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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the Official Gazette from July 1, 1964, through December 31, 1982. These notices and rule changes are currently in effect unless otherwise noted.

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INFORMATION AND CORRESPONDENCE

(1) Official Patent Office Mailing Address Remains Washington, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93-596, Jan. 2, 1975)

[860 O.G. 662]

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(2) Group Number Should Appear on Communications Relating to Pending Applications

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

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(3) Identification for Application Correspondence

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL-85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

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(4) Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner*
for Administration.

[943 O.G. 519]

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(5) Hand Delivery of Papers

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner*
for Patents.

[919 O.G. 1070]

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(6) Post Card Receipt Reminder

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

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(7) Acknowledgement of Receipt of a Patent or Trademark Application

When early notification of the serial number of newly filed application papers is desired, a *stamped, self-adressed post card* should be submitted with each application. Immediately after the mail has been opened in the Patent and Trademark Office, the post card will be stamped with both the receipt date and the serial number, and then returned to the addressee.

Within recent months, hundreds of cards could not be successfully returned because of insufficient postage or incomplete or nonexistent forwarding addresses. Accurate and complete addresses, including ZIP codes, are necessary to ensure prompt acknowledgement of the receipt of patent and trademark applications.

To assist in easy identification once the post card has been returned, it is suggested that the post card include applicant's names and title of invention.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

THERESA A. BRELSFORD,
July 19, 1982. *Acting Assistat Commissioner*
for Administration.

[1021 O.G. 96]

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(8) Status Inquiries

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the *Official Gazette* are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

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(9) Change of Address

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice or change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
May 28, 1975. *Deputy Assistant Commissioner*
for Patents.

[935 O.G. 1352]

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(10) Change of Address or Practitioner in a Plurality of Patent Applications

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations or power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Sept. 9, 1976. *Deputy Assistant Commissioner*
for Patents.

[951 O.G. 454]

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(11) Express Mail

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the *Official Gazette* of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
May 15, 1975. *Acting Assistant Commissioner for Administration.*

[936 O.G. 1554]

(12) Certificate of Mailing Procedures

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the *Official Gazette* on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the *Official Gazette* on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, the sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the *Official Gazette* (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

> I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on ______________
>
> (Date of Deposit)
>
> ______________
>
> Name of applicant, assignee, or Registered Representative
>
> ______________
>
> Signature
>
> ______________
>
> Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 20]

(13) Change in Legal Holidays

The Commissioner's Notice of December 2, 1970, "Change in Legal Holidays" is hereby rescinded, in view of Public Law 94-97, September 18, 1975, 89 Stat. 479, which amended the listing of legal public holidays in 5 USC §6103 by changing the Veterans Day holiday from the fourth Monday in October to November 11 of each year. Section 6103, as amended, reads as follows:

(a) The following are legal public holidays:
New Years Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, November 11.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Attention is called to the fact that the above listing of holidays in 5 USC §6103, as amended, should be followed, rather than the listing appearing on page 69 of the June 1979 Patent Laws pamphlet which does not reflect the noted amendment.

LUTRELLE F. PARKER,
Sept. 25, 1979. *Acting Commissioner, U.S. Patent and Trademark Office.*

Editorial Note: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

[987 O.G. 30]

(14) Acceptable Drawings for Patents

Approximately ten years ago, the Office's standards for acceptable drawings with respect to certain matters including the blackness and minimum thickness of inked lines, and shading of drawings, were relaxed in order to reduce the backlog of informal drawings at that time.

Apparently, because of the increased use of pens with a round, open-end capillary tip in place of the conventional draftsman's drawing pen, the Office now has a problem of obtaining acceptable reproduction copies of thin, light and gray lines which appear on many drawings. As a result, approximately 10,000 drawings sheets filed each year are *not* acceptable for normal reproduction and microfilming from the printed copy. Special printing steps must be taken to try to print very thin or light lines. Inked lines should be at least 0.012 inch in width and no closer together than 0.05 inch. Shading lines should be constructed to meet these criteria for acceptable drawings. The inked lines must not rub off the standard bristol board sheet, and their reflectance should not exceed 12%.

Applicants and draftsmen are requested not to use thin or light lines on their drawings. In the future, drawing requirements will be more stringent regarding the blackness and minimum thickness of lines to be acceptable. The Chief Draftsman has been instructed to adhere strictly to the above standards and criteria after January 1, 1978 so that special printing requirements can be held to a minimum.

Persons interested in examples of acceptable and unacceptable lines for drawings may obtain one set of "Printed Examples from Unacceptably Inked Drawings" by writing to:

The Chief Draftsman
U.S. Patent and Trademark Office
Washington, D.C. 20231

RICHARD J. SHAKMAN,
Oct. 20, 1977. *Assistant Commissioner for Administration.*

[964 O.G. 21]

(15) Change in Drafting Practice

Effective Apr. 12, 1982, the Patent and Trademark Office is terminating its drawing correction service.

In order to effect any changes in the drawings, applicants will be responsible for submitting either new drawings or having the drawings corrected by a bonded commercial draftsman, at applicant's expense, in the manner specified below. The new practice will permit applicants to delay correction of drawings in almost all cases until after the Notice of Allowance is mailed.

The initial list of bonded commercial draftsmen appears below. This list will be expanded as more commercial draftsmen are bonded. Applicants will, at least initially, be supplied with a current list of the bonded draftsmen with all Office actions requiring a drawing change.

The following is a letter which will be supplied, at least initially, to applicants in all Office actions requiring a drawing change. This letter explains the procedures for accomplishing the above, sets forth the time period within which the drawings must be corrected, and lists all of the currently bonded commercial draftsmen.

U.S.Department of
Commerce, Patent and
Trademark Office

Attachment to Paper Number
Serial No.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities (Draftsman's objections on PTO–948)

In order to correct any informalities in the drawings, applicants *MUST* comply with options (a) or (b) below. Failure to do so will result in *ABANDONMENT* of the application.

a) File new drawings with the changes incorporated therein. Applicant may delay filing the new drawings until the application is allowed by the examiner. If delayed, the new drawings *MUST* be filed within the *THREE MONTH* statutory period set for payment of the base issue fee in the **"NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE"** (PTOL–85). Also, if delayed, the drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsman and which indicates the following in the upper right hand corner:

Date of the Notice of Allowance
Issue Batch Number
Serial Number

b) Request a commercial bonded drafting firm (see list below) to make the necessary corrections.

A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE* DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE IN THE "NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE" (PTOL–85). NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

2. Corrections other than Informalities Noted by the Draftsman on the PTO–948

All changes to the drawings, other than informalities noted by the Draftsman, *MUST* be made in the same manner as above except that, if delayed option (a) is selected, normally, a sketch of the changes to be incoroprated into the new drawings *MUST* be approved by the examiner before the application will be allowed. If option (b) is selected, normally, applicants must submit, in duplicate, a separate paper containing a sketch of the proposed changes before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

3. Listing of Bonded Draftsmen

Graphe-Tech
11301 Rockville Pike
Kensington, Md. 20895
(301) 881-9400

Ultra Graphics, Inc.
Suite 300
3720 Farragut Ave.
Kensington, Md. 20795
(301) 946-1343

Mantech International Corp.
2121 Eisenhower Ave.
4th Fl.
Alexandria, Va. 22314
(703) 838-5793

National Graphic Center
205 W. Jefferson St.
Falls Church, Va. 22046
(703) 533-8700

Kirby Lithograhic Co.
2900 South Eads St.
Arlington, Va. 22202
(703) 684-7600

Mil-R Productions
2107 Mt. Vernon Ave.

Alexandria, Va. 22301
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1911 Jeff. Davis Hwy.
Suite 600-CM1
P.O. Box 2627
Arlington, Va. 22202
(703) 920-8900

IT IS SUGGESTED THAT APPLICANTS DETACH THIS LETTER FROM THE OFFICE ACTION AND ATTACH IT TO THE FRONT OF APPLICANT'S FILE AS A REMINDER THAT, IN ORDER TO AVOID ABANDONMENT, A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE,* OR NEW DRAWINGS SUBMITTED, DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE. NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

Currently there is a large backlog of applications pending before the Office draftsmen. Applicants whose applications are part of this backlog are strongly encouraged to have the necessary drawing corrections made by one of the bonded commercial draftsmen to expedite the issuance of their applications. If there has been authorization to charge a deposit account for these corrections, the authorization will not be processed. If a fee has been paid with cash, a refund will be processed.

The requirement of 37 CFR §§1.85, 1.86(b) and 1.123(a), specifying that drawings, or corrections to the drawings, may or must be made by the Office, is hereby waived.

GERALD J. MOSSINGHOFF,
Mar. 16, 1982. *Commissioner of Patents and Trademarks.*

[1017 O.G. 4]

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(16) Discontinuation of Drawing Comparison Fee

The Patent and Trademark Office no longer requires a $10 (ten dollar) comparison fee payment with the submission of formal sheets of drawings to replace originally filed informal drawings. Accordingly, no fee should be submitted, and all existing requirements for a drawing comparison fee are hereby rescinded.

THERESA A. BRELSFORD,
June 9, 1982. *Acting Assistant Commissioner for Administration.*

[1020 O.G. 10]

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(17) New Patent Drawing Correction Procedures

Drawings charged out from the Patent and Trademark Office, for the purpose of making changes or corrections, will be released from the Drafting Branch after the mailing of the Notice of Allowance. Most drawings should be available for charge out one week to ten days after the Notice of Allowance mail date. The major exception to this procedure will be when the examiner requires that drafting corrections be made prior to the Notice of Allowance issuance. We anticipate that this exception requirement will occur only for Design applications being appealed.

Unless a duplicate copy of the Drafting Letter has been filed by the attorney/applicant, the Office will not normally provide the commercial bonded draftsman with copies of either examiner approved drawing correction letters or a copy of the Patent and Trademark Office draftsman's noted informalities. It is the applicant's responsibility to provide copies of the necessary drawing corrections and the noted informalities. When drawings are borrowed from the Office draftsman, the serial number, batch number, and Notice of Allowance mailing date should be identified.

If for any reason a corrected and/or substitute drawing is not acceptable, a letter will be sent to the attorney/applicant. A bonded commercial draftsman must present a copy of this letter in order to borrow the unacceptable drawings.

THERESA A. BRELSFORD,
June 28, 1982. *Acting Assistant Commissioner for Administration.*

[1020 O.G. 18]

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(18) Regulations for the Use of the Facilities of the Patent and Trademark Office

Revision of Regulations

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.
Effective Date: June 26, 1979.
For Further Information Contact: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703-557-2290.
Supplementary Information: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.–8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.–5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

Regulations

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mezzanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101-20.3: and appropriate Sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 [41 CFR §§101-20.300 through 101-20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other forms of activity which may disturb other members of the public and/or Patent and Trademark Office personnel are forbidden.
6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.
7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.
8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.
9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.
10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.
11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.
12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.
13. In the Public Search Room for Patents, all bundles of patents must be promptly and properly replaced in the stacks by the user.
14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.
16. The front portion of the Public Search Room for patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.
19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.
21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.
22. All patent shoes must be promptly replaced in their proper location in the shoe cases.
23. All textbooks, journals and the like must be returned to their proper location.
24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of interest regulations of the Department of Commerce [15 CFR §§0.735-1 through 0.735-41].
25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide, an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

DONALD W. BANNER,
June 20, 1979. *Commissioner of Patents and Trademarks.*

[984 O.G. 26]

(19) Regulations Relating to the Use of Patent and Trademark Office Records Facilities

Establishment of Enforcement Procedures

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Notice.

SUMMARY: The Patent and Trademark Office is adopting procedures for enforcing existing regulations governing the use of the Public Search Room for Patents and the Patent Examining Group Search Facilities by members of the public. Enforcement of the existing regulations is necessary, and is intended by these procedures, to carry out the commitment of the Office to the public to promote an atmosphere conducive to research and maintain the integrity of the files in the Public Search Room for Patents and in the Examining Group Search Facilities.

EFFECTIVE DATE: 6-30-78.

FOR FURTHER INFORMATION CONTACT: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557-2290.

SUPPLEMENTARY INFORMATION: The procedures will apply in enforcing the regulations for the public use of records of the Public Search Room for Patents and the Patent Examining Group Search Facilities. The regulations of the Public Search Room for Patents were published in the Federal Register for July 14, 1976, 41 F.R. 29009, and incorporated in a Search Room User Agreement entered into by each person who is issued a User Pass. Regulations for Users of the Patent Examining Group Search Facilities were established under Rule 2 of the regulations of the Public Search Room for Patents and were published in the OFFICIAL GAZETTE of March 22, 1977, 956 O.G. 1118. The procedures appear below.

PROCEDURES FOR ENFORCEMENT OF THE REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS AND THE PATENT EXAMINING GROUP SEARCH FACILITIES

Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR 101-20.3; and appropriate sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the procedures appearing below are established.

Violation Involving the Security System

1. *Unauthorized removal of government property.*

(a) The Public Search Room for Patents is equipped with a security system designed to sound an alarm when an attempt to remove government property from the Public Search Room is detected. Each alarm signal triggered by a person passing through an exit to the Public Search Room will be investigated by security guards stationed at the Public Search Room exits. The person involved will be required to stop and allow the security guards to determine the cause of the alarm. If non-government property is the cause for the alarm, the person will be allowed to proceed without further delay. If unauthorized possession of government property is found to be the cause of the alarm, the person in whose possession the property is found will be advised that a violation has occurred and will be required to surrender the property to the Manager of the Public Search Room. An oral explanation for the possession of such property will be requested by the Manager.

(b) The Manager of the Public Search Room will immediately report each incident involving unauthorized possession of government property to the Deputy Assistant Commissioner for Administration by telephone, and if requested submit a written report, together with the government property and User Pass involved to the Deputy Assistant Commissioner for Administration.

(3) If it shall appear to the Deputy Assistant Commissioner for Administration that unauthorized possession of government property, detected by the security system, was inadvertent or otherwise unintentional, no further action will be taken. Otherwise, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Other Violations of the Public Search Room Regulations

2. *All other violations of the Public Search Room Regulations.*

(a) Each observed or reported violation will be investigated by the Manager of the Public Search Room. If a violation has occurred and is not denied, the person involved will be verbally requested by the Manager to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request of the Manager to comply with the regulations, or violates the regulations after having agreed to comply with them, the person will be required to surrender his or her User Pass to the Manager of the Public Search Room.

(b) The Manager of the Public Search Room will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Administration.

(c) If the Deputy Assistant Commissioner for Administration is satisfied that a reported violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Violations of the Patent Examining Group Search Facilities Regulations

3. *Violations of the Regulations for Users of the Patent Examining Group Search Facilities.*

(a) Each observed or reported violation will be investigated by Authorized Official. If a violation has occurred, and is not denied, the person involved will be verbally requested to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request to comply with regulations, or violates the regulations after having agreed to comply with them, the person involved will be required to surrender his or her User Pass to the Authorized Official.

(b) The Authorized Official will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Patents.

(c) If the Deputy Assistant Commissioner for Patents is satisfied that violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Patents will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked. A written decision will be rendered by the Deputy Assistant Commissioner for Patents after consideration of any timely submitted response.

Penalties

4. *Factors to be Considered in Assessing Penalties.*

(a) Penalties will be determined on a case-by-case basis. A record of penalties imposed for given violations will be kept and made available to the public upon request.

(b) Due weight may be given to prior violations of the regulations in assessing whether any given violation is willful, deliberate or intentional.

(c) Prior violations of the regulations will be considered in determining any specific penalty to be imposed. Depending upon the circumstances, the penalty for a first offense may range from an oral or written warning to a 60-day suspension of the User Pass. For a second offense, the penalty may be a suspension of from 5 days to 1 year. For a third offense, the penalty may range from a 30-day suspension to revocation of the User Pass.

General Provisions

5. *Use of Search Facilities During Suspension or After Revocation of User Pass.*

No individual will be permitted to use the Public Search Room for Patents or the Patent Examining Group Search Facilities while his or her User Pass is suspended or revoked.

6. *Temporary User Pass.*

Any person whose User Pass was surrendered, but not suspended or revoked, may be issued a temporary User Pass which shall be valid until the User Pass is returned or a decision is rendered pursuant to paragraph 1(c), 2(c), 3(c).

7. *Absence of the Deputy Assistant Commissioner for Administration.*

In the absence of the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services will carry out the functions and responsibilities assigned to the Deputy Assistant Commissioner for Administration in paragraph 1(b) and (c) and 2(b) and (c).

8. *Absence of the Manager of the Public Search Room.*

In the absence of the Manager of the Public Search Room, the Acting Manager will carry out the duties and responsibilities assigned to the Manager in paragraphs 1(a), 1(b), 2(a) and 2(b).

9. *Assistance.*

The Manager of the Public Search Room and the Authorized Official may, when necessary request the Security Officer of the Patent and Trademark Office or the GSA to provide assistance in carrying out their function in paragraphs 1(a), 2(a), and 3(a).

10. *Petitions.*

A decision rendered by the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services, or the Deputy Assistant Commissioner for Patents may be reviewed on petition to the Commissioner.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 5, 1978.

[970 O.G. 114]

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(20) Revised Regulations and Procedures for Visitors to the Patent and Trademark Office

Effective Oct. 1, 1982, all visitors to the Patent and Trademark Office (PTO) will be required to obtain and display a visitor pass while using PTO facilities. Passes will be available in building CP3, Room 1A01.

The current User Agreement will be replaced by the following Regulations for Visitors to the PTO:

These regulations are established for members of the public using the facilities of the PTO and will be enforced by designated officials of the PTO.

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 (41 CFR §§101-20.300 through 101-20.314).

Packages, briefcases and other personal effects brought into the PTO are subject to search by authorized personnel for reasonable cause.

All persons must comply with posted Official Notices.

User Passes

1. Individuals visiting any area of the PTO must obtain and display a valid, non-transferable User Pass at all times while on the premises.
2. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first User Pass is issued at no charge. Duplicate or replacement User Passes will be provided at a cost of $5.00 per Pass. Temporary User Passes may be obtained at no cost and are valid through the expiration date stamped thereon.
3. Permanent and Temporary User Passes must be surrendered to authorized PTO officials upon request for cause.

Use of Search Areas

4. When searching in a patent examining organization, visitors must register with the designated representative and sign a log indicating time entering and leaving the area, User Pass number, and class(es) and subclass(es) searched.
5. Documents removed from the files must be promptly returned to their proper location after use. No documents may be removed from the area in which they were obtained without specific authorization from a Group Director or a Supervisory Patent Examiner.
6. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
7. Trademark registrations may not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.

Prohibitions

8. Smoking and consumption of food or beverages in other than designated areas.
9. Loud talking or any conduct which is disruptive to others.
10. Use of radios, typewriters, photographic equipment, dictation equipment, and like items without permission from a designated official of the PTO.
11. Improper use, mutilation, destruction or removal of patent or trademark records or government property.
12. Reserving seats or work areas.
13. Affixing messages to walls, telephone booths or other government property, except designated message boards.
14. Use of the PTO as a mailing address, and use of PTO stationery.

Hours of Operations

15. Use of PTO facilities is limited to the following hours on regular business days:

Patent Public Search Room, High Ceiling Area	8:00 am–6:00 pm
Low Ceiling Area and Mezzanine	8:00 am–8:00 pm
Trademark Search Library	8:00 am–5:30 pm

Scientific Library, Assignment
Search Room, Microfilm Center,
Patent Examining Organizations,

and all other public access areas
of the PTO 8:45 am–4:45 pm

THERESA A. BRELSFORD,
Sept. 8, 1982. *Acting Assistant Commissioner*
for Administration.

[1023 O.G. 3]

(21) Use of Certificate of Correction Forms

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO-1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO-1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO-1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
May 10, 1977. *Assistant Commissioner for*
Administration.

[959 O.G. 3]

(22) Government Publications Subscription Service

The purpose of this notice is to inform subscribers of Federal Government publications serviced by the Government Printing Office, Superintendent of Documents, of the requirement to standardize subscriber change of address procedures.

It is imperative that the Government Printing Office be advised by each subscriber of an address change and that such advisement be accompanied by the latest subscription address label.

The Government Printing Office has the largest number of subscriptions of any activity in the United States, The Superintendent of Documents maintains about 835 mailing lists containing nearly 3 million addresses. Many of these subscribers frequently change their addresses and inform the Superintendent of Documents in a wide variety of methods. Some large organizations have as many as 20 identical subscriptions to the same street address but with different internal deliveries. Altogether the Government Printing Office is mailing nearly 5 million subscription copies each month. The Government Printing Office requests your cooperation to more effectively maintain the many mailing lists.

For your convenience, a change of address form is reproduced on the last page of the OFFICIAL GAZETTE.

BRADFORD R. HUTHER,
Aug. 9, 1977. *Acting Assistant Commissioner*
for Administration.

[962 O.G. 2]

(23) Notice to Official Gazette Subscribers

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the *Official Gazette*, MPEP Revisions, Trademark Rules of Practice, Annual Indices, and all other patent and trademark publications.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

All correspondence and inquiries concerning subscription services to patent and trademark related publications, and requests for reinstatement of subscriptions should be directed to:

Mr. C. A. LaBarre
Asst. Public Printer
Superintendent of Documents (SD)
Government Printing Office
Washington, D.C. 20401

This notice is effective with the publication date and supersedes the notice published on this subject in 939 O.G. 1, dated October 7, 1975.

RICHARD J. SHAKMAN,
Mar. 14, 1978. *Assistant Commissioner*
for Administration.

[969 O.G. 2]

(24) Subscription Pricing Information

The annual subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section

First-class domestic mailing	$360.00
Fourth-class domestic mailing	250.00
Fourth-class foreign mailing	312.00
Single copies each, domestic	7.50
Single copies each, foreign	9.40

Back issues will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1982.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
June 24, 1982. *Acting Assistant Commissioner*
for Administration.

[1020 O.G. 30]

(25) Subscription Pricing Information

The annual subscription prices on the following publications have been changed, as indicated below:

Title: Patent and Trademark Office Notices

First-class domestic mailing	$75.00
Second-class domestic mailing	60.00
Second-class foreign mailing	75.00
Single copies: not available	.....

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1982.

THERESA A. BRELSFORD,
June 3, 1982. *Acting Assistant Commissioner*
for Administration.

[1019 O.G. 54]

(26) Rules Service Company Address Change

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents*
and Trademarks.

[994 O.G. 10]

(27) Defensive Publication Program

A change in the numbering system of Defensive Publication documents will be implemented, effective with the issue of November 4, 1980.

The numbering system will be as follows:

T XXXX XX

Sequential Document Number

Official Gazette Volume Number

Document Category. "T" denotes
Technical Disclosure

The numbering system as announced in 869 O.G. 687 remains in effect for the issues of December 16, 1969 through October 1980.

RICHARD J. SHAKMAN,
Sept. 2, 1980. *Assistant Commissioner*
for Administration.

[998 O.G. 38]

(28) Forms Booklet Available

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8 1/2 by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Mar. 26, 1980. *Commissioner of Patents*
and Trademarks.

[993 O.G. 26]

(29) Patent and Trademark Office Services

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8 1/2 by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

Effective December 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP-4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

Effective immediately, no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which *no fee* is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office by doing the following:

Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.

Box 2—Replenishment of funds in deposit accounts.

Box 4—Mail for the Office of Legislation and International Affairs.

Box 5—"No fee" mail related to trademarks.

Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.

Box 8—All papers for the Office of the Solicitor.

Box 9—Coupon orders for U.S. patent and trademark copies.

Box 10—Orders for certified copies of patent and trademark applications.

Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

Envelopes should be addressed:

Box ____________________
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office Where possible, urgent items which require no fee should be hand delivered to the appropriate area.

Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.

Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.

Use commercial services for preparation of new patent and trademark application drawings.

On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #___, amendment, etc.). The name and telephone number of the individual representing the applicant also should appear on all papers.

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

SIDNEY A. DIAMOND,
Jan. 4, 1980. *Commissioner of Patents and Trademarks.*

[990 O.G. 184]

(30) Service of Court Papers on the Commissioner of Patents and Trademarks

Those having occasion to serve papers associated with court proceedings by mail are reminded that a special mailing address has been established to provide prompt forwarding to the Office of the Solicitor. The use of this address will ensure that the papers will not be delayed in dispatch. In court proceedings in which the Commissioner is a party, the notices of appeal to the U.S. Court of Appeals for the Federal Circuit and all service copies of papers filed in courts should be addressed:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Service copies of briefs and papers hand-carried to the Mail Room of the Patent and Trademark Office should likewise be addressed as shown above.

Joseph Nakamura,
Sept. 10, 1982. Solicitor.

[1023 O.G. 3]

(31) Automated Search Experiments

The United States Patent and Trademark Office (PTO) intends to carry out research and evaluation projects dealing with automated full-text searching of U.S. Patents.

To further this objective, the PTO has entered into an agreement with Mead Data Central to provide the PTO access to and support for the use of the LEXIS full-text system. Using that system, the PTO will test and evaluate the effectiveness of searching the full text of over 50,000 U.S. patents. As part of this experiment, the PTO will furnish to Mead Data Central a special compilation of tapes from an extensive library of computer tapes containing the full text of U.S. patents from 1970 to the present.

The PTO would welcome multiple experiments using the same or similar techniques and/or technology as Mead Data Central, and thus, the PTO is willing to enter into the same agreement, or a similar agreement on mutually agreeable terms, with any other responsible party, within 18 months from the date of this notice.

Additional information regarding this matter may be obtained from:

Donald P. Stein, Director
Office of Search Systems
U.S. Patent & Trademark Office
Washington, D.C. 20231
TEL: 703-557-3763

GERALD J. MOSSINGHOFF,
Aug. 3, 1981. *Commissioner of Patents and Trademarks.*

[1010 O.G. 3]

(32) Sale of Copies of Reexamination Requests

Copies of reexamination requests, all cited references, and the file wrapper and contents of the patent file for which reexamination is requested are available at a charge of $0.30 per page. Orders for such copies must indicate the control number assigned the reexamination request. Orders should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Customer Services Division.

GERALD J. MOSSINGHOFF,
July 31, 1981. *Commissioner of Patents and Trademarks.*

[1010 O.G. 4]

(33) Availability of Concordances Between the United States Patent Classification and the International Patent Classification

The Patent and Trademark Office announces that the 4th Edition of the Concordance which relates the U.S. Patent Classification (as revised to Apr. 9, 1979) to the Third Edition of the International Patent Classification, is now again available for sale by the U.S. Government Printing Office. Inquiries should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
(Stock Number 003-004-00562-9) (Cost $6.50)

Also, a Reverse Concordance, which is the opposite of the above mentioned Concordance, is now available

which relates the International Patent Classification to the U.S. Patent Classification. This Reverse Concordance will not be published, but is now available for loan to interested parties for copying at their own expense.

The loan copy, which consists of 517 pages, may be obtained by contacting:

Office of International Patent Classification
Crystal Square, Bldg. 4, Room 108
c/o Commissioner of Patents and Trademarks
Washington, D.C. 20231
Tel.: (703) 557-3756

RENE D. TEGTMEYER,
Nov. 17, 1981. *Assistant Commissioner for Patents.*

[1013 O.G. 36]

(34) Simultaneous Issue of Patents

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP-2, Room 5C26

The request must contain the following information about *each* allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance

Separate copies of the request must accompany *each* Issue Fee Transmittal (PTO-85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557-3794.

RICHARD J. SHAKMAN,
Aug. 25, 1978. *Assistant Commissioner for Administration.*

[974 O.G. 16]

RECORDS AND FILES

(35) Assignee Names

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL-85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL-85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

RICHARD J. SHAKMAN,
Dec. 17, 1975. *Assistant Commissioner for Administration.*

[942 O.G. 186]

(36) Submission of Uniform Assignee Names on the Issue Fee Payment Form PTOL-85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner for Administration.*

[965 O.G. 8]

(37) Title of Invention Carried on Office Records

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Aug. 31, 1977. *Acting Assistant Commissioner for Administration.*

[962 O.G. 23]

(38) New System To Monitor Patent Applications

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

- —Serial Number
- —Filing Date
- —Total Claims Allowed
- —Date of Mailing
- —Examiner Name and Group Art Unit
- —First Named Applicant
- —Title of the Invention
- —Base Issue Fee Due (Utility Applications Only)
- —Attorney's Docket Number
- —Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL-231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO-721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

SIDNEY A. DIAMOND,
June 16, 1980. *Commissioner of Patents*
and Trademarks.

[997 O.G. 9]

FEES AND PAYMENT OF MONEY DEPARTMENT OF COMMERCE

(39)

Patent and Trademark Office
37 CFR Parts 1 and 2
Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish fee related procedures and fees in amounts which would comply with the requirements of either Public Law 96-517 or H.R. 6260, dependent upon which is effective on Oct. 1, 1982. This action is necessary at this time in view of the requirements to establish fees and procedures contained in Public Law 96-517 and the requirements which would also be present under H.R. 6260 enacted as a Public Law. This final rule is being issued in two sections with the first section relating to patent fees and the second section relating to trademark fees. This final rule is also being issued in alternative form so that the proper fees and procedures will become effective on Oct. 1, 1982, under either Public Law 96-517 or the Public Law which results from enactment of H.R. 6260. Thus, if Public Law 96-517 remains fully effective on Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to Public Law 96-517, contained in Alternative A of each section, will become effective. Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to H.R. 6260, contained in Alternative B of each section, will become effective. Thus, the intended effect of this action is to adopt rules which will be effective on Oct. 1, 1982, establishing patent and trademark fees and procedures regardless of whether Public Law 96-517 remains fully effective or whether H.R. 6260 has been enacted.

EFFECTIVE DATE: Oct. 1, 1982. However, prior to Oct. 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

FOR FURTHER INFORMATION CONTACT: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

FOR FURTHER INFORMATION CONTACT: As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION:

SECTION I—REVISION OF PATENT FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28042-28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. An oral hearing was held on July 9, 1982. Fourteen written letters and statements were submitted. Five persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These rule changes are designed primarily to implement the Patent and Trademark Office fees which are provided for by Public Law 96-517, or which would be set in, or provided for by, the Public Law resulting from H.R. 6260.

Public Law 96-517

Public Law 96-517 presently requires that fees be established by the Commissioner for the processing of patent applications from filing through issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. Public Law 96-517 requires that by Oct. 1, 1982, fees for the processing of patent applications, other than design patents, be set by the Commissioner to recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. Similarly, fees for processing design patents are to be set to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. By Oct. 1, 1982, fees for all other services or materials related to patents are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

Public Law 96-517 also requires that fees be set for maintaining all patents filed on or after Dec. 12, 1980,

other than design patents, in force. It also requires that maintenance fees must recover 25 per centum of the estimated cost to the Office of processing patent applications, other than design patent applications, by the fifteenth fiscal year following Dec. 12, 1980. Under Public Law 96-517, the maintenance fees are due $3\frac{1}{2}$, $7\frac{1}{2}$, and $11\frac{1}{2}$ years after grant of the patent.

Public Law 96-517 is presently effective and this rule change is designed to implement the fee provisions of that law if it remains fully effective on Oct. 1, 1982. The changes which will become effective on Oct. 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. H.R. 6260 would establish a number of statutory fees which the Commissioner is required to charge. Among the more significant of these are fees for filing a patent application, issuing, and maintaining a patent in force. The fees for filing a patent application and issuing a patent would be set forth in §41(a) of Title 35, United States Code, as proposed to be amended by H.R. 6260. Certain other fees, such as appeal fees, the fee for filing a disclaimer, and fees for filing petitions seeking to revive an abandoned application and for extensions of time, would also be set in §41(a) of Title 35, United States Code. Section 41(b) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would set forth the fees for maintaining a patent in force. These fees would be due $3\frac{1}{2}$, $7\frac{1}{2}$, and $11\frac{1}{2}$ years after grant of the patent or within a grace period of six months thereafter. Section 41(c) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would provide for the acceptance of maintenance fees after the statutory grace period under certain conditions and with certain effects.

H.R. 6260 would also provide for the reduction by 50 per centum in the fees paid under §41(a) and (b) of Title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established, and to be established therefor.

Section 41(d) of Title 35, Untied States Code, as proposed to be amended by H.R. 6260, would also provide that the Commissioner establish fees for all other processing, services, or materials related to patents which are not covered in §41(a)-(c) of Title 35, United States Code, to recover the estimated average cost to the Office of the processing, services, or materials.

The changes which will become effective on Oct. 1, 1982, *upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982*, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. H.R. 6260 includes other provisions which would be the subject of other proposals for rulemaking.

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a patent application, or during the term of a patent. A number of significant changes are made in order to implement either Public Law 96-517 or H.R. 6260.

Under H.R. 6260, and Alternative B of this rule making, fees under §41(a) and (b) of Title 35, United States Code, would be reduced by 50 per centum for independent inventors, small business concerns, and nonprofit organizations. H.R. 6260 would give the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking, in Alternative B, implements the fee system which would be established by H.R. 6260 and lists all applicable fees.

* * * * *

Another significant change relates to fees established under Public Law 96-517 and which would be established by H.R. 6260 for petitions for extensions of time to take actions required by the Commissioner in an application. H.R. 6260 would establish a fee of $50 for filing a petition for a first one-month extension of time, an additional fee of $100 for filing a petition for a second one-month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a petition for a third one-month extension of time which would expire three months after the end of the time period set for taking action. A fourth one-month extension with an additional fee of $200 could be requested if additional time was available under the statute. Under H.R. 6260, the Commissioner would have authority to issue regulations providing when, within any maximum time period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. The Commissioner would also not be precluded by H.R. 6260 from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause. This rulemaking implements the extension of time provisions of H.R. 6260 by permitting applicants in the majority of situations to file the petition for an extension of time and the fee at the time of and along with the filing of the response for which a non-statutory or shortened statutory time period has been set. This will reduce the amount of paperwork involved and should significantly reduce the expenses of applicants and the Office since resources now devoted to the separate processing of petitions for extensions of time will no longer be required to be expended thereon. The fees are set to provide a proper control on the number of extensions of time given. The same procedures relating to extensions of time which would be established under Alternative B and H.R. 6260 will also be established under Alternative A and Public Law 96-517. Thus, whether the rules are effective on Oct. 1, 1982, under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B, the same procedures for obtaining extensions of time will be in effect with the only differences being in the amount of the fees.

Another significant change relates to the implementation of the fee for revival of an unintentionally abandoned application which would be authorized under H.R. 6260. H.R. 6260 would establish two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees would be applicable to petitions to accept the delayed payment of the fee for issuing a patent. Under H.R. 6260, a fee of $50 is established in §1.17(l) for filing a petition for revival under §§133 or 151 of Title 35, United States Code, in accordance with standards presently in effect where the delay resulting in the abandonment, or the delay in payment of the issue fee, was unavoidable. Under H.R. 6260, a fee of $500 is established in § 1.17(m) for filing each petition for revival, or for acceptance of the delayed payment of an issue fee, where the abandonment or the failure to pay the issue fee was unintentional. A mere statement that abandonment was unintentional plus the $500 fee is all that is required in this case for this purpose. Under H.R. 6260 and this rulemaking an applicant would have a choice of which petition and fee to file seeking revival depending on the circumstances involved. The changes discussed in this paragraph cannot be made effective without enactment of H.R. 6260 as a Public Law.

The rulemaking also provides for fees for filing certain petitions which have, in some cases, heretofore, been decided without a charge. These fees are established under Public Law 96-517 and are provided for by the amendment of §41(d) of Title 35, United States Code, which would be introduced by H.R. 6260. Under §41 of Title 35, United States Code, as amended by Public Law 96-517 or as it would be amended by H.R. 6260, fees are authorized for the processing of various petitions desiring certain actions to be taken regarding patent applications, for the recording of assignments, for reexamination of patents, and for the processing of international applications under the Patent Cooperation Treaty. In general, fees are not being required for those petitions which are supervisory in nature. For example, where applicants are petitioning from an allegedly improper action of the examiner, it is felt that such petitions should be processed and decided without charge since they are not asking for any special privilege but are attempting to correct an allegedly incorrect Office holding. The changes discussed in this paragraph will be in effect on Oct. 1, 1982, whether the rules become effective under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B.

Many of the fees currently set forth in §1.21 are being increased to reflect the cost of currently performing that service.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this proposal under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 1–54. Those changes which relate only to Public Law 96-517 appear as Alternative A and are numbered 55–62. Those changes which are dependent upon enactment of H.R. 6260 appear as Alternative B and are numbered 63–71. The changes common to Public Law 96-517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

Rule Changes Common To Public Law 96-517 and H.R. 6260

The following sections are changed, effective Oct. 1, 1982, under either Public Law 96-517 or H.R. 6260:

Section 1.11 is amended to change the reference for the reexamination request fee to §1.20(c).

Section 1.12 is amended to break the section into four paragraphs. Paragraph (a) maintains current practice but adds specific reference to §1.19(a)(5) which sets the cost of copies.

Paragraph (b) maintains current wording except for inserting "patent" after "abandoned" and changing "his" to "applicant's". Paragraph (c) includes new language relating to obtaining copies of assignment records not open to the public. Access can be obtained only with the applicant's permission or by petition with fee to the Commissioner for such access in particular situations. No change in the showing required by petition to obtain access is intended by this amendment. Paragraph (d) contains present language except for reference to the specific rule which sets forth the charge for time consumed in making assignment searches.

New paragraph (e) of §1.14, sets forth the two ways in which access can be obtained to patent applications which are not open to the public. The two ways are (1) by petitioning and paying the petition fee and approval of the Commissioner of such petition and (2) by obtaining written approval from the applicant.

New §1.19 provides fees for copies of various documents supplied by the Office. The fees have been grouped into 5 paragraphs. New paragraph (a) provides fees for uncertified copies. Subparagraphs (a)(1) and (2) indicate the prices of printed patent copies. Subparagraph (a)(3) provides a single fee for a copy of an application, as filed, for each 50 pages, or fraction thereof. This practice should make it much easier to determine the amount of the required fee. Subparagraph (a)(4) sets a single fee for a copy of each 100 pages, or fraction thereof, of a patent file wrapper. Subparagraph (a)(5) provides for a charge of 30 cents per page for copies of Office records other than those covered by subparagraphs (a)(1) through (4). Subparagraph (a)(6) provides a fee for a microfiche copy of a microfiche.

Paragraph (b) of §1.19 sets fees for certified copies of Office documents. Subparagraph (b)(1) sets a fee for certifying Office records. Subparagraph (b)(2) provides a single fee for searching assignment records, preparing an abstract of the title and certification thereof. Subparagraph (b)(3) provides a fee for comparing copies not prepared by the Office prior to certification in order to provide basis for certification. Paragraph 1.19(c) sets the fees for subscribing to all of the patents issued annually in particular subclasses. This charge is in addition to the normal copy charge under §1.19(a)(1) and (2). Paragraph 1.19(d) sets the fee for providing patent copies to libraries under 35 U.S.C. 13. Paragraph 1.19(e) provides fees for lists of United States patents in particular subclasses.

Section 1.21 is amended to contain those miscellaneous fees which do not relate to the topics covered in § §1.16–1.20. All of the fees in §1.21 are established under the authority given the Commissioner by 35 U.S.C. 41(d) as amended by Public Law 96-517 or as proposed in H.R. 6260. Paragraph 1.21(a) establishes fees for admission to the examination for registration to practice, registration, reinstatement and issuance of certificates of good standing of patent attorneys and agents. Subparagraph 1.21(b)(1) sets forth the fee for establishing and reinstating deposit accounts, while subparagraph 1.21(b)(2) sets forth the fee due when the balance at the end of each month is below $40. Paragraph 1.21(c) sets the fee for filing a disclosure document. Paragraph 1.21(d) sets the fee for renting a delivery box. Paragraph 1.21(e) sets the fee for an international-type search report. Although all national applications now receive what is known as an international-type search, if a report thereof is desired in addition to an Office action, the fee set in §1.21(e) is required. Paragraph 1.21(f) sets a fee for searching Office records for purposes not otherwise specified. Paragraph 1.21(g) sets the fee for tokens for copying machines. Paragraph 1.21(h) sets the fee for recording assignments, agreements, and other documents. Paragraph 1.21(i) sets forth the fee for publishing a notice of availability of a patent for licensing or sale in the *Official Gazette*. Paragraph 1.21(j) sets the fee for the Office providing a duplicate or replacement of a permanent Office user pass. Paragraph 1.21(k) indicates that the Commissioner may specify charges for items and services not otherwise specified at a level to recover the actual cost of providing such an item or service by the Office.

Section 1.24 is revised so that the denomination of coupons sold by the Office will be in more convenient amounts.

Section 1.25 is amended to provide, in paragraph (a), a reference to the fee for establishing a deposit account and a service charge if the end of the month balance is below $40.00. Paragraph (b) is amended by revising the present sentence to refer to post-issuance fees and by adding a second sentence which would specifically provide in the regulations for the possibility of an applicant giving a general authorization to charge any fee due under §§1.16–1.18 in a particular application to a deposit account during the entire pendency of the application. This general authorization would not apply after the patent issues, e.g., to maintenance fees. The last sentence of paragraph (b) permits fees during reexamination to be charged to a deposit account by filing an authorization with the request for reexamination.

Section 1.26 is amended to provide in paragraph (a) that a withdrawal of a request for an oral hearing will not entitle appellant to a refund. Paragraph 1.26(a) raises the amount which will not be refunded without specific request from fifty cents to one dollar. Paragraph (b) relating to refunds of international search fees during subsequent examination of a national application is deleted since such refunds are now covered by reductions in the appropriate fees paid under §1.445 rather than solely by direct refunds. Paragraph (c) is amended to bring the spelling of "requester" into conformance with that used in other sections of the regulations.

Section 1.45 is amended to provide in paragraphs (b) and (c) for a petition and petition fee to be filed to correct misjoinder of inventorship situations in pending applications. The fee will cover the additional time required by the Office to process such applications.

Section 1.47 is amended to provide for petitions and fees for filing applications signed by less than all inventors, or a person not the inventor.

Section 1.51 is amended to refer to the filing fees in new §1.16 and to add a new paragraph (c) indicating that applicants may file authorizations to charge fees required under any of §§1.16–1.18 to deposit accounts.

Section 1.52 is amended to add a reference in paragraph (a) to new paragraph (d). New paragraph (d) provides in the rules for filing an application in a language other than English if a verified English translation and fee under §1.17(k) are timely submitted.

Section 1.55 is amended in paragraph (b) to require a petition and fee for processing priority papers submitted after the issue fee is paid.

Section 1.75 is amended to add a reference to §1.16 and a sentence referring to the fee for multiple dependent claims set forth in §1.16(d).

Section 1.85 is amended to delete the sentence relating to mounting of informal drawings.

Section 1.86 is removed to delete the reference to the Office draftsman making drawings since such service is no longer available.

Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d). Revised paragraph (a) refers to paragraph (b) and added paragraphs (c) and (d). Paragraph (c) requires a petition but no fee where the basis for the petition to make special is the applicant's age or health or the impact of the invention on improving the environment or conservation of energy. Paragraph (d) requires a petition and the fee set forth in §1.17(i) for petitions to make special on grounds other than those above.

Section 1.103 is amended in paragraph (a) to provide for filing a petition and the fee set forth in §1.17(i) for a suspension of action except that no fee would be required where the reason for the suspension is the fault of the Patent and Trademark Office. Paragraph (b) is amended to clearly indicate that suspensions are directed to actions by the Office and not responses by the applicant.

Section 1.104, paragraph (d) is amended to change the fee reference to correspond to §1.21(e).

Section 1.134 is added to indicate that unless applicant is notified of any non-statutory or shortened statutory period in an Office action, a maximum period for response of six months is allowed.

Section 1.135 is amended to provide that if no response is filed within the time set in the Office action under §1.134 or as it may be extended under §1.136, the application will be abandoned unless an Office action indicates that another consequence, such as disclaimer, will take place. Paragraph (b) is amended to include a reference to paragraph (a). Paragraph (c) is amended to add that applicant's reply must be a bona fide attempt to respond as well as to advance the case to final action in order for applicant to be given an opportunity to supply any omission.

Section 1.136 is amended to revise the title and provide for two distinct procedures to extend the period for action or response in particular situations. The procedure which is available for use in a particular situation will depend upon the circumstances. Paragraph 1.136(a) permits an applicant to file a petition for extension of time and a fee as in §1.17(a), (b), (c), or (d) up to four months after the end of the time period set to take action except (1) where prohibited by statute, (2) in interference proceedings, or (3) where applicant has been notified otherwise in an Office action. The petition and fee can be filed prior to or with the response. The filing of the petition and fee will extend the time period to take action up to four months dependent on the amount of the fee paid except in those circumstances noted above. Paragraph 1.136(a) will effectively reduce the amount of paperwork required by applicants and the Office since the extension will be effective upon filing of the petition and payment of the appropriate fee and without acknowledgment or action by the Office and since the petition and fee can be filed with the response. Paragraph (b) provides for requests for extensions of time upon a showing of sufficient cause when the procedure of paragraph (a) is not available. Although the petition and fee procedure of §1.136(a) will normally be available within 4 months after a set period for response has expired, an extension request for cause under §1.136(b) must be filed during the set period for response. The sentence in paragraph (b) relating to who may grant an extension under paragraph (b) is eliminated thereby providing additional flexibility to designate persons to act on requests under paragraph (b). Extensions of time in interference proceedings are governed by §1.245.

Section 1.165, paragraph (b) is amended to delete therefrom the last sentence which refers to a fee for mounting copies. Since little or no need has been found for this provision in the rules, it is deleted.

Section 1.171, as amended, adds a reference to § 1.19(b)(2) which sets forth the fee for title reports.

Section 1.177 is amended to require a petition and fee as set forth in §1.17(i) where it is desired that divisions of a reissue issue on different dates.

Section 1.181 is amended to indicate in paragraph (d) that if a petition to the Commissioner is filed under the provisions of a section which requires a petition fee and the required fee is not paid, the petition will be dismissed. The amendment to paragraph (g) deletes the reference to §1.183.

Section 1.182 is amended to add a sentence requiring any petition filed under this section to be accompanied by the petition fee set forth in §1.17(h).

Section 1.183 is amended to specifically refer to the inherent authority of the Commissioner to suspend or waive the rules at the Commissioner's initiative. The amendment also indicates the Commissioner's authority to designate others to act for the Commissioner in appropriate circumstances. The rule language also requires the payment of the petition fee set forth in §1.17(h) if a petition to suspend or waive the rules is filed.

Section 1.191 is amended to change the fee reference for filing a notice of appeal to §1.17(e) and delete the word "primary" since some actions which are subject to appeal are not made by a "primary" examiner.

Section 1.192, paragraph (a), is amended to refer to the fee for filing an appeal brief set forth in §1.17(f). The present language requiring a showing of sufficient cause for extensions of time for filing the brief and an indication that an oral hearing is desired at the time of filing the brief are removed from paragraph 1.192(a). Under the amendment to paragraph 1.192(a), the provisions of §1.136 will apply to extensions of time for filing the brief. The time for requesting an oral hearing is now set in §1.194(b).

Section 1.194 is amended to revise paragraphs (b) and (c) to refer to the fee for oral hearing in §1.17(g) and to indicate in paragraph (b) that any request for an oral hearing must be made within one month after the mailing date of the examiner's answer.

Section 1.197, paragraph (b), is amended to modify the last sentence relating to extensions of time to make the provisions of §1.136 applicable thereto. Paragraph 1.197(b) is also amended to limit requests for rehearing, reconsideration or modification of a Board decision to one. This will not significantly change present practice since such requests are now required to be filed within thirty days from the date of the original decision.

Section 1.231, paragraph (a)(1), is amended to change the reference to the fee for filing a request for reexamination to §1.20(c).

Sections 1.245 and 1.246 are amended to indicate that the provisions of §1.136 do not apply to time periods in interferences.

Section 1.263 is amended to add a reference to the fee for filing a disclaimer contained in §1.20(d).

New section 1.268 is added to provide a rule relating to the filing of interference settlement agreements. The rule generally follows 35 U.S.C. 135(c) and provides for filing of petitions and fees in paragraphs 1.268(b) and (c).

Section 1.292, paragraph (a), is amended to require the payment of the fee set forth in §1.17(j) with any petition for the institution of public use proceedings.

Section 1.304, paragraph (a), is amended to provide for extension of the time period for filing an appeal or civil action to be subject to the provisions of §1.136 and refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.311 is amended to designate the present section as paragraph (a) and revise it in several ways. Paragraph (a) indicates that the notice of allowance will be sent to the correspondence address as indicated under § 1.33. The issue fee (§1.18) is indicated as being due 3 months from the date of mailing of the notice of allowance. Paragraph 1.311(b) permits an authorization to be filed either before or after the mailing of the notice of allowance to charge the issue fee to a deposit account.

Section 1.312 is amended to divide the section into two paragraphs and require a petition and payment of the fee under §1.17(i) for any amendment filed after payment of the issue fee.

Section 1.313 is amended to provide in paragraph (a) clear basis for the Office withdrawing applications from issue on its own initiative or upon petition by applicant accompanied by the petition fee set forth in §1.17(i). Any accompanying amendment must comply with the requirements of §1.312. Paragraph (b) clarifies when an application will be withdrawn from issue after assignment of the issue date and patent number.

Section 1.314 is amended to revise the wording to eliminate reference to a portion of the issue fee and adds reference to the possibility that an application in which the issue fee was paid can be withdrawn from issue under §1.313 or the issuance thereof deferred pursuant to a petition by the applicant and the payment of the petition fee under §1.17(i).

Section 1.321 is amended to include references in both paragraphs (a) and (b) to the statutory disclaimer fee in §1.20(d) and delete the reference to §1.21.

Section 1.324 is amended to include reference to the fee in §1.20(b) and change the word "application" to "petition".

Section 1.331, paragraph (a), is amended to add a new sentence which gives the citation of the fee for recording assignments and to indicate that instruments recorded on the Government register under Part 7 of Title 37, Code of Federal Regulations, do not require payment of such fee.

Section 1.332 is amended to refer to the fee in § 1.21(h) for recording an assignment.

Section 1.334 is amended to divide the rule into three paragraphs and also require an address of the assignee so that correspondence can be directed to the assignee if required. New paragraph (c) provides for filing a petition and the fee set in §1.17(i) seeking to have the patent issue to the assignee where such assignment has not been recorded at the time the issue fee is paid.

Section 1.341, paragraph (h), is amended to refer to the fee set forth in §1.21(a)(2) for registration of an attorney or agent.

Section 1.347 is amended to add a sentence referring to the fee set forth in §1.21(a)(3) for reinstatement of an attorney or agent.

Section 1.445 is amended to increase the PCT transmittal fee and search fee to a level needed to cover the cost of performing the required functions. Paragraph 1.445(a)(2) is also amended to provide, in effect, for a reduction in the international search fee due to the United States Patent and Trademark Office as an International Searching Authority where a corresponding United States national application with fee has been filed. In addition, paragraph 1.445(a)(4) is amended to credit the national fee required under §1.16(a)–(d) where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. The supplemental search fee for inventions in addition to the first, where lack of unity of invention has been found, is reduced since the present fee is more than is required to cover the costs. The national fee amount is the same as the national application filing fees in §1.16(a)–(d).

Section 1.446(b) is revised to permit a refund of a portion of the search fee to the extent set forth in § 1.445(a)(4), if such refund is requested at the time of paying the national fee.

Section 1.451 is amended in paragraph (b) to revise the citation of the fees for a certified copy.

Section 1.510 is amended to cite the section which sets forth the fee for requesting reexamination. There is no change in the amount of this fee.

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Alternative B—Rule Changes Under H.R. 6260

The following sections will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to that date:

Section 1.16 in Alternative B establishes in the regulations those statutory fees which would be charged by the Commissioner for filing patent applications under H.R. 6260. Section 1.16 also includes additional filing fees set in 35 U.S.C. 41(a)(1) to cover the cost of examining complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. Section 1.16 also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under 35 U.S.C. 41(a) as it would be amended by H.R. 6260, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in §112 of Title 35, United States Code, or any claim depending therefrom, is considered as separate dependent claims in accordance with the number of claims to which reference is made.

The fees in §1.16 are reduced by 50 per centum for applications filed by small entities, i.e., independent inventors, nonprofit organizations and small business concerns, in accordance with H.R. 6260. Therefore, two fees are listed under each paragraph.

New§1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $300 which will be required in all original patent applications. The term "original" as used in the regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $30 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $10 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple dependent claim. Paragraph 1.16(d) provides for a new fee of $100 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. New paragraph 1.16(e) establishes the amount of the surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application. This fee is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. New paragraph 1.16(f) provides for a filing fee of $125.00 for a design application.

Paragraphs 1.16(g) and (h) incorporate into the regulations the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under § 1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief for appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amount of the fees are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable. New paragraph (m) incorporates into the regulations the fee which will be established in 35 U.S.C. 41(a)7, as amended by H.R. 6260, to be charged for a petition for the revival of an unintentionally abandoned application for patent or for the unintentionally delayed payment of an issue fee.

Since paragraphs 1.17(h), (i), (j) and (k) are established under the authority given the Commissioner under 35 U.S.C. 41(d) as it would be amended by H.R. 6260, only one level of fee is set. H.R. 6260 only provides for the reduction of fees charged to small entities of those fees established in 35 U.S.C. 41(a) and (b).

New §1.18 sets the amount of the issue fees specified by H.R. 6260. New paragraph (a) establishes an issue fee of $500.00 for all original and reissue patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent. New paragraph (c) sets forth the issue fee for a plant patent. All fees in § 1.18 will be reduced by 50 per centum for small entities.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under § 1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 and which would be set in H.R. 6260 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after Dec. 12, 1980 and up to the date of enactment of H.R. 6260 are being established at this time in paragraphs 1.20(e)–(g). New paragraphs 1.20(h)–(j) incorporate into the regulations the maintenance fees which would be provided in 35 U.S.C. 41(b) by H.R. 6260. The fees in paragraphs 1.20(a)–(c) are only set at one level because they are established under 35 U.S.C. 41(d). The fees in paragraphs 1.20(e)–(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.66 is amended to provide for the use of an apostille of a foreign official to attest to oaths or affirmations made in foreign countries in accordance with 35 U.S.C. 115 and 261, as amended by H.R. 6260.

Section 1.137, as amended, designates the existing section as part of paragraph (a), adds a reference to the new fee under §1.17(1) for a petition for revival where the delay which resulted in abandonment was unavoidable, indicates that the petition must be promptly filed, and states when the showing that the delay was unavoidable must be verified. New paragraph 1.137(b) provides for filing a statement and a fee under §1.17(m) for revival of an application which was unintentionally abandoned, and also indicates when such petitions can be filed. Paragraph (c) requires that any petition for revival under paragraph (a) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition under paragraph (a) filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to § 1.18(b) which sets forth the issue fee for a design application. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.71(1) where the delay in payment was unavoidable, indicates that the petition must be promptly filed, and states when showings that the delay was unavoidable must be verified. New paragraph 1.155(c) provides for acceptance of the late payment of the issue fee where the delay was unintentional upon petition and payment of the fee set forth in §1.17(m). New paragraph 1.155(c) also indicates when such petitions can be filed. Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where petition under paragraph (b) of §1.155 is not filed within six months of the date of abandonment.

Section 1.316 is amended to implement the statutory provisions of 35 U.S.C 41(a) with regard to petition fees for revival of applications abandoned for failure to pay the issue fee. Paragraph (b) is amended to provide for petitions for revival with the fee in §1.17(1) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions for revival with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where a petition under paragraph (b) of §1.316 is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to Oct. 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph

(b) is amended to provide for petitions with the fee in § 1.17(1) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions with the fee in §1.17 (m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where a petition under paragraph (b) of §1.317 is not filed within six months of the date of lapse.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Written comments were received from three patent law groups and eleven individuals. The three patent law groups were (1) the American Patent Law Association whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office; (2) the Patent, Trademark and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of The Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups and by 3 individuals on their own behalf.

These comments appear below along with responses thereto.

Comments received relating to §§1.9, 1.27 and 1.28 and the forms of Part 3 are not discussed in substance in this rule change since additional time for submitting written comments is provided until Aug. 13, 1982. All comments presented to these rules will be discussed in a later rule promulgation.

Comment: One person argued that it is unreasonable to require fees to lengthen a shortened statutory period.

Reply: A shortened statutory time is provided for by statute. The shortened period helps reduce patent pendency time and speed the disclosure of technology and information about patent rights. Many applicants can reply within the present three month shortened period which has been in effect for over fifteen years. The fee for extending the time provides a positive method for applicants to obtain an extension of time while still expediting the prosecution of their applications.

Comment: Another person commented that H.R. 6260 should be rejected in that the fee levels are too high.

Reply: The consideration of the merits of H.R. 6260 is not before the Office in this rule change.

Comment: Three patent bar groups and two individuals presented comments relating to the effect of the new extension of time fees in §1.17 and the effect thereof on the current practice of granting an automatic one-month extension of time if a timely first response to a final rejection is filed by the applicant.

Reply: The Office plans to terminate the automatic one-month extension of time practice on Oct. 1, 1982. It is felt that the extensions of time which are readily available under §§1.17 and 1.136 will meet the needs of applicants. The amount of the fees required to obtain an extension will be the same for periods of response before and after final rejection.

Comment: One suggestion was made to permit the filing of an appeal without the appeal fee where the Office has not acted on a timely response after final rejection by applicant.

Reply: Such a procedure is not possible under the provisions of H.R. 6260 since it calls for the appeal fee "On filing an appeal" in §41(a)6.

Comment: Two comments were received requesting that the rules be changed to make the due date for paying the fee for an oral hearing on appeal after the examiner's answer on appeal.

Reply: A change in the rules has been made to provide that the fee for an oral hearing is due no later than one month after the date of mailing of the examiner's answer.

Comment: Two comments were received requesting that no charge for revival of an abandoned application be made where the abandonment resulted from the non-receipt of an Office action by the applicant.

Reply: It is present Office practice to remail any Office action which is not received at applicant's correspondence address and start anew the response period. This procedure will continue in the future under the revised rules.

Comment: Three patent bar groups and two individuals indicated that the proposed deletion of the refund provisions due to PCT search reports in §1.26(b) and § 1.446(b) would make the cost of filing under the Patent Cooperation Treaty prohibitively high and does not recognize the benefit of an earlier search on a corresponding application.

Reply: In view of these comments, proposed §1.445(a) (2) and (4) and §1.446(b) have been amended to provide a credit of $250 where there is a corresponding application.

Comment: One individual requested that the multiple dependent claim practice set forth in §1.75(c) be changed to permit one multiple dependent claim to refer to another multiple dependent claim as permitted under European practice.

Reply: This suggestion cannot be adopted since it is contrary to 35 U.S.C. 112 and cannot therefore be changed by rule.

Comment: One suggestion was made to change "official" to "Office" in §1.135(b).

Reply: The suggestion has been adopted.

Comment: One suggestion was made to allow refund of the oral hearing fee if an oral hearing is not held.

Reply: This suggestion was not adopted since such refund is not appropriate in view of the fact that the fee is stated to be "for requesting an oral hearing" and not the actual conduct thereof.

Comment: Three patent bar groups raised the question as to whether an applicant would be permitted to revive an unintentionally abandoned application under §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a) and suggested that this be made clear when the proposed rules are promulgated.

Reply: Yes, an applicant under certain conditions could use §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a).

Comment: Several comments related to the possibility of reviving applications unintentionally abandoned up to 15 years ago.

Reply: In view of the comments received, §1.137(b) is being implemented to provide only for the revival of applications which were unintentionally abandoned for a reasonable but limited period of time. This should create no substantial problems in regard to intervening rights situations. It would permit some greater flexibility than that originally proposed but should have no significant effect on the current case backlog, pendency or number of interferences pending.

Comment: One comment was received pointing out that the availability of an "unintentional abandonment" revival under §1.137(b) should not result in stricter holdings in "unavoidable abandonment" revival petitions under §1.137(a).

Reply: The Office plans to continue to use the current criteria used to decide petitions to revive applications unavoidably abandoned.

Comment: One written comment questioned whether the Commissioner has statutory authority to revive unintentionally abandoned applications.

Reply: If Congress did not intend the Commissioner to

have such authority there would have been no reason to establish fees in §41(a)7 in H.R. 6260. The legislative history of H.R. 6260, House Report No. 97–542 (Committee on the Judiciary), also makes the Congressional intent clear. The provisions in H.R. 6260 relating to unintentional abandonment are substantive in addition to setting the fee.

Comment: One letter questioned what is intended by the statement in §1.137(b) that the Commissioner may require additional information where there is a question whether the abandonment was unintentional.

Reply: Additional information would be required only where there is an indication that the abandonment was intentional, for example, where an express abandonment has been filed. The record should be clear how such an express abandonment was unintentional if the petition is to be granted.

Comment: One comment raised the question as to whether in a petition to revive on grounds that the delay was unavoidable under §1.137(a), it would be sufficient that a registered attorney's statement be submitted which merely recites facts as related to him or her by another.

Reply: Statements must be made, where possible, by the person having direct personal knowledge of the facts. No change in the "showing" required or the persons making them is intended in such petitions. The rule merely clarifies that a statement by a registered attorney or agent need not be in the form of an oath or declaration.

Comment: One comment suggested that §1.317 be changed to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Reply: Section 1.317 has now been changed to provide for this lapse situation.

Comment: Three patent bar groups and one individual indicated that a full credit of the amount equal to the international search fee be made where both a U.S. national and international seach are made by the United States Patent and Trademark Office.

Reply: While a complete credit is not considered proper in view of additional processing work (including searching) required in the second application, a credit of $250 has been provided in revising §1.445(a) (2) and (4).

Comment: One person commented that the term "patent" should be inserted after "abandoned" in §1.12(b).

Reply: The suggestion has been adopted.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of other changes which have been made as a result of the comments received and further review of the proposed rulemaking are identified below.

Implementation of the changes to §1.9, new §§1.27 and 1.28, and the deletion of Part 3 are being deferred for further comments by Aug. 13, 1982. See the discussion below.

Subparagraph (a) (5) of §1.19 has been changed from that proposed by referring to subparagraphs (1) through (4) rather than (3) and (4) in order to clarify that copies of patents cannot be ordered at the rate set in subparagraph (a) (5). Instead, copies of patents must be ordered under paragraphs (a) (1) and (2) of §1.19.

Section 1.24 has been changed from that proposed to provide for the sale of 40-cent coupons. Coupons in this denomination may be useful in view of the charge of forty cents for a printed copy of a registered mark in § 2.6(m) of Alternative A of the trademark rules.

Sections 1.137, 1.155 and 1.316 have been changed from that proposed in Alternative B to further specify the conditions under which unintentionally abandoned applications can be revived.

Sections 1.192 and 1.194 have been changed from that proposed so as to allow a request for an oral hearing and the payment of the required fee therefor to be made one month after the date of the examiner's answer. Previously, appellant was required to indicate a desire for an oral hearing at the time of filing the brief. The sections will now permit appellant to consider the examiner's answer before deciding whether to request an oral hearing and pay the required fee.

Section 1.317 has been changed in Alternative B to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Section 1.445(a) (2) and (4) have been changed from that proposed to provide for a reduction in the international search fee where there has been a corresponding United States national application and a credit to the national fee where an international search fee has been paid in a corresponding international application and the international search has been made by the United States Patent and Trademark Office.

Section 1.446(b) has been changed from that proposed to permit a refund of a portion of the search fee to the extent set forth in §1.445(a) (4), if such refund is requested at the time of paying the national fee.

IMPLEMENTATION OF PATENT FEE REVISION

The effective date of the patent fee revisions contained in this rulemaking is Oct. 1, 1982.

* * *

The changes which will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of specific sections is set forth below:

IMPLEMENTATION OF SPECIFIC SECTIONS

The various sections will be implemented in the manner set forth below:

§1.16 National application filing fees.

Any national patent application filing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section. Any additional fees which become due under §1.16 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include a multiple dependent claim for the first time, the fee set forth in §1.16(d) must be paid.

The surcharge in §1.16(e) of Alternative B is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. The statutory authority for the late filing of the fee or the oath or declaration becomes effective six months after enactment of H.R. 6260 as a Public Law.

§1.17 Patent application processing fees.

Any patent application processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

The extension fees which must accompany a petition for an extension of time become effective on Oct. 1, 1982, and apply to any application for which the period for responding, i.e., taking action, expires on Oct. 1, 1982, or thereafter. If a response or action by the applicant was due before Oct. 1, 1982, and was not filed timely or an extension of time until Oct. 1, 1982, or thereafter, was not obtained, then §1.136(a) cannot be used to obtain an extension. *Any response or action required before Oct. 1, 1982, cannot have its time extended by using §1.136(a).* If one or more previous extensions have been granted prior to Oct. 1, 1982, extending the time for taking action unitl Oct. 1, 1982, or thereafter, the fees which are due for additional extensions under § 1.136(a) will be as set forth in §1.17(a)–(d) under either Alternative A or B.

* * * * *

The previous practice of extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection is being discontinued effective with any first response to a final rejection filed on or after Oct. 1, 1982. Applicants can obtain additional time for response after that date by paying the appropriate fee for the same. An object of the previous practice, as expressed in §714.13 of the Manual of Patent Examining Procedure, was to obviate the necessity for appeal or filing a continuing application merely to gain time to consider the examiner's position in reply to a response timely filed after final rejection. Under §1.136(a) the object of the previous practice can be achieved without continuing the previous practice. Thus, under § 1.136(a) an applicant can file a timely first response to a final rejection within the initial period without having to file an appeal or a continuing application if the examiner's response is not received prior to the expiration of the initial period for response. If the timely first response places the application in condition for allowance no additional response and no extension fee from applicant is required. If the examiner's advisory action indicates the timely first response did not place the application in condition for allowance the applicant may then consider the examiner's position to determine whether further prosecution is desirable. If further prosecution is not desired the application can be abandoned without further response or expense. If further prosecution is desired, the applicant can petition and pay the necessary fee to extend the time to the extent appropriate up to the maximum permitted by statute. The availability of this flexibility under §1.136(a) eliminates the necessity for the previous practice. Further, under H.R. 6260 extensions of time would be granted in most instances by virtue of the payment of fees rather than without fees as in the previous practice. The elimination of the previous practice after final rejection is thus consistent with the letter and spirit of H.R. 6260.

After an applicant has petitioned and paid the extension fees of $550 for response within the fourth month pursuant to §1.136(a), any further extensions which are permitted under the statute must be obtained under § 1.136(b).

A petition for extension of time under §1.136(a) may incorporate by reference a previously filed response without including an additional copy of the response in circumstances where the response was received late and the petition is filed to extend the time so that the response will be considered timely.

The appeal fees set forth in §1.17(e)–(g) are due for notices of appeal or briefs filed, or requests for oral hearings filed, on or after Oct. 1, 1982. If more than one appeal occurs in an application, the fees are due for each notice of appeal, each brief, and each request filed for an oral hearing as long as a decision on the merits by the Board of Appeals resulted from the first notice of appeal, brief, and request for an oral hearing. If the examiner reopens prosecution in the application after appeal and prior to the decision by the Board of Appeals then the fee for the notice of appeal, brief, and request for an oral hearing will apply to a later appeal which does result in a decision by the Board of Appeals. No refund of any appeal fees is permitted since such are due on filing or on requesting an oral hearing. No fee is required for a reply brief.

The fees for petitions set forth in §1.17(h)–(j) and (1) apply to any such petition filed on or after Oct. 1, 1982. The fee set forth in §1.17(m) of Alternative B would apply, with enactment of H.R. 6260 prior to Oct. 1, 1982, to petitions (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent. Section 1.137(b) of Alternative B would apply to applications unintentionally abandoned by failure to prosecute, e.g., failure to respond to an Office action. Sections 1.155(c) and 1.316(c) of Alternative B would apply to applications in which the payment of the fee for issuing a patent is unintentionally delayed. These sections would be implemented, with enactment of H.R. 6260 prior to Oct. 1, 1982, by making them effective as to any applications which would be covered by the literal language of the sections. In addition, and for a transition period between Oct. 1, 1982, and Dec. 31, 1982, a petition to revive an unintentionally abandoned application would be granted if (i) the application received a decision on a petition to revive the application on or after Oct. 1, 1981, and before July 30, 1982, or (ii) a petition was filed or renewed on or after Oct. 1, 1981, and before July 30, 1982, provided in the case of both (i) and (ii) that a petition to revive was filed within one year of the date of abandonment. The dates in question were chosen so as to permit this remedial provision to be given as wide an application as possible to benefit applicants whose applications have previously been unintentionally abandoned, but who could not meet the previous requirements for a showing that the delay resulting in the abandonment was unavoidable. The dates were also chosen to prevent an applicant whose application has been abandoned for an unduly long period from attempting to take advantage of this new provision, possibly to the detriment of individuals or companies who had begun to make, use, or sell the subject matter of the application after the date of abandonment of the application. By using these dates the possibility of reviving the application of an applicant who has, in effect, abandoned the invention under 35 U.S.C. 102(c) is minimized. Implementing these sections in the manner set forth would be appropriate and proper in view of the legislative history of H.R. 6260, contained in House Report No. 97–542 (Committee on the Judiciary), which indicates that the Commissioner can establish time limits within which petitions to revive or to accept late payment of issue fees can be filed. Thus, it is entirely proper to limit such petitions in the manner set forth in order to prevent abuses from occurring. To ensure that abuses do not occur, §§1.137(b), 1.155(c), 1.316(c), and 1.317(c) specifically indicate that waivers of the time periods involved will not be considered via petitions under §1.183.

The fee set forth in §1.17(k) is required for any application filed on or after Oct. 1, 1982, with a specification in a non-English language.

§1.18 Patent issue fees.

Any patent issue fee paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section even if the notice of allowance was mailed prior to Oct. 1, 1982, and indicates different amounts due. If the issue fee is paid prior to Oct. 1, 1982, any balance of issue fee due must be paid in accordance with §1.317.

§1.19 Document supply fees.

The document supply fees set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.20 Post-issuance fees.

The post-issuance fees set forth in §1.20(a)–(d) apply to any petitions, requests, or actions filed on or after Oct. 1, 1982. The amounts of the maintenance fees are included in §1.20.

Maintenance fees will be required for any patent actually applied for on or after Dec. 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under 35 U.S.C. 120 or a right of priority under 35 U.S.C. 119. For reissue patents, the controlling date would be the filing date of the original patent. For example, maintenance fees would only be required where the application for the original patent was filed on or after Dec. 12, 1980. As to patents resulting from international applications filed under the Patent Cooperation Treaty, maintenance fees will be required on all patents resulting from international applications having PCT filing dates on or after Dec. 12, 1980.

The details implementing payment of the maintenance fees are not being established at this time since such fees will not be due for some time and additional consideration of the problems thereof is required.

§1.21 Miscellaneous fees and charges.

The miscellaneous fees and charges set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.445 International application filing and processing fees.

Any international application filing and processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

Implementation Of Certain Sections Deferred For Further Comments

In view of the comments and the recommendations received at the hearing on July 9, 1982, the period for written comments on §1.9(c), (d), (e), and (f), and on §§ 1.27 and 1.28, has been extended until Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). Comments received at the hearing on July 9, 1982, expressed the view that there is no necessity to publish final rules on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, by August 2, 1982, and that further time for consideration and comment was necessary. Persons commenting stated a belief that the pressure of time does not apply to §§1.27 and 1.28 as it does apply to the fee rulemaking. Accordingly, the period for written comments on these sections is extended until Aug. 13, 1982. After receiving written comments by Aug. 13, 1982, the changes to §1.9 and proposed §§1.27 and 1.28 will be adopted as final rules with such modifications as are found to be appropriate after review of the comments. These rule changes, with any appropriate modifications thereof, must become effective on Oct. 1, 1982, with enactment of H.R. 6260 prior to Oct. 1, 1982. Accordingly, adoption of the changes to §1.9 and new § §1.27 and 1.28 is being deferred at this time to permit additional written comments by Aug. 13, 1982. However, these rule changes will be adopted, with any appropriate modifications, as soon as possible after receipt of the additional written comments. No additional proposal will be published and no additional hearing will be held prior to adoption of final rules on the changes to §1.9 and on new §§1.27 and 1.28.

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 3 was also extended until Aug. 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change. Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 3 as proposed.

SECTION II—REVISION OF TRADEMARK FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28063–28065 and in the *Official Gazette* on June 29, 1982, at 1019 TMOG 110–119. An oral hearing was held on July 9, 1982. Three written letters and statements were submitted. Three persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These amendments establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks.

Public Law 96–517

Public Law 96–517 authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks. Public Law 96–517 requires that by Oct. 1, 1982, fees for the filing and processing of an application for the registration of a trademark or other mark be set to recover in the aggregate 50 percent of the estimated average cost to the Office of such processing. Also by Oct. 1, 1982, fees for providing all other services and materials relating to trademarks and other marks are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. This bill would amend the fee provisions to be implemented on Oct. 1, 1982. H.R. 6260 would repeal the provisions in Public Law 96–517 requiring that filing and processing fees be set to recover in the aggregate 50 percent of the estimated average cost of such processing to the Office, and that fees for providing all other services and materials relating to trademarks and other marks be set to recover the estimated average cost to the Office of performing the service or furnishing the material. In passing H.R. 6260, the House of Representatives recommended a fee schedule to the Commissioner for fiscal year 1983. The fees set in Alternative B adopt the House recommendation.

This rule change, therefore, is also designed in the alternative to implement the fee provisions as they would be amended by H.R. 6260. The rule change contains changes which are common to Public Law 96–517 and H.R. 6260, as well as alternative rule changes which are specific to Public Law 96–517 (Alternative A) and to H.R. 6260 (Alternative B).

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a trademark application, or during the life of a registration.

Rule changes for implementing provisions of Public Law 96–517 or H.R. 6260 other than the fee provisions have not been included. Rule changes for implementing provisions other than the fee provisions will be published in a later rulemaking proposal.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this document under three different categories. Those changes which are common to Public Law 96–517 and H.R. 6260 appear first and are numbered 72–76. The change which relates only to Public Law 96–517 appears as Alternative A and is numbered 77. The change which is dependent upon enactment of H.R. 6260 appears as Alternative B and is numbered 78. The changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. * * * Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

The specific rules for which changes are made are §§ 2.6, 2.85, 2.101, 2.146, 2.162 and 2.167.

Rule Changes Common to Public Law 96–517 and H.R. 6260

Section 2.85, paragraph (e), is amended to delete reference to late filed fees for oppositions and affidavits. The manner in which such fees shall be handled is described in the pertinent sections for affidavits and oppositions.

Section 2.101, paragraph (c), is amended to delete the reference to a service charge which will no longer be charged for late-filed fees for oppositions.

Section 2.146, paragraph (b), is amended to add a fee for filing a petition to the Commissioner. Paragraph (f) of this section which indicates that no fee is required is deleted.

Section 2.162, paragraph (d), is amended to remove the reference to a service charge for late-filed fees on §8 affidavits.

Section 2.167, paragraph (g), is added to establish procedures relating to the fee for affidavits under §15, 15 U.S.C. 1065, and to state the Office's action when no fee or an insufficient fee is filed.

* * * * *

Alternative B—Rule Change Only Under H.R. 6260

Section 2.6 is revised to establish the fees recommended by the House of Representatives under H.R. 6260 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks. The $10 fee recommended by the House for certified copies appears in paragraphs (n) and (o) as a fee of $6.50 for a copy of a registered mark showing title and/or status and a fee of $3.50 for certification.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on several of the sections. All of the comments included in the written submissions and the oral testimony were considered in adopting the changes set forth herein.

Written comments were received from three individuals. Oral comments were presented at the hearing on behalf of a patent and trademark law group, the American Patent Law Association, and an organization of trademark owners and lawyers, the United States Trademark Association. One individual spoke on behalf of a law firm and expanded upon the points raised in his previously submitted written comments.

These comments appear below along with responses thereto, where appropriate.

Comment: The representative of the trademark association spoke favorably about the proposal presented. The organization opposed 100% recovery of trademark costs from user fees. It was felt that such an approach reflected a misconception that trademarks benefit only their owners and not consumers and the economy as a whole. The speaker solicited the assistance of the Patent and Trademark Office in altering this viewpoint.

Comment: The representative of the bar group questioned the fairness of the Office in establishing the fees under Alternative B. It appeared that the Office had accepted the USTA proposals only where they were higher. In all cases where the USTA recommendations were lower than those proposed, the difference was split. The filing fee was singled out as the most unfair fee.

Reply: In Alternative B, the rules adopt the fee levels recommended by the House Committee on the Judiciary in House Report No. 97–542. The Report recognizes that the Office needs to recover a certain amount of fee income over the next three years. The application filing fee is expected to furnish more than 60% of the estimated annual income. It could not be reduced further without endangering operations. The reduction from $200.00 to $175.00 per class was covered to a large extent by higher fees for other services.

Comment: The philosophy of H.R. 6260 is to recover no more than 100%. Final fees should recover this level and no more.

Reply: Projecting processing costs three years in advance can never be absolutely accurate. The Office must have sufficient funds to process anticipated workloads under the fees set during fiscal years 1983–1985 when costs are expected to be somewhat higher than present costs.

Comment: One suggestion involved retaining Part 4 of 37 CFR, at least for the present. Occasional users of the registration system find it to be a readily available reference. Certain information in the forms is available from no other source. The speaker believed the time pressures to implement the fee changes precluded proper consideration of the merits of Part 4.

Reply: The period for comment on deletion of Part 4 has been/extended to August 13, 1982 to allow for additional public comment and internal consideration.

Comment: The suggestion was made that references to affidavits and oppositions should be eliminated from § 2.85(e) as the handling of late filed fees for these items is already covered directly in §§2.101(c), 2.162(d) and 2.167(g).

Reply: This suggestion was implemented.

Comment: A suggestion was made that §§2.101(c), 2.162(d) and 2.167(g) dealing with oppositions and affidavits under Section 8 and Section 15 be amended to require payment of all late filed fees within the time period specified in the notification by the Office.

Reply: All of the sections state that the affidavit or opposition "will not be refused if the required fee(s) . . . are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office." This language is considered sufficient to require payment of all fees or have the opposition, affidavit or declaration refused.

Comment: One suggestion was made to either cite §2.6 in all sections being changed relative to fees or to cite it in none.

Reply: Citations of §2.6 have been added to §2.101(c) and §2.146(b) to conform to §2.162(d) and §2.167(g).

Comment: It was suggested that the fee for a combined section 8 and 15 affidavit needed to be specified in the rules.

Reply: Section 2.6 has been changed to provide this combined fee.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of changes which were made as a result of the comments received and further review of the proposed rulemaking are identified below.

Deletion of Part 4 has been deferred for further comments by Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). As elimination of Part 4 is not essential to the setting of fees, and does not have to be in place 60 days before implementation, it was decided to ask for further public comment.

Section 2.85(e) has been revised to eliminate the references to oppositions and affidavits. Because the handling of late filed fees for these items is specified elsewhere, these references in §2.85(e) were redundant and confusing.

Both alternatives of §2.6 have been revised to add a fee for a combined affidavit under sections 8 and 15 of the Act. In order to prevent possible confusion by users of the Trademark system, it was included separately.

IMPLEMENTATION OF TRADEMARK FEE REVISION

The effective date of the trademark fee revisions contained in this rulemaking is Oct. 1, 1982.

* * * * *

The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of Section 2.6 is set forth below:

IMPLEMENTATION OF SECTION 2.6

Fees set forth in Section 2.6 must be paid in the amounts set forth in this section on or after Oct. 1, 1982. Any additional fees which become due under §2.6 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include additional classes, the fee set forth in §2.6(a) must be paid per class added.

IMPLEMENTATION OF CERTAIN SECTIONS DEFERRED FOR FURTHER COMMENTS

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 4 has also been extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change (see 47 FR 32458, July 27, 1982). Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 4 as proposed.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Public Law 96–517 and H.R. 6260 have both taken into consideration the impact they may have on small entities. The fees under Public Law 96–517 are set to recover 50% of patent and trademark processing costs rather than full costs and generally the rate of increase in the fees is less than that of inflation since the last increase in fees in 1965. Further, the rules implementing Public Law 96–517 take into consideration small entities by setting a lower patent filing fee than issue fee to recover the required level of patent processing costs. The lower filing fee permits a small entity to file a patent application for a relatively low cost and not have to pay the higher balance of fees required to achieve Public Law 96–517 recovery levels until examination is complete and it is known that a patent will issue. Under H.R. 6260 and this rulemaking, small entities would be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. §§1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

GERALD J. MOSSINGHOFF,
July 14, 1982. *Commissioner of Patents*
and Trademarks.

* * * * *

[Note: H.R. 6260 became Public Law 97–247 on Aug. 28, 1982. Rules that became effective Oct. 1, 1982 are those rules common to Public Law 96–517 and H.R. 6260 and those set forth in Alternative B. The adopted rules are reproduced in the notice entitled "Revision of Patent and Trademark Fees Confirmation," published at 1022 O.G. 21, which is reprinted immediately following this notice.]

[1021 O.G. 19]

(40)

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2

[Docket No. 2714-129]

Revision of Patent and Trademark Fees Confirmation

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Confirmation of rules.

SUMMARY: This document confirms certain rule changes for patent and trademark fees and fee-related procedures which take effect on October 1, 1982. These rule changes implement H.R. 6260 which was enacted as Public Law 97-247 on August 27, 1982.

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT:

As to the patent rules contact: R. Franklin Burnett, by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

As to the trademark rules contact: Miss Maude Williams, by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is required by law to publish a notice in the Federal Register of its fees at least 60 days before the effective date thereof (35 U.S.C. 41(g)). Thus, on July 30, 1982 a final rule document was published at 47 FR 33086 setting forth rule changes for patent and trademark fees and procedures which take effect on October 1, 1982. The document was based on the public law in effect at that time, Public Law 96-517, and on H.R. 6260, which was then pending but is now Public Law 97-247. The final rule document published on July 30, 1982, in the Federal Register sets out--

(1) rules that are common to both Pub. L. 96-517 and H.R. 6260 (now Pub. L. 97-247);

(2) Alternative A which contains rule changes implementing Pub. L. 96-517 alone; and

(3) Alternative B which contains rule changes implementing H.R. 6260 (now Pub. L. 97-247).

H.R. 6260 was enacted as Public Law 97-247 on August 27, 1982, and the Patent and Trademark Office hereby confirms that the rule changes common to both Pub. L. 96-517 and H.R. 6260 and Alternative B are those which go into effect on October 1, 1982.

The rules under Alternative A are hereby withdrawn. Additional rule changes required by Public Law 97-247 will be made the subject of separate rulemakings.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

Amendment of Regulations

For the reasons set out in the preamble, 37 CFR Parts 1 and 2 are confirmed as being amended by the final rule published on July 30, 1982 at 47 FR 33086 as set forth below.

September 14, 1982
Date

Gerald J. Mossinghoff
Commissioner of Patents and Trademarks

1. The rule changes made in Alternative A relating to patents which begin at 47 FR 33107 and in Alternative A relating to trademarks which begin at 47 FR 33112 are hereby withdrawn.

2. Confirmed as effective October 1, 1982 are the rule changes published July 30, 1982 common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) and Alternatives B. The rule changes relating to patents common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) were published on July 30, 1982 at 47 FR 33099. The rule changes relating to patents under Alternative B were published at 47 FR 33108. The rule changes relating to trademarks common to Public Law 96-517 and H.R. 6260 (now Public Law 97-247) were published on July 30, 1982 at 47 FR 33111. The rule changes relating to trademarks under Alternative B were published at 47 FR 33112. Corrections to the July 30, 1982 publication were published on August 4 and 5, 1982 at 47 FR 33688 and 33959.

3. For the convenience of the user, the rule changes common to Public Law 96-517 and H.R. 6260 and Alternative B have been integrated into numerical order and are reprinted below:

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. 1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, have been amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. Section 1.11 is amended by revising paragraph (c) to read as follows:

§1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under §1.20(c) has been paid, will be announced in the Official Gazette. Any reexaminations at the initiative of the Commissioner pursuant to §1.520 will also be announced in the Official Gazette. The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

* * * * *

2. Section 1.12 is revised to read as follows:

§1.12 Assignment records open to public inspection.

(a) The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon request and payment of the fee set forth in §1.19(a)(5).

(b) Assignment records, digests, and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or applicant's assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee, or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under §1.14, or any information with respect thereto, must (1) be in the form of a petition accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

(d) An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number or international application number of the application, an extra charge as set forth in §1.21(f) will be made for the time consumed in making a search for such assignment.

3. Section 1.14 is amended by adding a new paragraph (e) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or of any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

4. A new §1.16 is added which reads as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:

By a small entity (§1.9(f))-------------------------	$150.00
By other than a small entity------------------------	$300.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f))-------------------------	$ 15.00
By other than a small entity------------------------	$ 30.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§1.9(f))-------------------------	$ 5.00
By other than a small entity------------------------	$ 10.00

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$100.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$100.00

(f) For filing each design application:

By a small entity (§1.9(f))	$ 62.50
By other than a small entity	$125.00

(g) Basic fee for filing each plant application:

By a small entity (§1.9(f))	$100.00
By other than a small entity	$200.00

(h) Basic fee for filing each reissue application:

By a small entity (§1.9(f))	$150.00
By other than a small entity	$300.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§1.9(f))	$ 15.00
By other than a small entity	$ 30.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes.):

By a small entity (§1.9(f))	$ 5.00
By other than a small entity	$ 10.00

(Note, see §1.445 for international application filing and processing fees.).

5. A new §1.17 is added which reads as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a):

By a small entity (§1.9(f))	$ 25.00
By other than a small entity	$ 50.00

(b) Extension fee for response within second month pursuant to §1.136(a):

By a small entity (§1.9(f))	$ 75.00
By other than a small entity	$150.00

(c) Extension fee for response within third month pursuant to §1.136(a):

By a small entity (§1.9(f))	$175.00
By other than a small entity	$350.00

(d) Extension fee for response within fourth month pursuant to §1.136(a):

By a small entity (§1.9(f))	$275.00
By other than a small entity	$550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals:

By a small entity (§1.9(f))	$ 57.50
By other than a small entity	$115.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§1.9(f))	$ 57.50
By other than a small entity	$115.00

(g) For filing a request for an oral hearing before the Board of Appeals:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph--------------------$120.00

--§1.45 - for correction of inventorship
--§1.47 - for filing by other than all the inventors or a person not the inventor

--§1.182 - for decision on questions not specifically provided for
--§1.183 - to suspend the rules
--§1.268 - for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph--------------------$ 60.00

--§1.12 - for access to an assignment record
--§1.14 - for access to an application
--§1.55 - for entry of late priority papers
--§1.102 - to make application special
--§1.103 - to suspend action in application
--§1.177 - for divisional reissues to issue separately
--§1.268 - for access to interference settlement agreement
--§1.312 - for amendment after payment of issue fee
--§1.313 - to withdraw an application from issue
--§1.314 - to defer issuance of a patent
--§1.334 - for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under §1.292-----------------$750.00

(k) For processing an application filed with a specification in a non-English language (§1.52(d))--------------------------------$ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§1.9(f))------------------------$ 25.00
By other than a small entity-----------------------$ 50.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§1.9(f))------------------------$250.00
By other than a small entity-----------------------$500.00.

6. A new §1.18 is added which reads as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§1.9(f))----------------------- $250.00

By other than a small entity--------------------- $500.00

(b) Issue fee for issuing a design patent:

By a small entity (§1.9(f))----------------------- $ 87.50
By other than a small entity--------------------- $175.00

(c) Issue fee for issuing a plant patent:

By a small entity (§1.9(f))----------------------- $125.00
By other than a small entity--------------------- $250.00.

7. A new §1.19 is added which reads as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:

(1) Printed copy of a patent, including a design patent, or defensive publication document, except color plant patent----------------- $ 1.00

(2) Printed copy of a plant patent in color-- $ 8.00

(3) Copy of patent application as filed, each 50 pages or fraction thereof------------ $18.00

(4) Copy of patent file wrapper and contents, each 100 pages or fraction thereof--- $30.00

(5) Copy of Office records, except as provided in paragraphs (a)(1) through (4) of this section, per page----------------------- $ 0.30

(6) Microfiche copy of microfiche, per microfiche--------------------------------------- $ 2.00

(b) Certified copies of Office documents:

(1) For certifying Office records, per certificate--- $ 3.50

(2) For a search of assignment records, abstract of title and certification, per patent--- $12.00

(3) For comparing copies not prepared by the Office with the original, prior to certification of the copies, per page--------------- $ 0.10

(c) Subscription services:

(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and one subclass----------------- $ 4.00

(2) For annual subscription to each additional subclass in addition to the one covered by the fee under paragraph (c)(1) of this section, per subclass-------------------------------------- $ 0.40

(d) Library service (35 U.S.C. 13):

For providing to libraries copies of all patents issued annually, per annum---------------- $ 50.00

(e) Lists of patents in subclass:

(1) For list of all United States patents in a subclass, per 100 patent numbers or fraction thereof--- $ 2.00

(2) For list of United States patents in a subclass limited by date or patent number, per 50 patent numbers or fraction thereof--------- $ 2.00.

8. A new §1.20 is added which reads as follows:

§1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323)------------------ $ 40.00

(b) Petition for correction of inventorship in patent (§1.324)------------------------------ $ 120.00

(c) For filing a request for reexamination (§1.510(a))------------------------------------ $1,500.00

(d) For filing each statutory disclaimer (§1.321):

By a small entity (§1.9(f))---------------------- $ 25.00
By other than a small entity--------------------- $ 50.00

(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant---------- $ 200.00

(f) For maintaining an original or reissue patent, except a design patent, based

on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant------------- $ 400.00

(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant--- $ 600.00

(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))--------------------- $ 200.00
By other than a small entity-------------------- $ 400.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))---------------------- $ 400.00
By other than a small entity--------------------- $ 800.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§1.9(f))---------------------- $ 600.00
By other than a small entity--------------------- $1200.00.

9. Section 1.21 is revised to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:

(1) For admission to examination for

registration to practice, fee payable upon application-------------------- $75.00

(2) On registration to practice----------------- $50.00

(3) For reinstatement to practice--------------- $25.00

(4) For certificate of good standing as an attorney or agent--------------------- $10.00

(b) Deposit accounts:

(1) For establishing or reinstating a deposit account--------------------------- $10.00

(2) Service charge for each month when the balance at the end of the month is below $40-------------------------------- $ 2.00

(c) Disclosure document:

For filing a disclosure document----------------- $10.00

(d) Delivery box:

Local delivery box rental, per annum------------- $24.00

(e) International-type search reports:

For preparing an international-type search report of an international-type search made at the time of the first action on the merits in a national patent application---------- $25.00

(f) Search of Office records:

For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof------------- $10.00

(g) Copy machine tokens:

Token for copying machine, each------------------ $ 0.20

(h) Recording of documents:

(1) For recording each assignment, agreement or other paper relating to the property in a patent or application-------------- $20.00

(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application--------- $ 5.00

(i) Publication in Official Gazette:

For publication in the Official Gazette of a notice of the availability of an application or a patent for licensing or sale, each application or patent------------------ $ 6.00

(j) For a duplicate or replacement of a permanent Office user pass (There is no charge for the first permanent user pass).-------- $ 5.00

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this section, such charges as may be determined by the Commissioner with respect to each such item or service------------------ actual cost.

10. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of forty cents and one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The 40-cent coupons are sold individually and in books of 50 with stubs for record for $20. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

11. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $50 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $40.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts. A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination.

12. Section 1.26 is revised to read as follows:

§1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw an application, an appeal, or a request for oral hearing, will not entitle a party to demand such a return. Amounts of one dollar or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over one dollar may be returned by check or, if requested, by credit to a deposit account.

(b) [Reserved]

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

13. Section 1.45 is amended by revising paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

* * * * *

(b) If an application for patent has been made through error and without any deceptive intention by two or more persons as joint inventors when they were not in fact joint inventors, the application may be amended to remove the names of those not inventors upon filing of a petition including a statement of the facts verified by all of the original applicants, the required fee (§1.17(h)), and an oath or declaration as required by §1.65 by the applicant who is the actual inventor, provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

(c) If an application for patent has been made through error and without any deceptive intention by less than all the actual joint inventors, the application may be amended to include all the joint inventors upon filing of a petition including a statement of the facts verified by, and an oath or declaration as required by §1.65 executed by all the actual joint inventors, along with the required fee (§1.17(h)), provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

14. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.65. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.65. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. Section 1.51 is amended by revising paragraph (a)(4) and by adding a new paragraph (c) to read as follows:

§1.51 General requisites of an application.

(a) * * *

(4) The prescribed filing fee, see §1.16.

* * * * *

(c) Applicants may desire and are permitted to file with, or in, the application an authorization to charge, at any time during the pendency of the application, any fees required under any of §§1.16 to 1.18 to a deposit account established and maintained in accordance with §1.25.

16. Section 1.52 is amended by revising paragraph (a) and by adding a new paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

(a) The application, any amendments or corrections thereto, and the oath or declaration must be in the English language except as provided for in §1.69 and paragraph (d) of this section, or be accompanied by a verified translation of the application and a translation of any corrections or amendments into the English language. All papers which are to become a part of the permanent records of the Patent and Trademark Office must be legibly written, typed, or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing, typing, or printing thereon to permit the direct reproduction of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

* * * * *

(d) An application including a signed oath or declaration may be filed in a language other than English if it is accompanied by the fee set forth in §1.17(k). A verified English translation of the non-English language application is required to be filed with the application or within such time as may be set by the Office.

17. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Serial number and filing date of application.

* * * * *

(b) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.65. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

* * * * *

18. Section 1.66 is revised to read as follows:

§1.66 Officers authorized to administer oaths.

(a) The oath or affirmation may be made before any person within the United States authorized by law to administer oaths . An oath made in a foreign country may be made before any diplomatic or consular officer of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority shall be proved by a certificate of a diplomatic or consular officer of the United States, or by an apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States. The oath shall be attested in all cases in this and other countries, by the proper official seal of the officer before whom the oath or affirmation is made. Such oath or affirmation shall be valid as to execution if it complies with the laws of the State or country where made. When the person before whom the oath or affirmation is made in this country is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal.

(b) When the oath is taken before an officer in a country foreign to the United States, any accompanying application papers, except the drawings, must be attached together with the oath and a ribbon passed one or more times through all the sheets of the application, except the drawings, and the ends of said ribbon brought together under the seal before the latter is affixed and impressed, or each sheet must be impressed with the official seal of the officer before whom the oath is taken. If the papers as filed are not properly ribboned or each sheet impressed with the seal, the case will be accepted for examination, but before it is allowed, duplicate papers, prepared in compliance with the foregoing sentence, must be filed.

19. Section 1.75 is amended by revising paragraph (c) to read as follows:

§1.75 Claim(s).

* * * * *

(c) One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. For fee calculation purposes under §1.16, a multiple dependent claim will be considered to be that number of claims to which direct reference is made therein. For fee calculation purposes, also, any claim depending from a multiple dependent claim will be considered to be that number of claims to which direct reference is made in that multiple dependent claim. In addition to the other filing fees, any original application which is filed with, or is amended to include, multiple dependent claims must have paid therein the fee set forth in §1.16(d). Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of each of the particular claims in relation to which it is being considered.

* * * * *

20. Section 1.85 is revised to read as follows:

§1.85 Informal drawings.

The requirements of §1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required.

§1.86 [Removed]

21. Section 1.86 is removed.

22. Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d) to read as follows:

§1.102 Advancement of examination.

(a) Applications will not be advanced out of turn for examination or for further action except as provided by this part, or upon order of the Commissioner to expedite the business of the Office, or upon filing of a request under paragraph (b) of this section or upon filing a petition under paragraphs (c) or (d) of this section with a verified showing which, in the opinion of the Commissioner, will justify so advancing it.

* * * * *

(c) A petition to make an application special may be filed without a fee if the basis for the petition is the applicant's age or health or that the invention will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources.

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in §1.17(i).

23. Section 1.103 is amended by revising paragraphs (a) and (b) to read as follows:

§1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in §1.17(i). Action will not be suspended when a response by the applicant to an Office action is required.

(b) If action by the Office on an application is suspended when not requested by the applicant, the applicant shall be notified of the reasons therefor.

* * * * *

24. Section 1.104 is amended by revising paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(d) Any national application may also have an international-type search report prepared thereon at the time of the national examination on the merits, upon specific written request therefor and payment of the international-type search report fee. See §1.21(e) for amount of fee for preparation of international-type search report.

* * * * *

25. Section 1.134 is added and reads as follows:

§1.134 Time period for response to an Office action.

An Office action will notify the applicant of any non-statutory or shortened statutory time period set for response to an Office action. Unless the applicant is notified in writing that response is required in less than six months, a maximum period of six months is allowed.

26. Section 1.135 is amended by revising paragraphs (a), (b) and (c) to read as follows:

§1.135 Abandonment for failure to respond within time period.

(a) If an applicant of a patent application fails to respond within the time period provided under §§1.134 and 1.136, the application will become abandoned unless an Office action indicates otherwise.

(b) Prosecution of an application to save it from abandonment pursuant to paragraph (a) of this section must include such complete and proper action as the condition of the case may require. The admission of an amendment not responsive to the last Office action, or refusal to admit the same, and any proceedings relative thereto, shall not operate to save the application from abandonment.

(c) When action by the applicant is a bona fide attempt to respond and to advance the case to final action, and is substantially a complete response to the Office action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

* * * * *

27. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings.

28. Section 1.137 is revised to read as follows:

§1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in §1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) An application unintentionally abandoned for failure to prosecute may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(c) Any petition pursuant to paragraph (a) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

29. Section 1.155 is revised to read as follows:

§1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

30. Section 1.165 is amended by revising paragraph (b) to read as follows:

§1.165 Drawings.

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See §1.84.

31. Section 1.171 is revised to read as follows:

§1.171 Application for reissue.

An application for reissue must contain the same parts required for an application for an original patent, complying with all the rules relating thereto except as otherwise provided, and in addition, must comply with the requirements of the rules relating to reissue applications. The application must be accompanied by a certified copy of an abstract of title or an order for a title report accompanied by the fee set forth in §1.19(b)(2), to be placed in the file, and by an offer to surrender the original patent (§1.178).

32. Section 1.177 is revised to read as follows:

§1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts, subject to the provisions of §§1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in §1.17(i), all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

33. Section 1.181 is amended by revising paragraphs (d) and (g) to read as follows:

§1.181 Petition to the Commissioner.

* * * * *

(d) Where a fee is required for a petition to the Commissioner the appropriate section of this part will so indicate. If any required fee does not accompany the petition, the petition will be dismissed.

* * * * *

(g) The Commissioner may delegate to appropriate Patent and Trademark Office officials the determination of petitions.

34. Section 1.182 is revised to read as follows:

§1.182 Questions not specifically provided for.

All cases not specifically provided for in the regulations of this part will be decided in accordance with the merits of each case by or under the authority of the Commissioner, and such decision will be communicated to the interested parties in writing. Any petition seeking a decision under this section must be accompanied by the petition fee set forth in §1.17(h).

35. Section 1.183 is revised to read as follows:

§1.183 Suspension of rules.

In an extraordinary situation, when justice requires, any requirement of the regulations in this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, sua sponte, or on petition of the interested party, subject to such other requirements as may be imposed. Any petition under this section must be accompanied by the petition fee set forth in §1.17(h).

36. Section 1.191 is amended by revising paragraph (a) to read as follows:

§1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§1.113), may, upon the payment of the fee set forth in §1.17(e), appeal from the decision of the examiner to the Board of Appeals within the time allowed for response.

* * * * *

37. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

38. Section 1.194 is amended by revising paragraphs (b) and (c) to read as follows:

§1.194 Oral hearing.

* * * * *

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in §1.17(g) within one month after the date of the examiner's answer. If appellant requests an oral hearing and submits therewith the fee set forth in §1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.

(c) If no request and fee for oral hearing have been timely filed by the appellant, the appeal will be assigned for consideration and decision. If the appellant has requested an oral hearing and has submitted the fee set forth in §1.17(g), a day of hearing will be set, and due notice thereof given to the appellant and to the primary examiner. Hearing will be held as stated in the notice, and oral argument will be limited to twenty minutes for the appellant and fifteen minutes for the primary examiner unless otherwise ordered before the hearing begins.

39. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended under the provisions of §1.136.

* * * * *

40. Section 1.231 is amended by revising paragraph (a)(1) to read as follows:

§1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the counts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of §1.510(b) and is accompanied by the fee for requesting reexamination set in §1.20(c). Otherwise, a motion to dissolve an interference in which a patentee is a party will not be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§1.203(a) and 1.205(a).

* * * * *

41. Section 1.245 is revised to read as follows:

§1.245 Extension of time.

Extensions of time in any interference proceeding not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. The provisions of §1.136 do not apply to time periods in interferences.

42. Section 1.246 is revised to read as follows:

§1.246 Late papers.

A motion or other paper belatedly filed will not normally be considered except upon a showing, under oath or in the form of a declaration (§1.68), of sufficient cause as to why such motion or paper was not timely presented. The provisions of §1.136 do not apply to time periods in interferences.

43. Section 1.263 is revised to read as follows:

§1.263 Statutory disclaimer by patentee.

The disclaimer referred to in §1.262, when made by a patentee in interference is not a disclaimer under 35 U.S.C. 253. If a disclaimer under the statute and the fee set forth in §1.20(d) (see §1.321) cancelling claims involved in the interference from the patent, is made by the patentee, including all assignees as shown by the records of the Patent and Trademark Office, the interference will be dissolved pro forma as to such claims.

44. Section 1.268 is added to read as follows:

§1.268 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof filed in the Patent and Trademark Office, directed to the Board of Patent Interferences, before the termination of the interference as between the said parties to the agreement or understanding.

(b) If any party filing the agreement or understanding pursuant to paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding pursuant to paragraph (a) of this section, will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six-month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

45. Section 1.292 is amended by revising paragraph (a) to read as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the primary examiner, to make a prima facie showing that the invention involved in an interference or claimed in an application believed to be on file had been in public use or on sale one year before the filing of the application, or before the date alleged by an interfering party in his or her preliminary statement or the date of invention established by such party, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, times may be set for taking testimony, which shall be taken as provided by §§1.271 to 1.286. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

46. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

47. Section 1.311 is revised to read as follows:

§1.311 Notice of allowance.

(a) If, on examination, it shall appear that the applicant is entitled to a patent under the law, a notice of allowance will be sent to applicant at the correspondence address indicated in §1.33, calling for the payment of a specified sum constituting the issue fee (§1.18), which shall be paid within 3 months from the date of the mailing of the notice of allowance.

(b) An authorization to charge the issue fee (§1.18) to a deposit account may be filed in an individual application, either before or after mailing of the notice of allowance. Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of the notice of allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance.

48. Section 1.312 is revised to read as follows:

§1.312 Amendments after allowance.

(a) No amendment may be made as a matter of right in an application after the mailing of the notice of allowance. Any amendment pursuant to this paragraph filed before the payment of the issue fee may be entered on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in §1.17(i) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

49. Section 1.313 is revised to read as follows:

§1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in §1.17(i). If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirements of §1.312.

(b) When the issue fee has been paid, and the patent to be issued has received its issue date and patent number, the application will not be withdrawn from issue for any reason except (1) mistake on the part of the Office, (2) a violation of §1.56 or illegality in the application, (3) unpatentability of one or more claims, or (4) for interference.

50. Section 1.314 is revised to read as follows:

§1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless (a) the application is withdrawn from issue (§1.313) or (b) issuance of the patent is deferred. Any petition by the applicant requesting deferral of the issuance of a patent must be accompanied by the fee set forth in §1.17(i) and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

51. Section 1.316 is revised to read as follows:

§1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

52. Section 1.317 is revised to read as follows:

§1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse, and must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the remaining balance of the fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the patent lapsed or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of lapse of the patent. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay in payment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting acceptance of an unintentionally delayed payment will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

53. Section 1.321 is revised to read as follows:

§1.321 Statutory disclaimer.

(a) A disclaimer under 35 U.S.C. 253 must be accompanied by the fee set forth in §1.20(d) and identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his or her interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the *Official Gazette* and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must be accompanied by the fee set forth in §1.20(d) and include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

54. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that there was a misjoinder or nonjoinder of inventors and that such misjoinder or omission occurred by error and without deceptive intention, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate deleting the misjoined inventor from the patent or adding the non-joined inventor to the patent.

55. Section 1.331 is amended by revising paragraph (a) to read as follows:

§1.331 Recording of assignments.

(a) Assignments, including grants and conveyances, of patents, national applications, or international applications which designate the United States of America, will be recorded in the Patent and Trademark Office under 35 U.S.C. 261. Other instruments affecting title to a patent, a national application, or an international application which designates the United States of America, and licenses, even though the recording thereof may not serve as constructive notice under 35 U.S.C. 261, will be recorded as provided in this section or at the discretion of the Commissioner. Any instrument to be recorded, except those under Part 7 of this title, must be accompanied by the fee set forth in §1.21(h).

* * * * *

56. Section 1.332 is revised to read as follows:

§1.332 Receipt and recording.

Assignments are recorded in regular order as promptly as possible, and then transmitted with the date and identification of the record stamped thereon to the persons entitled to them. The date of the record is the date of the receipt of the assignment at the Office in proper form and accompanied by the fee set forth in §1.21(h).

57. Section 1.334 is revised to read as follows:

§1.334 Issue of patent to assignee.

(a) In case of an assignment of the entire interest in the invention and application, or of the entire interest in the patent to be granted, the patent will normally issue to the assignee. If the assignee should hold an undivided part interest, the patent will normally issue jointly to the inventor and the assignee. If it is desired that the patent so issue, the assignment in either case must first have been recorded, and at a day not later than the date payment is made of the issue fee.

(b) At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent and Trademark Office. In the event an assignment has been filed, such statement must include the name and address of the assignee and indicate whether or not an acknowledgement of a recorded assignment has been received from the Patent and Trademark Office.

(c) If the assignment is recorded after the date of payment of the issue fee, the assignee may petition that the patent issue to the assignee as recorded. Any such petition must be accompanied by the fee set forth in §1.17(i).

58. Section 1.341 is amended by revising paragraph (h) to read as follows:

§1.341 Registration of attorneys and agents.

* * * * *

(h) Oath and registration fee. Before his or her name may be entered on the register of attorneys or on the register of agents, every applicant for registration must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner of Patents and Trademarks and pay the prescribed registration fee. (See §1.21(a)(2).)

* * * * *

59. Section 1.347 is revised to read as follows:

§1.347 Removing names from registers.

Attorneys and agents, registered to practice before the Patent and Trademark Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the Official Gazette. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate. Any request for reinstatement must be accompanied by the fee set forth in §1.21(a)(3).

60. Section 1.445 is amended by revising paragraphs (a)(1) through (4) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) -- $125.00

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with fee has been filed------------------------------------- $500.00

(ii) Corresponding prior United States national application with fee has been filed------------------------------------- $250.00.

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2)----$125.00 per additional invention.

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.

* * * * *

61. Section 1.446 is amended by revising paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee may be made to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee.

* * * * *

62. Section 1.451 is amended by revising paragraph (b) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(4) and (b)(1).

* * * * *

63. Section 1.510 is amended by revising paragraph (a) to read as follows:

§1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under §1.501. The request must be accompanied by the fee for requesting reexamination set in §1.20(c).

* * * * *

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

64. Section 2.6 is revised to read as follows:

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a)	For filing an application, per class------------------------------------	$175.00
(b)	For filing an application for renewal of a registration, per class----------------	300.00
(c)	For filing to publish a mark under §12(c), per class---------------------------	100.00
(d)	For issuing a new certificate of registration upon request of assignee---------------------	100.00
(e)	For a certificate of correction	

	of registrant's error	100.00
(f)	For filing a disclaimer to a registration	100.00
(g)	For filing an amendment to a registration	100.00
(h)	For filing an affidavit under §8 of the Act, per class	100.00
(i)	For filing an affidavit under §15 of the Act, per class	100.00
(j)	For filing a combined affidavit under §§8 and 15 of the Act, per class	200.00
(k)	For petitions to the Commissioner	100.00
(l)	For filing petition to cancel or notice of opposition, per class	200.00
(m)	For ex parte appeal to the Trademark Trial and Appeal Board, per class	100.00
(n)	For printed copy of registered mark	
	Copy only	1.00
	Copy showing title and/or status	6.50
(o)	For certifying trademark records, per certificate	3.50
(p)	For photocopies or other reproductions of records, drawings, or printed material, per page of the material copied	.30
(q)	For recording trademark assignments, per document	100.00
	For each mark in addition to one assigned in the same document	20.00
(r)	For abstracts of title to each registration or application, including the search	12.00
(s)	For special service handling of late filed fees in connection with a renewal	100.00
(t)	For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service	actual cost.

65. Section 2.85 is amended by revising paragraph (e) to read as follows:

§2.85 Classification schedules.

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on an application for renewal or in connection with a petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because multiple classes in an application or registration are involved, the appeal or renewal application or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office, or if action is sought only for the number of classes equal to the number of fees submitted.

* * * * *

66. Section 2.101 is amended by revising paragraph (c) to read as follows:

§2.101 Filing an opposition.

* * * * *

(c) If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office.

* * * * *

67. Section 2.146 is amended by revising paragraph (b) to read as follows, and by removing paragraph (f):

§2.146 Petition to the Commissioner.

* * * * *

(b) Any such petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested and the requisite fee (See §2.6). Any brief in support thereof should accompany or be embodied in the petition; in contested cases any brief in opposition shall be filed within fifteen days after service of the petition. Where facts are to be proved in ex parte cases (as in petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20 (and exhibits, if any) must accompany the petition.

* * * * *

68. Section 2.162 is amended by revising paragraph (d) to read as follows:

§2.162. Requirements for affidavit or declaration during sixth year.

* * * * *

(d) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed before the expiration of the sixth year following the date of registration or of publication under Section 12(c) of the Act, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

* * * * *

69. Section 2.167 is amended by adding a paragraph (g) as follows:

§2.167 Affidavit or declaration under Section 15.

* * * * *

(g) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed at an appropriate time, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

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(41)

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1, 3 and 4

[Docket No. 2827-167]

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish procedures for the payment of fees under §41(a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for independent inventors and nonprofit organizations as required by the public law resulting from H.R. 6260. This action is necessary at this time in order that the procedures for paying the reduced fees will be effective on October 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by the public law resulting from H.R. 6260. This final rule also deletes Parts 3 and 4 which contain outdated sample forms and corrects a reference to a section which appears in §1.451.

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT:

As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D. C. 20231.

As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D. C. 20231.

SUPPLEMENTARY INFORMATION:

Notices of proposed rulemaking relating to the revision of patent and trademark fees were published in the Federal Register on June 28, 1982, at 47 FR 28042-28065 and in the Official Gazette on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on August 4, 1982, at 47 FR 33688 and on August 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on August 10, 1982, at 1021 O.G. 19-94. In view of comments received at the hearings, additional time for comment on the rules covered by this change was given until August 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458.

This final rule is being adopted as soon as possible after the enactment of the public law resulting from H.R. 6260. The Patent and Trademark Office has determined that the requirement of 5 U.S.C. 553(d) for publication not less than 30 days before its effective date does not apply to this final rule since it will reduce patent fees for independent inventors and nonprofit organizations.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by the public law resulting from H.R. 6260.

Public Law Resulting From H.R. 6260

The public law resulting from H.R. 6260 provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41(a) and (b) of Title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The public law resulting from H.R. 6260 gives the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. The public law resulting from H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking establishes regulations defining independent inventors and nonprofit organizations. The Small Business Administration is establishing the definition of a small business concern for the purpose of paying reduced fees under the public law resulting from H.R. 6260. This rulemaking also establishes the procedures which will be followed by independent inventors and nonprofit organizations when paying the reduced fees. The procedures to be followed by small business concerns when paying the reduced fees will be established in a separate final rule.

Discussion of Specific Sections

The following sections are changed by this final rule, effective October 1, 1982:

Section 1.9, as amended, adds paragraphs (c), (e), and (f) which define "independent inventor" and "nonprofit organization" as used in Title 37, Code of Federal Regulations, Chapter I. Each of these along with "small business concern" is identified as a "small entity" for purposes of paying fees which are set under §41(a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Paragraph (d) of §1.9 relates to the definition of small business concern which is being established by the Small Business Administration. Accordingly, proposed paragraph 1.9(d) is not being promulgated at this time.

The public law resulting from H.R. 6260 authorizes the Commissioner to establish regulations defining independent inventors and nonprofit organizations. Section 1.9(c) defines an independent inventor as any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization. Once an individual sole inventor, or one of several joint inventors, has assigned, granted, conveyed, or licensed, or comes under an obligation to assign, grant, convey, or license, any rights to the invention to anyone who could not likewise obtain status as a small entity, the inventor(s) will no longer be entitled to pay fees in the amounts established for an independent inventor (§1.9(c)). Section 1.9(c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to another individual or individuals who could qualify as an independent inventor or inventors if they had made the invention. In addition, §1.9(c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to a small business concern or nonprofit organization. Under the circumstances described in the previous two sentences the individual inventor could still qualify as an independent inventor. However, if the independent inventor assigned, granted, conveyed, or licensed, or came under an obligation to assign, grant, convey, or license, any rights to the invention to any individual or organization which could not qualify as a small entity (§1.9(f)), then the inventor would no longer qualify as an independent inventor.

Proposed section 1.9(d) relating to the definition of a small business concern is not being promulgated at this time.

Section 1.9(e) defines a nonprofit organization by utilizing and broadening the definition contained in 35 U.S.C. 201(i). The term "university or other institution of higher education" as used in §1.9(e) means an educational institution which (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate, (2) is legally authorized within the jurisdiction in which it operates to provide a program of education beyond secondary education, (3) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree, (4) is a public or other nonprofit institution, and (5) is accredited by a nationally recognized accrediting agency or association. The definition of "university or other institution of higher education" as set forth herein essentially follows the definition of "institution of higher education" contained in 20 U.S.C. 1141(a). Institutions which are strictly research facilities, manufacturing facilities, service organizations, etc., are not intended to be included within the term "other institution of higher education" even though such institutions may perform an educational function or publish the results of their work.

Section 1.9(f) identifies an independent inventor, a small business concern, or a nonprofit organization as a "small entity" for purposes of paying fees set under §41(a) and (b) of Title 35, United States Code, as amended by the public law resulting from

H.R. 6260. Fees established under §41(c) or (d) of Title 35, United States Code, will not be reduced for small entities since such a reduction is not permitted or authorized by the public law resulting from H.R. 6260. Paragraphs (c), (e), and (f) of §1.9 should be read together with new §§1.27 and 1.28 which deal with establishing status as a small entity and the effect thereof.

New §1.27 provides in paragraph (a) that any person seeking to establish status as a small entity, as defined in §1.9(f) for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Paragraph 1.27(b) provides specifically for inventors filing statements claiming status as independent inventors. Paragraph 1.27(c) relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule. Paragraph 1.27(d) provides for claiming status as a nonprofit organization. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

New §1.28 provides guidance as to the effect of failure to establish, or notify the Office of any change from, small entity status. Paragraph 1.28(a) provides that once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27, unless the Office is notified of a change in status. Under paragraph 1.28(a), status as a small entity in one application or patent does not affect any other application or patent except in applications filed under §1.60 where a reference is made to a verified statement in a parent application. Paragraph 1.28(b) requires that notification of any change in status resulting in loss of entitlement to small entity status be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. Section 1.28 also provides guidance as to the effect of improperly establishing status as a small entity. The intent of the reduced fees for small entities is to soften the impact of the fee increases under §41(a) and (b) of Title 35, United States Code, as such sections are amended by the public law resulting from H.R. 6260, upon those who are least able to absorb the increased fees without overall damage to their ability to participate in the patent system through the filing, issuing and maintaining of patents. Accordingly, any attempt to improperly establish status as a small entity will be viewed as a serious matter by the Office and paragraph 1.28(d) indicates that any attempt to fraudulently establish status as a small entity or pay fees as a small entity will be considered as a fraud practiced or attempted on the Office. In addition, improperly and through gross negligence establishing status as a small entity or paying fees as a small entity will be considered as a fraud practiced or attempted on the Office. Normally, the Office will not question a claim to status as a small entity. However, if the Office must resolve such an issue in a question arising before it, the Office will look to the actual or practical status of the individual or organization claiming status as a small entity rather than the professed or apparent status.

Section 1.451, paragraph (b), is amended to correct a reference to another section of the regulations.

Parts 3 and 4 are removed to eliminate all of the patent and trademark forms from the Code of Federal Regulations. The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which is available for sale to the public from the Superintendent of Documents and which includes full size copies of substantially all the forms in Parts 3 and 4. No need is seen to retain these forms in the Code of Federal Regulations in view of the difficulty of keeping such forms current by rule change provisions and since the use of the forms is not mandatory.

Discussion Of Significant Differences Between Proposed And Final Rules

A number of changes which have been made to §§1.9, 1.27 and 1.28 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (c) of §1.9 has been changed from that proposed to simplify the definition by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention". No change in substance is intended by removing these words since the phrase "any rights in the invention" obviously is inclusive of all rights regardless of how they are, or would be, transferred. The words "or otherwise" have also been removed to simplify the definition without a change in substance.

Paragraph (d) of §1.9 is not being promulgated by this rule change.

Paragraph (e) of §1.9 is changed from that proposed by adding the words "located in any country" in item (e)(1) to clarify the fact that a university or other institution of higher education can qualify regardless of location. Paragraph (e) is also changed from that proposed by adding an item (4) to clarify that a nonprofit organization "located in a foreign country" can qualify as a nonprofit organization if it could qualify as a nonprofit organization under item (2) or (3) of paragraph (e) "if it were located in this country." Thus, under paragraph (e) of §1.9 nonprofit organizations will be treated the same for purposes of paying fees regardless of location.

Paragraph (a) of §1.27 has been changed from that proposed by substituting the words "the first fee paid as a small entity" for the words "any fee paid as a small entity". This change is intended to clarify the fact that a verified statement is not required with every fee.

Paragraph (b) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern or nonprofit organization is to be filed by "the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization..." The term "official" as used in paragraph (b) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern or nonprofit organization. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Paragraph (c) of §1.27 relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule.

Paragraph (d) of §1.27 has been changed from that proposed in the same manner as paragraph (b) of §1.27 to clarify who is to file the verified statement. Paragraph (d) of §1.27 has also been changed from that proposed by adding a reference to §1.9(e)(4).

Paragraph (a) of §1.28 has been changed from that proposed by adding the words "or patent" in the first and third sentences since the failure to establish status as a small entity could occur in a patent as well as in an application. An exception to the requirement for a verified statement has also been inserted into paragraph (a) of §1.28 for applications filed under §1.60 where the status as a small entity has been established in a parent application and is still proper. Under this change in paragraph (a) of proposed §1.28, the application filed under §1.60 "must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired."

Paragraph (b) of §1.28 has been completely rewritten from that proposed to remove the requirement that the notification of a change in status resulting in loss of entitlement to small entity status must be filed prior to paying the next fee due. Instead, paragraph (b) of §1.28 provides that after establishment of small entity status, "fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due." Paragraph (b) of §1.28 is also changed from that proposed by removing the sentence stating that payment of any fee as a small entity serves "as a representation that such payment as a small entity is proper at the time the payment is made." This change does not sanction the payment of improper fees, but is no longer necessary in view of another change in paragraph (b) which specifically provides that notification of any change in status resulting in loss of entitlement to small entity status "must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." The effect of the changes to paragraph (b) of §1.28 is to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. This means that only four checks are required during the pendency and term of a patent after initial establishment of small entity status if such establishment was made prior to payment of the issue fee. The last sentence of paragraph (b) has been changed from that proposed by inserting the words "of change in status" after "notification" for clarity.

Paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This change from paragraph (c) as proposed will reduce paperwork and will provide a three-month grace period to correct errors with no explanations required for correction during that three-month period. The change has also been made to alleviate concerns about paragraph (d) of §1.28 which is being adopted as proposed.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the patent rules and forms affected by this final rule were received from three patent law groups and thirteen individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment:

One comment suggested that the definition of "independent inventor" be simplified.

Reply:

The definition of "independent inventor" has been simplified without a change in substance by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention."

Comment:

One comment suggested that there is no need to include any more than a simplified statement that a "non-profit organization includes a university or other institution of higher education" and that any other party that believes it qualifies will "be able to make a showing to qualify for non-profit organization status."

Reply:

The suggestion has not been adopted since it is the intent of the rules to delineate as clearly as possible what organizations can qualify as nonprofit organizations without having to expend undue resources deciding each request on a case-by-case basis.

Comment:

One comment suggested that §1.9(e) discriminates against foreigners and thus violates the principle of national equality set forth in the Stockholm text of the Paris Convention for the Protection of Industrial Property.

Reply:

Section 1.9(e), as promulgated, defines a nonprofit organization in such a way that it is clear that foreigners are not excluded.

Comment:

One comment questioned whether or not government organizations can qualify as nonprofit organizations and more specifically, whether or not a government research facility can qualify under the broad definition of a nonprofit scientific or educational organization. Another comment recommended that §1.9(e) be expanded to include the U.S. Government in the definition of a "nonprofit organization."

Reply:

Government organizations as such, whether domestic or foreign, cannot qualify as nonprofit organizations as defined in §1.9(e). Section 1.9(e) was based upon 35 U.S.C. 201(i), as established by Public Law 96-517. The limitation to "an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a))" would by its nature exclude the U.S. government and its agencies and facilities, including research facilities and government corporations. State and foreign governments and governmental agencies and facilities would be similarly excluded. Section 1.9(e) is not intended to include within the definition of a nonprofit organization government organizations of any kind located in any country. A university or other institution of higher education located in any country would qualify, however, as a "nonprofit organization" under §1.9(e) even though it has some government affiliation since such institutions are specifically included.

Comment:

One comment was directed to, and opposed, Public Law 96-517 and H.R. 6260 rather than the specific provisions of §§1.9, 1.27 and 1.28 on the ground that the concept of a self-supporting agency is ill-conceived, shortsighted and wrong.

Reply:

Public Law 96-517 and H.R. 6260 are not issues for consideration in this rule change.

Comment:

One comment asserted that the imposition of different fees depending upon the status of an applicant is unwise, unworkable, and will not "improve the efficiency of the Patent Office", while another comment urged the Office to "disavow the proposal for a two-tier fee system and adopt a different approach to assuring that patent and trademark fees are set so that individual inventors and small businesses can continue to obtain the protection of the patent and trademark system." Another comment supported the two-tier fee system, particularly as related to universities.

Reply:

The imposition of different fees is a legislative mandate imposed by the public law resulting from H.R. 6260 and is not an issue for consideration in this rule change.

Comment:

Four comments expressed concern that small entity status is required to be confirmed each time a fee as a small entity is paid. Alternative procedures which involve (1) confirming status at the time of filing and at the time the issue fee is paid, or (2) allowing a statement of status to hold for a period of time were recommended.

Reply:

The last sentence in §1.27(a) states that "[s]uch a verified statement need only be filed once in an application or patent and remains in effect until changed." It was not intended that such statements would be required each time a fee is paid. In order to clarify §1.27(a), the first sentence has been changed to require the statement prior to or with the first fee paid as a small entity. Thereafter, notice is only required where a change in status occurs. In addition, §1.28(b) has been rewritten to provide that "[o]nce status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due."

Comment:

One comment suggested that a paragraph 1.27(e) be added which would require confirmation of small entity status at the time of paying the patent issue fee and each maintenance fee and that this be done by a statement which designates the applicant's small entity status as of the close of the last fiscal year next preceding the date of the statement.

Reply:

The suggested paragraph has not been added. However, paragraph (b) of §1.28 has been completely rewritten to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. Instead of requiring papers to be filed confirming status as suggested in the comment, the rules as adopted require that "[n]otification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." Paragraph (b) of §1.28, as promulgated, is considered preferable to the suggested paragraph (e) of §1.27 since it will eliminate the filing of a confirming statement where there has been no change in status as a small entity. This reduces unnecessary paperwork.

Comment:

One comment suggested that verified statements of small entity status need not be filed in Rule 60 applications.

Reply:

The suggestion was adopted and is reflected by the change in §1.28(a). In such applications, it will be sufficient to include a reference to a verified statement establishing small entity status in a parent application if status as a small entity is still proper and desired.

Comment:

One comment suggested that proposed paragraph 1.28(b) be amended by inserting the words "believed to be" after "small entity is" in the second sentence.

Reply:

Paragraph (b) of §1.28 as promulgated does not contain the sentence to which the suggestion is directed.

Comment:

One comment suggested that paragraph (c) of §1.28 be amended by deleting the word "verified" so that a statement explaining how an error in good faith occurred can be made "on the basis of information and belief."

Reply:

The suggestion has not been adopted. However, paragraph (c) of §1.28 as promulgated permits the correction of errors without a verified statement if the correction is accomplished within three months after the date the error occurred.

Comment:

Three comments expressed concern about the provision dealing with fraud on the Patent and Trademark Office because of some questionable act in connection with paying fees as a small entity and indicated that some persons have raised a question as to the Office's authority to designate the payment of a lesser fee as fraud. The comments suggested that proposed §1.28 be withdrawn and turned over to an ad hoc group of Patent and Trademark Office officials and practitioners for immediate examination and timely comment.

Reply:

The period for comments was extended until August 13, 1982, as an alternative to, and in response to, the suggestion that §1.28 be withdrawn and turned over to an ad hoc committee. The extended period for comments has now expired and all comments which have been received have been carefully considered. In response to the statement that some persons have raised a question regarding the Office's authority to designate payment of a lesser fee as fraud, no authority has been cited which would establish or suggest that the Office does not have the authority to adopt this section. Paragraph (d) of §1.28 has been strictly limited to those situations in which there is an attempt to fraudulently establish status as a small entity, fraudulently pay fees as a small entity, or improperly and through gross negligence establish status or pay fees as a small entity. Paragraph (d) of §1.28 is clearly within the rule-making authority provided to the Commissioner pursuant to 35 U.S.C. 6 to protect the integrity of the system established by the public law resulting from H.R. 6260, whereby fees are reduced for small entities. In order to alleviate the concerns expressed about paragraph (d) of §1.28, paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This three-month grace period to correct errors with no explanations required for correction during that three-month period should reduce the concern about paragraph (d) of §1.28.

Comment:

One comment by an attorney (1) objected to and requested removal of the second sentence of §1.28(d) because he has to rely on the information provided by the client and does not have the facilities to check the reliability of information the client provides relating to the client's status as a small entity, and (2) raised the question as to how much investigation any attorney or other individual must make in order to avoid being guilty of "gross negligence" under §1.28(d).

Reply:

The rules do not authorize an attorney to sign a verified statement establishing status as a small entity on behalf of a client. The client has to sign the verified statement. Paragraph (b) of §1.27 requires that any verified statement filed on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47. Paragraph (d) of §1.27 requires that any verified statement filed on behalf of a nonprofit organization must be signed by an official of the nonprofit organization empowered to act on behalf of the organization. The intent of paragraphs (b) and (d) of §1.27 is that the verified statement be signed by the person in the best position to know the facts as to whether or not status as a small entity can be properly established. Insofar as the attorney's responsibilities and duty to investigate are concerned, these do not differ from those presently owed the Office under §§1.56, 1.346, and 1.555.

Comment:

One comment suggested that paragraph (d) of §1.28 be replaced by a provision under which a "stiff fine" would be assessed against "a wrongdoer who has not paid fees in good faith."

Reply:

The suggestion has not been adopted. Assessing a fine as the only penalty against "a wrongdoer who has not paid fees in good faith" might tend to encourage the payment of incorrect fees on the theory that it is unlikely that such a matter would be brought to the attention of the Office.

Comment:

Three comments opposed the proposed deletion of Part 3 for the reasons that (1) it is useful to have an up-to-date set of forms and (2) there does not seem to be a pressing need to delete the forms.

Reply:

The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which includes full size copies of substantially all of the forms in Part 3. Since the forms currently in Part 3 are not "up-to-date" as was suggested in the comment, no present need is seen to maintain Part 3.

Response to Comments on the Trademark Rules

Specific comments were received on the proposed deletion of Part 4. All of the comments included in the written submissions and the oral testimony were considered.

Written comments were received from four individuals. Oral comments restating previously submitted written comments on Part 4 were presented by one individual on behalf of his law firm.

These comments appear below along with replies thereto.

Comment:

One comment stated that there are rules in Part 4 which are not set forth elsewhere. Such guidelines and information include, among others, the types of commerce on which an application may be based and a requirement for the use of bond paper for typed drawings.

Reply:

Part 4 does not really carry the effect of rules because the forms are not mandatory, but are merely illustrative. The information referred to by this individual can be found elsewhere, such as in the Trademark Manual of Examining Procedure. Furthermore, despite the fact that the forms do not carry the force of rules, any correction or modification to them requires the cumbersome and time-consuming processes that are associated with a rules change.

Comment:

Several comments reflected the opinion that some attorneys, particularly those who do not specialize in trademark matters, may rely on the forms that appear in Part 4. It was believed that these individuals may not have or be aware of the compilation of forms identified as the "Patent and Trademark Office Forms Booklet." In the absence of such forms in Part 4, these individuals may devise their own application formats. Such a practice would result in increased informalities which, in turn, would result in unnecessary correspondence and delayed prosecution. In addition, the commenters believed that the number of written and oral inquiries to the Office of the Director of the Trademark Examining Operation would increase dramatically.

Reply:

The Office of the Director of the Trademark Examining Operation currently has a general information telephone line to answer inquiries and to accept requests for trademark application forms and related literature. While the Office of the Director indicates the availability of the forms booklet to many callers, copies of the appropriate trademark application form are sent to those individuals who request them. It is more likely that an individual who is unaware of the trademark application format would call the Office of the Director to request an application form than create one for the particular purpose.

Comment:

One individual, aware of the Office's plans for automation of the trademark program, saw the present deletion of the forms to be inappropriate. This individual felt that the deletion of the forms at this point would signal to the user community that the Office no longer had any interest in receiving applications in any particular format. To take such a position within a year or two of the introduction of a rigidly standardized application format was, in the opinion of this commenter, unwise. The adoption of a machine-readable application form would require greater, rather than diminished, reliance on a prescribed format.

Reply:

Within the next year or two, the Office will begin experimenting with the use of optical character recognition (OCR) equipment to automate the current data capture processes. Trademark application formats that are compatible with this equipment are likely to require special sizing and printing and, as such, are not acceptable for reduced size printing in the Code of Federal Regulations. If the existing forms were to be maintained in Part 4, they would remain available for use by applicants. As a result, the implementation of the new standardized application formats would be made more difficult.

Comment:

One commenter believed that since the next reprinting of Volume 37 of the Code of Federal Regulations will be in July, 1983, there is no pressing need to eliminate Part 4 at this time. This individual felt that users of the trademark registration system should be given additional opportunity to consider the significance of removing Part 4.

Reply:

Only four comments have been received on the deletion of Part 4. The elimination of Part 4 at this time will guarantee that the forms do not appear in the 1983 reprinting of the CFR. Of course, they will appear in the 1982 version of the CFR booklet and will be available until the new edition is published. In this matter, future access to these forms will be limited and those requiring help may contact the Office and receive the proper trademark forms.

Implementation of §§1.9, 1.27, and 1.28

Status as a small entity can be established in any application or patent for which a fee is due on or after October 1, 1982, and in which small entity status is available and desired.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et. seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. The public law resulting from H.R. 6260 has taken into consideration the impact the increase in fees may have on small entities. Under the public law resulting from H.R. 6260 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq., since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Parts 1, 3 and 4

Administrative practice and procedure, Colleges and universities, Courts, Fraud, Inventions and patents, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the public law resulting from H.R. 6260, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, (15 U.S.C. §§1113, and 1123), Parts 1, 3 and 4 of Title 37, Code of Federal Regulations, are amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

The table of contents for Part 1 is amended as follows:

FEES AND PAYMENT OF MONEY

* * * * *

1.27 Statement of status as small entity;

1.28 Effect on fees of failure to establish status, or change status, as a small entity.

1. Section 1.9 is amended by adding new paragraphs (c), (e) and (f) and adding and reserving paragraph (d) to read as follows:

§1.9 Definitions.

* * * * *

(c) An independent inventor as used in this chapter means any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section.

(d) [Reserved]

(e) A nonprofit organization as used in this chapter means (1) a university or other institution of higher education located in any country; (2) an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)); (3) any nonprofit scientific or educational organization qualified under a nonprofit organization statute of a state of this country (35 U.S.C. 201(i)); or (4) any nonprofit organization located in a foreign country which would qualify as a nonprofit organization under paragraphs (e)(2) or (3) of this section if it were located in this country.

(f) A small entity as used in this chapter means an independent inventor, a small business concern or a nonprofit organization.

2. Section 1.27 is added to read as follows:

§1.27 Statement of status as small entity.

(a) Any person seeking to establish status as a small entity (§1.9(f) of this Part) for purposes of paying fees in an application or a patent must file a verified statement in the application or patent prior to or with the first fee paid as a small entity. Such a verified statement need only be filed once in an application or patent and remains in effect until changed.

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47 of this Part, and must aver that the inventor qualifies as an independent inventor in accordance with §1.9(c) of this Part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity. Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status.

(c) [Reserved]

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in §1.9(e) of this Part specifying under which one of §1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this Part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9 of this Part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

3. Section 1.28 is added to read as follows:

§1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§1.9(f) and 1.27 of this Part) in any application or patent prior to paying, or at the time of paying, any fee (1) precludes payment of the fee in the amount established for small entities; and (2) precludes a refund pursuant to §1.26 of this Part of any portions of fees paid prior to establishing status as a small entity. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, or at the time of paying, the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under §1.60 of this Part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27 of this Part unless the Office is notified of a change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under §1.60 of this Part. Applications filed under §1.60 of this Part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

(b) Once status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due. Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9 of this Part. The notification of change in status may be signed by the applicant, any person authorized to sign on behalf of the assignee, or an attorney or agent of record or acting in a representative capacity pursuant to §1.34(a) of this Part.

(c) If status as a small entity is established in good faith, and fees as a small entity are paid in good faith, in any application or patent, and it is later discovered that such status as a small entity was established in error or that through error the Office was not notified of a change in status as required by paragraph (b) of this section, the error will be excused (1) if any deficiency between the amount paid and the amount due is paid within three months after the date the error occurred or (2) if any deficiency between the amount paid and the amount due is paid more than three months after the date the error occurred and the payment is accompanied by a verified statement explaining how the error in good faith occurred and how and when it was discovered.

(d)(1) Any attempt to fraudulently (i) establish status as a small entity or (ii) pay fees as a small entity shall be considered as a fraud practiced or attempted on the Office. (2) Improperly and through gross negligence (i) establishing status as a small entity or (ii) paying fees as a small entity shall be considered as a fraud practiced or attempted on the Office. See §§1.56(d) and 1.555 of this Part.

§1.451 [Amended]

4. In section 1.451, paragraph (b) is amended by removing the reference "§1.19(a)(4)" and inserting in its place the reference "§1.19(a)(3)".

PART 3 - FORMS FOR PATENT CASES

5. Part 3 is removed.

PART 4 - FORMS FOR TRADEMARK CASES

6. Part 4 is removed.

8/26/82
Date

Gerald J. Mossinghoff
Commissioner of Patents & Trademarks

DEPARTMENT OF COMMERCE

(42) **Patent and Trademark Office**

37 CFR Part 1

[Docket No. 2909-187]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish a definition and procedures for the payment of fees under section 41(a) and (b) of Title 35, United States Code, by small business concerns as required by Pub. L. 97–247. This action adopts the definition of a "small business concern" for purposes of paying patent fees established by the Small Business Administration and is necessary at this time in order that the procedures for paying reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by Pub. L. 97–247.

Effective Date: Oct. 1, 1982

For Further Information Contact: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

Supplementary Information: A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28042–28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982 at 47 FR 33959. The final rule was also published in the *Official Gazette* on Aug. 10, 1982, at 1021 O.G. 19–94. In view of comments received at the hearings, additional time for comment on certain rules, including those covered by this change, was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134–40140.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by Pub. L. 97–247.

Public Law 97–247

Pub. L. 97–247, signed Aug. 27, 1982, provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41(a) and (b) of title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The Commissioner has established regulations defining independent inventors and nonprofit organizations. Pub. L. 97–247 defines small business concerns by reference to Section 3 of the Small Business Act and regulations established by the Small Business Administration. The Small Business Administration has now established the definition of a small business concern for the purpose of paying reduced fees under Pub. L. 97–247. That definition is hereby incorporated into the patent rules of practice in §1.9(d). This rulemaking also establishes the procedures which will be followed by small business concerns when paying the reduced fees.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraph (d) which defines small business concern as used in Title 37, Code of Federal Regulations, Chapter I. A small business concern is identified as a "small entity" for purposes of paying fees which are set under section 41(a) and (b) of Title 35, United States Code, as amended by Pub. L. 97–247.

Section 1.9(d) defines a small business concern by reference to and incorporation of §121.3–18 of Title 13, Code of Federal Regulations. A small business concern is defined therein as any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. The section further defines affiliates of concerns and defines also the terms "employees" and "number of employees." Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees a business concern has is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Business concerns located in any country which meet the small business definition and which comply with the applicable procedures can qualify as a "small business concern". Under the definition, a small business concern would no longer qualify as a small business concern if any rights were assigned to any individual or concern which could not qualify as a small entity pursuant to §1.9(f), or if the concern came under an obligation to assign any rights to any individual or concern which could not qualify as a small entity.

Section 1.9(d) also incorporates paragraph (b) of 13 CFR 121.3–18 which provides for appeals to the Small Business Administration from Patent and Trademark Office adverse initial size determinations.

Paragraph 1.27(c) provides for claiming status as a small business concern. Any person seeking to establish status as a small entity, for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

A number of changes which have been made to §§1.9 and 1.27 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (d) of §1.9 has been changed from that proposed so as to incorporate into §1.9(d), the definition established by the Small Business Administration in § 121.3–18 of Title 13, Code of Federal Regulations. The definition differs from that proposed in specifying the number of employees constituting a small business concern and specifying that the concern must be one which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person or concern which could not be classified as an independent inventor, small business concern, or nonprofit organization.

Paragraph (c) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern is to be signed by "the owner or an official of the small business concern empowered to act on behalf of the concern." The term "official" as used in paragraph (c) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the rules affected by this final rule were received from three patent law groups and a number of individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment

Two comments urged that in view of the "exceedingly complex" definitions of a "small business" in 13 CFR 121.3, the patent system and those associated with it would be best served by setting forth clear guidelines as to whether or not a business qualifies as a small business without reference to the Small Business Act and without incorporation by reference of "the too many pages of SBA regulatory definition."

Reply

Pub. L. 97-247 specifically refers to section 3 of the Small Business Act and regulations established by the Small Business Administration for determining whether or not a business concern qualifies as a small business concern. Pub. L. 97-247 therefore does not permit the establishment of guidelines without reference to the Small Business Act and regulations established by the Small Business Administration. Section 1.9(d), however, does incorporate the definition as established in §121.3-18 of Title 13, Code of Federal Regulations. This will enable persons to utilize §1.9(d) without also referring to a copy of Title 13, CFR.

Comment

One comment argued that §1.27 should be corrected or clarified to indicate that a small business concern would be entitled to the 50 percent fee reduction even though it may grant a non-exclusive or even an exclusive license to some non-small entity.

Reply

The suggestion has not been adopted. Section 1.27 requires that the concern qualify as a small business concern as defined in §1.9(d). Section 1.9(d) defines a small business concern by incorporating 13 CFR 121.3-18, which in turn defines a small business concern as one not exceeding a particular size "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section." The intent of both 13 CFR 121.3-18 and 37 CFR 1.9(d) and 1.27(c) is to limit the payment of reduced fees under section 41 (a) and (b) of Title 35, United States Code, to those situations in which all of the rights in the invention are owned by small entities, i.e., independent inventors, small business concerns, or nonprofit organizations. To do otherwise would be clearly contrary to the intended purpose of the legislation which contains no indication that fees are to be reduced in circumstances where rights are owned by non-small entities. Adopting the suggestion might, for example, permit a non-small entity to transfer patent rights to a small business concern which would pay the reduced fees and grant an exclusive license to the non-small entity.

Comment

One comment suggested that the specific Small Business Administration regulations which are applicable be specified in §1.9(d).

Reply

The definition of a small business concern as established by the Small Business Administration is now incorporated into §1.9(d).

Implementation of §§1.9 and 1.27

Status as a small entity can be established in any application or patent for which a fee is due on or after October 1, 1982, and in which the individual inventor, small business concern, or nonprofit organization meets the qualifications established for small entity status.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Pub. L. 97-247 has taken into consideration the impact the increase in fees may have on small entities. Under Pub. L. 97-247 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Small businesses.

Amendment of Regulations

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and Pub. L. 97-247, Part 1 of Title 37, Code of Federal Regulations, is amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.9 is amended by adding a new paragraph (d) to read as follows:

§1.9 Definitions.

* * * * *

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3-18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§121.3-18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97-247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

2. Section 1.27 is amended by adding a new paragraph (c) to read as follows:

§Statement of status as small entity.

* * * * *

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

GERALD J. MOSSINGHOFF,
Sept. 23, 1982. *Commissioner of Patents and Trademarks.*

[FR Doc.82-26941 Filed 9-29-82; 8:45 am]
BILLING CODE 3610-16-M

SMALL BUSINESS ADMINISTRATION

13 CFR Part 121

Definition of Small Business for Paying Reduced Patent Fees Under Title 35, United States Code

AGENCY: Small Business Administration.

ACTION: Final rule.

SUMMARY: The Small Business Administration in conjunction with the Patent and Trademark Office is establishing a definition of small business for the purpose of paying patent fees under section 41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for small business concerns as required by Pub. L. 97-247. The definition would be implemented by the Patent and Trademark Office, which has recently published its regulations on the fee reduction procedures (47 FR 40134, Sept. 10, 1982).

EFFECTIVE DATE: Oct. 1, 1982.

FOR FURTHER INFORMATION CONTACT:
R. Franklin Burnett (703) 557-3054.
Harvey Bronstein (202) 653-6373.

SUPPLEMENTARY INFORMATION: Pub. L. 97-247 provides that funds available under the Act to the Patent and Trademark Office "shall be used to reduce by 50 per centum the payment of fees under Section 41 (a) and (b) of Title 35, United States Code, by small business concerns as defined in Section 3 of the Small Business Act and by regulations established by the Small Business Administration."

A notice of proposed rulemaking relating to the definition of a small business was published in the **Federal Register** on Aug. 31, 1982 (47 FR 38331). The regulation being issued is the same as that which was proposed. In order to be a small business, the number of employees of the concern, including those of its affiliates, may not exceed 500 persons. Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of a business concern is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year.

The definition also requires a small business for this purpose to be one "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section."

Discussion of Comments

One comment from the American Patent Law Association, whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office, expressed "no comment regarding the definition" and expressed "[t]hanks for all that's been done toward a hopefully workable definition." The remaining comments were from individual patent attorneys rather than comments on behalf of any organization.

Two comments raised questions about the intended scope of the term "license." It was suggested that clarification is needed as to what is included within the scope of the term. One comment suggested that, "[a]t the very least, the record should reflect that the definition is not intended to reach implied licenses to use and resell patented articles purchased from a small business." The comment is correct insofar as it suggests that such "implied licenses" are not intended to be included within the scope of the term. Likewise, an order by the applicant to a firm to build a proto-type machine or product for the applicant's own use is not considered to constitute a license for purposes of the definition.

Another suggestion was that the regulation be reworded to deny small business status where revenue above a certain dollar amount was received from licensing rights under the invention to a concern which could not qualify as a small entity. It was also suggested that the term "exclusive license of any of the rights in the invention" be used instead of the term "license." The latter two suggestions have not been adopted. Adoption of these suggestions would cause the regulation to become more complicated, and does not appear necessary to aid small concerns in accord with the purposes of the legislation. In addition, it could substantially broaden the number of concerns which could qualify with a resulting excessive loss of revenue to the Patent and Trademark Office. It is not seen likely that the restriction on licensing would unduly or adversely affect the ability of the small business concern to participate in the patent system.

Another comment which was made related to a firm which is a subsidiary of a university or other nonprofit organization. The suggestion was made that the number of employees of the university or other nonprofit affiliate be excluded from consideration in determining whether or not the business concern qualifies as a small business concern. The suggestion has not been adopted since the situation raised is already treated under the definition of nonprofit organization established by the Patent and Trademark Office on Sept. 10, 1982, at 47 FR 40134–40140. Under that Patent and Trademark Office regulation, a wholly owned subsidiary of a nonprofit or university is considered a part of the university or nonprofit and thus is already eligible for the fee reduction.

One comment suggested that the regulation contain language specifying that concerns meeting its requirements are also independently owned and operated and not dominant in their field of operation under the Small Business Act. It is not necessary to include this language since this regulation already contains an affiliation test for this purpose; and it is generally unlikely that a small concern would be found to be dominant. The legislative history of the Small Business Act indicates that "The mere fact that a small business makes a particular product or item and is dominant in its field with respect to the particular product or item is not intended to disqualify it from the benefits of this Act * * *"(House Report 494, 83rd Congress, 1st Session 1953). SBA Size Appeals Board precedents have consistently stated that dominance under the Act and the SBA regulations is not viewed in narrow industry subdivisions. It, therefore, does not appear that concerns defined as small business under this provision would be dominant within the meaning of the Small Business Act.

Another comment suggested that foreign concerns should not be eligible as small business under this provision. Since this patent legislation was enacted by the Congress with knowledge of the Paris Convention for the Protection of Industrial Property, there is no indication that Congress intended that foreign small business not be eligible for the fee reduction. It is the view of the Patent and Trademark Office that excluding foreign small concerns would violate U.S. treaties in the patent area.

This comment also questioned whether the Patent and Trademark Office should make initial size determinations, or whether they could more appropriately be made by SBA. Since the fee reduction procedure is part of the patent application and of other Patent and Trademark Office actions and may involve Patent law questions, it would be administratively infeasible to have initial size determinations made by the SBA. The Patent and Trademark Office recently issued regulations (Sept. 10, 1982, 47 FR 40134) which set forth the fee reduction procedures.

Other Considerations Relating to the Rulemaking

Environmental, energy, and other considerations: The rule will not have a significant impact on the quality of the human environment or the conservation of energy resources.

Small business concerns will be benefited by the rule. The proposed rule will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities and has reduced the fees, therefore, by 50 per centum.

The Small Business Administration has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 13 CFR Part 121

Small businesses, Inventions and patents.

PART 121—SMALL BUSINESS SIZE STANDARDS

Accordingly, pursuant to Section 3 of the Small Business Act and Pub. L. 97–247, Part 121 of Title 13 of the Code of Federal Regulations is amended by adding § 121.3–18 to read as follows:

§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code.

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

ROBERT B. WEBBER,
Sept. 23, 1982. *Acting Administrator.*

[FR Doc. 82-20940 Filed 9-29-82; 8:45 am]

BILLING CODE 8025–01–M

[1023 O.G. 23]

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(43) Revision of Patent and Trademark Fees

The purpose of this notice is to remind the public of changes in patent and trademark fees, effective Oct. 1, 1982, pursuant to Public Law 97–247, enacted Aug. 27, 1982. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982, at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Patent and Trademark Office Official Gazette on Aug. 10, 1982, at 1021 O.G. 19–94. In view of the enactment of Public Law 97–247, the "Alternative A—Rule Changes Under Only Public Law 96–517" relating to both patents and trademarks will *not* become effective. Instead, the "Rule Changes Common To Public Law 96–517 and H.R. 6260" and "Alternative B—Rule Changes Under H.R. 6260" will become effective for other patents and trademarks on Oct. 1, 1982. H.R. 6260 is now Public Law 97–247.

The Patent and Trademark Office has recieved a number of questions regarding the implementation of the

changes in fees. The final rule published in the Federal Register on July 30, 1982, and in the Official Gazette on Aug. 10, 1982, contains implementing instructions which should be carefully read and followed. The final rule includes in the implementing instructions the following.

> "*Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amont and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office.*"

A "Certificate of Mailing under §1.8" is *not* "proper" for items which are specifically excluded from the provisions of §1.8. Section 1.8 of Title 37, Code of Federal REgulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper." Such items include, *inter alia,* the filing of national and international applications for patent and the filing of trademark applications. Any application for patent or trademark filed, i.e., received in the Office, on or after Oct. 1, 1982, must include the fees which are effective on Oct. 1, 1982, since §1.8 does not apply to, and specifically excludes from its provisions, the filing of applications for patents and trademarks.

GERALD J. MOSSINGHOFF,
Sept. 14, 1982. *Commissioner of Patents*
and Trademarks.

[1022 O.G. 59]

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(44) Filing of Verified Statements Claiming Small Entity Status

In view of the fact that the rules implementing the definition of small business concern were not published in the Federal Register until Sept. 30, 1982, any verified statement claiming small entity status will be accepted as timely filed if (1) the first fee in a patent application has been paid on or after Oct. 1, 1982, but before Feb. 27, 1983, in the amount established for a non-small entity and (2) such verified statement is filed within 3 months of the date of payment of the first fee in a patent application paid on or after Oct. 1, 1982, but before Feb. 27, 1983. If such a verified statement is timely filed within three months of the date of payment of the first fee paid on or after Oct. 1, 1982, but before Feb. 27, 1983, the statement will be treated as though it were present on the date the fee was paid. The correct amount of the fee will be determined and any excess will be refunded upon request. Section 1.28(a) of 37 CFR is waived until Feb. 27, 1983 to the extent it is inconsistent with this practice.

DONALD J. QUIGG,
Oct. 15, 1982. *Acting Commissioner of*
Patents and Trademarks.

[1023 O.G. 77]

(45) Enactment of H.R.6260
Statement by the President
Aug. 28, 1982

The following is the text of President Reagan's Statement at the signing of H.R.6260 into law:

"I am pleased to sign into law H.R.6260 which authorizes appropriations for the Patent and Trademark Office for fiscal years 1983–1985. Throughout our Nation's history, the patent system has played a critically important role in stimulating technological advances. This legislation will make it possible for the Patent and Trademark Office to improve its operations and thus revitalize its traditional role of encouraging technical innovation.

"This measure reflects the policy of this Administration that those who benefit most directly from services should pay their fair share for them. For years the Patent and Trademark Office has not had the resources to carry out its mission properly or to modernize its operations. Now that this legislation is in place, most users will pay the actual cost of processing patents and trademarks. This means that even though the expenditure of tax revenue in FY 1983 to support the Patent and Trademark Office will be $21 million lower than in FY 1982, the total resources available to the Office through increased user fees will permit it to become a first-class service organization.

"We neither want nor expect the increased user fees to discourage the ingenuity and creativity of individual inventors. Many of our most important inventions have come from individuals working alone. Accordingly, the bill provides that independent and small business inventors, as well as nonprofit corporations, will pay only fifty percent of the actual patent processing costs.

"A major deterrent to using the patent system, especially by small businesses and independent inventors, is the inordinately high cost of patent litigation. This bill authorizes voluntary arbitration of patent validity and infringement disputes. This will not only improve the patent system and encourage innovation, but will help relieve the burden on the Federal courts.

"Development of new technology is a vital ingredient in my Administration's plan for economic recovery. This measure is a significant step in this process. At the same time, it symbolizes our commitment to making the Federal Government more effective and efficient. it is an excellent example of how the Federal Government can provide better service at less cost to the taxpayers, and I commend the Congress for enacting this important measure."

[1022 O.G. 15]

(46) Public Law 97-247
97th Congress

An Act

To authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Aug. 27, 1982
[H.R. 6260]

Patent and Trademark Office. Appropriation authorization.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated for the payment of salaries and necessary expenses of the Patent and Trademark Office to become available for fiscal year 1983, $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary as well as such additional or supplemental amounts as may be necessary, for increases in salary, pay, retirement, or other employee benefits authorized by law. Funds available under this section shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code, by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration. When so specified and to the extent provided in an appropriation Act, any amount appropriated pursuant to this section and, in addition, such fees as shall be collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), may remain available without fiscal year limitation.

15 USC 632.

SEC. 2. Notwithstanding any other provision of law, there is authorized to be appropriated for the payment of salaries and expenses of the Patent and Trademark Office, $121,461,000 for the fiscal year ending September 30, 1982, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

SEC. 3. (a) Section 41(a) of title 35, United States Code, is amended to read as follows:

Fees.

"(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

35 USC 112.

"2. For issuing each original or reissue patent, except in design or plant cases, $500.

"3. In design and plant cases:

"a. On filing each design application, $125.

"b. On filing each plant application, $200.

"c. On issuing each design patent, $175.

"d. On issuing each plant patent, $250.

"4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"5. On filing each disclaimer, $50.

"6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

35 USC 133, 151.

"7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

"8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

"a. On filing a first petition, $50.

"b. On filing a second petition, $100.

"c. On filing a third or subsequent petition, $200.".

(b) Section 41(b) of title 35, United States Code, is amended to read as follows:

Maintenance fees.

"(b) The Commissioner shall charge the following fees for maintaining a patent in force:

"1. Three years and six months after grant, $400.

"2. Seven years and six months after grant, $800.

"3. Eleven years and six months after grant, $1,200.

Expiration.

Surcharge.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.".

(c) Section 41(c) of title 35, United States Code, is amended to read as follows:

Maintenance fee, delayed payment.

Surcharge.

"(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

"(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.".

(d) Section 41(d) of title 35, United States Code, is amended to read as follows:

Fees.

"(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.".

35 USC 13.

Adjusted fees.

(e) Section 41(f) of title 35, United States Code, is amended to read as follows:

"(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.".

(f) Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended by deleting "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.".

(g) Section 42(c) of title 35, United States Code, is amended by adding the following sentence at the end thereof: "Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.".

SEC. 4. Section 3(a) of title 35, United States Code is amended (1) by deleting the phrase "not more than fifteen"; and (2) by inserting the phrase "appointed under section 7 of this title" immediately after the phrase "examiners-in-chief".

SEC. 5. Section 111 of title 35, United States Code, is amended to read as follows:

Applications.

"SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.".

35 USC 112.
35 USC 113.
35 USC 115.

Filing date.

SEC. 6. (a) Section 116 of title 35, United States Code, is amended (1) by deleting the phrase "Joint inventors" from the title and inserting in its place "Inventors"; and (2) in the third paragraph, by deleting the phrase "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" and inserting in its place the phrase "through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application".

(b) Section 256 of title 35, United States Code, is amended to read as follows:

"§ 256. Correction of named inventor

"Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

"The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.".

SEC. 7. Section 6 of title 35, United States Code, is amended by deleting paragraph (d) thereof.

SEC. 8. (a) Section 8(a) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(a)), is amended (1) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

(b) Section 8(b) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(b)), is amended (1) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

SEC. 9. (a) Section 13 of the Trademark Act of 1946, as amended (15 U.S.C. 1063), is amended (1) by deleting the phrase "a verified" and inserting in its place the word "an"; (2) by adding the phrase "when requested prior to the expiration of an extension" immediately after the word "cause"; and (3) by deleting the fourth sentence.

(b) Section 14 of the Trademark Act of 1946, as amended (15 U.S.C. 1064), is amended by deleting the word "verified".

SEC. 10. Section 15 of the Trademark Act of 1946, as amended (15 U.S.C. 1065), is amended by deleting the phrase "the publication" and inserting in its place the word "registration".

SEC. 11. The first sentence of section 16 of the Trademark Act of 1946, as amended (15 U.S.C. 1066), is amended to read as follows: "Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.".

SEC. 12. Section 21 of title 35, United States Code, is amended—

(1) by deleting the phrase "Day for taking action falling on Saturday, Sunday, or holiday" from the title and inserting in its place the phrase "Filing date and day for taking action";

(2) by inserting the following as subsection (a):

Filing date.

"(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.";

(3) by designating the existing paragraph as subsection (b); and

(4) by inserting the word "federal" in subsection (b), as designated above, immediately after the word "a".

SEC. 13. Section 6(a) of title 35, United States Code, is amended (1) by deleting the word "and", third occurrence, and inserting in its place a comma; (2) by inserting the phrase ", or exchanges of items or services" immediately after the word "programs"; and (3) by inserting the phrase "or the administration of the Patent and Trademark Office" immediately after the word "law", second occurrence.

SEC. 14. (a) Section 115 of title 35, United States Code, is amended by (1) deleting the phrase "shall be" and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(b) Section 261 of title 35, United States Code, is amended, in the third paragraph, by inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(c) Section 11 of the Trademark Act of 1946, as amended (15 U.S.C. 1061), is amended by (1) deleting the phrase "shall be", first occurrence, and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

SEC. 15. Section 13 of title 35, United States Code, is amended by deleting "(a) 9" and inserting in its place "(d)".

SEC. 16. Section 173 of title 35, United States Code, is amended to read as follows: "Patents for designs shall be granted for the term of fourteen years."

Effective dates.
35 USC 41 note.

SEC. 17. (a) Sections 1, 2, 4, 7, and 13 through 15 of this Act shall take effect on the date of enactment of this Act. Sections 3 and 16 of this Act shall take effect on October 1, 1982. The maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act. Each patent applied for on or after the date of enactment of this Act shall be subject to the maintenance fees established pursuant to section 3(b) of this Act or to maintenance fees hereafter established by law, as to the amounts paid and the number and timing of the payments.

(b)(1) Title 35, United States Code, is amended by inserting after section 293 the following new section of chapter 29:

35 USC 294.

"§ 294. Voluntary arbitration

"(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

Awards.
9 USC 1 *et seq.*
35 USC 282.

"(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

Modification.

"(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

Notices.
Modification.

"(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

"(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.".

(2) The analysis for chapter 29 of title 35 of the United States Code is amended by adding at the end the following:

"294. Voluntary arbitration.".

(c) Sections 5, 6, 8 through 12, and 17(b) of this Act shall take effect six months after enactment. 35 USC 294 note.

Approved August 27, 1982.

LEGISLATIVE HISTORY—H.R. 6260:

HOUSE REPORT No. 97-542 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 128 (1982):
June 8, considered and passed House.
Aug. 12, considered and passed Senate.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 18, No. 36 (1982):
Aug. 28, Presidential statement.

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(47)

97th Congress
2d Session
HOUSE OF REPRESENTATIVES
Report
No. 97-542

PATENT AND TRADEMARK OFFICE AUTHORIZATION

May 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. Kastenmeier, from the Committee on the Judiciary, submitted the following

REPORT

[To accompany H.R. 6260]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 6260) to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment strikes out all after the enacting clause of the bill and inserts a new text which appears in italic type in the reported bill.

Purpose of the Bill

The purpose of H.R. 6260 is to authorize appropriations for the Patent and Trademark Office for fiscal years 1983 through 1985.

Statement

The Subcommittee on Courts, Civil Liberties and the Administration of Justice previously held two days of hearings on the legislation, receiving testimony from a representative group of witnesses including the Commissioner of Patents and Trademarks, the American Bar Association Section of Patent, Trademark and Copyright Law, the American Patent Law Association, the Patent, Trademark and Copyright Section of the State Bar of Virginia, the United States Trademark Association and the General Patent Counsel of the General Electric Corporation.

H.R. 6260 reflects the recommendation of the Administration with three modifications as follows. First, the Administration proposal authorized the Commissioner of Patents and Trademarks to establish fees administratively. The subcommittee approved an amendment to set forth specific fees in the statute and limited the Commissioner's authority to raise fees. Second, the Administration recommended that user fees recover 100% of the costs of actual processing of patents and trademarks. The subcommittee amended the bill to reduce by 50% patent filing and maintenance fees for individual inventors, small businesses and not for profit institutions. The effect of the amendment is to increase by $8 million the authorized appropriation which would have been provided under the original Administration request. Third, the subcommittee adopted a recommendation of the Commissioner of Patents and Trademarks, the American Bar Association and a coalition of corporate patent counsel permitting arbitration of patent disputes.

H.R. 6260 was considered by the Full Committee on the Judiciary on May 11, 1982 and was approved as reported by the subcommittee with an amendment offered by Mr. Frank described below.

SYNOPSIS OF H.R. 6260

SECTIONS 1-3

Authorizes the Patent and Trademark Office for fiscal year 1983 at an appropriations level of $76,000,000 and for fiscal years 1984 and 1985 such sums as may be necessary. This would be augmented by additional fee income under the bill of approximately $79 million for a total budget of $155 million. In fiscal year 1982 the Patent and Trademark Office was authorized at a level of $118,961,000 of which $29,600,000 was provided through fee income. Fiscal year 1983 will be the first year in which fee income under P.L. 96-517 will be credited to the Patent and Trademark Office without being counted as part of its authorized appropriation. Had this new accounting procedure been applied to fiscal year 1982 the authorization and appropriation for the Patent and Trademark Office would have been $89 million. This constitutes the actual level of taxpayer support of the Office. Thus, H.R. 6260 authorizes the expenditure of tax revenue in fiscal 1983 to support the Patent and Trademark Office at a level $21 million lower than for fiscal 1982. H.R. 6260 proposes to double current fees as the means of making up for the difference between a lower level of taxpayer support and an increased total budget. Further, maintenance fees which were first authorized in P.L. 96-517 and which will not begin to be collected until fiscal year 1986 (October 1, 1985) will also be doubled over the amounts provided for under P.L. 96-517.

The overall objective of H.R. 6260 is to provide for increased user support for the Patent and Trademark Office costs associated with the actual processing of patent applications by fiscal year 1996. The fee schedule is designed to return to the government 100% of actual costs. However, an amendment to the original Administration proposal adopted by the subcommittee would reduce by half the fees for individuals, small businesses and nonprofit inventors. At the present time less than 25% of the actual costs of processing patent applications are supported by fee revenue and under P.L. 96-517, which becomes effective on October 1, 1982, this amount will gradually begin to rise but will only reach 50% of actual costs in 1996.

The amendment offered by Mr. Frank and approved by the Committee modifies that portion of Section 3 of H.R. 6260 dealing with Trademark fees. Public Law 96-517 (35 United States Code, section 31(a)) provides, "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost . . . of performing the service or furnishing the material."

The Administration requested that the figure, "50 per centum", be changed to "100 per centum", thus mandating full recovery to the Treasury of all costs associated with processing trademarks. An amendment offered during subcommittee consideration of the legislation proposed to reduce fee generated revenue supporting processing of trademarks to less than the 100 per centum recovery level. The amendment was not agreed to. The author of the amendment, Mr. Frank, then proposed to amend the law to provide a statutory fee schedule which would return revenue to the Patent and Trademark Office at a level designed to recover 100 per centum of costs. However, following consultations with interested parties, Mr. Frank modified his amendment simply to repeal those portions of P.L. 96-517 which mandate a specified level of cost recovery for the processing of trademark registrations. Thus, the level of cost recovery for processing of trademark registrations will be within the discretion of the Commissioner. The Committee is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of fee:	*Proposed fee*
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	([1])

[1] 100 plus for each mark in addition to 1.

Section 3(d) also permits the Commissioner of Patents to accept late payment of maintenance fees where it is established that the delay in payment was unavoidable.

Section 4 permits the Commissioner of Patents and Trademarks to appoint temporary examiners in chief for the Board of Patent Appeals to deal more flexibly with workload.

Section 5 permits late filing of the oath and fee accompanying submission of specifications and drawings which accompany patent claims.

Section 6 permits greater flexibility in correcting mistakes in the naming of inventors on a patent application.

Section 7 allocates funds from the Patent and Trademark Office to the Department of State to pay the financial obligations of administering the Patent Cooperation Treaty.

Section 8 clarifies the Trademark law with respect to what constitutes use of a mark "in commerce".

Section 9 deletes the burdensome technical requirement that trademark oppositions be verified.

Section 10 makes the date of registration rather than the date of publication the crucial date for purposes of establishing the incontestability of a trademark. This eliminates an ambiguity in the present law.

Section 11 limits the declaration of interferences under the trademark law to situations where extraordinary circumstances exist.

Section 12 authorizes the Commissioner of the Patent and Trademark Office the flexibility to deal with problems of delay in filing due to postal service breakdowns.

Section 13 permits the Commissioner of Patents to enter into cooperative studies, programs, exchanges and similar ventures associated with the administration of the Patent Office.

Section 14 conforms U.S. Patent and Trademark Law to a recent international treaty governing diplomatic or consular legalization of documents.

Section 15 corrects a mistaken citation in P.L. 96-517.

Section 16 creates a uniform term for design patents.

Section 17 establishes the effective dates for provisions of the Act. Increased filing fees would apply to all applications made on or after the date of enactment of H.R. 6260.

Section 18 permits voluntary arbitration of patent disputes.

Section-by-Section Analysis

SECTION 1

This section authorizes appropriations for the Patent and Trademark Office for the payment of salaries and necessary expenses of the Office. For Fiscal Year 1983, this section authorizes appropriations of $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary, as well as such additional and supplemental amounts as may be necessary to cover any increases in salary, pay, retirement, or employee benefits which may be authorized by law. Funds made available by these appropriations are to be used to reduce by 50 per centum the amount of the fees to be paid under title 35, United States Code, section 41(a) and (b) by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration.

In addition, fees collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), will augment the authorized appropriation to provide the resources needed to conduct the operations of the Office for fiscal year 1983. The total resources for the Office in fiscal year 1983, that is, the amount appropriated pursuant to this section plus fees collected pursuant to the patent and trademark laws, which will be available to the Office, are estimated to be $154,934,000. The corresponding levels for fiscal year 1984 and fiscal year 1985 are estimated in the President's Budget to be $167 million and $176 million, respectively. Any additional amounts to cover increases in salary, pay, retirement, or other employee benefits which may be authorized by law will be in addition to, and will therefore increase, those program levels. Finally, any funds appropriated pursuant to this section and all fees collected, when specified in an appropriation act, will remain available without any fiscal year limitation.

SECTION 2

This section provides that, notwithstanding any other provision of law, there is authorized to be appropriated to the Patent and Trademark Office for fiscal year 1982, $121,461,000 and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law. This section increases the amount authorized for the Patent and Trademark Office by $2.5 million over that authorized in Public Law 97-35. The President is recommending a supplemental appropriation of $2,500,000 for the Patent and Trademark Office for fiscal year 1982 in order to carry out the program recommendations included in his fiscal year 1983 Budget.

SECTION 3

This section establishes certain statutory fees which are to be charged by the Commissioner and authorizes the Commissioner to establish other fees whose amounts are not specifically set. Thus, the major routine fees which are applicable to patents and patent application processing are established (e.g., filing, issuance, and maintenance fees). The Commissioner is authorized to establish fees for all other processing, services, or materials related to patents which are not specifically established by statute. The processing and service fees, which would include such items as fees for filing various petitions to the Commissioner relating to the processing of patent applications, would be established at a level to recover the estimated average costs to the Office. A more specific discussion of the various provisions of this section is set forth below.

Section 3(a) amends section 41(a) of title 35 to provide the amounts of the fees for filing and issuance of patent applications. In addition, the section includes provisions for increasing the filing fees due to increased complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. The section also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under section 41(a)1, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of title 35, United States Code, or any claim depending therefrom, will be considered as separate dependent claims in accordance with the number of claims to which reference is made. Under the section, errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. This will enable the Commissioner to establish regulations whereby patent applicants may correct, without prejudice, errors in payment of the additional fees, i.e., those in addition to the basic fees established.

Under section 41(a)2, the fee for issuing all original and reissue patents, except in design or plant cases, would be a uniform amount of $500. No supplemental issue fees are required.

Section 41(a)3 establishes fixed fees for filing applications for, and issuance of design and plant patents. For design patent cases, the filing fee would be $125 and the issue fee $175. For plant patent cases, the filing fee would be $200 and the issue fee $250.

Section 41(a)4 relates to fees in reissue cases and establishes a fee of $300 for filing each application for the reissue of a patent. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 is due for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

Under section 41(a)5, a fee of $50 would be established for filing each disclaimer in a patent or patent application.

Section 41(a)6 establishes a fee due on filing an appeal from the examiner to the Board of Appeals of $115. In addition, a fee of $115 is due on filing a brief in support of the appeal, and a fee of $100 is due for requesting an oral hearing before the Board of Appeals.

Section 41(a)7 establishes two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees are applicable to petitions to accept the delayed payment of the fee for issuing a patent. The fees set forth in this section are due on filing the petition. Since the section provides for two alternative fees with different standards, the section would permit the applicant seeking revival or acceptance of a delayed payment of the fee for issuing a patent to choose one or the other of the fees and standards under such regulations as the Commissioner may establish. Under the section the Commissioner could establish time limits within which petitions under each of the different fees and standards can be filed. The section establishes a fee of $500 for filing each petition for revival or for acceptance of the delayed payment of an issue fee where the abandonment or the failure to pay the issue fee is unintentional. In order to prevent abuse and injury to the public the Commissioner could require a terminal disclaimer equivalent to the period of abandonment and could require applicants to act promptly after becoming aware of the abandonment. The section establishes a fee of $50 for filing a petition under sections 133 or 151 of title 35 in accordance with standards presently in effect requiring that the delay resulting in the abandonment, or the delay in payment of the issue fee, be unavoidable. Under this section a petition accompanied by either a fee of $500 or a fee of $50 would not be granted where the abandonment or the failure to pay the fee for issuing the patent was intentional as opposed to being unintentional or unavoidable. This section would permit the Commissioner to have more discretion than present law to revive abandoned applications and accept late payment of the fee for issuing a patent in appropriate circumstances.

Section 41(a)8 establishes fees for the filing of petitions for extensions of time. Various time periods are set by the Office for taking actions on matters relating to patent applications. These time periods are set pursuant to statute or by regulations established by the Commissioner under the authority granted to the Commissioner by statute. This section would provide for fees for filing petitions to extend the time periods set pursuant to statute or by regulations for taking action within any limitations set by statute.

A fee of $50 is established for filing a request for a first one month extension of time, an additional fee of $100 for filing a request for a second one month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a request for a third one month extension of time which would expire three months after the end of the time period set for taking action. A subsequent or fourth extension could be requested if additional time was available under the statute. In no case could a period be extended beyond the maximum time set by statute.

The Commissioner may issue regulations providing when, within any maximum period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. This section does preclude the Commissioner from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause.

Section 41(b) provides that the Commissioner charge the following fees for maintaining a patent other than a design or plant patent, in force: at three years and six months after grant, $400; at seven years and six months after grant, $800; and at eleven years and six months after grant, $1,200. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of a maintenance fee.

In order to avoid an inequitable loss of patent rights, the Commissioner is given the authority to accept payment of any maintenance fee after the six-month grace period if it is established that the delay in payment was unavoidable. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment. After the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable. A surcharge may be imposed by the Commissioner as a precondition to acceptance of a late fee. This surcharge may be in addition to any surcharge imposed for payment during the grace period.

A provision is included to protect the rights of one who began using or who took steps to begin use of a patent which expired for failure to pay a maintenance fee and which was subsequently reestablished by acceptance of the late payment. The intervening rights provision in section 41(c)(2) is similar to the intervening rights provision in 35 U.S.C. 252 concerning reissued patents.

Section 41(d) provides that the Commissioner establish fees for all other processing services, or materials related to patents not specified in section 41 at an amount calculated to recover the estimated average cost to the Office of such processing, services, or materials. Such processing and other services includes, but is not limited to, the processing of various petitions desiring certain actions to be taken regarding patent applications, recording of assignments, reexamination of patents and the processing of international applications. Fees for materials include the price of patent copies, certifications and other copying services. The yearly fee for providing a library specified in section 13 of title 35 with uncertified copies of the specifications and drawings for all patents issued in that year is set at $50.

Section 41(f) provides that the fees established in subsections (a) and (b) of section 41 may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than one per centum may be ignored by the Commissioner in making such adjustments.

Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is being changed to grant the Commissioner discretion to establish the level of recovery of office costs related to trademarks. It is expected that the Commissioner will set the fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system. This may require that other fees for services or materials related to trademarks recover more than their actual estimated cost in order that the Commissioner achieve in the aggregate adequate cost recovery for the entire trademark operation.

A provision is inserted in section 42(c) of title 35 in order to ensure that the trademark fees collected are used to fund trademark operations only and not the processing of patent applications.

SECTION 4

Section 3 of title 35 is amended by deleting specific reference to the number of examiners-in-chief in the first sentence. Elimination of the upper limit on the number of permanent members of the Board of Appeals would provide greater flexibility in filling most of its personnel needs, thereby avoiding an excess of examiner details. The authority to appoint acting examiners-in-chief, however, is maintained in order that temporary fluctuations in the workload of the Board may be accommodated.

SECTION 5

Under revised section 111 of title 35, the filing date of an application would be that on which the specification and any required drawings are received by the Patent and Trademark Office. The oath or declaration and filing fee could be submitted at such later time as established by the Commissioner, without any loss of the original filing date. Under the amendment, an applicant could either file the oath or declaration (including the applicant's signature) and fee together with an application or submit them at a later time as determined by the Commissioner.

The section would also authorize the imposition of a surcharge as a condition for accepting filing of the oath of payment of the filing fee after the filing date of the application. Since an application filed without the oath or declaration would not be signed or "made" by the applicant, the amendment permits a patent attorney or agent, authorized by the applicant, to submit the specification and drawings for the purpose of obtaining a filing date. Should the applicant, however, fail to file the oath or declaration, or pay the filing fee within the time limits set by the Commissioner, the application would be regarded as having been abandoned.

SECTION 6

The third paragraph of section 116 of title 35 is amended to enlarge the possibilities for correcting misnamed inventive entities. As a consequence, correction would be permitted also in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Commissioner would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to a different, but actual, joint inventors, conversions from erroneously identified joint inventors to different but actual, joint inventors, and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Commissioner must be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

The ability to receive a filing date based on a specification and drawings without signature as set forth in revised section 111 of title 35, and to file the oath or declaration and pay the filing fee within such period as determined by the Commissioner is also available to joint inventors.

Section 256 of title 35, which is a companion to section 116, would be amended to similarly enlarge the possibilities for correction of misnamed inventors in issued patents.

SECTION 7

Section 6(d) of title 35, which provides for the allocation of appropriated Patent and Trademark Office funds to the Department of State for payment of United States financial obligations under the Patent Cooperation Treaty, is deleted. The Department of State has traditionally assumed responsibility for financial obligations for international agreements to which the United States adheres.

SECTION 8

Section 8(a) of the Trademark Act is amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has been interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" for registrations published under section 12(c) of the Act. (This pertains to registrations issued under the Act of March 3, 1881 and the Act of February 20, 1905).

The word "still" has been deleted from section 8(a) and 8(b). Thus, the owner of a registration issued on the basis of a foreign registration under the provisions of section 44(e) of the Act will have to submit an affidavit to the effect that the mark is in use in commerce. Since the mark need not be used in commerce when it is registered, the requirement cannot be required to state that it is "still" in such use.

SECTION 9

Section 13 of the Trademark Act is amended to delete the requirement that an opposition be verified. The sentence which allowed an unverified application to be verified at a later date has been deleted. In addition, a phrase has been added to make it clear that any subsequent extension of time to file an opposition, beyond the first extension, must be requested before the end of the preceding extension.

Section 14 of the Trademark Act would also be amended to delete the requirement that a petition to cancel a registration be verified.

SECTION 10

Section 15 of the Trademark Act is amended to change the term "the publication" to "registration" in the first sentence. This change makes the date of registration rather than the date of publication the crucial date for purposes of incontestability. It will also make section 15 consistent with sections 22 and 33 of the Act.

SECTION 11

Section 16 of the Trademark Act is amended to limit the declaration of interferences to those situations where a petition to the Commissioner shows that extraordinary circumstances exist. Unless extraordinary circumstances exist, the rights of the parties can be determined adequately by the existing opposition and cancellation procedures. Additionally, if an interference is declared between an application and a registration and the applicant wins, a cancellation must still be initiated against the registration.

SECTION 12

A new subsection (a) has been added to section 21 of title 35 to authorize, but not to require, the Commissioner of Patents and Trademarks to give as the filing date of any paper or fee which is required to be filed in the Patent and Trademark Office the date on which the paper or fee was deposited with the United States Postal Service. The Commissioner may also give as the filing date of any paper or fee which was required to be filed in the Patent and Trademark Office the date it would have been deposited with the United States Postal Service but for postal service interruptions or emergencies which the Commissioner designates. The requirements governing whether any given paper or fee may be given the filing date of the day on which it was, or would have been, deposited with the United States Postal Service will be set forth in regulations established by the Commissioner.

Section 21(b) of title 35 is identical to existing section 21 with two minor amendments. The word "federal" has been inserted before the phrase "holiday within the District of Columbia" to clarify the nature of the holiday.

SECTION 13

This section clarifies the authority of the Commissioner in section 6(a) of title 35 to enter into a wide range of cooperative agreements concerning the patent and trademark laws or the administration of the Patent and Trademark Office. These agreements are in addition to the exchange of publications authorized in 35 U.S.C. 11(b) and 12. These cooperative agreements may take the form of studies, programs, exchanges, and other similar ventures. Thus, the Patent and Trademark Office could, for example, exchange patent copies, non-patent literature, tapes, or services in return for goods or services of value to the Patent and Trademark Office.

SECTION 14

The amendments of 35 U.S.C. 115 and Section 11 of the Trademark Act of 1946 recognize the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" which entered into force in the United States on October 15, 1981. The Convention abolishes the requirement of diplomatic or consular legalization for foreign public documents which are sworn to or acknowledged by a notary public in any of the countries adhering to the Convention. For documents executed by a notary public of all other foreign countries, diplomatic or consular legalization will still be required.

The amendment of 35 U.S.C. 261 is intended to give affirmative effect to acknowledgments executed pursuant to the Hague Convention.

SECTION 15

This section corrects an incorrect citation. Public Law 96-517 amended section 41 of title 35, United States Code, in a way which eliminated 35 U.S.C. § 41(a)(9). Unfortunately, section 13 of title 35, United States Code, was not amended accordingly by Public Law 96-517. This section corrects that oversight.

SECTION 16

This section sets a uniform term of fourteen years for all design patents.

SECTION 17

Sections 17(a) and (c) specify the effective dates of the Act. Section 17(a) also specifies that the maintenance fees provided for in section 3(b) of this Act will only apply to patents in which the application was filed on and after the date of enactment or to maintenance fees later established by law.

Section 17(b) adds a section 294 to title 35 providing for the voluntary arbitration of patent disputes by the parties to the dispute. The section requires that the Commissioner be notified in writing of an award made by an arbitrator or modified by a court. Such notification will be entered in the record of the prosecution of the patent.

At present, agreements to arbitrate some aspects of disputes arising under patent licenses are enforceable by the courts; however, there have been court decisions that have disapproved arbitration of disputes concerning patent validity or infringement. In this regard, see, for example, *Zip Mfg. Co.* v. *Pep Mfg. Co.*, 44 F.2d 184, 7 U.S.P.Q. 62 (D. Del. 1930) and *Beckman Instruments, Inc.* v. *Technical Developments Corp.*, 433 F.2d 55, 167 U.S.P.Q. 10 (7th Cir. 1965).

Partly as a reaction to those decisions, during the 93rd Congress both the Department of Commerce and the Department of Justice endorsed a provision specifically authorizing arbitration of validity and infringement disputes. This provision, included in an omnibus patent law revision bill, S. 2504, was never enacted due to the many controversial aspects of that legislation.

In the view of the Committee, a statutory authorization of voluntary agreements to arbitrate validity and infringement disputes would benefit both the parties to these disputes and the public.

Statutory endorsement of arbitration agreements would assure the parties that they could avail themselves of the numerous advantages of arbitration without the possibility of having to reargue the dispute in court. The advantages of arbitration are many: it is usually cheaper and faster than litigation; it can have simpler procedural and evidentiary rules; it normally minimizes hostility and is less disruptive of ongoing and future business dealings among the parties; it is often more flexible in regard to scheduling of times and places of hearings and discovery devices; and, arbitrators are frequently better versed than judges and juries in the area of trade customs and the technologies involved in these disputes.

The enforcement of voluntary arbitration provisions would serve the public in two ways. First, the availability of arbitration with its numerous advantages will enhance the patent system and thus will encourage innovation. This view is supported by the Committee for Economic Development in their January 1980 statement entitled "Stimulating Technological Progress." Secondly, arbitration could relieve some of the burdens on the overworked Federal courts. Chief Justice Burger in his speech to the American Bar Association on January 24, 1982, generally endorsed the use of arbitration to reduce the judicial backlog. Also, I think it is important to note that the American Bar Association's Section on Patent, Trademark and Copyright Law has endorsed court enforcement of arbitration agreements calling for arbitration of validity and infringement.

The recommendations of the Secretary of Commerce to increase substantially patent and trademark user fees were made on the promise that such increases "will lay the groundwork for revitalizing the patent and trademark systems." The Secretary committed to three major goals: (1) to reach an average patent application pendency time of 18 months by FY 1987, (2) to issue an examiner's first action on trademark registrability in three months and disposal of an application within 13 months, and (3) to move realistically toward a fully automated Office by the 1990's. In accepting the Administration's recommendations on user fees, the Committee fully expects the Administration to live up to its end of the bargain to bring about a first-class Patent and Trademark Office. To provide an opportunity for timely and effective Committee oversight of progress toward improving the Patent and Trademark Office, the Committee directs that the Secretary of Commerce report annually to the Committee on progress toward achieving the three major goals of the Patent and Trademark Office, as outlined above, and, in addition, promptly inform the Committee at any time it appears that any of the goals, for any reason, is viewed as not attainable.

OVERSIGHT STATEMENT

The Committee on the Judiciary has oversight responsibility over the Patent and Trademark Office in the Department of Commerce. In addition to its ongoing oversight, the Committee's Subcommittee on Courts, Civil Liberties and the Administration of Justice held an oversight hearing with respect to the Patent and Trademark Office on March 4, 1981, published as Oversight Hearings Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Seventh Congress, First Session on the Copyright Office, The U.S. Patent and Trademark Office, and the Copyright Royalty Tribunal. Serial No. 17.

The Committee expects to continue its oversight activities in this area.

STATEMENT OF THE BUDGET COMMITTEE

No statement has been received on H.R. 6260 from the House Committee on the Budget.

STATEMENT OF THE CONGRESSIONAL BUDGET OFFICE

Pursuant to clause 7, rule XIII of the Rules of the House of Representatives and section 403 of the Congressional Budget Act of 1974, the following is the cost estimate of H.R. 6260, as amended, prepared by the Congressional Budget Office.

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., May 13, 1982.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for H.R. 6260, a bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE

1. Bill number: H.R. 6260.

2. Bill title: A bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

3. Bill status: As ordered reported by the House Committee on the Judiciary, May 11, 1982.

Bill purpose: H.R. 6260 would authorize 1982 appropriations at a level $2.5 million above the amount already appropriated, and would provide a $76 million authorization level in 1983 to carry out the activities of the Patent and Trademark Office (PTO). In addition, such sums as may be necessary are authorized for fiscal years 1984 and 1985, plus such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other benefits authorized by law for each fiscal year 1983 through 1985. PTO would also have available for obligation offsetting fee collections as provided for in Public Law 96-517, plus the additional fees as specified in H.R. 6260.

Assuming enactment of H.R. 6260, total PTO collections over time would result in recovery of approximately 100 percent of patent and trademark processing costs. Individuals, small businesses, and non-profit institutions would be exempt from the proposed additional fees, however, but would continue to follow the fee schedule outlined in P.L. 96-517, which assumes the ultimate recovery of approximately 50 percent of all processing costs.

The President's 1982 budget includes a request for a $2.5 million supplemental for the PTO. The Administration has recommended increasing user fees to ultimately recover 100 percent of processing costs beginning in 1983, but does not provide for any exemptions to the proposed fee increases relative to current law. The effect of exemptions is to increase by approximately $8 million the authorized level of appropriations relative to the Administration's request.

In addition, the bill would make a number of other changes that are not expected to have a cost impact.

5. Cost estimate:

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Authorization level:					
Specified	2.5	76.0	...	...	...
Estimated	...	6.8	86.4	86.8	...
Subtotal	2.5	82.8	86.4	86.8	...
Total estimated outlays	2.4	61.8	82.4	82.8	5.5

Including outlays from appropriations to date for PTO, total 1982 outlays are estimated to be $121.5 million, and total 1983 outlays are estimated to be $79.8.

The costs of this bill fall within budget subfunction 376.

6. Basis of estimate: The authorization levels for PTO for 1982 and 1983 are those specified in the bill. The estimate authorization levels for 1984 and 1985 assume a level of funding sufficient to maintain a program level of $167 million and $176 million, respectively, including offsetting collections. In addition, authorization for increases in pay and other benefits of approximately $6.8 million, $7.4 million, and $7.8 million for fiscal years 1983 through 1985, respectively, were estimated based on CBO's current inflators. Outlays are based on historical spending patterns.

The estimated collections to PTO as a result of fees charged to cover the costs of processing trademarks and patents were provided by the agency, and assume the fee structure outlined in the bill. The estimated collections, under current law and under H.R. 6260, are shown in the table below.

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Estimated offsetting collections:					
Current law	...	47.8	52.7	57.7	...
Added by H.R. 6260	...	31.2	35.3	39.3	...
Total—H.R. 6260	...	79.0	88.0	97.0	...

7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Mary B. Maginniss.
10. Estimate approved by: C. G. Nuckols (James L. Blum, Assistant Director for Budget Analysis).

COMMITTEE VOTE

The Committee on the Judiciary ordered H.R. 6260 as amended reported by a voice vote, without objection being heard, with a quorum of Members being present.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman):

TITLE 35, UNITED STATES CODE

PART I—PATENT AND TRADEMARK OFFICE

* * * * * * *

CHAPTER 1—ESTABLISHMENT, OFFICERS, FUNCTIONS

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§ 3. Officers and employees

(a) There shall be in the Patent and Trademark Office a Commissioner of Patents and Trademarks, a Deputy Commissioner, two Assistant Commissioners, and [not more than fifteen] examiners-in-chief *appointed under section 7 of this title.* The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents and Trademarks, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law shall appoint all other officers and employees.

* * * * * * *

§ 6. Duties of Commissioner

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies [and], programs, *or exchanges of items or services* regarding domestic and international patent and trademark law *or the administration of the Patent and Trademark Office;* and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent and Trademark Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States.

[(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.]

* * * * * * *

§ 13. Copies of patents for public libraries

The Commissioner may supply printed copies of specifications and drawings of patents to public libraries in the United States which shall maintain such copies for the use of the public, at the rate for each year's issue established for this purpose in section 41[(a)9] *(d)* of this title.

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CHAPTER 2—PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE

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§21. [Day for taking action falling on Saturday, Sunday, or holiday] *Filing date and day for taking action.*

(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.

(b) When the day, or the last day, for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or a *Federal* holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding secular or business day.

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CHAPTER 4—PATENT FEES

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§41. Patent fees

[(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

[(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

[(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such

grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

[(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.]

(a) The Commissioner shall charge the following fees:

1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

2. For issuing each original or reissue patent, except in design or plant cases, $500.

3. In design and plant cases:

- *a. On filing each design application, $125.*
- *b. On filing each plant application, $200.*
- *c. On issuing each design patent, $175.*
- *d. On issuing each plant patent, $250.*

4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

5. On filing each disclaimer, $50.

6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

- *a. On filing a first petition, $50.*
- *b. On filing a second petition, $100.*
- *c. On filing a third or subsequent petition, $200.*

(b) The Commissioner shall charge the following fees for maintaining a patent in force:

1. Three years and six months after grant, $400.
2. Seven years and six months after grant, $800.
3. Eleven years and six months after grant, $1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.

(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

[(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three times.**]**

(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.

(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.

§ 42. Patent and Trademark Office funding

(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office. *Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.*

(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.

PART II—PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

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CHAPTER 11—APPLICATION FOR PATENT

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[§ 111. Application for patent

[Application for patent shall be made by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include: (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be signed by the applicant and accompanied by the fee required by law.**]**

SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, *in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such pescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.*

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§ 115. Oath of applicant

The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen. Such oath may be made before any person within the United States authorized by law to administer oaths, or, when, made in a foreign country, before any diplomatic or consular officer of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority **[**shall be**]** *is* proved by certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and such oath shall be valid if it complies with the laws of the state or country where made. When the application is made as provided in this title by a person other than the inventor, the oath may be so varied in form that it can be made by him.

§ 116. [Joint inventors] *Inventors*

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath, except as otherwise provided in this title.

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor. The Commissioner, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application, subject to the same rights which the omitted inventor would have had if he had been joined. The omitted inventor may subsequently join in the application.

Whenever **[**a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error**]** *through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application,* and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

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CHAPTER 16—DESIGNS

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§ 173. Term of design patent

[Patents for designs may be granted for the term of three years and six months, or for seven years, or for fourteen years, as the applicant, in his application, elects.**]**

Patents for designs shall be granted for the term of fourteen years.

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PART III—PATENTS AND PROTECTION OF PATENT RIGHTS

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CHAPTER 25—AMENDMENT AND CORRECTION OF PATENTS

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[§ 256. Misjoinder of inventor

[Whenever a patent is issued on the application of persons as joint inventors and it appears that one of such persons was not in fact a joint inventor, and that he was included as a joint inventor by error and without any deceptive intention, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate deleting the name of the erroneously joined person from the patent.

[Whenever a patent is issued and it appears that a person was a joint inventor, but was omitted by error and without deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate adding his name to the patent as a joint inventor.

[The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.**]**

§ 256. Correction of named inventor

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without and deceptive intention on his *part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.*

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.

CHAPTER 26—OWNERSHIP AND ASSIGNMENT

* * * * * * *

§ 261. Ownership; assignment

Subject to the provisions of this title, patents shall have the attributes of personal property.

Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.

A certificate of acknowledgment under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.

An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

CHAPTER 29—REMEDIES FOR INFRINGEMENT OF PATENT, AND OTHER ACTIONS

Sec.
281. Remedy for infringement of patent.

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294. Voluntary arbitration.

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§ 294. Voluntary arbitration

(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.

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TRADEMARK ACT OF 1946

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Sec. 8 (a). Duration of registration—Cancelation at end of 6 years unless affidavit of use filed

Each certificate of registration shall remain in force for 20 years: *Provided,* That the registration of any mark under the provisions of this Act shall be canceled by the Commissioner at the end of 6 years following its date, unless within 1 year next preceding the expiration of such 6 years the registrant shall file in the Patient and Trademark Office an affidavit showing that said mark is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. Special notice of the requirement for such affidavit shall be attached to each certificate of registration.

Sec. 8(b). Cancelation of republished prior registrations unless affidavit of use filed

Any registration published under the provisions of subsection (c) of section 12 of this Act shall be canceled by the Commissioner at the end of 6 years after the date of such publication unless within 1 year next preceding the expiration of such 6 years and registrant shall file in the Patent and Trademark Office an affidavit showing that said marks is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

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Sec. 11. Acknowledgments and vertifications

Acknowledgments and verifications required hereunder may be made before any person within the United States authorized by law to administer oaths, or, when made in a foreign country, before any diplomatic or consular officer of the United States or before any official authorized to administer oaths in the foreign country concerned whose authority [shall be] *is* proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and shall be valid if they comply with the laws of the state or country where made.

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Sec. 13. Opposition to registration of marks on the Principal Register

Any person who believes that he would be damaged by the registration of a mark upon the principal register may upon payment of the required fee, file [a verified] *an* opposition in the Patent and Trademark Office, stating the grounds therefor, within thirty days after the publication under subsection (a) of section 12 of this Act of the mark sought to be registered. Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause *when requested prior to the expiration of an extension.* The Commissioner shall notify the applicant of each extension of the time for filing opposition. [An unverified opposition may be filed by a duly authorized attorney, but such opposition shall be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.] An opposition may be amended under such conditions as may be prescribed by the Commissioner.

Sec. 14. A [verified] petition to cancel a registration of a mark, stating the grounds relied upon, may, upon payment of the prescribed fee, be filed by any person who believes that he is or will be damaged by the registration of a mark on the principal register established by this Act, or under the Act of March 3, 1881, or the Act of February 20, 1905—

(a) within five years from the date of the registration of the mark under this Act; or

(b) within five years from the date of publication under section 12(c) hereof of a mark registered under the Act of March 3, 1881, or the Act of February 20, 1905; or

(c) at any time if the registered mark becomes the common descriptive name of an article or substance, or has been abandoned, or its registration was obtained fraudulently or contrary to the provisions of section 4 or of subsections (a), (b), or (c) of section 2 of this Act for a registration hereunder, or contrary to similar prohibitory provisions of said prior Acts for a registration thereunder, or if the registered mark is being used by, or with the permission of, the registrant so as to misrepresent the source of the goods or services in connection with which the mark is used; or

(d) at any time if the mark is registered under the Act of March 3, 1881, or the Act of February 20, 1905, and has not been published under the provisions of subsection (c) of section 12 of this Act; or

(e) at any time in the case of a certification mark on the ground that the registrant (1) does not control, or is not able legitimately to exercise control over, the use of such mark, or (2) engages in the production or marketing of any goods or services to which the certification mark is applied, or (3) permits the use of the certification mark for purposes other than to certify, or (4) discriminately refuses to certify or to continue to certify the goods or services of any person who maintains the standards or conditions which such mark certifies:

Provided, That the Federal Trade Commission may apply to cancel on the grounds specified in subsections (c) and (e) of this section any mark registered on the principal register established by this Act, and the prescribed fee shall not be required.

Sec. 15. Incontestability under certain conditions of right to use mark

Except on a ground for which application to cancel may be filed at any time under subsections (c) and (e) of section 14 of this Act, and except to the extent, if any, to which the use of a mark registered on the principal register infringes a valid right acquired under the law of any State or Territory by use of a mark or trade name continuing from a date prior to the date of [the publication] *registration* under this Act of such registered mark, the right of the registrant to use such registered mark in commerce for the goods or services on or in connection with which such registered mark has been in continuous use for 5 consecutive years subsequent to the date of such registration and is still in use in commerce, shall be incontestable: *Provided,* That—

(1) there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register; and

(2) there is no proceeding involving said rights pending in the Patent Office or in a court and not finally disposed of; and

(3) an affidavit is filed with the Commissioner within 1 year after the expiration of any such 5-year period setting forth those goods or services stated in the registration on or in connection with which such mark has been in continuous use for such 5 consecutive years and is still in use in commerce, and the other matters specified in subsections (1) and (2) hereof; and

(4) no incontestable right shall be acquired in a mark which is the common descriptive name of any article or substance, patented or otherwise.

Subject to the conditions above specified in this section, the incontestable right with reference to a mark registered under this Act shall apply to a mark registered under the Act of March 3, 1881, or the Act of February 20, 1905, upon the filing of the required affidavit with the Commissioner within 1 year after the expiration of any period of 5 consecutive years after the date of publication of a mark under the provisions of subsection (c) of section 12 of this Act.

The Commissioner shall notify any registrant who files the above-prescribed affadavit of the filing thereof.

Sec. 16. Interference

[Whenever application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive, the Commissioner may declare that an interference exists.] *Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.* No interference shall be declared between an application and the registration of a mark the right to use of which has become incontestable.

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§ 31. Fees

(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. [Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.] However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.

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DEPARTMENT OF COMMERCE

(48) **Patent and Trademark Office**

37 CFR Part 1

Rules of Practice in Patent Cases; Reexamination Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending its rules of practice in patent cases to provide procedures for the reexamination of patents. Public Law 96–517 amended the patent act to authorize reexamination proceedings as a means for improving the quality of United States patents. The Patent and Trademark Office intends, through this amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office will follow in conducting reexamination proceedings.

Date: Effective date: July 1, 1981.

For Further Information Contract: Mr. R. Franklin Burnett by telephone at [703]557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information: This rule change relates to a procedure for reexamination of patents as provided for in Public Law 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981.

Background

A notice of proposed rulemaking was published in the Federal Register on Jan. 13, 1981 at 46 FR 3162–3175 and in the *Official Gazette* on Feb. 17, 1981 at 1003 O.G. 36–47.

The proposed rulemaking set forth two somewhat distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures were (1) provisions for reexamination of patents as provided for in Pub. L. 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) provisions for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

An oral hearing was held on Apr. 16, 1981. Fifty-nine written letters and statements were submitted. Nineteen persons testified at the oral hearing which resulted in 107 pages of testimony.

Discussion of General Issues Involved

After careful consideration of the comments which have been received, the part of the proposed rulemaking relating to reexamination of patents as set forth in new Chapter 30 which Pub. L. 96–517 added to Title 35 of the United States Code [35 U.S.C. 301–307] is being adopted with certain changes. The remainder of the proposal relating to inter partes protest proceedings is not being adopted.

The comments relating to the proposed rules for inter partes protest proceedings were generally mixed, with a majority of persons and associations submitting comments either opposed to these proposed rules or indicating that adoption of the proposed rules should be delayed or deferred for further study and consideration.

A number of comments were received requesting some further changes to the rules be made. The thrust of some of the suggested changes would be to remove public access to reissue applications and to limit public participation in the examination of reissue applications. The changes suggested included restoring the rules in these areas to essentially their pre-1977 form. In particular, it was suggested that §1.175 be amended to eliminate paragraph (a)(4). These changes were not a part of the published proposal and are not being adopted at this time. Their consideration and adoption would require a new notice of proposed rulemaking.

Further, since the subject matter of reissue applications is already known to the public the necessity for maintaining them in confidence is not compelling. The elimination of paragraph (a)(4) of §1.175 would not have a significant effect since less than one-fourth of the currently filed reissue applications are based solely upon the 1977 change to §1.175. Under the present circumstances, it is more appropriate to defer any consideration of such changes until this issue has been reviewed further and possibly until some experience is gained under the rules adopted herein relating to reexamination. Such experience may indicate the desirability of either retaining the 1977 change to §1.175, deleting the 1977 change, or making different changes in the rules.

The comments relating to reexamination were generally favorable with most of the comments indicating general approval of the proposed rules. Among the more often mentioned specific comments were suggestions relating to public notice of reexamination requests and/or orders. A number of comments also related to requester and/or third party participation in the reexamination proceeding and also to the scope of the proceeding.

After careful review of the comments and suggestions it has been decided to adopt the suggestions relating to the publication in the *Official Gazette* of requests for reexamination for which the fee has been paid. In addition, any reexaminations ordered at the initiative of the Commissioner will also be announced in the *Official Gazette.* The announcement will include at least the date of the request or any Commissioner initiated order, a reexamination request or order control number, the patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

The suggestions and comments relating to more participation in the reexamination proceeding by the requester and third parties have been adopted only to a limited degree. The requester will in general have only that participation provided by the rules as proposed. However, any citations under §1.501 by any person will be entered in the patent file up until the date of an order to reexamine. The essentially ex parte nature of the proceeding is believed to be in keeping with the spirit and intent of the statute even though the statute does not require ex parte proceedings. Ex parte proceedings will minimize the costs and other effects of reexamination requests on patentees, especially individuals and small businesses.

The scope of the reexamination proceeding which was originally proposed has been essentially adopted in the final rules. The suggestions that the rules be broadened to include other issues have not been adopted since the other issues would unduly complicate the proceedings, raise the expense of the proceedings and raise questions whether such issues can be considered under Pub. L. 96–517.

Discussion of the Major Specific Issues Involved

The rules relating to reexamination proceedings are directed to the procedures set forth in new Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301–307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings. Present §§1.1, 1.5, 1.11, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1.196, 1.197, 1.231, 1.248, 1.301, and 1.303 are amended to provide for reexamination procedures. A new "Subpart D-Reexamination of Patents" includes new §§ 1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of §1.291, relating to prior art citations in patents, is deleted, since provisions therefor appear in §1.501.

Section 1.1, as amended, provides for communications relating to reexamination proceedings to be marked "Box Reexam" to speed internal Office mail processing.

No comments were received concerning this section. The proposal has been modified to indicate that only requests should be marked "Box Reexam".

Section 1.5, as amended, provides for all letters relating to a reexamination proceeding to be identified by patent number and a reexamination request control number. No comments were received concerning this section. Section 1.5 has been modified to also include reference to the Group Art Unit and the examiner, if known.

Section 1.11, as amended, provides for all papers made of record in reexamination proceedings to be open to inspection and copying by the public. Eighteen comments were received relating to publication of a notice in the *Official Gazette.* A new paragraph (c) has been added which provides for the publication of requests with sufficient fees paid and orders initiated by the Commissioner. Proposed paragraph "c" has been adopted as paragraph "d".

Section 1.33, as amended, has a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed. Four comments were received on this section relating to whom the mail should be addressed. One proposal, which suggested use of the current address of the attorney or agent of record, was adopted.

Section 1.34, as amended, provides for the appointment of an attorney or agent in a reexamination proceeding. Only one comment was received on this section which proposed a rule specifically allowing attorneys to file requests without identifying their clients. Since any person may request reexamination, such a rule is not felt necessary.

Section 1.36, as amended, provides for the revocation and withdrawal of powers of attorney in a reexamination proceeding. No comment was received. Section 1.36 is adopted as proposed with an additional change which added "or her" near the end.

Section 1.104, as amended, broadens the present section to also include reexamination. Three comments were received on §1.104. All comments indicated that the examiner should not make a prior art search. Although no complete new search by the examiner is required, the use of patents and printed publications in addition to those submitted by the requester is clearly indicated in 35 U.S.C. 303(a). According, §1.104 is adopted as proposed.

Section 1.107, as amended, provides for the citation of prior art by the examiner in a reexamination proceeding. The amended rule also refers to foreign published applications, as well as patents. No comments were received on this section. It is adopted as proposed.

Section 1.109, as amended, provides for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims. No comments were received on this section. Except for a clarifying change in language, it is adopted as proposed.

Section 1.111, as amended, provides for replies by the patent owner in a reexamination proceeding. One comment was received which suggested a clarification. The suggestion was adopted. Other non-substantive changes have been made in the proposed section to shorten the sentences for clarity.

Section 1.112, as amended, provides for reexamination and reconsideration of the patent under reexamination after responses by the patent owner. Three comments were received on this section.

The wording has been changed as suggested to avoid any confusion between "reexamination" and "reexamine". The sentences have also been shortened for clarity.

Section 1.113, as amended, provides for a final rejection or action in a reexamination proceeding. One comment was received which pointed out a possible conflict between the amendment rights of section 305 and the final rejection of section 1.113. No problem is seen in this regard because of the provision of section 305 which states that "reexamination will be conducted according to the procedures established for initial examination." The section is adopted as proposed with the last sentence being divided into two sentences for clarity.

Section 1.115, as amended, provides for amendments by the patent owner in a reexamination proceeding. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity.

Section 1.116, as amended, provides for amendments after final action in reexamination proceedings. One comment was received which was the same as that mentioned and responded to in Section 1.113 above. The sentences have been shortened for clarity.

Section 1.121, as amended, contains a new paragraph (f) which requires a complete copy of any new or amended claim when presented during reexamination proceedings. Two persons commented on this section. One proposed side-by-side presentation of amended and original claims. The other proposed that exactly the same procedure be used as is now in effect for amending reissue claims. Neither suggestion was adopted since neither lends itself to printing only the amended claims in a certificate as easily as the procedure set forth in §1.121(f). The proposed section was revised to also provide for the amendment of the description. In addition, the last three sentences of §1.510(e) have been inserted as the last three sentences of §1.121(f) in order to provide a more complete description therein of the manner of making amendments, including the numbering of claims, the restriction on scope of the claims and the prohibition against the introduction of new matter.

Section 1.191, as amended, provides for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306. One comment was received on proposed §1.191 which urged that the requester should also be entitled to appeal. This proposal was not adopted because it is not provided for in the law and could result in harassment if permitted. The section is adopted as proposed except that "primary" contained in the existing rule is retained.

Section 1.192, as amended, provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding. Five comments were received relating to §1.192 which proposed that the period for filing an appeal brief in a reexamination appeal be two months as in other appeals. The proposed rule has been adopted with the suggested two month period. The sentences have been shortened for clarity.

Section 1.196 and §1.197 are being amended to refer to "appellants", which is a term which includes both applicants and patent owners.

These two sections were not published for comment, however, the issues involved were presented in proposed §§1.191 and 1.192. Paragraph (c) of §1.197 has also been rewritten for clarity.

Section 1.231(a)(1), as amended, provides for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Three comments were received concerning §1.231. All comments related to when interference or reexamination proceedings would be suspended. Section 1.565 provides basis for such suspensions. Decisions will be made on a case by case basis, depending on the particular fact situation. The sentences in §1.231(a)(1) have been shortened and rearranged for clarity.

An amendment was proposed to delete the last two sentences of §1.247 relating to proof of service. No comments were received concerning this section but, on reconsideration, no need for such deletion is felt necessary and no change is being adopted.

Section 1.248, as amended, includes a new paragraph (b) relating to methods of serving papers and proof of service. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity and to conform to the Federal Rules of Civil Procedure.

Section 1.291, as amended, deletes paragraph (b). Former paragraph (b) dealt with the citation of prior art provisions. It was deleted since the provisions are now covered by §1.501. Five persons commented on §1.291. One comment relating to filing protests in reexamination proceedings was not adopted since such proceedings are ex parte in nature and are limited to consideration of prior art patents and printed publications cited by the public prior to the order. Two persons mentioned providing a procedure for citation of prior art by patentees. Citation of prior art by patentees is included in §1.501. The two other comments related to the content of protest proceedings, which are not part of this final rule. Section 1.291 is adopted as proposed except that the paragraph designation of (c) is not being changed.

Section 1.301, as amended, provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals. Four comments were received relating to §1.301. One person suggested the insertion of "any" as the fourth word in the section. This suggestion was adopted. The other three comments related to appeals in inter partes protest proceedings which are not a part of this promulgation. Section 1.301 is adopted as proposed with only the above mentioned change.

Section 1.303, as amended, provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings. No comments were received concerning this section. The changes from the proposal are the insertion of "any" as the fourth word in the section as suggested in §1.301 and the addition of, "306" to the title.

New §1.501 provides a system for citation of patents and printed publications to the Patent and Trademark Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. Seventeen persons commented on §1.501. Nine comments indicated that citations should be limited to patents or printed publications. Six comments indicated that persons citing art should be required to apply it to at least one claim. Three persons held the opposite view. The final rule wording provides for citations limited to patents and printed publications where the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The final rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. Four persons stated that a separate letter requesting confidentiality should be required in cases desiring confidentiality. This provision was not considered to be necessary. One comment requested clarification of the term "period of enforceability of a patent." The meaning of this term appears to be clear since it includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286. Five comments were received relating the paragraph (c) concerning service of citations on the patent owner. The wording has been clarified. A suggestion was made that prior art copies and translations of non-English documents be required. This suggestion was not adopted since such documents are not absolutely essential until a request for reexamination has been filed. However, if the person citing the patents or printed publications desires that they be considered in any subsequent reexamination proceedings, copies and any necessary English translation should be included with the citation. A proposal was also made to charge a fee to prevent harassment. This proposal was not adopted since the mere citation of prior art is not considered to constitute harassment. A suggestion was made to change the title of the section. This suggestion was adopted in slightly modified form.

New §1.510 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302. Paragraph (a) of new §1.510 limits the period for such request to the period of enforceability of the patent for which the request is filed and requires payment of the fee for requesting reexamination. Paragraph (b) of new §1.510 indicates what each request for reexamination must include. Paragraph (c) of new §1.510 indicates under which conditions a request for reexamination will be considered. Paragraph (d) of new §1.510 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination. Upon reconsideration of the paragraph as proposed, it was considered more appropriate to base the filing date of the request for reexamination on the receipt of the fee for requesting reexamination rather than include other matters. Proposed paragraph (d) has been amended accordingly and is adopted. Paragraph (e) of new §1.510 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. The paragraph, with changes in wording for clarity, is adopted as proposed. A new paragraph (f) was added to clarify that requests for reexamination may be filed by attorneys or agents on behalf of a requester. Nineteen persons commented on §1.510. One person inquired as to whether confidential requests would be accepted. In response thereto, §1.510 provides that any person may file a request for reexamination. That person's name will not be maintained in confidence. One suggestion was made to permit comment and rebuttal before the decision under §1.515. No need for such a procedure is seen since the only question to be considered is whether or not a substantial new question of patentability has been raised. An opportunity for comment and rebuttal is provided after the issuance of the order. One comment was received which desired provision for supplemental requests at a reduced fee. This proposal was not adopted since it is felt that all requesters should share equally in the cost. One comment was received which proposed that duplicate copies of the request be filed in the Office so that one copy would be available for public inspection at all times. This proposal was not adopted since it would appear to create more problems than it would solve. One comment was received that only "readily available" translations should be required. It is felt that if a document is considered to be sufficiently pertinent to request reexamination, that an English translation should be provided to insure complete and proper consideration. A suggestion was made relating to paragraph (b)(5) that direct service be limited to registered patent attorneys. No need for such a restriction is seen. Various other comments relating to procedures were considered but were not adopted.

New §1.515 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303. Paragraph (a) of new §1.515 requires that the determination be made within 3 months of the filing date of the request. Paragraph (b) of new §1.515 refers to the refund provisions. Paragraph (c) of new §1.515 provides for review by petition to the Commissioner of any decision refusing reexamination. Seven persons commented on §1.515. Several comments were received suggesting that the term "reexamination" should be dropped before "examiner". This proposal was adopted. Several persons requested that all art cited in the patent file at the time of the order under §1.525 be considered when deciding whether a substantial new question of patentability is presented in the request. This is possible under the provision of §1.515(a) which permits "consideration of other patents or printed publications", but is not required insofar as prior art not relied upon in the request is concerned. One person suggested that "is" be changed to-affirms-in paragraph (c). This proposal has been adopted. One commentor questioned whether a right to review was available under paragraph (c) if reexamination was ordered. No right to review exists in such a case because all claims will be reviewed in view of all prior art during the reexamination under §1.550.

New §1.520 provides for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303. Six persons commented on §1.520. One comment was received that indicated that the section did not include a reference to patents "discovered by the Commissioner" which is contained in 35 U.S.C. 303(a). This phrase has been added to the rule. A request was made that the sentence "Normally requests from outside-will not be considered." be deleted from the rule. The sentence is being retained since the rule wording provides an easy reference for Office policy. Two comments were received that indicated a desire to have any decisions not to reexamine in Commissioner initiated situations be made part of the patent file. This proposal was not adopted since the basis for not reexamining may involve many policy issues in addition to whether a substantial new question of patentability exists in the case. If all papers in such a case would be made part of a file, it may lead to conclusions that there are no new questions of patentability when this question may not have been addressed because the reexamination was not ordered for other reasons such as little or no interest in a patent about to expire. One comment stated that the section safeguards the rights of the patentee. The language referring to the designation and delegation of authority to appropriate Patent and Trademark Office officials is deleted as unnecessary since the Commissioner's authority to designate and delegate is implicit and understood.

New §1.525 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§1.515 or 1.520. Six comments were received relating to §1.525. One comment was made that the attorney should be able to return notices to the sender if he is unable to contact the patent owner. This topic has not been added to the rules but will be handled on a case by case basis. One comment requested that the patent owner have the option to request that the reexamination be performed by an examiner (1) other than the original examiner, or (2) other than the examiner who issued the order. Comments were also received on both sides of the question as to whether the original examiner should conduct the reexamination. In response, it would appear to be inappropriate to allow an interested party to select the examiner. Under the section, the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination. Paragraph (b) has been changed to provide that the notices published in the *Official Gazette* will be considered to be constructive notice.

New §1.530 relates to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under §1.570 and 35 U.S.C. 307 is issued. Nine comments were received on §1.530. Several persons felt that the patent owner should be allowed to comment before the decision under §1.515 is made. Providing for such a comment would delay the decision under §1.515 which must be made within three months following the filing date of the request. Further, no need is seen for a statement relating to whether a new question of patentability is present since the patent owner has the opportunity to address any issues of patentability only after the first Office action. One comment questioned whether paragraph (d) also related to the description. This paragraph has been amended to clarify the matter. One person questioned whether an amendment could be filed with a statement. Paragraph (b) clearly answers this question in the affirmative. Several comments requested more time than two months for the patent owner to file a statement. In reply, the law in section 304 indicates that a reasonable period of not less than two months be provided for the patent owner's statement. If the period is too short in particular situations, extensions of time can be requested. It is felt that two months should be retained in the rule in view of the "Special Dispatch" required in reexamination cases. The proposed second sentence of paragraph (b) has not been adopted since §1.525(b) now provides for the publication of notices of the filing of all requests which are accompanied by the proper fee.

New §1.535 provides for reply by the reexamination requester to the statement under §1.530 of the patent owner and for service on the patent owner of any such reply. The last sentence of proposed §1.540 has been added as the last sentence of §1.535. Five persons commented on §1.535. Four persons indicated that the requester should be given additional opportunity to comment. The reasons for the limited participation are that it is all that is required under the law, it prevents to a great degree, harassment of a patent owner, it results in a less expensive proceeding for all parties, and it results in an earlier conclusion of the proceedings.

New §1.540 relates to the consideration of statements under §1.530 and replies under §1.535. One comment was received that the phrase "may result in their being refused" was worded too loosely. In the absence of any specific suggestion, the proposed wording is considered to be adequate and is adopted as proposed. In addition, it is appropriate that the Office retain discretion as to consideration in such cases.

New §1.550 covers the basic items relating to the conduct of reexamination proceedings. These proceedings basically follow the same procedures used for examining patent applications. The patent owner will be required to serve the reexamination requester with any response by the patent owner to the Office, in order to remove the necessity of the requester having to continuously monitor the file wrapper. Fourteen persons commented on §1.550.

Several persons commented that they felt that at least some input by third parties should be permitted. Paragraph (e) has been revised to permit third party input up until the time of the order. Several comments were received that the periods for response should be extended to be similar to those in regular application Office actions. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch." A question was raised as to the effect of failure to respond to an Office action. Paragraph (d) has been amended to clarify this matter.

New §1.552 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination as to original patent claims is only on the basis of patents or printed publications. However, narrowed amended claims or new claims limited to the original disclosure will also be examined for compliance with other sections of the statute (35 U.S.C. 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter. New §1.552 also provides that questions relating to matters other than those identified in paragraphs (a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved. Ten persons commented on §1.552. Several persons commented that the question of fraud should be considered in reexamination proceedings. Comments were also received that the proceedings should be limited to patents and printed publications. The rules have been written to follow the statute which speaks only to reexamination based on patents and printed publications. Mixed comments were also received concerning the retention of the second sentence of paragraph (c). The paragraph is being adopted as proposed with the addition of a reference to the fact that the examiner will note the existence of unresolved questions in an Office action. In addition, the phrase "raised or" has been deleted from paragraph (c) as unnecessary.

New §1.555 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent. Nine persons commented on §1.555. Four persons supported placing a duty of disclosure on the patent owner. One comment was received that an oath or declaration be required of the patent owner in a reexamination so as to minimize the appearance and occurrence of any fraudulent acts and to emphasize the patentee's obligation of candor. While the suggestion for an oath or declaration has not been adopted, §1.555 does place an obligation of candor on the patent owner insofar as bringing patents or printed publications to the attention of the Office is concerned. The necessity for an oath or declaration in addition to the obligation placed on the patent owner by §1.555 is not apparent at this time. Accordingly, the suggestion has not been adopted. Two persons felt the duty of disclosure should apply to both the patent owner and requester. This proposal was not adopted since no sanction could be easily applied against the requester who violated such a rule. One person suggested broadening the duty requirements to include information in addition to patents and printed publications. Although such a practice may be desirable, no need is seen to require information under the reexamination rules which cannot be used during the reexamination. One person felt that there should be no duty of disclosure requirement in reexamination proceedings since the Office will be considering specific prior art and the presence or absence of other prior art does not seem terribly relevant. This suggestion was not adopted since the issue of patentability is not limited to the specific prior art presented and the duty to disclose is consistent with current practice under §1.56. The section is adopted as proposed except for the indication that prior art statements should be filed in accordance with §1.98. Also, the section has been divided into two sentences for clarity.

New §1.560 relates to the conduct of interviews in reexamination proceedings. Seven comments were received directed to §1.560. One comment requested elimination of interviews. This suggestion was not adopted since interviews have been found to be very helpful in resolving issues. Five comments were received which indicated that the requester should be permitted to attend all interviews. This suggestion was not adopted because of the otherwise ex parte nature of the examination. Two comments were received which indicated that interviews should be permitted before the first Office action. This suggestion was not adopted since such interviews would be held at a time when the Office has not yet taken a position on the allowability of the claims under reexamination. Section 1.560 is adopted as proposed.

New §1.565 provides for the Commissioner to determine which, if any, proceedings should be stayed, consolidated, or suspended, if concurrent proceedings involving the patent under reexamination are instituted or in progress. Four comments were received concerning §1.565. One comment pointed out the desirability of combining copending reexamination proceedings. This concept has been accepted and a new paragraph (c) has been added to cover this matter. Two comments voiced concern over the possibility of delay resulting from stayed, suspended or combined cases. Although some delay may result, it is felt that a resolution of all issues should occur at an earlier date. Decisions as to whether to delay or combine cases will be made on a case by case basis to minimize delays and to protect the interests of all parties concerned. One comment was made to allow the patent owner to comment prior to any decision to stay proceedings by the Commissioner. The desirability of such comment will be decided on a case by case basis and is not considered desirable for placement in the rules. The addition of paragraph (c) and the insertion of "is or" before "becomes" in the first sentence of paragraph (b) are the only changes from the proposed rule.

New §1.570 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Three commentors mentioned §1.570. Two persons questioned the statutory authority for paragraph (d). In response to the concern for statutory authority, it is the position of the Office that once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. One commentor indicated that copies of the certificate should be part of subsequently sold copies of the patent. Such a practice is intended but is not being made part of the regulations.

Environmental, energy, and other consideration: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

[Text of adopted rules appears in 37 CFR. revised July 1, 1982.]

RENE D. TEGTMEYER,
May 12, 1981. *Acting Commissioner of Patents and Trademarks.*

ROBERT B. ELLERT,
May 15, 1981. *Acting Assistant Secretary for Productivity, Technology, and Innovation.*

[FR Doc. 81-16031 Filed 5-26-81; 8:45 am]

[1007 O.G. 30]

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(49)

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 & 5
[Docket No. 21001-202]
Revision of Patent Procedure

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part 1 of 37 CFR, to implement the sections of Public Law 97-247 of 1982 which become effective on Feb. 27, 1983, and to make other miscellaneous changes. The other miscellaneous changes are being made to clarify and improve the rules where appropriate. The rulemaking also proposes to amend Part 5 of 37 CFR to establish procedures expediting the granting of a license under 35 U.S.C. 184 permitting filing of a patent application in a foreign country and to indicate on the application filing receipt if such a license is granted. This action is necessary at this time in order that final rules may be adopted prior to Feb. 27, 1983, the effective date of the sections of Public Law 97-247 which this proposal seeks to implement.

DATES: Comments must be submitted on or before Dec. 16, 1982; a public hearing will be held Dec. 16, 1982, 9:30 a.m.; requests to present oral testimony should be received on or before Dec. 9, 1982.

ADDRESSES: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Hwy., Arlington, Va. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza at 2021 Jefferson Davis Hwy., Arlington, Va.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed primarily to 1) implement the changes in practice in the Patent and Trademark Office provided for in Public Law 97-247 enacted on Aug. 27, 1982; 2) correct, or clarify or rewrite certain rules; and 3) to expedite the granting of licenses under 35 U.S.C. 184.

This proposal contains a number of changes in practice designed to benefit both the Office in its handling of its mission and the public the Office serves. Certain of the proposed changes are more or less housekeeping in nature.

A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19-94. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134-40140. A "Revision of Patent and Trademark Fees Confirmation" was published on Sept. 17, 1982 at 47 FR 41272-41283 upon enactment of H.R. 6260 as Public Law 97-247 on Aug. 27, 1982. A final rule relating to the definition of "small business concern" was published on Sept. 30, 1982 at 47 FR 43272-43276.

DISCUSSION OF SPECIFIC RULES: Section 1.4, if amended as proposed, would add a reference to Subpart D relating to citation of prior art and reexamination.

Section 1.6, if amended as proposed, would insert "federal" before "holidays" in paragraphs 1.6(a)-(c) in accordance with §21(b) of Title 35, United States Code, as amended by Public Law 97-247. Proposed new paragraph 1.6(d) would establish in the regulations a procedure under which papers and fees which could not be filed on a particular date because of an interruption or emergency in the United States Postal Service which is so designated by the Commissioner, may be promptly filed after the ending of such a designated interruption or emergency and be considered as having been filed on that particular date. Authority for such a practice is found in §21(a) of Title 35, United States Code, as amended by Public Law 97-247.

Section 1.7, if amended as proposed, would insert "federal" before "holiday" in accordance with 35 U.S.C. 21(b), as amended by Public Law 97-247.

Section 1.8, if amended as proposed, would delete in paragraph 1.8(a) the references to §§3.55 and 4.23, which sections were deleted from the rules by the rulemaking entitled "Revision of Patent and Trademark Fees" published in the Federal Register on Sept. 10, 1982 at 47 Fed. Reg. 40134-40140. The proposed change in paragraph 1.8 (a) (i) results from the change made in §111 of Title 35, United States Code, by Public Law 97-247. Under the proposal, the certificate of mailing procedure would be available for filing oaths or declarations and filing fees. However, the certificate of mailing procedure could not be used for filing specifications and drawings to obtain a filing date. Such papers could be filed under proposed §1.10. The proposed change in paragraph 1.8(a) (viii) would recognize the establishment of the Court of Appeals for the Federal Circuit.

Section 1.10, if added as proposed, would provide a procedure for assigning the date on which any paper or fee is deposited as Express Mail with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Authority for the Commissioner to establish such a procedure is provided in §21(a) of Title 35, United States Code, as amended by Public Law 97-247. The proposed procedure, in paragraph 1.10(a), would require the use of the "Express Mail Post Office to Addressee Service" of the United States Postal Service. This service provides for the use of a mailing label which clearly indicates the date on which it was deposited. Proposed paragraph 1.10(b) would require (1) that the number of the Express Mail mailing label be placed on each paper or fee and (2) that a certificate of express mailing, signed by the person mailing the paper or fee, accompany the paper or fee and state the date of deposit as Express Mail in the United States Postal Service. Under proposed paragraph 1.10(c), the Office would accord the paper or fee the certificate date as the filing date without further proof if the paper or fee is received in the Office on the first day the Office receives papers or fees following the certificate date. Since Express Mail provides for one day delivery, the certificate plus timely receipt one day later is considered sufficient evidence to establish the deposit date. If, however, more than one day has elapsed between the certificate date and the Office receipt date, paragraph 1.10(c) provides that the person mailing the paper or fee may be required to file (1) a copy of the Express Mail receipt showing the actual date of mailing and (2) an affidavit or declaration from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. The certificate of mailing procedure of §1.8(a) would continue to be available in addition to the proposed procedure under § 1.10.

Section 1.17, paragraph (h), if amended as proposed, would delete the reference to §1.45 and add a reference to proposed §1.48 relating to the correction of inventorship in patent applications.

Section 1.22 as it currently exists is proposed to be labeled as paragraph (a) and is proposed to be amended to recognize that filing dates may be assigned without payment of the basic filing fee as authorized by §111 of Title 35, United States Code, as amended by Public Law 97-247. Proposed new paragraph 1.22(b) would indicate that fees paid to the Office should be itemized in such a manner that the purpose for which the payment is submitted can be clearly determined by Office personnel for proper processing.

Section 1.24, if amended as proposed, would delete the reference to coupons in denominations of forty cents since coupons in this denomination are no longer necessary.

Section 1.41, if amended as proposed, would require in paragraph 1.41(a) that a patent be applied for in the name of the actual inventor or inventors and the full names of the inventors be stated. Paragraph 1.41(b), as proposed to be amended, clarifies the definition of the word "applicant". Proposed new paragraph 1.41(c) permits any person authorized by the applicant to file an application for patent in order to receive a filing date on behalf of the inventor or inventors, but the oath or declaration for the application must be made by all of the actual inventors in accordance with proposed §§1.63 and 1.64. Under proposed new paragraph 1.41(d), a showing may be required from the person initially filing an application that the filing was authorized.

Sections 1.42 and 1.43, if amended as proposed, would remove the requirement that the legal representative sign the application papers in view of the proposed changes pursuant to 35 U.S.C. 111 as amended by Public Law 97-247. The oath or declaration must still be signed. Several occurrences of the masculine gender in §1.42 are also proposed to be deleted.

Section 1.45, if amended as proposed, would delete present paragraphs 1.45(b) and (c) in view of proposed new §1.48 and remove the requirement that joint inventors sign the application papers. The joint inventors would, however, still be required to make the oath or declaration in accordance with proposed new §§1.63 and 1.64.

Section 1.46, if amended as proposed, would permit anyone to file the application if authorized by the inventor or inventors or one of the persons mentioned in §§1.42, 1.43, or 1.47.

Section 1.47, if amended as proposed, would change the reference for the rule on oaths or declarations from §1.65 to proposed §1.63.

Section 1.48, if added as proposed, would add a new section relating to correction of inventorship as authorized by §116 of Title 35, United States Code, as amended by Public Law 97-247. Under proposed §1.48, if the correct inventor or inventors are not named in an application for patent, the application could be amended to name only the actual inventor or inventors so long as the error in the naming of the inventor or inventors occurred without any deceptive intention. Proposed §1.48 would require that the amendment be diligently made and be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee. Correction would be permitted in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Office would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to different, but actual, joint inventors; conversions from erroneously identified joint inventors to different but actual, joint inventors; and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Office would have to be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

Section 1.51, if amended as proposed, would change the reference in paragraph (a) (2) to new §1.63 for the requirements of an oath or declaration and would change paragraph (b) with regard to the required time for filing material information disclosure statements.

Section 1.52, if amended as proposed, would revise paragraph 1.52(c) relating to interlineations, erasures, cancellations or other alterations in application papers to specify that such changes must be made before the signing of any accompanying oath or declaration and should be dated and initialed or signed by the applicant on the same sheet of paper. Paragraph 1.52 (c), as proposed to be amended, would prohibit making alterations in the application papers after the signing of an oath or declaration referring to such application papers. Under paragraph 1.52 (c), as proposed to be amended, amendments to application papers made after the signing of an oath or declaration referring to the application papers, could only be made in the manner provided by §§1.121 and 1.123-1.125.

Section 1.53, if amended as proposed, would revise the title to indicate that the section, as amended, would relate to application serial numbers, filing dates and completion of applications. Paragraph 1.53(a) as proposed, would indicate that a serial number is assigned to any application received for identification purposes, even if the application is incomplete or informal. Paragraph 1.53(b), as proposed, would provide that a filing date would be assigned an application as of the date a specification containing a description and claim and any required drawing are received in the Patent and Trademark Office. Although the filing fee and oath or declaration could be submitted later, no amendments could be made to the specification or drawings which would introduce new matter. This practice is authorized by 35 U.S.C. 111 as amended by Public Law 97-247. Proposed new paragraph 1.53(c) would provide for notifying applicant of any application incomplete because the specification or drawing is missing and giving the applicant a time period to correct any omission. If the omission is not corrected within the time period given, the application would be returned or otherwise disposed of and a handling fee of $50.00 would be retained from any refund of a filing fee. Proposed new paragraph 1.53(d) would provide that, where a filing date has been assigned to a filed specification and drawing, the applicant will be notified and be given a period of time in which to file the missing fee, oath or declaration and to pay the surcharge due. Proposed new paragraph 1.53(e) would indicate that a patent application would not be forwarded for examination on the merits until all required parts had been received. Proposed new paragraph 1.53(f) indicates that international applications filed under the Patent Cooperation Treaty which designate the United States of America are considered to have a United States filing date, except as provided in 35 U.S.C. 102(e), on the date the requirements of PCT Article 11(1) (i) to (iii) are met.

Section 1.54, if amended as proposed, would designate the existing section as paragraph (a) and add a reference to §1.53. Paragraph 1.54(b) is proposed to be added to indicate that applicant will be informed of the serial number and filing date of the application.

Section 1.55, if amended as proposed, would limit the section to claims for foreign priority by deleting paragraphs (a) and (d) and redesignating paragraphs (b) and (c) as paragraphs (a) and (b). Paragraph 1.55(a), as proposed, would change the reference from §1.65 to proposed §1.63.

Section 1.56, if amended as proposed, would revise paragraph (c) to delete reference to signing of the application but would add reference to signing of the oath or declaration pursuant to proposed §1.63. Under paragraph 1.56(c), as proposed to be amended, an application may be stricken from the files if an oath or declaration pursuant to proposed §1.63 is signed in blank, or without actual inspection of the application papers, or without the review of the specification indicated in proposed §1.63(b). Paragraph 1.56(c), as proposed to be amended, would also provide for an application to be stricken from the files if application papers filed in the Office are altered after the signing of an oath or declaration pursuant to proposed §1.63 referring to those application papers.

Section 1.57 is proposed to be deleted since the requirements relating to applicant's signature to the oath or declaration of the application are adequately covered in other sections.

Section 1.59, if amended as proposed, would be rewritten to refer to and conform with the changes proposed in §1.53.

Section 1.60, if amended as proposed, would require the applicant to supply a verified copy of the originally signed application in all cases where the §1.60 filing procedure is used. The Office would no longer prepare copies without charge under the proposal. The Office, by a separate final rule, is adopting a new §1.62 to provide for the filing of a file wrapper continuing application which will eliminate the need for the office to continue to prepare copies under §1.60.

Section 1.63, if added as proposed, would add a section replacing current §1.65 relating to the required content and execution of an oath or declaration filed as a part of a patent application. Proposed paragraph 1.63(a) provides that the oath or declaration, (1) be executed in accordance with §1.66 or §1.68, (2) identify the specification to which it is directed in some definite manner such as giving the title of the invention or serial number of the application, if previously filed, (3) identify each inventor and his or her residence and country of citizenship, and (4) state whether the inventor is a sole or joint inventor of the claimed invention. Proposed paragraph 1.63(b) would further require the oath or declaration to state that the person signing the oath or declaration (1) has reviewed and understands the contents of the identified specification, (2) believes the named inventor is the original and first inventor, and (3) acknowledges the duty to disclose information which is material. Proposed paragraph (c) would require that any application in which a claim for foreign priority is made identify in the oath or declaration the first filed foreign application. Proposed paragraph 1.63(d) would require that the oath or declaration in a continuation-in-part application, which discloses and claims subject matter in addition to that disclosed in the prior copending application, state that the person making the oath or declaration acknowledges the duty to disclose material information (including any foreign patenting, publication, or public use or sale in the United States of the subject matter of the prior application which occurred more than one year prior to the filing date of the continuation-in-part application).

Section 1.64 is proposed to be added to clearly indicate who must sign the oath or declaration of a patent application.

Section 1.65 is proposed to be deleted because the oath or declaration requirements set forth therein are covered by proposed §1.63.

Section 1.67, if amended as proposed, would delete all of present paragraphs (a) and (b) and substitute therefor new wording. Proposed paragraph 1.67 (a) would indicate that a supplemental oath or declaration meeting the requirements of proposed §1.63 may be required to correct deficiencies or inaccuracies present in an earlier oath or declaration. Proposed paragraph 1.67(b) would require a supplemental oath or declaration to be filed (1) when a claim is presented embracing material not originally claimed and (2) when a subsequently filed oath or declaration under proposed §1.53(d) refers to an amendment which includes improper new matter. Proposed paragraph 1.67(b) would also clearly state the prohibition against entry of new matter after the filing date of the application.

Section 1.69, paragraph (b), if amended as proposed, would change the time at which a translation of a non-English language oath or declaration which has not been supplied by the office must be filed. The current time period of two months after the filing date would be changed to two months after notification that a translation is required. The reference to §1.65 in paragraph 1.69(b), as proposed to be amended, would be changed to proposed §1.63.

Section 1.70, if amended as proposed, would merely refer to proposed §1.63 for the requirements to be met when an oath or declaration is filed under 35 U.S.C. 371(c) (4).

Section 1.77, if amended as proposed, would change paragraphs (h) and (i) to refer to the abstract of the disclosure and signed oath or declaration, respectively.

Section 1.97, if amended as proposed, would change the title from "prior art statement" to "material information disclosure statement". This proposed change is appropriate since the designation "material information disclosure statement" more accurately characterizes the nature and content of the information required to be disclosed to the Patent and Trademark Office pursuant to §1.56. Section 1.97, if amended as proposed, would also provide additional time for filing a material information disclosure statement if the filing receipt has not been received within three months of the filing date. If the filing receipt is not received within three months of the filing date, the disclosure statement should be submitted within two months after receiving the filing receipt.

Section 1.98, if amended as proposed, would indicate that material information disclosure statements should list prior art with all of the information which is required to print such citations on the front page of a patent.

Section 1.99, if amended as proposed, would change the title to be consistent with the proposed amendment to §1.97.

Section 1.101, if amended as proposed, would specifically indicate that applications which are to have their examination advanced pursuant to §1.102 will be taken up for examination out of order by the examiner.

Section 1.118, if amended as proposed, would designate the existing section as paragraph (a) and amend it to clearly state that no new matter may be introduced into an application and to make specific reference to proposed §§1.53, 1.63 and 1.67. Proposed new paragraph 1.118(b) would indicate how improper amendments which introduce new matter in the specification or claims will be handled by the examiner.

Section 1.123, if amended as proposed, would require all corrections to drawings to be made by bonded draftsmen at applicant's expense since the Office does not have sufficient draftsmen to make such corrections. Sketches of any desired corrections would, however, still require approval of the examiner.

Section 1.125, if amended as proposed, would relax the prohibition against substitute specifications which are not required by the examiner. The proposed section would, however, add the requirement that any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Under the proposed section the statement must be a verified statement if made by a person not registered to practice before the Office.

Section 1.131, if amended as proposed, would specifically refer to the use of affidavits or declarations under the section during reexamination of a patent. Under the section as proposed to be amended, the same person or persons who would make the affidavit or declaration in an application would be required to make the affidavit or declaration on behalf of the owner of the patent under reexamination.

Section 1.132, if amended as proposed, would specifically refer to the use of affidavits or declarations under the section during reexamination of a patent.

Section 1.137, if amended as proposed in paragraph (b), would except from the provisions of paragraph (b) those applications abandoned pursuant to proposed §1.53(d) because the fee, oath, or declaration and the surcharge were not submitted. Section 111 of Title 35, United States Code, as amended by Public Law 97-247, requires that any delay in submission of the fee and oath be shown to be unavoidable. Thus, paragraph (b) of §1.137 is inapplicable to the revival of applications which become abandoned pursuant to proposed §1.53(d).

Section 1.141, if amended as proposed, would revise the rule to more clearly define what inventions are considered to be separate inventions for purposes of requiring restriction. The changes would provide in the rules the criteria which has been used in the past and is currently being used to determine if claims to different categories of invention (i.e., product, process, method of making, method of use) are directed to a single inventive concept.

Section 1.153, if amended as proposed, would change the reference for oath and declaration requirements from §1.65 to proposed §1.63.

Section 1.154, if amended as proposed, would revise paragraph (e) to refer to the signed oath or declaration requirements of §1.153(b).

Section 1.162, if amended as proposed, would change the reference from current §1.65 to proposed §1.63.

Section 1.163, if amended as proposed, would change the wording of the section to clearly indicate that a signed oath or declaration is required rather than a signed specification.

Section 1.172, if amended as proposed, would clearly indicate that the reissue oath is signed and sworn to rather than the reissue application.

Section 1.174, if amended as proposed, would remove the requirement that photoprints of original drawings be securely mounted or pasted on sheets of drawing board because paper drawings are acceptable.

Section 1.175, if amended as proposed, would change the reference to the oath or declaration from §1.65 to proposed §1.63.

Sections 1.301, 1.302 and 1.303, if amended as proposed, would refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.324, if amended as proposed, would include wording similar to that in proposed §1.48 for correction of inventorship in applications.

Section 1.325, if amended as proposed, would include reference to the reexamination procedure.

Section 1.335, if added as proposed, would provide a new section relating to the filing in the Patent and Trademark Office of notices of arbitration awards. Such filing is required under §294 of Title 35, United States Code, as added by Public Law 97-247.

Section 1.565, if amended as proposed, would add a paragraph (e) indicating that a patent owner who has a claim rejected on a United States patent which claims the same invention must file a reissue application, if appropriate, in order to seek an interference pursuant to §1.205. The rejection cannot be overcome by an affidavit or declaration pursuant to §1.131. Proposed paragraph 1.565(e) also provides that the failure or refusal of the patent owner to file a reissue application in such circumstances shall be taken as a disclaimer of the invention covered by the claim under rejection and will result in cancellation of the claim in the reexamination certificate issued pursuant to 35 U.S.C. 307 and §1.570.

Section 5.12, if amended as proposed, would separate the section into two paragraphs. Proposed paragraph (a) would provide that the filing of an application for an invention made in the United States would be considered to include a petition for a license for foreign filing. If a license is granted, it will be indicated on the filing receipt. If it is not granted, no indication of the denial will appear. Failure to grant a license should be considered a denial of a first petition for a license. A subsequent petition may be filed under §5.12(b). Section 5.12(b) is essentially the text of §5.12 in its present form. No rights to file a petition for license are being removed.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act. (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 96-517 and 97-247 have both taken into consideration the impact they may have on small entities. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 5 Administrative practice and procedure, Courts, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

It is proposed to amend 37 CFR, Parts 1 and 5, as follows with deletions indicated by brackets and additions by arrows.

1. Section 1.4 is proposed to be amended by revising paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises: (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.352; of international applications in Subpart C, §§1.401 to 1.482; of reexamination of patents in Subpart D, §§1.501 to 1.570; and of [Trademark] trademark applications §§2.11 to 2.189.

* * * * *

2. Section 1.6 is proposed to be revised to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

(b) Mail placed in the Patent and Trademark Office pouch up to midnight on weekdays, excepting Saturdays and federal holidays, by the post office at Washington, D.C., serving the Patent and Trademark Office is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch.

(c) In addition to being mailed or delivered by hand during office hours, letters and other papers may be deposited up to midnight in a box provided at the guard's desk at the lobby of building 3 of the Patent and Trademark Office at Crystal Plaza, Arlington, Va. and at the main entrance (14th Street) of the Department of Commerce Building, Washington, D.C., on weekdays except Saturdays and federal holidays, and all papers deposited therein are considered as received in the Patent and Trademark Office on the day of deposit.

(d) If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any paper or fee which is (1) promptly filed after the ending of the designated interruption or emergency and (2) accompanied by a statement indicating that such paper or fee would have been filed on that particular date if it were not for the designated interruption or emergency in the Postal Service. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

3. Section 1.7 is proposed to be revised to read as follows:

§1.7 Times for taking action: Expiration on Saturday, Sunday or federal holiday.

Whenever periods of time are specified in this part in days, calendar days are intended. When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the Patent and Trademark Office falls on Saturday, Sunday, or on a federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding day which is not a Saturday, Sunday, or a federal holiday. See §1.304 for time for appeal or for commencing civil action.

4. Section 1.8 is proposed to be amended by revising paragraph (a) to read as follows:

§1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and

fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if : (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they are accompanied by a certificate stating the date of deposit [(see forms, §§3.55 and 4.23)]. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated [, the] . The actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(i) The filing of a national application specification and drawing or other papers for the purpose of obtaining an application filing date; [applications for patents;]

* * * * *

(viii) The filing of a notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or section 21(a) (1) of the Trademark Act, 15 U.S.C. 1071(a) (1), in response to another party's appeal to the Court of Appeals for the Federal Circuit [Court of Customs and Patent Appeals];

* * * * *

5. A new section 1.10 is proposed to be added to read as follows:

§1.10 Filing of papers and fees by Express Mail with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the Express Mail Post Office to Addressee Service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as Express Mail with the United States Postal Service.

(b) Any paper or fee filed by Express Mail must have the number of the Express Mail mailing label placed thereon prior to mailing, be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and must be accompanied by a certificate of express mailing which states the date of express mailing and is signed by the person mailing the paper or fee.

(c) The Office will accept the certificate of express mailing and accord the paper or fee the certificate date under 35 U.S.C. 21(a) without further proof of the date on which the express mailing occurred if the paper or fee is received in the Office on the first day the Office receives papers or fees following the certificate date. If more than one day has elapsed between the certificate date and the Office receipt date the person mailing the paper or fee may be required to file a copy of the Express Mail receipt showing the actual date of mailing and an affidavit or declaration from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified.

6. Section 1.17 is proposed to be amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph—$120.00

[—§1.45—for correction of inventorship]
—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182—for decision on questions not specifically provided for
—§1.183—to suspend the rules
—§1.268—for late filing of interference settlement agreement

* * * * *

7. Section 1.22 is proposed to be revised to read as follows:

§1.22 Fees payable in advance.

(a) Fees and charges payable to the Patent and Trademark Office are required to be paid in advance, that is, at the time of [making application for] requesting any action by the Office for which a fee or charge is payable with the exception that under §1.53 applications for patent may be assigned a filing date without payment of the basic filing fee .

(b) All fees paid to the Patent and Trademark Office should be itemized in each individual application, patent or other proceeding in such a manner that it is clear for which purpose the fees are paid.

8. Section 1.24 is proposed to be revised to read as follows:

§1.24 Coupons.

Coupons in denominations of [forty cents and] one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. [The 40-cent coupons are sold individually and in books of 50 with stubs for record for $20.] The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

9. Section 1.41 is proposed to be revised to read as follows:

§1.41 Applicant for patent.

(a) A patent must be applied for in the name of the actual inventor or inventors. Full names must be stated, including the family name and at least one given name without abbreviation together with any other given name or initial. [and the application papers must be signed and the necessary oath or declaration executed by the actual inventor in all cases, except as provided by §§1.42, 1.43, and 1.47. (See §1.60)]

(b) Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor [,] or joint inventors who are applying [have applied] for a patent, or to the person mentioned in §§1.42, 1.43, or 1.47 who is applying [has applied] for a patent in place of the inventor.

(c) Any person authorized by the applicant may file an application for patent on behalf of the inventor or inventors, but an oath or declaration for the application (§1.63) can only be made in accordance with §1.64.

(d) A showing may be required from the person filing the application that the filing was authorized where such authorization comes into question.

10. Section 1.42 is proposed to be revised to read as follows:

§1.42 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may [sign the application papers and] make the necessary oath or declaration, and apply for and obtain the patent. Where the inventor dies during the time intervening between the filing of [his] the application and the granting of a patent thereon, the letters patent may be issued to the legal representative upon proper intervention [by him].

11. Section 1.43 is proposed to be revised to read as follows:

§1.43 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may [sign the application papers and] make the necessary oath or declaration, and apply for and obtain the patent.

12. Section 1.45 is proposed to be amended by deleting paragraphs (b) and (c) and the designation (a) to the first paragraph to read as follows:

§1.45 Joint inventors.

[(a)] Joint inventors must apply for a patent jointly and each must [sign the application papers and] make the required oath or declaration: neither of them alone, nor less than the entire number, can apply for a patent for an invention invented by them jointly, except as provided in §1.47.

[(b) If an application for patent has been made through error and without any deceptive intention by two or more persons as joint inventors when they were not in fact joint inventors, the application may be amended to remove the names of those not inventors upon filing of a petition including a statement of the facts verified by all of the original applicants, the required fee (§1.17(h)), and an oath or declaration as required by §1.65 by the applicant who is the actual inventor, provided the amendment is diligently made. Such amendment must have the written consent of any assignee.]

[(c) If an application for patent has been made through error and without any deceptive intention by less than all the actual joint inventors, the application may be amended to include all the joint inventors upon filing of a petition including a statement of the facts verified by, and an oath or declaration as required by §1.65 executed by all the actual joint inventors, along with the required fee (§1.17(h)), provided the amendment is diligently made. Such amendment must have the written consent of any assignee.]

13. Section 1.46 is proposed to be revised to read as follows:

§1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made or authorized to be made and an oath or declaration signed by the inventor or one of the persons mentioned in §§1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in §1.334.

14. Section 1.47 is proposed to be revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette.* The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §[1.65] 1.63. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette.* The inventor may subsequently join in the application on filing an oath or declaration of the character required by §[1.65] 1.63. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. A new section 1.48 is proposed to be added to read as follows:

§1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee.

16. Section 1.51 is proposed to be amended by revising paragraphs 1.51(a) (2) and (b) to read as follows:

§1.51 General requisites of an application.

* * * * *

(a) (2) An oath or declaration, see §§[1.65] 1.63 and 1.68.

* * * * *

(b) Applicants are encouraged to file a [prior art] material information disclosure statement [at the time of filing the application or within three months thereafter]. See §§1.97 through 1.99.

17. Section 1.52 is proposed to be amended by revising paragraph (c) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(c) Any interlineation, erasure, [or] cancellation or other alteration of the application papers [as] filed must be [have been] made before the signing of any accompanying oath or declaration pursuant to §1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. No such alterations in the application papers are permissible after the signing of an oath or declaration referring to those application papers (§1.56(c)). After the signing of the oath or declaration referring to the application papers amendments may only be made in the manner provided by §§1.121 and 1.123–1.125. [application was signed and sworn to or declaration made, and should be dated and initialed or signed by the applicant in a marginal note or footnote on the same sheet of paper to indicate such fact. No such alterations are permissible after execution of the application papers. (See §1.56.)]

* * * * *

18. Section 1.53 is proposed to be revised to read as follows:

§1.53 Serial number, filing date, and completion of application [Application accepted and filed for examination only when complete].

(a) Any application for a patent received in the Patent and Trademark Office will be assigned a serial number for identification purposes [An application for a patent will not be accepted and placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required].

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are received in the Patent and Trademark Office. No new matter may be introduced into an application after its filing date (§1.118). [If the papers and parts are incomplete, or so defective that they cannot be accepted as a complete application for examination, the applicant will be notified; the papers will be held six months for completion and, if not by then completed, will thereafter be returned or otherwise disposed of; the fee, if submitted, will be refunded.]

(c) If any application is received without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of receipt of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $50.00 handling fee.

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section.

(e) An application for a patent will not be placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required.

(f) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).

19. Section 1.54 is proposed to be revised to read as follows:

§1.54 Parts of application to be filed together; filing receipt.

(a) It is desirable that all parts of the complete application be deposited in the Office together; otherwise a letter must accompany each part, accurately and clearly connecting it with the other parts of the application. See §1.53 with regard to completion of an application.

(b) Applicant will be informed of the application serial number and filing date by a filing receipt.

20. Section 1.55 is proposed to be revised to read as follows:

§1.55 Claim for foreign priority [Serial number and filing date of application].

[(a) Complete applications are numbered in regular order, and the applicant will be informed of the serial number and filing date of the application by a filing receipt. The filing date of the application is the date on which the complete application, acceptable for placing on the files for examination is received in the Patent and Trademark Office; or the date on which the last part completing such application is received in the case of an incomplete or defective application completed within six months.]

[(b)] (a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by [§1.65] §1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

[(c)] (b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

[(d) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).]

21. Section 1.56 is proposed to be amended by revising paragraph (c) to read as follows:

§1.56 Duty of disclosure; striking of applications.

* * * * *

(c) Any application may be stricken from the files if: (1) [Signed or sworn to] An oath or declaration pursuant to §1.63 is signed in blank, or without actual inspection and review by the applicant as required by §1.63(b); or (2) If application papers filed in the Office are altered [Altered or partly filled in] after the signing of an oath or declaration pursuant to §1.63 referring to those application papers [being signed or sworn to].

* * * * *

22. Section 1.57 is proposed to be removed.

[§1.57 Signature.

(a) The application must be signed by the applicant in person. The signature to the oath or declaration under §1.65 will be accepted as the signature to the application provided the oath or declaration under §1.65 is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims.

(b) The signature to the oath or declaration under §1.70 will be accepted as the signature to the application provided the oath or declaration under §1.70 specifically refers to the specification and claims to which it applies.

(c) Full names must be given, including at least one given name without abbreviation together with any other given name or initial.]

23. Section 1.59 is proposed to be revised to read as follows:

§1.59 Papers of [complete] application with filing date not to be returned.

Papers in [a complete] an application which has received a filing date pursuant to §1.53 [, including the drawings,] will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

24. Section §1.60 is proposed to be revised to read as follows:

§1.60 Continuation or divisional [Continuing] application for invention disclosed and claimed in a prior application.

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. If the application papers comprise a copy of the prior application as filed, signing and execution by the applicant may be omitted provided the copy [either] is [prepared and certified by the Patent and Trademark Office or is prepared] supplied by the applicant and verified by an affidavit or declaration by the applicant, or his or her attorney or agent, stating that it is a true copy of the prior application as filed. [Certification may be omitted if the copy is prepared by and does not leave the custody of the Patent and Trademark Office.] Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

25. A new section 1.63 is proposed to be added to read as follows:

§1.63 Oath or declaration.

(a) An oath or declaration filed under §1.51(a)(2) as a part of an application must

(1) be executed in accordance with either §1.66 or §1.68;
(2) identify the specification to which it is directed;
(3) identify each inventor and the residence and country of citizenship of each inventor; and
(4) state whether the inventor is a sole or joint inventor of the invention claimed.

(b) In addition to meeting the requirements of paragraph(a), the oath or declaration must state that the person making the oath or declaration

(1) has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration;
(2) believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought; and
(3) acknowledges the duty to disclose information which is material to the examination of the application in accordance with §1.56(a).

(c) In addition to meeting the requirements of paragraphs (a) and (b) of this section, the oath or declaration in any application in which a claim for foreign priority is made pursuant to §1.55 must identify the first filed foreign application for patent or inventor's certificate by specifying the application number, country, day, month and year of its filing.

(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose material information (including any foreign patenting, publication, or public use or sale in the United States of the subject matter of the prior application which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application).

26. A new section 1.64 is proposed to be added to read as follows:

§1.64 Person making oath or declaration.

(a) The oath or declaration must be made by all of the actual inventors except as provided in §§1.42, 1.43, or 1.47.

(b) If the person making the oath or declaration is not the inventor (§§1.42, 1.43, or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state.

27. Section 1.65 is proposed to be removed.

[§1.65 Oath or declaration.

(a) (1) The applicant, if the inventor, must state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. He must acknowledge a duty to disclose information he is aware of which is material to the examination of the application. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country.

(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in §1.66, or (b) include the personal declaration of the applicant as prescribed in §1.68. See §1.153 for design cases and §1.162 for plant cases.

(b) If the application is made as provided in §§1.42, 1.43, or 1.47, the applicant shall state his relationship to the inventor and, upon information and belief, the facts which the inventor is required by this section to state.

(c) An additional statement may be required if the application has not been filed in the Patent and Trademark Office within a reasonable time after execution of the original statement.]

28. Section 1.67 is proposed to be revised to read as follows:

§1.67 Supplemental oath or declaration [for matter not originally claimed].

(a) A supplemental oath or declaration meeting the requirements of §1.63 may be required to be filed to correct any deficiencies or inaccuracies present in an earlier filed oath or declaration. [When an applicant presents a claim for matter originally shown or described but not substantially embraced in the statement of invention or claim originally presented, he shall file a supplemental oath or declaration to the effect that the subject matter of the proposed amendment was part of his invention: That he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than one year before his application, or in public use or on sale in the United States for more than one year before the date of his application, that said invention has not been patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application in this country on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in the United States, and has not been abandoned. Such supplemental oath or declaration should accompany and properly identify the proposed amendment, otherwise the proposed amendment may be refused consideration.]

(b) A supplemental oath or declaration meeting the requirements of §1.63 must be filed (1) when a claim is presented for matter originally shown or described but

not substantially embraced in the statement of invention or claims originally presented, and (2) when an oath or declaration submitted in accordance with §1.53(d) after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed (§1.53(b); §1.118. In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

29. Section 1.69 is proposed to be amended by revising paragraph (b) to read as follows:

§1.69 Foreign language oaths and declarations.

* * * * *

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under [§1.65] §1.63 , the translation may be filed in the Office no later than two months [after the filing date] from the date applicant is notified to file the translation .

30. Section 1.70 is proposed to be amended by revising paragraph (a) to read as follows:

§1.70 Content of oath or declaration [relating to content of and amendment to an application] under 35 U.S.C. 371(c)(4).

(a) [(1)] When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he or she must file an oath or delcaration in accordance with §1.63 [specifically identify the international application and any amendments thereto and state that he or she has reviewed the referred to application and any amendments, and that he or she verily believes himself or herself to be the original and first inventor or discoverer of the process, machine, manufacturer, composition of matter, or improvement thereof, for which he or she solicits a patent; that he or she does not know and does not believe that the same was ever known or used in the United States of America before his or her invention or discovery thereof, and shall state of what country he or she is a citizen and where he or she resides and whether he or she is a sole or joint inventor of the invention claimed in his or her international application as filed or as amended. In every application the applicant must distinctly state that to the best of his or her knowledge and belief the invention has not been in public use or on sale in the United States of America more than one year prior to his or her international application, or patented or described in any printed publication in any country before his or her invention or more than one year prior to his or her international application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his or her international application on an application filed by himself or herself or his or her legal representatives or assigns more than twelve months prior to his or her international application. He or she must acknowledge a duty to disclose information he or she is aware of which is material to the examination of the application. He or she shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself or herself, or by his or her legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he or she shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the international application].

[(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in §1.66, or (b) include the personal declaration of the applicant as prescribed in §1.68.]

* * * * *

31. Section 1.77 is proposed to be amended by revising paragraphs (h) and (i) to read as follows:

§1.77 Arrangement of application elements.

The elements of the application should appear in the following order:

* * * * *

(h) [Signature. (See §1.57)] Abstract of the disclosure.

(i) [Abstract of the disclosure.] Signed oath or declaration.

* * * * *

32. Section 1.97 is proposed to be revised to read as follows:

§1.97 Filing of material information disclsoure [prior art] statement.

As a means of complying with the duty of disclosure set forth in §1.56, applicants are encouraged to file a material information disclosure [prior art] statement at the time of filing the application or within three months thereafter if the filing receipt has been received. If the filing receipt has not been received within three months after the time of filing, the disclosure statement should be submitted within two months after receiving the filing receipt. If filed separately, the disclosure statement should include the Group Art Unit to which the application is assigned as indicated on the filing receipt . The statement may either be separate from the specification or may be incorporated therein.

(b) The statement shall serve as a representation that the material information [prior art] listed therein includes, in the opinion of the person filing it, all of the material information [the closest prior art] of which that person is aware; the statement shall not be construed as a representation that a search has been made or that no other material information [better art] exists.

33. Section 1.98 is proposed to be amended by revising paragraph (a) to read as follows:

§1.98 Content of material information disclosure [prior art] statement.

Any statement filed under §1.97 or §1.99 shall include: (1) A listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the statement to be pertinent. All United States patents listed should be identified by their patent numbers, patent dates and names of the patentees. Each foreign published application or patent should be cited by identifying the country or office which issued it, the document number and publication date. Each printed publication should be identified by author (if any), title, date, pages and place of publication.

* * * * *

34. Section 1.99 is proposed to be revised to read as follows:

§1.99 Updating of material information disclosure [prior art] statement.

If prior to issuance of a patent an applicant, pursuant to his or her duty of disclosure under §1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental material information disclosure [prior art] statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of §1.98.

35. Section 1.101 is proposed to be amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications [(§§1.53 and 1.55)] are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102 and those applications in which the Office has accepted a request for waiver of patent rights filed under §1.139 which are not examined on the merits

* * * * *

36. Section 1.118 is proposed to be revised to read as follows:

§1.118 Amendment of disclosure.

(a) No amendment shall introduce new matter into the disclosure of an application after the filing date of the application (§1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application [In original applications, all amendments of the drawings or specifications, and all additions thereto,] must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application after its filing date even though supported by [a supplemental oath, and can be shown or claimed only in a separate application] an oath or declaration in accordance with §1.63 or §1.67 filed after the filing date of the application .

(b) If it is determined that an amendment filed after the filing date of the application introduces new matter, claims containing new matter will be rejected and deletion of the new matter in the specification and drawings will be required even if the amendment is accompanied by an oath or declaration in accordance with §1.63 or §1.67.

37. Section 1.123 is proposed to be revised to read as follows:

§1.123 Amendments to the drawing.

[(a)] No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by [the Office.] bonded draftsmen, at applicant's expense. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner . The paper requesting amendments to the drawing should be separate from other papers.

[(b) Substitute drawings will not ordinarily be admitted in any case unless required by the Office.]

38. Section 1.125 is proposed to be revised to read as follows:

§1.125 Substitute specification.

If the number or nature of the amendments shall render it difficult to consider the case, or to arrange the papers for printing or copying, the examiner may require the entire specification or claims, or any part thereof, to be rewritten.

A substitute specification may [will ordinarily] not be accepted unless it has been required by the examiner or unless it is clear that acceptance of a substitute specification would facilitate processing of the application. Any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Such statement must be a verified statement if made by a person not registered to practice before the Office.

39. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the applicant or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the applicant or the confirmation of the patentability of the claims of the patent , unless the date of such patent or printed publication [be] is more than one year prior to the date on which the applicant's or patent owner's application was filed in this country.

* * * * *

40. Section 1.132 is proposed to be revised to read as follows:

§1.132. Affidavits or declarations traversing grounds of rejection.

When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

41. Section 1.137 is proposed to be amended by revising paragraph (b) to read as follows:

§1.137 Revival of abandoned application.

* * * * *

(b) An application unintentionally abandoned for failure to prosecute , except pursuant to §1.53(d), may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

* * * * *

42. Section 1.141 is proposed to be amended by revising paragraph (b) to read as follows:

§1.141 Different inventions in one application.

* * * * *

(b) A group of claims of different categories in an application so linked as to form a single inventive concept are considered to be one invention. In particular any of the following groupings of claims of different categories may be included in the same application:

(1) In addition to a claim for a given product,

(i) A claim for one process specially adapted for the manufacture of the said product, [as where] for example, where the process of making as claimed cannot be used to make other and materially different products and the product as claimed cannot be made by another and materially different process ;

(ii) A claim for one specially adapted use of the said product, [as where] for example, where said use as claimed cannot be practiced with another materially different product and the product as claimed cannot be used in a materially different process of using ; or

(iii) Both (b) 1 (i) and (ii);

(2) In addition to a claim for a given process, a claim for one apparatus or means specifically designed for carrying out of the said process, [that is, it] for example, where the apparatus cannot be used to practice another materially different process and the process cannot be practiced by another materially different apparatus or by hand

* * * * *

43. Section 1.153 is proposed to be amended by revising paragraph (b) to read as follows:

§1.153 Title, description and claim, oath or declaration.

* * * * *

(b) The oath or declaration required of the applicant must comply with §[1.65] 1.63 except that the period of twelve months specified therein with respect to foreign applications is six months in the case of designs.

44. Section 1.154 is proposed to be amended by revising paragraph (e) to read as follows:

§1.154 Arrangement of specification.

The following order of arrangement should be observed in framing design specifications:

* * * * *

(e) [Signature of applicant. (See §1.57)] Signed oath or declaration (See §1.153(b)).

45. Section 1.162 is proposed to be revised to read as follows:

§1.162 Applicant, oath or declaration.

The applicant for a plant patent must be the person who has invented or discovered and asexually reproduced the new and distinct variety of plant for which a patent is sought (or as provided in §§1.42, 1.43, and 1.47). The oath or declaration required of the applicant, in addition to the averments required by §[1.65] 1.63 , must state that he or she has asexually reproduced the plant. Where the plant is a newly found plant the oath or declaration must also state that it was found in a cultivated area.

46. Section 1.163 is proposed to be amended by revising paragraph (b) to read as follows:

§1.163 Specification.

* * * * *

(b) Two copies of the specification (including the claim) must be submitted, but only one [need be] signed oath or declaration is required. The [and executed; the] second copy of the specification may be a legible carbon copy of the original.

47. Section 1.172 is proposed to be amended by revising paragraph (a) to read as follows:

§1.172 Applicants, assignees.

(a) Reissue [applications] oaths must be signed and sworn to or declaration made by the inventors except as otherwise provided (see §§1.42, 1.43, 1.47), and must be accompanied by the written assent of all assignees, if any, owning an undivided interest in the patent, but a reissue [application] oath may be made and sworn to or declaration made by the assignee of the entire interest if the application does not seek to enlarge the scope of the claims of the original patent.

* * * * *

48. Section 1.174 is proposed to be amended by revising paragraph (a) to read as follows:

§1.174 Drawings.

(a) The drawings upon which the original patent was issued may be used in reissue applications if no changes whatsoever are to be made in the drawings. In such cases, when the reissue application is filed, the applicant must submit a temporary drawing which may consist of a copy of the printed drawings of the patent or a photoprint of the original drawings [securely mounted by pasting on sheets of drawing board] of the size required for original drawing [, or an order for the same].

* * * * *

49. Section 1.175 is proposed to be amended by revising the first sentence of paragraph (a) to read as follows:

1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of [the first sentence of §1.65] §1.63 , must also file with their applications a statement under oath or declaration as follows:

* * * * *

50. Section 1.301 is proposed to be revised to read as follows:

§1.301 Appeal to U.S. Court of [Customs and Patent] Appeals for the Federal Circuit

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of [Customs and Patent] Appeals for the Federal Circuit . The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§1.302 and 1.304); (b) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

51. Section 1.302, paragraph (a), is proposed to be revised to read as follows:

§1.302 Notice and reasons of appeal.

(a) When an appeal is taken to the U.S. Court of [Customs and Patent] Appeals for the Federal Circuit , the appellant shall give notice thereof to the Commissioner, and file in the Patent and Trademark Office, within the time specified in §1.304, his or her reasons of appeal specifically set forth in writing.

* * * * *

52. Section 1.303 is proposed to be revised to read as follows:

§1.303 Civil action under 35 U.S.C. 145, 146, 306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of [Customs and Patent] Appeals for the Federal Circuit (§1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in §1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding has taken an appeal to the U.S. Court of [Customs and Patent] Appeals r the Federal Circuit , he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

(c) If a defeated party to an interference proceeding has taken an appeal to the U.S. Court of [Customs and Patent] Appeals for the Federal Circuit , and any adverse party to the interference shall, within twenty days after the appellant shall have filed notice of the appeal to the court (§1.302), file notice with the Commissioner that he or she elects to have all further proceedings conducted as provided in 35 U.S.C. 146, certified copies of such notices will be transmitted to the U.S. Court of [Customs and Patent] Appeals for the Federal Circuit for such action as may be necessary. The notice of election must be served as provided in §1.248.

53. Section 1.324 is proposed to be revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or [there was a misjoinder or nonjoinder of] inventors were not named through [and that such misjoinder or omission occurred by] error [and] without deceptive intention, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors [deleting the misjoined inventor from the patent or adding the non-joined inventor to the patent].

54. Section 1.325 is proposed to read as follows:

§1.325 Other mistakes not corrected.

Mistakes other than those provided for in §§1.322, 1.323, 1.324, and not affording legal grounds for reissue or for reexamination, will not be corrected after the date of the patent.

55. A new §1.335 is proposed to be added to read as follows:

§1.335 Filing of notice of arbitration awards.

(a) Written notice of any award by an arbitrator pursuant to 35 U.S.C. 294 must be filed in the Patent and Trademark Office by the patentee, or the patentee's assignee or licensee. If the award involves more than one patent a separate notice must be filed for placement in each patent. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the award.

(b) If an award by an arbitrator pursuant to 35 U.S.C. 294 is modified by a court, the party requesting the modification must file in the Patent and Trademark Office, a notice of the modification for placement in each patent to which the modification applies. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the court's order modifying the award.

(c) Any award by an arbitrator pursuant to 35 U.S.C. 294 shall be unenforceable until any notices required by paragraph (a) or (b) of this section are filed in the Patent and Trademark Office. If any required notice is not filed by the party designated in paragraph (a) or (b) of this section, any party to the arbitration proceeding may file such a notice.

56. Section 1.565 is proposed to be amended by adding a new paragraph (e) to read as follows:

§1.565 Concurrent office proceedings.

* * * * *

(e) If a claim of a patent in the process of reexamination is rejected based upon a United States patent which claims the same invention, the patent owner will be given a specified time within which to file a reissue application in order to seek an interference pursuant to §1.205, if appropriate. The failure or refusal of the patent owner to file a reissue application for purposes of seeking an interference, where appropriate, shall be taken as a disclaimer of the invention covered by the claim under rejection and will result in cancellation of the claim in the reexamination certificate issued pursuant to 35 U.S.C. 307 and §1.570.

57. Section 5.12 is proposed to be revised to read as follows:

5.12 Petition for license

(a) Filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject matter of the application. The filing receipt will indicate if a license is granted. If the initial automatic petition is not granted, a subsequent petition may be filed under paragraph (b) of this section.

(b) Petitions for license under 35 U.S.C. 184 should be presented in letter form and should include petitioner's address, and full instruction for delivery of the requested license when it is to be delivered to other than the petitioner.

GERALD J. MOSSINGHOFF,
Sept. 30, 1982. *Commissioner of Patents*
and Trademarks.

[1024 O.G. 5]
(Pending no finnal action taken)

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(50) Deposit Accounts—Statutory Fee Charges

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

(51) Request for Refunds

In order to expedite the processing of refunds for payment of fees by actual mistake or in excess of the designated fees, attorneys and applicants requesting refunds should direct their correspondence to the attention of the "Refund Section, Accounting Division, Office of Finance." This procedure should be followed whether the request is for a refund check or for a credit to the deposit account. The problems of misrouting the request for a refund in the Patent and Trademark Office would be alleviated and the payment of refunds accelerated.

BRADFORD R. HUTHER,
Assistant Commissioner
for Finance & Planning.

[1024 O.G. 59 (11-23-82)]

APPLICATION CONTENT

(52) Use of Metric System of Measurements in Patent Applications

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'-Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

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(53) Filing of Non-English Language Applications

This notice is in response to inquiries regarding the filing of applications in a language other than English. The Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, *provided:*

(1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and

(2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that it has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (*a*) applicant's name(s); (*b*) title of invention; (*c*) number of pages of specifications, claims, and sheets of drawings; (*d*) whether oath or declaration was filed and (*e*) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. *Commissioner of Patents*
and Trademarks.

[942 O.G. 1552]

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(54) Filing of Copies of Patent Applications

Beginning on October 1, 1978, the Office will accord a filing date to facsimile or other reproduced copies of United States national patent applications meeting the requirement of 35 U.S.C. 111, *provided:*

(1) the application was properly executed by the inventor(s) prior to transmission of the copy.

(2) the copy filed is a complete copy and bears a reproduction of applicant's signature, and

(3) the originally signed application is filed no later than two months after the facsimile or other reproduced copy is filed.

Authority for this practice is found in 35 U.S.C. 26 as interpreted by the District Court decisions *Neergaard* v. *Dann*, Civil Action No. 76-536. December 20, 1976 (D.D.C.) and *Dietzel, et al.* v. *Commissioner of Patents and Trademarks*, Civil Action No. 75-0298, December 22, 1976 (D.D.C.).

In order to ensure prompt association with the copy of the application initially filed it is strongly recommended that the subsequently filed original application be accompanied by a cover letter signed by the applicant or the attorney or agent averring it is the original of the earlier filed facsimile application, identifying the application by applicant's name, title of invention, date of initial filing and serial number, if known.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be used routinely for filing applications.

The above procedure does not apply to international applications filed under the Patent Cooperation Treaty since procedures to cover unsigned international applications are already provided for in PCT Article 14(1)(a)(i) and (b) and PCT Rule 26.2.

DONALD W. BANNER,
Aug. 28, 1978. *Commissioner of Patents and Trademarks.*

[974 O.G. 14]

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(55) Graphical Illustrations in the Specification

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

WILLIAM FELDMAN,
Jan. 12, 1978. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

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(56) Multiple Dependent Claims and New Drawing Filing Requirements

Introduction

On January 24, 1978, Public Law 94-131 (pages 108–115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect *U.S. patent applications filed on and after January 24, 1978,* relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in order to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7-3776) in the administration area or Louis Maassel (extension 7-3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the *Official Gazette* of February 21, 1978.

Multiple Dependent Claims

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 *or* 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 *and* 4, further comprising . . .") is *not* permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may *not* serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actually referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO-1360, has been designed to be used in conjunction with the current fee calculation form PTO-875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO-1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO-1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be

referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

> "Embodiment _____ would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO-1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO-1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO-875. Form PTO-1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO-1360 and the total number of claims and number of independent claims will then be placed on form PTO-875 for final fee calculation purposes.

If at least $65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO-1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple dependent claim would be considered to be that number of dependent claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

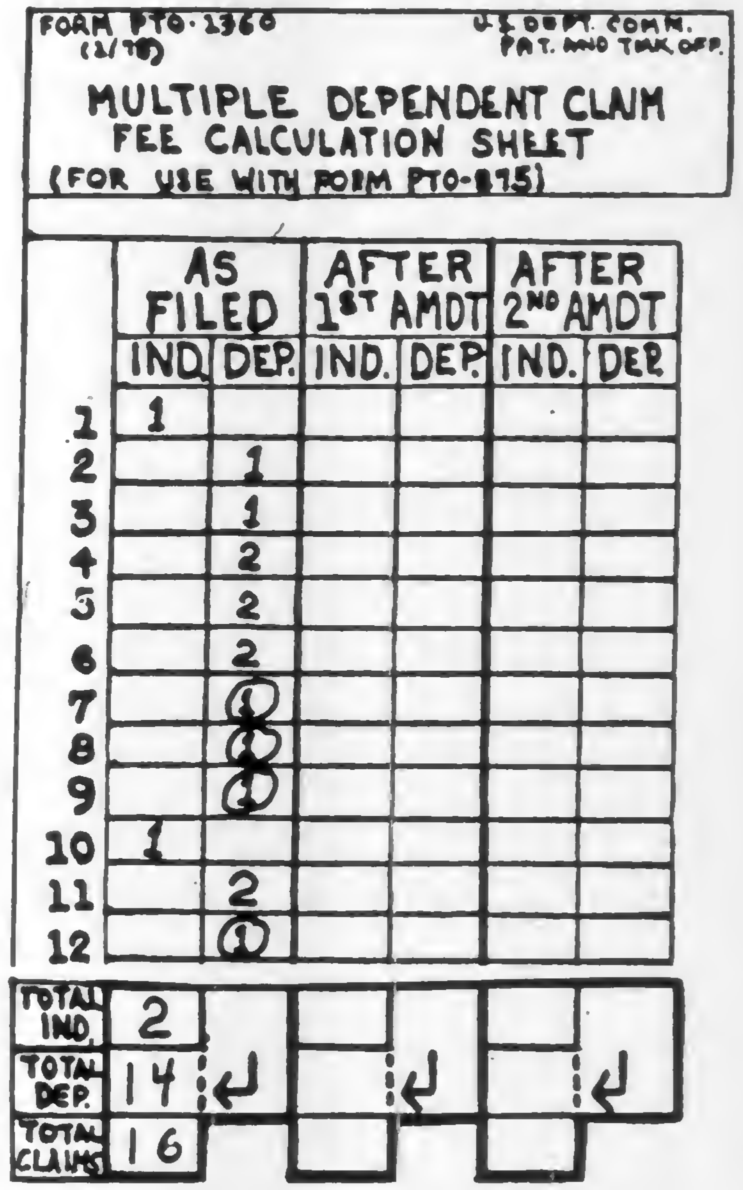
Improper Multiple Dependent Claim

If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO-1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number	
1	Independent
2	Dependent on claim 1
3	Dependent on claim 2
4	Dependent on claim 2 or 3
5	Dependent on claim 4
6	Dependent on claim 5
7	Dependent on claim 1 or 4
8	Dependent on claim 1 or 5
9	Dependent on claim 8
10	Independent
11	Dependent on claim 1 or 10
12	Dependent on claim 1 and 10



FORM PTO-1360 (1/78) U.S. DEPT. COMM. PAT. AND TMK. OFF.

MULTIPLE DEPENDENT CLAIM
FEE CALCULATION SHEET
(FOR USE WITH FORM PTO-875)

	AS FILED		AFTER 1ST AMDT		AFTER 2ND AMDT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		2				
5		2				
6		2				
7		①				
8		①				
9		①				
10	1					
11		2				
12		①				
TOTAL IND.	2					
TOTAL DEP.	14	↲		↲		↲
TOTAL CLAIMS	16					

Comments on Fee Calculation Example

Claim 1.–This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.–Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.–Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.–Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.–This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.-Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

Claim 7.-This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.-This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.-Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.-Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.-This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.-Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 *and* 10") rather than in the alternative ("1 *or* 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO-1360, each column is added. In this example., there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO-875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by $2 for an additional total claim fee of $12. The total number of independent claims in the example is 2, which minus 1 is 1, which times the $10 rate is $10. The total filing fee is therefore $65 + $12 + $10, or total of $87.

Drawing Requirements

Revised 35 U.S.C. 113 relaxes the previous requirements for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 113 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 113 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submitted on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 113

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 113.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 113

35 U.S.C. 113 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

> "The examiner has decided that the subject matter of this applicaton admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

RENE D. TEGTMEYER,
Feb. 8, 1978. *Assistant Commissioner*
for Patents.

[968 O.G. 7]

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(57) Execution and Filing of Patent Applications

This notice is intended as a reminder that United States patent applications which have not been prepared and executed in accordance with the requirements of Title 35 of the United States Code and Title 37 of the Code of Federal Regulations may be denied a filing date as a complete application or may be, in appropriate circumstances, stricken from the files as having been improperly executed and/or filed. Although the statute and the rules have been in existence for many years, the Office continues to receive a number of applications which have been improperly executed and/or filed. Since the improper execution and/or filing of patent applications can ultimately result in a loss of rights it is appropriate to re-emphasize the importance of proper execution and filing.

Attention is invited to the fact that 35 U.S.C. 111 requires that "(t)he application must be signed by the applicant . . ." The same requirement appears in 37 CFR 1.57 which specifies that the signature to the oath or declaration "will be accepted as the signature to the application provided the oath or declaration . . . is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims."

It should be carefully noted that the application "signed by the applicant" must be a *complete* application and cannot be simply an oath or declaration signed without the remainder of the application. As an example, it is improper for an applicant to sign an oath or declaration which is later attached to a specification and/or claims unless the specification is also signed after the claims. See 37 CFR 1.56(c) which provides that "(a)ny application may be stricken from the files if: (1) Signed or sworn to in blank, or without actual inspection by the applicant . . ."

The provisions of 35 U.S.C. 363 for filing an international application under the Patent Cooperation Treaty (PCT) which designates the United States and thereby has the effect of a regularly filed United States national application, except as provided in 35 U.S.C. 102(e), are somewhat different than the provisions of 35 U.S.C. 111. Under 35 U.S.C. 363 and PCT Article 11(1), the signature of the inventor is not required to obtain a filing date but must be submitted later. The oath or declaration requirements for an international application before the Patent and Trademark Office are set forth in 37 CFR 1.70.

The requirement that applicant sign "the application" also precludes alterations to the application after execution. See 37 CFR 1.52(c) which states that "(n)o . . . alterations are permissible after execution of the application papers." It is therefore necessary that the application, including the oath or declaration, be executed in the form in which it is intended to be filed since it is improper for anyone, including counsel, to complete or otherwise alter application papers, including the oath or declaration, after the applicant has executed the same. Section 1.56(c) provides that "(a)ny application may be stricken from the files if: . . . (2) Altered or partly filled in after being signed or sworn to."

In summary, it is emphasized that the application filed must be the application executed by the applicant and it is improper for anyone, including counsel, to alter, rewrite, or partly fill in any part of the application, including the oath or declaration, after execution by the applicant. This reminder should particularly be brought to the attention of foreign applicants by their United States counsel since the United States law and practice in this area may differ from that in other countries. Hopefully, this Notice will serve as an adequate reminder so that applicants will not lose rights through the improper execution and/or filing of patent applications.

LUTRELLE F. PARKER,
Oct. 11, 1979. *Acting Commissioner of*
Patents and Trademarks.

[988 O.G. 2]

(58) Use of Symbol "Ø" in Patent Applications

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "0" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any questions about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (I, 0) in the patent application.

RICHARD J. SHAKMAN,
Dec. 20, 1978. *Assistant Commissioner*
for Administration.

[978 O.G. 152]

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(59) U.S. Accession to Hague Convention Abolishing the Requirement of Legalization for Foreign Public Documents

On Oct. 15, 1981, the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" entered into force between the United States and twenty-eight foreign countries that are parties to the Convention. The Convention applies to any document submitted to the United States Patent and Trademark Office for filing or recording, which is sworn to or acknowledged by a notary public in any one of the member countries. The Convention abolishes the certification of the authority of the notary public in a member country by a diplomatic or consular officer of the United States and substitutes certification by a special certificate, or apostille, executed by an officer of the member country. Accordingly, the Office will accept for filing or recording a document sworn to or acknowledged before a notary public in a member country if the document bears, or has appended to it, an apostille certifying the notary's authority. The requirement for a diplomatic or consular certificate, specified in 37 CFR 1.66 and note 1 of 37 CFR 3.45, will not apply to a document sworn to or acknowledged before a notary public in a member country if an apostille is used.

The member countries that are parties to the Convention are:

Austria
Bahamas
Belgium
Botswana
Cyprus
Fiji
France
Germany,
  Fed. Rep. of
Hungary
Israel
Italy
Japan
Lesotho
Liechtenstein
Luxembourg
Malawi
Malta
Mauritius
Netherlands
Portugal
Seychelles
Spain
Suriname
Swaziland
Switzerland
Tonga
U.K. of Great
  Britain and
  N. Ireland
United States
Yugoslavia

The Convention prescribes the following form for the apostille:

Model of certificate

The certificate will be in the form of a square with sides at least 9 centimetres long

APOSTILLE

(Convention de La Haye du Oct. 5, 1961)

1. Country: ....
This public document
2. has been signed by ....
3. acting in the capacity of ....
4. bears the seal/stamp of ....
....

Certified

5. at .... 6. the ....
7. by ....
8. No. ....
9. Seal/stamp: 10. Signature:
....

GERALD J. MOSSINGHOFF,
Nov. 5, 1981. *Commissioner of Patents*
and Trademarks.

[1013 O.G. 3]

(60) Simulated or Predicted Tests or Examples

In order to provide for uniform practice before the Patent and Trademark Office, the following clarification of current Office practice relating to simulated or predicted tests or examples is being set forth. This notice specifies the Office policy which is currently in effect and is considered to have been in effect in the past in this area. The wording of the MPEP provisions prior to this amendment went further than was intended. The amended sections below spell out more clearly the Office's position from the start.

The following wording will be substituted in revision number 8 for that presently in paragraph D of section 608.01(p) of the Manual of Patent Examining Procedure.

MPEP §608.01(p)

"D. Simulated or Predicted Test Results or Prophetic Examples

Simulated or predicted test results and prophetical examples (paper examples) are permitted in patent applications. Working examples correspond to work actually performed and may describe tests which have actually been conducted and results that were achieved. Paper examples describe the manner and process of making an embodiment of the invention which has not actually been conducted. Paper examples should not be represented as work actually done. No results should be represented as actual results unless they have actually been achieved. Paper examples should not be described using the past tense."

The first and last paragraphs of MPEP section 707.07(1) are being deleted.

DONALD J. QUIGG,
Apr. 15, 1982. *Deputy Commissioner*
of Patents and Trademarks.

[1018 O.G. 27]

EXAMINATION OF APPLICATIONS

(61) Examination of Claims For Patentability Under 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic. "A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.,* 163 USPQ 673 (decided December 8, 1969). "Office policy has consistently been to follow *Graham* v. *John Deere Co.,* 148 USPQ 4559 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test. "The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and 'a synergistic result,' but clearly decided whether the claimed inventions were unobvious 'on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test. "Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

C. MARSHALL DANN,
July 8, 1976. *Commissioner of Patents*
& Trademarks.

[949 O.G. 3]

(62) Claims Copied From Patents

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
Apr. 10, 1974. *Acting Assistant Commissioner*
for Patents.

[922 O.G. 442]

(63) Translations of Foreign Language References

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible. 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If indentifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Oct. 26, 1977. *Deputy Assistant Commissioner*
for Patents.

[964 O.G. 24]

(64) Restriction Between Inventions

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner*
for Patents.

[934 O.G. 450]

(65) Revised Practice Re Markush-Type Claims

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a *non-elected species*, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016. dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,
Oct. 23, 1978. *Commissioner of Patents and Trademarks.*

[976 O.G. 128]

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(66) Revised Procedures for Recording Searches and Considerations of Certain Prior Art

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO-892. "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass*, including all United States and foreign patent documents and other publications placed therein. The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass*, for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B, 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. _____)" will be recorded. If the parent has been patented, the patent number "Pat. N. _____" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steroids

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO-1041 in two copies, recording all queries searched, even those which yield only non-relevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists the terms and tagged documents, will be

placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search*, or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant. The classification will be recorded, followed by "(Cursory)."
2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.
3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:
   a. *Abstracting publications*, such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.
   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.
   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.
   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).
   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.
   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.
   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service.
   These search systems include many data bases.
   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.
   The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.
4. A search of only the *publications in a subclass*. The class and subclass followed by "(publications only)" will be recorded.
5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention. The serial number of a parent application that is still Pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted. The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. Not Recorded

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below.

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*
   In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.
2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*
   In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Feb. 22, 1977. *Assistant Commissioner for Patents.*

[956 O.G. 1546]

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(67) Prior Art Cited by Applicants

Effective immediately, applicants are encouraged to use new form PTO-1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97–1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citation, supersedes form PTO-3.72.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO-1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines and has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO-892.

The reference designations "AA," "AB," etc. (referring to applicant's reference A, Applicant's reference B, etc.) will be used by the examiner in the same manner as examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

WILLIAM FELDMAN,
Aug. 15, 1980. *Deputy Assistant Commissioner for Patents.*

[998 O.G. 8]

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(68) Express Abandonments

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP).Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(i) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Apr. 7, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 2]

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(69) Notice of Abandonment for Failure to Prosecute Application

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: ______. In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976: 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. *Deputy Assistant Commissioner for Patents.*

[959 O.G. 24]

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(70) New Procedures for Recordation of Interviews

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the Official Gazette of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance

of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in section 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

—Serial Number of the application
—Name of applicant
—Name of examiner
—Date of interview
—Type of interview (personal or telephone)
—Name of participant(s) (applicant, attorney or agent, etc.)
—An indication whether or not an exhibit was shown or a demonstration conducted
—An identification of the claims discussed
—An identification of the specific prior art discussed
—An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
—The signature of the examiner who conducted the interview
—Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

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(71) Statements Filed Under Atomic Energy Act And NASA Act

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an applicaton which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Aug. 13, 1973. *Deputy Assistant Commissioner for Patents.*

[914 O.G. 2]

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(72) Extensions of Time to Submit Affidavits After Final Rejection

Not infrequently, applicants request an extension of time, stating as a reason therefor that more time is needed in which to submit an affidavit. When such a request is filed after final rejection, the granting of the request for extension of time is without prejudice to the right of the examiner to question why the affidavit is now necessary and why it was not earlier presented. If applicant's showing is insufficient, the examiner may deny entry of the affidavit, notwithstanding the previous grant of an extension of time to submit it. The grant of an extension of time in these circumstances serves merely to keep the case from becoming abandoned while allowing the applicant the opportunity to present the affidavit or to take other appropriate action. Moreover, prosecution of the application to save it from abandonment must include such timely, complete and proper action as required by 37 CFR 1.113. The admission of the affidavit for purposes other than allowance of the application, or the refusal to admit the affidavit, and any proceedings relative thereto, shall not operate to save the application from abandonment.

Implicit in the above practice is the fact that affidavits submitted after final rejection are subject to the same treatment as amendments submitted after final rejection. *In re Affidavit Filed After Final Rejection,* 152 USPQ 292, 1966 C.D. 53.

WILLIAM FELDMAN,
July 25, 1977. *Deputy Assistant Commissioner for Patents.*

[961 O.G. 16]

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(73) Extension of Time Limit

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Nov. 28, 1977. *Deputy Assistant Commissioner for Patents.*

[965 O.G. 14]

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(74) Examination of Patent Applications Having an Issue of Fraud

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examinations as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,
Jan. 2, 1975. *Acting Assistant Commissioner for Patents.*

[930 O.G. 1455]

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(75) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter 1—Patent and Trademark Office, Department of Commerce

Part 1—Rules of Practice in Patent Cases

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to §1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to §1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office **Official Gazette** in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

Purpose of Rules

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

Reissue Applications

Amended §1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed within §1.175(a) (1) unless the applicant believes that to be the case. Section 1.175(a) (4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended §1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for §1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new §1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

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[1] See *In re Clark;* 522 F.2d 623. 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declind to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl,* 500 F.2d 1151, 183 USPQ 38 (CCPA 1974)

[2] See *In re Oda,* 443 F.2d 1200, 170 USPQ 268 (CCPA 1971).

Amended §1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the *Official Gazette*. This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the *Official Gazette*. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, §1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the *Official Gazette* announcement of filing.

A substantial majority of the comments received favored adoption of §1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of §1.11(b) is for clarity. The word "furnished" is changed to "obtained" in §1.11 for clarity.

Protests and Public Use Proceedings

Amended §§1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new §1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to submit additional written information or may provide extra time for comments by a protester to be filed.

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of §1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of §1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs[4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond §1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§1.291(c) and 1.292(b) for clarity.

In §1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

Duty of Disclosure

Amended §1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored §1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of §1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended

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[3] *International Paper Co.* v. *Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

[4] 923 O.G. 2; 930 O.G. 1454; 938 O.G. 945.

to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of §1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of §1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in §1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of §1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in §1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed §1.56. The court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making."[6]

Although the third sentence of §1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of §1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of §1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of §1.56. The Patent and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New §1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in §1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus §1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from §1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing §1.56 to encompass conduct of this sort.[8] Moreover, §1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In §1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with §1.56. Similar comments were directed to §§1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under §1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In §1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in §1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended §1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of §1.65 to avoid confusion with the prior art statement of §1.97 through 1.99.

Amended §1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although §1.346 is limited to papers filed in Office proceedings, the amendment to §1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under §1.348 for a groundless allegation of improper conduct in a court proceeding.

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[5] 426 U.S.—, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6] 426 U.S. at—, 48 L. Ed. 2d at 765, 96 S. ct. at 2132, 44 U.S.L.W. at 4855.

[7] See discussion accompanying proposed rules in Federal Register of Oct. 4, 1976, page 43731, first sentence.

[8] *Norton* v. *Curtiss*, 433 F. 2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

Prior Art Statement

New §§1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in §1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in §1.56. The only criterion contained in §§1.97 through 1.99 as to content of the art cited is in §1.97(b). This subsection indicates that the statement will be construed as a representation that the prior are listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not representation that a search has been made or that no better art exists.

In §1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of §1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

A notice published in 1974[10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in §1.56, applicants will perceive that it is to their advantage to use the procedures of §§1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as §1.51(a) and adding new §1.51(b) which contains a reference to §§1.97 through 1.99.

Foreign Language Oaths

Amended §1.52 and new §1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the *Official Gazette* at a later date.

The change in §1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of §1.69.

Although very few persons opposed §§1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure. §608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two-month grace period for filling an English translation of an oath or declaration filed under §1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

Decisions and Files Made Public

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act[12] required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation[13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended §1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under §1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended §1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

Patent Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that §1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearing is held.

In appeals where the appellant has requested an oral hearing §1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

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[9] E.g., Federal Register of Sept. 9, 1968, 34 FR 14176, 866 O.G. 1402; S. 2255, 94th Congress, §131(b).

[10] Notice of Aug. 12, 1974, 926 O.G. 2.

[11] BNA's Patent. Trademark and Copyright Journal, No. 301, Oct. 28, 1976, page D-1.

[12] 5 USC 552.

[13] *Irons* v. *Gottschalk:* Slip Opinion, No. 74–1365 (D.C. Cir., Oct. 21, 1976).

[14] See notice of mar. 20, 1975, 933 O.G. 1010.

[15] MPEP, §1209.

Section 1.194(c) provides, as does existing §1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, §1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed §1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing §1.196(b) will not be modified, but a new §1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new §1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in approprite circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

Reasons for Allowance

New §1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive: when an examiner allows a claim on the first Office action after citing very close prior art: and when the examiner allows a claim after remand from the Board of Appeals (see new §1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal. [Text of adopted rules appears in 37 CFR, revised 7-1-77]

Effective Date. These amendments become effective on March 1, 1977, except for §§1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§1.65 and 1.69 which become effective on January 1, 1978.

C. MARSHALL DANN,
Jan. 18, 1977. *Commissioner of Patents and Trademarks.*

Betsy Ancker-Johnson, Ph.D.
Jan. 19, 1977. *Assistant Secretary for Science and Technology.*

[955 O.G. 1054]

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(76) Guidelines for Implementation of Recently Revised Rules

Recently a number of rules relating to Patent Examining and Appeal procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the *Official Gazette* at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures

which are being followed in implementing 37 CFR sections 1.11, 1.97–1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(Note.—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the *Official Gazette* and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filling of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.
2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.
3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

   Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.
4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL—327), an examiner's amendment (PTOL—37), or a Notice of Allowance (PTOL—85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
(*b*) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or
(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO—892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

> If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section

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[16] See notice of Mar. 20, 1975, 933 O.G. 1010.

1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL—327) or Examiner's Amendment (PTOL—37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO—892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

C. MARSHALL DANN,
Mar. 18, 1977. *Commissioner of Patents*
and Trademarks.

[957 O.G. 11]

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(77) Further Guidelines Relating to 37 CFR 1.175 and 1.291, as Amended Effective March 1, 1977

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two *Official Gazette* publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing

requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under sub-section (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred."[1] This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificify about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not*, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be availale to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65, When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection*, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments*, If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials; including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Offical Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A-13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A-13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO—892. If the examiner does not cite all of the prior art or other documents of form PTO—892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO—892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on . . . . and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by . . . ."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

> "The protest, as filed_______, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Nov. 13, 1978. *Commissioner of Patents*
& Trademarks.

[977 O.G. 11]

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(78) Expedited Processing of Reissue Applications and Applications Having Issues of Fraud or Failure to Comply With The Duty of Disclosure

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to *immediately*. Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.183 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants, protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words "*REISSUE LITIGATION*" and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked "*REISSUE LITIGATION*" will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

DONALD W. BANNER,
June 5, 1979. *Commissioner of Patents*
and Trademarks.

[983 O.G. 24]

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(79) Prior Art Cited by Patent Offices in Other Countries

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Section 1.97–1.99 of 37 CFR.

DONALD W. BANNER,
Apr. 23, 1979. *Commissioner of Patents*
and Trademarks.

[982 O.G. 36]

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(80) DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 1 and 2

[Docket No. 21001-200]

Court Review of Patent and Trademark Office Decisions

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending its rules of practice relating to court review of its decisions. The Federal Courts Improvement Act of 1982, Pub. L. 97–164, established the United States Court of Appeals for the Federal Circuit (CAFC), effective Oct. 1, 1982, and transferred to this Court the jurisdiction previously vested in the U.S. Court of Customs and Patent Appeals to review Patent and Trademark Office decisions. This rulemaking action substitutes the name of the new Court where the predecessor U.S. Court of Customs and Patent Appeals is referred to in the rules, and changes Office procedures to conform to the requirements of the new Court's rules.

EFFECTIVE DATE: Oct. 26, 1982.

FOR FURTHER INFORMATION CONTACT: Joseph F. Nakamura by telephone at (703) 557–3525 or by mail marked to his attention and addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION:

The Rule Changes

The Patent and Trademark Office has found that the provisions of the Administrative Procedure Act (5 U.S.C. 553) requiring notice of proposed rulemaking, opportunity for public participation, and delay of effective date are not applicable because they are unnecessary. The rule changes can have no substantive impact on the rights and duties of persons subject to the rules. These changes simply conform Office practice to the agency procedures required by the "Rules of the United States Court of Appeals for the Federal Circuit." These rules have already been issued, distributed and scheduled to go into effect on Oct. 1, 1982. They can be changed only by the Court and are binding on the Office. The substitution of the name of the new Court for the prior Court's name is a housekeeping, and not a substantive, change to conform the rules to a change made by Pub. L. 97–164.

The Federal Courts Improvement Act of 1982, Pub. L. 97–164, established the United States Court of Appeals for the Federal Circuit and transferred to this Court the jurisdiction previously vested in the U.S. Court of Customs and Patent Appeals to review Patent and Trademark Office decisions. The rules in Parts 1 and 2 of Title 37, Code of Federal Regulations, in which the U.S. Court of Customs and Patent Appeals is named are accordingly being amended by substituting the name of the new Court. The rules so amended are §§1.8, 1.253(e), 1.301, 1.302, 1.303, 1.304 and 2.145.

The "Rules of the United States Court of Appeals for the Federal Circuit" specify that the Commissioner, upon receipt of an appellant's notice of appeal to the Court "shall promptly transmit to the clerk of this court a certified list as described in FRAP 17(b), which shall constitute compliance with the requirement of 35 U.S.C 143 and 15 U.S.C. 1071(a)(3) for the transmission of a certified record to the Court." Sections 1.301 and 2.145 accordingly are being amended by deleting references to the transmission of a certified transcript of record by the Office to the Court on order of and at the expense of the appellant. Reference is being made instead to the certified list required by the new Court's rules.

The rules of the new Court require all appendices to be 8½ by 11 inches in size with type matter 6½ by 9½ inches. Accordingly, the alternative smaller page size permitted by section 253(e) for copies of testimony is being eliminated. The provision for allowing twenty-five additional copies of the testimony to be filed for use if an appeal is taken is also being eliminated since the transmission of a record to the Court is not required under the new Court's rules.

In addition to the above-noted changes, housekeeping changes are being made as follows.

In §1.8(a), a reference to §§3.55 and 4.23 is being deleted since these sections are being deleted effective Oct. 1, 1982. In §§1.302, 1.304 and 2.145, references to the masculine gender are being amended to include the feminine.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act). If anything, the change will reduce costs for persons, including small businesses, who appeal to the new Court from Patent and Trademark Office decisions. A Regulatory Flexibility Analysis, therefore, will not be prepared.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291 because it does not result in: (a) An effect on the economy of $100 million or more, (b) a major increase in any costs or prices, or (c) adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete domestically or abroad with foreign-based enterprises.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C 3501 *et seq.* since no additional recordkeeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Trademarks.

Amendment of Regulations

For the reasons given above, and pursuant to the authority of the Commissioner of Patents and Trademarks under 35 U.S.C. 6 and 15 U.S.C. 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.8 is amended by revising paragraph (a)(1), (a)(2) and (a)(2)(viii) to read as follows:

§1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if: (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they are accompanied by a certificate stating the date of deposit. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated, the actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

* * * * *

(viii) The filing of a notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or section 21(a)(1) of the Trademark Act, 15 U.S.C. 1071(a)(1), in response to another party's appeal to the Court of Appeals for the Federal Circuit.

* * * * *

2. Section 1.253 is amended by revising paragraph (e) to read as follows:

§1.253 Copies of the testimony.

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(e) When the copies of the testimony are submitted in printed form, they may be produced by standard typographic printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be 8½ by 11 inches (21.8×27.9 cm.) with type matter 6½ by 9½ inches (16.5×24.1 cm.). The testimony shall be bound to lie flat when open.

* * * * *

3. Section 1.301 is amended by revising the section and section heading to read as follows:

§1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§1.302 and 1.304); (b) in the court, file a copy of the notice and reasons of appeal and pay the fee for appeal, as provided by the rules of the court. The certified list required by the rules of the Court will be transmitted to the Court by the Patent and Trademark Office.

4. Section 1.302 is amended by revising paragraph (a) to read as follows:

§1.302 Notice and reasons of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner, and file in the Patent and Trademark Office within the time specified in §1.304, his or her reasons of appeal specifically set forth in writing.

* * * * *

5. Section 1.303 is amended by revising the section to read as follows:

§1.303 Civil action under 35 U.S.C. 145, 146, 306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of Appeals for the Federal Circuit (§1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in §1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding has taken an appeal to the U.S. Court of Appeals for the Federal Circuit, he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

(c) If any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an interference proceeding files notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (§1.302), that he or she elects to have all further proceedings conducted as provided in 35 U.S.C. 146, certified copies of such notices will be transmitted to the U.S. Court of Appeals for the Federal Circuit for such action as may be necessary. The notice of election must be served as provided in §1.248.

6. Section 1.304 is amended by revising paragraph (c) to read as follows:

§1.304 Time for appeal or civil action.

* * * * *

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under 35 U.S.C. 141 that he or she elects to have all further proceedings conducted under 35 U.S.C. 146 (§1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

7. Section 2.145 is amended by revising the section to read as follows:

§2.145 Appeal to court and civil action.

(a) *Appeal to U.S. Court of Appeals for the Federal Circuit.* An applicant for registration, or any party to an interference, opposition, or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the Act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§2.165, 2.184), may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (1) In the Patent and Trademark Office give written notice of appeal to the Commissioner (see paragraphs (b) and (d) of this section); (2) In the court, file a copy of the notice of appeal and pay the fee for appeal, as provided by the rules of the Court. The certified list required by the rules of the Court will be transmitted to the Court by the Patent and Trademark Office.

(b) *Notice of appeal.* (1) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof in writing to the Commissioner, which notice shall be filed in the Patent and Trademark Office, within the time specified in paragraph (d) of this section. The notice shall specify the party or parties taking the appeal and shall designate the decision or part thereof appealed from.

(2) In inter partes proceedings, the notice must be served as provided in §2.119.

(c) *Civil Action.* (1) Any person who may appeal to the U.S. Court of Appeals for the Federal Circuit (paragraph (a) of this section), may have remedy by civil action under section 21(b) of the Act. Such civil action must be commenced within the time specified in paragraph (d) of this section.

(2) If an applicant or registrant in an ex parte case has taken an appeal to the U.S. Court of Appeals for the Federal Circuit, he thereby waives his right to proceed under section 21(b) of the Act.

(3) If any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an inter partes proceeding files notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (paragraph (b) of this section), that he or she elects to have all further proceedings conducted as provided in section 21(b) of the Act, certified copies of such notices will be transmitted to the U.S. Court of Appeals for the Federal Circuit for such action as may be necessary. The notice of election must be served as provided in §2.119.

(d) *Time for appeal or civil action.* (1) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is sixty days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time specified in §2.129(c) or §2.144, or within any extension of time granted thereunder, the time for filing an appeal or commencing a civil action shall expire at the end of the sixty day period or thirty days after action on the request, whichever is later. The sixty and thirty day periods may be extended by the Commissioner upon a showing of sufficient cause.

(2) The times specified herein are calendar days. If the last day of time specified for an appeal, or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under section 21(a)(1) of the Act that he or she elects to have all further proceedings conducted under section 21(b) of the Act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the Act.

GERALD J. MOSSINGHOFF,
Oct. 1, 1982. *Commissioner of Patents*
and Trademarks.

[FR Doc 82-29287 Filed 10-25-82; 8:45 am]
BILLING CODE 3510-16-M

[1024 O.G. 61]

[Revised to incorporate corrections published at 47 F.R. 50242.]

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(81) Priority Claims Based on Inventors Certificates

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, application for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Aug. 17, 1977. *Commissioner of Patents*
and Trademarks.

[962 O.G. 14]

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(82) Requirements for Priority Documents, Priority Based on Application for Industrial Design

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and
(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

C. MARSHALL DANN,
Aug. 15, 1977. *Commissioner of Patents*
and Trademarks.

[962 O.G. 14]

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(83) Right of Priority (35 U.S.C. 119) Based on a Foreign Application Filed Under a Bilateral or Multilateral Treaty

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

C. MARSHALL DANN,
Aug. 9, 1977. *Commissioner of Patents*
and Trademarks.

[962 O.G. 2]

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(84) Abstract of the Disclosure

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster,* 512 F2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Dec. 30, 1977. *Deputy Assistant Commissioner*
for Patents.

[967 O.G. 2]

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(85) Supplemental Guidelines for The Implementation of 37 CFR 1.109—Reasons for Allowance

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

These guidelines are supplemental to those published in the **Official Gazette** at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule.

> "If the examiner believes that the record of the prosecution *as a whole* does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111(b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119 and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least:

(1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

Examples of When It Is Likely That a Statement Should Be Added to the Record

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:
   a. When the arguments are presented in an appeal brief.
   b. When the arguments are presented in an ordinary response with or without amendment of claims.
   c. When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.
2. First action issue:
   a. Of non-continuing application wherein claims are very close to cited prior art and differences have not been discussed elsewhere.
   b. Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filled matters.
3. Withdrawal of a rejection for reasons not suggested by applicant, for example:
   a. As a result of an appeal conference.
   b. When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.
   c. When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to address the question of obviousness.
4. Allowance after remand from the Board of Appeals.
5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:
   a. When reference is found and cited (but not argued) by applicant.
   b. When reference is found and cited by Examiner.
6. Where the reasons for allowance *are* of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.
7. Allowance based on claim interpretation which might not be readily apparent, for example:
   a. Article claims in which method limitations impart patentability.
   b. Method claims in which article limitations impart patentability.
   c. Claim is so drafted that "non-analogous" art is not applicable.
   d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims. Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.
2. During two telephonic interviews with applicant's attorney, Mr.—on 5/6 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.
3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953.224. The improvement comprises baffle means *12* whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.
4. Upon reconsideration, this application has been awarded the effective filing date of S.N. _______. Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.
5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.
6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (Note: The significance of this statement may not be clear if no further explanation is given.)
2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.
3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.
4. Claims 1–6 have been allowed because they are believed to be both novel and unobvious.

The examiner should *not* include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.
6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Jan. 24, 1978. *Deputy Assistant Commissioner*
for Patents.

[968 O.G. 6]

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(86) Practice/Re: New Grounds of Rejection After Appeal Brief Has Been Filed

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of rejection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e) or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modification will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner
for Patents.

[970 O.G. 94 (5-23-78)]

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(87) Commercial Success and Other Considerations Bearing on Obviousness

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are made in the Manual of Patent Examing Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. *Commercial Success and Other Considerations Bearing on Obviousness*

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy, *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) ; *In re Palmer.* 172 USPQ 126, 451 F.2d 1100 (CCPA 1971) ; *In re Fielder and Underwood,* 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham* v. *John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakraida* v. *Ag Pro*,425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc.* v. *Pavement Salvage Co., Inc.*, 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co.* v. *Supermarket Corp.*, 340 U.S. 147 87 USPQ 303 (1950). See *Dann* v. *Johnston,* 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States* v. *Adams,* 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tiffin,* 448 F.2d: 791. 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is *not* the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Mageli, et al.* 176 USPQ 305, (CCPA 1973)]; [*In re Noznick, et al,* 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of longfelt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's potential or marketability rather than want of technical knowhow [*Scully Signal Co.* v. *Electronics Corp. of America,* 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not convincing, the commercial success not related to the technology, etc.).

RENE D. TEGTMEYER,
July 10, 1978. *Assistant Commissioner*
for Patents.

[973 O.G. 34]

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(88) Handling of Dependent Claims by the Examiner

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

		Identification	
Claim Number	Claim Dependency	Current Practice	Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3 .	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

[976 O.G. 128]

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(89) Microorganisms—Patentable Subject Matter

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. §101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. §101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
July 29, 1980. *Commissioner of Patents*
and Trademarks.

[997 O.G. 24]

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(90) Department of Commerce
Patent and Trademark Office

Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty and the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary, and Japan. A copy of the Treaty was published in the *Official Gazette* on Aug. 23, 1977 (961 O.G. 21–26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains informations for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty

or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms,

(v) complying with respect to the microorganisms deposited under the Treaty with the requirement of secrecy which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depository authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1)

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

SIDNEY A. DIAMOND,
July 14, 1978. *Commissioner of Patents*
and Trademarks.

[999 O.G. 2]

(91) Entry Into Force of the Budapest Treaty

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (961 O.G. 21–36).

Following entry into force of the Treaty, each state adhering or acceding thereto will be authorized to nominate depositories on its territory to serve as international depository authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depository will be designated an international depository authority.

No depository in the United States or elsewhere has yet been nominated or designated to serve as an international depository authority. It is expected, however, that some depositories will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depository authority and its requirements for patent deposits.

An application for a patent in any adhering States involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depository authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depository meeting the requirements set forth in *In re Argoudelis, et al.*, 168 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

SIDNEY A. DIAMOND,
July 14, 1980. *Commissioner of Patents and*
Trademarks.

JORDAN J. BARUCH,
July 16, 1980. *Assistant Secretary for*
Productivity, Technology and Innovation.

[997 O.G. 10]

DEPARTMENT OF COMMERCE

(92) Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the American Type Culture Collection, Rockville, Md., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents*
and Trademarks.

BUDAPEST Notification No. 11

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the American Type Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Nov. 17, 1980, of a written communication from the Government of the United States of America, relating to the American Type Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The American Type Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 3, 1980.

[1002 O.G. 116]

DEPARTMENT OF COMMERCE

(93) Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the Agricultural Research Culture Collection, Peoria, Ill., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents*
and Tradmarks.

BUDAPEST Notification No. 12

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the Agricultural Research Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Dec. 2, 1980, of a written communication from the Government of the United States of America, relating to the Agricultural Research Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The Agricultural Research Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 8, 1980.

[1002 O.G. 116]

DEPARTMENT OF COMMERCE

(94) **Patent and Trademark Office**

37 CFR Part 1

[Docket No. 21001-201]

File Wrapper Continuing Application Procedure

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent cases to provide a new procedure for filing continuation, continuation-in-part, and divisional patent applications. This procedure is being provided to simplify filing and processing of continuation, continuation-in-part and divisional patent applications which have heretofore required a new set of application papers. By using the application which is to be abandoned, the procedure will eliminate many of the problems currently involved in preparing and processsing such continuing patent application papers.

EFFECTIVE DATE: Feb. 27, 1983.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is amending the rules of practice for patent cases to permit an applicant to file a continuation or division of a pending patent application by simply filing a request therefor and paying the necessary application filing fee. To file a continuation-in-part application, an amendment adding the additional subject matter and an oath or declaration relating thereto is also required.

The "file wrapper continuing" (FWC) procedure is incorporated in the rules by adding a new §1.62. Under this simplified procedure, any continuing application such as a continuation, continuation-in-part, or divisional application may be filed by using the papers in the copending prior application, which application will become automatically expressly abandoned. Under the FWC procedure, a new serial number is assigned and the specification, drawings and other papers in the parent application file wrapper are used as the papers in the continuing application. Changes in inventorship may be made. The "file wrapper continuing" (FWC) procedure is available for utility, design, plant, and reissue applications to the full extent that continuing applications can now be filed in such applications. Use of the FWC procedure will automatically result in express abandonment of the prior application as of the date that the continuation, continuation-in-part, or divisional application is filed.

The FWC procedure could be used for any continuation, continuation-in-part or divisional application provided the applicant wishes the copending prior application to become abandoned. If a divisional application is desired without abandonment of the parent application, the procedure under §1.60 should be used. Applicant also has the option of filing new application papers with a reexecuted oath or declaration.

Background

The notice of proposed rulemaking was published in the Federal Register on Nov. 7, 1980 at 45 FR 73965 and in the Official Gazette on Dec. 9, 1980 at 1003 O.G. 9. An oral hearing was held on Feb. 4, 1981.

Discussion of Major Issue Involved

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been satisfactorily resolved before the examiner and the application is not in condition for an appeal from the final rejection to the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application. Continuation-in-part applications are filed where additional subject matter is added and claimed in the application. Under 35 U.S.C. 120 of the patent law, a continuation, continuation-in-part or divisional application may be filed during the pendency of the prior application and the benefit of the filing date of the prior application for the subject matter disclosed therein may be obtained.

The practice under §1.60 has resulted in a number of problems, especially difficulties in obtaining good-quality copies of prior applications. In addition, the practice involves unnecessary handling and processing delays.

Under new §1.62, the specification, claims and drawings, and any amendments in the prior application are made available for use in the continuation, continuation-in-part, or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41 and 37 CFR 1.16. The only other statutory requirement under 35 U.S.C. 111 is a signed oath or declaration. Since a continuation or divisional application cannot contain new matter, the oath or declaration filed in the prior application would supply all the information required under the statute and rules to have a complete application and to obtain a filing date. Accordingly, the previously-filed oath or declaration will be considered to be the oath or declaration of the §1.62 continuation or division. However, if a continuation-in-part application is being filed, or a correction of inventorship is being made, then a new oath or declaration must be signed and filed by the applicant.

The original disclosure of an application filed under §1.62 will be the original parent application as executed by the inventor(s). However, the filing fee will be based on the claims in the §1.62 application after entry of any unentered amendments under §1.116 in the prior application and any preliminary amendment which may accompany the FWC request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 will not apply to filing a request for a "File Wrapper Continuing" application since the filing of such a request is considered to be a filing of application papers for the purpose of obtaining an application filing date (37 CFR 1.8(a)(i)).

The applicant may file a signed FWC request and the regular filing fee under §1.16 and other necessary papers with the Patent and Trademark Office, either by mail addressed to "Box FWC" or in person with the mail room. An individual check or deposit account authorization should accompany each FWC application, since combined checks delay processing.

The Correspondence and Mail Division will sort out all "Box FWC" envelopes upon receipt and deliver them to a reader for prompt special handling. The reader would apply the "Mail Room" date stamp and mark the categories of the fees. The papers for each FWC application would be assigned a regular national serial number and be placed in a "Jumbo" size file wrapper. The Special Handling Branch will review the FWC request for accuracy and completeness and assign the filing date if everything appears to be in order. Problems will be handled, insofar as possible, by calling the applicant or attorney by telephone. There will be no need for any processing of the FWC application by the Classification or Examination Branches of Application Division since there are no papers to be examined and the FWC application will be routed to the group assigned the prior application. When the FWC application file wrapper is received in the examining group, the parent application will be promptly obtained and processed by a clerical staff member.

All of the correspondence from the Office in a FWC application will refer to the FWC application serial number and filing date and will be processed in the same manner as any other continuation, continuation-in-part or divisional application. The first action final rejection procedures set forth in §706.07(b) of the Manual of Patent Examining Procedure will also apply to FWC applications filed under §1.62.

The PALM III system will supply information to authorized persons as to the location of the parent application file wrapper and will tie the parent application number to the FWC application number.

The provisions of §1.62 provide that if any application in the file wrapper is available to the public that all applications in the file wrapper will be available to the public.

Some of the anticipated benefits of the new §1.62 procedure are the following:

For the Applicant

1. Formal requirements will be minimal.
2. A more prompt first action in the continuing application should be received in view of reduced processing time. The Application Division can process promptly all §1.62 applications with minimal effort. In the examining groups, the applications will be given high priority for processing purposes.
3. Amendments made to the specification, drawings and claims of the prior application will carry over into the §1.62 continuing application and will not need to be resubmitted in the continuing application.

For the Public

1. The pendency of a series of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the §1.62 procedure would be reduced.
2. The entire record of prosecution could be in one file wrapper under the §1.62 procedure, even if several continuing applications are filed. This will result in easier access by the public to a series of applications if a patent is later issued.

For the Patent and Trademark Office

1. The workload of reviewing and processing new application papers in the Application Division will be reduced.
2. The examining group clerks will not be required to again enter amendments made in the prior application.
3. Less storage space will be required under §1.62 since there will be fewer papers to store.
4. The prior application file history and references cited therein will be readily available to the examiner under §1.62 and will not need to be ordered from abandoned files.
5. The Office will not be required to prepare a copy of the prior application file under the §1.62 procedure.

Discussion of Comments Received

After careful consideration of the comments which have been received, the proposed rulemaking relating to file wrapper continuing application procedure is being adopted with certain changes. A total of 23 comment letters were received. Six of these letters were received from patent law organizations. Two persons presented oral comments at the hearing. The comments of 6 letters supported the proposed rulemaking without further suggestions for change. Only one letter opposed the proposal.

Seven of the letters urged adoption of a procedure whereby an applicant could pay a fee to have a final rejection withdrawn so that prosecution could be extended in an application rather than filing a continuing application. This suggestion was not adopted for several reasons. Such a procedure could not be used for filing of continuation-in-part applications, the average pendency of applications in the Office would be extended, and significant problems in internal record systems would be created.

A number of comments were received which presented specific suggestions to proposed §1.62. Four letters commented that the requirement of proposed §1.62(a)(4) to supply information as to title, applicant, correspondence address, etc. in order to file under §1.62 could easily lead to filing errors.

In final §1.62(a)(3) only the serial number, filing date and applicant's name of the prior application are required. The filing of information relating to the title, applicant's name, etc. is however urged in paragraph (e) of final §1.62 and is needed to prepare Office records and the filing receipt.

One comment letter was received which indicated that a specific reference should be made to unentered amendments filed under 37 CFR 1.116. Such a reference has been added to paragraph (a)(2) of §1.62.

Two letters objected to the requirement in proposed §1.62(a)(2) that a new set of claims be presented. This requirement has been deleted from final §1.62.

A number of general comments were also presented relating to §1.62. One comment argued that the proposed practice would encourage abuse by examiners of the second action final rejection practice. In response to this argument, it is felt that the proposed procedure would not create any new problems.

One comment indicated that problems involving access to the file wrapper may arise. It is felt, however, that access problems should not arise in view of paragraph (c) of final §1.62 which relates to waiver of secrecy. The current PALM III computer record system is capable of indicating the location of both the prior and continuing applications.

One comment was received relating to proposed §1.138 which indicated that the reference to §1.60 was confusing. The reference to §1.60 has been deleted in final §1.138.

New §1.62 sets forth the requirements of the file wrapper continuing procedure.

Section §1.138 is amended so that a registered attorney or agent could, without being of record, file a §1.62 application and expressly abandon a pending prior application. Such an action would not affect applicant's rights to any great extent since the prior application would only be expressly abandoned if a filing date was granted to a continuing application.

Other Considerations

Environmental, Energy, and Other Considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980(44 U.S.C. 3501 et seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities because it adds no burdens and does simplify filing procedures (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to preparing application papers and amendments, will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Lawyers.

PART 1—[AMENDED]

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by Section 6 of Title 35 of the United States Code, Part 1 of Title 37 of the Code of Federal Regulations is amended as set forth below.

1. A new §1.62 is added to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application which uses the specification and drawings from a prior application may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on a prior application if each of the following four conditions are met:

(1) A request is made for filing under this section;

(2) The filing fee for a continuation, continuation-in-part, or divisional application is paid. Such filing fee must be based on the number of claims remaining in the application after entry of any preliminary amendment and any repeated amendment under §1.116 unentered in the prior application;

(3) The prior application is identified by Serial Number, filing date, and applicant's name;

(4) In the case of a continuation-in-part which adds additional disclosure, a new oath or declaration must also be filed as provided by 35 U.S.C. 111. In a continuation or divisional application which discloses and claims only subject matter disclosed in a prior application, no additional oath or declaration is required.

(b) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application serial number.

(c) The filing of an application under this section will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning, either the prior application or any continuing application filed under the provisions of this section may be given similar access to, or similar information concerning, the other application(s) in the file wrapper.

(d) The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application.

(e) The applicant is urged to furnish the following information relating to the prior application to the best of his or her ability:

(1) Title as originally filed and as last amended;

(2) Name of applicant as originally filed and as last amended;

(3) Current correspondence address of applicant;

(4) Identification of prior foreign application and any priority claim under 35 U.S.C. 119.

(f) Envelopes containing only application papers and fees for filing under this section should be marked "Box FWC".

2. Section 1.138 is revised to read as follows:

§1.138 Express abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant himself or herself, and the assignee of record, if any, identifying the application. Except as provided in §1.262 an application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent acting under the provision of §1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

GERALD J. MOSSINGHOFF,
Sept. 30, 1982. *Commissioner of Patents*
and Trademarks.

[FR Doc. 82-29283 Filed 10-23-82: 8:45 am]
BILLING CODE 3510-16-M
[1024 O.G. 59]

DEPARTMENT OF COMMERCE

(95)

Patent and Trademark Office

37 CFR Part 1

Reissue, Reexamination, Protest and Examination Procedures in Patent Cases

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases (1) to eliminate consideration of the so-called "no defect" reissue applications, (2) to limit the participation by protestors during the examination of patent applications, (3) to reject and permit appeal to the Board of Appeals for failure to comply with the duty of disclosure rather than striking applications without appeal rights, and (4) to clarify the interface between patent application examination and patent reexamination in certain areas. These changes are intended to (1) reduce the prosecution costs of patent applicants, and (2) permit some of the Patent and Trademark Office resources now devoted to consideration of the so-called "no defect" reissue applications, and to extensive participation by protestors during application examination, to be directed toward reduction of the backlog of pending patent applications. The changes are also intended to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. The rule changes are further intended to clarify the interface between the duty of disclosure during patent application examination and the duty of disclosure during patent reexamination, as well as the treatment of concurrent reissue and reexamination proceedings on the same patent.

Effective Date: July 1, 1982.

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Supplementary Information:

Background

A notice of proposed rulemaking was published in the Federal Register on Nov. 10, 1981, at 46 FR 55666-55672 and in the Official Gazette on Dec. 8, 1981, at 1013 O.G. 19-25. An oral hearing was held on Feb. 4, 1982. Forty-two written letters and statements were submitted. Fourteen persons testified at the oral hearing which resulted in 113 pages of testimony. Consideration was also given to the comments presented at the oral hearing on Apr. 16, 1981, relating to the proposed rules for implementing patent reexamination.

Objectives of Rule Change

The rule change is designed to adopt and implement suggestions from members of the public for changes in patent examination practice considered desirable in light of the implementation of statutory patent reexamination, contained in Public Law 96-517. Many of the persons who commented in writing and at the hearing held on

Apr. 16, 1981, on the proposed rules for implementing patent reexamination favored modification of patent examination rules as amended herein. This rule change is designed to implement the suggestions received and, in particular, to reduce the prosecution costs of patent applicants by limiting the amount of participation by protestors during the patent application examination process.

The rule change also seeks to reduce the amount of time required by the Patent and Trademark Office to examine protested applications by limiting protestor participation. The technical expertise of the Patent and Trademark Office will continue to be available to make determinations of patentability on the basis of prior art and related facts on an ex parte basis. However, the patent examiners in the Office are not trained as hearing examiners and have no substantial experience in handling inter partes matters. Under the rule change, protestor participation will be limited to the filing of papers in opposition to the grant of a patent with no Office communications to the protestor resulting therefrom beyond an acknowledgment of receipt of a protest or petition to strike in reissue applications. The opportunity to comment on Office actions and applicants' responses is eliminated. The rule change also intends to accomplish these purposes by eliminating the consideration of reissue applications not initially presented to correct defects pursuant to 35 U.S.C. 251.

The rule change is also designed to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. This is accomplished by amending §1.56(d) to provide that the claims in an application be rejected if upon examination pursuant to 35 U.S.C. 131 and 132 it is found that applicant is not "entitled to a patent under the law" because of fraud or a violation of the duty of disclosure. The rejection would be made under the same conditions and circumstances previously used to strike an application, i.e., "clear and convincing evidence" of fraud or any violation of the duty of disclosure through bad faith or gross negligence. The statute, 35 U.S.C. 131, provides for examination of an application "and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent * * *" Section 132 of Title 35, United States Code, makes provision for the rejection of a claim for a patent as a result of the examination directed by 35 U.S.C. 131. While questions of fraud and violations of the duty of disclosure have historically been dealt with by the Commissioner through the mechanism of striking the affected application, there is no statutory requirement that the Commissioner act in that manner. Clearly the Commissioner can choose how, and by whom, the examination directed by 35 U.S.C. 131 can be made. 35 U.S.C. 132 authorizes a rejection in those circumstances where applicant is not "entitled to a patent under the law." The rule change simply modifies the mechanism and procedures which the Commissioner will use where the applicant is not "entitled to a patent under the law" because of failures to comply with §1.56(d).

The rule change is also designed to clarify the interface between patent application examination and patent reexamination in certain areas. The two areas involved are duty of disclosure and concurrent proceedings involving a patent under reexamination and for which a reissue application has been filed.

Sections 1.56, 1.106, 1.175, 1.193, 1.291, 1.555, 1.565, and 1.570 are amended to accomplish the purpose indicated above.

Discussion of Specific Rules

Access and Publication of Reissue Applications

The changes proposed in §1.11 are not being adopted since only one of the twenty-two comments favored the changes.

The publication of notices of the filing of reissues and provisions for public access to reissues will therefore continue as at present. Such publication eliminates the need for interested members of the public to periodically monitor the patent files to determine if a reissue application has been filed.

Amendments to §1.56

A large majority of the comments supported the amendments to §1.56. A number of comments questioned the advisability of having relatively inexperienced or non-attorney examiners handle questions of fraud or violation of the duty of disclosure. In response thereto, the amendments to the rule do not require that such questions be handled by the examiner who examines the application for questions of obviousness, enablement, etc. The Office presently plans to have questions of possible fraud or violation of the duty of disclosure examined by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Several comments suggested that the provisions for striking an application pursuant to existing paragraph (c) of §1.56 are inconsistent with the rejection for fraud or violation of the duty of disclosure contemplated in the amendment to paragraph (d). In response thereto, it is pointed out that paragraph (c) of §1.56 makes striking of the application discretionary with the Commissioner. It is thus more appropriate to retain this authority to strike the application in appropriate circumstances rather than to make it subject to a rejection. No inconsistency is seen between the different routes under paragraphs (c) and (d) of §1.56. Several comments were received indicating concern about the possible delay of a decision by the Board of Appeals pending consideration of a fraud or duty of disclosure question. In response to these concerns, it is pointed out that less time overall will be required by having the Board of Appeals consider the matter once rather than in a series of separate decisions. Further, expense to the applicant will be minimized by one appeal rather than two. The amendments to §1.56 are adopted as proposed except for some clarifying changes in paragraph (g).

Section 1.56 is amended by revising the title and paragraph (d), and by adding new paragraphs (e) through (i). The revision to the title and paragraph (d) provides for the rejection of claims upon examination pursuant to 35 U.S.C. 131 and 132 on the ground that applicant is not entitled to a patent under the law if it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies. Under amended paragraph (d), any rejection which would be made would include all the claims in the application.

The standards to be used in rejecting the claims under paragraph (d) as amended, would be the same as those utilized by the Commissioner in striking applications pursuant to present paragraph (d), i.e., clear and convincing evidence of fraud or any violation of the duty of disclosure through bad faith or gross negligence. Consistent with present practice, the revision of paragraph (d) looks to fraud or a violation of the duty of disclosure through bad faith or gross negligence with relation to the application under consideration or any previous application upon which the application relies.

The phrase "in connection with the application" is construed in the same manner as in the present unamended paragraph (d). For purposes of this section, a reexamination proceeding on a patent would be considered as being "in connection with the application" insofar as consideration of any subsequent reissue application is concerned. The phrase also includes within its scope the mere refiling of the subject matter of an application in another application without relying in the second application upon the first application. Thus, an appropriate rejection upon examination pursuant to 35 U.S.C. 131 and 132 based on conduct or actions proscribed by §1.56(d) could not be avoided merely by refiling the subject matter of the application in a second or subsequent application which did not rely upon the earlier application. The phrase "in connection with any previous application upon which the application relies" is intended to include all applications upon which the application under consideration relies, either directly or indirectly. For example, an application to reissue a patent obviously relies upon the application which resulted in the patent sought to be reissued. Likewise, continuation applications, continuation-in-part applications, and divisional applications also rely upon one or more parent applications.

New paragraph (e) of §1.56 normally delays the examination of an application for compliance with paragraph (d) of §1.56 until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. Present plans are to have this examination on the question of fraud or violation of the duty of disclosure conducted by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Paragraph (e), as added, would thus permit the resolution of issues arising under §1.56(d) to be delayed until consideration of such issues is necessary and appropriate. The practice under new paragraph (e) is generally consistent with present practice under paragraph (d) which normally delays the substantive resolution of fraud and duty of disclosure issues until other issues have been resolved in favor of applicant. Under new paragraph (e) an appeal would be suspended for examination pursuant to amended paragraph (d) of §1.56 once appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals. If no questions of possible violation of §1.56 are raised or evident on the record before the examiner, no examination for compliance with paragraph (d) of §1.56 will be undertaken. New paragraph (e) provides for the reopening of prosecution of the application to the extent necessary to conduct the examination pursuant to amended paragraph (d) of §1.56 including any appeal pursuant to §1.191. New paragraph (e) also indicates that where an appeal has already been filed based on a rejection on other grounds, any further rejection under amended paragraph (d) will be treated in accordance with amended §1.193(c).

New paragraph (f) continues the present long standing practice whereby any member of the public can file a petition to strike an application from the files pursuant to paragraph (c) of §1.56. Such petitions are currently being filed without specific mention in §1.56. Under revised §1.56 petitions to strike an application for a violation of §1.56 are limited to violations of paragraph (c), with any violations of paragraph (d) being subject matter for rejection under paragraph (d). New paragraph (f) requires that any such petition alleging a violation of paragraph (c) which is entered in the application file must: (1) Be timely filed, (2) specifically identify the application to which the petition is directed, and (3) be served on the applicant or be filed with the Office in duplicate in the event service is not possible. New paragraph (f) does not specifically limit a "timely petition" to any particular point in the examination of the application. Such petitions will generally be considered "timely" if they are filed before final rejection or allowance of the application by the examiner. Whether or not a petition filed after final rejection or allowance of the application by the examiner is considered "timely" will depend upon the circumstances and the point in the prosecution at which the petition is submitted.

New paragraph (f) requires that the petition specifically identify the application to which the petition is directed. While an identification by application serial number is not essential, the identification must include enough specificity that the Office can determine with certainty the application to which the petition is directed. Paragraph (f) requires service of the petition on the applicant, or a duplicate copy in the event service is not possible, before the petition will be entered. While the Office might, in some circumstances, reproduce and serve a petition on the applicant, a member of the public would have no assurance that this would be done and, under paragraph (f), could not rely upon the Office doing so. Paragraph (f) also requires that any petition filed by an attorney or agent comply with §1.346.

New paragraph (g) of §1.56 assures a member of the public that a petition to strike an application for violation of paragraph (c) of §1.56 which meets the requirements of paragraph (f) will be considered by the Office. Language has been added to conform to additional language in §1.291(c). The Office will send petitioner an acknowledgment of the entry of a petition to strike in a reissue application file. However, the Office will not communicate with the member of the public filing such a petition in non-reissue applications, except for the return of any self-addressed postcard which was enclosed which merely acknowledges receipt of the petition. The member of the public filing the petition will not be permitted to contact the Office as to the disposition, or status, of the petition, or to participate in any Office proceedings relating to the petition. No further papers will be acknowledged or considered unless they raise new issues which could not have been earlier presented and thereby constitute a new proper petition. Mere arguments relating to the Office's decision on the petition or applicant's response to the petition would not qualify as a new proper petition. The disposition of the petition, once one has been filed, will, under paragraph (g), be an ex parte matter between the Office and the applicant. Paragraph (g) provides for communication by the Office with the applicant regarding a petition to strike the application which has been entered in the application file. Under new paragraph (g) the applicant could be required by the Office to respond to the petition. Any such response would be ex parte and would not be served on the member of the public filing the petition.

New paragraph (h) of §1.56 provides that any member of the public may seek to have the claims in an application rejected pursuant to the amended paragraph (d) of §1.56 by filing a timely protest in accordance with §1.291. New paragraph (h) also requires that any such protest filed by an attorney or agent seeking a rejection of claims pursuant to amended paragraph (d) of §1.56 must be in compliance with §1.346. One comment suggested that the last sentence of paragraph (h) is redundant since §1.346 applies without any specific mention. After careful consideration of the comment the sentence is being retained in order to emphasize and remind attorneys and agents of the obligations imposed by §1.346.

New paragraph (i) provides for the Office requiring the applicant to supply information pursuant to paragraph (a) of §1.56 in order for the Office to decide any issues relating to paragraphs (c) and (d) of §1.56, whether or not such issues arise as a result of a petition or a protest, or arise from other sources, e.g., an examiner discovering the issue while studying the application file. Any requirements for information under new paragraph (i) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under new paragraph (i) differs from past practice under which information was required, or requested, from applicant and one or more petitioners or protestors in some cases.

Rejection of Claims

Five comments were submitted relating to new paragraph (c) of §1.106. Two of the comments favored the paragraph as written and three recommended modification or clarification of the paragraph to ensure that it is not inconsistent with *In re Ruff, et al.*, 45 CCPA 1037, 118 USPQ 340 (CCPA 1958), and subsequent decisions. No modification or clarification of the paragraph is considered necessary since the intent of the paragraph was not to change current practice, but was merely to emphasize the importance placed on admissions and to make §1.106 more closely reflect current practice, which

includes practice following *In re Ruff, et al.*, and subsequent decisions. The amendments to §1.106 are adopted as proposed.

Section 1.106 is amended to include a new paragraph (c) which emphasizes the importance placed on admissions by the applicant or the patent owner in a reexamination proceeding insofar as matters affecting patentability are concerned. Paragraph (c) includes a reference to the use of rejections based upon facts within the knowledge of the examiner as provided in §1.107. Paragraph (c) does not constitute a change in practice, but does result in §1.106 more closely reflecting current practice.

Reissue Oath or Declaration

Ten persons commented on §1.175. Four comments were received in support of the proposed change. Three of these favorable comments were from patent law groups. Of the six comments received opposing the change, two were from patent law groups. Eleven comments received at the Apr. 16, 1981, hearing on reexamination argued for retraction of the "Dann Amendments" which included §1.175(a)(4). Four comments at the Apr. 16, 1981, hearing favored retaining the "Dann Amendments". The arguments supporting the change were generally that paragraph (a)(4) was not necessary in view of the new reexamination procedure. The arguments opposing the deletion were generally that an inter partes practice before the Office is desirable from the standpoint of the judiciary and for a complete resolution of issues. After careful consideration of all of the arguments and the resources available in the Patent and Trademark Office, it is felt that the practice under paragraph (a)(4) of §1.175 should be discontinued and paragraph (a)(4) should be cancelled.

The numbering of paragraphs (a)(5) and (6) is not being changed. Proposed paragraph 1.175(a)(6) is being adopted as new paragraph 1.175(a)(7). The proposed wording is otherwise being adopted without change.

Amended §1.175 eliminates paragraph (a)(4). Under paragraph (a)(4), the Office gave advisory opinions on patentability over additional prior art without any changes in the patent claims. The courts have generally refused to give preclusive effect to these advisory opinions. See *PIC, Inc.* v. *Prescon Corp.*, 485 F. Supp. 1302, 205 USPQ 228 (D. Del. 1980), and *Rohm and Haas Co.* v. *Mobil Oil Corp.*, 525 F. Supp. 1298, 212 USPQ 354 (D. Del. 1981). Accordingly, in view of the implementation of patent reexamination pursuant to Pub. L. 96-517 it is appropriate to discontinue the advisory opinions provided pursuant to §1.175(a)(4). Under amended §1.175 an applicant for reissue of a patent will be required to file with the reissue application a statement under oath or declaration specifically averring a defect in the patent, e.g., "a defective specification or drawing," or an excess or insufficiency in the claims. Amended §1.175 also requires, in paragraphs (a)(5) and (a)(6), that applicant specify "errors" as opposed to "what might be deemed to be errors." Amended §1.175 effectively eliminates Office consideration of the merits of "no defect" reissue applications since any such "no defect" reissue applications filed after July 1, 1982, the effective date of the changes to §1.175, will not be examined as to questions of patentability. In addition, §1.175(a)(7) has been added to parallel the provisions in §1.65 requiring the same acknowledgment of the duty of disclosure in the oath or declaration of reissue applications as in the case of non-reissue applications.

Delay in Examination of Reissue Applications

Six comments were received relative to the proposed changes in §1.176. One comment supported, and five comments opposed, deleting the two month waiting period before action could be taken by an examiner in a reissue application. The opposing comments favored retaining the two month period to provide an opportunity for interested parties to submit information relating to the examination of a reissue application after notice of the filing thereof has been published in the Official Gazette. Since the notices under §1.11 will continue to be published, no need is seen to change §1.176. The proposed change is therefore not adopted.

Examiner's Answer

Only one comment was made relating to the proposed addition of paragraph (c) to §1.193. It suggested including a minimum time period for response in the rule. This suggestion was not adopted because in some circumstances it may be appropriate to set a shorter or a longer period for the reply brief. The amendments to §1.193 are adopted as proposed.

Paragraph (c) adds to §1.193 a provision that any decision rejecting claims pursuant to §1.56(d) in an application already on appeal from a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e). Prior to entering any such supplemental examiner's answer under paragaph (c), the Office may require information from applicant pursuant to paragraph (i) of §1.56. Under paragraph (c) of §1.193, the appellant may file a reply to the supplemental examiner's answer. Paragraph (c) provides that the appellant's reply to the supplemental examiner's answer will be considered and responded to as necessary with appellant being provided with an additional month, or such other time as may be set, within which to reply to any such response from the Office. After introduction of a supplemental examiner's answer pursuant to paragraph (c) and any replies and response thereto, the application will be forwarded to the Board of Appeals for consideration.

Protests by the Public Against Pending Applications

Fifteen persons commented on the proposed amendment of §1.291. Two persons suggested that protests be acknowledged by more than the return of a self-addressed postcard. The suggestion has been adopted to the extent of providing for an acknowledgment of the entry of a protest in a reissue application file to be sent to the member of the public filing the protest. The suggestion has not been adopted insofar as original applications are concerned since these applications are generally required to be kept in confidence under 35 U.S.C. 122. Further, the use of return postcards is an established method of receiving acknowledgment from the Office that a paper has been filed. By merely returning the postcard to a protestor in an application for an original patent and directing Office initiated communications solely to applicant, the amount of Office resources required will be minimized.

Several persons commented that the protest proceeding should be more inter partes. The weight of the comments received at the hearings held on Apr. 16, 1981, and Feb. 4, 1982, and in writing, favored ex parte proceedings. To ensure that the proceedings are essentially ex parte, a sentence is being added to paragraph (c) of §1.291, indicating that active participation by a member of public ends with the filing of the protest. To retain the inter partes nature of the protest would be contrary to the majority of the comments received and to one of the major purposes of the rule change, i.e., to reduce the amount of time spent by the Office in examining protested applications. The amendments to paragraphs (a) and (b) of §1.291 are adopted as proposed and paragraph (c) is being revised as indicated above.

Amended §1.291 continues to permit protests by the public against pending original and reissue applications. The protest may include any grounds which the member of the public filing the protest believes to be applicable.

Amended paragraph (a) of §1.291 provides for entry of a protest in the application file if the protest specifically identifies the application, is timely submitted, and is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate, in the event service is not possible. The comments made above in the discussion of new paragraph (f) of §1.56 regarding the timeliness of the filing or submission, specific identification of the application, and service on the applicant, are also applicable to the amendments of paragraph (a) of §1.291. The requirement that the Office acknowledge the filing of a protest is deleted from paragraph (a), but is covered in paragraph (c).

New paragraph (b) of §1.291 assures members of the public that a protest will be considered by the Office if (1) it specifically identifies the application to which it is directed; (2) it is timely submitted; (3) it is properly served upon the applicant in accordance with §1.248, or is filed with the Office the duplicate in the event service is not possible; (4) it includes a listing of the patents, publications or other information relied upon and a concise explanation of the relevance of each listed item; (5) it includes a copy of each listed patent or publication or other item of information in written form, or at least the pertinent portions thereof; and (6) it includes an English language translation of all the necessary and pertinent parts of any non-English language document relied upon. It is considered desirable that §1.291 advise members of the public as to the contents which should be included in any protest since there will be no Office communications directed to the member of the public submitting the protest under paragraph (c). Thus, under paragraph (c) members of the public will not be given an opportunity to complete any protest which is incomplete. Amended paragraph (c) provides for the acknowledgment of the entry of a protest in a reissue application file.

Amended paragraph (c) of §1.291 provides that a member of the public filing a protest in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard acknowledging receipt of the protest. Amended paragraph (c) of §1.291 does not permit the member of the public filing the protest, or any other member of the public, to contact the Office as to the disposition, or status, of the protest or to participate in any Office proceedings relating to the protest. The disposition of the protest, once it has been filed will, under paragraph (c), be an ex parte matter between the Office and the applicant. However, applications which are open to the public may be inspected pursuant to §1.11.

Amended paragraph (c) provides for the Office to communicate with the applicant regarding any protest entered in the application file. Under paragraph (c), the applicant could be required by the Office to respond to the protest. Any response would be ex parte and would not be served on the member of the public filing the protest. Paragraph (c) provides for the Office to require applicant to supply information pursuant to pargraph (a) of §1.56 in order for the Office to decide any issues raised by the protest. Requirements for information under paragraph (c) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under paragraph (c) differs from past practice under which information could be required, or requested, from applicant and one or more protestors. Under amended paragraph (c), the active participation of the protestor ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest. Mere arguments relating to an Office action or an applicant's response would not qualify as a new protest.

Duty of Disclosure in Reexamination Proceedings

Only two comments were received relative to proposed §1.555. One comment argued that the Office should never ignore a violation of the duty of disclosure or leave it hanging. In response thereto, neither the statute nor the presently existing reexamination rules provide for reexamination on grounds other than those based on patents or printed publications. The second comment questioned whether a patent owner has a duty to cite new prior art after a request but prior to an order to reexamine. No further clarification of the section is necessary since §1.555(a) specifies when the patent owner should file a prior art statement in a reexamination proceeding. The amendments to §1.555 are adopted as proposed.

Amended §1.555 makes the duty of disclosure in reexamination proceedings more consistent with the duty of disclosure in patent applications. Paragraph (a) of §1.555 specifies that a duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner or involved employees of the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. This rule is consistent with the duty set forth in §1.56(a) insofar as patent applications are concerned, except that in paragraph (a) of §1.555 the patent owner is specified rather than the inventor as set forth in paragraph (a) of §1.56. This does not, however, impose the responsibility for compliance with the duty of disclosure on a corporate entity or organization but leaves the responsibility with involved individuals in the corporation or other organization. Paragraph (a) of §1.555 places a requirement on the individuals identified to bring to the attention of the Office patents or printed publications material to the reexamination which have not been previously made of record in the patent file and specifies how that should be accomplished.

Amended paragraph (b) of §1.555 essentially parallels existing paragraph (b) of §1.56 and makes similar provisions applicable to disclosures in reexamination proceedings.

Amended paragraph (c) of §1.555 provides that the duties of candor, good faith, and disclosure required in paragraph (a) of §1.555 have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding. The language of paragraph (c) refers to fraud or violation of the duty of disclosure in the reexamination proceeding since such conduct during the pendency of applications is covered by §1.56.

Amended paragraph (d) of §1.555 affirms that the responsibility for compliance with §1.555 rests upon the individuals identified in paragraph (a). Paragraph (d) also provides that no evaluation will be made in the reexamination proceeding by the Office as to compliance with §1.555. Paragraph (d) of §1.555 also provides that questions of compliance with §1.555 which are discovered during a reexamination proceeding will be noted as unresolved questions in accordance with present §1.552(c). Paragraph (d) will not preclude the patent owner from filing a reissue application to have questions of candor, good faith, and duty of disclosure considered and resolved, including such questions which arise during a reexamination proceeding, so long as the requirements of 35 U.S.C. 251 have been met. Paragraph (d) does not preclude suspension or disbarment proceedings under present §1.348 based upon conduct during a reexamination proceeding.

Concurrent Office Proceedings

Four comments were received on §1.565. One comment proposed adding a sentence at the end of paragraph (b) of §1.565 reflecting that reexamination would only be stayed in extraordinary situations. This suggestion has not been adopted since it is considered inappropriate to attempt to further define by rule the circumstances under which a stay of the reexamination may be appropriate. Two comments were received raising questions as to the treatment, during a merged reissue and reexamination proceeding, of broader claims which are present therein because of a reissue application which contained broadened claims. No clarification or change is necessary since the broadened claims are properly in the merged proceeding during the period it is merged. Such broader claims which are present in both the reissue and reexamination files during the pendency of the merged proceeding will be treated in accordance

with the reissue statute and case law during the pendency of the merged proceeding. If the merged proceeding ceases to exist because of the abandonment of the reissue application, the claims in the reexamination file, including any broadened claims, will be examined in accordance with the reexamination statute and rules. Finally, one comment did not agree with merging reissue and reexamination proceedings because the merger is not seen to produce cost savings or other salutary results. One of the reasons for the merged proceedings is to ensure that claims of differing scope and inconsistent responses are not presented at the same time in different proceedings in the same patent. Moreover, since the proceedings are concurrent rather than sequential, a significant savings in resources and overall pendency time may be realized by merging in many cases.

The amendment to §1.565 clarifies the proposed language of paragraph (b), eliminates from paragraph (b) the last two sentences relating to the treatment of concurrent reexamination and reissue proceedings, and adds a new paragraph (d) relating to this subject. The clarification in paragraph (b) is intended to avoid misinterpretations relating to stay determinations where concurrent litigation or reissue applications are involved.

Under new paragraph (d), which is consistent with the practice presently in effect under paragraph (b), if a reissue application and a reexamination proceeding on which an order pursuant to present §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the proceedings. New paragraph (d) also provides that where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with present §§1.171-1.179. The examiner, in examining the merged proceeding, will apply the reissue statute and case law, in addition to applicable provisions of §§1.171-1.179, to the merged proceeding. This is appropriate in view of the fact that the statutory provisions for reissue applications and reissue application examination include, *inter alia,* provisions equivalent to 35 U.S.C. 305 relating to the conduct of reexamination proceedings. New paragraph (d) of §1.565 makes clear that the patent owner must place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. Under new paragraph (d) of §1.565 the examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and will be physically entered into both files. New paragraph (d) also provides that any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent. The amendments to §1.565 are adopted with the changes or clarification indicated in paragraph (b).

Reexamination Certificate

Section 1.570, as amended, revises paragraph (e) to refer to new paragraph (d) of §1.565 rather than paragraph (b) in order to reflect the changes in §1.565.

No comments were received concerning the section and it is adopted without change.

Interim Procedures on Applications Pending on Effective Date

On July 1, 1982, the revised procedures of §§1.56(d) and 1.193(c) will apply to any applications then pending which have not been the subject of a final Office decision on questions of fraud or violation of the duty of disclosure. Any petition to strike an application from the files or any protest against a pending application filed prior to July 1, 1982, will be governed by the rules in effect prior to that date. Any applications filed under §1.175(a)(4) prior to July 1, 1982, will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned. For a discussion of the interim practice in effect prior to July 1, 1982, see 1013 O.G. 18-19.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

List of Subjects in 37 CRF Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Lawyers.

Amendment of Regulations

PART 1-RULES OF PRACTICE IN PATENT CASES

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Part 1 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 1.56 is amended by revising the heading and paragraph (d) and by adding new paragraphs (e) through (i) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(d) No patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or gross negligence. The claims in an application shall be rejected if upon examination pursuant to 35 U.S.C. 131 and 132, it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon with the application relies.

(e) The examination of an application for compliance with paragraph (d) of this section will normally be delayed until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. The prosecution of the application will be reopened to the extent necessary to conduct the examination pursuant to paragraph (d) of this section including any appeal pursuant to §1.191. If an appeal has already been filed based on a rejection on other grounds, any further rejection under this section shall be treated in accordance with §1.193(c).

(f) Any member of the public may seek to have an application stricken from the files pursuant to paragraph (c) of this section by filing a timely petition to strike the application from the files. Any such timely petition and any accompanying papers will be entered in the application file if the petition and accompanying papers (1) specifically identify the application to which the petition is directed, and (2) are either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible. Any such petition filed by an attorney or agent must be in compliance with §1.346.

(g) A petition to strike an application from the files submitted in accordance with the second sentence of paragraph (f) of this section will be considered by the Office. An acknowledgement of the entry of such a petition in a reissue application file will be sent to the member of the public filing the petition. A member of the public filing such a petition in an application for an original patent will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the member of the public may include with the petition in order to receive an acknowledgement by the Office that the petition has been received. The Office will communicate with the applicant regarding any such petition entered in the application file and may require the applicant to respond to the Office on matters raised by the petition. The active participation of the member of the public filing a petition pursuant to paragraph (f) of this section ends with the filing of the petition and no further submission on behalf of the petitioner will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new petition.

(h) Any member of the public may seek to have the claims in an application rejected pursuant to paragraph (d) of this section by filing a timely protest in accordance with §1.291. Any such protest filed by an attorney or agent must be in compliance with §1.346.

(i) The Office may require applicant to supply information pursuant to paragraph (a) of this section in order for the Office to decide any issues relating to paragraphs (c) and (d) of this section which are raised by a petition or a protest or are otherwise discovered by the Office.

2. Section 1.106 is amended by adding a new paragraph (c) to read as follows:

§1.106 Rejection of claims.

* * * * *

(c) In rejecting claims the examiner may rely upon admissions by the applicant, or the patent owner in a reexamination proceeding, as to any matter affecting patentability and, insofar as rejections in applications are concerned, may also rely upon facts within his or her knowledge pursuant to §1.107.

3. Section 1.175 is amended by revising paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of the first sentence of §1.65, must also file with their applications a statement under oath or declaration as follows:

(1) When the applicant verily believes the original patent to be wholly or partly inoperative or invalid, stating such belief and the reasons why.

(2) When it is claimed that such patent is so inoperative or invalid "by reason of a defective specification or drawing," particularly specifying such defects.

(3) When it is claimed that such patent is inoperative or invalid "by reason of the patentee claiming more or less than he had the right to claim in the patent," distinctly specifying the excess or insufficiency in the claims.

(4) [Reserved]

(5) Particularly specifying the errors relied upon, and how they arose or occurred.

(6) Stating that said errors arose "without any deceptive intention" on the part of the applicant.

(7) Acknowledging a duty to disclose information applicant is aware of which is material to the examination of the application.

* * * * *

4. Section 1.193 is amended by adding a paragraph (c) to read as follows:

§1.193 Examiner's answer.

* * * * *

(c) Any decision pursuant to §1.56(d) rejecting claims in an application already under appeal of a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e), in which case appellant may file a reply thereto within two months from the date of the supplemental examiner's answer. Such reply will be considered and responded to as necessary. Appellant may file a reply brief directed to any such response within one month of the date of the response or within such other time as may be set in the response.

5. Section 1.291 is amended by revising the title, amending paragraphs (a) and (c), and adding paragraph (b), to read as follows:

§1.291 Protests by the public against pending applications.

(a) Protests by a member of the public against pending applications will be referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file if (1) the protest is timely submitted; and (2) the protest is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible.

(b) A protest submitted in accordance with the second sentence of paragraph (a) of this section will be considered by the Office if it includes (1) a listing of the patents, publications or other information relied upon; (2) a concise explanation of the relevance of each listed item; (3) a copy of each listed patent or publication or other item of information in written form or at least the pertinent portions thereof; and (4) an English language translation of all the necessary and pertinent parts of any non-English language patent, publication, or other item of information in written form relied upon.

(c) An acknowledgment of the entry of a protest under paragraph (a) of this section in a reissue application file will be sent to the member of the public filing the protest. A member of the public filing a protest under paragraph (a) of this section in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard which the member of the public may include with the protest in order to receive an acknowledgment by the Office that the protest has been received. The Office will communicate with the applicant regarding any protest entered in the application file and may require the applicant to supply information pursuant to paragraph (a) of §1.56, including responses to specific questions raised by the protest, in order for the Office to decide any issues raised by the protest. The active participation of the member of the public filing a protest pursuant to paragraph (a) of this section ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest.

6. Section 1.555 is revised to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. A prior art statement, preferably in accordance with §1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

(c) The duties of candor, good faith, and disclosure required in paragraph (a) of this section have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding.

(d) The responsibility for compliance with this section rests upon the individuals identified in paragraph (a) of this section and no evaluation will be made in the reexamination proceeding by the Office as to compliance with this section. If questions of compliance with this section are discovered during a reexamination proceeding, they will be noted as unresolved questions in accordance with §1.552(c).

7. Section 1.565 is amended by revising paragraph (b) and adding paragraph (d) to read as follows:

§1.565 Concurrent office proceedings.

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in interference proceedings or litigation, or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination, reissue or interference proceeding.

* * * * *

(d) If a reissue application and a reexamination proceeding on which an order pursuant to §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the two proceedings. Where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with §§1.171-1.179 and the patent owner will be required to place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. The examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and be physically entered into both files. Any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent.

8. Section 1.570 is amended by revising paragraph (e) to read as follows:

§1.570 Issuance of reexamination certificate after reexamination proceedings.

* * * * *

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in §1.565(d) the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

* * * * *

GERALD J. MOSSINGHOFF,
Apr. 6, 1982. *Commissioner of Patents*
and Trademarks.

[FR Doc. 82-13613 Filed 5-18-82; 8:45 am]
BILLING CODE 3510-16-M

[1019 O.G. 37]

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(96) Interim Reissue, Reexamination, Protest, And Examination Procedures In Patent Cases Pending Proposed Revision of 37 CFR §§1.11, 1.56, 1.106, 1.175, 1.176, 1.193, 1.291, 1.555, 1.565, and 1.570.

This notice sets forth, in general, the practice the Office intends to follow pending a final determination on the "Notice of proposed rulemaking" published in the Federal Register on November 10, 1981, at 46 F.R. 55666–55672. The "Notice of proposed rulemaking" is also being published in this issue of the Official Gazette.

Practice Relating To §1.11

Any reissue application which is presently open to inspection by the general public pursuant to present §1.11(b), and any reissue application filed before the effective date of a change in the rule, will continue to be open to inspection by the general public. No restriction of access to those reissue applications is contemplated at this time, either during their pendency before the Office, or after an abandonment of the reissue application. The filing of reissue applications will continue to be announced in the Official Gazette pending revision of §1.11(b).

Practice Relating To §1.56

Any issues arising under §1.56(d) prior to the effective date of a change in paragraph (d) will continue to be handled in accordance with paragraph (d) as it presently exists. If paragraph (d) is amended as proposed, the Office presently intends to apply the revised procedures to any applications then pending which have not been the subject of a final Office decision on questions of "fraud" or violation of the duty of disclosure.

Any petitions to strike applications from the files which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure.

Any petition to strike an application from the files which is filed after the date of publication of this Notice will be considered in accordance with the procedure set forth in the "Notice of proposed rulemaking" insofar as participation by the petitioner is concerned. Since the provisions of 37 CFR 1.56 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of petitions to strike applications, it is considered appropriate and proper to restrict participation on behalf of a petitioner as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any petition to strike an application from the files which is filed after the date of publication of this Notice must include a self-addressed postcard specifically identifying the petition and the application to which the petition is directed if an acknowledgement of the filing of the petition is desired. A member of the public filing a petition to strike an application after the date of publication of this Notice will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the petition. All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect.

Practice Relating To §1.106

No interim practice is necessary regarding this proposed revision since it would not constitute a change in practice, but would merely make §1.106 more closely reflect current practice.

Practice Relating To §1.175

Any applications filed under §1.175(a)(4) prior to the effective date of any change in the rule will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned.

Practice Relating To §1.176

The examination of any applications filed prior to the effective date of any change in the rule will continue to be delayed for two months after the announcement of the filing in the Official Gazette, except where the delay period is waived by a decision on a petition under 37 CFR 1.183.

Practice Relating To §1.193(c)

No interim practice is necessary regarding this proposed revision since the practice of rejecting claims pursuant to §1.56(d) will not be adopted prior to the effective date of a change in paragraph (d).

Practice Relating To §1.291

Any protest against a pending application which is filed after the date of publication of this Notice in the Official Gazette will be treated essentially in accordance with the procedures set forth in the "Notice of proposed rulemaking." Any protests which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure. Since the provisions of 37 CFR 1.291 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of protests filed under §1.291, it is considered appropriate and proper to restrict participation on behalf of a protestor essentially as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any protest filed after the date of publication of this Notice will be acknowledged as set forth in present §1.291 on a self-addressed postcard which protestor is hereby advised to include with the protest. The self-addressed postcard must specifically identify the protest and the application to which the protest is directed, to the extent such identifying data for the application is known. A member of the public filing a protest against a pending application after the date of publication of this Notice will receive no communication from the Office relating to the protest, other than the self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the protest as set forth in present §1.291(a). All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect. Pending adoption of the proposed rulemaking the Office will consider protests which comply with present §1.291(a) even though the protest does not include all the items enumerated in proposed new paragraph (b) of §1.291.

Practice Relating To §1.555

No interim practice is necessary regarding this proposed revision since it merely makes §1.555 more closely parallel §1.56 and more specifically defines the responsibility of a patent owner in a reexamination proceeding.

Practice Relating To §1.565

No interim practice is necessary regarding this proposed revision since it merely clarifies, but does not change, present practice.

Practice Relating To §1.570

No interim practice is necessary since this proposed revision merely reflects the paragraph change proposed in §1.565.

CONCLUSION

The present interim procedures will be in effect until further notice and pending a final determination on the proposed rulemaking.

DONALD J. QUIGG,
Nov. 16, 1981. *Deputy Commissioner*
of Patents & Trademarks.

[1013 O.G. 18]

MISCELLANEOUS

(97) Hearings Before the Board of Appeals

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Mar. 20, 1975. *Commissioner of Patents*
and Trademarks.

[933 O.G. 1010]

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(98) Access to Interference Settlement Agreements by Government Agencies

Under the provisions of 35 U.S.C. §135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date:__________

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 U.S.C. 135(c),
please permit . . . .
the bearer(s) of this letter, to [ ] inspect and/or [ ] copy the settlement agreement(s) filed in Interference
No. . . . .
The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

. . . .
Name, Title
. . . .
Agency

The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agencies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. §1002.02(k), item 2, and the parties to the interference are normally provided with copies of any such petition.

LUTRELLE F. PARKER,
June 5, 1978. *Acting Commissioner of Patents*
and Trademarks.

[972 O.G. 2]

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(99) Accessibility of Non-Final Discovery Opinions and Orders Issued by the Board of Patent Interferences

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. §1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. §552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. §122 and 37 C.F.R. §1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. §1.287]
    1.10 Requests and service under §1.287(a)
    1.20 Requests under §1.287(b)
    1.30 Motions for additional discovery under §1.287(c)
        1.31 Related to derivation
        1.32 Related to abandonment, suppression, and concealment
        1.33 Related to inequitable conduct
        1.34 Other
    1.40 Motions under §1.287(d)(1)
    1.50 Action under §1.287(d)(2)
    1.60 Agreements under §1.287(e)

C. MARSHALL DANN,
Mar. 5, 1976 *Commissioner of Patents*
and Trademarks.

[944 O.G. 2098]

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(100) Extensions of Time and Filing of Papers in Interferences

A recent sample of the interferences declared during fiscal years 1971–1975 has shown that since the 1950–1959 period there has been an increase of 27 days in the approximately one and one-half year pendency time of the average interference. This increase has occurred in spite of the Commissioner's notice of April 24, 1964, 802 O.G. 601, and an extensive revision of the interference rules in 1965.

While the failure to achieve any reduction in average interference pendency time may in part be attributable to the adoption in 1971 of 37 CFR 1.287(a)(2), which provides for the setting of additional time periods for purposes of discovery, it appears that a considerable reduction would result if the parties were to adhere to the times originally set by the Office, rather than seeking extensions of those times. Accordingly, stipulations or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Another factor which adversely affects the pendency time of the average interference is the number of papers filed. While parties are certainly entitled to exercise their rights in filing papers provided for by the rules, many papers are also filed that are not provided for by the rules, such as replies to replies to oppositions to motions under 37 CFR 1.231, and replies to oppositions to motions or petitions under 37 CFR 1.243 or 1.244. These unprovided-for papers appear to be generally unnecessary, cause a considerable increase in the size of the interference files, and delay determination of the motions or petitions to which they relate. Therefore, in the future papers filed in interference proceedings will be given no consideration unless they are specifically provided for by the rules. In this regard, particular attention is directed to 37 CFR 1.228, 1.231(b), 1.237, 1.243 and 1.244.

C. MARSHALL DANN,
Nov. 9, 1976. *Commissioner of Patents*
and Trademarks.

[953 O.G. 2]

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(101) Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock,* 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel,* 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty,* 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle,* 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Apr. 17, 1980. *Commissioner of Patents*
and Trademarks.

[994 O.G. 28]

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(102) Petitions in Interference Cases to Strike Applications for Alleged Violations of 37 CFR §1.56

Not infrequently a party in an interference will file a petition requesting the Commissioner to enter an order under 37 CFR §1.56(d) striking from the files a patent application involved in an interference. The issues raised by such a petition have been determined to be ancillary to priority within the meaning of 37 CFR §1.258(a). See e.g., *Norton* v. *Curtiss,* 57 CCPA 1384, 433 F. 2d 779, 167 USPQ 532 (1970); *Langer* v. *Kaufman,* 59 CCPA 1261, 465 F. 2d 915, 175 USPQ 172 (1972). Hence, the issues may be considered by the Board of Patent Interferences at final hearing if properly and timely presented.

The normal disposition of a petition to strike an application involved in an interference is to dismiss the petition, without prejudice to renewal following termination of the interference. Such a disposition allows the parties to develop the issues before the Board of Patent Interferences. If the party filing the petition ultimately prevails in the interference, further action on the petition may be unnecessary. Should action on the petition be necessary, the Commissioner has the benefit of the view of the Board of Patent Interferences on the issues.

Under present practice, the Board of Patent Interferences generally will hold a petition to strike an application involved in an interference until the time for opposition has expired. The file is then forwarded to the Commissioner, where the petition is normally disposed of as indicated in the preceding paragraph. This practice is time consuming and needlessly delays the interference. In order to prevent such delays, in the future the Patent Interference Examiner is authorized to enter an order dismissing a petition to strike an application involved in an interference, without prejudice to renewal of the petition after termination of the interference. The petition should be dismissed immediately upon receipt, without suspension of the interference.

Petitions to strike an application not involved in an interference will continue to be handled in the Office of the Assistant Commissioner for Patents in the manner previously announced.

SIDNEY A. DIAMOND,
Aug. 11, 1980. *Commissioner of Patents*
and Trademarks.

[998 O.G. 8]

COMMISSIONER'S NOTICE

(103) Practice under 37 CFR §1.225(b)

When a junior party to an interference is placed under an order to show cause why judgment should not be entered pursuant to 37 CFR §1.225 and requests final hearing to contest an ancillary matter, either the junior or senior party may file a motion for permission to take testimony pursuant to 37 CFR §1.225(b) and the last sentence of 37 CFR §1.251(b). However, some uncertainty has arisen as to when the motion must be filed and what it must contain.

Motion by the Junior Party

When a junior party is placed under an order to show cause and the junior party desired a testimony period, the motion for permission to take testimony should be filed preferably before the time set for responding to the order to show cause. The motion will be considered timely, however, if filed no later than twenty (20) days after the Board of Patent Interferences enters an order setting final hearing.

There are instances where the requested testimony relates to priority. For example, the junior party may occasionally desire to take testimony to establish prior inventive acts alleged in a preliminary statement even though those acts are subsequent to the senior party's effective filing date. This situation arises when (1) the junior party's preliminary statement dates fall between the filing date of the senior party's involved application and the filing date of a prior application accorded to the senior party, (2) the junior party has unsuccessfully contended in a motion under 37 CFR §1.231 that the senior party should not be accorded benefit of the prior application, and (3) the junior party has requested final hearing to review the examiner's adverse decision on the motion.

When the requested testimony includes priority testimony, the motion to take testimony may be *pro forma, viz.,* a simple request that a testimony period be set to obtain priority evidence. Normally, however, when a junior party seeks to take testimony under 37 CFR § 1.225(b), the proposed testimony relates solely to ancillary matters. When the requested testimony relates solely to ancillary matters, the motion must comply with the provisions of 37 CFR §1.225(b)—a showing of good cause must be submitted and a *pro forma* request would not be sufficient. See generally Rivise & Caesar, *Interference Law and Practice,* Vol. III, §§376–377 (1947).

Motion by the Senior Party

There are occasions when a senior party may desire a testimony period even if the junior party does not request a testimony period. See e.g., *Lorenian v. Winstead,* 127 USPQ 501 (Bd.Int. 1959). When a senior party desires a testimony period, the motion for permission to take testimony should be filed promptly after the Board of Patent Interferences enters an order setting final hearing, but in no event later than twenty (20) days after entry of such order. A senior party should take into account the fact that a junior party will begin preparation of a brief for final hearing after receiving notice of the briefing schedule. Therefore, a senior party should not be permitted to let a junior party expend unnecessary energy preparing a brief for final hearing if the senior party plans to move to take testimony.

As in the case of a junior party, a request to take testimony relating to priority may be *pro forma.* A request to take testimony limited to ancillary matters must comply with 37 CFR §1.225(b). See 37 CFR 1.251(b), last sentence.

RENE D. TEGTMEYER,
June 15, 1981. *Acting Commissioner of*
Patents and Trademarks.

[1008 O.G. 9]

(104) Disclosure Document Program

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program. Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

The Program

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

Content of Disclosure Document

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8 1/2 by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

> *"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."*

Retention

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

Warning as to Limitations

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner*
of Patents.

[883 O.G. 3]

(105) Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212

The purpose of this notice is to clarify existing Office practice with respect to suspension of action. "Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken *by the Examiner.* In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson,* USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Mar. 7, 1978. *Deputy Assistant Commissioner*
for Patents.

[969 O.G. 8]

(106)

POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 788-2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (515) 684-2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.
DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226-3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275-9111, Ext. 345.
HARTFORD, CONN., 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269-6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374-3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534-3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589-6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th Floor) (201) 645-6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3285.
PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221-3001.
RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784-5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg., (809) 723-4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

C. MARSHALL DANN,
Commissioner of Patents
and Trademarks.

July 18, 1975.

[937 O.G. 386]

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(107)

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

[1025 O.G. 8]

(108) Examiner Testimony

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works v. Joy Manufacturing Co.*, 167 USPQ 170, 171: ". . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205-12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

(109) No Change in Foreign Filing License Requirements

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703-557-2897, or Mr. Edward Drazdowsky at 703-557-2167.

WILLIAM FELDMAN,
Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

[1001 O.G. 28]

(110) Department of Commerce

Patent and Trademark Office

United States Adherence to the International Union for the Protection of New Varieties of Plants (UPOV)

On Nov. 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the 1961 text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161-164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agriculture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557-3065.

SIDNEY A. DIAMOND,
Dec. 16, 1980. *Commissioner of Patents and Trademarks.*

[1002 O.G. 102]

(111) Taking Effect in the United States of the International Convention for the Protection of New Varieties of Plants

The International Convention for the Protection of New Varieties of Plants (the UPOV Convention) will take effect in the United States on Nov. 8, 1981. It will apply to all applications for the patenting of plants under the provisions of Title 35, United States Code, which are filed on or after Nov. 8, 1981. The actual filing date will govern in determining whether the Convention will apply to an application, even though the application may be entitled to an earlier effective date under section 119 or 120 of Title 35, United States Code.

In addition to the United States, the UPOV Convention will be in effect as of Nov. 8, 1981, in the following fourteen States: Belgium, Denmark, Federal Republic of Germany, France, Ireland, Israel, Italy, Netherlands, New Zealand, Republic of South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

No changes in the patent law are needed to implement the UPOV Convention in the United States. An applicant for a plant patent will be required, however, to submit for registration a variety name for the plant to be patented. Registration is required by Article 13 of the UPOV Convention.

Registrability shall be determined in accordance with the International Code of Nomenclature for Cultivated Plants (1980). As an interim procedure pending the promulgation of an appropriate rule, inclusion of the variety name in the application will be accepted as a submission of the name for registration. No plant patent as a result of an application filed on or after Nov. 8, 1981, shall be issued without the registration of a variety name. Questions concerning this variety naming requirement or the UPOV Convention may be addressed to:

Mr. Michael K. Kirk, Director
Office of Legislation and
International Affairs
Box 4
U.S. Patent and Trademark Office
Washington, D.C. 20231

Mr. Kirk's telephone number is (703) 557-3065.

GERALD J. MOSSINGHOFF,
Oct. 15, 1981. *Commissioner of Patents and Trademarks.*

[1011 O.G. 27]

(112) Patent Cooperation Treaty Accession by Sri Lanka and Listing of PCT Member States

On Nov. 26, 1981 Sri Lanka deposited its instrument of accession to the Patent Cooperation Treaty (PCT) with the World Intellectual Property Organization. Therefore, according to PCT Article 63 (2), Sri Lanka may be designated in international applications filed on and after Feb. 26, 1982.

List of PCT Member States

State	Ratification or Accession	Date of Ratification or Accession	Date From Which State May Be Designated
(1) Central African Republic*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Fed. Rep. of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (N. Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium**	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI Member States. A designation of any State is an indication that all OAPI States have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, except for France and Belgium, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

GERALD J. MOSSINGHOFF,
Mar. 12, 1982. *Commissioner of Patents and Trademarks.*

[1017 O.G. 10]

(113) Update of PCT Information

Topics covered in this update include:

I. European Patent Office Available As An International Searching Authority on Oct. 1, 1982.
II. Matters To Be Considered When Choosing An International Searching Authority.
III. PCT Fee Amounts.

I. European Patent Office Available as an International Searching Authority on Oct. 1, 1982.

The United States Patent and Trademark Office has informed the International Bureau that in addition to the United States Patent and Trademark Office, the European Patent Office is competent as an International Searching Authority for searching all kinds of international applications filed in the United States Receiving Office on and after Oct. 1, 1982. (PCT Article 16(2) and PCT Rule 35.2(a) (i)).

It should be noted that the European Patent Office will not search, by virtue of PCT Article 17(2) (a) (i), any international application to the extent that it considers that the international application relates to subject matter set forth in PCT Rule 39.1. Furthermore, the European Patent Office is not equipped to search computer programs.

The international search fee for the European Patent Office must be paid to the United States Patent and Trademark Office (USPTO) as a Receiving Office at the time of filing the international application. The search fee for the European Patent Office is currently set under PCT Rule 16.1(b) at 710 United States dollars ($710.00). The search fee will change as costs and exchange rates require. If exchange rates fluctuate significantly, the fee may change frequently. Notice of changes will be published in the Official Gazette shortly before the effective date of any change.

If the European Patent Office as the International Searching Authority considers that the international application does not comply with the requirement of unity of invention as set forth in PCT Rule 13, the European Patent Office will invite applicants to timely pay *directly to it* an additional search fee of 1,700 Deutsche Mark for each additional invention.

A revised fee calculation sheet (form PCT/RO/101, Annex) having appropriate spaces to indicate the choice of International Searching Authority has been developed so that applicants may indicate which International Searching Authority is to make the search. The revised fee calculation sheet should be available by Oct. 1, 1982. However applicants may indicate the choice of International Searching Authority by placing the name of the desired international searching authority directly after "II SEARCH FEE" on the current fee calculation sheet (form PCT/RO/101, Annex).

II. Matters to be Considered when Choosing an International Searching Authority.

Choosing the European Patent Office (EPO) as an International Searching Authority could be an advantage to United States applicants who designate countries for European Regional patent protection in PCT International applications, for the following reasons:

(1) Claims may be amended according to EPO search results *before* entering the European Office as a designated Office.
(2) The EPO search fee need not be paid upon entering the European Office as a designated office.
(3) The EPO search results may be available for use in the U.S. priority application.
(4) The EPO international search may be obtained without the need for a European Professional Representative.
(5) The European Patent Office search could provide the U.S. applicant with the benefit of a European art search (which may be different from his own or the USPTO'S search) before it is necessary to enter the European Patent Office or other designated Offices and usually before amendments to the U.S. priority application are needed.
(6) Cost factors include the following:

When European countries are designated for European Regional patent protection in an international application, and the USPTO is selected as the International Searching Authority the minimum cost will be $250 for the International Search by the USPTO and about $568 ($710 fee minus a fee reduction of 20% or $142, depending on exchange rates) for the EPO search as a designated Office, making a total of $818. If the EPO is selected as the International Searching Authority, the cost will be $710 for the International Search with no additional fee for the EPO search in the designated Office phase.

In summary if the U.S. applicant enters the EPO as a designated Office after receiving an EPO International Search Report, he may save $108 under USPTO and EPO fees as of Oct. 1, 1982, given rebates and exchange rates, because the applicant will have already paid the EPO international search fee and will not need to pay an additional search fee to the EPO as a designated Office.

If the U.S. applicant selects the EPO as the International Searching Authority but does *not* enter the EPO as a designated Office, the additional cost for having the EPO conduct the PCT international search will be about $460 ($710 for EPO search vs. $250 for USPTO search).

It should be noted that Designated Offices other than the EPO do not appear to make any distinction in their search or examination fees or rebates, whether the PCT International Search report emanates from the USPTO or the EPO.

Some of the disadvantages that may occur due to the European Patent Office making the International Search are the following:

(1) Additional mailing time to and from the EPO Searching Authority may shorten the time for applicants to respond to various invitations from the EPO such as for comments on abstracts and payments of additional search fees as well as for PCT Article 19 amendments to the claims after issuance of the International Search Report.
(2) There may be more difficulty in solving any procedural problems between the applicant and the EPO than with the USPTO due to physical distance and time differences.

III. PCT Fee Amounts.

A. The fees which have been established by the Patent and Trademark Office and announced in the Federal Register on July 30, 1982 at 33066-33112 include fees established under the authority of 35 U.S.C. 376 for international applications filed on and after Oct 1, 1982 as follows:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) - $125.00.
(2) A search fee where the USPTO is chosen as International Searching Authority (see 35 U.S.C. 361(d) and PCT Rule 16) and where:

(i)	No corresponding prior United States national application with fee has been filed	$500.00
(ii)	Corresponding prior United States national application with fee has been filed	$250.00

(3) A supplemental search fee when required by the USPTO as an International Searching Authority (see PCT Art. 17(3) (a) and PCT Rule 40.2) - $125.00 per additional invention.
(4) The national fee, that is, the amount set forth as the filing fee under 37 CFR 1.16(a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Where the amount of the credit is in excess of that required for the national

fee, a request for a refund of the excess under 37 CFR 1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.

The following fee remains unchanged:

(5) A special fee when required (see 35 U.S.C. 372(c)), per claim	$10.00

(The fee for preparing a certified copy of the priority document is set forth in 37 CFR 1.19(a) (3) and (b) (1).)

B. The basic fee and designation fee portions of the international fee are prescribed in PCT Rule 15. The amounts of these fees are:

Basic Fee (first 30 pages)	$270.00
Basic Supplemental Fee (for each sheet over 30)	$ 6.00
Designation Fee (per national or regional office)	$ 65.00

GERALD J. MOSSINGHOFF,
Sept. 3, 1982. *Commissioner of Patents and Trademarks.*

[1022 O.G. 52]

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(114) Change in PCT International Fees, Effective Jan. 1, 1983 and Jan. 22, 1983

On Sept. 10, 1982 the PCT Assembly in its ninth session (sixth Extraordinary) held in Geneva, Switzerland, fixed new amounts for the various international fees set in Swiss francs in the Schedule of Fees annexed to the PCT Regulations, effective Jan. 1, 1983. The new fee amounts in Swiss francs reflect a 7½ % increase over the previous amounts. The US dollar amounts, however, reflect a slight overall decrease from the previous amounts.

Effective Jan. 1, 1983, for United States applicants filing PCT international applications in the United States Receiving Office the amounts of the International fees are as follows:

FEE	AMOUNT
Basic Fee (first 30 pages)	$265.00
Basic Supplemental Fee (each page over 30)	$ 5.00
Designation Fee (per country or region)	$ 65.00

The International Bureau has informed the U.S. Patent and Trademark Office that due to a more favorable exchange rate for the U.S. dollar, the International Search fee for United States applicants who choose the European Patent Office as Searching Authority will decrease, effective Jan. 22, 1983, from the current level of $710.00 to $670.00.

The amounts of the Transmittal Fee and the Search Fee for the United States Patent and Trademark Office as a Searching Authority remain at the level established on Oct. 1, 1982 (See 1021 O.G. 11, published on Aug. 10, 1982). The amounts of these fees are as follows:

Transmittal Fee	$125.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	$500.00
—Corresponding prior U.S. national application filed	$250.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

[1022 O.G. 52]

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(115) Reduction of European Search Fee for PCT Cases

The following letter dated December 21, 1979 from Dr. J. B. Van Benthem, the President of the European Patent Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the Administration Council of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent Organization is entitled to decide under what conditions and to what extent:

a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with

b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian Patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and the USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part of the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administrative Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 Sept. 1979. It applies to all international applications filed since 1 June 1979.

Yours sincerely,

J. B. Van Benthem.
(President)."

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof, Has decided as follows:

Article 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries.

Article 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1978.

Done at Berlin, 14 Sept. 1979.

For the Administrative Council
The Chairman,
G. VIANES.

END OF ANNEX

[992 O.G. 2]

TRADEMARK NOTICES

(116) Interviews Involving Trademark Application

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of Feb. 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147]

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(117) Powers of Attorney in Registered Trademark Files

On and after Feb. 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C.M. WENDT,
Jan. 30, 1967. *Director.*

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(118) Request for Extension of Time in which to Oppose

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, Jr.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3]

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(119) DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 2

[Docket No. 2816-154]

Trademark Applications, Filing Dates

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: This document amends the rules of practice in trademark cases. The amendments are needed to reduce both the special handling required to process and control applications not entitled to a filing date and the delays such handling imposes on other applications. The amendments clarify the requirements for an application and allow the Office to return applications that fail to meet these requirements. The amendments also define with greater specificity the nature of the drawing and specimens which must accompany an application in order for it to be entitled to a filing date.

EFFECTIVE DATE: Oct. 4, 1982.

FOR FURTHER INFORMATION CONTACT: Alan B. Davidson by telephone at (703) 557-3916, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking concerning the amendment of 37 CFR 2.21, 2.52, 2.54, and 2.57 and the deletion of §2.55 was published in the Federal Register on Oct. 7, 1981 (46 FR 49602). Interested parties were requested to submit written comments on or before Jan. 5, 1982. Comments were received from thirteen individuals and organizations and were given careful consideration.

One commenter suggested that the final sentence of §2.54, providing for correction of drawings by the Office, should not be deleted. The individual reasoned that minor alterations are more expeditiously handled by sending the drawing to the Office draftsman rather than returning it to the applicant. The administrative overhead of such a procedure was thought to be more costly than the correction process. This suggestion has not been adopted. Under the existing practice, simple deletions from drawings are made by Examiners and clerical personnel using gummed labels and opaque correction fluid. Due to the lack of facilities, drawings have not been sent to the Drafting Branch for correction for two years.

One commenter questioned whether the proposed revision of paragraph (d) of §2.52 required a date of first use for applications filed under the provisions of Section 44 of the Lanham Act. The revision was not intended to extend the use date requirement to such applications. Paragraph (d) has been reworded to eliminate any possible confusion.

Three commenters expressed unequivocal support for the proposed amendments. While two other commenters found them to be beneficial both to the Office and to applicants, they expressed some concern as to how the new practice will be implemented. One asked about the availability of proof of the initial date of filing should the papers be improperly returned by the Office. The other directed attention to the possibility that a self-addressed postcard, often submitted by an applicant, would be sent back bearing a mail date stamp and a serial number, and the application papers would be returned subsequently as incomplete.

The procedures that have been developed to implement the proposed changes should eliminate both of these concerns. All papers which constitute an application will be date stamped in the Mail Room prior to a review of their completeness. If an application fails to meet the requirements for receiving a filing date, a second stamp will be added to indicate that the papers are informal. A notation will also be placed on the application to indicate the nature of the omission that resulted in denying a filing date. Should the initial determination prove to be erroneous, reinstating the filing date should be a simple matter. Only applications deemed to be sufficient to receive a filing date will reach the processing stage at which a serial number is assigned and the postcard returned. Hence, there should be no instances in which the papers are returned but the self-addressed postcard indicates they are accepted.

One commenter recommended further revisions to §§2.21(a)(6) and 2.52(d). The individual thought an application based on Sections 44(d) or 44(e) of the Lanham Act should be required to include complete information on the foreign application or registration claimed. In addition, the country of origin, the application or registration number, and relevant dates were suggested as required components of the heading of the drawing. These recommendations have not been adopted. Such information, while helpful, is not essential to the initial examination of an application. Much of the information is available from the certification or certified copy of the foreign registration that must accompany the application papers. While placing Section 44 information on the drawing may be of some convenience, it is not needed in order to perform a normal search. The principal area of concern to commenters involved the revisions of §§ 2.52(d) and 2.21(a)(6) which make the heading on the drawing a requirement for receiving a filing date. The six commenters who addressed themselves to this issue believed the changes placed form over substance and imposed a penalty too severe for a strictly administrative problem. They believed that the potential impact of the new procedure on applicants' substantive rights far outweighed the current inconvenience to the Office. Alternative proposals were advanced for eliminating the problem of clerks interrupting classification work to add or complete headings on drawings. One called for imposing a penalty fee for applications with incomplete drawings. Another would require the Office to hold such applications for a reasonable time while the applicant corrected the deficiency. The original filing date would be awarded once compliance was achieved. One suggestion would allow an application to receive a filing date upon substantial compliance with the drawing requirements.

A survey conducted by the Patent and Trademark Office recently showed additional processing was required to add or complete the headings on the drawings in 14% of all applications. This means remedial action is necessary for approximately 8500 applications annually. Each time an application clerk is required to add or complete the heading on a drawing, processing of other applications is slowed. As a result, the mailing of filing receipts and the filing of copies of the application drawings in the Trademark Search Library cannot be accomplished in the most timely manner.

Inadequate preparation of drawings affects the public as well as the Office. Users of the Trademark Search Room need certain basic information about each new mark in order to identify marks likely to cause confusion with other pending and registered marks. Unless this information is displayed on the drawings, the searcher must attempt to locate the application files, the only alternative source of the information.

The imposition of penalty fees or the establishment of a grace period for correcting deficiencies would not eliminate the potential difficulties for Search Library users. If drawings without complete headings were held pending correction, the search copies of all application drawings received by the Office on a given day would not be filed at the same time in the Search Library. The potential impact on a party making a search could be severe should a conflicting mark bearing a filing date a month or more old appear after a search that should have revealed it has been conducted. For these reasons, the suggestions were not adopted.

One commenter explicitly stated, and others implied, a fear of overzealous enforcement of the amended rules. The Office will make every effort to interpret the rules sensibly. The Office will make every effort to interpret the rules sensibly. For instance, an application will not be denied a filing date because of the absence of a zip code or other non-critical part of an address. No letter-by-letter comparison of an applicant's name appearing on the drawing and in the application will be made. Detailed procedures and guidelines for the Office's clerical personnel should ensure a reasonable and evenhanded approach. The implementation of the rules will be monitored carefully for the first several months.

Environmental and Other Considerations

This rule changes will not have any significant impact on the quality of the human environment or the conservation of energy resources.

These rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The rule changes will clarify application requirements, simplify existing procedures, and expedite procedings before the Patent and Trademark Office.

The Patent and Trademark Office has determined that these rule changes do not constitute major rules as defined in Section 1(b) of Executive Order 12291 (45 FR 13193), since they would benefit trademark applicants and reduce the burdens on the Office.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed on the public.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Trademarks.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Amendment to Regulations

In consideration of the comments received and pursuant to the authority of the Commissioner of Patents and Trademarks under 15 U.S.C. 1123, Part 2 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 2.21 is revised to read as follows:

§2.21 Requirements for receiving a filling date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered containing the information required by paragraph (d) of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act:

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent and Trademark Office.

(c) If the papers and fee submitted as an application do not satisfy all of the requirements specified in paragraph (a) of this section, the papers will not be considered to constitute an application and will not be given a filing date. The Patent and Trademark Office will return the papers and any fee submitted therewith to the person who submitted the papers. The Office will notify the person to whom the papers are returned of the defect or defects which prevented their being considered to be an application.

2. Section 2.52 is amended by revising paragraph (d) to read as follows:

§2.52 Requirement for drawings.

* * * * *

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading,

listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

* * * * *

3. Section 2.54 is revised to read as follows:

§2.54 Informal drawings.

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.

§2.55 [Removed]

4. Section 2.55 is removed.

5. Section 2.57 is revised to read as follows:

§2.57 Facsimiles.

(a) When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8-1/2 inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

(b) A purported facsimile which is merely a reproduction of the drawing submitted to comply with §2.51 will not be considered to be a facsimile depicting the mark as actually used on or in connection with the goods or in connection with the services.

GERALD J. MOSSINGHOFF,
Aug. 13, 1982. *Commissioner of Patents and Trademarks.*

[FR Doc. 82-24158 Filed 9-1-82; 8:45 am]

BILLING CODE 3510-16-M

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(120) Initial Processing of Application

On Feb. 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.
2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.
3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.
4. When an application is accompanied by a petition to the Commissioner under §2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective Feb. 1, 1972.

RICHARD A. WAHL,
Jan. 11, 1972. *Acting Commissioner of Patents.*
JAMES H. WAKELIN, JR.,
Assistant Secretary for
Science and Technology.

Published in 37 F.R. 942; Jan. 21, 1972
[895 O.G. TM 193]

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(121) Petition to Make Trademark Applications Special

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lewry,* 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren,* 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. TM 2]

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(122) Realignment of Patent Office Handling of Opposition Papers

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner*
for Trademarks.

[929 O.G. TM 62]

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(123) Standardized Disclaimers

Beginning with the Nov. 9, 1982 issue of the *Official Gazette*, disclaimers in marks published for opposition and in those registered on the Supplemental Register will be printed in a standardized form, regardless of the text submitted. Certificates of registration for marks issued on the Supplemental Register will also contain the standardized disclaimer as of that date. Certificates of registration for marks issued on the Principal Register will contain the uniform statement beginning Feb. 1, 1983. The disclaimed matter will be taken from the disclaimer of record and inserted into a standardized disclaimer for printing and data base purposes. The new disclaimer text will take the following form:

No claim is made to the exclusive right to use ______, apart from the mark as shown.

MARGARET M. LAURENCE,
Aug. 30, 1982. *Assistant Commissioner*
for Trademarks.

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(124) Conference of Parties in Trademark Inter Partes Proceedings

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Va., to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents*
and Trademarks.

[932 O.G. TM 2]

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(125) International Protection of Government Emblems and Seals

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one department seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of Dec. 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by Sept. 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1 1/2 inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6*ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

C. MARSHALL DANN,
Aug. 18, 1976. *Commissioner of Patents*
and Trademarks.

Published in 41 F.R. 35741
[950 O.G. TM 114]

(126) Recording of "Territorial Assignments" in the Assignment Division of the Patent and Trademark Office

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

BERNARD A. MEANY,
Oct. 7, 1977. *Assistant Commissioner*
for Trademarks.

[964 TMOG 8]

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(127) Trademark Rule 2.165 Requirement Where A Section 8 Affidavit Or Declaration Is Held Insufficient

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (*a*) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (*b*) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Dec. 12, 1977. *Assistant Commissioner*
for Trademarks.

[966 TMOG 80]

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(128) Dissemination Of Trademark Information

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703-557-3268.

BERNARD A. MEANY,
Feb. 15, 1978. *Assistant Commissioner*
for Trademarks.

[968 TMOG 9]

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(129) Notice To Purchasers Of Trademark Indices

An incorrect stock number has been assigned to the "1976 Index of Trademarks."

The correct stock number to be used when ordering the "1976 Index of Trademarks" through the Superintendent of Documents is as follows: 003-004-00532-7. The cost of this publication is $8.00 per copy.

RICHARD J. SHAKMAN,
Mar. 14, 1978. *Assistant Commissioner*
for Administration.

(130)

TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indicated their hope to sign before the end of the year. The Treaty remains open for signature through Dec. 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on Feb. 22, 1972; Sept. 19, 1972; and Feb. 20, 1973, in the Official Gazette *of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.*

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
June 22, 1973. *Commissioner of Patents.*

TRADEMARK REGISTRATION TREATY

Adopted at Vienna, June 12, 1973

INTRODUCTORY PROVISIONS

Article 1

Establishment of a Union

The States party to this Treaty (hereinafter called "the Contracting States") constitute a Union for the international registration of marks.

Article 2

Abbreviated Expressions

For the purposes of this Treaty and the Regulations and unless expressly stated otherwise:

(i) "international registration" means a registration effected under this Treaty by the International Bureau in the International Register of Marks;

(ii) "international application" means an application filed for international registration;

(iii) "applicant" means the natural person who or legal entity which files the international application;

(iv) "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of all or fewer than all the designated States and in respect of all or some only of the goods and/or services listed in that registration;

(v) "mark" means both a trademark and a service mark; it also includes a collective mark within the meaning of Article 7*bis* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and a certification mark whether or not such certification mark is a collective mark within the said meaning;

(vi) "national mark" means a mark registered by a government authority of a Contracting State having the power to grant registrations with effect in that State; references to a *national mark* shall not be construed as references also to regional marks;

(vii) "regional mark" means a mark registered by an intergovernmental authority other than the International Bureau having the power to grant registrations with effect in more than one State;

(viii) references to any *final* decision or *final* refusal shall be construed as references to a decision or refusal against which there is no remedy, or against which all remedies have been exhausted, or where the time limit for asking for a remedy against the refusal or decision has expired;

(ix) references to any *publication by the International Bureau* shall be construed as references to publications effected in the official Gazette of that Bureau;

(x) references to the *date of the publication* of the international registration or to the *date of the publication* of the recording of the later designation shall be construed as references to the date of that issue of the official Gazette of the International Bureau in which the international registration or the recording of the later designation, as the case may be, has been published;

(xi) references to any *recording by the International Bureau* shall be construed as references to recordings made in the International Register of Marks;

(xii) "designated State" means any Contracting State in which the applicant or the owner of the international registration desires that such registration produce the effects provided for in this Treaty and which has been identified for that purpose in the international application or any request for the recording of later designations;

(xiii) "national Office" means the government authority of a Contracting State entrusted with the registration of marks; references to a *national Office* shall be construed as referring also to any intergovernmental authority which several States have entrusted with the task of registering regional marks, provided that at least one of those States is a Contracting State, and provided that such authority has been empowered to assume the obligations and exercise the powers which this Treaty and the Regulations provide for in respect of national Offices;

(xiv) "national register of marks" means the register of marks kept by a national Office in which national and/or regional marks are registered;

(xv) "designated Office" means the national Office of the designated State;

(xvi) references to *national law* shall be construed as references to the national law of a Contracting State and, where a regional mark is involved, to the regional treaty providing for the registration of regional marks;

(xvii) "Madrid Agreement" means the Madrid Agreement Concerning the International Registration of Marks;

(xviii) "Union" means the Union referred to in Article 1;

(xix) "Assembly" means the Assembly of the Union;

(xx) "Organization" means the World Intellectual Property Organization;

(xxi) "International Bureau" means the International Bureau of the Organization and, as long as it subsists, the United International Bureau for the Protection of Intellectual Property (BIRPI); and where any provision refers to the receiving of documents, or of payments, by the International Bureau, it also includes any agency of that Bureau established under Article 32(2)(a) (ix);

(xxii) "Director General" means the Director General of the Organization;

(xxiii) "International Classification" means the classification established under the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks;

(xxiv) "Regulations" means the Regulations referred to in Article 35.

CHAPTER I: SUBSTANTIVE PROVISIONS

Article 3

International Register of Marks

(1) [*International Registrations*] The International Bureau shall register marks in the International Register of Marks according to the provisions of this Treaty and the Regulations.

(2) [*International Applications*] International registrations shall be effected in the basis of international applications.

Article 4

Right To File International Applications and To Own International Registrations

(1) [*Entitlement*] (a) Any resident or national of a Contracting State may file international applications and may own international registrations.

(b) If there are several applicants, they shall have the right to file an international application only if all of them are residents of nationals of Contracting States.

(c) If there are several owners of an international registration, they shall have the right to own such a registration only if all of them are residents or nationals of Contracting States.

(2) [*Natural Persons*] (a) Any natural person shall be regarded as a resident of a Contracting State if:

(i) according to the national law of that State, he is a resident of that State, or

(ii) he has a real and effective industrial or commercial establishment in that State.

(b) Any natural person shall be regarded as a national of a Contracting State if, according to the national law of that State, he has the nationality of that State.

(3) [*Legal Entities*] (a) Any legal entity shall be regarded as a resident of a Contracting State if it has a real and effective industrial or commercial establishment in that State.

(b) Any legal entity shall be regarded as a national of a Contracting State if it is constituted according to the national law of that State.

(4) [*Different Residence and Nationality*] If the State of the residence and the State of the nationality of the applicant or owner of the international registration are different, and only one of those States is a Contracting State, the Contracting State alone shall be considered for the purposes of this Treaty and the Regulations.

(5) [*Certain Associations*] Where under the national law of any Contracting State an association of natural persons or legal entities may own marks notwithstanding the fact that it is not a legal entity, it shall be entitled to file international applications and to own international registrations, provided it is a resident or national of that State within the meaning of paragraph (3).

(6) [*Domestic Filing*] (a) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, an international application may be filed only if the mark that is the subject of the international application is, at the time of the filing of that application, the subject of an application for registration, in the name of the said applicant, in the national register of marks of that State in respect of at least those goods and/or services listed in the international application.

(b) Subparagraph (a) shall not apply where, at the time of the filing of the international application, the mark that is the subject of the international application is already registered in the name of the applicant in the national register of marks of the said State in respect of the said goods and/or services.

Article 5

The International Application

(1)(a) [*Mandatory Contents*] The international application shall contain, as specified in this Treaty and the Regulations:

(i) an indication that it is filed under this Treaty,

(ii) indications concerning the applicant's identity, residence, nationality, and address,

(iii) a reproduction of the mark,

(iv) a list of goods and/or services in which the terms are grouped under the applicable classes of the International Classification and in which each term is comprehensible, permits classification in one class only of that Classification, and, as far as possible, is one that appears in the alphabetical list of goods and/or services of the said Classification,

(v) the identification of the designated State or States,

(vi) in respect of any designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

(vii) in respect of any designated State in which the effects provided for in this Treaty are desired as for a collective mark or a certification mark, an indication to that effect.

(b) [*Optional Contents*] The international application may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the international application may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) [*Language, Form, Signature, Fees*] The international application shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(2) [*Filing With International Bureau*] International applications shall be filed direct with the International Bureau.

(3) [*Filing Through National Office*] (a) Notwithstanding paragraph (2) but subject to subparagraph (c), the national law of any Contracting State may provide that international applications of residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the international application is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the international application the date on which it received that application and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

(c) Any Contracting State on whose territory an agency of the International Bureau, established under Article 32(2)(a)(ix), is functioning shall, at least for the time such agency functions, suspend the application of any provision of its national law referred to in subparagraph (a) and Article 6(3)(a).

Article 6

Later Designation

(1) [*Possibility of Later Designation*] Any Contracting

State not designated in the international application or whose designation has ceased to have the effects provided for in Article 11 may be designated by the applicant or, once the international registration has been effected, by the owner of the international registration, as provided in the Regulations ("later designation").

(2)(a) [*Mandatory Contents; Filing With International Bureau*] Any later designation shall be the subject of a request for the recording of later designations. Several States may be designated in the same request. The request shall be filed direct with the International Bureau and shall contain, as specified in the Regulations:

(i) an indication that it is for the recording of later designations under this Treaty,

(ii) indications concerning the identity, residence, nationality and address of the applicant or, where the international registration has already been effected, of the owner of the international registration,

(iii) the identification of the international application or, where the international registration has already been effected, of such registration,

(iv) the identification of the later designated State or States,

(v) in respect of any later designated State in which the effects provided for in this Treaty are available either as if the mark has been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

(vi) in respect of any later designated State in which the effects provided for in this Treaty are desired as for a collective mark or a certification mark, an indication to that effect.

(b) [*Optional Contents*] The request may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the request may contain in respect of any State designated therein a list of goods and/or services, provided that, if that list is different from the list of goods and/or services included in the international registration as published or, if the international registration has not yet been published, from the list of goods and/or services included in the international application after any limitation under Article 7(4), it shall conform with the formal concept of limitation as defined in the Regulations. Finally, the request may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) [*Language, Form, Signature, Fees*] The request shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(3) [*Filing Through National Office*] (a) Notwithstanding paragraph (2)(a) but subject to Article 5(3)(c), the national law of any Contracting State may provide that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the request for the recording of later designations is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the request the date on which it received that request and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

Article 7

International Registration or Declining of the International Application

(1) [*No Defects*] Subject to paragraphs (2) to (5), the International Bureau shall promptly effect the international registration as applied for, and the date under which such registration shall be effected ("international registration date") shall be the date on which the international application was received by the International Bureau or, in the case of an international application filed through the intermediary of a national Office under Article 5(3), the date on which it was received by that Office provided that the said application is received by the International Bureau before the expiration of 45 days from that date. The International Bureau shall issue to the owner of the international registration a certificate of international registration.

(2) [*Defects Which Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the international application does not contain an indication that it is filed under this Treaty,

(ii) the international application is in a language other than one of the prescribed languages,

(iii) the international application contains no indications concerning the residence or nationality of the applicant or only such indications as do not permit the conclusion that he has the right to file international applications,

(iv) the international application contains no indications concerning the applicant's identity and address or only such indications as do not permit him to be identified and reached by mail,

(v) the international application does not include the reproduction of the mark,

(vi) the international application does not contain a list of goods and/or services,

(vii) the international application does not designate any Contracting State,

(viii) no fees have been received by the International Bureau on or before the date on which the international application is received by the Bureau or, where the international application is filed through the intermediary of a national Office under Article 5(3), no fees have been received by the International Bureau within 45 days from the date on which that Office received the international application,

(ix) the amount of the fees received by the International Bureau by the date referred to in item (viii) does not attain the amount ("minimum amount") fixed in the Regulations, it shall invite the applicant to correct the defect; however, where the defect referred to in item (iv) makes it unlikely for the invitation to reach the applicant, the International Bureau is not required to send such invitation.

(b) If the defect is not corrected within three months from the date on which the International Bureau received the international application, the International Bureau shall decline that application.

(c) If the defect is corrected within the time limit referred to in subparagraph (b) and unless the international application is declined under paragraph (3)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau received the required correction or the prescribed amount of the fees, unless a later date is applicable under paragraph (3)(d).

(3) [*Defects Which Do Not Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the amount of the fees received by the International Bureau by the date referred to in paragraph (2)(a)(viii) is less than the amount prescribed but attains the minimum amount,

(ii) the international application does not contain, in respect of any designated State to which Article 5(1)(a)(vi) applies, the indication of the choice referred to in the said provision,

(iii) the international application is not signed, it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau received the international application, the International Bureau shall decline that application or, if the only defect which is not corrected within the said time limit is the defect referred to in subparagraph (a)(ii), the International Bureau shall decline to record the State concerned as a designated State.

(c) If the defect is corrected before the expiration of one month from the date of the invitation referred to in subparagraph (a) and unless the international application is declined under subparagraph (b) or paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date referred to in paragraph (1), unless a later date is applicable under paragraph (2)(c).

(d) If the defect is corrected later than at the expiration of one month from the date of the invitation referred to in subparagraph (a) but earlier than at the expiration of three months from the date on which the International Bureau received the international application, and unless the international application is declined under paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau received the required correction or payment, unless a later date is applicable under paragraph (2)(c).

(4) [*Classification Causing Increase in Fees*] (a) Where the International Bureau finds that, by classifying any of the terms appearing in the list of goods and/or services in or also in a class or classes of the International Classification in which such term was not classified in the international application as filed, the amount of the fees required is higher than if that term had not been so classified, the invitation referred to in paragraph (2)(a) or (3)(a) shall contain appropriate explanations and shall indicate that the applicant may limit the list of goods and/or services.

(b) If, within three months from the date on which the International Bureau received the international application, it receives from the applicant a statement which limits the list of goods and/or services in conformity with the formal concept of limitation as defined in the Regulations, the International Bureau shall modify the list of goods and/or services accordingly and, if such modification entails a change in the prescribed amount of the fees, such change shall be taken into account by the International Bureau in determining that amount and in applying paragraph (2)(b), (2)(c), (3)(b), (3)(c), or 3(d), as the case may be.

(5) [*Details*] (a) The Regulations shall provide for the details of the procedure under paragraphs (1) to (4).

(b) Failure to send or receive any invitation referred to in paragraphs (2) to (4), or any delay in dispatching or receiving it, or any error therein, shall not extend the time limits fixed in those paragraphs and shall not affect any obligation to decline the international application.

(c) Where the international application is declined, the International Bureau shall reimburse to the applicant such amounts as are specified in the Regulations.

(6) [*Defects Peculiar to Filings Through National Offices*] Where the international application filed through the intermediary of a national Office under Article 5(3):

(i) does not indicate that the applicant is a resident of the State through the intermediary of whose national Office the international application was filed, or

(ii) does not contain a statement by the said national Office indicating the date on which that Office received the international application, or

(iii) contains the said statement indicating a date which precedes by more than 45 days the date on which the International Bureau received the international application, that application shall be treated as if it had been filed direct with the International Bureau on the date it reached that Bureau.

Article 8

Recording or Declining of Later Designations

(1) [*No Defects*] Subject to paragraph (2), the International Bureau shall promptly effect the recording of any later designation as requested, and the date under which such recording shall be effected ("recording date of the later designation") shall be the date on which the request for the recording of the later designation was received by the International Bureau or, in the case of a request filed through the intermediary of a national Office under Article 6(3), the date on which it was received by that Office, provided that the said request is received by the International Bureau before the expiration of 45 days from that date. The International Bureau shall issue to the owner of the international registration a certificate of the recording of the later designation.

(2) [*Defects*] (a) The provisions of Article 7(2) to (6) shall apply, *mutatis mutandis,* to the recording of later designations and declining of requests for the recording of later designations, provided that, once the international registration has been effected, any reference to the applicant shall be considered a reference to the owner of the international registration.

(b) Notwithstanding subparagraph (a), items (v) and (vi) of Article 7(2)(a) shall be considered to have been replaced by the following:

"(v) the request does not identify the international application or, once the international has been effected, such registration."

(c) Notwithstanding subparagraph (a), Article 7(3)(a) shall be considered to have been completed by the following:

"(iv) any list of goods and/or services contained in the request does not conform with the requirements of Article 6(2)(b), second sentence."

Article 9

Avoiding the Effects of Declining

(1) [*Requesting Redress Through Designated Office*] Where the International Bureau has declined the international application or a request for the recording of later designation, the applicant or the owner of the international registration may, within two months from the date of the notification of the declining, file with the national Office of any State designated in the declined international application or declined request:

(i) a petition for the purpose of requesting the International Bureau to proceed, in respect of that State, where the international application was declined, with the international registration and the recording of the designation of the said State or, where the request for the recording of the later designation was declined, with the recording of the designation of that State, or

(ii) an application for the registration, in the national register of marks ("national application"), of the mark that is the subject of the declined international application or declined request, in respect of all or some of the goods and/or services indicated in the said international application or the said request, such application complying with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks.

(2) [*Decision on the Request*] If the national Office or any other competent authority of the said State finds that the declining, by the International Bureau, of the international application or of the request for the recording of the later designation of that State was unjustified under this Treaty or the Regulations, or that the declining was based on the fact that there was a delay in meeting a time limit which must be excused by virtue of Article 29(1), then:

(i) where a petition has been filed under paragraph (1)(i), the said national Office shall request the International Bureau to proceed as provided in that paragraph, and the International Bureau shall proceed as requested, and the international registration date or the recording date of the later designation shall be the same as if the declining had not taken place,

(ii) where a national application has been filed under paragraph (1)(ii), that application shall, provided it complies with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks, be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

(3) [*Recording of the Petition for Redress*] The applicant or the owner of the international registration who files a petition under paragraph (1)(i) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

Article 10

Publication and Notification

(1) [*Publication*] International registrations and recordings of later designations shall be promptly published by the International Bureau, as provided in the Regulations.

(2) [*Notification*] International registrations and recordings of later designations shall be promptly notified by the International Bureau to the national Offices of each designated State, as provided in the Regulations.

Article 11

Effects of International Registration and of Recording of Later Designation

(1) [*National Application Effect*] The international registration of a mark and the recording of any later designation, published and notified as provided in Article 10, shall have the same effect in each designated State as if an application for the registration of the mark in the national register of marks had been filed with the national Office of that State on the international registration date or on the recording date of the later designation, as the case may be.

(2) [*National Registration Effect*] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State; such effect shall come into existence in any designated State:

(i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a)(i), at the expiration of the said time limit or on such earlier date as may be prescribed by the national law of that State,

(ii) where a refusal or a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a)(i), if and when, and to the extent to which, the refusal is reversed by a final decision or the final decision taken in the proceedings referred to in the notice of possible refusal results in acceptance of the effect provided for in this paragraph,

and shall be deemed to have started as of the international registration date or the recording date of the later designation, as the case may be.

(3) [*Several National Registers*] Where, in any designated State, there is more than one national register of marks or the national register of marks has several parts, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to that national register or that part of the national register which affords the highest degree of protection, unless another register or part of the register is indicated in the international application or the request for the recording of the later designation. In the case of such indication, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to the register or part of the register so indicated.

Article 12

Refusal of the Effects Provided for in Article 11

(1) [*Grounds of Refusal*] Subject to paragraph (2) and Articles 19, 21(3) and 22(3), the effects provided for in Article 11 may, in respect of any designated State, be refused by the competent authorities of that State:

(i) on the same grounds and to the same extent as those in respect of which applications for the registration of marks in the national register of marks may be refused under the national law of the said State, provided that such grounds are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6*quinquies* of the Stockholm (1967) Act of the said Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6 *quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications.

(2) [*Time Limit and Other conditions*] (a) Any refusal under paragraph (i) shall be effective only:

(i) if the refusal or notice of possible refusal is notified, as provided in the Regulations, by the national Office of the designated State to the International Bureau so that the latter receives it within 15 months or, in the case of a certification mark, 18 months from the date of the publication of the international registration, or, in the case of a later designation, of the publication of the recording of the later designation of such State, and

(ii) in the case of a refusal, if the grounds for the refusal are specified, and provided, where such refusal is not final, that the grounds given in the final decision of refusal include at least one of the grounds specified in the said refusal and the final decision is or is also based on at least one of the grounds specified in the said refusal,

(iii) in the case of a notice of possible refusal followed by a refusal, if the notice specifies, as provided in the Regulations, the grounds on which a refusal may eventually be pronounced, and provided that the grounds given in the final decision of refusal include at least one of the grounds specified in the said notice and the final decision is or is also based on at least one of the grounds specified in the said notice.

(b) The proviso of subparagraph (a)(ii) and the proviso of subparagraph (a)(iii) shall not apply where the final decision is that of a court or other independent review authority.

(c) Subparagraph (a) shall not apply where the refusal is based on lack of compliance with the requirements of the national law of the designated State permitted by Article 19(3).

(3) [*Remedies*] The owner of the international registration shall, with reasonable time limits, have in any designated State the same remedies against any decision of refusal and the same procedural and substantive rights in connection with any intended refusal, whether ex officio or based on the opposition of a third party, as have applicants who apply for the registration of marks in the national register of marks of the State in question.

(4) [*Procedural Details*] (a) The International Bureau shall record any notification received under paragraph (2)(a) and publish a corresponding notice.

(b) Where the decision of refusal is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record

the final decision, cancel the designation of that State, or, in a case where the final decision relates to some only of the goods and/or services listed, cancel in respect of the said State those goods and/or services to which the said decision relates, and publish such cancellation.

(c) Where a refusal which is not final or a notice of possible refusal has been notified under paragraph (2)(a) and the final decision results in acceptance of the effect referred to in Article 11(2), the national Office of the designated State shall notify the International Bureau accordingly, and the International Bureau shall record the notification received and publish a corresponding notice.

(d) The details of the procedures referred to in subparagraphs (a) to (c) are provided in the Regulations.

Article 13

Cancellation of the Effect Acquired Under Article 11(2)

(1) [*Grounds of Cancellation*] Subject to Article 19, the effect acquired under Article 11(2) may, in respect of any designated State, be cancelled by the competent authorities of that State:

(i) on the same grounds, to the same extent and subject to the same procedure as those in respect of which registrations of marks in the national register of marks may be cancelled under the national law of the said State, provided that such grounds and such procedure are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6 *quinquies* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6*quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications.

(2) [*Defense and Remedies*] The competent authorities of the designated State shall give, with reasonable advance notice, an opportunity to the owner of the international registration to defend his rights in any cancellation proceeding and such owner shall have the same remedies against any decision of cancellation as have owners of marks registered in the national register of marks of the said State.

(3) [*Procedural Details*] If the decision of cancellation is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record that decision, cancel the designation of the said State or, in a case where the cancellation relates to some only of the goods and/or services listed, cancel—in respect of that State—those goods and/or services to which the said decision relates, and publish such cancellation.

Article 14

Change in the Ownership of the International Registration

(1)(a) [*Total or Partial Change; Request; Recording*] Where the ownership of any international registration changes so that the new owner has become the owner in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services, the change in ownership shall, on request, subject to paragraph (2), be recorded by the International Bureau.

(b) [*Details of the Request*] The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the international Bureau of a change in ownership is requested,

(ii) the international registration number of the international registration,

(iii) indications concerning the name, residence, nationality and address of the new owner,

(iv) the identification of those of the designated States in respect of which the new owner has acquired ownership and the identification, in respect of each of those States, of those of the goods and/or services for which the new owner has acquired ownership.

(c) [*Signature*] The request shall be signed by the person who, pursuant to the change in ownership, ceases to own the international registration in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services ("earlier owner") or, where the earlier owner is unable to sign, by the new owner, provided that if it is signed by the new owner the request shall also contain an appropriate attestation, as provided in the Regulations, by the national Office of the Contracting State of which the earlier owner was, at the time of the change of ownership, a national or, if at that time the earlier owner was not a national of a Contracting State, by the national Office of the Contracting State, of which, at the said time, the earlier owner was a resident.

(d) [*Fee; Publication; Notification*] The request shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified by it to the earlier owner and the new owner and to the interested designated Offices, as provided in the Regulations.

(2) [*Declining of Request*] (a) In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the person who has signed it:

(i) Where the request does not contain the indication referred to in paragraph (1)(b)(i),

(ii) where the request does not contain the number referred to in paragraph (1)(b)(ii),

(iii) where the request contains no indications concerning the residence or nationality of the new owner, or only such indications as do not permit the conclusion that he is entitled to own international registrations,

(iv) where the request contains no indications concerning the identity and address of the person who has signed it or only such indications as do not permit him to be identified and reached by mail,

(v) where the request does not identify any designated State in respect of which the new owner has acquired ownership,

(vi) where the request does not identify, as provided in the Regulations, any goods and/or services in respect of each of the designated States for which the new owner has acquired ownership,

(vii) where the request is not signed and, if it is signed by the new owner, where it does not contain the attestation, as provided in the Regulations, referred to in paragraph (1)(c),

(viii) where the prescribed fee has not been received.

(b) Where the request has the defect referred to in subparagraph (a)(iv) to the extent that it makes it unlikely for the notification referred to in subparagraph (a) to reach the person who signed the request, the International Bureau is not required to send such a notification.

(3) [*Effect*] Subject to paragraph (4), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States to which the request relates.

(4)(a) [*Denial of Effect: Grounds*] The competent authorities of any designated State may, as far as that State is concerned, deny the effect referred to in paragraph (3) on grounds which, according to its national law, do not allow of changes in ownership or on the ground that the new owner is not entitled to own international registrations.

(b) [*Denial of Effect: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (3) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (1)(d) or, where that national law provides for a longer period, within that period, evidence is not adduced before its national Office which satisfies the conditions of the national law as regards changes in ownership. Any national Office may collect the fee prescribed by its national law in connection with the examination of the said evidence adduced before it.

(c) [*Denial of Effect: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect referred to in paragraph (3), the national Office of that State shall promptly notify the International Bureau accordingly, and that Bureau shall record the denial and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

(5) [*Switchover to National Register Where an Owner Cannot Own International Registrations*] Where there is a change in ownership other than by contract between the earlier owner and the new owner, and where the new owner is a person who is not entitled to file international applications but is entitled under the national law of any designated State to file applications for the registration of marks in the national register of marks of that State, the new owner may file an application for the registration, in the said national register, of the mark which is registered, and in respect of all or some of the goods and/or services which are listed, in the International Register of Marks in respect of that State. If, within two years from the change in ownership and prior to six months after the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, the new owner files such an application, that application shall be treated in the said State as if it had been filed at the time when the designation of that State took effect.

Article 15

Change in the Name of the Owner of the International Registration

(1) [*Recording*] Where the owner of the international registration changes his name, such change in the name of the owner shall, on his request, be recorded by the International Bureau.

(2) [*Request*] (a) Any request may relate to several international registrations of the same owner.

(b) The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the International Bureau of a change in the name of the owner of the international registration is requested,
(ii) a declaration to the effect that the change in name does not amount to a change in the ownership of the international registration,
(iii) the international registration number of the international registration,
(iv) an indication of the former name and of the new name of the owner of the international registration.

(c) The request shall be signed with the new name of the owner of the international registration.

(d) The request shall be subject to the payment of a fee to the International Bureau.

(3) [*Publication, Notification, Copies of Documents*] The recording shall be published by the International Bureau and shall be notified to the designated Offices, as provided in the Regulations.

(4) [*Declining of Request*] In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the owner:

(i) where the request does not contain the indications referred to in paragraph (2)(b),
(ii) where the request is not signed as provided in paragraph (2)(c),
(iii) where the prescribed fee has not been received.

(5) [*Effect*] Subject to paragraph (6), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States.

(6)(a) [*Denial of Effect: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (5) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (3)(a) or, where that national law provides for a longer period, within that period, evidence is not adduced before its national Office which proves that the national person or legal entity designated by the former name and the new name is the same.

(b) [*Denial of Effect: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect referred to in paragraph (5), the national Office of that State shall promptly notify the International bureau accordingly, and that bureau shall record the denial and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

Article 16

Limitation of the List of Goods and/or Services

(1) [*Request; Recording*] On the request of the owner of the international registration, the International Bureau shall record, in respect of any designated State, any limitation of the list of goods and/or services which conforms with the formal concept of limitation as defined in the Regulations.

(2) [*Fees; Publication and Notification*] The request for recording shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified to all the interested designated States, as provided in the Regulations.

(3) [*Declining of the Request*] The International Bureau shall decline the recording of any change in the list of goods and/or services which does not conform with the said formal concept of limitation or other requirements of the request, and shall notify the owner of the International Registration accordingly, as provided in the Regulations.

(4) [*Effect*] Subject to paragraph (5), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks of each of the designated States to which the request relates.

(5)(a) [*Limitation on the Invitation of the Designated Office*] If the national Office or other competent authority of a designated State finds that the limitation requested by the owner of the international registration in respect of that State but declined by the International Bureau is, in fact, a limitation in the sense that the terms proposed in the request relate only to goods and/or services which are covered by the terms appearing in the international registration, the national Office of that State, upon petition by the owner, shall, as provided in the Regulations, invite the International Bureau to record the limitation in respect of that State.

(b) [*Reinstatement of the List of Goods and/or Services on the Invitation of the Designated Office*] If the national Office or other competent authority of a designated State finds that the limitation requested by the owner of the international registration and recorded by the International Bureau is, in fact, not a limitation in the sense indicated in subparagraph (a), the national Office of that State may, as provided in the Regulations and after having heard the owner, invite the International Bureau to reinstate, in respect of that State, wholly or in part, the list of goods and/or services as it was prior to the limitation in question.

(c) [*Procedural Details*] The International Bureau shall proceed as invited and effect, as provided in the Regulations, the corresponding recording, publication and notifications.

Article 17

Term and Renewal of the International Registration

(1) [*Initial Term*] The initial term of any international registration shall be ten years from the international registration date.

(2) [*Renewal*] (a) Any international registration may be renewed in respect of any designated State by its owner for terms of ten years.

(b) Renewal shall prolong the effects provided for in Article 11 in each designated State for the term of the renewal.

(c) Each term of renewal shall start on the day following the day on which the initial term of the international registration or the term of the last renewal expires.

(3)(a) [*Demand*] Renewal shall be the subject of a demand presented to the International Bureau as provided in the Regulations, and shall be subject to the payment of fees, as provided in the Regulations. The demand shall not be presented and the fees shall not be paid earlier than six months before, or later than six months after, the starting date of the term of renewal. If the demand is presented or the fees are received after the starting date of the term of renewal, renewal shall be subject to the payment of an additional fee ("renewal surcharge"), as provided in the Regulations, which shall be paid before the expiration of six months after the starting date of the term of renewal.

(b) [*Publication*] The International Bureau shall record and publish the renewal and shall notify each designated Office accordingly, as provided in the Regulations.

Article 18

Fees

(1) [*Fees Belonging to the International Bureau*] (a) The International Bureau shall be entitled to fees in connection with the filing of each international application, request for recording of later designations, demand for renewal, and such other operations and services as are subject, according to this Treaty or the Regulations, to the payment of fees.

(b) The Regulations fix the amounts of the fees referred to in subparagraph (a).

(2) [*Fees Belonging to the Contracting States*] Each Contracting State shall be entitled to fees ("State fees") in connection with each designation and each renewal concerning it. The State fees shall be either "individual" or "standard," according to the choice of the Contracting State. The choice shall be exercised and applied as provided in the Regulations and shall apply to all designations and renewals concerning the Contracting State.

(3) [*Individual State Fees*] (a) Subject to subparagraphs (b) to (f), the amounts of individual State fees applicable to any State shall be determined by such State.

(b) The amounts of the individual State fees shall be communicated by the national Office of the Contracting State to the International Bureau in the currency and within the time limits specified in the Regulations. They shall remain applicable for the periods specified in the Regulations.

(c) The amounts of the individual State fees may vary only according to the number of classes to which the goods and/or services listed in respect of that State belong under the International Classification and according to whether the mark is or is not a collective mark or a certification mark.

(d) Any individual State fee shall belong to the designated State in respect of which it was paid and shall be transferred to its national Office as provided in the Regulations.

(e) The amount of the individual State fee to which the Contracting State is entitled in connection with each designation concerning it ("individual State designation fee") shall not exceed the total amount of any filing, class, examination, registration and publication fees which that State prescribes in connection with an application for registration in the national register of marks.

(f) The amount of the individual State fee to which the Contracting State is entitled in connection with each renewal concerning it ("individual State renewal fee") shall not exceed the amount of the renewal fee which that State prescribes for the renewal of a registration in the national register of marks, provided that, if the latter amount relates to a period which is longer or shorter than ten years, the said limit shall be proportionately reduced or proportionately increased, as the case may be.

(4) [*Standard State Fees*] (a) The amounts of the standard State designation fee and of the standard State renewal fee shall be fixed in the Regulations.

(b) The standard State fees shall belong to the States which have chosen standard State fees. The total amount of such fees collected by the International Bureau for any given calendar year shall be distributed and transferred in the course of the following year to the national Offices of the Contracting States to which the standard State fees apply in proportion to the number of designations and renewals concerning each of them, provided that the number resulting for each Office shall be first multiplied by the coefficient, as fixed in the Regulations, based on the extent of the examination which the national law provides.

(5) [*Other Details Concerning Fees*] The Regulations give further details concerning fees and provide for the total or partial reimbursement of certain fees in certain circumstances.

Article 19

Certain National Requirements

(1) [*Fees*] Subject to Article 14(4)(b), no national Office of any designated State shall, unless acting as an independent review authority, require the payment of any fee by the applicant or the owner of the international registration in connection with the obtaining and renewing of the effects, in the said State, of international applications, international registrations, and recordings concerning such applications and registrations.

(2) [*Number of Classes and of Goods and/or Services*] No designated State may refuse or cancel the effects provided for in Article 11 merely on the grounds that its national law allows the registration of marks only in respect of a limited number of classes or a limited number of goods and/or services.

(3)(a) [*Actual Use*] The national law of any Contracting State may impose the same conditions as are applicable to marks whose registration is applied for or which are registered in the national register of marks in that State in respect of any requirement that the owner of an international registration use the mark in that State or in any other place, provided that such State shall not refuse under Article 12, cancel under Article 13, or otherwise fail to accord the effects of the international registration as defined in Article 11, on the ground that the mark has not been used at any time prior to the expiration of three years counted from the international registration date or the recording date of the later designation, as the case may be. However, the national law of any Contracting State may provide that any action for infringement based upon an international registration may be started only after the owner of such international registration has commenced the continuing use of the mark in the said State and that any remedy resulting from such action shall relate only to the period after such use has commenced.

(b) [*Actual Use: Continued*] Where, at the expiration of the three-year time limit referred to in subparagraph (a), the final decision referred to in Article 11(2)(ii) has not been made, the said time limit shall be extended until the expiration of one year counted from the date on which the effect provided for in Article 11(2) does, in fact, come into existence, provided that in no case shall any Contracting State be required to extend the said three-year time limit by more than two years. This subparagraph shall not apply to any Contracting State whose national law does not permit of such extension. Any such State shall notify the International Bureau of the provisions of its national law in this regard at the time it deposits its instrument of ratification or accession. Each Contracting State shall notify the International Bureau whenever its national law changes in regard to this subparagraph.

(c) [*Actual Use: Continued*] Where prior to the international registration date or the recording date of the later designation, as the case may be, the mark has been registered, in the name of the person who is the owner of the international registration, in the national register of marks of any designated State, or has been the subject on the part of the said person of an application for registration in that register, the proviso of subparagraph (a) and the first sentence of subparagraph (b) shall not apply to the extent that the said registration or application relates to the same goods and/or services as are listed in respect of such State in the international registration. However, where the application for registration in the national register was filed less than three years before the international registration date or the recording date of the later designation, as the case may be, the proviso of subparagraph (a) shall apply, but only during the period between such date and the expiration of the third year counted from the date on which the said application was filed. Where the three-year time limit is extended under subparagraph (b), the preceding sentence shall be applied accordingly. The present subparagraph shall also apply where the earlier registration is one effected in the international register under the Madrid Agreement or the present Treaty.

(d) [*Declaration of Actual Use*] Where one of the conditions of the national law of the designated State referred to in subparagraph (a) consists of a requirement, general in the sense that it is applicable to all marks registered in the national register of marks of that State, that a declaration stating that the mark is or is still in use in that State must be filed with its national Office at certain points in time or in connection with each renewal or other specific event ("routine declaration"), such declaration may, in the form prescribed by the national law of that State or in the form prescribed in the Regulations, be filed with the International Bureau and shall have the same effect as if it had been filed with the national Office of that State on the date on which it was received by the International Bureau. Such declaration shall be promptly forwarded by the International Bureau to the said national Office. The said effect shall not be denied on the ground that the declaration was not accompanied by any required supporting evidence, or that the evidence accompanying it was insufficient, without the said national Office's giving the owner of the international registration an opportunity to adduce or complete before it any required evidence within not less than three months after having notified the said owner or his duly appointed representative that evidence or additional evidence is required. The present subparagraph shall not apply in inter partes and other proceedings in which the requirement is not a general one in the sense indicated above ("ad hoc requirement").

(e) [*Declaration of Actual Use: Continued*] No requirement referred to in subparagraph (d) shall be applicable prior to the expiration of the time limit under the proviso of subparagraph (a), subject, where applicable, to subparagraph (b), or subparagraph (c).

(4) [*Declaration of Intent To Use the Mark*] (a) Any Contracting State may apply its national law requiring that applicants file a declaration with its national Office to the effect that they intend to use the mark, provided that such requirement shall be considered to have been complied with if a declaration in the form specified in the Regulations to the effect that the applicant or the owner of an international registration intends to use the mark in that State is contained in the international application or request for the recording of the later designation, as the case may be.

(b) The International Bureau shall, as provided in the Regulations, notify the national Office of any designated State in respect of which a declaration under subparagraph (a) was filed with that Bureau of such declaration.

(5) [*Provisions Common to Paragraphs (3) and (4)*] Whenever paragraphs (3) and (4) refer to use of the mark by the applicant or the owner of the international registration, use by a person whose use, under the applicable national law, inures to the benefit of the applicant or the owner shall be sufficient for invoking the benefits provided for in the said paragraphs.

(6) [*Collective Marks and Certification Marks*] Any Contracting State may apply its national law requiring that where the mark is a collective mark or a certification mark the owner thereof must adduce before its national Office certain supporting documents and other evidence, including in particular the bylaws of the association or other entity owning such mark and the rules concerning the control exercised over the use of such mark.

(7) [*Representation*] No designated State shall require that the applicant or the owner of the international registration be represented by any natural person or legal entity located in that State or that, for the purpose of serving notices on such applicant or owner, an address in that State be indicated, except where, in respect of or based on the mark which is the subject of the international application or the international registration, the applicant or owner institutes or defends a proceeding before the national authorities of the said State.

(8) [*Service of Certain Notifications*] (a) The national law of any Contracting State may provide that proceedings before a national authority, including a court, in that State may, for the cancellation in that State pursuant to Article 13 of the effect provided for in Article 11(2), and for no other matter, validly be commenced against the owner of the international registration by means of service of a notification addressed to him at the International Bureau.

(b) The International Bureau shall promptly forward the said notification to the owner of the international registration by registered airmail accompanied by a postal receipt form (*avis de reception, Ruckschein*).

(c) Promptly, upon return to the International Bureau of the receipt form, that Bureau shall send to the party instituting the proceeding a copy, certified by that Bureau, of the said receipt form.

(d) If the receipt form showing receipt by the said owner is not received by the Internal Bureau within one month from the date of its having mailed the notification, the International Bureau shall promptly publish the notification.

(e) Any national law referred to in subparagraph (a) shall provide for a reasonable time limit for the owner of the international registration to respond to the notification and defend his rights in the proceedings. This time limit shall not be less than three months from the date of the notification.

(9) [*Certain Associations*] Article 4(5) shall be without prejudice to the application of the national law in any designated State. However, no such State shall refuse or cancel the effects provided for in Article 11 on the ground that the applicant or the owner of the international registration is an association of the kind referred to in Article 4(5) if, within two months from the date of an invitation addressed to it by the designated Office, the said association files with that Office a list of the names and addresses of all the natural persons or legal entities who or which comprise it, together with a declaration that its members are engaged in a joint enterprise. The said State may, in such a case, consider the said persons or entities as the owners of the international registration standing in the name of the said association.

(10) [*Certification of Documents Issued by the International Bureau*] Where any document issued by the International Bureau bears the seal of that Bureau and the signature of the Director General or a person acting on his behalf, no authority of any Contracting State shall require authentication, legalization or any other certification of such document, seal or signature, by any other person or authority.

Article 20

Recordings Effected by National Offices

(1) [*Notification of the International Bureau*] The national Office of any Contracting State which effects any recording in its own register of marks or in any other related register in respect of matters that may be recorded in the International Register of Marks with regard to any mark which is registered in the International Register of Marks and for which that State is a designated State shall, at the time of effecting such recording and as provided in the Regulations, notify the International Bureau of the said recording unless the recording has been effected pursuant to a notification by the International Bureau to that national Office.

(2) [*Annotation and Publication by the International Bureau*] The International Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

(3) [*Lack of Annotation and Publication*] (a) Until the said annotation and publication are effected, any recording referred to in pargraph (1) shall not be effective in respect of any third party unless such third party was actually aware of the subject matter of the said recording.

(b) Notwithstanding subparagraph (a), the national law of any Contracting State may provide that recordings in its own register referred to in paragraph (1) shall be effective in respect of the residents of that State even before the annotation and publication referred to in subparagraph (a) are effected.

Article 21

Preservation of Rights Acquired Through National Registration

(1) [*Rights Preserved*] If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark owns, in any designated State, a registration of the same mark in the national register of marks ("national registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under the national registration, and, subject to paragraph (4), shall be deemed to continue to include them even where the national registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration are, in fact, covered by the list of goods and/or services referred to in the said national registration.

(2) [*Procedural Details*] The applicant or the owner of the international registration of a mark may, as provided in the Regulations, make a declaration stating that he owns national registrations of the same mark in certain designated States and identifying such registrations. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. It shall, as provided in the regulations, be accompanied by a certified copy of each national registration referred to in the declaration. The International Bureau shall record and publish the declaration and shall notify the interested designated Offices accordingly, as provided in the Regulations. Those Offices shall refer to the declaration in their respective national registers of marks in connection with the said national registrations.

(3) [*Immunity Against Refusal*] (a) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not, subject to subparagraph (b), be refused under Article 12.

(b) Where, in any designated State, there is more than one national register of marks or the national register of marks has several parts and the national registration referred to in paragraph (1) exists in a national register or a part of that register which affords less than the highest degree of protection, subparagraph (a) shall apply only if the declaration under paragraph (2) relates to a registration in the same national register or in the same part of that register.

(4) [*Expiration of the National Registration*] Where the national registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the said national registration only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said national registration.

Article 22

Preservation of Rights Acquired Through International Registration Under the Madrid Agreement

(1) [*Rights Preserved*] If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark effected under this Treaty owns, in respect of any designated State, an international registration of the same mark effected under the Madrid Agreement ("Madrid Registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under the Madrid registration and, subject to paragraph (4), shall be deemed to continue to include them even where the Madrid registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration under this Treaty are, in fact, covered by the list of goods and/or services referred to in respect of the said State in the Madrid registration.

(2) [*Procedural Details*] The applicant seeking the international registration of a mark under this Treaty, or the owner of the international registration of a mark under this Treaty, may, as provided in the Regulations, make a declaration stating that he owns a Madrid registration of the same mark in respect of certain designated States and identifying such registration. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. The International Bureau shall record and publish the declaration, as provided in the Regulations.

(3) [*Immunity Against Refusal*] Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not be refused under Article 12, unless protection under the Madrid Agreement has been refused or as long as refusal under that Agreement is still possible.

(4) [*Expiration of the Madrid Registration*] Where the Madrid registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the Madrid Agreement only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said Madrid registration.

Article 23

Preservation of the Right to Use the Madrid Agreement

Where any natural person or legal entity has the right to seek international registration under the Madrid Agreement or to renew his or its international registration under that Agreement, such right shall not be affected by this Treaty in any Contracting State party also to the Madrid Agreement.

Article 24

National Registrations Based on Internationl Registrations

(1) [*Preservation of Rights Acquired Through International Registration*] The owner of the international registration of a mark having the effect provided for in Article 11(2) in any Contracting State may, at any time and with reference to such international registration, apply for the registration of the same mark in the national register of marks of that State, and such national registration shall, provided the requirements of the national law are complied with, be granted in that State, and the rights of the said owner under such national registration shall be deemed to include all rights, particularly any priority right, existing under the said international registration in the said State, even where the international registration subsequently expires in respect of that State. The foregoing provision shall apply to the extent that the goods and/or services listed in the said application are in fact covered by the list of goods and/or services referred to in the said international registration in respect of the said State.

(2) [*Procedural Details*] Until the expiration of the effect referred to in paragraph (a), Article 20(1) and (2) shall apply also in connection with any national registration effected under that paragraph.

Article 25

Regional Marks

(1) [*Designation Having the Effect of an Application for a Regional Mark*] (a) Where the residents or nationals of all Contracting States are given the right under a treaty providing for the registration of regional marks ("regional treaty") to file applications and obtain registrations under such regional treaty by way of this Treaty, any Contracting State party to such regional treaty may declare, as provided in the Regulations, that its designation under the Treaty shall have the same effect as if the mark had been applied for a regional mark effective in that State.

(b) Where the international application is for a regional mark and, under the regional treaty, the applicant cannot limit his application to some only of the States party to that treaty, designation of one or more of those States shall be treated as designation of all the States party to that treaty, and withdrawal of the designation, or renunciation of the recording of the designation, or cancellation of the designation for any other reason of any such State shall have the effect of withdrawal, renunciation or cancellation with respect to the designation of all such States.

(2) [*Fees*]Where the use of this Treaty results in effects under a regional treaty. Article 18(2) to (5) shall apply *mutatis mutandis* and subject to the following provisions:

(i) The beneficiary of the fees referred to in Article 18(2) shall be the intergovernmental authority administering the regional treaty.
(ii) The choice referred to in Article 18(2) shall be exercised by the intergovernmental authority administering the regional treaty.
(iii) Where, under a regional treaty, fees vary according to the number of the States to which the effect of the regional registration extends, the amounts of individual fees may vary not only according to Article 18(3)(c) but also according to the number of the designated States party to the said regional treaty, provided that the total amount referred to in Article 18(3)(e) and the amount of the renewal fee referred to in Article 18 (3)(f) shall be that of the fees prescribed in the regional treaty with respect to as many States as are designated States.

Article 26

Representation Before the International Bureau

(1) [*Possibility of Representation*] Applicants and owners of international registrations may, as provided in the Regulations, be represented before the International Bureau by any natural person or legal entity empowered by them to that effect (hereinafter referred to as "the duly appointed representative").

(2) [*Effect of Appointment*] Any invitation, notification or other communication addressed by the Internationl Bureau to the duly appointed representative shall have the same effect as if it had been addressed to the applicant or the owner of the international registration. Any application, request, demand, declaration or other document whose signature by the applicant or the owner of the international registration is required in proceedings before the International Bureau, except the document appointing the representative or revoking his appointment, may be signed by his duly appointed representative, and any communication from the duly appointed representative to the International Bureau shall have the same effect as if it had been effected by the applicant or the owner of the international registration.

(3) [*Several Applicants or Owners*] (a) Where there are several applicants, they shall appoint a common representative. In the absence of such appointment, the applicant first named in the international application shall be considered the duly appointed representative of all the applicants.

(b) Where there are several owners of the international registration, they shall appoint a common representative. In the absence of such appointment, the natural person or legal entity first named among the said owners in the International Register of Marks shall be considered the duly appointed representative of all the owners of the international registration.

(c) Subparagraph (b) shall not apply to the extent that the owners own the international registration in respect of different designated States, or in respect of different goods and/or services, or in respect of different States and different goods and/or services.

Article 27

Conditions for and Effect of Priority Claim Contained in the International Application or in the Request for the Recording of Later Designations

The conditions for and the effect of any priority claimed in the international application or in the request for the recording of later designations shall be as provided for in respect of marks in Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property.

Article 28

International Application as Possible Basis of Priority Claim

(1) [*Basis of Claim*] Any international application which is regular shall be equivalent to a regular national filing within the meaning of Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and shall be recognized as the basis of a priority claim as provided for in that Act.

(2) [*Criterion of "Regular" International Application*]. For the purposes of paragraph (1), an international application shall be regarded as regular if it is adequate to establish the date on which it was filed with the International Bureau or, where it was filed through the intermediary of a national office, with that Office.

Article 29

Delay in Meeting Time Limits

(1) [*Delays That Must Be Excused by Contracting States*] Subject to paragraph (3), any Contracting State shall, as far as that State is concerned, excuse, for reasons admit-

ted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(2) [*Delays That May Be Excused by Contracting States*] Subject to paragraph (3), any Contracting State may, as far as that State is concerned, excuse, for reasons other than those admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(3) [*Delays That Cannot Be Excused*] Paragraphs (1) and (2) shall not apply to any delay in meeting any time limit provided for in Article 7(1), Article 7(6)(iii), Article 8(1) and Article 12(2)(a)(i).

(4) [*International Bureau*] The International Bureau shall not excuse delays by applicants, owners of international registrations or national Offices in meeting any time limit fixed in this Treaty and the Regulations.

Article 30

Correction of Errors of the International Bureau

(1) [*Petition for Redress*] Subject to Article 9, where, in the opinion of the applicant or the owner of the international registration, the International Bureau has, in applying the provisions of this Treaty and the Regulations, made an error which may affect the interests of such applicant or owner in respect of any designated State, the said applicant or owner may, within the time limit fixed in the Regulations, filed with the national Office of such State a petition for the purpose of requesting the International Bureau to correct the error in respect of said State.

(2) [*Redress*] If the national Office or any other competent authority of the said State finds that the International Bureau has in fact made the error which is the subject of the petition, the said national Office shall request the International Bureau to correct that error in respect of that State and the International Bureau shall proceed as requested.

(3) [*Procedure*] The applicant or the owner of the international registration who files a petition under paragraph (1) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it received a copy of such petition; otherwise it shall keep the said copy in its files.

(4) [*Procedure: Continued*] Where the correction requires a corresponding modification of the International Register of Marks, the International Bureau shall modify that Register accordingly. Furthermore, where the correction affects any information which has been the subject of a publication by the International Bureau, that Bureau shall publish the correction.

Article 31

Notification of Owner of International Registration

Any matter recorded by the International Bureau in respect of an international registration shall be the subject of a corresponding notification to the owner of the international registration. Details may be provided in the Regulations.

CHAPTER II: ADMINISTRATIVE PROVISIONS

Article 32

Assembly

(1) [*Composition*] (a) The Assembly shall consist of the Contracting States.

(b) The Government of each Contracting State shall be represented by one delegate, who may be assisted by alternate delegates, advisors, and experts.

(2) [*Tasks*] (a) The Assembly shall:

(i) deal with all matters concerning the maintenance and development of the Union and the implementation of this Treaty;
(ii) excercise such rights and perform such tasks as are specially conferred upon it or assigned to it under this Treaty;
(iii) give directions to the Director General concerning the preparation for revision conferences;
(iv) review and approve the reports and activities of the Director General concerning the Union, and give him all necessary instructions concerning matters within the competence of the Union;
(v) determine the program and adopt the budget of the Union, and approve its final accounts;
(vi) adopt the financial regulations of the Union;
(vii) establish such committees and working groups as it deems appropriate to facilitate the work of the Union and of its organs;
(viii) determine which States other than Contracting States and which intergovernmental and international non-governmental organizations shall be admitted to its meetings as observers;
(ix) decide upon the establishment of any agency of the International Bureau in any place outside Geneva (Switzerland) for the purpose of receiving documents and payments under this Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva;
(x) take any other appropriate action designed to further the objectives of the Union and perform such other functions as are appropriate under this Treaty.

(b) With respect to matters which are of interest also to other Unions administered by the Organization, the Assembly shall make its decisions after having heard the advice of the Coordination Committee of the Organization.

(3) [*Representation*] A delegate may represent, and vote in the name of, one State only.

(4) [*Vote*] Each Contracting State shall have one vote.

(5) [*Quorum*] (a) One-half of the Contracting States shall constitute a quorum.

(b) In the absence of the quorum, the Assembly may make decisions but, with the exception of decisions concerning its own procedure, all such decisions shall take effect only if the quorum and the required majority are attained through voting by correspondence as provided in the Regulations.

(6) [*Majority*] (a) Subject to Article 34(5)(f), Article 35(2)(b) and (c), and Article 38(2)(b), the decisions of the Assembly shall require a majority of the votes cast.

(b) Abstentions shall not be considered as votes.

(7) [*Sessions*] (a) The Assembly shall meet once in every calendar year in ordinary session upon convocation by the Director General, preferably during the same period and at the same place as the Coordination Committee of the Organization.

(b) The Assembly shall meet in extraordinary session upon convocation by the Director General, either on the Director General's own initiative or at the request of one-fourth of the Contracting States.

(8) [*Rules of Procedure*] The Assembly shall adopt its own rules of procedure.

Article 33

International Bureau

(1) [*Tasks*] The International Bureau shall:

(i) Perform the administrative tasks concerning the Union; in particular, it shall perform such tasks as are specially assigned to it under this Treaty or by the Assembly;
(ii) provide the secretariat of revision conferences, of the Assembly, of the committees and working groups established by the Assembly, and of any other meeting convened by the Director General and dealing with matters of concern to the Union.

(2) [*Director General*] The Director General shall be the chief executive of the Union and shall represent the Union.

(3) [*Meetings Other Than Sessions of the Assembly*] The Director General shall convene any committee and working group established by the Assembly and all other meetings dealing with matters of concern to the Union.

(4) [*Role of International Bureau in the Assembly and Other Meetings*] (a) The Director General and any staff member designated by him shall participate, without the right to vote, in all meetings of the Assembly, the committees and working groups established by the Assembly, and any other meeting convened by the Director General and dealing with matters of concern to the Union.

(b) The Director General or a staff member designated by him shall be ex officio secretary of the Assembly, and of the committees, working groups and other meetings referred to in subparagraph (a).

(5) [*Revision Conferences*] (a) The Director General shall, in accordance with the directions of the Assembly, make the preparations for revision conferences.

(b) The Director General may consult with intergovernmental and international non-governmental organizations concerning the said preparations.

(c) The Director General and persons designated by him shall take part, without the right to vote, in the discussions at revision conferences.

(d) The Director General or a staff member designated by him shall be ex officio secretary of any revision conference.

(6) [*Assistance by National Offices*] The Regulations may specify the services that national Offices shall render in order to assist the International Bureau in carrying out its tasks under this Treaty.

Article 34

Finances

(1) [*Budget*] (a) The Union shall have a budget.

(b) The budget of the Union shall include the income and expenses proper to the Union, its contribution to the budget of expenses common to the Unions, and any sum made available to the budget of the Conference of the Organization.

(c) Expenses not attributable exclusively to the Union but also to one or more other Unions administered by the Organization shall be considered as expenses common to the Unions. The share of the Union in such common expenses shall be in proportion to the interest the Union has in them.

(2) [*Coordination with Other Budgets*] The budget of the Union shall be established with due regard to the requirements of coordination with the budgets of the other Unions administered by the Organization.

(3) [*Sources of Income*] The budget of the Union shall be financed from the following sources:

(i) fees and other charges due for services rendered by the International Bureau in relation to the Union;
(ii) sale of, or royalties on, the publications of the International Bureau concerning the Union;
(iii) gifts, bequests, and subventions;
(iv) rents, interests, and other miscellaneous income.

(4)(a) [*Self-Supporting Financing*] The amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty.

(b) [Continuation of Budget; Reserve Fund] If the budget is not adopted before the beginning of a new financial period, it shall be at the same level as the budget of the previous year, as provided in the financial regulations. If the income exceeds the expenses, the difference shall be credited to a reserve fund.

(5) [*Working Capital Fund*] (a) The Union shall have a working capital fund which shall be constituted by a single payment made by each Contracting State. If the fund becomes insufficient, the Assembly shall arrange to increase it. If part of the fund is no longer needed, it shall be reimbursed.

(b) The amount of the initial payment of each Contracting State to the said fund or of its participation shall be proportionate to the number of international applications which, among the total number of such applications, it is estimated that its residents will file. The participations of all Contracting States in the fund may be revised from time to time by the Assembly to make them correspond to the number of international applications actually filed by the residents of the various States since the date of the initial payments or the last such revision.

(c) The proportion and the terms of payment shall be fixed by the Assembly on the proposal of the Director General and after it has heard the advice of the Coordination Committee of the Organization.

(d) If loans from the reserve fund permit the constitution of a working capital fund that is sufficient, the Assembly may suspend the application of subparagraphs (a), (b) and (c).

(e) Any reimbursement under subparagraph (a) shall be proportionate to the amounts paid by each Contracting State, taking into account the dates at which they were paid.

(f) Any decision under subparagraphs (a) to (d) shall require two-thirds of the votes cast.

(c) [*Advances by Host Country*] (a) In the headquarters agreement concluded with the State on the territory of which the Organization has its headquarters, it shall be provied that, whenever the working capital fund is insufficient, such State shall grant advances. The amount of those advances and the conditions on which they are granted shall be the subject of separate agreements, in each case, between such State and the Organization. As long as it remains under the obligation to grant advances, such State shall have an ex officio seat in the Assembly if it is not a Contracting State.

(b) The State referred to in subparagraph (a) and the Organization shall each have the right to denounce the obligation to grant advances, by written notification. Denunciation shall take effect three years after the end of the year in which it has been notified.

(7) [*Auditing of Accounts*] The auditing of the accounts shall be effected by one or more of the contracting States or by external auditors, as provided in the financial regulations. They shall be designated, with their agreement, by the Assembly.

Article 35

Regulations

(1) [*Adoption of Regulations*] The Regulations adopted at the same time as this Treaty are annexed to this Treaty.

(2) [*Amending the Regulations*] The Assembly may amend the Regulations. Amendments may consist also of new provisions added to the Regulations concerning:

(i) matters in respect of which this Treaty expressly refers to the Regulations or expressly provides that they are or shall be prescribed,
(ii) any administrative requirements, matters or procedures,
(iii) any details useful in the implementation of this Treaty.

(b) Subject to subparagraphs (c) and (d), the amendment of the Regulations shall require two-thirds of the votes cast.

(c) The amendment of any provision of the Regulations affecting the amount of the fees referred to in Article 18(2), as well as the distribution among the national Offices and the transfer to them of such fees, shall require three-fourths of the votes cast. Where the amendment relates to fees referred to in Article 18(2) but those fees are fees to which only some of the Contracting States are entitled, only the Contracting States entitled thereto shall, for the purposes of the quorum, be considered Contracting States, and only they shall have the right to vote.

(d) The amendment of any provisions of the Regulations concerning declarations of intent to use the mark and declarations of actual use of the mark shall require that it be accepted by a majority of two-thirds of the votes cast and that no Contracting State whose national law allows or requires the filing of such declarations vote against the proposed amendment.

(3) [*Conflict Between the Treaty and the Regulations*] In the case of conflict between the provisions of this Treaty and those of the Regulations, the former shall prevail.

Article 36

Search Service

(1) [*Tasks*] The International Bureau shall maintain a Service whose task shall be to search for anticipations among marks registered under this Treaty, and, to the extent authorized by the Assembly, other marks as well.

(2) [*Fees; Availability*] Searches shall be made on request and shall be subject to the payment of fees fixed under the Regulations. The Service shall be at the disposal of any Government, national Office, other legal entity, or natural person.

(3) [*Self-Supporting Financing*] The amounts of the fees referred to in paragraph (2) shall be so fixed that they should be sufficient to cover the expenses of the International Bureau connected with the Service.

CHAPTER III: REVISION AND AMENDMENT

Article 37

Revision of the Treaty

(1) [*Revision Conferences*] This Treaty may be revised from time to time by conferences of the Contracting States.

(2) [*Convocation*] The convocation of any revision conference shall be decided by the Assembly.

(3) [*Provisions That Can Be Amended Also by the Assembly*] The provisions referred to in Article 38(1)(a) may be amended either by a revision conference or according to Article 38.

Article 38

Amendment of Certain Provisions of the Treaty

(1) [*Proposals*] (a) Proposals for the amendment of the length of any time limit fixed in Chapter I of this Treaty, other than those referred to in Articles 12(2) and 19(3), or for any amendment to Articles 32(5) and (7), 33, 34 and 36, may be initiated by any Contracting State or by the Director General.

(b) Such proposals shall be communicated by the Director General to the Contracting States at least six months in advance of their consideration by the Assembly.

(2) [*Adoption*] (a) Amendments to the provisions referred to in paragraph (1) shall be adopted by the Assembly.

(b) Adoption shall require three-fourths of the votes cast, provided that adoption of any amendment of the length of the time limit fixed in Articles 7(1), 7(3)(c), 7(6)(iii) and 8(1) shall require that no Contracting State vote against the proposed amendment.

(3) [*Entry Into Force*] Any amendment to the provisions referred to in paragraph (1) shall enter into force one month after written notifications of acceptance, effected in accordance with their respective constitutional processes, have been received by the Director General from three-fourths of the Contracting States members of the Assembly at the time the Assembly adopted the amendment.

(b) Any amendment to the said Articles thus accepted shall bind all the Contracting States which were Contracting States at the time the amendment was adopted by the Assembly, provided that any amendment increasing the financial obligations of the said Contracting States shall bind only those which have notified their acceptance of such amendment.

(c) Any amendment which has been accepted and which has entered into force in accordance with subparagraph (a) shall bind all States which become Contracting States after the date on which the amendment was adopted by the Assembly.

CHAPTER IV: FINAL PROVISIONS

Article 39

Becoming Party to the Treaty

(1) [*Ratification, Accession*] Any State member of the International Union for the Protection of Industrial Property may become party to this Treaty by:

(i) signature followed by the deposit of an instrument of ratification, or
(ii) deposit of an instrument of accession.

(2) [*Deposit of Instrument*] Instruments of ratification or accession shall be deposited with the Director General.

(3) [*Reference to Other States*] (a) Any instrument of ratification or accession may be accompanied by a declaration to the effect that it shall be considered to have been deposited only when another State, or either one of two other States, or both of two other States, specified by name, shall have deposited instruments of ratification or accession. The instrument of ratification or accession of any State having made such a declaration shall be considered to have been deposited

(i) on the day on which the specified State, or one of the two specified States, or the second specified State, as the case may be, deposits its instrument of ratification or accession,
(ii) where the instrument of ratification or accession of any specified State itself is accompanied by a declaration concerning other States, on the day on which the instrument of ratification or accession of the said specified State is to be considered to have been deposited.

(b) Any declaration made under subparagraph (a) may be withdrawn at any time or, if it was made in respect of two States, may be limited to one of them. The instrument of ratification or accession of any State withdrawing its declaration shall be considered to have been deposited on the day on which the withdrawal is notified to the Director General, whereas the instrument of ratification or accession of any State limiting its declaration shall be considered to have been deposited on the day on which the remaining State deposits its instrument of ratification of accession. If the instrument of ratification or accession of the remaining State has already been deposited, the instrument of ratification or accession of the State limiting its declaration shall be considered to have been deposited on the day on which the limitation is notified to the Director General.

(4) [*Certain Territories*] (a) The provisions of Article 24 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply to this Treaty.

(b) Subparagraph (a) shall in no way be understood as implying the recognition or tacit acceptance by a Contracting State of the factual situation concerning a territory to which this Treaty is made applicable by another Contracting State by virtue of the said subparagraph.

Article 40

Transitional Provisions

(1) [*Declaration by Certain Developing Countries*] Any State party to the Paris Convention for the Protection of Industrial Property but not party to this Treaty which, in conformity with the established practice of the General Assembly of the United Nations, is regarded as a developing country may make a declaration addressed

to the Director General stating that it wishes to avail itself of the right provided for in paragraph (2) and that it intends to become party to this Treaty at the latest within two years from the date on which that right, according to the applicable provisions of paragraphs (5) to (8), ceases to be effective in respect of that State.

(2) [*Effect of Declaration*] Residents and nationals of any State having made a declaration according to paragraph (1) shall, notwithstanding Article 4(1), have the right to file international applications and to own international registrations under this Treaty.

(3) [*Time of Filing Declaration*] The declaration referred to in paragraph (1) shall be filed with the Director General at any time before June 12, 1978.

(4) [*Commencement of Effect*] If filed before the entry into force of this Treaty according to Article 41(1), the declaration referred to in paragraph (3) shall become effective on the date of the said entry into force. If filed after such entry into force, the said declaration shall become effective three months after the date of its filing.

(5) [*Expiration of Effect*] Subject to paragraphs (6) to (8), the right provided for in paragraph (2) shall be effective until the expiration of whichever of the following two periods expires later:

(i) a period of ten years from the date (June 12, 1973) of the signature of this Treaty,

(ii) a period of five years from the entry into force of this Treaty according to Article 41(1).

(6) [*Possible Prolongation of Effect*] (a) The period referred to in paragraph (5) may be prolonged twice for periods of five years each by decisions of the Special Conference as defined in subparagraph (b) in respect of those States having made the declaration referred to in paragraph (1) whose residents or nationals have filed an average of not more than two hundred international applications per year during the three consecutive years, as defined in subparagraph (d).

(b) The Special Conference shall consist of the States which, at the time it meets, are Contracting States and those States having made a declaration under paragraph (1) which fulfill, in respect of the number of international applications, the conditions set forth in subparagraph (a).

(c) The decision of the Special Conference shall require a simple majority of the votes cast. The said Conference shall meet upon convocation by the Director General during the year preceding the year in which:

(i) the period referred to in paragraph (5) expires, and

(ii) the first five-year period referred to in subparagraph (a) expires if prolongation for that period had been decided.

(d) The three consecutive years referred to in subparagraph (a) shall, in respect of each of the two possible decisions, be the fourth, third and second calendar years before the year in which the decision is made.

(7) [*Possible Further Prolongation of Effect*] The Assembly, in exceptional cases and upon request, may decide to prolong for two further periods of five years each the application of the right under paragraph (2) in respect of any State which, at the time the decision is made, benefits from the said right and which is then regarded as one of the least developed among the developing countries.

(8) [*Termination of Effect for Special Reasons*] Notwithstanding paragraphs (4) to (7), the right provided for in paragraph (2) shall cease to exist on the last day of the calender year which follows the year in which any State having made a declaration under paragraph (1):

(i) ceases to be regarded as a developing country in conformity with the established practice of the General Assembly of the United Nations, or

(ii) denounces the Paris Convention for the Protection of Industrial Property.

Article 41

Entry Into Force of the Treaty

(1) [Initial Entry Into Force] This Treaty shall enter into force six months after five States have deposited their instruments of ratification or accession.

(2) [*States Not Covered by the Initial Entry Into Force*] Any State which is not among those referred to in paragraph (1) shall become bound by this Treaty three months after the date on which it has deposited its instrument of ratification or accesssion.

Article 42

Reservations to the Treaty

Subject to Article 46(2), no reservations to this Treaty are permitted.

Article 43

Denunciation of the Treaty

(1) [*Notification*] Any contracting State may denounce this Treaty by notification addressed to the Director General.

(2) [*Effective Date*] Denunciation shall take effect one year after the day on which the Director General has received the notification.

(3) [*Moratorium on Denunciation*] The right of denouncing this Treaty provided for in paragraph (1) shall not be exercised by any Contracting State before the expiration of five years from the date on which it becomes bound by this Treaty.

(4) [*Continuation of the Effects of the Treaty*] (a) The effects of this Treaty on any mark enjoying the benefits of this Treaty on the day preceding the day on which the denunciation by any Contracting State takes effect shall continue in that State until the expiration of the initial or renewal term which was running on that date.

(b) Where the right to own the international registration of a mark is based on the owner's being a resident or national of the Contracting State referred to in subparagraph (a), the benefits of this Treaty shall, in all designated States, continue until the day on which the period referred to in subparagraph (a) expires in respect of that mark.

Article 44

Signature and Languages of the Treaty

(1) [*Original Texts*] This Treaty shall be signed in a single original in the English and French languages, both texts being equally authentic.

(2) [*Official Texts*] Official texts shall be established by the Director General, after consultation with the interested Governments, in the German, Italian, Japanese, Portuguese, Russian and Spanish languages, and such other languages as the Assembly may designate.

(3) [*Time Limit for Signature*] This Treaty shall remain open for signature at Vienna until December 31, 1973.

Article 45

Depositary Functions

(1) [*Deposit of the Original Texts*] The original of this Treaty, when no longer open for signature, shall be deposited with the Director General.

(2) [*Certified Copies*] The Director General shall transmit two copies, certified by him, of this Treaty to the Governments of the States party to the Paris Convention for the Protection of Industrial Property and, on request, to the Government of any other State.

(3) [*Registration of the Treaty*] The Director General shall register this Treaty with the Secretariat of the United Nations.

(4) [*Amendments*] The Director General shall transmit two copies, certified by him, of any amendment to this Treaty to the Governments of the Contracting States and, on request, to the Government of any other State.

Article 46

Settlement of Disputes

(1) [*International Court of Justice*] Any dispute between two or more Contracting States concerning the interpretation or application of this Treaty or the Regulations, not settled by negotiation, may, by any one of the States concerned, be brought before the International Court of Justice by application in conformity with the Statute of the Court, unless the States concerned agree on some other method of settlement. The Contracting State bringing the dispute before the Court shall inform the International Bureau; the International Bureau shall bring the matter to the attention of the other Contracting States.

(2) [*Reservation*] Each Contracting State may, at the time it signs this Treaty or deposits its instrument of ratification or accession, declare by notification deposited with the Director General that it does not consider itself bound by paragraph (1). With regard to any dispute between any Contracting State having made such a declaration and any other Contracting State, paragraph (1) shall not apply.

(3) [*Withdrawal of Reservation*] Any Contracting State having made a declaration in accordance with paragraph (2) may, at any time, withdraw its declaration by notification addressed to the Director General.

Article 47

Notifications

The Director General shall notify the Governments of the States party to the Paris Convention for the Protection of Industrial Property of:

(i) signatures under Article 44;

(ii) deposits of instruments of ratification or accession under Article 39(2) and of any declaration accompanying them under Article 39(3)(a) and any withdrawal or limitation of such declarations made under Article 39(3)(b);

(iii) the date of entry into force of this Treaty under Article 41(1) and any amendment under Article 38(3)(a);

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UNDER THE TRADEMARK REGISTRATION TREATY

Rule 1

Abbreviated Expressions

1.1 *"Treaty"*

In these Regulations, the word "Treaty" means the Trademark Registration Treaty.

1.2 *"Chapter" and "Article"*

In these Regulations, the words "Chapter" and "Article" refer to the specified Chapter or Article of the Treaty.

1.3 *"Associations"*

In these Regulations, references to legal entities where such references concern them in their capacity of applicants or owners of international registrations shall be construed as references also to associations referred to in Article 4(5).

1.4 *"Gazette"*

In these Regulations, the word "Gazette" means the official Gazette of the International Bureau referred to in Article 2(ix).

1.5 *"Table of Fees"*

In these Regulations, the words "Table of Fees" mean the table of fees annexed hereto.

RULES CONCERNING CHAPTER I

Rule 2

Representation Before The International Bureau

2.1 *Number of Duly Appointed Representatives*

(a) The applicant and the owner of the international registration may appoint only one representative.

(b) Where several natural persons or legal entities have been indicated as representatives by the applicant or the owner of the international registration, the natural person or legal entity first mentioned in the document in which they are indicated shall be regarded as the only duly appointed representative.

(c) Where the representative is a partnership or firm composed of attorneys or patent or trademark agents, it shall be regarded as one representative.

2.2 *Form of Appointment*

(a) A representative shall be regarded as a "duly appointed representative" if his appointment complies with the prescriptions of paragraphs (b) to (e).

(b) The appointment of any representative shall require:

(i) that his name appear as that of a representative in the international application and that such application bear the signature of the applicant, or

(ii) that a separate power of attorney (i.e., a document appointing the representative), signed by the applicant or the owner of the international registration, be filed with the International Bureau.

(c) Where there are several applicants or owners of the international registration, the document containing or constituting the appointment of their common representative shall be signed by all of them.

(d) Any document containing or constituting the appointment of a representative shall indicate his name and his address. Where the representative is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). Where the representative is a legal entity or a partnership or firm of attorneys or patent or trademark agents, "name" shall mean the complete name of the legal entity or partnership or firm. The address of the representative shall be indicated in the same manner as that provided for in respect of the applicant in Rule 5.2(c).

(e) The document containing or constituting the appointment shall contain no words which, contrary to Article 26(2), would limit the powers of the representative, in particular by indicating a time limit or event after which the appointment would expire, by excluding certain matters from the powers of the representative, or by specifying some only of the powers which any representative has under the said Article.

(f) Where the appointment does not comply with the requirements referred to in paragraphs (b) to (e), it shall be treated by the International Bureau as if it had not been made, and the applicant or the owner of the international registration as well as the natural person, the legal entity, the partnership or firm which was indicated as the representative in the purported appointment shall be informed of this fact by the International Bureau.

(g) The Administrative Instructions shall provide recommended wording for the appointment.

2.3 *Revocation or Renunciation of Appointment*

(a) The appointment of any representative may be revoked at any time by the natural person who or legal entity which has appointed that representative. The revocation shall be effective even if only one of the natural persons who or legal entities which have appointed the representative revokes the appointment.

(b) Revocation shall require a written document signed by the natural person or the legal entity referred to in the preceding paragraph. It shall be effective, as far as the International Bureau is concerned, as from the date of the receipt of the said document by that Bureau.

(c) The appointment of a representative as provided in Rule 2.2 shall be regarded as the revocation of any earlier appointment of any other representative. The appointment shall preferably indicate the name of the other earlier appointed representative.

(d) Any representative may renounce his appointment through a notification signed by him and addressed to the International Bureau.

2.4 *General Powers of Attorney*

The appointment of a representative in a separate power of attorney (i.e., a document appointing the representative) may be general in the sense that it relates to more than one international application and more than one international registration in respect of the same natural person or legal entity. The identification of such applications and registrations, as well as other details in respect of such general power of attorney and of its revocation or renunciation, shall be provided in the Administrative Instructions. The Administrative Instructions may provide for a fee payable in connection with the filing of general powers of attorney.

2.5 *Substitute Representative*

(a) The appointment of the presentative referred to in Rule 2.2(b) may indicate also one or more natural persons as substitute representatives.

(b) For the purposes of the second sentence of Article 26(2), substitute representatives shall be considered as representatives.

(c) The appointment of any substitute representative may be revoked at any time by the natural person who or legal entity which has appointed the representative or by the representative. Revocation shall require a written document signed by the said natural person, legal entity or representative. It shall be effective, as far as the International Bureau is concerned, as from the date of the receipt of the said document by that Bureau.

Rule 3

3.1 *International Register of Marks*

Contents of the International Register

The International Register of Marks shall contain, in espect of each mark registered therein:

(i) all the indications that must or may be furnished under the Treaty or these Regulations, and that have in fact been furnished, to the International Bureau, and, where relevant, the date on which such indications were received by that Bureau,

(ii) the amount of all fees received and the date or dates on which they were received by the International Bureau,

(iii) the number and date of the international registration and the numbers, if any, and the dates of all recordings relating to that registration.

3.2 *Keeping of the International Register*

The administrative Instructions shall regulate the establishment of the International Register of Marks, and, subject to the Treaty and these Regulations, shall specify the form in which it shall be kept and the procedure which the International Bureau shall follow for inscribing recordings therein and for preserving it from loss or other damage.

Rule 4

4.1 *Applicant*

The Same Applicant for All Designated States

(a) The applicant shall be the same for the purposes of all the designated States.

(b) Where the international application, as filed, does not indicate the same applicant for the purposes of all the designated States, that application shall be treated as if only the state first mentioned therein, and any other State for the purposes of which the same applicant is indicated as for the said first-mentioned state, had been designated.

Rule 5

Mandatory Contents of the International Application

5.1 *Indication that the International Application is Filed Under the Treaty*

The indication referred to in Article 5(1)(a)(i) shall be worded as follows: "The undersigned requests that the mark herein reproduced be registered in the International Register of Marks established under the Trademark Registration Treaty"; or it shall consist of a statement to the same effect.

5.2 *Indications Concerning the Applicant*

(a) The applicant's identity shall be indicated by his name. If the applicant is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). If the applicant is a legal entity, its name shall be indicated by the full, official designation of the said entity.

(b) The applicant's residence and nationality shall be indicated by the name(s) of the State(s) of which he is a resident and of which he is a national.

(c) The applicant's address shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and shall, in any case, consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. Any telegraphic and teletype address and telephone number that the applicant may have should preferably be indicated. For each applicant, only one address shall be indicated; if several addresses are indicated, only the one first mentioned in the international application shall be considered.

5.3 *Reproduction of the Mark; Color; Transliteration*

(a) Where the mark consists only of letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, and the applicant does not wish to claim any special graphic feature, the mark may be reproduced, for example by typing the letters, numerals and signs, on the sheet itself on which the international application appears. The use of small letters and capital letters shall be permitted, and shall be followed in the publications of the International Bureau.

(b) In cases other than that referred to above, the mark shall be reproduced on a sheet of paper of A4 size (29.7 cm x 21 cm.), separate from the sheet on which the text of the international application appears, and shall be attached to the latter sheet. The reproduction of the mark itself on the separate sheet shall not occupy a space larger than 10 centimeters horizontally and 10 centimeters vertically. The reproduction of the mark on the separate sheet shall be of a quality admitting of direct reproduction by photography and printing processes. The separate sheet shall indicate the name and address of the applicant.

(c) Where color is claimed, the international application shall contain a statement to that effect and shall be accompanied by

(i) either a reproduction of the mark in color in one copy satisfying the requirements set forth in paragraph (b),

(ii) or a reproduction of the mark in color in the number of copies fixed in the Administrative Instructions and a reproduction of the mark in black and white in one copy containing a description of the colors in words and signs as specified in the Adminstrative Instructions, all copies satisfying the requirements set forth in paragraph (b).

(d) Where the mark or a certain part of it is three-dimensional, the international application and the separate sheet containing the reproduction of the three-dimensional feature shall contain an indication to that effect.

(e) Where the mark is intended to be used, or also to be used, as a sound mark, the international application and any separate sheet containing the reproduction of the mark shall contain an indication to that effect.

(f) Where the mark consists of or contains matter in script other than Latin script or numbers expressed in forms other than Arabic or Roman, the international application shall also contain a transliteration of such matter in Latin script and Arabic numerals; the transliteration shall follow the English pronunciation if the international application is in English, and the French pronunciation if it is in French. If the International Bureau finds that such transliteration is incorrect or is missing and it is equipped to effect itself the said transliteration, it shall do so. In the latter case, however, it shall notify the applicant of its transliteration and invite him to make comments on it within one month from the date of the notification, and shall not proceed with the international registration before the expiration of the said period of one month.

5.4 *List of Goods and/or Services*

(a) Each of the groups of terms pertaining to the same class of the International Classification shall be preceded by an indication of the number of the class, and the various groups shall follow in the numerical order of the corresponding classes.

(b) If, in the list of goods and/or services contained in the international application as filed, the terms are not or not properly grouped as provided in Article 5(1)(a)(iv), the International Bureau shall, after having notified the applicant of its intention to do so and allowing him one month from the date of the notification to react to such notification, classify each term as required and constitute the required groups. If any of the terms does not permit classification in one class only of the International Classification, it shall be classified in each of the applicable classes.

(c) If the International Bureau finds that any term is incomprehensible, it shall notify the applicant of its finding and allow him one month from the date of the notification to submit either arguments to the effect that the term is comprehensible or a request that the incomprehensible term be deleted. If, on the basis of the said arguments or other considerations, the International Bureau finds that the term is comprehensible, it shall treat it according to its comprehended meaning. Otherwise it shall delete it ex officio.

(d) The list of goods and/or services shall be the same for the purposes of all States designated in the international application as filed or as limited under Article 7(4)(b). Where the international application as filed or as limited under Article 7(4)(b) indicates different goods and/or services in respect of different designated States, that application shall be treated as if only the State first mentioned therein, and any other States for the purposes of which the same list of goods and/or services is indicated as for the said first-mentioned State, had been designated.

5.5 *Identification of States*

(a) Identification of any State shall consist in writing its name in the international application in a manner sufficiently clear for the purposes of identification.

(b) The identification of any designated State which is not a Contracting State shall be treated as if such State had not been identified.

5.6 *Choice Between National and Regional Marks*

(a) The availability of any choice referred to in Article 5(1)(a)(vi) shall be notified by the interested Contracting State to the International Bureau, and that Bureau shall publish a corresponding announcement.

(b) The choice referred to in Article 5(1)(a)(vi) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

5.7 *Collective Marks and Certification Marks*

The indication referred to in Article 5(1)(a)(vii) shall consist of the words "collective mark desired" or "certification mark desired," respectively, or other words to that effect, appearing next to the name of the designated State to which the indication applies.

5.8 *Application Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 5(3)(b) shall be worded as follows: "The . . . [1] certifies that the present international application was filed with it on . . . [2] ."

[1] Indicate the name of the national Office. [2] Indicate the date.

(b) The national Office of any Contracting State whose national law provides that international applications of residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the international applications filed with it since the sending of the last such note.

(i) the name of the applicant,
(ii) a reproduction of the mark,
(iii) the date on which the international application was filed with that Office,
(iv) the date on which the international application was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively.

(d) If the International Bureau does not receive any of the international applications listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.

Rule 6

Optional Contents of the International Application

6.1 *Naming of a Representative*

The international application may indicate a representative.

6.2 *Claiming of Priority*

(a) The declaration referred to in Article 5(1)(b) shall consist of a statement to the effect that the priority of an earlier application is claimed and shall indicate:

(i) where the earlier application is an application filed for the registration of a mark in the register of marks of a given country, the country in which it was filed; where the earlier application is an international application filed under the Treaty, a State designated therein; where the earlier application is an application for a regional mark, the authority with which it was filed and a State for which it was filed;
(ii) the date on which the earlier application was filed;
(iii) the number allotted to the earlier application.

(b) If the declaration does not indicate the country or State, and the date, referred to in paragraph (a)(i) and (ii), the International Bureau shall treat the declaration as if it has not been made.

(c) If the application number referred to in paragraph (a)(iii) is not indicated in the declaration but is furnished by the applicant or the owner of the international registration to the International Bureau prior to the expiration of the 10th month from the filing date of the said application, it shall be considered to have been included in the declaration and shall be published by the International Bureau.

6.3 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 19(4)(a) shall consist of the following statement:

> "The undersigned applicant declares that (he) (it) intends to use the mark which is the subject of this international application himself (itself) and/or by and through persons whose use inures to his (its) benefit in commerce with and/or on the territory of . . . [1] on and/or in connection with the goods and/or services listed in this international application."

[1] If the declaration relates to all the States designated in the international application, insert "each of the States designated in this application"; otherwise, indicate those of the States designated in respect of which the declaration is made.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the effect provided for in Article 19(4)(a) in that State.

6.4 *Declaration of Actual Use*

In respect of any designated State, the following statement, signed by the applicant, may be made and attached to the international application:

> "The undersigned applicant declares that the following mark . . . [1] which is the subject of the international application to which this declaration is attached is now in use by and through . . . [2] in commerce with and/or on the territory of . . . [3] on or in connection with the following goods and/or services listed in respect of such State . . . [4] ; that such use commenced on . . . [5] ; and that the mode and manner in which the mark is used is:
>
> on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
> on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
> in the case of services, in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
> other [7] ."

[1] Reproduce the mark. [2] Insert "the undersigned applicant" and/or, if applicable, the name and address of the person or persons whose use of the mark inures to

the benefit of the applicant in the State. [3] Insert name of State. [4] Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used. [5] Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates. [6] The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use. [7] Recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use.

6.5 *Declarations Under Articles 21(2) and 22(2)*

(a) Any declaration under Article 21(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the applicant owns a national registration or national registrations of the same mark in the said State or States,
(iii) indicate, in respect of each such national registration, its number.

(b) Any declaration under Article 22(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the applicant owns a Madrid registration of the same mark in respect of the said State or States,
(iii) indicate the relevant registration number under the Madrid Agreement.

6.6 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register or the appropriate part of the national register (for example, "Supplemental Register" or "Part B Register").

6.7 *Trade or Business of the Applicant*

The applicant may indicate in the international application the trade or business in which he is engaged.

6.8 *Translation of the Mark*

If the mark consists of or contains one or more words which can be translated into the language of the international application, that application may contain such translation.

Rule 7

Languages

7.1 *Language of the International Application*

The international application shall be in the English or in the French language.

7.2 *Language of the Request for Recording of Later Designations*

The request for the recording of any later designation shall be in the same language as that in which the international application was filed.

7.3 *Language of Registrations, Recordings, Annotations and Communications*

(a) Registrations, recordings and annotations by the International Bureau shall be in the same language as that in which the international application was filed.

(b) Any notification or other communication addressed by the International Bureau to the applicant or the owner of the international registration and any request, demand, declaration or other communication addressed by the applicant or the owner of the international registration to the International Bureau shall be in the same language as that in which the international application was filed.

(c) Notification by the national Offices to the International Bureau, and letters of other written communications from the national Offices to the International Bureau, shall be in the English or in the French language, it being understood that copies of papers filed by a third party in the case of an opposition proceeding attached to any notice of possible refusal and any copy referred to in Rule 20.3(a)(iii) shall be in the language in which such papers or copy were filed with the national Office.

(d) Letters from the International Bureau to any national Office shall be in English or French according to the wish of the national Office; any matter in such letters quoted from the International Register of Marks shall be in the language in which such matter appears in that Register.

(e) Where the International Bureau is under the obligation to forward to the applicant or the owner of the international registration any of the communications referred to in paragraph (c), it shall forward them in the language in which it received them.

Rule 8

Form of the International Application

8.1 *Printed Forms*

(a) The international application shall be made on the printed form referred to in paragraph (b) or on a paper identical, for all practical purposes, with that form as to size, content and layout.

(b) The International Bureau shall furnish free of charge, on request, to prospective applicants, attorneys, patent or trademark agents, and to the national Offices, printed forms for international applications. Such forms shall be established in the English language, in the French language, and in both of those languages.

(c) The form shall be filled in preferably by typewriter and shall be easily legible.

8.2 *Copies; Signature*

(a) Subject to Rule 5.3(c)(ii), the international application, including the reproduction of the mark and any attachments, shall be filed in one copy.

(b) The international application shall be signed by the applicant.

8.3 *No Additional Matter*

(a) The international application shall not contain any matter, and shall not be accompanied by any document, other than those prescribed or permitted by the Treaty or these Regulations.

(b) If the international application contains matter other than that prescribed or permitted, the International Bureau shall delete it ex officio; and if the international application is accompanied by any document other than those prescribed or permitted, the International Bureau shall treat such document as if it had not been transmitted to it and shall return the said document to the applicant.

Rule 9

Fees Payable With the Filing of the International Application

9.1 *International Application Fee and State Designation Fees*

(a) The fees payable with the international application shall be:

(i) an "international application fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee,
(ii) in respect of each designated State, the individual State designation fee or the standard State designation fee, as the case may be.

(b) The amounts of the international application fee, the color reproduction fee and the standard State designation fee are indicated in the Table of Fees.

(c) The amounts of the individual State designation fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State designation fees from Jan. 1 to Dec. 31 of the year following the year in which they are published.

Rule 10

Mandatory Contents of the Request for the Recording of Later Designations

10.1 *Indication that the Request is for the Recording of Later Designations*

The indication referred to in Article 6(2)(a)(i) shall be worded as follows: "The undersigned applicant/owner of the international registration identified herein requests the recording in the International Register of Marks of the following later designations made under the Trademark Registration Treaty"; or it shall consist of a statement to the same effect.

10.2 *Indications Concerning the Applicant or the Owner of the International Registration*

Rule 5.2 shall apply, *mutatis mutandis,* in the case of Article 6(2)(a)(ii).

10.3 *Identification of the International Application or International Registration*

(a) The international application shall be identified by a copy of the same and, where it was filed direct with the International Bureau, the date on which it was filed with or mailed to the International Bureau or, where it was filed through the intermediary of a national Office, the name of that Office and the date on which it was received by or mailed to the said Office.

(b) The international registration shall be identified by its international registration number and date.

10.4 *Identification of the Later Designated States*

Rule 5.5 shall apply, *mutatis mutandis,* in the case of Article 6(2)(a)(iv).

10.5 *Indication of the Choice Between National Mark and Regional Mark*

The choice referred to in Article 6(2)(a)(v) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

10.6 *Collective Marks and Certification Marks*

The indication referred to in Article 6(2)(a)(vi) shall consist of the words "collective mark desired" or "certification mark desired," respectively, or other words to that effect, appearing next to the name of the designated State to which the indication applies.

10.7 *Requests Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 6(3)(b) shall be worded as follows: "The . . . [1] certifies that the present request was filled with it on . . . [2] ". [1] Indicate the name of the national Office. [2] Indicate the date.

(b) The national Office of any Contracting State whose national law provides that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the requests filed with it since the sending of the last such note:

(i) the name of the applicant or the owner of the international registration,

(ii) the international registration number and date to which the request refers or, where such number and date are not available, the reproduction of the mark, together with, where the international application was filed through the intermediary of the national Office, the date on which it was so received by such Office and the date on which it was mailed to the International Bureau or, where the international application was filed direct with the International Bureau, the date on which it was so filed or the date on which it was mailed to the International Bureau,

(iii) the date on which the request was filed with that Office,

(iv) the date on which the request was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no requests have been filed with the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the requests listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.

Rule 11

Optional Contents of the Request for the Recording of Later Designations

11.1 *Claiming of Priority*

Rule 6.2 shall apply also to the declaration referred to in Article 6(2)(b).

11.2 *Declaration of Intent To Use*

(a) Any declaration made under Article 19(4)(a) shall consist of the following statement:

> "The undersigned applicant/owner of the international registration declares that he (it) intends to use the mark which is the subject of the international application/international registration to which this request relates himself (itself) and/or by and through persons whos use inures to his (its) benefit in commerce with and/or on the territory of . . . [1] on and/or in connection with the goods and/or services listed in this request."

[1] If the declaration relates to all the States designated in the request, insert "each of the States designated in this request"; otherwise, indicate those of the States designated in the request in respect of which the declaration is made.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the effect provided for in Article 19(4)(a) in that State.

11.3 *Declaration of Actual Use*

In respect of any State designated in the request for recording of later designations, a statement, signed by the applicant or the owner of the international registration and whose form shall be the same as that appearing in Rule 6.4 or Rule 26.3, as the case may be, may be made and attached to the request.

11.4 *Declarations Under Articles 21(2) and 22(2)*

Rule 6.5 shall apply, *mutatis mutandis,* to any declaration under Articles 21(2) or 22(2), where such declaration is included in the request for the recording of later designations.

11.5 *List of Goods and/or Services*

The formal concept of limitation referred to in Article 6(2)(b), second sentence, is defined in Rule 24.2

11.6 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register or the appropriate part of the national register (for example, "Supplemental Register" or "Part B Register").

Rule 12

Form of the Request for the Recording of Later Designations

12.1 *Printed Forms*

(a) The request for the recording of later designations shall be made on the printed form referred to in paragraph (b) or on a paper identical, for all practical purposes, with that form as to size, content and layout.

(b) The international Bureau shall furnish free of charge, on request, to applicants, owners of international registrations, attorneys, patent or trademark agents, and to the national Offices, printed forms for requests for the recording of later designations. Such forms shall be established in the English language, in the French language, and in both of those languages.

(c) The form shall be filled in preferably by typewriter and shall be easily legible.

12.2 *Copies; Signature*

(a) The request for the recording of later designations and any attachments thereto shall be filed in one copy.

(b) The request shall be signed by the applicant or the owner of the international registration.

12.3 *No Additional Matter*

Rule 8.3 shall also apply to requests for the recording of later designations.

Rule 13

Fees Payable With the Request for the Recording of Later Designations

13.1 *International Later Designation Fee and State Designation Fees*

(a) The fees payable with the request for the recording of the later designation of any Contracting State shall be the following:

(i) an "international later designation fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee,

(ii) in respect of each later designated State indicated in the request, the individual State designation fee or the standard State designation fee, as the case may be.

(b) The amounts of the international later designation fee, the standard State designation fee and the color reproduction fee are indicated in the Table of Fees.

Rule 14

Defects in the International Application

14.1 *Minimum Amount Under Article 7*

The minimum amount referred to in Article 7(2)(a)(ix) and (3)(a)(i) shall be an amount equivalent to the amount of the international application fee referred to in Rule 9.1(a(i).

14.2 *Notification, and Reimbursement of Certain Fees, Under Article 7(5)*

(a) Where the International Bureau declines the international application, it shall notify the applicant accordingly and shall state the grounds for declining. It shall reimburse to the applicant all fees received from him except an amount equivalent to the international application fee referred to in Rule 9.1(a)(i).

(b) Where the International Bureau declines to record a State as a designated State either on the ground referred to in Article 7(3)(b) or on the ground that the said State is not a Contracting State, it shall reimburse to the applicant any fee received from him in respect of the attempted designation of that State.

14.3 *Notification of the National Office*

Where the international application is treated as provided for in Article 7(6), the International Bureau shall inform accordingly the national Office through the intermediary of which the application was filed.

Rule 15

Defects in the Request for the Recording of later Designations

15.1 *Application of Rule 14*

Rule 14 shall apply, *mutatis mutandis,* in respect of Article 8, provided that the amount referred to in Rules 14.1 and 14.2(a) shall be an amount equivalent to the amount of the international later designation fee referred to in Rule 13.1(a)(i).

Rule 16

Procedure Where Avoiding the Effects of Declining Is Sought

16.1 *Recording and Publication Under Article 9(3)*

(a) The fact of having received a copy of a petition under Article 9(1)(i) shall, where the petition relates to a mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which the said copy was received.

(b) The publication under Article 9(3) shall contain the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

16.2 *Information Available to National Offices*

On the request of the applicant or the owner of the international registration, or of the interested national Office, the International Bureau shall send to that Office a copy of the file of the declined international application or declined request for the recording of later designations, together with a memorandum setting out the grounds for and the various steps leading to the declining of the said application or request.

16.3 *Information Furnished by the National Office*

Any request by a national Office referred to in Article 9(2)(i) shall indicate the grounds on which it is based.

Rule 17

Certificates

17.1 *Certificates of International Registration and Certificates of Recording of Later Designations*

(a) The certificates referred to in Articles 7(1) and 8(1) shall be issued in the name of the International Bureau and shall be signed by the Director General or an officer of the International Bureau authorized to do so by the Director General.

(b) Any such certificate shall consist of a facsimile of the publication of the international registration or of the publication of the recording of the later designations, as the case may be, and a statement to the effect that the said registration or recording reproduced in the certificate has been effected in the International Register of Marks.

(c) The certificate shall be promptly sent to the owner of the international registration.

Rule 18

Publication of International Registrations and Recordings of later Designations

18.1 *Contents of Publication of International Registrations*

(a) The publication of any international registration shall contain:

(i) the name and address of the owner of the international registration, together with any indication of his trade or business and, if he bases his right to file international applications on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be.
(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) or (e) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,
(iii) the list of goods and/or services,
(iv) the names of the designated States and, where applicable, after the name of each such State, an indication concerning the choice referred to in Rule 5.6 and the indication referred to in Rule 5.7,
(v) the international registration date,
(vi) the international registration number,
(vii) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed.
(vii) any indication under Article 11(3),
(ix) any declaration under Articles 21(2) and 22(2),
(x) the particulars concerning the representative, as provided in Rule 39.2(a).

(b) Where, in respect of any designated State, the international registration is effected pursuant to Article 9(2) (i), this fact shall be indicated in the publication.

(c) The Administrative Instructions shall provide for the composition and allocation of international registration numbers.

18.2 *Contents of Publication of Recordings of later Designations*

(a) The publication of any recording of a later designation shall contain:

(i) *mutatis mutandis*, the same elements as those referred to in Rule 18.1(a),
(ii) the international later designation number,
(iii) the date of the recording of the later designation.

(b) Where the recording of any later designation is effected pursuant to Article 9(2)(i), this fact shall be indicated in the publication.

The Administrative Instructions shall provide for the composition and allocation of international later designation numbers.

(d) Where the recording of any later designation was effected sufficiently prior to the date of publication of the international registration to be practical to do so, the publication of the recording of the later designation shall be consolidated with the publication of the international registration.

Rule 19

Notification of International Registrations and Recordings of later Designations

19.1 *Form of Notification*

The notification referred to in Article 10(2) shall be effected separately for each national Office and shall consist of:

(i) a list of the international registration numbers and the international later designation numbers of the international registrations and recordings of later designations in which the State of the said Office has been designated,
(ii) reprints made of the publication by the International Bureau of each international registration and of each recording of later designations referred to in the said list,
(iii) a copy of the international application or the request for the recording of later designations if it contains a declaration made under Article 19(4)(a).
(iv) a copy of any declaration made under Rules 6.4 or 11.3,
(v) where Rule 5.3(c)(ii) applies, the reproduction in color of the mark in the number of copies specified in the Administrative Instructions, provided that such Instructions shall enable each Office to require at least six copies.

19.2 *Time of Notification*

The notification shall be effected on the same day as that on which the issue of the Gazette is published that contains the matter from which the reprints referred to in Rule 19.1(ii) are made.

Rule 20

Refusals; Notices of Possible Refusal

20.1 *Notifying the International Bureau; Grounds*

(a) Any notification under Article 12(2)(a) shall be sent in one copy, preferably on a form furnished free of charge by the International Bureau to the national Office of each contracting State. The notification shall, in any case, contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates,
(ii) the name of the owner of the international registration,
(iii) an indication of the mark in the cases and the manner provided for in paragraph (b),
(iv) an indication as to whether the notification is that of a refusal or of a notice of possible refusal,
(v) where it relates to some only of the goods and/or services listed, identification of those to which it relates,
(vi) the grounds referred to in Article 12(2)(a)(ii) and (iii), together with a reproduction of any mark cited in the notification and not reproduced therein and a copy of the list of goods and/or services (in the original language) pertaining to such mark, and when the notice of possible refusal specifies the grounds by reference to the opposition of a third party, a copy of any document filed by the opposing party in which the said grounds are specified, together with a reproduction of any mark cited in the said document and not reproduced therein and a copy of the list of goods and/or services pertaining to such mark; where the grounds specified by the national Office in the notice of possible refusal do not include the grounds or some of the grounds invoked in the document filed by the opposing party and transmitted together with the said notice by the national Office, all the grounds contained in the said document shall be considered as having been specified by the national Office,
(vii) an indication as to whether any remedy is available, and if so with which authority it has to be sought and within what time limit.

(b) The cases and the manner referred to in paragraph (a)(iii) and in Rules 2.1.(a)(ii) and 28.1(c)(ii) shall be as follows:

(i) where the mark consists of letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, without any special graphic features and without also containing figurative elements, the indication shall consist of the letters, numerals and signs,
(ii) where item (i), above, does not apply, the indication shall consist of a reproduction of the mark.

(c) The form referred to in paragraph (a) shall be prepared separately for each Contracting State, in collaboration with its national Office. It shall list the more common of the grounds for refusal with a reference to the pertinent provisions of the national law so that, wherever possible, such grounds may be specified by marking the applicable items of the list. The form shall contain a space reserved for specifying any other grounds and for other possible indications.

20.2 *Notifying the Owner of the International Registration; Publication*

(a) The notification under Article 31, of the recording effected under Article 12(4)(a) shall be sent to the owner of the international registration promptly after the receipt of the notification referred to in Article 12(2)(a); it shall indicate the date on which the notification made under Article 12(2)(a) was received by the International Bureau and shall include a copy thereof.

(b) The publication of the recording effected under Article 12(4)(a) shall be effected promptly and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates, and the name of the owner of the international registration,
(ii) the name of the State whose national Office transmitted the notification,
(iii) a statement to the effect that a notification uner Article 12(2)(a) was received.

20.3 *Notification and Recording of Final Decisions of Refusal; Cancellation of the designation, and Publication of the Cancellation*

(a) The notification by the national Office under Article (12)(4)(b) shall be effected promptly after the date on which the date on which the decision of refusal becomes final and shall contain:

(i) an indication that it relates to a final decision of refusal,
(ii) the indications referred to in Rule 20.1(a)(i),
(iii) where the decision is that of a court; a copy of the final decision, or, where the decision is not that of a court, the grounds given in the final decision, preferably in the same manner as that indicated in Rule 20.1(c),
(iv) where the notification relates to some only of the goods and/or services listed, identification of those to which it relates,
(v) the name of the authority which pronounced the decision, the number, if any, and the date of such decision,
(vi) the date on which the decision became final.

(b) The notification by the International Bureau under Article 12(4)(b) shall be effected as soon as possible and shall include a copy of the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and an indication of the date of the receipt of such notification by the International Bureau.

(c) The details of the recording referred to in Article 12(4)(b) shall be provided in the Administrative Instructions.

(d) The publication referred to in Article 12(4)(b) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a)(i) and (iv) to (vi), above, as well as the name of the State whose authorities have pronounced the final decision and the name of the owner of the international registration.

20.4 *Notification and Publication Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)*

(a) The notification under Article 12(4)(c) shall be effected promptly after the final disposal of the case and shall consist of a statement to the effect that the notice of possible refusal or the refusal is withdrawn, the indications referred to in Rule 20.1(a)(i), the number, if any, and the date of the decision, and the date on which the decision became final.

(b) The publication referred to in Article 12(4)(c) shall be effected promptly and shall consist of the elements referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and the name of the owner of the international registration.

20.5 *Belated Notifications*

If any notification referred to in Article 12(2)(a) is received by the International Bureau after the expiration of the time limit fixed in that provision, the International Bureau shall inform accordingly the national Office which effected the notification, treat such notification as if it had not been effected, inform the owner of the international registration that the notification it received is belated, and send to the owner a copy thereof.

Rule 21

Final Decisions of Cancellation

21.1 *Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification referred to in Article 13(3) shall be effected promptly after date on which the decision of cancellation becomes final and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the final decision of cancellation relates,
(ii) an indication of the mark in the cases and the manner provided for in Rule 20.1(b),
(iii) where the final decision relates to some only of the goods and/or services listed, identification of those to which it relates,
(iv) the name of the authority which pronounced the final decision,
(v) the number, if any, and the date of such decision,
(vi) the date on which the decision became final.

(b) The details of the recording referred to in Article 13(3) shall be provided in the Administrative Instructions.

(c) The publication referred to in Article 13(3) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision of cancellation and the name of the owner of the international registration.

Rule 22

Changes in Ownership

22.1 *Request for Recording of Change in Ownership*

(a) The indication referred to in Article 14(1)(b)(i) shall preferably be worded as follows: "The undersigned requests that the following change in ownership concerning the international registration identifed herein be recorded."

(b) Rule 5.2 shall apply, *mutatis mutandis*, to the indications concerning the new owner referred to in Article 14(1)(b)(iii).

(c) The designated States referred to in Article 1491)(b)(iv) shall be identified by their names in a manner sufficiently clear for the purpose, provided that where the request relates to all the States designated in the existing international registration, they may be identified by a statement to that effect.

(d) The goods and/or sevices referred to in Article 14(1)(b)(iv) shall be identified as follows:

(i) where the request relates to all of the designated States and all of the goods and/or services listed in respect of each of those States, by a statement to that effect,

(ii) where the request relates to all of the designated States and the list of goods and/or services, while being the same for each, is more limited than in the international registration, by a new list and by a statement to the effect that it applies to all of the designated States,

(iii) in all other cases, in respect of those States for which the list of goods and/or services is the same as in the existing international registration, by a statement to that effect, and, in respect of those States for which the list of goods and/or services is more limited than the list of goods and/or services in the existing international registration, by a new list.

(e) The attestation referred to in Article 14(1)(c) shall be worded as follows:

> "According to evidence produced before this Office, . . . [1] appears to be the successor in title of . . . [2] to the extent described in the present request, and the conditions referred to in Article 14(1)(c) of the Trademark Registration Treaty appear to be fulfilled. This attestation is given for the sole purpose of allowing the change of ownership to be recorded in the International Register of Marks."
>
> [1] Insert the name of the new owner. [2] Insert the name of the earlier owner.

(f) The attestation shall be dated and shall bear the stamp or seal of the national Office and the signature of an official thereof.

(g) the amount of the fee referred to in Article 14(1)(d) is indicated in the Table of Fees.

(h) The request may contain an indication of the trade or business in which the new owner is engaged.

22.2 *Publication Where the Change in Ownership is Total*

(a) Where the change in ownership concerns all the designated States and all the goods and/or services, the publication referred to in Article 14(1)(d) shall contain:

(i) an indication that the change in ownership concerns all the designated States and all the goods and/or services,

(ii) the name and address of the new owner together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(iii) the name of the earlier owner,

(iv) the date on which the International Bureau received the request,

(v) a reference to all the prior publications concerning the international registration except those which have been superseded by later publications in respect of that registration.

(b) The publication shall be effected under the number of the international registration, and, where applicable, the numbers of later designations to which it refers, followed by such further indications as the Administrative Instructions shll provide.

22.3 *Publication Where the Change in Ownership is Partial*

(a) Where the change in ownership concerns fewer than all of the designated States and/or some only of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain two parts, one concerning the new owner, the other the earlier owner.

(b) The part concerning the new owner shall contain:

(i) an indication that the publication is effected pursuant to a request for the recording of a change in ownership,

(ii) the date on which the International Bureau recieved the request,

(iii) the number under which the part concerning the earlier owner is published,

(iv) the name and address of the new owner together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(v) all the indications which, prior to the date referred to in item (ii), were published in respect to the international registration and which have not been superseded by later publications in respect of that registration, except those indications which solely concern designated States and goods and/or services in respect to which ownership is retained by the earlier owner.

(c) The part concerning the earlier owner shall contain:

(i) an indication that the publication concerns an existing international registration and contains those elements of that registration which, after the recording of the change in ownership concerning that registration, continue to concern the earlier owner,

(ii) the number under which the part concerning the new owner in published,

(iii) the date on which the International Bureau received the request,

(iv) all the indications which, prior to the date referred to in item (iii), were published in respect of the international registration and have not been superseded by later publications in respect of that registration, except those indications which, because of the change in ownership, no longer concern the earlier owner.

(d) Each part shall have an number and possibly also an appropriately worded heading. The Administrative Instructions shall provide the details of such numbers and headings.

22.4 *Notification of Recording of Changes*

(a) The notifications referred to in Article 14(1)(d) shall be effected by sending reprints of the publication referred to in Rules 22.2 and 22.3.

(b) The transmittal to designated Offices of the reprints referred to in paragraph (a) shall be accompanied by a list of the numbers referred to in Rules 22.2(b) and 22.3(d) relating to recordings concerning the designated State to which the list is addressed. Rule 19.2 shall apply, *mutatis mutandis.*

22.5 *Notification of Declining of the Recording*

The notification referred to in Article 14(2)(a) shall be effected by letter. The letter shall state the grounds for declining.

22.6 *Denial*

(a) The notification by the national Office referred to in Article 14(4)(c) shall:

(i) refer to the fact of the denial,

(ii) identify the authority that pronounced the denial and the date on which it was pronounced,

(iii) indicate the relevant number or numbers referred to in Rule 22.2(b) and 22.3(d),

(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 14(4)(c) shall contain:

(i) the elements referred to in paragraph (a),

(ii) the date on which the International Bureau received the notification referred to in paragraph (a),

(iii) a reference to the publication of the recording effected under Article 14(1)(d).

(c) The notification by the International Bureau referred to in Article 14(4)(c) shall be sent to the earlier and the new owners and to the national Office which notified the denial.

Rule 23

Changes in the Name of the Owner of the International Registration

23.1 *Request for Recording of Change in the Name*

(a) The indication and declaration referred to in Article 15(2)(b)(i) and (ii) shall preferably be worded as follows: "The undersigned requests that the following change in the name of the owner of the international registration(s) identified herein be recorded. He declares that this change in his name does not amount to change in ownership."

(b) Rules 5.2(a) shall apply, *mutatis mutandis,* to the indication of both the former and the new names of the owner of the international registration.

(c) The amount of the fee referred to in Article 15(2)(d) is indicated in the Table of Fees.

23.2 *Publication*

(a) The publication referred to in Article 15(3) shall contain:

(i) an indication to the effect that it concerns a change in the name of the owner of the international registration,

(ii) the former name of the owner,

(iii) the new name of the owner,

(iv) the international registration number of the international registration in respect of which the recording has been effected,

(v) the date on which the International Bureau received the request,

(vi) a reference to all the prior publications concerning the international registration except those which have been superseded by later publication in respect of the international registration conerned.

(b) The publication shall be effected under the number of the international registration, and, where applicable, the numbers of later designations to which it refers, followed by such further indications as the Administrative Instructions shall provide.

23.3 *Notification of Recording*

(a) The notifications referred to in Article 15(3) shall be effected by sending reprints of the publication referred to in Rule 23.2

(b) The transmittal to designated Offices of the reprints referred to in paragraph (a) shall be accompanied by a list of the numbers referred to in Rule 23.2(b) relating to recordings concerning the designated State to whose national Office the list is addressed. Rule 19.2 shall apply, *mutatis mutandis.*

23.4 *Notification of Declining the Recording*

The notification referred to in Article 15(4) shall be effected by letter. The letter shall state the grounds for declining.

23.5 *Denial*

(a) The notification by the national Office referred to in Article 15(6)(b) shall:

(i) refer to the fact of the denial,

(ii) identify the authority which pronounced the denial and the date on which it was pronounced,

(iii) indicate the relevant number or numbers referred to in Rule 23.2(b),

(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 15(6)(b) shall contain:

(i) the elements referred to in paragraph (a),

(ii) the date on which the International Bureau received the notification referred to in paragraph (a),

(iii) a reference to the publication of the recording effected under Article 15(3).

(c) The notification by the International Bureau referred to in Article 15(6)(b) shall be sent to the owner of the international registration and to the national Office which notified the denial.

Rule 24

Recording of Limitations of the List of Goods and/or Services

24.1 *Request for Recording of Limitation of the List*

(a) The request for recording referred to in Article 16(1) shall indicate its purpose and contain:

(i) the name of the owner of the international registration,

(ii) the international registration number,

(iii) the desired limitation of the list of goods and/or services,

(iv) where the request relates to fewer than all the designated States, identification of those States to which it relates,

(v) where the request relates to one only of the designated States and, while not conforming with the formal concept of limitation ad defined in Rule 24.2(a) and (b), it conforms with a decision of the national Office or other competent authority of such State concerning the international registration, a copy of such decision and, if the decision is in a language other than English or French, a translation of such decision.

(b) The request shall be signed by the owner of the international registration.

(c) The amount of the fee referred to in Article 16(2) is indicated in the Table of Fees.

(d) Where any term which is the subject of the request appears under more than one class of the International Classification and the request does not identify the class or classes to which it relates, such request shall be treated as if it related to the term under each of the classes under which it appears.

24.2 *Formal Concept of Limitation*

(a) Subject to paragraph (c), any request under Article 16(1) shall be regarded as conforming with the formal concept of limitation if it is presented in any of the following forms:

(i) it asks for the deletion of one or more terms in the list of goods and/or services,

(ii) it asks for the insertion of one or more words, linked to the existing term by words (such as "except") which, from the point of view of syntax, make it clear that the inserted word or words are meant to be excluded from the existing term (for example, *milk products* (existing term) *except* (linking word) *condensed milk* (inserted words)),

(iii) it asks for the insertion of one or more words linked to the existing term by words (such as "provided that") which, from the point of view of syntax, make it clear that the inserted words are covered by the existing term (for example, *pineapples* (inserted word) *provided that they are* (linking words) *canned fruits* (existing term)).

(b) Unless the limitation is presented in one of the forms described in paragraph (a), it shall not, subject to paragraph (c), be regarded as conforming with the formal concept of limitation, however clear it may be that, in the ordinary sense of the word, there is a limitation (for example, replacing the term "milk products" by "condensed milk").

(c) For the purposes of Rule 24.1(a)(v), any change in the list of goods and/or services decided upon by the national Office or other competent authority concerned shall be deemed to conform with the formal concept of limitation.

24.3 *Recording, Publication, and Notification, of Limitation of the List*

(a) If the request complies with the presecribed requirements, the International Bureau shall record the indications referred to in Rule 24.1(a)(i) to (iv) and the date on which the request was received.

(b) Where the request is based on a decision referred to in Rule 24.1(a)(v), this fact, together with the following particulars, shall also be recorded:

(i) the name of the authority which pronounced the decision,
(ii) the number, if any, and the date of such decision.

(c) The publication and the notification referred to in Article 16(2) shall contain the indications referred to in Rule 24.1(a)(i) to (iv), the indications referred to in paragaph (b) and the date of the recording.

24.4 *Declining the Recording of Limitation of the List*

If the request does not comply with the prescribed requirements, the International Bureau shall decline the recording of the limitation and shall notify the owner of the international registration accordingly. The notification shall include the grounds for declining.

24.5 *Invitation to Record Limitation of the List; Recording, Publication and Notification*

(a) The invitation by the national Office referred to in Article 16(5)(a) or (b) shall:

(i) indicate the relevant international registration number and date,
(ii) indicate the name of the owner of the international registration,
(iii) refer to the declining of the request of the owner or to the recording of the limitation by the International Bureau, as the case may be,
(iv) indicate the finding of the national Office or other competent authority together with a brief indication of its grounds,
(v) where the finding is contained in a decision, indentify the authority which pronounced the decision and the date on which it was pronounced,
(vi) where, under Article 16(5)(b), the limitation is found to be a limitation only in part, specify the extent to which it is found to be a limitation.

(b) The recording and the publication referred to in Article 16(5)(c) shall contain:

(i) the elements referred to in paragraph (a),
(ii) the date on which the International Bureau received the invitation referred to in paragraph (a),
(iii) a reference to the publication of the recording, if any, effected under Article 16(1).

(c) The notifications by the International Bureau referred to in Article 16(5)(c) shall be sent to the national Office which sent the invitation.

Rule 25

Renewal

25.1 *Reminder by the International Bureau*

The International Bureau shall send a letter to the owner of the international registration before the expiration of the term, initial or renewal (as the case may be), which is in effect. reminding him that such term is about to expire. Further details concerning the contents of the reminder shall be provided in the Administrative instructions. The reminder shall be set at least 6 months before the expiration date. Failure to send or receive the reminder, or the fact of sending or receiving it outside the said period, or any error in the remainder, shall not affect the expiration date.

25.2 *Demand for Renewal*

(a) Any demand for renewal may exclude any of the designated States.

(b) Any demand for renewal may exclude in respect of any of the designated States all the goods and/or services appearing in the international registration under a given class or under given classes of the International Classification.

(c) The demand for renewal referred to in Article 17(3)(a) shall preferably be made on a printed from furnished free of charge by the International Bureau together with the remainder referred to in Rule 25.1. The demand shall, in any case, indicate its purpose and contain:

(i) the name and address of the owner of the international registration,
(ii) the international registration number,
(iii) where the demand contains any exclusion under paragraphs (a) or (b), the identification of the state or State and/or the class or classes referred to in paragraph (b).

(d) Where the demand contains any exclusion under paragraphs (a) or (b), it shall be signed by the owner of the international registration.

(e) The demand for renewal shall not be combined with any other request; in particular, it shall not contain a request for recording a later designation, a request for recording a change in ownership, or, subject to paragraph (b), a request for recording a limitation in the list of goods and/or services.

(f) Rule 8.3 shall also apply to demands for renewal, provided that any declaration under Article 19(3)(d) may be filed at the same time as the demand for renewal.

25.3 *International Renewal Fee and State Renewal Fees*

(a) The fees payable under Article 17(3)(a) shall be the following:

(i) an "international renewal fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee, as well as, where applicable, the "renewal surcharge" referred to in Article 17(3)(a),
(ii) in respect to each designated State to which the demand relates the individual State renewal fee or the standard State renewal fee, as the case may be.

(b) The amounts of the international renewal fee, the color reproduction fee, the renewal surcharge and the standard State renewal fee are indicated in the Table of Fees.

(c) The amounts of the individual State renewal fees concerning the various Contracting States shall be published by the International Bureau each year in the month of Aug. The amounts so published shall be applicable as the individual State renewal fees from Jan. 1 to Dec. 31 of the year following the year in which they are published.

25.4 *Imperfect Demands*

(a) Where, within the time limits fixed in Article 17(3)(a), the International Bureau receives:

(i) a demand which does not conform with the requirements or Rule 25.2, or
(ii) a demand but no payment or insufficient payment to cover the renewal fees and any surcharge that is due, or
(iii) money which appears to be intended to cover fees connected with renewal but not demand,

it shall, whenever practicable, promptly invite the owner of the international registration to present a correct demand, to pay or complete the renewal fees and any surcharge that is due, or to present a demand, as the case may be. The invitation shall indicate the applicable time limits.

(b) Failure to send or receive the invitation referred to in paragraph (a), or any delay in dispatching or receiving such invitation, or any error in the invitation, shall not prolong the time limits fixed in Article 17(3)(a).

25.5 *Recording, Publication, and Notification*

(a) Where the demand is presented and the fees are paid as prescribed, the International Bureau shall record the renewal and shall publish the elements, as specified in paragraph (b), of the international registration as it stands on the first day of the term of renewal, together with an indication both of the fact that the publication is that of a renewal and of the date on which the renewal shall expire.

(b) The elements referred to in paragraph (a) shall be the following:

(i) the name and address of the owner of the international registration, together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,
(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) or (e) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,
(iii) the list of goods and/or services, provided that, where the list of goods and/or services differs in respect of different designated States, the publication shall contain appropriate indications in order to show which goods and/or services relate to which designated State,
(iv) the names of the designated States and, where applicable, after the name of each such State, and indication concerning the choice referred to in Rule 5.6 and the indication referred to in Rule 5.7,
(v) where, in respect of any designated State, a refusal or notice of possible refusal was notified and no final decision resulting in the cancellation of the designation or in the acceptance of the effect referred to in Article 11(2) has been notified, an indication that a refusal or notice of possible refusal was notified, together with the date of the receipt by the International Bureau of the notification of the refusal or notice of possible refusal,
(vi) the international registration number,
(vii) any international later designation number,
(viii) where the priority of one or more earlier applications was claimed, a statement that such claim has been made,
(ix) a reference to any indication under Article 11(3),
(x) a reference to any declaration under Articles 21(2) and 22(2),
(xi) particulars concerning the representative, as provided in Rule 39.2(a).

(c) Any indication which, at some time prior to the first day of the term of renewal, has been part of the international registration but which, before that day, has been cancelled or superseded shall not be included in the publication referred to in paragraph (a).

(d) The notification under Article 31 shall be effected by sending to the owner of the international registration a reprint of the publication of the renewal referred to in paragraph (a).

(e) The International Bureau shall notify each designated Office of the renewal by sending it:

(i) a reprint of the publication referred to in paragraph (a), and
(ii) where Rule 5.3(c)(ii) applies, the reproduction of the mark in the number of copies specified in the Administrative Instructions, provided that such Instructions shall enable each national Office to require at least six copies.

25.6 *Declining the Demand*

(a) Where the limits fixed in Article 17(3)(a) are not respected or where the demand does not conform with the requirements of Rule 25.2 or the fees (including, where applicable, any surcharge) are not paid as presecribed, the International Bureau shall decline the demand and shall notify the owner of the international registration by letter. The letter shall state the grounds for declining.

(b) The International Bureau shall not decline any demand before the expiration of 6 months after the starting date of the term of renewal.

25.7 *Reimbursement of Certain Fees*

Where, under Rule 25.6(a), the International Bureau declines the demand, it shall reimburse to the owner of the international registration all fees received from him except an amount equivalent to the international renewal fee referred to in Rule 25.3(a)(i).

25.8 *Recording of Lack of Demand*

Where, by the expiration of 6 months after the starting date of the term of renewal, no demand for renewal is presented to the International Bureau in respect of any or all of the designated States, such fact shall be recorded by the International Bureau.

25.9 *Publication of Lists of International Registrations Not Renewed*

The International Bureau shall publish, at intervals specified in the Administrative Instructions, a list of the international registration numbers of those international registrations which, having become due for renewal, have been renewed in respect of none of the designated States.

Rule 26

Declarations of Actual Use

26.1 *Information on Requirement Concerning Routine Declarations of Actual Use*

The national Office of any Contracting State whose national law requires the filing of rountine declarations referred to in the first sentence of Article 19(3)(d) shall in form the International Bureau of such requirement and of any changes therein. Such information shall, in particular, indicate the time limits within which such declarations must be filed according to the national law and state whether the attachment of specimens or facsimiles to routine declarations of actual use is required by the national law. Any information received shall be published promptly upon receipt. Furthermore, the International Bureau shall republish in Aug. of each year all the information received and still applicable at the time of the republication in respect of all the States concerned.

26.2 *National Forms*

The national Office of any Contracting State referred to in Rule 26.1 shall supply free of charge to the International Bureau in reasonable quantities declaration forms, in the form prescribed by the national law of that State, for the purposes of making declarations referred to in Article 19(3)(d). The International Bureau shall furnish such forms free of charge to interested persons.

26.3 *International Form*

(a) Where the declaration referred to in Article 19(3)(d) is not made on a national form according to Rule 26.2, it shall be made on a form ("international form") consisting of the following statement and shall be signed by the owner of the international registration:

> "The undersigned owner of the international registration declares that he (it) is the owner of the international registration which was effected under No. . . . , as shown by recordings in the International Register of Marks, in respect of . . . [1] on . . . [2] ; that the mark which is the subject of the in-

ternational registration herein identified is now in use by and through . . . [3] in commerce with and/or on the territory of the said State on or in connection with the following goods and/or services listed in respect of such State: . . . [4] ; that such use commenced on . . . [5] ; and that the mode or manner in which the mark is used is:

on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
in the case of services in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
other [7] ."

[1] Insert name of State. [2] Insert international registration date or, if applicable, recording date of the later designation of such State. [3] Insert "the undersigned owner" and/or, if applicable, the name and address of the person or persons whose use of the mark inures to the benefit of the owner in the State. [4] Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used. [5] Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates. [6] The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or fascimiles be attached to routine declarations of actual use. [7] Recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use.

(b) The International Bureau shall furnish such forms free of charge to interested persons.

(c) The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(d) The specimens referred to in paragraph (a) shall, in the case of a mark for goods, be duplicates of the actually used labels, tags, or containers, or the displays associated therewith, or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the declaration. When, owing to the mode of applying or affixing the mark to the goods or to the manner of its use on the goods, such specimens cannot be furnished, suitable photographs or other acceptable reproductions, not larger than the declaration, which clearly and legibly show the mark and all matter used in connection therewith, shall be furnished. In the case of marks for services, specimens or facsimiles, as specified above, of the mark as used in the sale or advertising of the services shall be furnished unless impossible because of the nature of the mark or the manner in which it is used, in which event some other acceptable reproductions shall be furnished.

(e) It shall depend on the national law of each Contracting State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the same effect.

Rule 27

Declarations Concerning Earlier National or Madrid Registrations

27.1 *Separately Filed Declarations*

(a) Any separately filed declaration under Article 21(2) shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the owner of the international registration owned a national registration or national registrations in the said State or States on the international registration date or the international later designation date, as the case may be,
(iii) indicate, in respect of each such national registration, its number,
(iv) indicate the international registration number of the international registration to which it relates.

(b) Any separately filed declaration under Article 22(2) shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the owner of the international registration owned a registration under the Madrid Agreement in respect of the said State or States on the international registration date or the international later designation date, as the case may be,
(iii) indicate the number of the relevant Madrid registration,
(iv) indicate the international registration number of the international registration to which it relates.

27.2 *Certification of National Registrations*

The certification of the copy of any national registration referred to in Article 21(2) shall be in the English or French language, shall be signed by a person authorized by the national Office to effect certifications and shall indicate the date to which the certification refers. That date shall be the international registration date or the international later designation date, as the case may be, or, where the certification is made before international registration or recording of the later designation is effected, the date on which the certification is effected. In the latter case, the national Office effecting the certification shall, on the request of the International Bureau presented once the said registration or recording is effected by it, indicate to that Bureau any change which might have occurred in respect of the national registration between the date to which the certification referred and the international registration date or the recording date of the later designation, as the case may be.

27.3 *Defects*

(a) The International Bureau shall promptly notify the applicant or the owner of the international registration of any defect in the declaration made under Article 21(2) or Article 22(2), including the absence of the certified copy referred to in Article 21(2) and any defect in the certification thereof as provided in Rule 27.2.

(b) As long as any defect referred to in paragraph (a) is not corrected, the International Bureau shall treat the declaration as if it had not been made.

27.4 *Publication; Notification*

(a) Unless effected by virtue of Rule 18.1(a)(ix) or Rule 18.2(a)(i), the publication of any declaration under Article 21(2) or Article 22(2) shall indicate:

(i) the fact that the publication relates to a declaration made under Article 21(2) or 22(2), as the case may be,
(ii) the State or States in respect of which the declaration was made and the numbers of the relevant national or Madrid registrations,
(iii) the international registration number of the international registration to which the declaration relates,
(iv) the name of the owner of the international registration.

(b) Unless effected by virtue of Rule 19.1, the notification of any declaration under Article 21(2) or 22(2) shall consist of an indication that the declaration made under Article 21(2) or 22(2), as the case may be, was recorded by the International Bureau and shall be accompanied by a copy of the declaration.

Rule 28

Transmittal of Documents to the International Bureau

28.1 *Place and Mode of Transmittal*

(a) International applications, requests, demands, notifications and any other documents intended for filing, notification or other communication to the International Bureau shall be deposited with the competent service of that Bureau during the office hours fixed in the Administrative Instructions, or mailed to that Bureau.

(b) Where any document is transmitted to the International Bureau in response to an invitation by that Bureau bearing a reference number, the document shall indicate such reference number.

(c) Where paragraph (b) does not apply, any document transmitted to the International Bureau shall:

(i) where it relates to an international application, be accompanied by a copy of such application,
(ii) where it relates to an international registration, indicate, by its international registration number, the international registration to which it relates; it may also contain an indication of the mark as provided fror in Rule 20.1(b).

(d) Paragraph (c) shall not apply in those cases where these Regulations contain specific provisions on the identification of the international application or registration to which any document transmitted to the International Bureau relates.

28.2 *Date of Receipt of Documents*

Any document received by the International Bureau through deposit or mail shall be considered to have been received on the day on which it is actually received by that Bureau, provided that, when it is actually received after office hours, or on a day when the Bureau is closed for business, it shall be considered to have been received on the next subsequent day on which the Bureau is open for business.

Rule 29

Signature

29.1 Legal Entity

(a) Where any document submitted to the International Bureau is signed by a legal entity, the name of the legal entity shall be indicated in the place reserved for signature and shall be accompanied by the signature of the natural person or persons entitled to sign for such legal entity according to the national law of the State under whose law the legal entity was established.

(b) Paragraph (a) shall apply, *mutatis mutandis,* to partnership or firms composed of attorneys or patent or trademark agents but which are not legal entities.

29.2 *Exemption from Certification*

No signature provided for under the Treaty or these Regulations shall require authentication, legalization or other certification.

Rule 30

Calendar; Computation of Time Limits

30.1 *Calendar*

The International Bureau, national Offices, applicants and owners of international registrations shall, for the purposes of the Treaty and these Regulations, express any date in terms of the Christian era and the Gregorian calendar.

30.2 *Periods Expressed in Years, Months, or Days*

(a) When a period is expressed as one year or a certain number of years, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent year in the month having the same name and on the day having the same number as the month and the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(b) When a period is expressed as one month or a certain number of months, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent month on the day which has the same number as the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(c) When a period is expressed as a certain number of days, computation shall start on the day following the day on which the relevant occurred, and the period shall expire on the day on which the last day of the count has been reached.

30.3 *Local Dates*

(a) The date which is taken into consideration as the starting date of the computation of any period shall be the date which prevails in the locality at the time when the relevant event occurred.

(b) The date on which any period expires shall be the date which prevails in the locality in which the required document is filed or the required fee is paid.

30.4 *Expiration on a Non-Working Day*

If the expiration of any period during which any document or fee must reach the International Bureau or any of its agenices falls on a day on which such Bureau or agency is not open for business, or on which ordinary mail is not delivered in Geneva or the locality in which the agency is situated, the period shall expire on the next subsequent day on which neither of the said two circumstances obtains.

Rule 31

Payment of Fees

31.1 *Payment to the International Bureau*

All fees due under the Treaty and these Regulations shall be payable to the International Bureau.

31.2 *Applicable Fee Schedule*

The fees payable shall be:

(i) where they concern an international application or a request for the recording of a later designation, the fees in force on the date the international application or the request for the recording of the later designation is received by the International Bureau or, where the application or request has been filed through the intermediary of a national Office under Article 5(3), on the date on which it was received by that Office,
(ii) where they concern a demand for renewal, the fees in force on the date which precedes by 6 months the starting date of the term of renewal.

31.3 *Currency*

(a) Subject to paragraph (b), all fees due under the Treaty and these Regulations shall be payable in Swiss currency.

(b) Where the International Bureau has agencies, the Administrative Instructions may, under specified conditions, allow exceptions to paragraph (a).

31.4 *Deposit Accounts*

(a) Any natural person or legal entity may open a deposit account with the International Bureau or any or its agencies.

(b) The details concerning deposit accounts shall be provided in the Administrative Instructions.

31.5 *Indication of the Mode of Payment*

(a) Unless the payment is made in cash to the cashier of the International Bureau, the international application, and any request, demand, or other document, filed with the International Bureau in connection with any international registration, subject to the payment of any fee, shall indicate:

(i) the name and address, as provided in Rule 5.2(a) and (c), of the natural person or legal entity making the payment, unless the payment is made by a cheque attached to the document,

(ii) the mode of payment, which may be by an authorization to debit the amount of the fee to the deposit account of such person or entity, or by transfer to a bank account or to the postal cheque account of the International Bureau, or by cheque. The Administrative Instructions shall provide the details, in particular those governing the kind of cheques that shall be accepted in payment.

(b) Where the payment is made pursuant to an authorization to debit the amount of the fee to a deposit account, the authorization shall specify the transaction to which it relates unless there is a general authorization to debit to a specified deposit account any fee concerning a certain applicant, owner of an international registration, or duly appointed representative.

(c) Where the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, or by a cheque not attached to the international application, request, demand, or other document, the notification of the transfer or the cheque (or paper accompanying it) shall identify the transaction to which the payment relates, in the manner to be provided for in the Administrative Instructions.

31.6 *Effective Date of Payment*

Any payment shall be considered to have been received by the International Bureau on the date indicated hereinbelow:

(i) if the payment is made in cash to the cashier of the International Bureau, on the date on which such payment is made,

(ii) if the payment is made by debiting a deposit account with the International Bureau pursuant to a general authorization to debit, on the date on which the international application, the request for the recording of later designation, the demand for renewal or other document entailing the obligation to pay fees is received by the International Bureau, or in the case of a specific authorization to debit, on the date on which the specific authorization is recieved by the International Bureau,

(iii) if the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, on the date on which such account is credited,

(iv) if the payment is made by cheque, on the date on which the cheque is received by the International Bureau, provided that it is honored upon presentation to the bank on which the cheque is drawn.

Rule 32

Withdrawals and Renunciations

32.1 *Withdrawal of the International Application or Request for Recording of Later Designation*

(a) Any withdrawal of an international application shall be treated as such by the International Bureau if the communication of withdrawal reaches it before preparations for publication have been completed.

(b) Any withdrawal of a request for the recording of later designation shall be treated as such by the International Bureau if the communication of withdrawal reaches it before preparations for publication have been completed.

32.2 *Renunciation of the International Registration or of Certain Designations*

(a) The owner of the international registration may, at any time, renounce the international registration or the recording of the designation of any designated State.

(b) Renunciation of the recording of all designated States shall be treated as renunciation of the international registration.

32.3 *Procedure*

(a) Withdrawals and renunciations referred to in Rules 32.1 and 32.2 shall be effected in a written communication addressed to the International Bureau and signed by the applicant or the owner of the international registration, as the case may be. The International Bureau shall acknowledge receipt of this communication.

(b) In the case of any withdrawals, the International Bureau shall reimburse to the applicant or the owner of the international registration any State designation fee which it received from him in connection with any State affected by the withdrawal.

(c) The International Bureau shall record and publish renunciations, and shall notify interested designated Offices thereof. The details shall be provided in the Administrative Instructions.

Rule 33

33.1 *Choice Between Individual and Standard State Fees Initial Choice*

Any Contracting State shall choose between individual and standard State fees in a written declaration addressed to the International Bureau at the same time as it deposits its instrument of ratification or accession. If it chooses individual State fees, the declaration shall also indicate the amounts of those individual State fees in Swiss francs. The choice of the Contracting State shall become effective and the amounts indicated shall be applicable from the date on which such State becomes bound by the Treaty. Where the Contracting State fails to indicate its choice at the prescribed time, or where it chooses individual State fees but fails to indicate their amounts in Swiss francs, it shall be considered to have chosen standard States fees.

33.2 *Change in Choice*

Any Contracting State may at any time indicate, in a written declaration addressed to the International Bureau, that it wishes to choose standard State fees instead of individual State fees or vice versa, provided that, in the latter case, the declaration shall indicate also the amounts of the individual State fees. The change in choice shall apply from Jan. 1 of that calendar year which commences at the expiration fat least 6 months after the date on which the International Bureau received the declaration. If the desired change is for individual State fees but the declaration fails to indicate their amounts in Swiss francs, the declaration shall be treated as if it had not been made.

Rule 34

34.1 *Change in the Amounts of Individual State Fees Communication; Effective Date*

Any change in the amounts of individual State fees, expressed in Swiss francs, shall be communicated in writing by the interested national Office to the International Bureau. The amounts so communicated shall be applicable as from Jan. 1 of that calendar year which commences at the expiration of at least 6 months after the date on which the International Bureau receives the communication.

Rule 35

35.1 *State Fees Individual State Fees*

(a) The International Bureau shall in every calendar year transfer to any interested designated Office the fees referred to in Article 18(3)(d) that are collected in respect of international registrations, recordings of requests for later designations, and recordings of renewals, effected in the preceding calendar year.

(b) Further details shall be provided in the Administrative Instructions.

35.2 *Standard State Fees*

(a) The coefficient referred to in Article 18(4)(b) shall be:

(i) 2, if the national law provides only for examination of "absolute grounds of nullity,"

(ii) 3, if the national law provides for examination as to whether there is conflict with another mark ("relative grounds of nullity") and if such examination is carried out only where there is third-party opposition,

(iii) 4, if the national law provides for examination of relative grounds of nullity ex officio and without third-party opposition,

(iv) 5, if the national law provides for examination of relative grounds of nullity ex officio followed by the possibility of third-party opposition.

(b) Further details shall be provided in the Administrative Instructions.

Rule 36

Fees Belonging to the International Bureau

36.1 *Fees Belonging to the International Bureau*

All fees and charges collected under the Treaty, these Regulations and the Administrative Instructions, except those referred to in Article 18(2), shall belong to the International Bureau.

Rule 37

Recordings Effected by National Offices

37.1 *Notification*

The notification by the national Office provided for in Article 20(1) shall be made on a form furnished by the International Bureau and the details of which are provided in the Administrative Instructions.

37.2 *Annotation and Publication*

The Administrative Instructions shall provide for the extent to which annotations of any changes notified under Article 20(2) shall be made in the International Register of Marks and shall be published by the International Bureau, provided that such annotation and such publication shall at least indicate the international registration number of the mark, the State which it concerns, the date on which it was received, and its subject matter.

Rule 38

38.1 *Changes in Addresses Recording and Publication*

(a) The International Bureau shall, on request, record and publish, free of charge, any change in the address of the owner of the international registration or his representative.

(b) The request shall be signed.

Rule 39

39.1 *Recording and Publication Concerning Representatives Recording*

(a) Where a representative is appointed, the appointment shall be recorded.

(b) Where the appointment of a representative is revoked or renounced, the revocation or the renunciation shall be recorded.

39.2 *Publication*

(a) Where a representative is appointed, his appointment, including his name and address, shall be published.

(b) Where the appointment of a representative is revoked or renounced, the revocation or the renunciation shall be published unless, at the time the publication could be effected, the appointment of another representative is published.

Rule 40

40.1 *The Gazette Contents and Title of the Gazette*

(a) All matters which, according to the Treaty or these Regulations, the International Bureau is obliged to publish shall be published in a periodical entitled "International Marks Gazette/*Gazette internationale des marques*".

(b) The Administrative Instructions may provide for the inclusion of other matters in the Gazette.

40.2 *Frequency of Issue of the Gazette*

The Gazette shall be issued once a week.

40.3 *Languages of the Gazette*

(a) The Gazette shall be issued in a bilingual (English and French) edition.

(b) The Administrative Instructions shall identify those portions which require translation and those portions which do not require translation.

(c) Matters which can be easily understood even if not translated (for example, the names of the designated States), or which are indicated by signs or abbreviations (for example, "Ren." for "Renewal/*Renouvellement*") to which the keys shall be published in each issue, need not be translated. The details shall be provided in the Administrative Instructions.

(d) Matters not falling within the scope of paragraph (c) (for example, the lists of goods and/or services) shall always be published in both languages. The publication shall indicate which is the original language. Translations shall be prepared by the International Bureau. In case of any divergence between the original and the translation, all legal effects shall be governed by the original.

40.4 *Sale of the Gazette*

The subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

40.5 *Copies of the Gazette for National Offices*

(a) Before July 1 of each year each national Office shall notify the International Bureau of the number of copies of the Gazette which it wishes to receive in the next subsequent year.

(b) The International Bureau shall make the requested number of copies available to the national Office:

(i) free of charge, up to the same number as the number of units corresponding to the class chosen under the Paris Convention for the Protection of Industrial Property by the Contracting State of which the said Office is the national Office,

(ii) at half of the ordinary subscription or sale price, for copies in excess of the said number.

(c) Copies given free of charge or sold under paragraph (b) shall be for the internal use of the national Office which has requested them.

40.6 *Errors in Publications*

(a) Any error in the Gazette may be rectified by the International Bureau through publication of an appropriate corrigendum.

(b) Any national Office and any interested person may call any error in the Gazette to the attention of the International Bureau.

40.7 *Further Details*

Further details concerning the Gazette may be provided in the Administrative Instructions.

Rule 41

41.1 *Copies and Other Information Available to the Public*

Copies and Information Concerning International Applications and International Registrations

(a) Any person may obtain from the international Bureau, against payment of a fee whose amount shall be fixed in the Administrative Instructions, certified or uncertified copies or extracts of the international registration or of any document in the file of any international application or international registration. Each copy or extract shall reflect the situation of the international registration or of the file, or parts of such registration or file, on a specific date; such date shall be indicated in the said copy or extract.

(b) On request and against payment of a fee whose amount shall be fixed in the Administrative Instructions, any person may obtain from the International Bureau oral or written information, or information by telecopier devices, on any fact appearing in any document in the file of any international application or international registration.

(c) Notwithstanding paragraphs (a) and (b), the Administrative Instructions may waive the obligation to pay any fee where the work or the expense connected with the furnishing of a copy, extract, or information is minimal.

Rule 42

42.1 *Regional Marks*
Declaration Under Article 25(1)(a)

(a) The declaration referred to in Article 25(1)(a) shall be in writing and shall be addressed to the International Bureau. It shall be effective as from the date or event specified in the declaration, provided that it shall not become effective prior to the expiration of 2 months from the receipt of the declaration by the International Bureau.

(b) The declaration shall be promptly published by the International Bureau.

42.2 *Fees*

Rules 9, 13, 25.3, 33 and 34 shall apply *mutatis mutandis,* in the case referred to in Article 25(2).

Rule 43

43.1 *Procedure Where Correction*
of Errors of the International Bureau is Sought
Time Limit Under Article 30

The time limit referred to in Article 30(1) shall be:

(i) where the alleged error may be discovered on the basis of a notification sent by the International Bureau to the applicant or the owner of the international registration, 2 months from the date of such notification,

(ii) where item (i) does not apply and the alleged error may be discovered on the basis of a publication of the International Bureau, 2 months from the date of such publication,

(iii) where neither item (i) nor item (ii) applies, the time limit provided for in the national law.

43.2 *Application of Rule 16*

Rule 16 shall apply, *mutatis mutandis,* in respect of Article 30.

RULES CONCERNING CHAPTER II

Rule 44

44.1 *Expenses of Delegations*
Expenses Borne by Governments

The expenses of each delegation participating in any session of the Assembly and in any committee, working group or other meeting dealing with matters of concern to the Union shall be borne by the Government which has appointed it.

Rule 45

45.1 *Absence of Quorum in the Assembly*
Voting by Correspondence

(a) In the case provided for in Article 32(5)(b), the International Bureau shall communicate any decision of the Assembly (other than decisions relating to the Assembly's own procedure) to the Contracting States which were not represented when the decision was made and shall invite them to express in writing their vote or abstention within a period of 3 months from the date of the communication.

(b) If, at the expiration of the said period, the number of Contracting States having thus expressed their vote or abstention attains the number of Contracting States which was lacking for attaining the quorum when the decision was made, that decision shall take effect provided that at the same time the required majority still obtains.

Rule 46

46.1 *Administrative Instructions*
Establishment of Administrative
Instructions; Matters Governed by Them

(a) The Director General shall establish Administrative Instructions. He may modify them. They shall deal with matters in respect of which these Regulations expressly refer to such Instructions and with details in respect of the application of these Regulations.

(b) Before establishing the Administrative Instruction and before modifying any provision thereof which affects national Offices, the Director General shall communicate to the interested Offices the text of the intended provisions and shall invite the said Offices to notify him of any observations they might wish to make.

(c) All forms of interest to applicants and owners of international registrations shall be included in the Administrative Instructions.

46.2 *Control by the Assembly*

The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly.

46.3 *Publication and Effective Date*

(a) The Administrative Instructions and any modification thereof shall be published in the Gazette.

(b) Each publication shall specify the date on which the published provisions become effective. The date need not be the same for all the provisions provided that no provision may be declared effective prior to the expiration of a period of one month after the publication date of that issue of the Gazette in which it was published.

46.4 *Conflict with the Treaty and the Regulations*

In the case of conflict between any provision of the Administrative Instructions and any provision of the Treaty or of these Regulations, the latter shall prevail.

ANNEX TO THE REGULATIONS

Table of Fees

The fees marked by an asterisk apply to the States which have chosen the standard State fee system (see Articles 18(2) and (4)). Where, either because of the choice exercised by the applicant or the owner of the international registration under Article 5(1)(a)(vi) or 6(2)(a)(v), or because only a regional mark is available, the designation of one or more States party to a regional treaty has the same effect as if an application for the registration of the mark in the regional register of marks had been filed, the fees marked by an asterisk shall be payable once even if the regional registration effect extends to more than one State party to the regional treaty.

	Kind of Fee	*Amount in Swiss francs*
1.	*Application*	
1.1	International Application Fee (Rule 9.1(a)(i)): irrespective of the number of designated States and of the numbers of classes	400
1.2	*Standard State Designation Fee (Rule 9.1(a)(ii): for each designated State to which the Standard Fee System applies	[1]30
1.3	Color Reproduction Fee (Rule 9.1(a)(i))	100
2.	*Later Designation*	
2.1	International Later Designation Fee (Rule 13.1 (a)(i)): irrespective of the number of designated States and of the number of classes	100
2.2	*Standard State Designation Fee (Rule 13.1(a)(ii)): for each designated State to which the Standard Fee System applies	[1]30
2.3	Color Reproduction Fee (Rule 13.1(a)(ii)):	100
3.	*Change in Ownership*	
3.1	Request for Recording Change in Ownership Fee (Rule 22.1(g))	100
4.	*Change in the Name of the Owner—Request for Recording Change in the Name of the Owner (Rule 23.1(c)):*	
4.1	Where the request relates to one international registration	100
4.2	Where the request relates to more than one international registration	[2]50
5.	*Limitation of List of Goods and/or Services*	
5.1	Request for Recording of Limitation of the List of Goods and/or Services Fee (Rule 24.1(c))	100
6.	*Renewal*	
6.1	International Renewal Fee (Rule 25.3(a)(i)): irrespective of the number of designated States and of the number of classes	400
6.2	Renewal Surcharge (Rule 25.3(a)(i)): irrespective of the number of designated States and of the number of classes	200
6.3	*Standard State Renewal Fee (Rule 25.3(a)(ii)): for each designated State to which the Standard Fee System applies	[1]30
6.4	Color Reproduction Fee (Rule 25.3(a)(i))	100

[1] Multiplied by the number of classes.

[2] For each of the international registrations to which it relates.

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[912 TMOG 205]

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TRADEMARK REGISTRATION TREATY

Implementing Legislation

On September 3, 1975 the Trademark Registration Treaty (TRT), signed at Vienna, Austria, on June 12, 1973, was transmitted by the President to the Senate of the United States with a view to receiving its advice and consent to ratification. Legislation designed to implement the TRT has been prepared by the Patent and Trademark Office in the Department of Commerce.

Following a suggestion by the General Accounting Office, the Patent and Trademark Office is planning a survey of a random sample of United States trademark owners who would have a direct interest in the TRT and in the changes required in United States trademark law. In order to provide the interested public with the information on which the sampled companies will base their responses, the complete draft legislation, including Summary, Statement of Purpose and Need and Sectional Analysis is reproduced below. A copy of the survey questionnaire will be published in a future issue of the OFFICIAL GAZETTE.

The text of the TRT was reproduced in the OFFICIAL GAZETTE *of July 24, 1973. Some post conference documents, including a history of the Treaty, were reproduced in the* OFFICIAL GAZETTE *of Feb. 11, 1974. The report of the United States delegation to the Vienna Conference was reproduced in the* OFFICIAL GAZETTE *of Feb. 11, 1975. Additional copies of the material reproduced below as well as the previous* OFFICIAL GAZETTE *publications are available upon request to the Commissioner of Patents and Trademarks.*

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

July 11, 1978.

SUMMARY

In 1973, the United States and thirteen other countries signed the Trademark Registration Treaty. This Treaty was transmitted to the Senate on September 3, 1975, with a view to advice and consent to receiving its ratification.

The Trademark Registration Treaty will establish an international trademark filing arrangement, through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Since the Treaty is not self-executing, the instrument of United States ratification will not be deposited until the necessary implementing legislation is enacted.

The proposed implementing legislation effects the necessary changes in the trademark statutes and provides to persons filing domestic applications the same benefits in the United States as those accorded under the Treaty. The implementing legislation would not come into force until the Treaty enters into force. Entry into force requires the deposit of instruments of ratification or accession by five States.

STATEMENT OF PURPOSE AND NEED

The enclosed bill would amend the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) to implement the Trademark Registration Treaty and make certain of its benefits available to persons filing national applications for United States trademark registration.

First, the bill would implement the Trademark Registration Treaty (TRT), an agreement adopted on June 12, 1973, by the Vienna Diplomatic Conference on Industrial Property to facilitate the protection of trademarks used or intended to be used in international commerce. This Treaty was signed by the United States and was transmitted by the President to the Senate of the United States on September 3, 1975, with a view to receiving its advice and consent to ratification.

Ratification of the Treaty and its implementation by this bill would enable United States nationals and residents to avail themselves of the advantages offered by the Treaty when it has entered into force with respect to the United States. In addition to the procedural implementing provisions, the bill would effect certain changes in the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) that are required to be made in order to comply with certain conditions and requirements of the Trademark Registration Treaty. These changes would not come into effect until the entry into force of the Treaty.

Second, the bill also makes modifications in the present law to provide to United States nationals and residents the same benefits when filing national applications for trademark registration in the United States Patent and Trademark Office as would be available to such applicants in the United States if filing under the Treaty.

Purpose of Trademark Registration Treaty

The Trademark Registration Treaty has as its primary purpose the establishment of a trademark filing arrangement through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Separate actions in approximately 150 jurisdictions (i.e. States, possessions, territories, etc.) are now required by United States companies in order to extend the protection of a trademark throughout the world. The complexity and high cost of establishing and protecting trademarks in international markets through the diverse national laws and procedures is a serious problem for businessmen seeking to further their commercial objectives by the sale of trademarked products across national boundaries. However, if trademark protection in potential foreign markets is not secured promptly, the unprotected mark is frequently appropriated by a "pirate" or may even be coincidentally adopted by another.

The entry into force of the Trademark Registration Treaty would help alleviate these problems by establishing an alternative international registration procedure through which the effects of national trademark registration in member countries could be secured, maintained and renewed on a central international register of marks. With a few exceptions, the effects of international registration in each participating State would remain subject to the substantive requirements of the national laws of such State.

History of Treaty Development

The Trademark Registration Treaty is the culmination of continuous efforts, since 1965, by the United States, to participate in an acceptable international arrangement to facilitate the protection of trademarks in international commerce. Consideration was first given to the possibility of United States adherence to the Madrid Agreement for the International Registration of Marks, a special arrangement under the Paris Convention for the Protection of Industrial Property. The Madrid Agreement, in force since 1891, has long operated successfully among twenty-three countries, principally European.

By 1968, it became apparent that there was substantial U.S. private sector opposition to adherence to the Madrid Agreement in its present form, largely because of certain of its features which, it was argued, would be contrary to the interests of United States firms.

From 1968 to 1970, there were efforts to revise the Madrid Agreement to correct these alleged deficiencies, but these efforts were not successful. However, whereas there was opposition to our adherence to the Madrid Agreement, interested private groups continued to urge United States participation in an acceptable trademark registration treaty.

In September, 1970, a United States sponsored resolution to develop a new trademark registration treaty was adopted unanimously by the competent administrative organs of the Paris Convention. After several drafts and examinations by three Committees of Experts and several Consultants' groups, a final draft was considered at a diplomatic conference held in Vienna, Austria, from May 17 to June 12, 1973. Fifty States and thirty-one international organizations (governmental and non-governmental) were represented at the conference. On June 12, 1973, the Trademark Registration Treaty was signed by eight countries, including the United States, and remained open for signature until Dec. 31, 1973, by which date a total of fourteen countries had become signatories. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession. To date, none of the signatory States has ratified the Treaty. Four States (Congo, Gabon, Togo, and Upper Volta) have deposited instruments of accession.

Main Features of Treaty

The Trademark Registration Treaty will establish a multilateral trademark filing arrangement for residents or nationals of its member countries, which provides easier procedures for securing, administering and maintaining national trademark registration effects in other countries by filing a single international application, securing a single international registration and maintaining a record of such rights on a central international register. International registration amounts to central recording of a "bundle of national rights" rather than a separate property right.

With some exceptions (as noted below), the substantive aspects of rights are regulated by each member State according to its national law. The main features of the Treaty are as follows:

1. A national or resident of a member State may file directly with the International Bureau of the World Intellectual Property Organization an international application designating the States in which protection of the trademark is desired. Any number of States, including the applicant's home State, may be designated.

2. The international application may claim the priority (Paris Convention "right of priority") of an earlier first application to register the same trademark.

3. The application is subject to an international fee plus a fee for each designated State (not higher than 100% of the total fees for national registration).

4. After a brief examination as to formal requirements, the trademark is registered by the International Bureau. The details of the international registration are promptly published in English and French in an international gazette and communicated to each of the designated States.

5. Unless refused by a designated State, the international registration is accorded the same legal effect as if the same trademark were registered nationally in that State. The time limit for the initial notice of refusal, including all reasons or possible reasons for refusal, is fifteen months from the date of the international publication. The reasons for refusal cannot be different from those applicable to national applications.

6. If initially refused by any designated State, the owner is notified of the refusal and is guaranteed the same procedural rights of re-examination and/or remedies available in the case of refusals of national trademark applications. Further proceedings are not subject to any Treaty time limits, and are carried out directly between the owner and the concerned national office.

7. The effects of an international registration may be cancelled in any designated State according to the national law of that State. The effect of cancellation is limited to the State in which the legal action for cancellation was brought.

8. An international registration may be renewed at ten year intervals by a single renewal application filed with the International Bureau.

9. States not originally designated may be added later by requesting the recording of later designations of the new States.

10. Assignments, changes of name, limitations of the goods and/or services, etc. may be recorded by filing a single international request, with the same legal effect as if recorded in the national registers.

11. Non-use of the trademark during an initial period of three years counted from the filing date cannot result in refusal or cancellation by any State. However, any State may require that the owner declare his intention to use the trademark in that State and may further provide in its law that no action for infringement may be commenced until the continuing use of the trademark in that State has started and that any remedy (e.g. damages or profits) may relate only to the period after use has commenced.

The benefits of the Treaty will be available only to nationals or residents of member countries. As to such persons, the Treaty may be used to secure protection in a few countries, or in many, depending upon the extent of the commercial interests.

The Treaty provides that the contracting States shall constitute a Union for the international registration of marks. The provisions for administration of the Union are similar to those established for the Patent Cooperation Treaty, which was transmitted to the Senate on Sept. 12, 1972, and was favorably acted on by that body on Oct. 30, 1973.

The Regulations annexed to the Treaty provide rules concerning administrative requirements and procedures and details useful in implementation of the Articles.

Interest of Other Countries

In addition to the United States, the signatories of the TRT include a number of major trading countries (e.g. Federal Republic of Germany, United Kingdom, Italy, Sweden, Austria). Others are awaiting developments in the United States, which furnished primary impetus to the negotiations. In particular, the interest of most Western European countries is contingent upon United States ratification, primarily because of the existence of the Madrid Agreement. The Trademark Registration Treaty is more modern than the Madrid Agreement, has more advantages for trademark owners and eliminates features which have long inhibited the territorial growth of the Madrid system. However, the position of the Madrid Agreement members is dependent upon the interest of major countries outside that Union in the new arrangement. Of these, the United States is clearly the most important. However, Japan, United Kingdom, Canada, and the Scandinavian group are among other countries outside the Madrid Union which are known to be seriously considering participating in the TRT arrangement, or, failing that, in some other multilateral agreement, such as Madrid.

Main Advantages

The main advantages of the Treaty are the simplified procedures provided in order to secure national registration effects, to maintain the rights thereby acquired, and to continue these rights by renewal. Other benefits are the time limits for national refusal notifications and the limitations on national use requirements.

The Treaty will not be a panacea for all trademark problems. It will establish what is essentially a multilateral trademark filing arrangement, reserving (except for a few points) the substantive aspects of rights to regulation on a country-by-country basis under the national law of each country. However, by limiting participation to States having previously adhered to the Paris Convention for the Protection of Industrial Property, it assimilates or applies the norms and standards of trademark protection law which have been agreed to by the eighty-seven member countries of that Union over the almost 100 years of its existence. The fact that its filing, maintenance and administrative procedures are independent of national procedures means that a framework for future development of international substantive standards and further rationalization of procedures is provided. Also, since trademark piracy is best dealt with preemptively by prompt filing and diligent maintenance practices, the Treaty attacks this problem directly by facilitating the filing and maintenance procedures.

Even the short range objectives and benefits will not be immediately realized upon United States ratification. Five States must ratify before the Treaty enters into force. To date, only eighteen out of the eighty-seven potential member States have taken positive steps (i.e. fourteen signatories and four adherents). The benefits of simplified filing and maintenance will accrue in proportion to the number of member States.

Effect on U.S. System—Cost

As the Treaty matures in terms of the number of participating States, one of its effects will probably be an increase of foreign origin filings in this country (present foreign origin filings are less than 10% of total filings). It is fundamental that the benefits of simplification accrue in both directions. To the extent that any increased filings reflect existing commercial rights, this result would be consistent with a fundamental purpose of the federal trademark registration system, i.e. the central recording of marks in which rights may exist. Because registration is not mandatory in order to secure rights in a trademark in the United States (and this would not change under the Treaty), the U.S. system is designed to encourage federal registration, in order to provide centralized information to those searching for and selecting new marks for new products or services to be sold in commerce. Part of the increase, as explained later, may result from permitting the filing and registration of marks based on an intent to use as an alternative to actual use.

Since the intent to use amendments to be effected by the bill will not come into force until the date of entry into force of the Treaty, none of the financial consequences will accrue until after that date. It is assumed that entry into force will occur promptly after United States ratification, if not before that date. Assuming action by the 95th Congress, increased incremental costs and manpower requirements of the Patent and Trademark Office have been estimated as shown in the following chart.

ESTIMATED COSTS INCURRED BY RATIFICATION OF TRT AND ENACTMENT OF RELATED LEGISLATION[1]

[Dollar Amounts in Thousands]

	FY 1979		Adjustment for FY 1980		Total FY 1980		Adjustment for FY 1981		Total FY 1981	
	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar
Operational printing[2]	...	581.9	.....	(+68.7)	....	650.6	.....	(+54.8)	....	705.4
Operational, other[3]	21.7	420.3	(+11.6)	(+252.6)	33.3	672.9	(+7.4)	(+176.1)	40.7	849.0
Start-up[4]	3.0	109.8	(−2.0)	(−73.4)	1.0	36.4	(−1.0)	(−31.5)	....	[5]4.9
	24.7	1,112.0	.....	.....	34.3	1,359.9	.....	......	40.7	1,559.3

[1] These estimated costs will be partially offset by fees to the same extent as under our national system.

[2] Assumes additional publication of all applications will be required (see discussion of Sections 9 and 10 of bill in the Sectional Analysis).

[3] Includes supervisory, professional and clerical personnel, and mail.

[4] Includes Legislation and International staff, Organization and Systems, and all travel.

[5] Only travel remains.

An important caveat is that many of the assumptions on which the above estimates are based are, at this point, very speculative. Also, since the Treaty provides for the assessment of country designation fees (paid centrally) at a level equal to the fees for national registration, any increased operational costs of the Patent and Trademark Office due to increased filings will be offset to the same extent as under the national system. The above cost estimate does not reflect these partially offsetting fees.

Additional cost factors, too remote for attempting to estimate at this time, involve contributions to the World Intellectual Property Organization (WIPO) which will serve as the International Bureau under the Treaty. Article 34(5) of the Treaty establishes a working capital fund, constituted by a single payment made by each contracting State. Based on the experience in the case of other treaties administered by WIPO, it is believed that consideration of any working capital fund would be deferred, at least, until several years after the Treaty enters into force. The amount of the initial payment of each contracting State to this fund is computed with due regard to the number of international applications which are filed by residents of that State. Thus, a direct relationship exists between the amount of the payment by the United States and the use of the TRT by U.S. companies.

In starting up for operations under the TRT, the International Bureau will have to establish a budget financed from fees and charges for services rendered by the International Bureau, from sales of publications and other miscellaneous income. While the Madrid Agreement, also administered by WIPO, has operated at a profit for many years, and the TRT is designed to be self-supporting under normal circumstances (Article 34(4)), the possibility of deficits cannot be ruled out altogether. Deficits would be covered out of the working capital fund, which fund would then be reimbursed by the States. Deficits are not expected to be of any significant magnitude. Contributions to the working capital fund would be the responsibility of the Department of State.

Effect on U.S. Trademark Law

Participation in the international system will require that our national trademark law be amended in a number of respects. The most fundamental change is one which would permit the securing of a national registration in the United States based on intention to use the trademark applied for, and provide for an initial period of 3 years during which nonuse of the mark could not be a basis for refusing or cancelling such registration. Consistent with the Treaty, the proposed legislation provides that infringement actions in the courts would continue to be contingent upon the commencement of use, however.

As explained by the President in forwarding the Treaty to the Senate for its advice and consent, there is a sharp difference of opinion among interested persons, firms and associations in the United States as to the desirability of making this change, and, to a lesser extent, other less significant changes, required by the Treaty, in our national law.

The essence of the change in United States law is that it would move us from the strict use approach (today held to only by the United States, and a few other countries, e.g. Republic of Philippines, Panama) to the middle position, i.e. a use or intention to use system similar in principle to that of the British. The change is believed to be more consistent with the legitimate needs of businessmen, especially where international trade is contemplated.

Intention To Use Legislation

In fact, legislation permitting the filing of a trademark application based on an intent to use was widely supported in the private sector and, in the 91st Congress, identical House and Senate bills, substantially the same as the earlier Senate bills, were introduced at the request of the Administration (S. 3110, McClellan; H.R. 14050 Kastenmeier). This legislation was not reintroduced in the 93rd and 94th Congresses, however, since it was known at an early stage in the Treaty negotiations that the use requirements of the United States would be affected.

The support of intention to use legislation in the United States had its foundation in domestic concerns. Under present law actual use of a mark is a prerequisite to the filing of an application for registration. Thus, every applicant for federal registration, in addition to other requirements, must specify in his application the date of first use of the mark and the date of first use in commerce over which Congress has control (usually interstate commerce).

As applied to the adoption of new trademarks, the requirement of establishing use of a mark prior to applying for its registration is unrealistic since the time interval between clearance and adoption of a trademark and use of commercial quantities varies from several months to several years depending upon the products involved. Typically, before a consumer product is marketed commercially, there is considerable time and effort expended in the developmental effects. After having undertaken the effort and expense of creating and planning the promotion of a new mark, however, the businessman may find that the mark is not registrable because of conflict with another mark or some other reason. These problems led to the drafting and introduction of intent to use legislation.

Canada, in 1954, after careful study, adopted a system permitting applications for registration on the basis of an owner's proposed use. The Canadian system is favorably regarded by businessmen, as are the intention to use systems of many other nations. Approximately one-half of the trademark applications filed today in Canada are based on proposed use, rather than actual use, evidencing the usefulness and acceptability of the system.

Differences Between Previous Intention To Use Legislation and the Treaty

Although similar in terms of their substantive effect, the "intent to use" amendments previously proposed in this country do not satisfy the requirements of the Treaty. There are two basic differences:

(1) The time period under the Treaty during which use may not be required cannot be less than 3 years, counted from the filing date.

Under the "intent to use" bills, the time period was flexible, depending upon the length of time consumed by the examination, i.e. 90 days, counted from the date of allowance of the application by the examiner (a shorter period if the application were opposed). Although entirely dependent upon pendency experience of the Patent and Trademark Office, the period of permitted non-use of most of the applied for marks under those bills would have been in the approximate range of one to two years, counted from the filing date.

Whereas the Treaty permits the "reserving" of a mark for an initial 3 years, more entended "reserving" may be precluded under Article 19(3) and this is done in the proposed implementing legislation. Thus, the 3 year period cannot be extended except for extraordinary reasons. The fact that an application is still pending at the date of expiration of the 3 years may *not* be accepted as a reason for extension. The use requirements after 3 years are the same as under present law.

(2) Under the Treaty, the national *registration* effect of an international registration may not, for the initial three year period, be refused or cancelled on the ground of non-use. However, any country may provide that the right to sue for infringement of the registered mark (even during the three years) is subject to the condition of use, i.e. no right to sue until after continuous use has commenced; and that any remedy may relate only to the period after use has commenced.

Under the "intent to use" bills, an application could be filed, and priority secured, based on intent to use, without actual use, but the *registration* would not issue until a declaration demonstrating actual use had been filed and accepted.

The implementing legislation takes into account the above differences, as the Treaty requires. Also, in all respects, the benefits to applicants from the 3 year use moratorium are accorded to United States residents filing regular nationals applications in the United States as well as to those applicants filing under the Treaty.

A BILL

To amend the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946, as amended.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, that, in order to carry out the provisions of the Trademark Registration Treaty and extend its benefits to citizens and residents of the United States pursuant to the authority of Congress to regulate commerce within its control, section 1 of the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946 (60 Stat. 427), as amended, is amended to read as follows:

"(a) Any person who is the owner of a trademark which is used or intended to be used in commerce may register that trademark on the principal register hereby established, subject to the conditions and requirements of this Act.

"(b) Application by a person described in section 1(a) to register a trademark on the principal register may be made:

(1) By paying in the Patent and Trademark Office the filing fee and filing in such Office—

(A) A written application, in such form as may be prescribed by the Commissioner, signed by the applicant or by a duly appointed representative of the applicant, specifying the applicant's domicile and citizenship and the particular goods in connection with which the trademark is used or intended to be used in commerce;

(B) A drawing of the trademark;

(C) Except where the declaration under section 1(c) is filed together with the application, a declaration of the applicant's intention to use the trademark in commerce in connection with the goods specified in the application;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By designating the United States in an international registration, or in the recording of any later designation in an international registration, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty: *Provided, That—*

(A) the person applying was entitled to file international applications, is entitled to own international registrations, and is the Owner of the international registration of the trademark sought to be registered under this Act; and

(B) a declaration of such person's intention to use the trademark in commerce in connection with the goods specified in the international registration is notified to the Patent and Trademark Office in conformity with the said Treaty.

"A person whose international application, or request for the recording of later designation, designating the United States, has been declined by the International Bureau may apply to register the same trademark under paragraph (1) of this subsection. If the application under paragraph (1) is filed in the Patent and Trademark Office prior to the expiration of two months, counted from the date of the notification by the International Bureau of its declining of the corresponding international application or request, and if the Commissioner determines that such declining was not justified, the application shali be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

"(c)(1) The applicant of an application for registration under this Act, or the registrant of a registration issued on the basis of such application, shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the trademark is in use in commerce and that such use commenced on or prior to the date of expiration of three years counted from the filing date of the application, and specifying the date of his first use of the trademark, the date of his first use of the trademark in commerce, those of the particular goods identified in the registration, or, if the registration has not been issued, in the application for registration, in connection with which the trademark is used, and the mode or manner in which the trademark is used in connection with such goods. The declaration shall be signed by the registrant or his duly appointed representative, or, if the registration has not been issued, by the applicant or his duly appointed representative, and it shall be accompanied by such number of specimens or facsimiles of the trademark as actually used as may be prescribed by the Commissioner. Where the declaration concerns an application filed under, or registration issued pursuant to, section 1(b)(2), it may, in such form as may be prescribed by the Commissioner or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application to which it pertains, or later: *Provided,* That unless such declaration has been filed prior to the expiration of four years, counted from the filing date, the Commissioner shall cancel the registration, if issued, or refuse the application for registration, if pending. If the declaration is accepted in respect of fewer than all of the goods stated in the registration or identified in the application, the application or registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is in use in commerce.

(3) If an application for registration is pending after the expiration of the three-year period referred to in paragraph (1) of this subsection, or if a registration is relied upon in an opposition or cancellation proceeding under this Act which was filed, or which is pending, after the expiration of such period, the Commissioner may require that the declaration under this subsection in respect of such application or registration be filed within such earlier period as he may prescribe: *Provided,* That such earlier period shall not expire earlier than 2 months, counted from the date of a notice mailed to the applicant or registrant.

(4) If a person who applied for registration of a trademark under this Act, or any successor, assignee or related company of such applicant, shall subsequently apply for registration under this Act of the same or a substantially equivalent trademark on or prior to the date of expiration of five years from the filing date of the said earlier application in respect of all or fewer than all of the goods recited in the said earlier application, the three-year period referred to in paragraph (1) of this subsection shall, in respect of those of the goods which are the same, be counted from the filing date of the said earlier application, or if there were more than one such earlier application, from the filing date of the earliest of them: *Provided,* That this paragraph shall not be applicable if a declaration of use conforming to the requirements of this subsection is filed together with the said subsequently filed application.

(5) Upon a satisfactory showing by the applicant or registrant that his failure to commence use of the mark in commerce on or prior to the date of expiration of the three-year period referred to in paragraph (1) of this subsection was due to extraordinary circumstances which excuse such failure and was not due to any intention to abandon the mark, the Commissioner may extend the date of expiration of the said period and of the time limit for filing the declaration under this subsection: *Provided,* That the said expiration dates may not be extended for the reason that the application for registration was pending after the date of expiration of the said three-year period.

(6) The Commissioner shall notify the applicant or registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor.

"(d) In any application in respect of which the declaration under section 1(c) has been filed, the applicant may claim concurrent use. If concurrent use is claimed, the applicant shall state exceptions to his claim of exclusive use, in which he shall specify, to the extent of his knowledge, any concurrent use by others, the goods in connection with which and the areas in which each concurrent use exists, the periods of each use, and the goods and area for which the applicant desires registration.

"(e) If the applicant is not domiciled in the United States he shall designate by a written document filed in the Patent and Trademark Office the name and address of some person resident in the United States on whom may be served notices or process in proceedings affecting the trademark. Such notices or process may be served upon the person so designated by leaving with him or mailing to him a copy thereof at the address specified in the last designation so filed. Unless filed with the application, the document designating such person shall be filed on or prior to the date on which the applicant, or the registrant of any registration issued on the basis of such application, replies to any communication by the examiner, or otherwise institutes or defends any proceeding under this Act, relating to such application or registration. Until such person has been designated, or if the person so designated cannot be found at the address given in the last designation, such notices or process may be served upon the Commissioner."

Sec. 2 The first sentence of section 3 of such Act is amended by striking out "used in commerce".

Sec. 3 The first sentence of section 4 of such Act is amended by striking out "used in commerce" and by inserting, following "exercising", the words "or intending to exercise".

Sec. 4 Section 5 of such Act is amended by inserting, following "used" (first occurrence), the words, "or is intended to be used,"; and by inserting, following "use" (both occurrences), the words "or intention to use".

Sec. 5(a) The second sentence of section 7(a) of such Act is amended by inserting, following "date" (third occurrence), the words "of issue"; by striking out "date on which the application for registration was received in the Patent and Trademark Office" and inserting in lieu thereof the words "filing date"; and by changing the period at the end of the sentence to a colon and adding the following proviso:

"*Provided,* That if the declaration under section 1(c) has not been filed, this fact shall be indicated in lieu of the dates of first use of the mark."

(b) A new sentence is added to section 7(a) of such Act reading as follows: "The Commissioner shall cause a notice concerning the issuance of the registration to be published in the Official Gazette of the Patent and Trademark Office."

(c) Section 7(b) of such Act is amended to read as follows:

"Subject to any conditions and limitations stated therein, a certificate of registration of a mark upon the principal register provided by this Act shall be prima facie evidence of the validity of the registration, of the registrant's ownership of the mark, and of the right of the registrant to prevent registration under this Act by any other person, except a lawful concurrent user, of the mark either in the identical form as reproduced in the registration, or in such near resemblance thereto as to be likely, when applied to the goods or services of such other person, to cause confusion or to cause mistake, or to deceive."

(d) Section 7(d) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The registrant of any registration under this Act may limit the goods and/or services specified in his registration by filing an application, in such form as may be prescribed by the Commissioner, for the recording of such limitation or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), by filing at the International Bureau a request for the recording of a limitation, in respect of the United States, of the goods and/or services of the international registration on the basis of which such registration was issued. The Commissioner shall refuse to record any limitation requested by the registrant if its effect would be to enlarge the scope of the goods and/or services beyond that of the goods and/or services specified in the registration. The recording by the International Bureau of a limitation of the goods and/or services, in respect of the United States, of an international registration shall, unless refused by the Commissioner, have the same effect as if such limitation had been entered in the records of the Patent and Trademark Office on the same date of such recording."

"(3) Where the Commissioner has limited the goods and/or services of any registration pursuant to the provisions of paragraph (2) of this subsection, or sections 1(c)(2), 8(a)(2), or 9(c)(2) of this Act, appropriate entry of such limitation shall be made in the records of the Patent and Trademark Office and, if requested by the registrant, upon the certificate of registration or, if such copy is lost or destroyed, upon a certified copy thereof."

(e) Section 7 of such Act is amended by adding, after subsection 7(g), the following new subsection:

"(h)(1) Appropriate entry shall be made in the records of the Patent and Trademark Office of any recording notified to it by the International Bureau in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), unless the effect of such recording has been refused in conformity with the provisions of this Act or of the Trademark Registration Treaty.

(2) The Commissioner shall notify the International Bureau as provided in the Trademark Registration Treaty before making any entry, other than as specified in paragraph (1) of this subsection, in the records of the Patent and Trademark Office in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), and the entry in such records shall not be made until the corresponding entry has been annotated and published by the International Bureau as provided in the said Treaty."

Sec. 6 Section 8(a) of such Act is amended to read as follows:

"(1) The initial term of a registration under this Act shall be 10 years counted from the filing date:

Provided, That the registration of any mark under the provisions of this Act shall be cancelled by the Commissioner at the end of 6 years counted from its date of issue, unless, within 1 year next preceding the expiration of such 6 year period, the registrant shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, an affidavit or declaration showing that the mark is still in use in commerce. Special notice of the requirement for such affidavit or declaration shall be attached to each certificate of registration. Where the affidavit or declaration concerns a registration issued pursuant to section 1(b)(2), it may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the same date as the date on which it was received by the International Bureau.

(2) If the affidavit or declaration of use under paragraph (1) of this subsection is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods and/or services specified in the affidavit or declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the affidavit or declaration under this section."

Sec. 7 Section 9 of such Act is amended to read as follows:

"(a) The owner of a mark which is still in use in commerce may renew his registration of that mark for periods of ten years from the end of each expiring period of the registration, subject to the conditions and requirements of this Act.

"(b) Renewal of a registration by a person described in section 9(a) may be effected:

(1) By paying in the Patent and Trademark Office the prescribed fee and filing in such Office—

(A) within the six months next preceding the date of expiration of the period for which the registration was issued or renewed, an application for renewal: or

(B) prior to the expiration of six months counted from the date of expiration of the period for which the registration was issued or renewed, an application for late renewal, on payment of the additional fee herein prescribed;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By the renewal of an international registration in respect of which the United States is a designated State, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, *Provided:* That the person applying is entitled to own international registrations and is the Owner of the international registration of the mark sought to be renewed under this Act.

If the Commissioner refuses an application for renewal of a registration filed under paragraph (1), he shall notify the registrant of his refusal and the reasons therefor. The provisions of section 1(e) shall be applicable to any person not domiciled in the United States who applies for or effects the renewal of a registration under this Act.

"(c)(1) The registrant of a registration renewed under this Act shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the mark is still in use in commerce, and specifying those of the particular goods and/or services identified in the registration on or in connection with which the mark is so used. The declaration shall be signed by the registrant or by his duly appointed representative, and shall be accompanied by a specimen or facsimile showing current use of the mark. Where the renewal is effected pursuant to section 9(b)(2), the declaration may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application for renewal under section 9(b)(1), or, in the case of a renewal effected pursuant to section 9(b)(2), with the demand for renewal of the corresponding international registration filed with the International Bureau, or later: *Provided,* That unless such declaration has been filed prior to the expiration of six months, counted from the starting date of the term of renewal, the Commissioner shall cancel the registration. If the declaration is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the declaration under this section.

(4) The Commissioner shall notify the registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor."

Sec. 8(a) Section 10 of such Act is amended by inserting, preceding the first sentence of such section, "(a)(1)", by striking out "(d)" in the last sentence and inserting in lieu thereof "(e)", and by adding at the end of such section the following new paragraphs:

"(2) A change in the ownership of a registration or application for registration under this Act may be recorded in the Patent and Trademark Office in such form as may be prescribed by the Commissioner, or, in the case of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in Ownership, in respect of the United States, of the international registration on the basis of which such application was filed or such registration was issued. The recording by the International Bureau of a change in the Ownership, in respect of the United States, of an international registration shall, if valid, have the same effect as if such change had been entered in the records of the Patent and Trademark Office on the same date as the date of such international recording.

"(3) The recording of a change in ownership pursuant to paragraph (2) which is the result of an assignment of the registered or applied for mark shall, as of the date of such recording, be accorded the same effects as those which are accorded to the recording of such assignment: *Provided,* That within three months from the date of notice of such recording, mailed to the person who applied therefor, or, where the recording is effected by the International Bureau, from the date of publication of such international recording, instruments of assignment conforming to the requirements of paragraph (1) have been recorded in the Patent and Trademark Office.

"(4) Any person, not entitled to file international applications, who has, nevertheless, become the owner of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), other than as a result of a contract between him and the previous applicant or registrant, may file an application for registration of the same mark under section 1(b)(1). If the application under section 1(b)(1) is filed by such person in the Patent and Trademark Office within two years from the said change in ownership and prior to six months after the expiration of the initial term, or of the then running term of renewal, of the international registration on which such application or registration is based, it shall, in respect of those of the goods and/or services which are the same, be treated as if it had been filed on the same date as the date on which the designation of the United States in such corresponding international registration took effect: *Provided,* That such application under section 1(b)(1) conforms to all of the requirements of this Act."

(b) Section 10 of such Act is amended by adding the following subsections:

"(b) Instruments evidencing changes in the name of the applicant or registrant may be recorded in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, or, in the case of a registration issued on the basis of an application filed under section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in the name of the Owner of the international registration on the basis of which such registration was issued. The recording by the International Bureau of a change in the name of the Owner of an international registration, in which the United States is a designated State, shall, if valid, have the same effect as if it had been entered in the records of the Patent and Trademark Office on the same date as the date of such recording.

"(c) Where at any time, as a result of a final decision in any proceeding under this Act, it is determined that a recording made under this section is void or that such recording was made contrary to the requirements of the Act, the Commissioner shall, upon request of any interested party, cause an appropriate correction to be entered in the records of the Patent and Trademark Office. If such recording was effected on the basis of a recording in respect of an international registration, the Commissioner shall, if appropriate, deny the effect of such international recording and notify the International Bureau accordingly, as prescribed in the Trademark Registration Treaty."

Sec. 9 Section 12(a) of such Act is amended to read as follows:

"Upon the filing of an application for registration, the

Commissioner shall refer the application to the examiner in charge of the registration of marks, who shall cause an examination to be made. Unless the application has been previously withdrawn or abandoned, the mark shall be published in the OFFICIAL GAZETTE of the Patent and Trademark Office at such time as the Commissioner shall prescribe, not later than 12 months, counted from the filing date of the application. In the case of an applicant claiming concurrent use, or in the case of an application to be placed in an interference as provided for in section 16 of this Act, the mark may be published subject to the determination of the rights of the parties to such proceedings."

Sec. 10 Section 12(b) of such Act is amended by striking out "6" in two places and inserting, in lieu thereof "3" and by adding at the end thereof:

"Except for the failure of an applicant to comply with the requirements of section 1(c), no mark shall be refused registration for a reason which has not been indicated in a communication given or mailed to the applicant on or prior to 12 months, counted from the filing date: *Provided,* That this limitation shall not apply to any refusal determined by the Trademark Trial and Appeal Board or by a court."

Sec. 11 The second sentence of section 13 of such Act is amended by changing the period at the end of this sentence to a colon and adding a proviso and a new third sentence reading as follows:

"*Provided,* That such time shall in no event be extended to a date which is later than 14 months, counted from the filing date of the application for registration in respect of which the extension of time for filing opposition is requested. An opposition may be filed by a duly authorized attorney of the opposer."

Sec. 12 Section 14 of such Act is amended by inserting, following "person" the words, "or by a duly authorized attorney of any person"; by inserting, following "date" in clause (a), the words "of issue", and by inserting, following "thereunder" , in clause (c), the following words:

"or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), on the ground that the registrant was not entitled to own international registrations,".

Sec. 13 The first sentence of section 15 of such Act is amended by inserting, following the third occurrence of "date", the words "of issue".

Sec. 14 The first sentence of section 16 of such Act is amended by inserting, following "may" the words, "prior to the publication under section 12(a) of such mark,".

Sec. 15 Section 17 of such Act is amended by inserting, between the first and second sentences thereof:

"Where an interference, opposition to registration or concurrent user proceeding concerns an application for registration under this Act of a mark, the entitlement to registration of which has not been finally determined by the examiner in charge of the registration of marks or, as a result of an appeal from a final refusal of the examiner, by the Trademark Trial and Appeal Board or a court, the Commissioner may, with notice to all parties, defer the commencement of such proceeding until such final determination has been made."

Sec. 16 The first sentence of paragraph (1) of section 21(a) of such Act is amended by inserting, following "affidavit", the words "or declaration"; and by striking out "section 8" and inserting in lieu thereof "section 8. 1(c). or 9(c)".

Sec. 17 Section 22 of such Act is amended by inserting, at the beginning of the sentence, "Issuance of a" and by changing the "R" in "Registration" to "r".

Sec. 18 Section 23 of such Act is amended by inserting, following "commerce" in the second sentence of such section, "or are intended to be used in commerce,"; by striking out in the second sentence of such section "for the year preceding the filing of the application"; by inserting between the second and third sentences of such section: "An application for the registration of a mark shall be treated as an application under this section only if the application or, in the case of an application pursuant to section 1(b)(2), if the international registration or recording of later designation which is the basis for such application, contains an indication to this effect."; and by striking out in its entirety the last sentence of such section.

Sec. 19(a) The second sentence of section 24 of such Act is amended by inserting, preceding "may," the words, "or his duly authorized attorney," and by striking out the word "verified".

(b) The fourth sentence of section 24 of such Act is amended by inserting, following "used", the words, "following the date of expiration of the period referred to in section 1(c)(1),".

Sec. 20 The second sentence of section 30 of such Act is amended to read as follows:

"When the goods and/or services specified in an application fall within a plurality of classes, a fee equalling the sum of the fees for filing an application in each class shall be paid, and the Commissioner may issue a single certificate of registration for such mark."

Sec. 21(a) Subsection (a) of section 31 of such Act is amended by striking out paragraph (3) of such subsection, by appropriately renumbering the remaining paragraphs; and by inserting, following "mark" in newly renumbered clause (6) (old paragraph (7)), "change in the name of the registrant,".

(b) Section 31 of such Act is amended by adding, after subsection 31(c), the following new subsection:

"(d) The fees specified in paragraphs (1) and (2) of subsection (a) shall, in the case of applications pursuant to section 1(b)(2) and renewals pursuant to section 9(b)(2), be deemed to be substituted for, respectively, by the individual State fees and the individual State renewal fees applicable to designations of and renewals concerning the United States pursuant to the Trademark Registration Treaty. The Commissioner shall communicate to the International Bureau the amounts of such individual State fee and individual State renewal fee and such amounts shall be the same, respectively, as the amounts of the fees specified in paragraphs (1) and (2) of subsection (a)."

Sec. 22 Section 32(1) of such Act is amended by adding at the end of such section the following sentence:

"No action under this section may be started by the registrant of a registration issued under this Act until the declaration under section 1(c) in respect of the mark which is the subject of such registration has been filed in the Patent and Trademark Office and accepted by the Commissioner."

Sec. 23(a) Section 33(a) of such Act is amended by inserting following "registration" (second occurrence), the words, "and in respect of which the mark is stated to be in use in commerce in the registration, or in the declaration under section 1(c) which has been filed in the Patent and Trademark Office and accepted by the Commissioner,"

(b) Paragraph (5) of section 33(b) of such Act is amended by inserting, preceding "registration" the words "the date of issue of the".

(c) Section 33 of such Act is amended by adding, after subsection 33(b), a new subsection reading as follows:

"(c) For the purpose of determining priority of rights in any proceeding under this Act, an application for registration of a mark which has not been withdrawn or abandoned or a registration issued on the basis of such application, shall, from and after its filing date, be accorded the same effect as if the applicant, or the registrant, had commenced use of the mark in commerce on the said filing date, without derogation, however, of any earlier priority based on use of the mark commenced earlier than the said filing date or of any right of priority to which the applicant of registrant may be entitled pursuant to second 44(d) of this Act."

Sec. 24 Section 35 of such Act is amended by adding at the end of such section the following sentence:

> "Any remedy under this section shall relate only to the period after the registrant commenced the continuing use of the mark in commerce."

Sec. 25 Section 44(a) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

> "(2) The Commissioner shall keep a register of international registrations designating the United States which have been published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, including renewals thereof and recordings related thereto, and shall be authorized to accord and refuse effects, communicate notifications, make attestations, decide petitions, determine the amounts of and receive payments of fees, and perform all other acts prescribed by the said Treaty, subject to the requirements thereof.
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> "(3) Where the time limit for a notification to the International Bureau prescribed by the Trademark Registration Treaty is stated in terms of the date of receipt of such notification by the International Bureau, such notification shall be transmitted by Registered Mail no later than 14 days prior to the expiration of the time limit and, except where an agency of the said Bureau, established pursuant to the said Treaty, is operating within the United States, shall be transmitted to that bureau via Air Mail.
>
> "(4) A mark subject of an application under section 1(b)(2) in respect of which no notification of refusal or possible refusal was received by the International Bureau within the time limit fixed in Article 12(2)(a)(i) of the Trademark Registration Treaty shall be automatically entitled to registration under this Act on the same register as the one for which such application was made. Upon request by the applicant of such an application and unless the registration has been previously issued, the Commissioner shall issue the registration to which such applicant is entitled under this paragraph and the date of issue of such registration shall be the date of the OFFICIAL GAZETTE next preceding the date of expiration of the said time limit. Registration of a mark under the provisions of this paragraph shall be without prejudice to the right of any person to petition to cancel such registration under section 14 of this Act for any reason, including one which was referred to in a refusal made pursuant to section 12(b) or in an opposition filed pursuant to section 13, the notification of which was not received by the International Bureau or which was not received by such Bureau within the said time limit. If a registration is issued pursuant to this paragraph in respect of a mark, the registration of which had been opposed in a timely filed opposition, the Commissioner shall notify the opposer in such opposition and shall, upon request of such opposer received within 30 days from the date of such notice, direct the Trademark Trial and Appeal Board to determine and decide the rights of registration as if the opposition to registration had been filed as an application to cancel the said registration on the date of issue of such registration.
>
> "(5) Failure by the applicant of an international application or by the Owner of an international registration to act within prescribed time limits in connection with requirements pertaining to an international application, international registration or later designation designating the United States, or to any recording related thereto, may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the Trademark Registration Treaty or by this Act."

Sec. 26 Section 44(c) of such Act is amended by striking out the first sentence of such section; and by striking out the heading, preceding the second sentence, "Country of origin defined."

Sec. 27 Section 44(d) of such Act is amended to read as follows:

> "An application for registration of a mark under sections 1, 2, 3, 4 or 23 of this Act filed by a person described in paragraph (b) of this section who has previously duly filed an application for registration of the same mark in one of the countries described in paragraph (b), or a regular international application in respect of the same mark designating at least one country other than the United States, shall be accorded the same force and effect as would be accorded to the same application if filed under this Act on the same date on which such application was first filed in such foreign country, or on which such international application was first filed with the International Bureau: *Provided,* That—
>
> (1) The application under this Act is filed within 6 months from the date on which the application was first filed in the foreign country or on which the international application was first filed with the International Bureau;
>
> (2) The rights acquired by third parties before the date of the filing of the first application in the foreign country or of the first international application shall in no way be affected by a registration obtained on an application filed under this subsection (d);
>
> (3) Nothing in this subsection (d) shall entitle the owner of a registration granted under this section to sue for acts committed prior to the date on which such registrant has commenced the continuing use of the mark in commerce.

In like manner and subject to the same conditions and requirements, the right provided in this section may be based upon a subsequent regularly filed foreign application or subsequent regular international application, instead of the first filed foreign application: *Provided,* That any foreign application or international application filed prior to such subsequent application or international application has been withdrawn, abandoned, or otherwise disposed of, without having been laid open to public inspection and without leaving any rights outstanding, and has not served, nor thereafter shall serve, as a basis for claiming a right of priority."

Sec. 28(a) The paragraphs headed "Trademark," "Service Mark," "Certification Mark," "Collective Mark" and "Intent of Act" in section 45 of such Act are amended by inserting, following each occurrence of "used", the words "or intended to be used".

(b) Clause (a) of the paragraph in section 45 of such Act headed "Abandonment of Mark" is amended to read as follows:

"(a) when its use has not commenced and there is no intent to commence use or when its use has been discontinued with intent not to resume. Lack of intent to commence or intent not to resume may be inferred from the circumstances. If use of a mark has been discontinued, its nonuse for two consecutive years shall be prima facie abandonment."

(c) Section 45 of such Act is amended by adding the following paragraphs:

> "*Filing date.* The filing date of an application for registration under section 1(b)(1) shall be the date on which all of the elements prescribed by the Commissioner as minimum elements for according a filing date have been received in the Patent and Trademark Office. The filing date of an application for registration under section 1(b)(2) shall be the same date as the international registration date of the international registration or, if applicable, the recording date of the later designation, on the basis of which such application is filed."

> "*Date of issue. The date of issue of a registration under this Act is the date of the issue of* OFFICIAL GAZETTE of the Patent and Trademark Office in which the notice concerning the issuance of the registration appears."
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> "*Trademark Registration Treaty.* The term "Trademark Registration Treaty" means the Treaty so entitled, done at Vienna, Austria, on June 12, 1973, including the Regulations under the said Treaty."
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> "*International application, international registration, request for the recording of later designation, recording of later designation, International Bureau, regular international application, individual State fee, individual State renewal fee.* The terms "international application", "international registration", "request for the recording of later designation", "recording of later designation", "International Bureau", "regular international application", "individual State fee" and "individual State renewal fee" are to be taken in the sense indicated by the Trademark Registration Treaty."
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> "*Owner, Ownership.* The terms "Owner" and "Ownership" are to be taken in the sense indicated by the Trademark Registration Treaty where they appear in this Act in capitalized form."
>
> "*Owner of a trademark.* The term "owner of a trademark" means a person who is using, or who has an intention to use, a trademark in commerce: *Provided,* That no other person, except a lawful concurrent user, has the right to use, and is using or has previously declared, in an application filed under this Act which has not been withdrawn or abandoned, his intention to use, such mark in commerce either in the identical form thereof or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive."

Sec. 29(a) This Act shall come into force on the same date as the entry into force of the Trademark Registration Treaty with respect to the United States. It shall apply to applications for registration of marks filed in the Patent and Trademark Office on or after such date, even though entitled to an earlier effective filing date, and to registrations issued on the basis of such applications; to international applications and later designations designating the United States filed with the International Bureau on or after such date, even though entitled to an earlier effective filing date, and to international registrations accorded effects in the United States on the basis of such international applications and later designations; and to proceedings under the Trademark Act of 1946, as amended, commenced on or after such date.

(b) Except as otherwise hereafter provided, applications for registration of marks on file in the Patent and Trademark Office on the date this Act comes into force, registrations issued on the basis of such applications, and proceedings under the Trademark Act of 1946, as amended, which are pending on such date, shall be governed by the provisions of the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(c) Except as otherwise provided hereafter in this section, all registrations under the Trademark Act of 1946, as amended, or under the previous Acts specified in section 46(b) of such Act, existing on the date this Act comes into force shall be governed by the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(d) The provisions of section 9 of the Trademark Act of 1946, as amended, as amended by this Act, shall apply to all registrations under such Act and under the previous Acts specified in section 46(b), whether issued or applied for before, on, or after the date this Act comes into force: *Provided,* that the amendments to such section by this Act shall not apply to the renewal of any registration for any period which started on a date which is earlier than six months after such date.

(e) The amendment by this Act, of the Trademark Act of 1946, as amended, shall not affect any rights or liabilities existing under such Act in effect immediately prior to the date this Act comes into force.

SECTIONAL ANALYSIS

Section 1 of the bill amends section 1 of the Trademark Act of 1946, as amended (hereinafter referred to as Trademark Act)[1] in a number of respects. The preamble makes it clear that the commerce clause as well as the treaty power is invoked to support the amendments. Section 1 of the amended Trademark Act is divided into five subsections, each of which is separately discussed below:

Section 1(a) *Entitlement to registration of a trademark.* Entitlement to registration is changed from present law in one fundamental respect. This is that intention to use, as well as actual use of, a trademark is a valid basis for ownership and registration. The other conditions are essentially the same as under present law.

The applicant must be a "person", as defined in section 45. The definition of "person" has not been changed.

As under the present statute, the applicant must be the "owner" of the trademark sought to be registered. The concept of ownership is modified as necessary to be consistent with the new alternative basis of rights. Also, rather than being part of the verified statement, the definition of "owner of a trademark" is in section 45.

The term "owner" is defined, as under present law, in respect of the absence of a superior right in any other person. What is new is that a claim of ownership is defeated not only by the superior right of a prior *user* of the same of a similar mark but also by the superior right of one who has a prior *intention to use* such a mark. However, the latter right can defeat the claim of ownership *only* it the intention to use has been previously declared in an application filed under the Act which has not been withdrawn or abandoned. Accordingly, while a person acquires (absent a superior right) an ownership right by reason of his intention to use a trademark, the right in that case is inchoate and is accorded no protection under the statute and no priority until it has been fixed in an application filed under the Act in which the intention to use is declared. Thus, filing the application is critical to a claim of ownership by intention to use and except, of course, where the Paris Convention "right of priority" (i.e. section 44(d)) is invoked, the filing date is the earliest date on which such a person can rely in a priority contest. (See Section 23(c)).

Finally, the use or intended use must be in commerce. The definition of "commerce" is not changed. The outside parameters of "intended use in commerce" are left to interpretation just as has been the case with "use in commerce" under the present statute, and the principles that would be applied in such interpretation are essentially the same.

Section 1(b) *Procedure for applying to register a trademark.* Under the amended Act, there are two basic procedures for securing the registration of a trademark, i.e. by filing an application in the Patent and Trademark Office (section 1(b)(1)) and by designating the United States in an international registration pursuant to the

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[1] Public Law 489, 79th Congress, approved July 5, 1946; 60 Stat. 427.
Amendments have been effected by the following public laws.
P.L. 710, 81st Cong., 64 Stat. 459, 8-17-50.
P.L. 593, 82nd Cong., 66 Stat. 792, 7-19-52.
P.L. 609, 85th Cong., 72 Stat. 540, 8-8-58.
P.L. 333, 87th Cong., 75 Stat. 748, 10-3-61.
P.L. 772, 87th Cong., 76 Stat. 769, 10-9-62.
P.L. 89-83, 89th Cong., 79 Stat. 260, 7-24-65.
P.L. 93-596, 93rd Cong., 88 Stat. 1949, 1-2-75.
P.L. 93-600, 93rd Cong., 88 Stat. 1955, 1-2-75.

Trademark Registration Treaty[2] (section 1(b)(2)). Except for the place where the application is filed and the fee is paid, the substantive requirements applicable to the alternative procedures are essentially the same.

Section 1(b)(1) *Domestic procedure.* In order to achieve harmonization of domestic and international procedures, the following changes are made in the national application procedures.

1. The application may be signed by a representative, duly appointed by the applicant, as an alternative to signing by the applicant himself. The same benefit is provided to applicants filing under the Trademark Registration Treaty (Article 26).
2. Consistent with the requirements of the Trademark Registration Treaty and modern practice in regard to the filing of statements with federal agencies the verification of ownership requirement has been eliminated.

Of course, the criminal provisions of 18 U.S.C. 1001 would remain applicable to a statement made in a trademark application irrespective of whether such statement is verified.

3. The applicant need not allege use of the mark in his application. The Trademark Registration Treaty prohibits such a requirement (Article 19(3)(a)) for the owners of international registrations; consequently, the same benefit is accorded to persons filing regular national applications. Substituted for this requirement is the declaration of intention to use the mark in commerce, which *is* permitted by the Treaty (Article 19(4)). Consistent with this change, specimens or facsimiles of the mark as actually used need not be submitted with the application.

It should be noted that required allegations and exhibits relating to actual use according to the present statute are retained in section 1(c). It should also be noted here that the applicant *may* file the section 1(c) declaration together with his application (section 1(c)(2)), if the mark is already in use in commerce. In such case, the declaration of intention to use is obviously superfluous and need not be made.

Section 1(b)(2) *International procedure.*

This paragraph states the requirements which must be satisfied in order to secure the effect of a United States application, i.e. the effect required by the Trademark Registration Treaty (Article 11(1)).

The provisions of Article 19(4) of the Treaty, requiring a declaration of intention to use, are also implemented, corresponding to the same requirement in section 1(b)(1)(C) for domestic applicants.

Finally, a special requirement as to entitlement of a foreign applicant to use the Trademark Registration Treaty (Article 4) has been added since the International Bureau will only examine this question formally, leaving it to the designated States to examine it as to substance. Thus, non-entitlement of a foreign applicant to use the Treaty procedure is a ground for refusal (Article 12(1)(ii)) or cancellation (Article 13(1)(ii)) in addition to the grounds applicable under the national law.

The final two sections of section 1(b) implement part of Article 9 of the Treaty whereunder the improper declining of an international application or later designation request by the International Bureau can be rectified by filing a regular domestic application within 2 months from the notice of the declining.

Section 1(c) *Declaration of use.*

Section 1(c) calls for a declaration of use showing that use of the mark commenced on or prior to the date of expiration of three years, counted from the filing date.

Paragraph (1) requires the declaration to contain essentially the same information as that required by present section 1.

Paragraph (2) prescribes a time limit of four years, counted from the filing date, within which the declaration may be filed, and indicates the consequences of failure to file an acceptable declaration.

Paragraph (3) authorizes the Commissioner to require the earlier filing of a declaration when important relative to an issue in any Office proceeding, provided that the three-year period has expired.

Paragraph (4) prevents abuse of the intention to use provisions by a person filing successive applications for the same, or a substantially equivalent, mark by providing that, unless there is a gap of at least two years between the expiration of the nonuse moratorium of the earlier case and the date of filing of the later case, the three-year period in the later case is measured from the filing date of the earlier case. Any subsequent application which is accompanied by a declaration of use is excluded from the special provisions.

Paragraph (5) provides for an extension of the time limits when due to extraordinary circumstances nonuse is excusable. The proviso expressly states, however, that the mere pendency of the application for registration as of the expiration of the three-year period shall not justify an extension, making it clear that Article 19(3)(b) of the Trademark Registration Treaty does not apply in the United States.

Paragraph (6) requires the Commissioner to give notice regarding acceptance or refusal of a declaration.

Section 1(d) *Special requirement for concurrent use applications.*

This provision, unchanged from present law, is placed in a separate subsection because its applicability is limited to applications wherein the section 1(c) declaration of use has been filed.

Section 1(e) *Special requirement for applicants not domiciled in United States.*

This subsection requires all applicants not domiciled in the United States to designate an agent for service on or prior to the institution or defense of a proceeding under this Act. Before a local agent for service has been designated, service may be made upon the Commissioner.

Sections 2 and 3 of the bill amend sections 3 and 4 of the Trademark Act so that service marks and collective and certification marks may be registered based on either use or intention to use.

Section 4 of the bill amends section 5 of the Trademark Act to provide that the intended use by a related company inures to the benefit of the registrant or applicant.

Section 5(a) of the bill amends section 7(a) of the Trademark Act to take into account the fact that registrations issued on the basis of intent applications would not, if the declaration of use has not been filed, contain any data concerning use of the mark. In such cases, the fact that the declaration has not been filed would be indicated in the registration in lieu of the indications as to use. Also, the term "date of the registration" has been deleted, the significant dates under the amended statute being the "filing date" and the "date of issue."

Section 5(b) amends section 7(a) by requiring a notice of registration to be published in the OFFICIAL GAZETTE in support of the definition of "date of issue" in section 45.

Section 5(c) amends section 7(b) of the Trademark Act by deleting the presumption of the registrant's exclusive right to use the registered mark in commerce on the goods specified in the registration. One reason is that this presumption in the present statute is repeated in section 33(a).

The other reason is that this presumption, as it pertains to infringement actions, must be limited to be consistent with the limitation on the right even to file an infringement action prior to the commencement of use (see Section 23(a)).

Deletion of the "exclusive right to use" presumption from section 7(b) leaves a gap in the statute, however, the bringing of Patent and Trademark Office proceedings, i.e. oppositions and cancellations is not subject to the above mentioned limitation. The exclusive right to use presumption has served in such proceedings as the basis of the ruling that a registrant is entitled to rely solely upon his registration on the principal register as prima facie evidence of his right to exclude any other person from securing a registration under the Act of a confusing mark. Therefore, a presumption as to this right has been added.

Section 5(d) of the bill amends section 7(d) by adding two new paragraphs which provided domestic and international procedures, consistent with present law and with the Treaty, for amending a registration in respect of the specification of goods and/or services.

Section 5(e) of the bill amends section 7 by adding a new subsection, section 7(h), providing for appropriate notification, consistent with Article 20 of the Treaty, with respect to entries concerning registration based on international registrations.

Section 6 of the bill amends section 8(a) of the Trademark Act by changing the term of a registration from 20 to 10 years and the date from which the terms is measured from the registration date to the filing date. These changes correspond the term of domestic registrations to that of registrations secured under the Trademark Registration Treaty. The shorter term also facilitates the clearing from the register of unused marks.

The section is also amended to require that the use declared in the affidavit or declaration set forth in the proviso, i.e. the present section 8 affidavit, be use "in commerce".

Finally, the section is amended to permit, consistent with the requirement in the Treaty (Article 19(3)(d)), that such affidavit or declaration requirements be capable of being fulfilled in the case of an international registration by filing with the International Bureau.

Section 7 of the bill amends section 9 of the Trademark Act to set forth domestic and international procedures for renewal and to provide equivalent treatment, as to substantive requirements, of international and domestic registrants. Thus, as in the case of an application for registration, the renewal application may be signed by a representative, duly appointed by the registrant.

Two changes are made in the statute which conform to the Treaty, as follows:

1. The term of renewal is 10 years rather than 20, consistent with the Treaty (Article 17).
2. The time period, counted from the expiration date of the expiring term, in which a late renewal application can be filed is increased from three months to six months, corresponding to Article 17(3)(a).

Section 9(c) requires a declaration of use which requirement is applicable to all renewed registrations. Other than the three additional months in which to declare use of the mark, the only difference from present law is that the consequence of failure to satisfy the requirement is cancellation of the registration rather than refusal to renew.

Section 8(a) of the bill amends section 10 of the Trademark Act in several minor respects. Except for a technical change, the present provision for recording of assignments (section 10) is not changed.

Three new paragraphs have been added to the assignment section. The first two of these (i.e. 10(a)(2) and 10(a)(3)) implement Article 14 of the Treaty, under which a change in the ownership of an international registration may be recorded, by adding equivalent procedures to the national law. Thus, any applicant or registrant may record the fact that a new person has become the owner of an application filed or registration issued under the Act by complying with certain basic formalities. Paragraph (3) provides that if this step is taken within the period specified in paragraph (1) and it is followed up by the recording of instruments of assignment conforming to the requirements of paragraph (1), the constructive notice effect of recording an assignment in the Office will accrue.

The third additional paragraph (i.e. 10(a)(4)) is a special provision, implementing Article 14(5), for the benefit of one who, although not entitled to file under the Treaty, becomes the owner of an international registration by operation of law (e.g. by inheritance). Such a person may, subject to special requirements, rectify this defect by filing a regular national application.

Section 8(b) of the bill amends section 10 of the Trademark Act by adding two new provisions. The first of these (Section 10(b)) adds a new procedure, consistent with Article 15 of the Treaty, for recording a change in the name of the registrant.

Subsection (c) is added to clarify the procedure where a recording is void. Recordings under subsections (a) and (b) may later be determined to be void or contrary to law in another proceeding (cancellation, infringement action, etc.) under the Act. A specific provision has been added to clarify the fact that the Commissioner has the authority to correct the records and to provide a basis for denial of any international recording which formed the basis of the national entry.

Section 9 of the bill amends section 12(a) of the Trademark Act to provide for a "cut off" in the length of the ex parte examination of twelve months counted from the filing date of the application. Under amended section 12(a) all applications, the examination of which has not been completed, would have to be published for opposition purposes no later than 12 months from the filing date.

The reason for 12 months as the "cut off" is that the time required to effect publiction, to receive oppositions (including delays in processing oppositions received on the last day), and to communicate, in the case of international registrations, all grounds of refusal or possible refusal to the International Bureau, must be taken into account in order to meet the deadlines prescribed by the Treaty (see Article 12).

It should be noted that the exact schedule for publication is left to determination by the Commissioner. There are, at least, two possibilities: (1) publication, promptly after filing, of all applications; and (2) publication (of allowed cases) after completion of the ex parte examination (as at present), or (of all still pending cases) at the expiration of 12 months, whichever event is the earlier to occur.

Section 10 of the bill amends section 12(b) of the Trademark Act by reducing the period of time in which to reply to an Office communication concerning the application from six to three months and by providing a time limitation applicable to notifying the applicant of grounds raised during the ex parte examination. The reduction of response time should make it possible for the Office to complete the ex parte examinaion of most applications within the 12 months period of amended section 12(a).

The cut off is the same as the one in amended section 12(a), i.e. 12 months, counted from the filing date. The examination need not be completed within the 12 months as the Treaty requirement is only that all grounds be communicated within that period. Also, the limitation would not apply to a new ground of refusal based on a decision of the Trademark Trail and Appeal Board or of a court.

Section 11 of the bill amends section 13 of the Trademark Act by providing for a time limit of 14 months for receiving oppositions. The 14 month time limitation ties in with the amendment to section 12(a) of the Act, providing equivalence of treatment of domestic and Treaty applicants. Section 13 is also amended to provide that an attorney may file an opposition on behalf of the opposer.

Section 12 of the bill amends section 14 of the Trademark Act in two respects, conforming this section to amended section 13, and a minor change in terminology ("date of issue").

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[2] Done at Vienna, Austria, June 12, 1973. This is the Treaty which was transmitted by the President to the Senate for advice and consent to ratification on Sept. 3, 1975. *congressional Record Sept. 3, 1975, S. 15139.*

Section 13 of the bill amends section 15 of the Trademark Act by a minor change in terminology ("date of issue").

Section 14 of the bill amends section 16 of the Trademark Act by providing specifically that an interference may be declared as to any particular application for registration of a mark only prior to the publication for opposition of that mark. While this is no different than current practice, the change in the statute seemed desirable. Since the declaration of an interference would constitute a ground of possible refusal under the Trademark Registration Treaty, such ground would have to be notified to the International Bureau within the prescribed time limit. By requiring the declaration of the interferences prior to the date of publication, the section is subject to the same time limitation as in amended section 12(a), i.e. 12 months from the filing date.

Section 15 of the bill amends section 17 of the Trademark Act by providing discretionary authority to the Commissioner to defer the commencement of certain inter partes proceedings where the ex parte examination of a concerned application is not complete.

Section 16 of the bill amends section 21 of the Trademark Act by providing for an appeal from a refusal to accept a declaration pursuant to sections 1(c) and 9(c), as is now provided in the case of refusal of a section 8 affidavit.

Section 17 of the bill makes a language change in section 22 of the Trademark Act, consistent with the change from "date of registration" to "date of issue". Thus, constructive notice begins with publications of issuance of the registration (date of issue), no different in substance than under present law.

Section 18 of the bill amends section 23 of the Trademark Act by eliminating the requirements and provisions relating to use in the first and fourth paragraphs. Also, provision is made for treatment of applications as being under this section only where the application or the international registration (or recording of later designation) so indicates. The specific reference implements Article 11(3) which requires this treatment in the case of international registrations.

Section 19(a) of the bill amends section 24 of the Trademark Act by deleting the requirement that a petition to cancel a registration on the Supplemental Register be verified (consistent with amended section 14).

Section 19(b) of the bill amends section 24 of the Trademark Act by limiting the authority to cancel a registration on the Supplemental Register for nonuse, consistent with the use moratorium of the Treaty.

Section 20 of the bill amends section 30 of the Trademark Act in minor respects to remove an incidental reference to use of a mark that is inconsistent with amended section 1.

Section 21(a) of the bill amends section 31 of the Trademark Act by deleting the requirement of a fee for the filing of a section 8 affidavit. Since a section 8 fee cannot be assessed against a registration issued on the basis of an international registration (Article 19(1)), it is deleted in order to provide equivalence between domestic and Treaty applicants as to fees payable to the United States.

Section 21(b) of the bill amends section 31 of the Trademark Act by adding new subsection (d) whereby the filing and renewal fees are deemed to be substituted for by the corresponding fees set forth in the Treaty, where the international procedure is followed. This provision also obligates the Commissioner to fix the Treaty fees at the same amounts as the national fees.

Section 22 of the bill amends section 32(1) of the Trademark Act by providing that no infringement action may be started under the Act until the declaration of use of the mark in commerce has been filed in the Patent and Trademark Office and accepted by the Commissioner. This change implements the last sentence of Article 19(3)(a). Examination of the declaration could be accelerated if the registrant faced an impending infringement situation.

Section 23(a) of the bill amends section 33(a) of the Trademark Act so that the presumption of exclusive right to use the mark would apply as a rule of evidence only as to those goods and/or services in respect of which the mark is stated to be in use in commerce either in the registration itself or in the declaration under section 1(c).

Section 23(b) makes some minor changes in the language of section 33(b).

Section 23(c) amends section 33 of the Trademark Act by adding a new subsection (c) to define priority of rights accorded to applications or registrations based on an intention to use the mark. Under new subsection (c), the priority of an intent applicant or registrant would be *the same as if* he had commenced use of the mark in commerce on the filing date, unless, of course, he had an earlier priority based on use or based on the Paris Convention priority provisions of section 44(d) of the Act.

Section 24 of the bill amends section 35 of the Trademark Act in order to implement the last sentence of Article 19(3)(a) so that the remedies of profits and damages cannot date back prior to the date of commencement of use.

Section 25 of the bill renumbers present section 44(a) of the Trademark Act as section 44(a)(1) and adds to it some special provisions relating to the Trademark Registration Treaty.

> Paragraph (2) authorizes the Commissioner to keep a register of international registrations designating the United States.
>
> Paragraph (2) also contains a broad implementing provision, authorizing the Commissioner to take various actions prescribed by the Treaty. While all of the essential Treaty provisions parallel to provisions concerning domestic applications and registrations have been specifically implemented, a large number of Treaty provisions remain which solely concern the international procedures.
>
> Paragraph (3) prescribes a precedure for communicating notifications where the deadline is stated in terms of the date of receipt by the International Bureau, most importantly the notification of refusal or possible refusal under Article 12(2)(a)(i).
>
> Paragraph (4) implements Article 11(2)(i) of the Treaty providing for automatic registration as of the date of expiration of the time limit fixed in Article 12(2)(a)(i) where no notification of refusal or possible refusal has been received by the International Bureau.
>
> Pargraph (5) implements Article 29 of the Treaty whereby certain delays in meeting the time limits fixed in the Treaty must be waived and others may be waived. There are some specific exceptions in the Treaty which is the reason for the last clause in this pargraph.

Section 26 of the bill amends section 44(c) of the Trademark Act by deleting the first sentence of this subsection. Since a person can secure a registration based on an intention to use the mark in commerce, the sentence is inconsistent with the amended Act. However, the sentence is no longer necessary. Under the amended Act all applicants would be required to declare use or an intention to use in commerce, whether or not the mark is also registered in the country of origin.

Section 27 of the bill deletes present subsection 44(d) of the Trademark Act and substitutes therefor a subsection providing that a right of priority may be based on a first international application as well as a first national application. Paragraph (2) of present subsection (d) is not continued. Waiver of use in commerce is no longer necessary since an application need not allege use under the amended Act. Old pargraph (4) (new paragraph (3)) of the subsection is amended to be consistent with the first sentence of section 44(c).

Section 28(a) of the bill amends the definitions, in section 45 of the Trademark Act, of the terms "trademark," "service mark," "certification mark," "collective mark" and "Intent of Act" by adding the phrase, "or intended to be used" in appropriate places consistent with the new basis for securing registrations.

Section 28(b) of the bill amends the definition, in section 45 of the Trademark Act, of "abandonment" to provide for abandonment of a mark applied for based on an intention to use where no use is commenced and there was never any intention to commence use. The two year prima facie abanodnment provision is amended to make it clear that it applies only where use of a mark is discontinued.

Section 28(c) of the bill amends section 45 of the Trademark Act by adding the following new definitions:

(1) "Filing date" is defined because of its significance in respect of priority of rights in the case of an application or registration based on the intention to use;
(2) "Date of issue" is defined;
(3) "Trademark Registration Treaty" is defined;
(4) Various terms used in respect of the Trademark Registration Treaty are referenced to the Trademark Registration Treaty definitions;
(5) The terms "Owner" and "Ownership," used in capitalized form are referenced to the Trademark Registration Treaty.

This was done in order to distinguish these references from other references in the statute to "owner" or "ownership" which refer to the owner, or ownership, of a mark.

Finally, the term "owner of a trademark" is defined. The reason for this definition is discussed under Section 1, infra.

Section 29 of the bill prescribes the implementation of the various changes effected by the bill. The effective date of the Act coincides with the entry into force of the Treaty with respect to the United States. Appropriate provisions specify the controlling law which is applicable before, or on or after, the effective date.

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(132) Trademark Applications Under Section 44 of the Trademark Act of 1946

[37 CFR Parts 2 and 4]

Withdrawal of Proposed Rules

Agency: Patent and Trademark Office, Commerce.
Action: Withdrawal of proposed rules.

Summary: The Patent and Trademark Office hereby withdraws its rule proposals (FR Doc. 77-23095 published in the Federal Register on Aug. 10, 1977, 42 FR-40450; 962 TMOG 2-4, Sept. 6, 1977) regarding applications filed under section 44 of the Trademark Act of 1946.

Under the proposed rules, foreign applicants filing under section 44 (d) or (e) of the Trademark Act of 1946, as amended, 15 U.S.C. 1126, would no longer have been required to allege use of the mark somewhere or to submit specimens of facsimiles demonstrating such use.

The primary consideration for the withdrawal of this rules proposal was the strong objection voiced by several commenters that the proposed rule changes would have placed some United States nationals in a less favorable position than foreign nationals than is the case under the present rules.

Effective Date: June 30, 1978.

For Further Information Contact: J. Paul Williamson, Patent and Trademark Office, 703-557-2521.

Supplementary Information: A notice was published in the Official Gazette of the United States Patent and Trademark Office on Apr. 30, 1974 (921 OG TM 250) detailing the procedure being followed by the Office in connection with applications filed under section 44 of the Trademark Act of 1946 without specimens and without a statement of use of the mark. That notice is hereby withdrawn and the procedure thereunder terminated. Henceforth, in order to receive a formal filing date, an application under section 44 must include in the application at least one specimen and a statement that the mark has been used.

Those applicants having cases now under suspension in this Office in accordance with the Apr. 1974 Official Gazette notice will be notified individually of the Office policy regarding specimens and use as set out above.

Finally, the withdrawal of this rules proposal should in no way be interpreted as a diminution of the continuing support of the Department of Commerce and this Office for the Trademark Registration Treaty. Under that Treaty it will be possible to treat all applicants, foreign and domestic, equally in regard to initial use requirements for filing an application for trademark registration in the United States Patent and Trademark Office.

June 16, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

[FR Doc. 78-18301; Filed 6-29-78; 8:45 am]

[973 TMOG 19]

(133) THE RETENTION SCHEDULE FOR TRADEMARK RECORDS

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.	The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.
Canceled Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after the date of cancellation.
Expired Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after expiration of registration.
Abandoned Trademark Application Files. Consists of original application and all related correspondence.	Destroy 2 years after date of abandonment.
Trademark Renewal Index. Index to trademark registrations that are renewed.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.	
A. Applicant's Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
B. Serial Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.	Destroy 3 years after termination of the proceeding.
Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Trademarks Published in Official Gazette. Clippings of marks from *Official Gazette.*	
a. Those which have been opposed.	*Retain in agency until no longer needed for reference.*
b. All others.	*Destroy when mark is registered.*
Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.	Destroy after information transferred to magnetic media.
Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Public Advisory Committee for Trademark Affairs Files.	

a. Agenda, minutes, correspondence, reports and related supporting files.	*PERMANENT.* Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.
b. Working papers and reference materials.	Destroy when 10 years old or no longer needed for reference, whichever is sooner.
Seminar in Trademark practice and Procedure Files. Record set of training materials used in training trademark examiners.	*PERMANENT.* Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.
Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.	
a. Original Petitions in trademark case file.	Dispose of with related case file.
b. Other copies.	Destroy when 2 years old.
Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.	Destroy when no longer needed or when three years old, whichever is earlier.
International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.	
a. Records that supplement the International Property Activities Case Files (Item 103).	*PERMANENT.* Transfer to office responsible for international affairs after case is closed.
b. Other materials.	Destroy 5 years after close of case or sooner if no longer needed.
International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:	Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.

1. That they be made of material suitable for being placed inside a manila file wrapper.
2. That they be capable of being arranged flat, such as being folded.
3. That they be of a size not to exceed 8 1/2 inches wide by 13 inches long. (Rule 2.56)

These requirements provide for specimens which will fit inside the application file wrapper, which is 9 × 14 inches in size and which will conveniently expand to about one inch thickness.

Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.

February 28, 1979.

SAUL LEFKOWITZ,
Acting Assistant Commissioner
for Trademarks.

[980 TMOG 16]

(134) Flexible Working Hours

On Jan. 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Dec. 13, 1978. *Commissioner of Patents and Trademarks.*

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(135) Compressed Work Week

The Office of Personnel Management has completed a study on compressed work schedules and has recommended that Congress enact permanent legislation authorizing use of alternative work schedules in the Federal Government. The authority for the program expires on Mar. 28, 1982.

The U.S. Patent and Trademark Office has been participating in this program, on an experimental basis, for nearly two years. Most of the Office's examiners and other employees are permitted to participate under one of two options:

1. 4/10 plan-Work ten hours four days a week and choose Monday, Wednesday, or Friday as a day off each week. The day selected can be changed only with supervisory approval.
2. 5/4-9 plan-Work nine hours for eight continuous days, eight hours on the ninth day, and choose Monday, Wednesday, or Friday as a day off once every two weeks. Again, the day off can only be changed with supervisory approval.

All employees must be on duty Tuesdays and Thursdays.

The U.S. Patent and Trademark Office is interested in considering any comments or recommendations you may have about the program in order to make the proper decision concerning the continuation, revision, or termination of alternative work schedules should the Congress enact legislation authorizing its continuation.

Please send any comments or recommendations you may have, no later than Mar. 2, 1982, to:

Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

GERALD J. MOSSINGHOFF,
Jan. 21, 1982. *Commissioner of Patents and Trademarks.*

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(136) Bulky Specimens in Trademark Cases

When an application containing bulky specimens is received, it will be given a filing date; but before it is forwarded to the Examiner, a letter will be sent to the applicant requiring new specimens in conformance with Rule 2.56. If the new specimens are not received within six months from the date of the letter, the application will be abandoned. The letter will also note that the "bulky specimens" received by the Office will be held for pick-up by the applicant for 30 days from the date of the letter, and will then be destroyed.

This practice is being instituted to alleviate the increased storage difficulties posed by bulky specimens. As always, however, an Examiner has the discretion to request additional information in the form of bulky specimens during examination under Trademark Rule 2.61(b). In the case of International Class 16, at least one complete issue of a publication will still be required. Also in the situation where the mark is a configuration of the goods, or a configuration of the container of the goods, then one actual container may be required. The other four specimens should be facsimiles as described in Trademark Rule 2.57. All applicants are reminded that bulky specimens which are not picked up within 30 days of notification will be destroyed and that specimens having intrinsic value should not be filed.

The inconsistent provisions of the previous O.G. Notice concerning bulky specimens [900 T.M.O.G. 176 (July 25, 1972], are hereby repealed.

The new procedure will be put into effect on Apr. 1, 1979.

DONALD W. BANNER,
Feb. 28, 1979. Commissioner of Patents and Trademarks.

[980 TMOG 17]

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(137) Public Advisory Committee for Trademark Affairs

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A-63 of Mar. 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in Sept., 1970, and its present charter expired on Jan. 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office; Washington, D.C. 20231; telephone (703) 557-3881.

GUY W. CHAMBERLIN,
Mar. 15, 1979. *Assistant Secretary for Administration.*

[FR Doc. 79-8929; Filed 3-22-79; 8:45 am]

[982 TMOG 14]

(138) Forms Booklet Available

A new publication titled "Patent and Trademark Forms Booklet" dated Oct. 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8½ by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Mar. 26, 1980. *Commissioner of Patents and Trademarks.*

[993 TMOG 18]

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(139) Reorganization of the Patent and Trademark Office

In July 1980 the Patent and Trademark Office was reorganized to establish a fourth Assistant Commissioner position. The new Assistant Commissioner is known as the Assistant Commissioner for Finance and Planning. Set forth below is the text of Department of Commerce Organization Order 30-3B and an accompanying organization chart defining the functions and lines of authority for the principal units in the Patent and Trademark Office.

Section 1. Purpose

.01 This Order prescribes the organization and assignment of functions within the Patent and Trademark Office. (Department Organization Order 30-3A prescribes the scope of authority and functions.)

.02 This revision reflects the realignment of existing elements of the Patent and Trademark Office to form the offices reporting to the newly established Assistant Commissioner for Finance and Planning (Section 9.), and incorporates the provisions of outstanding amendments.

Section 2. Organization Structure

The principal organization structure and line of authority shall be as depicted in the attached organization chart (Exhibit1).

Section 3. Commissioner of Patents and Trademarks

The Commissioner of Patents and Trademarks determines the policies and directs the programs of the Patent and Trademark Office and is responsible for the conduct of all activities of the Patent and Trademark Office. The Commissioner is principally assisted by a Deputy Commissioner, four Assistant Commissioners and a Solicitor whose main duties shall be as specified below.

a. The *Deputy Commissioner* shall assist the Commissioner in the direction of the Patent and Trademark Office; shall perform the duties of the Commissioner in the latter's absence; and shall direct the Office of Equal Employment Programs.

b. The *Assistant Commissioner for Patents* (an Assistant Commissioner under 35 U.S.C 3) shall provide administrative and policy direction to the patent examining and documentation operations which consist of the organizational elements enumerated in Section 5. of this Order. The Assistant Commissioner is assisted by a Deputy Assistant Commissioner. The Deputy Assistant Commissioner shall, among other duties as assigned, have immediate responsibility for patent examination and for the organizational elements enumerated in paragraph 5.01, and shall perform the duties of the Assistant Commissioner during the latter's absence. There shall also be an Administrator for Documentation who shall have immediate responsibility for domestic and foreign patent documentation and the organization elements enumerated in paragraph 5.02.

c. The *Assistant Commissioner for Trademarks* (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organization elements enumerated in Section 6. of this Order.

d. The *solicitor* shall be the chief law officer of the Patent and Trademark Office and shall provide administrative and policy direction to organizational elements enumerated in Section 7, of this Order. Pursuant to Department Organization Order 10-6, the Solicitor shall be subject to the overall authority of the Department's General Counsel with respect to legal matters involving the Patent and Trademark Office, other than in connection with the issuance of patents or the registration of trademarks. The Solicitor shall be assisted by a Deputy Solicitor who shall perform the duties of the Solicitor during the latter's absence.

e. *Assistant Commissioner for Administration* shall be the principal advisor to the Commissioner on the formulation and application of administrative policies. The Assistant Commissioner for Administration shall provide administrative and policy direction to the organizational elements enumerated in Section 8. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

f. The *Assistant Commissioner for Finance and Planning* shall be the principal advisor to the Commissioner on financial and planning matters. The Assistant Commissioner shall provide administrative and policy direction to the organizations enumerated in Section 9. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner. Among other duties as assigned, the Deputy Assistant Commissioner also shall be the Director of Resource Management, with immediate responsibility for the organizational elements enumerated in paragraph 9.01.

Section 4. Organizations Reporting To The Commissioner

.01 The *Board of Appeals* shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patent.

.02 The *Board of Patent Interferences* shall conduct interference proceedings and make final determinations in the Patent and Trademark Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of Sections 2182 and 2456 (d) and (e) of Title 42, U.S.C.

.03 The *Office of Information Services* shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and of the functions, services and administrative publications of the Patent and Trademark Office; and develop publication policies,

.04 The *Office of Legislation and International Affairs* shall, subject to Department Organization Order 10-6, make studies and advise the Commissioner on policy and actions concerning matters which may require legislation or which involves international patent and trademark (intellectual property) matters; draft proposed legislation relating to patents and trademarks and advise on pending legislation affecting the Patent and Trademark Office; represent the Commissioner in the negotiation or renegotiation of treaties and the negotiation of other new major international initiatives; assist in the development and implementation of related programs; coordinate or conduct in cooperation with other appropriate Patent and Trademark Office organizations, negotiations in matters relating to existing international programs; and maintain liaison with the Office of the Secretary, the

General Counsel, other agencies, international and foreign bodies, members of the public, and appropriate congressional committees in such matters.

.05 The *Office of Equal Employment Programs*, under the immediate direction of the Deputy Commissioner, shall be responsible for the design, development, implementation, review, and maintenance of all Patent and Trademark Office Equal Employment Opportunity (EEO) programs; including EEO complaint processes, the Affirmative Action Plan, upward mobility programs and other special emphasis programs such as those for women, Hispanic-Americans, the handicapped, and all protected groups and classes of employees.

Section 5. Organizations Reporting To The Assistant Commissioner For Patents

.01 Patent Examination Organizations.

a. The *Office of Patent Program Control* shall establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and provide planning evaluation and budget support to the examination organizations, and perform such other duties as assigned.

b. The *Patent Examining Groups* shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

.02 Patent Documentation Organizations.

a. The *Office of Documentation Planning, Support and Control* shall analyze the examiner and public patent search files and all proposed programs concerning them; coordinate efforts in regard to numerical files; develop and maintain overall documentation plans relating to these files; define the form, content and accessibility of these files and insure such definition through periodic checks; initiate the acquisition and provision of patent documentation for these files; coordinate the development of an overall system, and the efforts of related implementing activities, to insure the accuracy and effective utilization of patent data; provide budgetary and other services for the documentation organizations; and establish performance standards and evaluation criteria for, and monitor and evaluate, the activities of the documentation organizations.

b. The *Office of International Patent Classification* shall direct Patent and Trademark Office initiatives designed to foster harmonization of the United States Patent Classification System with the International Patent Classification System. The Office shall also consult and participate with foreign counterparts representing national offices and appropriate international groups in further development and refinement of the International Patent Classification System. In carrying out such consultations and participations, it shall coordinate all related policy matters with the Office of Legislation and International Affairs.

c. The *Office of Micrographic Systems* shall develop and recommend plans for micrographic information systems including analyses of existing and proposed micrographic hardware and techniques suitable for meeting the particular demands of the U.S. Patent and Trademark Office. It shall also evaluate ongoing micrographic information systems in respect to the responsiveness of such systems to evolving informational needs. The foregoing shall be coordinated with other appropriate offices such as the Office of Automatic Data Processing Administration and the Office of Search Systems

d. The *Office of Search Systems* shall maintain a state-of-the-art awareness of machine-assisted information storage, access, retrieval, and display systems useful or potentially useful in searching patent documentation; participate with parties in the private and government sectors in cooperative programs designed to develop systems for Patent and Trademark Office utilization; evaluate the potential of existing and cooperatively developed systems; initiate the acquisition and adaption of selected systems and direct the maintenance of all non-operational search and display systems (equipment and materials); conduct and evaluate pilot tests in Patent and Trademark Office operating environments; recommend operational establishment or discontinuance of evaluated systems; and monitor and evaluate the performance of operational systems.

e. The *Scientific Library* maintains collections of technical and scientific information such as foreign patents, periodicals, books and other publications, in printed or microfilm form, and provides related services and facilities, for use by the public and by examiners and other personnel in the internal operations of the Patent and Trademark Office.

f. The *Classification Groups* shall develop, implement and maintain subject matter classification systems for the organization of patent search files of prior art including the preparation of definitions, indexes, schedules, and related documentations. Each classification group shall perform this function for subject matter falling within the generic category (chemical, electrical, mechanical) assigned to it.

Section 6. Organizations Reporting To The Assistant Commissioner For Trademarks

.01 The *Office of Trademark Program Control* shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademark administrative support activities.

.02 The *Trademark Trial and Appeal Board* shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The *Trademark Examining Operation* shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks, and maintain the principal and supplemental registers of trademarks. The Trademark Examining Operation shall be composed of examining divisions, the number and coverage of such divisions to be determined by the Commissioner.

Section 7. Offices Reporting To The Solicitor

.01 The *Office of the Solicitor* shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The *Office of Government Employee Inventions* shall review questions of ownership of patents and rights to inventions made by Government employees in issues brought before it under Executive Order 10096 and shall make appropriate recommendations to the Commissioner for action on such questions.

Section 8. Office Reporting To The Assistant Commissioner For Administration

.01 The *Office of Automatic Data Processing Administration* shall coordinate automatic data processing resources for the Patent and Trademark Office; recommend to management the acceptance, updating or termination of all Patent the Trademark Office automatic data processing resources and contracts; provide management with regular reviews on the status of automatic data processing expenditures and utilization of resources; advise management on alternatives for meeting defined short and long range ADP requirements; coordinate ADP procurement and installation; operate a central computer facility for the Patent and Trademark Office responsive to user needs; conduct and review specified ADP feasibility studies; design, implement, operate and

coordinate specialized ADP management information systems, including data collection, manipulation and dissemination; coordinate ADP liaison for the Patent and Trademark Office with the Department of Commerce and other Federal agencies; provide programming and systems design resources for approved projects based on requirements; provide technical assistance to the Patent and Trademark Office to fulfill needs as specified by the user.

.02 The *Office of General Services* shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, files, mail and correspondence, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, including liaison with the Department of Commerce, in connection therewith.

.03 The *Office of Patent and Trademark Services* shall provide materials and services to the public, many on a fee basis, as well as to examiners and other personnel for internal operations of the Patent and Trademark Office. It shall maintain a Public Search Room with a collection of U.S. patents; record assignments and other instruments for the transfer of property rights to patents and trademarks; furnish copies of patents, trademark registrations and office records; and provide drafting services. It shall also conduct an initial examination of patent applications for compliance with law and regulations as to form and certain matters of factual content; grant or deny a filing date based on such examination, and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; and maintain records on the status and location of all applications.

.04 The *Office of Personnel* shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations, and various employee benefit programs.

.05 The *Office of Publications* shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly issues and related announcements in the Official Gazette; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

Section 9. Offices Reporting To The Assistant Commissioner For Finance And Planning

.01 Resource Management Organizations.

a. The *Office of Finance* shall develop and maintain the financial accounting system of the Patent and Trademark Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent and Trademark Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent and Trademark Office, and administration of the payroll system and related employee accounts; and provide financial advice.

b. The *Office of Budget* shall develop and maintain Patent and Trademark Office budget and fiscal plans; provide advice and staff to assist line managers in preparing, reviewing, justifying, presenting and executing the Patent and Trademark Office's budget; develop budgetary policies and procedures for the entire Patent and Trademark Office budget process; maintain budgetary accountability for available funds: maintain external liaison on budgetary matters; and provide assistance in integrating program plans with the budgetary process.

c. The *Office of Planning and Evaluation* shall coordinate and help develop medium and long range plans for all Patent and Trademark Office programs; develop and administer a system for integrating the Patent and Trademark Office planning process with the budgetary process; coordinate and help develop goals, objectives, and strategies for the operating program offices of the Patent and Trademark Office, and evaluate the effectiveness of the administration of the programs against those goals, objectives and strategies.

.02 The *Office of Management and Organization* shall develop and/or receive requests for management improvement systems, programs or projects, including studies for work measurement, resource utilization, workflow analyses, computer systems, operations research and other operational problems and programs and determine the best resource(s) for analyses, resolution, and implementation; conduct organizational reviews; conduct, coordinate or assign studies on resource utilization, procedures or workflow analyses; coordinate work measurement studies; manage Patent and Trademark Office policy orders and administrative instructions and issuances; develop and maintain statistical data; and develop and manage a historical file on all management studies and statistical data developed.

.03 The *Office of Technology Assessment and Forecast* shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast development on a worldwide basis.

.04 The *Office of Quality Review* shall establish criteria for reviewing, and perform a review of the quality of examination of patent and trademark applications which have been examined. The Office shall review; the application of substantive statutory criteria for patentability or registrability; the adequacy of the examiner's search of prior patent, trademark or other literature; and the adherence to approved examining procedures. The Office shall provide information to managers and examiners on the results of its review, and make recommendations for maintaining or improving the quality of examination.

Section 10. Effect on Other Orders

This Order supersedes Department Organization Order 30–3B of Aug. 19, 1976, as amended.

SIDNEY A. DIAMOND,
Commissioner of Patent
and Trademarks.
Assistant Secretary for Science and Technology.
Acting Assistant Secretary for Administration.
[1001 O.G. 10]

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(140) Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes in a Multiple Class Registration

Effective with the *Official Gazette* issue of December 16, 1980, there will be a change in the *Official Gazette* listing entitled "Trademark Registrations Cancelled." Beginning with that issue, "Trademark Registrations Cancelled" will list:

(1) single class registrations cancelled;
(2) multiple class registrations cancelled in all classes;
(3) multiple class registrations cancelled in fewer than all classes.

For every entry in the listing, the specific classes cancelled will be included in parentheses, next to the registration number and mark.

For a single class registration and for a multiple class registration in which every class has been cancelled, the class number(s) shown in parentheses will represent every class to which the registration applied.

For a multiple class registration in which fewer than all classes have been cancelled, the *Official Gazette* entry will include the word "only" following the notation of classes in parentheses, for example: (Int. Cls. 12 and 20, only). In this example, the addition of the word "only" would indicate that there are classes in the registration in addition to Classes 12 and 20, but only Classes 12 and 20 have been cancelled.

MARGARET M. LAURENCE,
Oct. 29, 1980. *Assistant Commissioner for Trademarks.*

[1000 TM 21]

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(141) Trademark Examining Procedure for Amended Applications; Reporting Oldest Dates of Amended Trademark Applications

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the *Official Gazette* (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6]

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(142) Trademarks—Status Inquiries

In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed to the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. The original inquiry will be entered in the file and the duplicate will be marked with a response and returned to the applicant. The date when the next office action can be expected will not be given unless specifically requested.

Status letters have been used by applicants to establish diligence in support of a later petition to revive should the application become abandoned. Under current practice, attorneys have frequently submitted status letters as a matter of course for such purposes. This has proved burdensome both to attorneys and the Patent Office. Until further notice, in new applications, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to the initial office action if inquiry as to the status of the application is received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months from the filing date of the application, or

b. A reasonable period after the *Official Gazette* (Trademarks) indicates that the filing date of the oldest new case awaiting action in the Division to which the application is assigned is more recent than the filing date of the application.

For amended cases, the applicant will be considered to have exercised diligence if inquiries as to the status of the application are received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months after filing a response to the examiner's last received action, or

b. A reasonable period after the *Official Gazette* (Trademarks) indicates that the date of the oldest amendment filed that is awaiting action in the Division to which the application is assigned is more recent than the date of filing the last amendment to the application.

It should be noted as an exception to the above that status inquiries are totally unnecessary during period(s) of time when an application is suspended pursuant to 37 CFR 2.67.

Applicants are urged not to file status inquires within the first year after filing due to the current backlog of new applications.

ROBERT GOTTSCHALK,
July 28, 1971. *Acting Commissioner of Patents.*

JAMES H. WAKELIN, JR.,
July 30, 1971. *Assistant Secretary for Science and Technology.*

[FR. Doc. 71-11532 Filed 8-10-71; 8:48 am]

Published in 36 F.R. 14771, Aug. 11, 1971

[890 O.G. TM 5]

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(143) Requests for Information on Status of Trademark Registrations

The purpose of this notice is to explain the circumstances in which the Trademark Examining Operation can respond to written and telephone requests for information about the status of trademark registrations. Only limited information can be provided by telephone.

I. Orders for "Status" Copies

The most reliable means of obtaining status information concerning a registration is a written order for a "status" copy of the registration. Status copies show whether affidavits have been filed under Sections 8 and 15, whether the registration has been renewed or cancelled, and whether certain other actions have been taken with respect to the registration. The charge for copies of registrations showing status and/or title, if not certified, is $6.50, effective Oct. 1, 1982. The charge for a certified copy showing status and/or title is $10.00 effective the same date.

II. Telephone Information Available from the Search Library

If the caller has the registration number, he or she may leave a request for status information on an automatic answering machine in the Trademark Search Library (Search Room) at 703-557-3282. The Search Library staff will call back with the information requested within one working day. Callers are asked to limit their requests to two registration numbers per day.

The Search Library staff is not permitted to make "searches" to determine if particular marks are in the Office's search files. Neither is the staff able to supply information as to the ownership or assignment of registrations, or to read over the telephone lengthy passages of a registration, such as the identification of goods or services.

III. Telephone Information on Receipt of Section 8 and 15 Affidavits and Renewal Applications

The Post Registration Section can be reached by calling 703-557-2923. The staff of this section can advise only on whether an affidavit or a renewal application has or has not been received. Inquiries as to whether affidavits and renewals have been accepted should be directed to the Search Library.

MARGARET M. LAURENCE,
Sept. 15, 1982. *Assistant Commissioner for Trademarks.*

(144) Title 37—Patents, Trademarks, and Copyrights

Chapter I—Patent Office, Department of Commerce
Parts 2 and 6—Rules of Practice in Trademark Cases
International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise §6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new §6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act of all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the *Official Gazette*, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the *Official Gazette* when the List is available from local sources of the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom.

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ROBERT GOTTSCHALK,
May 14, 1973. *Commissioner of Patents.*

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

Published in 38 F.R. 41681, June 4, 1973

[911 O.G. TM 210]

(Note: Rule 2.85 (Classification schedules) was revised and Rule 6.1 (International schedule of classes of goods and services) was established as of September 1, 1973 by this notice; prior U.S. schedule of classes was redesignated as Rule 6.2.)

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(145) Change in Format for Publishing Trademarks for Opposition

Section 30 of the Trademark Act of 1946 as amended by Public Law 772, 87th Congress, approved October 9, 1962, 76 Stat. 769, provides for the filing of a combined application for the registration of a trademark in more than one class.

The present practice of publishing the mark with pertinent data under each class in which registration is sought results in needless duplication.

Beginning with the issue of November 3, 1964, "Marks Published for Opposition" will be divided into two sections. In Section 1, all marks presented in combined applications for registration in more than one class will be published with only one reproduction of each mark.

The reproduction of the mark will be followed by the class numbers and titles, and under each class will appear the description of the goods in connection with which the trademark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

Trademarks presented in applications for registration in a single class will be published, as in the past, in class order, in Section 2.

The same procedure will be followed in the notice of the issuance of registrations on the Supplemental Register.

EDWIN L. REYNOLDS,
Sept. 18, 1964. *First Assistant Commissioner.*
[807 O.G. TM 51]

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(146) Changes in Format for Publishing Trademarks for Opposition

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see *Official Gazette* of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the *Official Gazette* of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the *Official Gazette* entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see *Official Gazette* of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner*
for Trademarks.
[921 O.G. TM 122]

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(147) Hand Delivery of Trademark Papers

Trademark papers which are not accompanied by fees or by authorization to charge a deposit account, may be filed by hand in the Trademark Docket Section or in the Incoming Mail Section of the Mail and Correspondence Division. However, to avoid confusion concerning money matters, when papers which are accompanied by fees or by authorization to charge a deposit account are filed by hand, they should be delivered only to the window in the Incoming Mail Section of the Mail and Correspondence Division where personnel can immediately refer the money or the charge to the Cashier. Trademark Examiners should not be requested to receive papers for filing (either with or without fees) since there is no convenient procedure by which the Examiners can transmit such papers to proper locations.

If a receipt is desired from the Trademark Docket Section, it may take the form of a duplicate copy of the paper or of a card identifying the paper and the application. The receipt will be date-stamped at the same time as the paper and handed back to the person delivering the paper. If a receipt is desired from the Incoming Mail Section, a card should be used. The card will be date-stamped and handed back to the person delivering the paper.

When a card is used for receipt, it should contain sufficient information to identify the paper and the application clearly, such as applicant's name, the serial number and filing date of the application, the mark, and the title or a description of the paper being filed.

In the discretion of the Assistant Commissioner for Trademarks, or of the Director of the Trademark Examining Operation, or of the Trademark Trial and Appeal Board, papers appropriate for those Offices (such as petitions or briefs) may be filed by hand in such Offices.

The procedure set forth in the notice entitled "Hand-Delivery of Papers" in the *Official Gazette* of February 26, 1974 (919 O.G. TM 180) pertains to papers for patent applications. The designation "Examining Group" used in that notice relates to the patent examining area of the Patent Office. (The equivalent designation in the trademark examining area is "Examining Division.")

RENE D. TEGTMEYER,
Aug. 21, 1974. *Assistant Commissioner*
for Trademarks.
[926 O.G. TM 132]

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(148) Mail Delays and Petitions to Revive (Trademarks)

Since applications that become abandoned unintentionally present burdens to both the Patent office and the applicant, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on ________________, which date is more than three full days prior to the due date, at ________________, by ________________.
(Location) (Name of individual)

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. ________ in the name of ________________.

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)
And
Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner*
for Trademarks.
[921 O.G. TM 126]

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(149) Recording of Documents Affecting Title

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*
Published in 36 F.R. 13231; July 16, 1971
[889 O.G. TM 2]

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(150) Separation of the Patent and Trademark Sections of the Official Gazette

Effective February 2, 1971, the *Official Gazette* will be separated into two parts to be known as the *Patent Official Gazette and the Trademark Official Gazette.*

* * * * *

Orders for subscriptions should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Also effective February 2, 1971, the *Official Gazette* will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the *Official Gazette* will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the *Patent Official Gazette* and the *Trademark Official Gazette* will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Dec. 29, 1970. *Commissioner of Patents.*
[882 O.G. TM 33]

(151) Trademark Office Actions

Effective Apr. 1, 1972, trademark applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
Feb. 7, 1972. *Commissioner of Patents.*

[895 O.G. TM 238]

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(152) Wording In Verification or Declaration of Trademark Application

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

> —that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:—*

The wording emphasized conforms to the present language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance. Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Mar. 25, 1974. *Assistant Commissioner*
for Trademarks.

[921 O.G. TM 186]

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(153) Rules Service Company Address Change

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Co.
4341 Montgomery Ave.
Bethesda, Md. 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents*
and Trademarks.

[994 O.G. 10]

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(154) Late-Filed Renewal Fees

Sections 9 and 31 of the Lanham Act (15 U.S.C. §§1095 and 1113) require that an additional five dollar ($5.00) fee be submitted by a registrant who files a renewal application during the three-month period following expiration of its registration. The language of the statute requires that this additional fee be submitted within the three-month grace period. A number of registrants who have failed to submit the additional fee within the prescribed period have petitioned the Commissioner to allow their renewal applications. The Commissioner has granted petitions of this kind where the registrant or its attorney maintained a Patent and Trademark Office deposit account which contained, on the date the renewal application was filed, sufficient funds to cover the additional fee. Specifically, the Commissioner has exercised discretion under Trademark Rules 2.146(a)(3) and 2.147 to deem the authorizations to charge the deposit accounts to have taken place at the time the registrants filed their renewal applications, even though the authorizations were not confirmed until a later date. This Office policy was established by the Commissioner's decision in *In re Ralston Purina Co.*, 191 USPQ 154 (Comr. Pats. 1976).

The policy established by the *Ralston Purina* decision is being changed. Henceforth, the Commissioner will no longer exercise discretion to charge deposit accounts *nunc pro tunc* for trademark renewal application fees. To allow an authorization to charge a deposit account to relate back to a date on which no actual authorization existed is, in effect, to allow late payment. It is inequitable to permit those registrants who have deposit accounts (or those whose attorneys have such accounts) to make late payment of renewal fees, while those without deposit accounts may not.

Petitions relying on *Ralston Purina* will, after the date of this notice, be denied, unless the events that gave rise to those petitions occurred before publication of this notice.

MARGARET M. LAURENCE,
Feb. 20, 1981. *Assistant Commissioner*
for Trademarks.

[1004 O.G. 29]

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(155) Single Copies of the Trademark Official Gazette

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

MARGARET M. LAURENCE,
Mar. 3, 1981. *Assistant Commissioner*
for Trademarks.

[1004 O.G. 36]

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(156) Consolidated Certificates Under Trademark Rule 2.88

Trademark Rule 2.88 provides as follows:

Applications may be consolidated.

a. When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.

b. The issuance of any original certificate may be suspended upon request of the applicant for a period not exceeding 6 months, to permit such consolidation.

The resulting certificate of registration is known as a consolidated certificate.

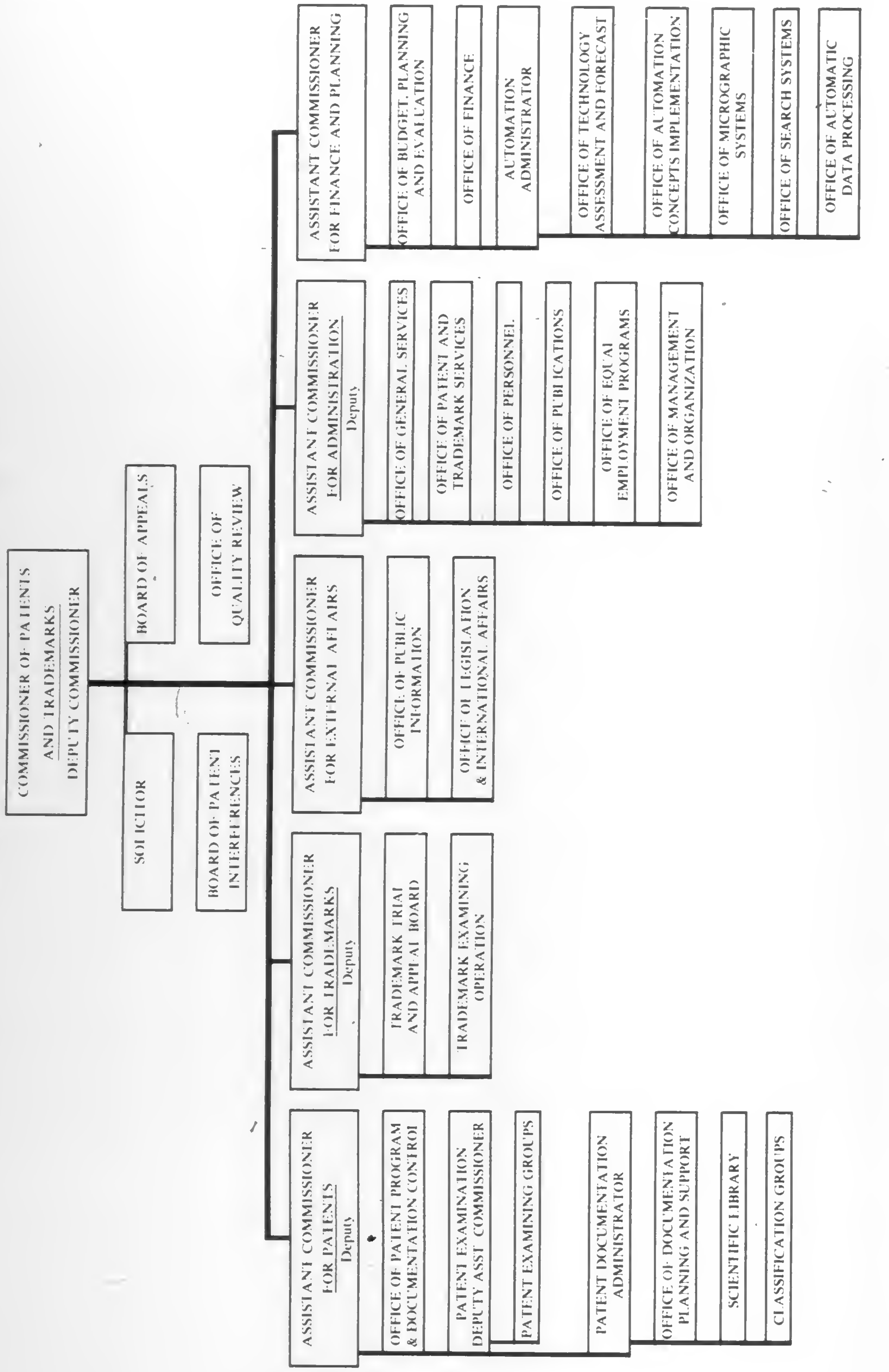
Because Rule 2.88 is seldom invoked and because the issuance of consolidated certificates entails undue administrative effort, the Patent and Trademark Office will soon be publishing for comment a proposal to eliminate the rule.

In the meantime, any applicant seeking registration of a single mark for more than one class of goods and/or services is encouraged to use the multiple-class application procedure set forth in Trademark Rule 2.87, rather than the consolidated application procedure set forth in Trademark Rule 2.88.

MARGARET M. LAURENCE,
July 29, 1981. *Assistant Commissioner*
for Trademarks.

[1009 O.G. 17]

U. S. DEPARTMENT OF COMMERCE
PATENT and TRADEMARK OFFICE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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority will change as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· Until Jan. 22, 1983, All cases	710.00
· After Jan. 22, 1983, All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,110,657, Re. S.N. 441,187, Filed Nov. 12, 1982, Cl. 313/332, LEAD-IN SEAL AND LAMP UTILIZING SAME, John C. Sobieske, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Norman C. Fulmer, Ex. Gp.: 256

4,146,663, Re. S.N. 245,777, Filed Mar. 20, 1981, Cl. 428/96, COMPOSITE FABRIC COMBINING ENTAGLED FABRIC OF MICROFIBERS AND KNITTED OR WOVEN FABRIC AND PROCESS FOR PRODUCING SAME, Masataka Ikeda, et al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 164

4,211,909, Re. S.N. 416,510, Filed Sept. 10, 1982, Cl. 219/10.55R, COMBINATION MICROWAVE AND GAS OVEN, Nagatoshi Yoshida, et al., Owner of Record: *Sanyo Electric Co., Ltd. and Tottori Electric Co., Ltd., Tottori, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 213

4,227,117, Re. S.N. 433,023, Filed Oct. 5, 1982, Cl. 315/13R, PICTURE DISPLAY DEVICE, Masanori Watanabe, et al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaha, Japan,* Attorney or Agent: Ellsworth H. Mosher, et al., Ex. Gp.: 222

4,232,787, Re. S.N. 439,929, Filed Nov. 8, 1982, Cl. 206/443, MULTIPLE COMPARTMENT PACKAGING, Anne V. Mann, Owner of Record: *Inventor,* Attorney or Agent: Limbach, Limbach & Sutton, Ex. Gp.: 241

4,244,727, Re. S.N. 441,953, Filed Nov. 15, 1982, Cl. 71/29, UREA-FORMALDEHYDE SOLUTION FOR FOLIAR FERTILIZATION, William P. Moore, Jr., Owner of Record: *Inventor,* Attorney or Agent: Nelson H. Shapiro, et al., Ex. Gp.: 173

4,277,321, Re. S.N. 437,471, Filed Oct. 28, 1982, Cl. 204/192E, TREATING MULTILAYER PRINTED WIRING BOARDS, Charles J. Bartlett, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: Arthur J. Torsiglieri, Ex. Gp.: 112

4,288,052, Re. S.N. 419,059, Filed Sept. 16, 1982, Cl. 248/188.6, BASE FOR FREE STANDING MERCHANDISER, George B. Scott, Owner of Record: *Inventor,* Attorney or Agent: James J. Hamill, Ex. Gp.: 355

4,291,211, Re. S.N. 439,351, Filed Nov. 4, 1982, Cl. 200/311, ILLUMINATED TOGGLE SWITCH, Frank J. Discenza, Owner of Record: *Carlingswitch, Inc., West Hartford, Conn.,* Attorney or Agent: John C. Hilton, Ex. Gp.: 243

4,294,243, Re. S.N. 437,766, Filed Oct. 27, 1982, Cl. 128/201.18, RESPIRATORS, John Ernsting, et al., Owner of Record: *United States of American, as Represented by the Secretary of U.S.A.F.,* Attorney or Agent: Donald J. Singer, Ex. Gp.: 335

4,296,152, Re. S.N. 439,484, Filed Nov. 5, 1982, Cl. 427/440, METHOD AND COMPOSITION FOR TREATING WOOD WITH PENTACHLOROPHENOL, Roy P. Kirchner, Owner of Record: *Idacon, Inc., Houston, Tex.,* Attorney or Agent: John D. Norris, et al., Ex. Gp.: 162

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,646,593, Reexam. No. 90/000,290, Requested: Nov. 16, 1982, Cl. 51/165, APPARATUS FOR THE AUTOMATIC SHARPENING OF BROACHING OR REAMING TOOLS, Ludwig Schubert, Owner of Record: *Oswald Frost GmbH, Solingen, Germany,* Attorney or Agent: Browdy & Neimark, Ex. Gp.: 320, Requester: Owner

4,062,647, Reexam. No. 90/000,298, Requested: Nov. 26, 1982, Cl. 8/137, CLAY-CONTAINING FABRIC SOFTENING DETERGENT COMPOSITIONS, Thomas D. Storm, et al., Owner of Record: *The Proctor*

& Gamble Co., Cincinnati, Ohio. Attorney or Agent: Edmund F. Gebhardt, Ex. Gp.: 140, Requester: Owner

4,112,921, Reexam. No. 90/000,292, Requested: Nov. 22, 1982, Cl. 126/448, METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR, Calvin D. MacCracken, Owner of Record: *Bio-Energy Systems, Inc., Ellenville, N.Y.*, Attorney or Agent: Parmelee, Johnson, Bollinger & Bramblett, Ex. Gp.: 340, Requester: Environmental Resources, Inc., Las Vegas, Nev.

4,120,391, Reexam. No. 90/000,302, Requested: Dec. 6, 1982, Cl. 198/347, CONVEYOR SYSTEMS FOR CIGARETTES AND OTHER ROD-LIKE ARTICLES, Desmond W. Molins, et al., Owner of Record: *Molins Ltd., England*, Attorney or Agent: Craig & Antonelli, Ex. Gp.: 310, Requester: Peter K. Kontler, Stamford, Conn.

4,128,357, Reexam. No. 90/000,301, Requested: Dec. 2, 1982, Cl. 404/41, SLAB-ELEMENTS FOR COVERING THE GROUND, Gunter Barth, et al., Owner of Record: *Requester*, Attorney or Agent: Albert C. Johnston, Ex. Gp.: 356, Requester: F. von Langsdorff Bauverfahren GmbH, Rastatt, West Germany

4,167,117, Reexam. No. 90/000,304, Requested: Dec. 6, 1982, Cl. 73/422, APPARATUS AND METHOD FOR SAMPLING FLOWING FLUIDS AND SLURRIES, Charles O. Stokley, et al., Owner of Record: *Exxon Production Research Co., Houston, Tex.*, Attorney or Agent: E. Eugene Thigpen, Ex. Gp.: 240, Requester: Owner

4,282,385, Reexam. No. 90/000,300, Requested: Dec. 3, 1982, Cl. 562/589, HYPERACIDIC SOLID METAL LACTATES AND PROCESS FOR PRODUCING SAME, Ulrich Metz, et al., Owner of Record: *Trostberg Aktiengesellschaft, Trostberg, Germany*, Attorney or Agent: Thomas L. Tully, Ex. Gp.: 120, Requester: Alvin Guttag, Washington, D.C.

4,315,798, Reexam. No. 90/000,296, Requested: Nov. 22, 1982, Cl. 162/161, DECAY RESISTANT SHEET MATERIAL WITH RETAINED FLEXIBILITY, Warren J. Bodendorf, et al., Owner of Record: *Emhart Merging, Inc., USM Corp., Beverly, Mass.*, Attorney or Agent: Russell D. Orkin, Ex. Gp.: 170, Requester: Georgia Bonded Fibers, Inc., Buena Vista, Va.

Public Advisory Committee for Trademark Affairs
Notice of Open Meeting

In accordance with Section 10 (a) (2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the following Committee meeting.

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. until 5:00 p.m. on Feb. 3, 1983, at the Bridge Hotel, Boca Raton, Fla.

The Committee was first established in 1970 and was reestablished in 1981 to advise the Patent and Trademark Office of steps that can be taken to increase the effectiveness of administration of the Trademark Act and to provide a continuing source of information from the private sector to the government.

The agenda for the meeting is as follows:

(1) Financial and statistical reporting, including fees
(2) Computerization and automation, including assignments and classification
(3) TMEO management responsibilities and management development
(4) TTAB management responsibilities and management development
(5) Trademark Rule changes
(6) Trademark Manual of Examining Procedure

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis. If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. To insure proper consideration at the meeting, any comments or suggestions relating to the agenda items should be submitted in writing before Jan. 24, 1983. Further comments and suggestions will be accepted after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request.

Inquiries may be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. Please mark all correspondence to the attention of Committee Control Officer, Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Room CP3-11C17. Telephone: 703-557-7464.

GERALD J. MOSSINGHOFF,
Dec. 8, 1982. *Commissioner of Patents and Trademarks.*

Trademark Classification; Coin-Activated Video Games

Coin-activated video output games will be classified in International Class 28 with video game cartridges, computer game tapes, non-coin operated video games, and hand-held units for playing electronic games.

This will permit all video games (coin-operated and other) to be classified in a single class. This decision is consistent with the Office's previous handling of coin-operated billiard tables, which are classified as games in International Class 28.

MARGARET M. LAURENCE,
Dec. 10, 1982. *Assistant Commissioner for Trademarks.*

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-90,390 (4,356,958). BLOOD CELL SEPARATOR. Dept. of Health & Human Services.

SN 6-239,448 (4,357,088). MACULA-DISC CAMERA WITH IMPROVED RESOLUTION. Dept. of Health & Human Services.

SN 6-237,617 (4,357,324). PRODRUG DERIVATIVES OF 9B-D-ARABINOFURANOSYL-2-FLUOROADENINE. Dept. of Health & Human Services.

SN 6-266,462 (4,357,341). SPECIFIC IRREVERSIBLE ANTAGONISM OF HISTAMINE RECEPTORS BY PHOTOAFFINITY ACTUATED COMPOUNDS. Dept. of Health & Human Services.

SN 6-25,132 (4,357,344). POLYBUTYLBENZYLPHENOLS AND BENZYL-3,4-METHYLENEDIOXYBENZENES IN INSECT POPULATION CONTROL. Dept. of Agriculture.

SN 6-212,061 (4,357,549). AUTOMATIC FREQUENCY ALTERATION CIRCUIT. National Security Agency.

SN 6-415,848. IMPROVED FIBER OPTIC pH PROBE FOR TISSUE MEASUREMENTS. Dept. of Health & Human Services.

SN 6-416,107. HIGH SPEED PREPARATIVE COUNTERCURRENT CHROMATOGRAPHY WITH A MULTIPLE LAYER COILED COLUMN. Dept. of Health & Human Services.

SN 6-329,869. SEPARATION OF TRIPHENYLPHOSPHINE OXIDE FROM METHOTREXATE ESTER AND PURIFICATION OF SAID ESHER. Dept. of Health & Human Services.

SN 6-410,965. METHOD OF TREATING CANCERS WITH METHYLGLYOXAL BIS-GUANYLHYDRAZONE. Dept. of Health & Human Services.

SN 6-436,124. TWIN-ETALON SCANNING SPECTROMETER. Dept. of Commerce.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 4, 1983

4,165,316
4,180,498
4,203,960
4,230,421
4,232,302
4,252,817
4,259,523
4,279,903
4,289,822
4,292,391
4,301,678
4,301,934
4,303,704
4,305,576
4,311,612
4,313,486
4,313,872
4,315,764
4,322,389
4,328,002
4,331,684
4,336,371
4,336,978
4,338,350
4,339,271
4,339,426
4,339,875
4,340,848
4,341,509
4,341,628
4,343,094
4,343,267
4,343,657
4,343,688
4,344,518
4,344,955
4,345,483
4,345,765
4,347,126
4,347,394
4,347,585
4,347,659
4,347,934
4,348,208
4,348,297
4,350,725
4,352,300
4,352,670
4,353,488
4,354,058
4,354,920
4,355,919
4,356,580

Disclaimers

3,575,271.—*Geoffrey E. P. Constable,* Cheltenham, England; *Graeme E. Cullen,* Castle Douglas, and *Richard Swarbrick,* Glasgow, Scotland. ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT. Patent dated Apr. 20, 1971. Disclaimer filed Nov. 18, 1982, by the assignee, *Chubb Integrated Systems Limited.*

Hereby enters this disclaimer to claims 3 and 8–23 of said patent.

4,161,128.—*Shigeru Yamada* and *Eiichiro Aoki,* Hamamatsu, Japan. ELECTRONIC MUSICAL INSTRUMENT. Patent dated July 17, 1979. Disclaimer filed Nov. 16, 1982, by the assignee, *Nippon Gakki Seizo Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,347,969.—*William E. Kost* and *Norman Schoeneerger, Jr.,* Tampa, Fla. TRAY. Patent dated Sept. 7, 1982. Disclaimer filed Nov. 15, 1982, by the assignee, *Weyerhaeuser Co.*

Hereby enters this disclaimer to all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries, except the Cleveland Public Library, offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 27, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-19-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	8-28-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-18-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-17-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-16-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	12-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-02-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-09-80

Expiration of patents: The patents within the range of numbers indicated below expire during November 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,214,767 to 3,221,338, inclusive
Plant Patents	Numbers 2,566 to 2,576 inclusive

DEFENSIVE PUBLICATIONS

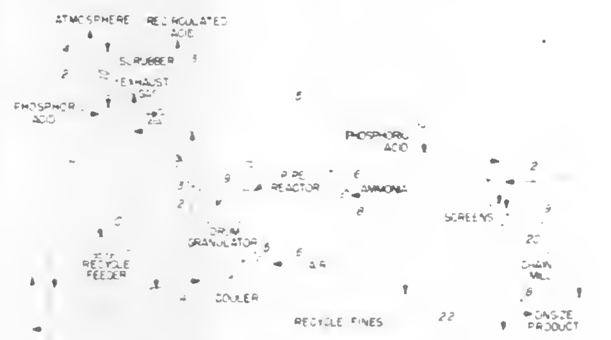
PUBLISHED JANUARY 4, 1983

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,601
PRODUCTION OF GRANULAR AMMONIUM-POLYPHOSPHATE WITH AN INLINE REACTOR AND DRUM GRANULATOR

Byron R. Parker, Rte. 7, Box 117, and Thomas R. Stumpe, Rte. 7, Box 487, both of Florence, Ala. 35630
Filed Mar. 15, 1982, Ser. No. 358,396
Int. Cl.^{3} C05B *7/00*
U.S. Cl. 71—34
6 Sheets Drawing. 23 Pages Specification



FLOW DIAGRAM OF GRANULATION PILOT-PLANT FOR PRODUCTION OF AMMONIUM POLYPHOSPHATE USING THE PIPE REACTOR

Method for production of granular ammonium polyphosphate fertilizer in which ammonium polyphosphate melt is prepared in a simple inline reactor and distributed onto a bed of solids in a drum granulator to bind smaller fertilizer particles into granules. The desired polyphosphate content can be obtained in the granular product by adjusting the total heat input of the feed reactants to the reactor by means of energy conservation modifications to the system. Energy losses from the reaction system are controlled by use of a predetermined quantity of insulation so that varying amounts of the maximum theoretical heat input can be utilized to produce products of polyphosphate contents as desired. The quantities of insulation and the resulting heat inputs to the reactor have been identified which will produce the given critical polyphosphate content material, determined to be 12 percent of total phosphate as polyphosphate in a granular material, which will give 10 percent polyphosphate in a suspension fertilizer made from the granular material. No external heat is required and energy savings can be readily realized as well as production cost savings.

T102,602
CULTURE OF FRESHWATER MUSSEL GLOCHIDIA IN AN ARTIFICIAL HABITAT UTILIZING COMPLEX LIQUID GROWTH MEDIA

Billy G. Isom, Rte. 3, Box 444, Killen, Ala. 35645, and Robert G. Hudson, Rte. 1, Box 202, Clinton, S.C. 29325
Filed Dec. 7, 1981, Ser. No. 328,307
Int. Cl.^{3} A01K *61/00*
U.S. Cl. 119—4
No Drawing. 22 Pages Specification

A process, and a composition of matter utilized therein, to obtain transformation of the glochidia of freshwater mussels to the juvenile stage. In nature, glochidia normally transform while as parasites on fish. The instant artificial process involves the use of cell culture and bacteriological techniques to best assure environmental integrity during the protracted culture period. The composition of the media includes a combination of the blood serum of fish and commonly available tissue culture fluids and inorganic salts. A nonspecific component of fish serum in combination with the media supra was determined to be essential for glochidial transformation to juveniles.

T102,603
TABLE SYRUP CONTAINING BUTTER OR BUTTER OIL

Christopher McIntyre, Middletown, N.Y., assignor to Hercules Incorporated, Wilmington, Del.
Filed Jan. 14, 1980, Ser. No. 112,059
Int. Cl.^{3} A23L *1/09*
U.S. Cl. 426—613
No Drawing. 4 Pages Specification

A table syrup is disclosed consisting essentially of an aqueous phase containing at least about 65% sugar having emulsified therein about 1 to 40% butter, based on the total emulsion weight and about 0.05 to 0.4% of a stabilizer consisting of 20–35% pectin, 35–50% carrageenan, 15–30% locust bean gum, and 5–20% potassium citrate. Such syrups are much more easily homogenized than are presently known syrups of this type and are characterized by good stability of the oil droplet throughout the aqueous phase.

REISSUES

JANUARY 4, 1983

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

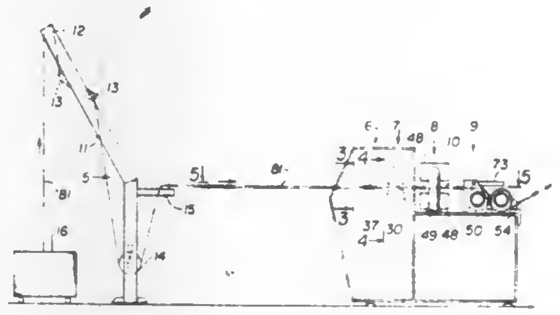
Re. 31,115
METHOD OF PADDING AND EXTRACTING A CONTINUOUSLY ADVANCING CIRCULAR KNIT FABRIC TUBE

Frank Catallo, c/o Fab-Con, 103 Harbor Rd., Port Washington, N.Y. 11050

Original No. 4,112,532, dated Sep. 12, 1978, Ser. No. 801,550, May 31, 1977. Division of Ser. No. 739,258, Nov. 5, 1976, abandoned. Application for reissue Aug. 18, 1980, Ser. No. 179,272

Int. Cl.³ D06B *3/10, 15/02*

U.S. Cl. 8—151 **2 Claims**



1. In a method of padding and extracting a continuously advancing circular knit fabric tube having upper and lower layers by passage through a puddle of impregnating liquid contained within an upwardly open nip defined by a pair of opposed horizontally disposed squeeze rolls, the steps of spreading the advancing fabric tube to a predetermined width *by passage over a spreader and*, then immediately directing said spread fabric tube onto one of said squeeze rolls for advance in a generally downward direction through said puddle into said nip, the said upper layer of said fabric tube being free from contact with either of said squeeze rolls until its passage through said nip, and expelling any entrapped air in said fabric tube *by free movement of the air from the nip area forwardly towards the spreader and* through the said upper layer thereof during its advance over the said one of said squeeze rolls toward engagement with said nip as the result of directing said fabric tube into said puddle of impregnating liquid under controlled tension.

Re. 31,116
ROTARY FORMING MACHINE AND TOOL

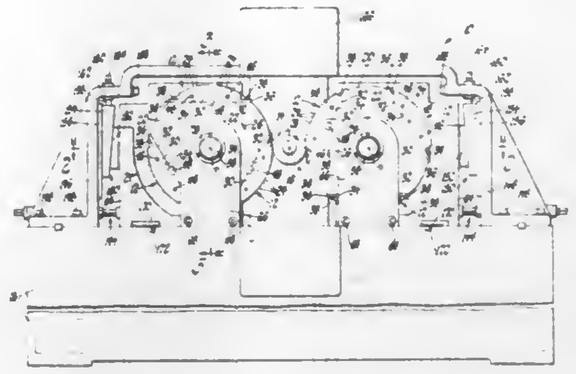
Marvin R. Anderson, Grosse Pointe Shores, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

Original No. 4,045,988, dated Sep. 6, 1977, Ser. No. 711,673, Aug. 4, 1976. Continuation-in-part of Ser. No. 676,827, Apr. 14, 1976, abandoned. Application for reissue Apr. 19, 1979, Ser. No. 31,558

Int. Cl.³ B21H *5/02*

U.S. Cl. 72—108 **32 Claims**

1. A rotary forming machine comprising: a work spindle for rotatably mounting a workpiece about a first axis; a pair of tool spindles rotatably mounted about spaced second axes on opposite sides of the first axis about which the workpiece rotates; a plurality of rotary tools associated with each tool spindle; each tool including leading and trailing ends and having a flat base mounting surface engaged with the associated tool spindle as well as including an oppositely facing partially circular forming face generated about the second axis of the associated tool spindle and having forming tooth groups located thereabout for an angle less than 180°; the teeth within each group having the same size and having a progressively increasing size from one group to the next group; the teeth within each group having a profile that is conjugate to the shape to be formed in the workpiece; mounting means for securing the tools to their associated tool spindles while permitting any tool on either tool spindle to be removed and replaced without replacement of the other tools; and drive means for rotating the tool spindles so that the forming faces of associated pairs of the tools simultaneously engage and form the workpiece during a partial revolution of the tool spindles for less than 180°.



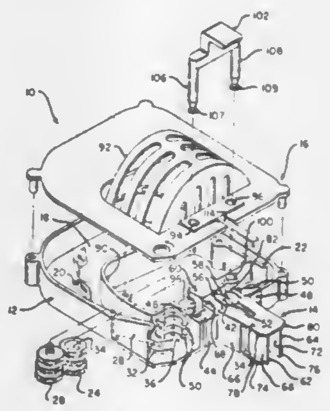
Re. 31,117
RIBBON CASSETTE WITH BI-COLOR CAPABILITY

Noel F. Depew, Wichita, Kans., assignor to NCR Corporation, Dayton, Ohio

Original No. 4,088,218, dated May 9, 1978, Ser. No. 731,404, Oct. 12, 1976. Application for reissue Jul. 23, 1979, Ser. No. 59,864

Int. Cl.³ B41J *33/14*

U.S. Cl. 400—208 **17 Claims**



13. A ribbon cassette comprising a body portion for storing a multicolor ribbon and having a cover portion thereon, support means for supporting said ribbon in an operating plane,

means enabling said support means to pivot with respect to said body portion between first and second operating positions, and

cantilever means connected with and extending from said cover portion and biasly engageable with a surface on one side of said support means to cause said support means to be moved to a normal position and to be operated in said first operating position wherein said support means is inclined relative to said body portion to obtain printing in one color and wherein said support means includes a contact area on a side opposite said one side engageable by an external member to return said support means from said normal position against the bias of said cantilever means for operation in said second operating position to obtain printing in another color.

Re. 31,118

HYDRAULIC CEMENT AND METHOD OF PRODUCING SAME

Thomas C. Slater, deceased, late of Sutter Creek, Calif. (by Vivian Slater, executrix), and Floyd C. Hamilton, Jr., Louisville, Ky., assignors to The Flintkote Company, White Plains, N.Y.

Original No. 3,861,928, dated Jan. 21, 1975, Ser. No. 277,969, Aug. 4, 1972. Continuation-in-part of Ser. No. 85,776, Oct. 30, 1970, Pat. No. 3,682,669, which is a continuation-in-part of Ser. No. 70,596, Sep. 8, 1970, abandoned, which is a continuation of Ser. No. 652,275, Jul. 10, 1967, abandoned. Application for reissue Jan. 23, 1980, Ser. No. 114,677

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—89 **33 Claims**

1. A hydraulic cement composition containing alphaprime dicalcium silicate as a hydraulically settable calcium silicate in an amount by weight of about 65 percent to about 85 percent of said composition *and borate.*

Re. 31,119

FLY-BACK TRANSFORMER WITH A LOW RINGING RATIO

Yutaka Mitani, Nagaokakyo; Katumi Tokuda, Nanao, and Saburo Kitao, Kyoto, all of Japan, assignors to Murata Mfg., Co. Ltd., Nagaokakyo, Japan

Original No. 4,229,786, dated Oct. 21, 1980, Ser. No. 943,678, Sep. 19, 1978. Application for reissue Oct. 19, 1981, Ser. No. 312,525

Claims priority, application Japan, Sep. 26, 1977, 52-115850; Oct. 18, 1977, 52-125625; Nov. 30, 1977, 52-144716; Dec. 13, 1977, 52-150317; Dec. 21, 1977, 52-154707

Int. Cl.^{3} H01J *29/70*

U.S. Cl. 363—126 **23 Claims**

1. A fly-back transformer for use in a horizontal deflection circuit of a television receiver, the operation of said [deflector] *deflection* circuit being cyclical, and each cycle of said circuit being divided into a scanning period and a [retract] *retrace* period, said transformer comprising:

a core member,

a first coil bobbin provided on said core member;

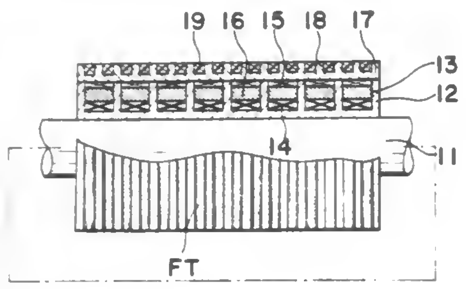
a primary winding for low voltage supply mounted on said first coil bobbin;

a second coil bobbin located on said first coil bobbin;

a secondary winding for producing a high-voltage output responsive to an electromagnetic field generated by said core and located on said second coil bobbin;

a tertiary winding for generating a low-voltage output responsive to an electromagnetic field generated by said core and located at a position wherein the magnetic coupling of said tertiary winding to said primary winding is small in comparison with the magnetic coupling of said tertiary to said secondary winding, and wherein the leakage flux of said secondary winding with respect to said primary winding interlinks with said tertiary winding; and

a commutating circuit connected to said tertiary winding so as to commutate the output of said tertiary winding only during said scanning period of said horizontal deflection circuit.



PLANT PATENTS

GRANTED JANUARY 4, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,970

PEACH TREE (A3-10)

Grant Merrill, deceased, late of Red Bluff, Calif., and by Lucile B. Merrill, executrix, 325 Breese Ave., Red Bluff, Calif. 96080

Filed Jul. 20, 1981, Ser. No. 284,541

Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, which has general similarity in tree to the Gemfree but bears clingstone fruit which, in particular comparison with the fruit of the Gemfree, is more round in shape and has a darker red blush color of the skin; the fruit ripening approximately with or slightly later than the fruit of the Gemfree.

4,971

BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 16, 1981, Ser. No. 254,908

Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt.—32 **1 Claim**

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has excellent timber quality, is fast growing, has strong central stem tendency, little sweep, few crooks; average in time of leafing, pistillate flowers early, pollen sheds mid-season, produces abundant annual crops of large-sized nuts; averages 2 per cluster, the percentage of weight of kernel to nut averages approximately twenty (20) percent; nut bearing begins early in life of tree.

PATENTS

GRANTED JAN. 4, 1983

ERRATA

For CLASS	See PATENT NO.
604–174	4,366,817
436–501	4,367,072
524–047	4,367,171
548–482	4,367,176
423–228	4,367,258
501–119	4,367,292

PATENTS

GRANTED JANUARY 4, 1983

GENERAL AND MECHANICAL

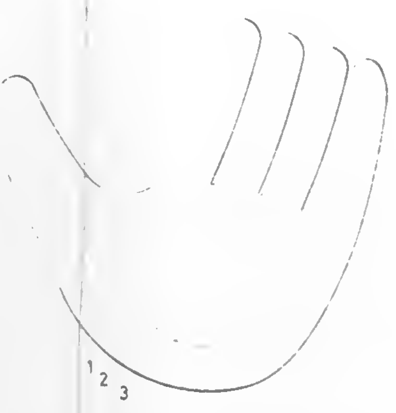
4,366,579

MITT FOR BASEBALL USE

Teruo Noguchi, Osaka, Japan, assignor to Mutsuwa Taiga Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 1981, Ser. No. 239,481
Claims priority, application Japan, Apr. 25, 1980, 55-55911
Int. Cl.³ A41D *13/10*

U.S. Cl. 2—19 **2 Claims**



1. In a mitt for baseball use comprising a leather ball-catching portion, the improvement wherein the leather which forms the ball-catching portion is permeated with a vegetable oil and bears on the face opposite the ball-contacting face a hardened coating of a polyurethane resin.

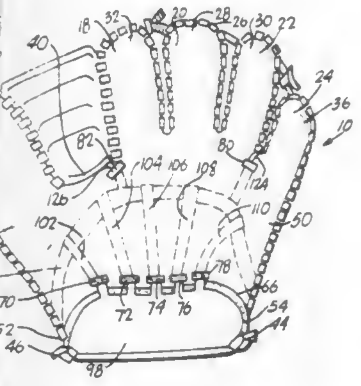
4,366,580

REVERSIBLE GLOVE

Israel Zidele, 1303 Ditmas Ave., Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 195,942, Oct. 10, 1980. This application Mar. 11, 1981, Ser. No. 242,642
Int. Cl.³ A41D *13/10*

U.S. Cl. 2—19 **8 Claims**



1. A reversible baseball glove comprising

(a) juxtaposed front and rear pieces of flexible sheet material, each said piece provided with a middle finger stall, two intermediate finger stalls and two outer finger stalls, a palm portion, and a heel portion, said front piece having a first cutout therein, said first cutout extending upwardly in a curved configuration into and across said palm portion of said front piece from said heel portion of said front piece, said rear piece having a second cutout therein, said second cutout extending upwardly in a curved configuration into and across said palm portion of said rear piece from said heel portion of said rear piece;

(b) a web disposed between one of said outer finger stalls and the adjoining intermediate finger stall;

(c) means for peripherally interconnecting said front piece and said rear piece, wherein said means joins said web to said front piece and said rear piece;

(d) a first geometrically shaped planar member of substantially identical shape to the shape of said first cutout of said front piece, said first geometrically shaped planar member being disposed within said first cutout of said front piece;

(e) first means for movably interconnecting said first geometrically shaped planar member to said front piece;

(f) a second geometrically shaped planar member of substantially identical shape to the shape of said second cutout of said rear piece, said second geometrically shaped planar member being disposed within said second cutout of said rear piece; and

(g) second means for movably interconnecting said second geometrically shaped member to said rear piece.

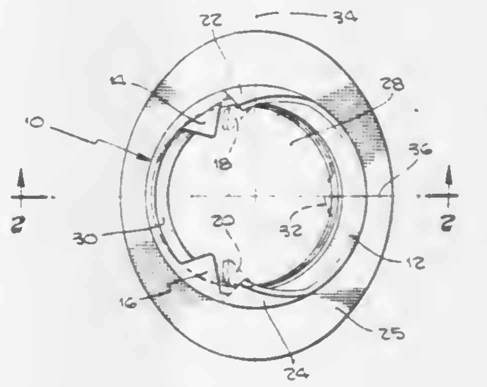
4,366,581

ELLIPTICAL SUTURING CUFF

Suresh T. Shah, Eagan, Minn., assignor to Medical Incorporated, Iver Grove, Minn.

Filed Sep. 2, 1981, Ser. No. 298,656
Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **5 Claims**



1. An elliptical prosthetic heart valve suturing cuff comprising:

a knitted tubing consisting of biocompatible multifilament yarn materials, said knitted tubing being formed into a plurality of folds to form an elliptical suturing cuff and mounted on the exterior of a round planform prosthetic heart valve, said knitted tubing including excess materials at predetermined spaced apart locations whereby said suturing cuff is radially enlarged at predetermined spaced apart locations to define an elliptical planform suturing cuff, said knitted tubing being one integral piece of material with wales extending substantially longitudinally of said tubing, said wales being positioned in substantially vertical alignment from one fold to the next and said suturing cuff having a substantially uniform porosity throughout.

4,366,582

POSTERIOR CHAMBER INTRAOCULAR LENS

Gerald D. Faulkner, 1380 Lusitana St., Ste. 714, Honolulu, Hi. 96813

Filed Dec. 1, 1980, Ser. No. 211,589
Int. Cl.³ A61F *1/16, 1/24*

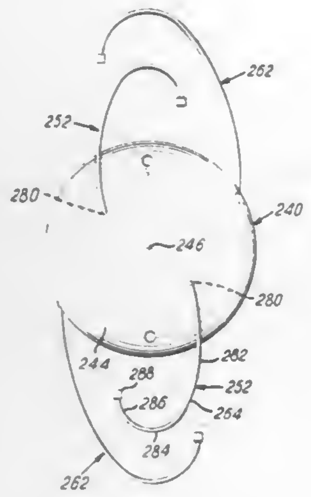
U.S. Cl. 3—13 **8 Claims**

1. A posterior chamber intraocular lens comprising:

(a) an optic;

(b) support means for engaging an eye structure posterior of the iris to support said optic from said eye structure and retain said optic in alignment with the anterior-posterior axis of the eye, said support means including radially extensive support structure connected to said optic; and

(c) retaining means for engaging the anterior surface of the iris to impede posterior dislocation of said optic, said retaining means including a plurality of radially extensive retaining elements each of which is connected to said optic, said retaining elements being disposed at circularly spaced locations about the axis of said optic and anteriorly of said support structure, each of said retaining elements including an elongated filament one end of such filament being embedded in said optic with the other end constituting a tip of the retaining element defined by a bight in the filament included in such element, each of said retaining elements being formed solely from one of said filaments in the shape of a J with the base of such J being remote from said optic, the non-embedded ends of said J-shaped filaments being devoid of sharp edges, the diameter across said retaining elements being such that the tips of said retaining elements are adapted to extend to the periphery of the normal human iris and engage the wall of the eyeball.



4,366,583
BREAST PROSTHESIS

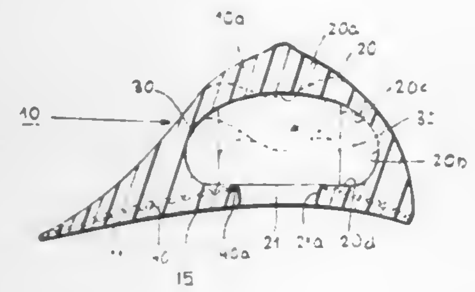
Gertraud Prahl, Rullstorf, Fed. Rep. of Germany, assignor to IPOS Gesellschaft fur integrierte Prothesen-Entwicklung und orthopadietechnischen Service mbH & Co. KG, Lunenburg, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,891

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938019

Int. Cl.³ A61F *1/00;* A41C *3/10*

U.S. Cl. 3—36 **10 Claims**



4. A breast prosthesis comprising an elastic, deformable breast-shaped part having a contact surface adapted for mounting the prosthesis on a patient, said breast-shaped part having a hollow interior bounded by the interior walls of said breast-shaped part and the interior walls of said contact surface and in communication with the exterior of the prosthesis through a central opening in said contact surface, a plurality of flexible web-like ribs in the periphery of said hollow interior connected to the interior wall of said contact surface radially outward from said opening and to the interior peripheral walls of said breast-shaped part.

4,366,584
BATHROOM APPLIANCES

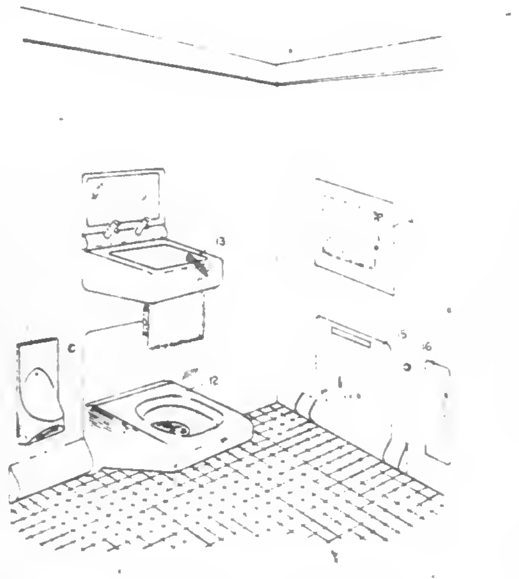
Frank S. Mchuma, P.O. Box 738, Dar-Es-Salaam, United Rep. of Tanzania

Filed Feb. 6, 1981, Ser. No. 232,275

Claims priority, application United Kingdom, Feb. 18, 1980, 8005413

Int. Cl.³ E03D *13/00*

U.S. Cl. 4—307 **8 Claims**



1. A bathroom type appliance comprising:
a supporting structure defining a cavity;
an appliance mounted on the supporting structure by pivotal mounting means defining a pivot axis about which the appliance can be turned between an operative position in which the appliance is accessible for normal usage and an inoperative position in which the appliance is retracted into said cavity;
a water inlet to and a waste outlet from said appliance;
respective watertight joints connecting the water inlet and waste outlet to said appliance, each joint including two parts relatively rotatable about said pivot axis;
a screen for covering the cavity when the appliance is in its inoperative position;
an auxiliary screening panel for covering any part of the cavity which is left open when the appliance is in the operative position;
mounting means permitting movement of said auxiliary screening panel; and
coupling means whereby the auxiliary screening panel is automatically moved between an operative, cavity closing position and a non-operative retracted position when the appliance is moved between its operative and non-operative positions.

4,366,585
ARMCHAIR EFFECTIVE TO BE TRANSFORMED INTO A BED

Marcello Ponti, Milan, and Paolo Cesana, Seregno, both of Italy, assignors to I.V.M. S.p.A., Milan, Italy

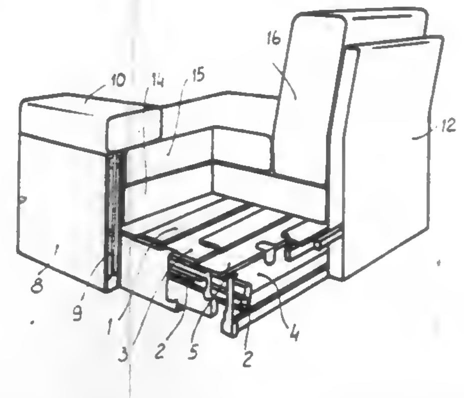
Filed Oct. 3, 1980, Ser. No. 193,626

Claims priority, application Italy, Jun. 30, 1980, 22179/80[U]

Int. Cl.³ A47C *17/13*

U.S. Cl. 5—18 R **2 Claims**

1. An armchair that can be transferred into a bed, which comprises at least one bed unit having a plurality of telescopically interconnected sections moveable from a telescoped condition corresponding to the armchair configuration to an extended condition corresponding to the bed configuration; one of said interconnected sections having a bottom cover and a top cover, said top cover being openable to adapt said section for storage of articles; an adjustable member constituting a back piece of the armchair configuration; and a pair of side armpieces, at least one armpiece including a section pivotable into a laterally extending position and a table section movable from a position recessed into the armpiece to a position overlying said pivotable section.



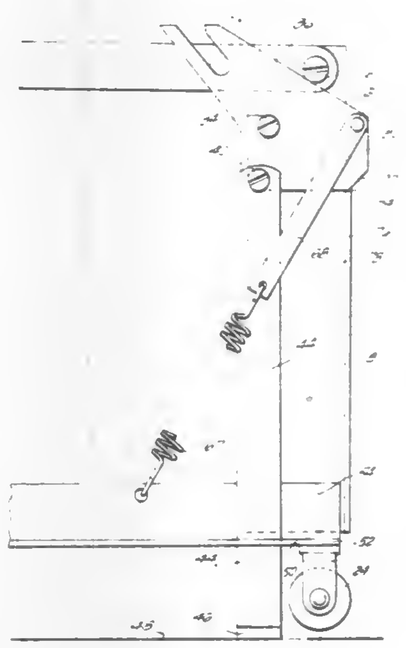
4,366,586
OTTOMAN ROLL LATCH MECHANISM

W. Dorwin Teague, Nyack, N.Y., assignor to Castro Convertible Corporation, New Hyde Park, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,778

Int. Cl.³ A47C *17/04*

U.S. Cl. 5—28 **11 Claims**



1. In a bed mechanism having a plurality of pivotally connected bed sections, including a base section supported on rollers or the like with said section being adapted to unfold into a straight line and fold into a compact configuration, the improvement comprising at least one anti-roll foot mounted in said base section for movement towards and away from the surface on which the base section is supported and means responsive to the initiation of unfolding pivotal movement of one of said bed sections relative to said base section for urging said foot into contact with said support surface to resist rolling of said base frame during unfolding of said bed sections.

4,366,587
INFANT SAFETY CARRIER FOR VEHICLES

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

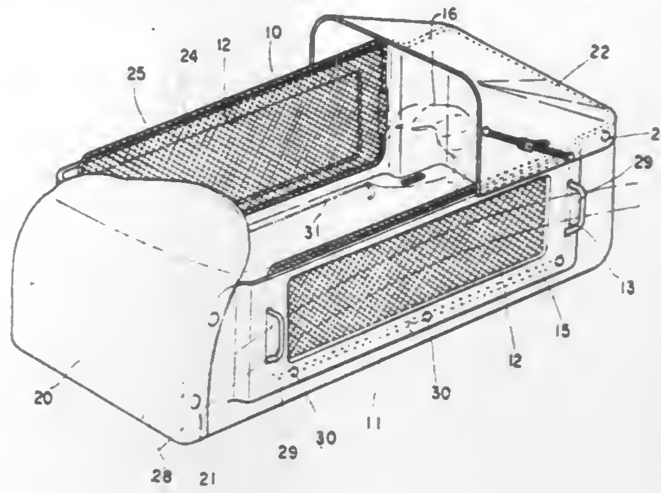
Filed Jul. 8, 1980, Ser. No. 166,813

Claims priority, application Japan, Jul. 9, 1979, 54-085985

Int. Cl.³ A47D *7/04*

U.S. Cl. 5—94 **5 Claims**

1. An infant safety carrier for vehicles having a substantially rigid receptacle that has a generally rectangular bottom, a pair of side walls and at least one end wall and is adapted to be placed crosswise of the vehicle on the seat and fastened in place by a vehicle safety belt characterized in that there is a bag of strong flexible material fastened in the receptacle, the bag being shaped and dimensioned to envelop an infant's body and head, except for his or her face, thus to retain the infant safely in the receptacle in the event of an accident, and having a lengthwise releasable closure which permits it to be opened to receive the infant, and further characterized in that there is a pair of strong rings fastened to the side wall of the receptacle nearest the vehicle seat back, the rings being adapted to accept the vehicle belt and being located at about the same height on the receptacle as the center of gravity of the carrier with an infant received therein.



4,366,588
DOUBLE BLOW METHOD AND PRESS FOR PRODUCING TUBULAR RIVETS

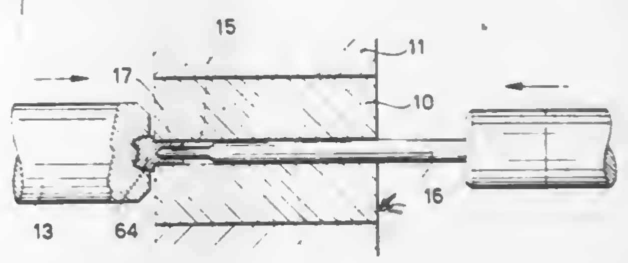
Eufemia Garlaschi, Via Victor Hugo, 4-Milan, Italy

Filed May 21, 1980, Ser. No. 151,931

Claims priority, application Italy, Jun. 7, 1979, 23355 A/79

Int. Cl.³ B21K *1/60*

U.S. Cl. 10—11 A **10 Claims**

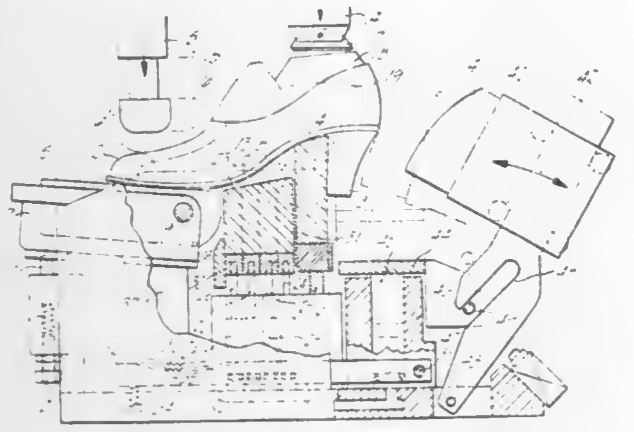


1. A method for producing tubular rivets on a double blow press with a fixed die having a bore, a preparation punch, a finishing punch having a frontal cavity and a bridge piece cavity connected by a bore and a bore-forming pin, comprising the following operations:
(a) in a first working stage (first blow)
  moving the preparation punch with a cavity therein towards the die bore until a residual distance remains to force a portion of a wire piece into the die bore and into contact with the bore-forming pin positioned in the die bore in a first position,
  deforming that part of the wire which has not penetrated into the die bore in order to form a crude rivet head by means of a frontal cavity in the preparation punch,
  moving said pin from said first position to a second more advanced position in the die bore in order to extrude the wire material about the end of the pin inside the die in order to produce a partial bore in the wire material of the required depth;
(b) in a second working stage (second blow)
  moving the finished punch into contact with the crude rivet

head to force the crude rivet head into the frontal cavity and produce final deformation of the rivet head,
simultaneously moving said pin from said second to a third more advanced position in order to further extend the bore in the rivet shank until it passes beyond its head, to shear a material bridge piece and finally expel the bridge piece into a cavity in the finishing punch.

4,366,589
CEMENT PRESS FOR CEMENT ATTACHING OUTSOLES TO LASTED FOOTWEAR

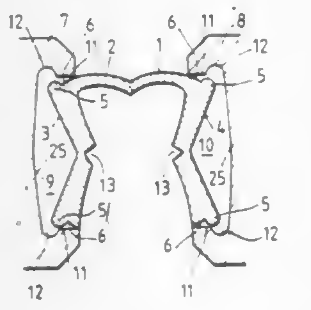
Anton Muhlbach, Frankfurt am Main-Sossenheim, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn. Continuation-in-part of Ser. No. 114,120, Jan. 21, 1980. This application Feb. 9, 1981, Ser. No. 232,721
Int. Cl.³ A43D *63/00*
U.S. Cl. 12—16.4 3 Claims



1. A cementing press for cement attaching outsoles to lasted footwear from their toe to the lower end of the heel breast by using a counter support applying pressure in the waist region, whereby a heel support takes up the pressure exerted to the heel breast during cement attaching, which heel support is arranged on a lever pivoted around a fulcrum running transversely to the longitudinal direction of the shoe towards the heel, thereby characterized, that the lifting mechanism for a heel abutment is provided with a catch which engages with an inclined slot in the lever, so that, with the lifting of the heel abutment the lever with the heel support is drawn up to the heel.

4,366,590
EXPANSION JOINT

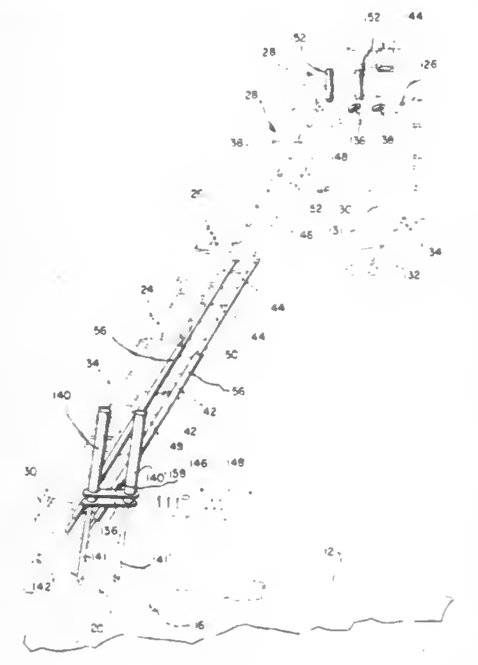
Reinhold Huber, Bülach, Switzerland, and Waldemar Köster, In Tentefeld 17, D-5064 Rösrath-Forsbach, Fed. Rep. of Germany, assignors to Waldemar Köster, Rösrath-Forsbach, Fed. Rep. of Germany
Filed Dec. 23, 1980, Ser. No. 220,178
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952613
Int. Cl.³ E01D *19/06*
U.S. Cl. 14—16.5 5 Claims



1. A connecting strip, more particularly in devices for bridging expansion-joints in bridges or the like structures, the said strip being made of a resilient material having at least one connecting element by means of which it may be inserted, by deformation, into a matching undercut groove in the edge-element of a joint, and comprising a longitudinally continuous notch which facilitates the deformation of the said connecting element, characterized in that the notch (**13, 17,30**) is arranged on the inside of the connecting element (**3,4,16,29**) remote from the base (**24,25,32**) of the groove; in that in order to facilitate insertion into the groove (**9,10,23,28**) in the edge-element (**7,8,21,26**) of the joint, the said connecting element is buckled towards the middle of the joint, thus opening the said notch; and in that the said connecting element, in its ultimate position, is at least straight, with the notch closed.

4,366,591
AUTOMATIC SAFETY GANGPLANK

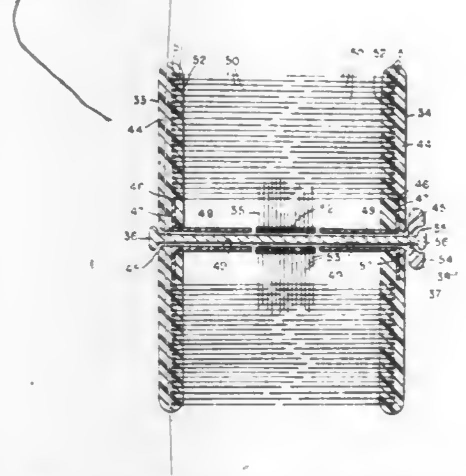
Mahlon N. Zimmerman, R.D. #2, Ephrata, Pa. 17522
Filed Nov. 12, 1980, Ser. No. 205,932
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.3 36 Claims



1. In an extendable walkway of the type suitable to extend from a construction of fixed elevation to the deck of a ship, wherein the deck is movable between a lower elevation and higher elevation, the combination of
extendable gangplank means to span the distance from the elevation of the construction to elevation of the deck,
the extendable gangplank means comprising at least a base segment and a fly segment,
the fly segment being adapted to move in longitudinal telescoping relationship to the base segment,
the base segment having a connected end and an elevating end; and
the fly segment terminating outwardly from the base segment in a free end;
extending means interconnected between the base segment and the fly segment to longitudinally move the fly segment relative to the base segment;
elevating means interconnected between the construction and the gangplank means to elevate a portion of the gangplank means about the connected end of the base segment;
walkway means pivotally connected to the gangplank means, the walkway means being adapted to contact the deck, the walkway means extending between the deck and a portion of the gangplank means,
the walkway means being adapted to angularly move relative to the gangplank means when the elevation of the deck is varied; and
first gangplank movement control means comprising an active element in contact with a portion of the walkway means, the first gangplank movement control means being adapted to monitor a change in angularity of the walkway means about a horizontal axis in response to a change in deck elevation,
the elevating means being adapted to be activated in response to change in deck elevation monitored by the first gangplank movement control means to elevate or lower a portion of the gangplank means.

4,366,592
BRUSHES AND METHOD OF MAKING SAME

Jonathan J. Bromboz, 11 Chaparral Ct., Novato, Calif. 94947
Filed Aug. 6, 1980, Ser. No. 175,931
Int. Cl.³ A46B *9/04;* A46D *3/00*
U.S. Cl. 15—22 R 50 Claims

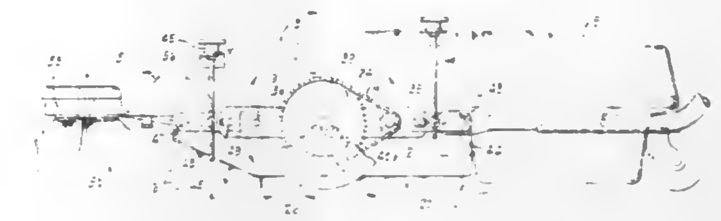


1. The method of manufacturing a brush comprising
a. forming an elongated strip comprising
  (1) an elongated backing sheet, and
  (2) a plurality of elongated filaments secured to one face of said sheet
    (a) in transversely extending relation thereto, and
    (b) with one end of each of said filaments projecting outwardly from the same longitudinal edge of said sheet,
b. securing said one end of said filaments to a supporting member, and
c. removing said backing sheet from said filaments to afford bristles projecting outwardly from said supporting member.

30. A toothbrush comprising
a. an elongated handle,
b. a shaft mounted in said handle and having an end portion projecting outwardly from said handle,
c. two brushes,
d. each of said brushes comprising
  (1) a base support member comprised of resilient, yieldable material and having two oppositely disposed faces, and
  (2) bristles projecting outwardly from one of said faces, with said bristles on each of said bases spaced from each other along a substantially spiral-shaped row, and adjacent bristles in each of said rows projecting different distances from said base support member on which said bristle are mounted, and said bristles on one of said base support member extending into abutting engagement with said bristles on said other of said base support member,
e. said brushes being rotatably mounted on said shaft with said bristles on said two brushes facing toward each other, and
f. said shaft being articulatedly mounted in said handle for transverse movement relative thereto through an acute angle.

4,366,593
SWEEPER

Bhupendra A. Parikh, Parma, Ohio, assignor to MTD Products Inc., Cleveland, Ohio
Filed Apr. 20, 1981, Ser. No. 255,645
Int. Cl.³ A47L *11/22;* E01H *1/04*
U.S. Cl. 15—49 C 10 Claims



1. In a sweeper having a supporting frame adapted to be moved generally parallel to, in alternate forward and rearward directions along a floor surface to be swept, a receptacle carried by the frame for receiving material swept from the floor surface by the sweeper, and a pair of elongated rotary-type brushes mounted on shafts, respectively, carried by the frame and disposed parallel to each other in a plane to be disposed generally parallel to the said floor surface, the combination of a first axle carried by, and extending laterally of, said frame on one side of the frame, a first wheel journalled on said first axle and disposed to be in rolling engagement with said floor surface and to support said frame, a second axle carried by, and extending laterally of said frame on the opposite side of said frame and directed away from said first axle, a second wheel journalled on said second axle and disposed to be in rolling engagement with said floor surface and to support said frame, said first and second axles being disposed on axes transverse of said frame, a first one-way clutch assembly mounted to said first wheel and providing the journal connection between said first wheel and said first axle, the said first one-way clutch assembly being arranged to permit the said first wheel to revolve freely in a rearward direction around the first axle without rotating the said first axle but to engage and drivingly engage the first axle in a forward direction upon the first wheel revolving in a forward direction, a second one-way clutch assembly mounted to said second wheel and providing the journal connection between said second wheel and said second axle, the said second one-way clutch assembly being arranged to permit the second wheel to revolve freely in a forward direction around the second axle without rotating the second axle but to engage and drivingly engage the second axle in a rearward direction upon the second wheel revolving in a rearward direction, a first chain and sprocket drive assembly drivingly connecting the said first axle and the shafts of said brushes to rotate the shafts and brushes carried thereby to rotate the brushes in opposite rotative directions upon the said first axle being rotated in a first direction by said first wheel, a second chain and sprocket assembly drivingly connecting the said second wheel and one of said shafts to rotate both of the shafts, through the said one shaft and the first chain and sprocket assembly, to rotate the brushes in opposite rotative directions upon the second axle being rotated by said second wheel in a second direction, the brushes being rotated in said opposite rotative directions by the alternative movement of the frame in both forward and rearward directions.

4,366,594
LEAF MASTER

H. B. Hyams, 24 S. Groveland Ave., Medford, Oreg. 97501
Filed Mar. 27, 1981, Ser. No. 248,492
Int. Cl.³ A47L *5/36*
U.S. Cl. 15—314 10 Claims

1. A vacuum-operated debris collector comprising:
a wheel-supported vehicle frame,
a collection receptacle and impeller unit assembly mounted on said frame including a collection receptacle supported over

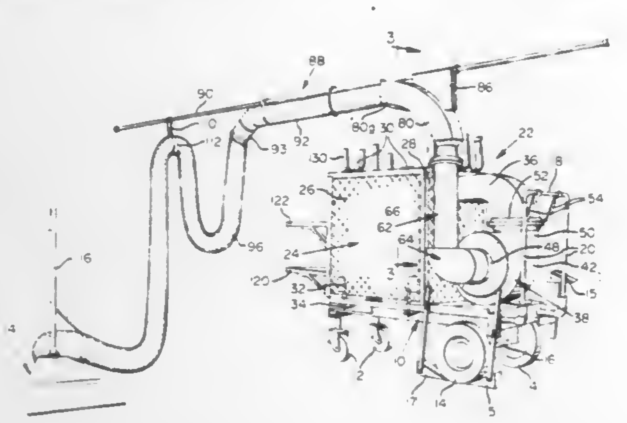
said frame adjacent one end of the frame, and a motor-driven impeller unit supported over said frame adjacent the opposite end of the frame,

said impeller unit having an outlet for pressurized air and an inlet for air at sub-atmospheric pressure and said inlet and outlet being located below the level of the top of said assembly,

conduit means connecting said outlet and said collection receptacle,

a rigid upright conduit assembly connected at its lower end to said inlet and having an upper extremity located above the top of said collection receptacle and impeller unit assembly,

a rigid outwardly extending conduit section connected at its inner end to said upper extremity of the upright conduit assembly, said upright conduit assembly including swivel means accommodating swiveling of the outwardly extending conduit section about the axis of the upright conduit assembly over 360° to place the outwardly extending conduit section at any desired laterally extending direction,



a suction head,

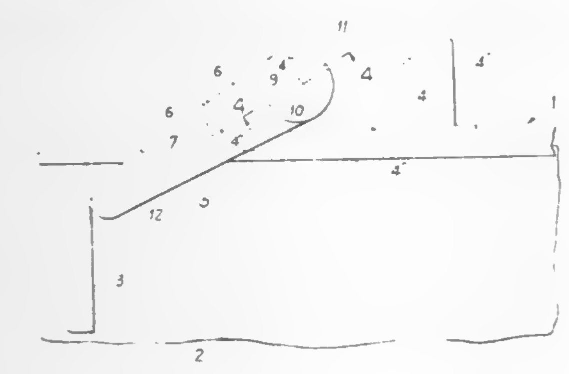
a hose connected at one end to the suction head, and

detachable coupling means connecting the opposite end of the hose to said outwardly extending conduit section, said coupling means including stiff inner and outer sleeves constructed and arranged with the inner sleeve snugly nested within the outer sleeve, said coupling means further including manually operated means detachably locking the sleeves from relative axial displacement, one sleeve being joined in fluid-tight relation to said opposite end of the hose and the other sleeve being joined in fluid-tight relation to the outer end of the outwardly extending conduit section.

4,366,595
DOOR CLOSER

James D. Elliott, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 15, 1980, Ser. No. 178,320
Int. Cl.³ E05F *15/12, 15/18, 15/20*
U.S. Cl. 16—71 **5 Claims**

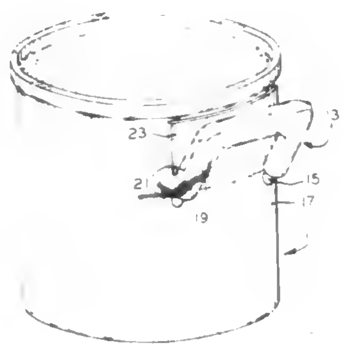


1. An automatic door closer for a cabinet having a door, comprising, an electric motor on said cabinet and having a shaft protruding therefrom, a door closing arm extending between said motor and door, said arm being rotatably mounted at one end thereof on said shaft, the other end of said arm extending to said door, means on said door for moving said arm in one direction about said shaft in response to opening movement of said door, and drive means on said shaft being driven by said motor and engaging after a time delay and moving said arm in an opposite direction to close said door and to disengage said arm after said door is closed.

4,366,596
REMOVABLE COVERS FOR CLOSED LOOP UTENSIL HANDLES

David L. Hellinger; Gordon D. Bell, both of Fort Wayne; Gregory N. Brown, Lafayette; Robert J. Kennedy, Jr., and Kendall S. Smith, II, both of W. Lafayette, all of Ind., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Oct. 22, 1980, Ser. No. 199,575
Int. Cl.³ A47J *45/08, 45/10*
U.S. Cl. 16—119 **10 Claims**



1. A one-piece removable heat insulating cover for a cooking utensil handle comprising a body of resilient rubber-like material having low thermal conductivity having a U-shaped hollow hand grip portion for substantially surrounding the utensil handle and a protective flap portion joined to the U-shaped portion, said protective flap extending between the terminal ends of the U-shaped portion and laterally beyond at least one side of the U-shaped portion so as to be adapted to lie adjacent a portion of a main body of the utensil when the hand grip portion is positioned substantially surrounding the utensil handle with the protective flap portion providing a barrier to prevent a user's hand from contacting the utensil body when grasping the hand grip portion, the resiliency of the flap being such as to enable at least a portion of the flap adjacent the terminal ends of the U-shaped portion to follow the contour of the utensil body.

4,366,597
MULTI-PINTLE HINGE

Villum B. K. Rasmussen, No. 6 Solystparken, 2930 Klampenborg, Denmark

Filed Jun. 16, 1980, Ser. No. 159,462
Claims priority, application Denmark, Jul. 10, 1979, 2904/79
Int. Cl.³ E05D *1/04*
U.S. Cl. 16—368 **2 Claims**

1. A hinge device for tilting type windows, in particular for inclined overhead windows, comprising:

a first hinge portion including a first base plate to be mounted on a stationary frame of the window,

a second hinge portion including a second base plate to be mounted on a tiltable sash of the window,

a pivot pin firmly secured to said second base plate,

a bearing member in which said pivot pin is journalled,

substantially parallel link means movably interconnecting said first base plate and said bearing member so as to allow a substantially translatory displacement of said bearing member between first and second positions in which said pivot pin is located inside a front edge of said first base plate and outside said front edge, respectively,

a curved guide member on said first base plate having its concave side facing said bearing member, and

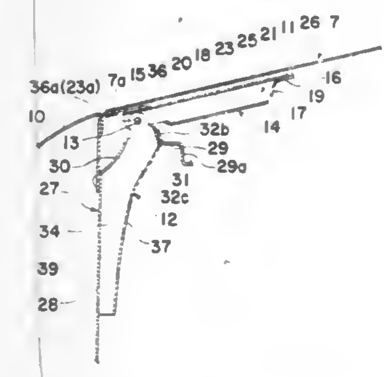
a guide pin on said second base plate displaceable along the concave side of said guide member to coordinate the displacement of said bearing member with the tilting of said second base plate on said pivot pin, said substantially parallel link means being journalled at their ends to the bearing member and the first base plate, respectively,

and one of the link means having an edge opposed to the concave side of said guide member to limit the possible movement of said guide pin away from said concave side.

4,366,598
HINGE STRUCTURE

Hayathugu Harasaki, and Nobuaki Matsuura, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 27, 1980, Ser. No. 125,235
Claims priority, application Japan, Feb. 27, 1979, 54-24943[U]
Int. Cl.³ E05D *5/02*
U.S. Cl. 16—382 **9 Claims**



7. A hinge structure comprising:

a stiffening plate having first and second portions and a flange, said flange being connected to the first portion and being adapted to be secured to an automobile hood, the second portion being connected to the first portion and, when said stiffening plate is secured to the hood, being spaced from the hood and having an inner surface facing the hood, said first and second portions extending at an angle with respect to one another, one of said portions having an opening therethrough;

an integral substantially U-shaped first hinge bracket having a top wall and two spaced first sidewalls, each of said first sidewalls having a first edge along said top wall and a free edge, said first hinge bracket having first and second ends, the first end projecting through said opening, said first sidewalls at the first end portion respectively having first bearing holes therethrough;

two connecting portions attached to corresponding free edges of said first sidewalls, said first hinge bracket being connected to said inner surface at said connecting portions, whereby an interior space is formed by said top wall, said first side walls and said inner surface;

a body structure having first and second body structure portions, the second body structure portion extending at an angle with respect to said first body structure portion and having an aperture therethrough, and flanges extending from the second body structure portion along the peripheral edges of said aperture;

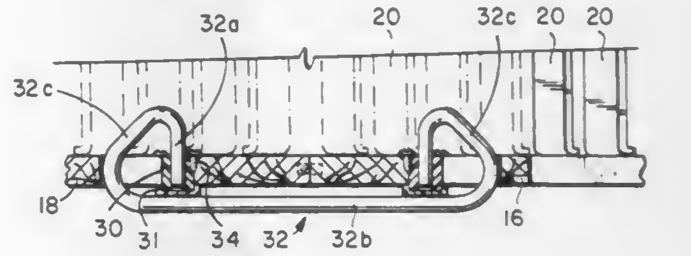
a second hinge bracket rigidly secured to the first body structure portion and having a substantially U-shaped lateral cross-section including two spaced second sidewalls, said second hinge bracket extending through said aperture and said sidewalls having second bearing holes therethrough and said flanges being connected to said second hinge bracket; and

a hinge pin extending through said bearing holes for pivotally connecting the hinge brackets.

4,366,599
CHAIR HINGE

Peter G. Zimmer, and Diethelm von Lieres, both of Port Hood, Nova Scotia, Canada (B0E 2W0)

Filed Oct. 23, 1980, Ser. No. 200,082
Int. Cl.³ E05D *5/10*
U.S. Cl. 16—386 **7 Claims**



1. A hinge structure comprising:

a member having an aperture with a socket portion and having two opposed abutment surfaces lying transverse to a circular arc centered on said socket portion,

a bushing located in said socket portion, and

a rod having a shaft portion rotatable within said bushing, a lever portion extending transversely of the shaft portion, and a stop portion spaced radially of the shaft portion and configured to contact said abutment surfaces to limit pivoting movement of said rod relative to the member,

said aperture being shaped to allow insertion of said rod with the bushing mounted thereon as a unit, the rod being configured so that when the bushing is held in place the rod is restricted in movement axially of the bushing.

4,366,600
METHOD AND MEANS OF CUTTING LINKS OF ENCASED MATERIAL

Ray T. Townsend, Des Moines, and Floyd R. Ladd, West Des Moines, both of Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 154,480, May 29, 1980, Pat. No. 4,322,871. This application Jan. 9, 1981, Ser. No. 223,909
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—52 **16 Claims**

1. An apparatus for separating a plurality of links interconnected by twisted casing sections, comprising

a support frame including a cutting zone having opposite upstream and downstream sides,

a conveyor means on said frame for sequentially conveying joint links to and through said cutting zone,

a knife movably supported in said cutting zone for severing the stretched twisted casing section,

a knife drive means, and

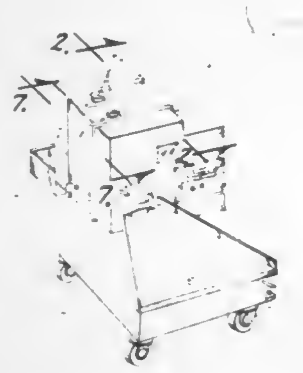
a sensor positioned on the upstream side of said cutting zone for detecting the presence of a twisted casing section between a pair of links, said sensor including a source of electromagnetic waves directed across the path of said links and means for sensing those waves which pass between links adjacent the twisted casing section,

said sensing means being operatively connected to said knife drive means for cutting movement of the knife through the sensed twisted casing section upon movement of said twisted casing section downstream from said sensor to said cutting zone,

said sensor including a light source operative to direct a beam of light into the path of said links and a photocell positioned for sensing said beam of light when said links are advanced to a position such that a twisted casing section is positioned adjacent said beam of light,

said light source and photocell being positioned in adjacent relation on one side of the path of said links,

and a reflective surface is positioned on the opposite side of said path for reflecting said beam of light from said light source back toward said photocell when a twisted casing section enters the space between said light source and reflective surface; said reflective surface being positioned in the path of said links so that said links will engage said reflective surface and move thereover whereby the movement of said links over said reflective surface will maintain said reflective surface in a clean condition.



16. The method of separating a plurality of links interconnected by twisted casing sections, comprising,

providing a cutting zone and a cutting means adjacent thereto for sequentially cutting and separating twisted casing sections moving through said cutting zone,

controlling said cutting means with a sensor including a light source operative to direct a beam of light into the path of said links in said cutting zone and reflecting said light from a reflective surface in said cutting zone to a photocell operatively connected to said cutting means; and

passing a plurality of links through said cutting zone and through the path of said beam of light wherein said links will engage and move across said reflective surface to clean said reflective surface in the area where said beam of light is reflected therefrom.

4,366,601
CARD SCREEN

Wolfgang Beneke, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

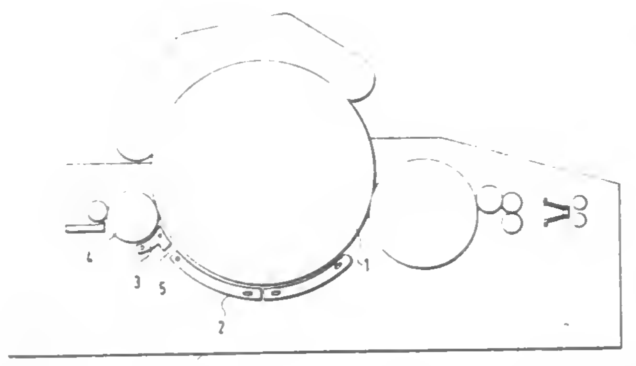
Filed Oct. 23, 1980, Ser. No. 199,812

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943343

Int. Cl.³ D01G *15/34*

U.S. Cl. 19—98 **5 Claims**

1. In a carding machine including a carding cylinder, a lickerin cooperating with the carding cylinder and defining a corner zone therewith, a first card screen extending underneath the carding cylinder and having a screen face oriented towards the carding cylinder and having a length extending substantially parallel to the circumference of the carding cylinder and a width extending perpendicularly to the length of the screen face; said first card screen having an end situated in said corner zone; and a second card screen extending from said end of said first screen underneath said lickerin; the improvement comprising means defining a throughgoing slot in said first screen in the vicinity of said corner zone; said slot being spaced from said end and extending over said width in a direction parallel thereto; and further wherein said slot constitutes the sole discontinuity in said face of said first card screen.



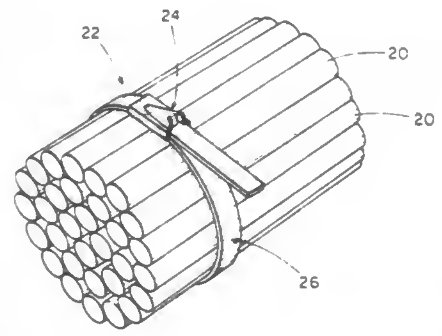
4,366,602
METAL TIE

Thomas Conlon, Oak Forest, and Jack E. Caveney, Hinsdale, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Continuation of Ser. No. 958,296, Nov. 6, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,206

Int. Cl.³ B65D *63/08;* **F16L** *3/08*

U.S. Cl. 24—25 **3 Claims**



1. A tie for forming a plurality of elongate objects into a bundle and for holding a pair of objects together, said tie comprising:

at least one elongate metallic strap;

a metallic locking head disposed adjacent one end of a strap for receiving another end of a strap and comprising a strap entry face, a strap exit face and a strap-receiving aperture extending therebetween and further comprising a floor and a roof which diverge in the direction of said exit face; and

metallic roller means for lockingly engaging a strap, said head comprising retention means for retaining said roller means, said roller means being movable between a threading position wherein said roller means is disposed adjacent said exit face and a locking position wherein said roller means is closer said entrance face, said tie comprising means for causing a threaded strap in all of its positions to be maintained in engagement with said roller means without regard to the posture of said head whereby said tie is positive locking.

4,366,603
FASTENER FOR RETAINING A PAIR OF PANELS

David O. Hulse, Exton, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 18, 1980, Ser. No. 188,501

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—221 R **8 Claims**

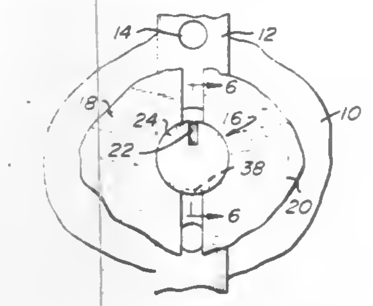
1. A fastener for retaining two adjacent edges of a pair of panels to a structure having an opening therein comprising:

(a) a round head portion;

(b) a stem extending from said head portion eccentrically disposed with respect thereto;

(c) a flange section extending around and outwardly away from said stem to provide stability for said fastener when it is inserted into said opening and further being spaced from said head portion to receive said panels therebetween;

(d) retaining sections extending from said stem disposed below said flange section to retain said fastener in the opening of said structure after it has been inserted therein;



(e) a portion of said stem extending below said flange section being disposed to pass through said opening in said structure with said flange section providing a stop means to maintain said fastener stable inside of said opening and permitting said fastener to be rotated when inserted inside of said opening; and

(f) said eccentrically disposed stem being disposed close to the tangent of said head portion to permit said head portion to be rotated to positions free of one or the other of said panels or rotated to a position to hold in place on said structure both of said pair of panels.

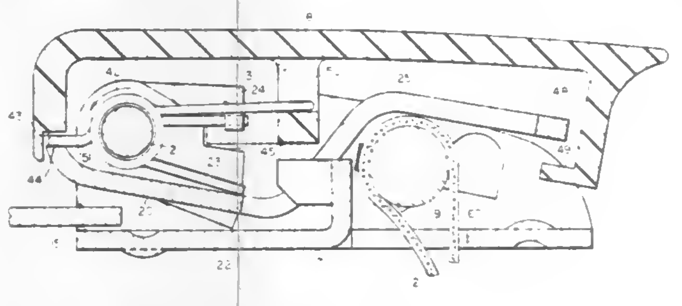
4,366,604
ANTI-CREEP SEAT BELT DEVICE WITH EMERGENCY RELEASE MEANS

James R. Anthony, Indianapolis, and James W. Crooks, Carmel, both of Ind., assignors to Indiana Mills & Mfg., Inc., Carmel, Ind.

Filed Oct. 30, 1980, Ser. No. 202,317

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—230 A **13 Claims**



3. A seat belt buckle comprising:

a main frame attachable to a belt;

a cover pivotally mounted at one end of said frame and movable to and from a locked position and an unlocked position;

a pawl pivotally mounted to said frame at said one end and pivotable to and from said frame forming a space therebetween to receive an aperture tongue plate to be releasably secured;

spring means operable to normally urge said pawl toward said frame to secure said tongue but yieldable to allow movement of said pawl from said frame to release said tongue, said spring means also operable to urge said cover to said locked position but yieldable to allow said cover to pivot to said unlocked position, said cover contacting said pawl when said cover is pivoted to said unlocked position while pivoting said pawl away from said frame releasing said tongue, said pawl includes emergency release means operable to pivot said pawl away from said frame to release said tongue independent of said cover and wherein said cover contacts said emergency release means intermediate said locked position and said unlocked position of said cover to pivot said pawl.

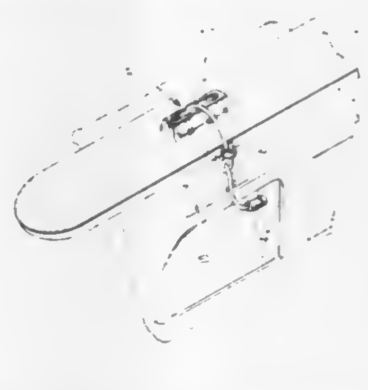
4,366,605
ANTI-THEFT CABLE DEVICE FOR CAR TOP CARRIERS

John McKenney, 20 Vista del Sol, South Laguna, Calif. 92677

Filed Feb. 2, 1981, Ser. No. 230,668

Int. Cl.³ A44B *13/00*

U.S. Cl. 24—230.5 R **7 Claims**



1. An anti-theft device for tethering a load carried on the outside of a vehicle, comprising:

a stiff sheet metal clip shaped as a short section of deep channel fittable over the top edge of a window glass of said vehicle and thin enough to permit said window glass to be substantially closed with said clip in place thereon,

said clip being removable only when said window is opened;

and a cable-like tether permanently attached to said clip at a retaining portion thereof,

said retaining portion being a pair of bent-out tabs brought together with a common hole through both.

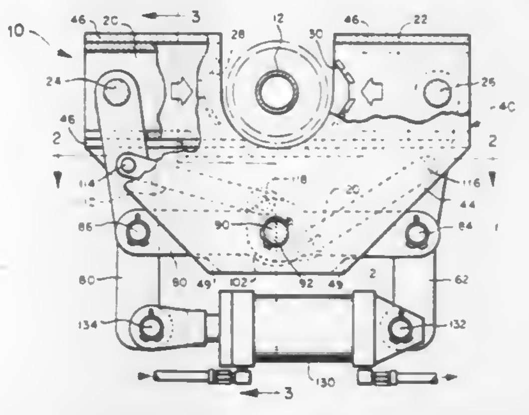
4,366,606
SELF-CENTERING CLAMP FOR DOWN-HOLE TUBULARS

Clyde A. Willis, and Jerry K. Lingafelter, both of Wichita Falls, Tex., assignors to Walker-Neer Mfg. Co., Inc., Wichita Falls, Tex.

Filed Aug. 29, 1980, Ser. No. 182,771

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—263 DA **14 Claims**



14. A self-centering clamp for clamping down-hole tubulars having a range of diameters about a substantially predetermined clamping axis, said clamp comprising:

first and second spaced, substantially parallel side plates, each plate defining an elongated slot therein having a longitudinal axis;

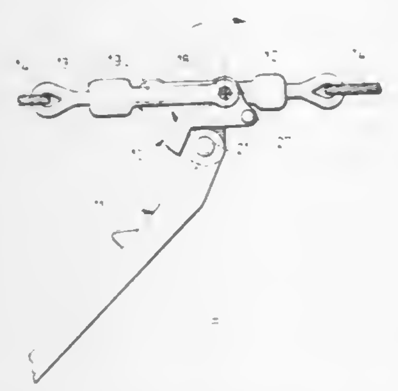
a plurality of edge plates rigidly mounted between the side

plates such that the edge plates in combination with the side plates define a pair of aligned guide cavities therebetween oriented along a first line passing through the clamping axis;
a pair of opposed clamping jaws, each jaw disposed in a respective one of the guide cavities such that the jaws are guided to move along the first line;
a pin disposed between the side plates in the elongated slots, said pin sized such that the pin is movable along the longitudinal axis of the slots but is substantially prevented from moving transverse to the longitudinal axis of the slots;
at least one tension member mounted on the pin between the side plates, said tension member defining opposed pivot sections at the ends thereof;
a pivot plate mounted on the pin to rotate with respect to the side plates, said pivot plate defining a pair of spaced attachment points;
first and second opposed rocker arms, each rocker arm pivotably mounted to a respective one of the pivot sections of the tension member, and each rocker arm mounted to a respective one of the jaws;
a hydraulic cylinder mounted between the opposed rocker arms such that extension of the cylinder pivots the rocker arms about the respective pivot sections of the tension member, thereby causing the opposed jaws to move along the first line;
a first link member mounted between the first rocker arm and the first attachment point such that pivotal movement of the first rocker arm causes the pivot plate to rotate;
a second link member mounted between the second rocker arm and the second attachment point such that rotation of the pivot plate causes the second rocker arm to pivot;
the length of the first and second link members being chosen such that the opposed jaws remain substantially equidistant from the clamping axis as the jaws move along the first line;
the longitudinal axis of each elongated slot oriented to intersect the clamping axis.

4,366,607

OVERCENTER TENSIONING ENGAGEMENT AND RELEASE DEVICE

Stuart J. MacCuaig, London, Canada, assignor to Dominion Chain Inc., Stratford, Canada
Filed Oct. 2, 1980, Ser. No. 193,158
Int. Cl.^{3} B66F *3/00*
U.S. Cl. 24—270 **7 Claims**

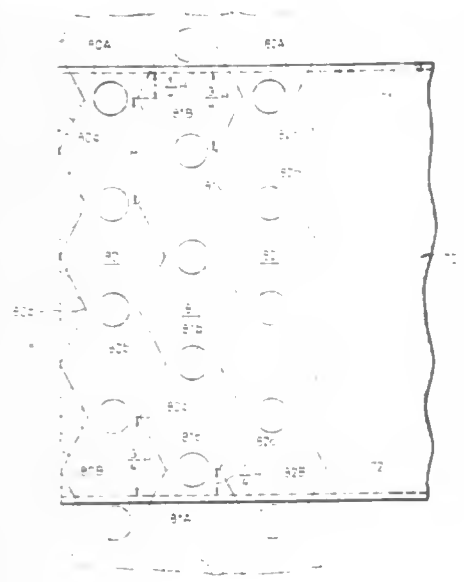


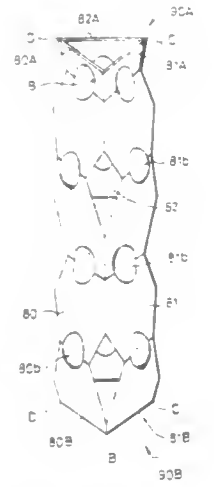
1. An overcentre tensioning engagement and release device comprising a crank member and an operating lever extending therefrom, and first and second tensile load carrying members pivotally connected to said crank member by respective pivotal connections, means defining a third pivotal connection between the operating lever and said crank member, the operating lever being pivotally movable with respect to the crank member between first and second limit positions defined by angularly spaced abutment means on said crank member, the operating lever being selectively engageable with said abutment means for rotating the crank member through a dead centre position between respective load tensioning and load release positions, and said third pivotal connection constituting a lost motion connection permitting the crank member to overrun the operating lever when the crank member is rotated past the dead centre position.

4,366,608

METHOD FOR MANUFACTURING FLUID CONTACTING DEVICE

Tadayoshi Nagaoka, Matsubara, Japan, assignor to Nagaoka Kanaami Kabushiki Kaisha, Matsubara, Japan and Rolf P. C. Manteufel, Kalmthout-Heide, Belgium
Filed May 29, 1980, Ser. No. 154,426
Claims priority, application Japan, Jun. 1, 1979, 54-68536
Int. Cl.^{3} B23P *15/00*
U.S. Cl. 29—157 R **16 Claims**



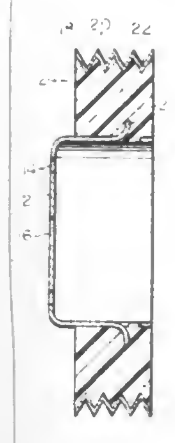


1. A method of manufacturing a fluid contacting device comprising the steps of forming a plurality of elongated sheets each of a predetermined length, each elongated sheet having opposite longitudinal undulating edges defining alternating widened portions and constricted portions, longitudinally foreshortening said sheets to lessen said predetermined length by bending each sheet at transverse lines of juncture traversing the widest and narrowest transverse areas of said widened and constricted portions respectively, and arranging at least three of said sheets into a generally hollow column of triangular cross-section with adjacent longitudinal edges of the elongated sheets being contiguous with each other and with the transverse lines of junction being generally aligned.

4,366,609

COMPOSITE PULLEY AND METHOD FOR MAKING

Billy L. Speer, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio
Division of Ser. No. 76,105, Sep. 17, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,350
Int. Cl.^{3} F16H *55/48*
U.S. Cl. 29—159 R **12 Claims**

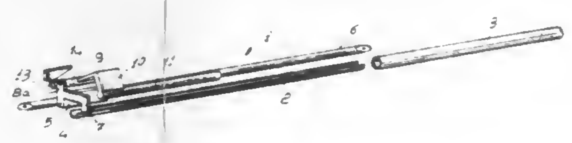


1. A method for manufacturing a composite pulley construction for use with at least one endless power transmission belt, said pulley construction comprising means for mounting said pulley for rotation, an outer peripheral metal surface for receiving and supporting said belt, and a molded plastic sheave supported by said mounting means and supporting said metal surface which comprises the steps of:
(a) providing a mold means having a pulley-shaping cavity having a circumferential portion of desired configuration for forming said belt receiving and support surface;
(b) disposing said mounting means within said cavity;
(c) disposing a cylindrical metal sleeve within said cavity;
(d) closing said cavity;
(e) injecting a plastic material into said cavity between said mounting means and said metal sleeve under pressure;
(f) forcing said plastic material under said pressure against said cylindrical metal sleeve;
(g) deforming said cylindrical metal sleeve under pressure of said material to conform to said configuration of said circumferential portion; and
(h) forming said receiving and supporting surface of said deformed sleeve.

4,366,610

DEVICE FOR INSERTING BARS INTO TUBES

Vladimiro Fabbri, Faenza, Italy, assignor to I.E.M.C.A. S.p.A. Industria Elettromeccanica Complessi Automatici, Faenza, Italy
Filed Sep. 15, 1980, Ser. No. 187,278
Claims priority, application Italy, Sep. 28, 1979, 3494 A/79
Int. Cl.^{3} B23P *19/04*
U.S. Cl. 29—234 **5 Claims**

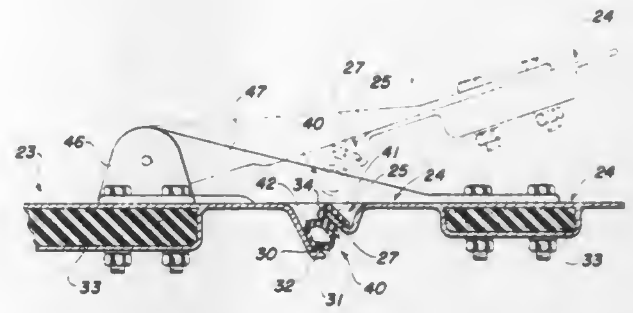


1. A device for inserting bars into tubes, comprising a carriage mobile to and fro in a direction parallel to a guide arranged for supporting a bar in a position aligned with the tube, characterized in that said carriage is provided with an appendix which intersects the guide, such that during a first active stroke of the carriage, said appendix thrusts against the rear end of the bar in such a manner that this latter becomes partly inserted into the tube, and comprises a bar thrust rod which is mounted mobile on the carriage in such a manner that it can be disposed along the guide and aligned with the bar, so that the bar becomes completely inserted into the tube during a second active stroke of the carriage, means being provided at the rear end of the device for raising the bar thrust rod from the guide in order to enable a subsequent bar to be fed into the guide.

4,366,611

METHOD OF MAKING A GASKET-SEALED MOLDED DOOR AND FRAMING MEMBER ASSEMBLY

Donald Jenkins, Louisiana, Mo., assignor to Astoria Fibra-Steel, Inc., Astoria, Ill.
Filed Aug. 25, 1980, Ser. No. 181,174
Int. Cl.^{3} B23P *17/00;* B29D *3/02, 9/00;* B29G *3/00*
U.S. Cl. 29—416 **2 Claims**

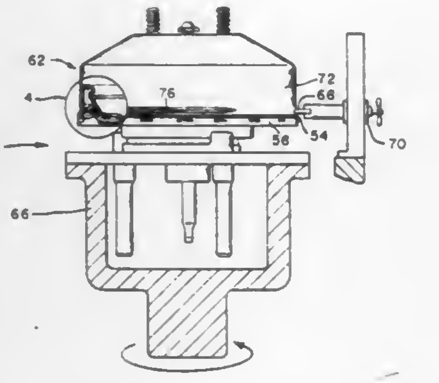


1. The method of making a door-like article to be sealed by a gasket against a flanged framing member, comprising the steps of
preparing a single mold surface having a framing member mold surface portion, a door-forming member mold surface portion projecting outward therefrom, and a mold ridge bounding the door-forming member mold surface portion and projecting beyond it and then sloping toward said framing member mold surface portion, then
molding fiberglass material conformably against said single mold surface only,
to form a single-piece intermediate article of manufacture having a finished outer surface conforming to said single mold surface, which article of manufacture comprises a framing member portion and an integral door-forming portion bounded by a flanged substantially V-shaped groove conforming to said mold ridge, an outer wall of such groove sloping toward the framing member surface portion, then
severing said framing member portion from the door-forming portion by cutting completely through the sloping outer wall of said flanging groove at an intermediate level thereof,
to provide, severed from each other, a framing member bounded by an inwardly-sloping flange, and a door-like member bounded by a generally V-shaped flange having an outwardly and forwardly sloping outer end portion for mounting a gasket thereon
positioning said door-like member on a hinged mounting assembly in a manner such that, in a closed position, said inwardly sloping flange of said framing member and said sloping outer end portion of said V-shaped flange of said door-like member define a cut opening therebetween, and said framing member flange extends slopingly inward of said outer end portion of said V-shaped flange in substantially parallel relationship therewith, providing a gasket having a channel portion on one edge and a cushioning portion on an opposite edge,
and mounting said channel portion of the gasket around the sloping outer end portion of the V-shaped flange in a manner so that said cushioning portion of said gasket underlies an inner surface of said sloping outer end portion and faces an outer surface of said framing member flange,
to effectively enlarge the door-like member so that, on closing the door-like member against the framing member, the

cushioning portion of the gasket overlays and is compressed against said outer surface of the inward sloping flange of the framing member.

4,366,612
METHOD OF FASTENING A FIRST SHELL TO A SECOND SHELL WITH A DIAPHRAGM BEAD THEREBETWEEN

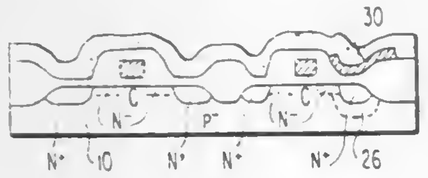
Henry Dorsett, LaPorte, and Michael E. Gatt, Osceola, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.
Filed Dec. 22, 1980, Ser. No. 219,078
Int. Cl.³ B23P *19/04;* B21D *39/00;* B23P *11/02*
U.S. Cl. 29—454 7 Claims



1. In a method of fastening a first shell to a second shell to form a housing by crimping a first peripheral surface on the first shell around a second peripheral surface on the second shell to axially compress a bead on a diaphragm between the first and second shell to seal the interior of the housing from the surrounding environment, the improvement comprising the steps of:
- deforming said first shell over said bead adjacent said crimping to radially compress said bead toward said second shell to compensate for any dimensional differences between said first and second shells and bead that may affect the development of said seal.

4,366,613
METHOD OF FABRICATING AN MOS DYNAMIC RAM WITH LIGHTLY DOPED DRAIN

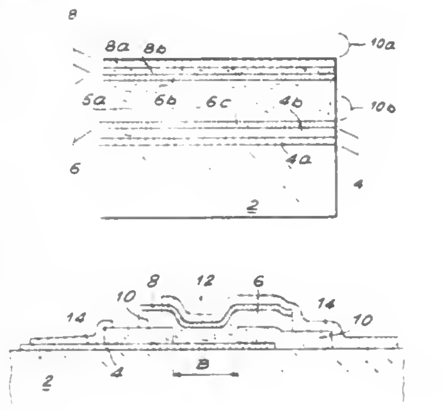
Seiki Ogura, Hopewell Junction, and Paul J. Tsang, Poughkeepsie, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.
Filed Dec. 17, 1980, Ser. No. 217,497
Int. Cl.³ H01L *21/26*
U.S. Cl. 29—571 13 Claims



1. A method of forming a high speed field effect transistor dynamic RAM integrated circuit structure with lightly doped drain areas, comprising the steps of:
- providing a monocrystalline silicon body with a gate oxide and with spaced dielectric insulator regions extending above a surface of said body,
- forming polysilicon gate electrodes between adjacent dielectric insulator regions with substantially vertical surfaces,
- ion implanting N^+ type impurity between adjacent gate electrodes and dielectric insulator regions,
- wherein the improvement comprises, prior to said ion implanting step,
- ion implanting N^- type impurity to form N^- impurity type regions between said vertical surface of said gate electrode and said insulator regions,
- forming a spacer insulator layer with resulting substantially vertical surfaces adjacent said substantially vertical surfaces of said gate electrode and substantially horizontal surfaces overlying said monocrystalline body, and
- reactive ion etching said spacer insulator layer to remove substantially all of said substantially horizontally disposed spacer insulator layer to leave narrow dimensioned spacer insulator regions adjacent said substantially vertical surfaces of said gate electrodes, to thereby protect underlying regions of N^- type impurity from said succeeding N^+ type impurity ion implantation.

4,366,614
METHOD FOR CONSTRUCTING DEVICES WITH A STORAGE ACTION AND HAVING AMORPHOUS SEMICONDUCTORS

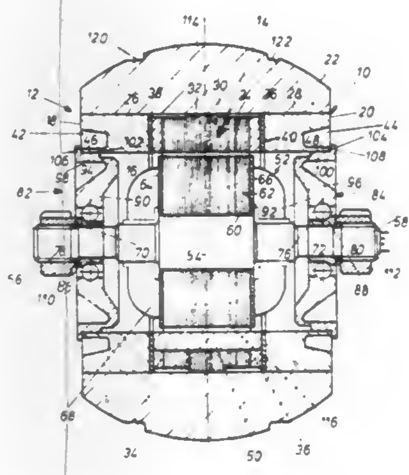
Pierre Kumurdjian, Saint Cheron, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Mar. 17, 1981, Ser. No. 244,608
Claims priority, application France, Mar. 24, 1980, 80 06480
Int. Cl.³ B01J *17/00;* H01J *3/00*
U.S. Cl. 29—580 9 Claims



1. A method for the production of devices having a memory action with amorphous semiconductors, comprising in sequence a substrate on which is deposited a lower electrode, an active area produced by means of an amorphous semiconductor compound and an upper electrode, comprising producing the active area in the form of a central layer constituting an active layer formed from a first amorphous semiconductor compound and at least one buffer layer placed on one of the upper and lower faces of the active layer, said buffer layers being formed from a second amorphous semiconductor compound in the form of a quarternary compound selected from the group consisting of germanium, tellurium, arsenic and sulphur and producing at least one of the electrodes that it constitutes the actual electrode and with a thin layer turned towards the active area constituting a barrier, wherein the actual electrodes are made from a metal chosen from the group consisting of tungsten and tantalum which can diffuse into the buffer layers and which with the second amorphous semiconductor compound constituting the said buffer layers can form a binary compound with a hexagonal structure forming the barrier necessary for stabilizing the semiconductor.

4,366,615
METHOD OF MAKING AN EXTERNAL ROTOR GYROSCOPE

Bernhard Strittmatter, Nussdorf, and Wolfgang Syre, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geraetetechnik GmbH, Uberlingen, Fed. Rep. of Germany
Division of Ser. No. 6,381, Jan. 25, 1979, Pat. No. 4,283,959, which is a continuation of Ser. No. 803,752, Jun. 6, 1977, abandoned. This application Jul. 28, 1980, Ser. No. 173,144
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646376
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 1 Claim



1. A method for manufacturing a gyroscope comprising jacket-shaped rotor means with an opening therethrough, said rotor means being a substantially solid annular part, a stator located inside the opening of the rotor means, an axle firmly attached to the stator and defining an axis of rotation with the stator having two sides in planes generaly normal to said axis, and prestressed ball bearing assemblies at both sides of the stator and mounted on said axle, each bearing assembly including an inner ring and an outer ring with balls therebetween, said rotor means having end faces in planes generally normal to said axis and including an annular jacket member and an annular motor drive member centrally within secured to the jacket member, said rotor means having an inner surface which at said end faces forms bearing surfaces cylindrical about said axis, said outer rings of said bearing assemblies including outer faces with cylindrical circumferential surfaces received directly in said bearing surfaces respectively and flanges abutting said end faces respectively, said rotor means between said end faces including three parts, namely, a central part and two end parts, said three parts being all within said jacket member and all defining a straight cylindrical through bore concentric with said axis and being said opening, said motor drive member forming said central part, said rotor means including annular end members forming said end parts respectively, said annular end members having inner walls defining said bearing surfaces and end faces in said planes of said rotor means, said end faces of said end members having annular grooves extending inwardly from said planes of said rotor means concentric to the axis of rotation and positioned at a distance from said opening such that said inner walls adjacent the end faces of the end members define resilient rim portions against which said outer rings are mounted as aforesaid, said method comprising the steps of:
- forming said end members with an exterior diameter greater than the diameter of the bore of the jacket member, with a machining allowance at the interior thereof, and with a machining allowance at the faces thereof which will correspond to the end faces of the rotor;
- forming at least part of the periphery of the motor member with an exterior diameter greater than that of the bore of the jacket member;
- thermally adjusting the dimensions of the members so that said exterior diameters are smaller than the diameter of the jacket member bore, assembling said motor member and said end members in said jacket member, and equilibrating the temperatures of said members, whereby said jacket member securely engages said motor members and said end members to form a blank for said substantially solid annular part;
- thereafter accurately machining said blank to form said opening of said rotor means;
- thereafter machining said end faces on said blank while orienting said machining operation by use of the previously formed opening of said rotor means; and
- assembling said rotor means and bearings with the rotor means so formed.

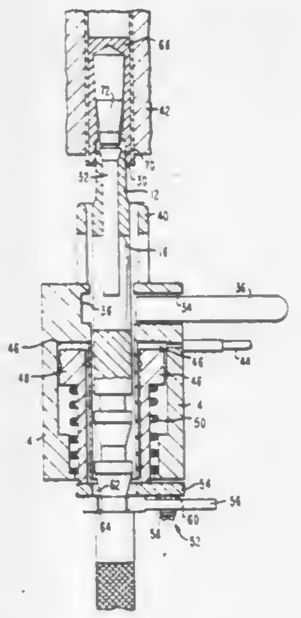
4,366,616
COATING FOR LITHIUM ANODE, THIONYL CHLORIDE ACTIVE CATHODE ELECTROCHEMICAL CELL

Vincent O. Catanzarite, 7044 Mira Vista, Las Vegas, Nev. 89120
Division of Ser. No. 143,719, Apr. 25, 1980, Pat. No. 4,296,185, which is a continuation-in-part of Ser. No. 53,988, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 840,521, Oct. 11, 1977, Pat. No. 4,170,693. This application Oct. 17, 1980, Ser. No. 197,961
The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.
Int. Cl.³ H01M *6/14*
U.S. Cl. 29—623.5 6 Claims

4. In a method of reducing passivation in an electrochemical cell having a lithium anode, a cathode current collector spaced from said anode, a separator located between said anode and said cathode current collector, and electroylte consisting of an ionically conductive solute dissolved in thionyl chloride; the steps comprising:
- (a) prior to assembly, locating a cyanoacrilate sheet adjacent to said anode
- (b) assembling said anode and cyanoacrilate sheet into said cell along with said cathode current collector and electrolyte.

4,366,617
PLUG REMOVAL APPARATUS

William F. Nanstiel, Forest Hills, and Ronald F. Antol, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 12, 1980, Ser. No. 129,538
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—727 8 Claims



1. Plug removal apparatus comprising:
a fluid cylinder;

a rod having a slot therethrough and disposed in said fluid cylinder for engaging a plug disposed in a member and extracting said plug from said member under the action of said fluid cylinder;

a ram slidably disposed in said rod for loosening said plug in said member so that said plug can be extracted from said member; and

engagement means associated with said rod and said fluid cylinder, with said slot selectively coupling said rod to said fluid cylinder, and for selectively engaging said ram thereby allowing said ram to loosen said plug when said fluid cylinder is activated.

4,366,618

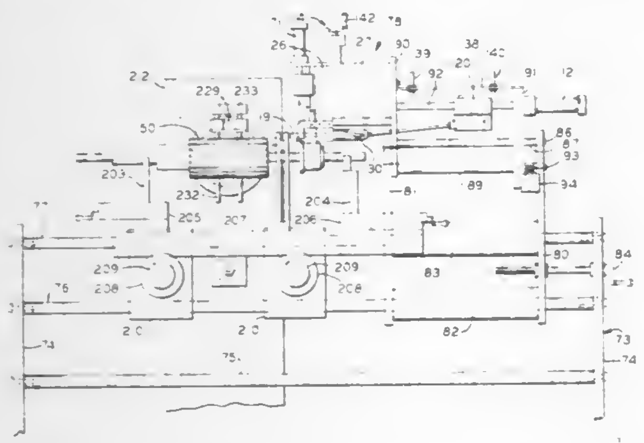
APPARATUS FOR WINDING ARMATURES OF ELECTRIC MACHINES

Lee J. Lakes, 1023 Sherwood Dr., Bluffton, Ind. 46714

Filed Jul. 2, 1980, Ser. No. 165,375

Int. Cl.^{3} B23P *23/00;* B65H *81/00*

U.S. Cl. 29—735 **34 Claims**



1. In an apparatus for winding the armature of an electric machine, said armature having a slotted core and commutator mounted on a common shaft, said commutator having commutator bars and risers provided with slots, respectively, apparatus comprising:

a supporting frame, means on said frame for supporting an armature in winding position and holding such armature stationary in such position, lead-connecting mechanism carried by said frame adjacent to said supporting and holding means in juxtaposition to the commutator of said armature for locating two coil leads in two preselected ones of said riser slots, respectively, means mounting said armature-supporting and holding means and said mechanism on said stationary frame for independently adjustably rotating each of said supporting and holding means and said mechanism about the axis of said armature, coil-winding mechanism on said frame, for winding a coil on the core of said armature while stationary in said position;

said lead-connecting mechanism including a coil lead guide device having two lead-aligning sections laterally spaced a distance corresponding to the spacing between two adjacent slots in the commutator riser, said lead-aligning sections for a given rotated position of said mechanism being disposed radially opposite said riser with said sections in alignment with two adjacent riser slots, means for locating the two end leads of a coil wound on said core in said lead-aligning sections, respectively, and two lead-inserting devices for selective independent movement into and out of said two riser slots for inserting said coil leads into said slots, respectively.

4,366,619

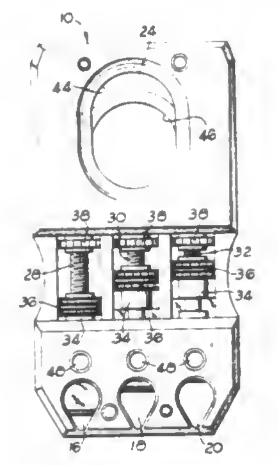
CABLE STRIPPER

Zdzislaw Bieganski, Timber La., Woburn, Bedfordshire, England

Filed Dec. 29, 1980, Ser. No. 229,598

Int. Cl.^{3} H02G *1/12*

U.S. Cl. 30—90.1 **4 Claims**



1. A manually operable tool for stripping cables, comprising a body having a plurality of cable apertures, a blade carrier in the body which is movable toward and away from the cable apertures, means resiliently urging the blade carrier toward the cable apertures, a stop which limits movement of the carrier toward the cable apertures, a plurality of blade holders adjustably mounted in the carrier, each of which is individually adjustable toward and away from one of the cable apertures, and each of which holds a blade extending transverse to said aperture, whereby each blade holder may be individually set in a position to cause its blade to produce a predetermined depth of cut in the sheath of a cable extending through the corresponding aperture when the carrier is against said stop, a finger aperture in the blade carrier, and a finger access aperture in said body, overlapping said finger aperture, which is large enough to permit the carrier to be manually drawn away from said stop for insertion of a cable into a cable aperture.

4,366,620

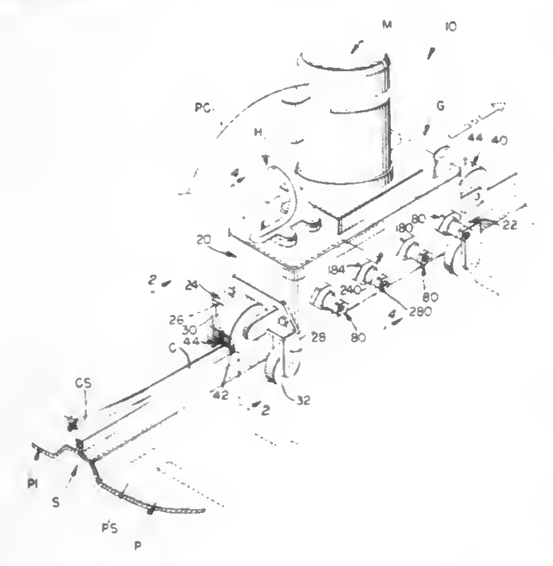
ROOF SEAM CUTTING MACHINE

Richard R. McClure, Basehor, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Feb. 23, 1981, Ser. No. 237,522

Int. Cl.^{3} B26B *15/00*

U.S. Cl. 30—264 **8 Claims**



1. A machine for cutting a standing seam connecting roof panels together comprising:

a body;

means on said body for moving the machine along a standing seam to be cut;

a platen wheel mounted on said body to be located on one side of the standing seam;

a cutter wheel mounted on said body to be located on a side of the seam opposite said platen wheel;

mounting means movably mounting said cutter wheel on said body;

a jackscrew mechanism mounted on said body adjacent said mounting means for moving said mounting means toward said cutter wheel, said jackscrew mechanism including a bonnet nut having a bore defined therethrough, a shuttle bolt threadably received in said bonnet nut and having a head on one end and a slot on an opposite end, a lug nut having a key on one end thereof, said key being engaged with said shuttle bolt slot so that rotation of said lug nut about the longitudinal axis thereof causes corresponding rotation of said shuttle bolt about the longitudinal axis thereof so that said shuttle bolt moves longitudinally with respect to said bonnet nut; and

cutting means fixed on said cutter wheel to cooperate with said platen wheel to cut the seam.

4,366,621

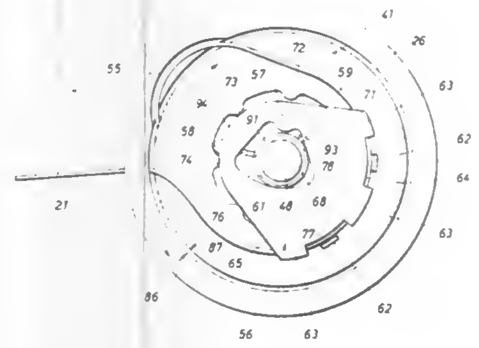
APPARATUS FOR CUTTING VEGETATION

Albert W. Mitchell, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 144,062, Apr. 28, 1980. This application Sep. 5, 1980, Ser. No. 184,276

Int. Cl.^{3} A01D *50/00*

U.S. Cl. 30—276 **13 Claims**



1. An apparatus for cutting vegetation, comprising:

a head rotatable about an axis of rotation, said head having at least one peripheral aperture;

said head carrying a cavity providing a storage area for cutting line;

a supply of cutting line disposed in said cavity, said cutting line being flexible and with a free end extending outwardly from said head through said aperture into a cutting plane;

an escapement cam mounted on said head for movement between first and second positions, said escapement cam including means for preventing movement of said cutting line for extension into said cutting plane when said escapement cam is in at least said first position, said means being operable to release predetermined incremental lengths of cutting line for extension into said cutting plane in response to movement of said escapement cam between said first and second positions;

means on said escapement cam engageable with a portion of said cutting line and responsive to a force tending to extend said cutting line into said cutting plane to be urged in said first position, said escapement cam being responsive to a shortening of said cutting line at said free end to less than a predetermined length during rotation of said head to move to said second position to effect release of an incremental length of cutting line for extension into said cutting plane; and

recoil means engaged with said escapement cam for urging said escapement cam from said second position toward said first position.

4,366,622

APPARATUS FOR CUTTING VEGETATION

Marco H. Lombard, Austin, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 53,592, Jun. 29, 1979, Pat. No. 4,290,200. This application Apr. 23, 1981, Ser. No. 256,788

Int. Cl.^{3} A01D *50/00*

U.S. Cl. 30—276 **9 Claims**

1. An apparatus for cutting vegetation, comprising:

(a) a head rotatable about an axis of rotation and said head having a peripheral aperture;

(b) said head carrying an annular cavity to provide a storage area for a cutting line;

(c) spool means including a coil of said cutting line mounted in said cavity and journaled therein for rotation freely about the rotational axis of said head;

(d) a flexible non-metallic cutting line disposed in a coiled portion about said spool means with a free end of said cutting line extending radially outwardly through said aperture into a cutting plane;

(e) cam means for controlling extension of said cutting line through said aperture into the cutting plane to a predetermined maximum length;

(f) said cam means including an elongated member pivotally mounted in said head and provided with rounded cam surfaces for gripping said cutting line, said elongated member having adjacent said aperture first, second and third openings, and said cutting line extending from said spool means progressively gripped by passage through said first opening and about said rounded cam surfaces, and then with a reversing loop through said second and third openings before passing through said aperture and into the cutting plane;

(g) said elongated member being provided with counterbalance parts extending on opposite sides of its mounting point to said head and vibration of said cutting line inducing movement of said elongated member and said cutting line whereby said cutting line is continuously extended from said aperture when a length less than the predetermined maximum length extends in the cutting plane.

4,366,623

ELECTRONIC LENGTH MEASURING DEVICE COMPRISING A MEASURING-TAPE WHICH IS ROLLED UP IN A GAUGING STATION

Elon R. V. Bergqvist, Myrbackavägen, Pl. 6246, Kungälv, Sweden (442 90)

Filed Mar. 5, 1981, Ser. No. 240,124

Claims priority, application Sweden, Mar. 6, 1980, 8001753

Int. Cl.^{3} G01B *3/08;* G06M *1/272*

U.S. Cl. 33—140 **3 Claims**

1. An electronic length measuring device for measuring length and summing successively measured lengths, said device comprising:

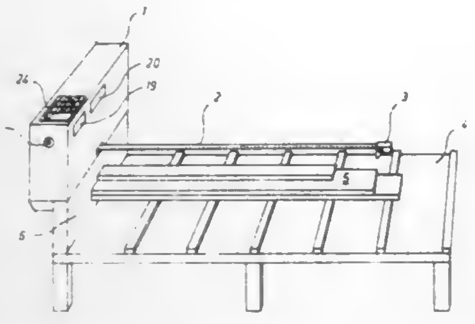
a gauging station;

an elongated measuring tape having a plurality of detectable elements secured thereto and spaced at equal distances along the length of the tape, said tape having a distal end;

means for permitting selective longitudinal extension and retraction of said distal end of said tape from said gauging station;

detector means for sensing passage of said detectable elements thereby during longitudinal extension and retraction of said tape;

counter means for counting each detectable element sensed by said detector means to provide a count representing a measured length;



selectively actuable signal transmission means disposed at said distal end of said tape;

means for transmitting signals from said transmission means to said gauging station; and

memory means disposed at said gauging station for accumulating counts of said counter means representing successive measured lengths in response to a signal transmitted by said transmission means.

4,366,624

ARRANGEMENT FOR BENCHES FOR MEASURING AND STRAIGHTENING VEHICLES

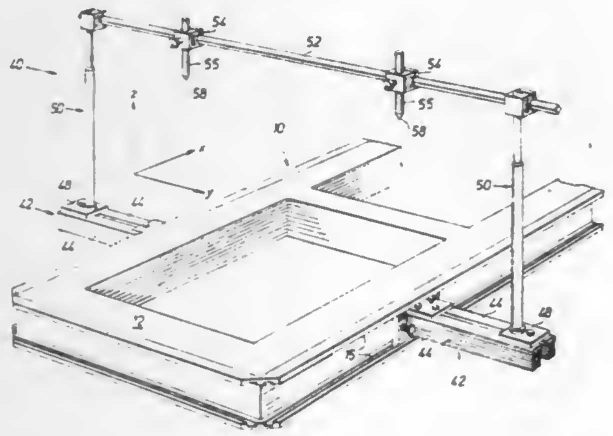
Hans R. Bergstrom, Kungsor, Sweden, assignor to Aktiebologet Samefa, Kungsor, Sweden

Filed Apr. 15, 1981, Ser. No. 254,480

Claims priority, application Sweden, Sep. 12, 1980, 8006417

Int. Cl.³ G01B *5/255*

U.S. Cl. 33—180 AT **7 Claims**



1. An arrangement for determining and, if required, correcting the position of selected reference points on a vehicle body or chassis comprising, a stable set-up device in the form of a rigid, substantially horizontal bench having parallel sides and over which a body which is to be measured and checked is suspended by means connected with the bench in a position which is fixed relative to the bench and also comprising a measuring unit which co-acts with the bench, said arrangement also including a measuring bridge supported on said bench for adjustment lengthwise thereof (x axis), said bridge comprising slide members on which upwardly extending locating tools can be adjustably displaced transversely (y axis) and vertically (z axis), the amount of said displacement being readable on appropriate scales, both the bench and the measuring bridge having co-acting reference surfaces for the accurate orientation of the two components relative to each other so that the position of the measuring tools relative to predetermined reference points on the vehicle body can be adjusted and determined, characterized by another measuring unit in the form of an inverted, substantially U-shaped stand adapted to span said bench transversely, said stand having laterally spaced, upright legs connected at their upper ends by a cross bar, said bench having rigid support members projecting laterally outwardly from opposite sides thereof on which the lower ends of said legs are mounted for adjustment, said supports being adjustably mounted on said bench, at least one auxiliary locating tool mounted on said cross bar for adjustment vertically and lengthwise thereof, the arrangement being such that the auxiliary locating tools extend downwardly from above and towards the body suspended over the bench, said stand and said measuring bridge having fixed abutments thereon adapted to interengage with selected abutments fixed on a rigid orientation gauge extending therebetween to enable adjustment of the stand on the bench to a precise position relative to said measuring bridge so that the positions of the measuring tools on the bridge and stand relative to each other can be precisely determined.

4,366,625

AIMING DEVICE

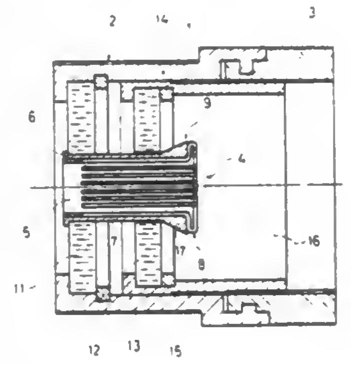
Walter Gehmann, Karlstrasse 40, Karlsruhe I, Fed. Rep. of Germany (7500)

Filed Jan. 23, 1981, Ser. No. 227,758

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004636

Int. Cl.³ F41G *1/08, 1/26*

U.S. Cl. 33—251 **7 Claims**



1. An aiming device for sport rifles comprising: a tubular housing forming a sighting ring tunnel; a sighting ring concentrically supported by a support disc within said housing and consisting of a hollow cylinder composed of elastic metal lamellas disposed adjacent each other and having ramp-like end portions with inwardly bent ends; a control disc surrounding said hollow cylinder and slidably supported in said housing; means for moving said control disc along said hollow cylinder and onto said ramp-like end portion to thereby compress said lamellas for adjustment of the opening of said sighting ring, said hollow cylinder being supported by a support disc mounted in said housing, and said support and control discs including hub sleeves and outer sleeves interconnected by thin radial strips consisting of spring steel and being oriented in axial direction within said tubular housing, said sleeves providing for a large transparent area therebetween such that compression of said lamellas for reduction of the opening of said sighting ring also results in a reduction of the size of the sighting ring.

4,366,626

RULING DEVICE FOR THE BLIND

Lester R. Livick, 15106 Beatty St., San Leandro, Calif. 94579

Filed Nov. 24, 1980, Ser. No. 209,675

Int. Cl.³ B43L *13/00*

U.S. Cl. 33—435 **3 Claims**

1. A marking device for the blind comprising

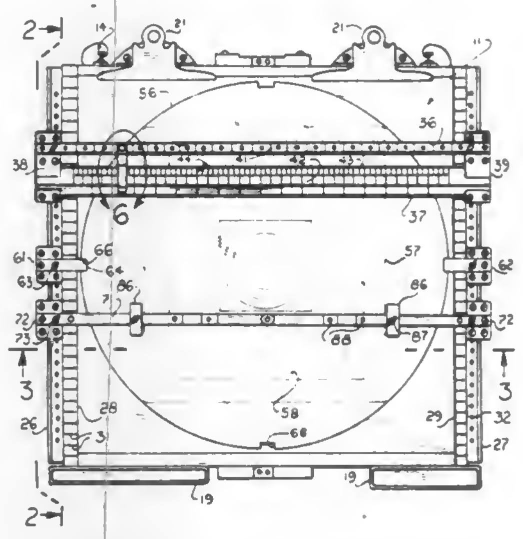
a board having a flat upper surface with tracks disposed one along each lateral side and distance indicators along each lateral side having physically raised or depressed marks for identification by touch,

a pair of parallel spaced bars adapted to extend laterally across the upper surface of said board and having a foot at each end connecting said bars and slidably engaging a track whereby said bars are movable together on said board, the upper bar of said pair of bars having marks equally spaced longitudinally thereof that are raised or indented to be identifyable by touch,

the lower bar of said pair of bars having an inclined surface facing said upper bar and extending from the board surface to an edge formed by another surface of said bar, said inclined surface having graduations thereon identifyable by touch,

a movable marker slidably engaging said upper bar of said pair of bars and extending between said bars on the board surface over said lower bar inclined surface an at least partially over said another surface for sliding along said inclined surface and including releasable locking means engaging said upper bar for fixing said marker in alignment with one of the marks on said upper bar, and

locking means on said feet cooperating with said tracks for releasably fixing said bars in alignment with said distance indicators along the side of said board.



4,366,627

PROCESS FOR THE TREATMENT OF WOOD

Bror O. Hager, Forsetevagen 5, S-182 63 Djursholm, Sweden

Filed Apr. 8, 1981, Ser. No. 252,233

Int. Cl.³ F26B *3/00, 5/04;* **D05B** *3/12*

U.S. Cl. 34—9.5 **16 Claims**

12. A novel oil mixture for use in the drying of wood comprising a mixture of high boiling and low boiling oils in a volume ratio of 50:50 to 25:75 with said high boiling oil being present in an amount of at least 25 volume percent, said high boiling oils having a boiling point ranging from about 325° to about 400° C. and said low boiling oils having a boiling point ranging from about 150° to about 200° C.

4,366,628

INVERTABLE PAN CONVEYOR AND MATERIAL CARRYING PAN THEREFOR

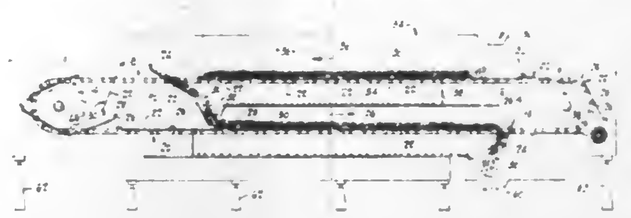
Kurudamannil A. George, Philadelphia, Pa., assignor to Proctor & Schwartz, Inc., Pa.

Filed Apr. 6, 1981, Ser. No. 251,386

Int. Cl.³ F26B *15/14*

U.S. Cl. 34—207 **12 Claims**

1. A conveyor comprising a horizontally arranged series of traveling material carrying pans adapted to course between and around terminal sprockets, each said pan having a single material carrying surface, means for inverting said pans sequentially as they approach a terminal sprocket at the end of one reach of horizontal travel, said pans being reinverted in sequence as they approach the other terminal sprocket, said pan inverting means including a vertically disposed plate-like cam located at an end of each of said pans, said plate-like cam comprising a first portion extending above the material carrying surface of the pan and a second portion coplanar with said first portion and extending below said pan, said first and second portions including oppositely inwardly extending cam follower intercepting notches defined by cam follower engaging edges, for engaging spaced stationary pan-inverting cam followers located adjacent each reach and prior to the terminal sprocket in the direction of pan travel, said cam and cam followers configured for and coacting respectively to invert said pans sequentially on approach to said terminal sprocket in response to pan inverting engagement between a said notch and a cam follower during movement in the direction of travel along a reach of horizontal travel, to discharge material carried on said material carrying surface for transfer to a lower traveling pan moving in the opposite direction on a lower reach, said discharge being in a direction inwardly of the sprockets and toward a point intermediate said sprockets.



4,366,629

SAFETY BOOT

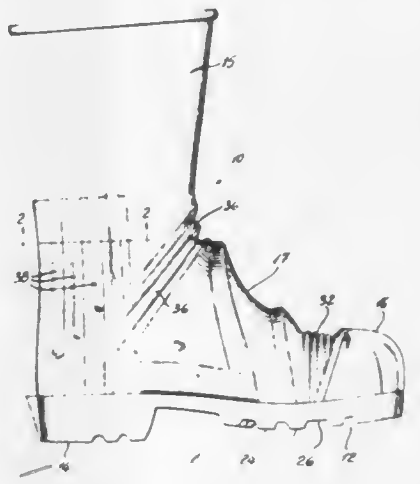
Hans R. Scherz, 458 Mount Stephen, Westmount, Quebec, Canada

Continuation of Ser. No. 104,551, Dec. 17, 1979, abandoned.

This application Dec. 19, 1980, Ser. No. 217,980

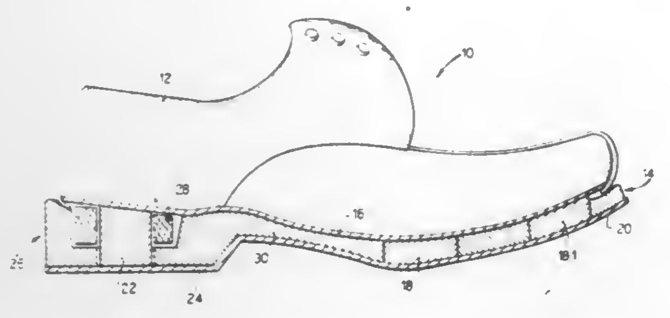
Int. Cl.³ A43B *1/10, 13/42;* **A43C** *13/14;* **A43B** *23/00*

U.S. Cl. 36—4 **8 Claims**



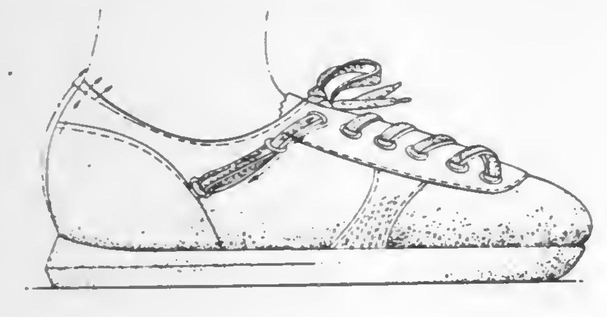
1. A waterproof safety boot of molded plastics material having an integral sole and upper, the upper including a toe portion and a metatarsal portion, a metallic plate provided in the sole portion and extending the width and length thereof and allowing for longitudinal flexing of the sole, a box-shaped rigid toe guard provided in the toe portion, a rigid arched metatarsal guard member extending laterally and having side portions connected to the sole plate, the trailing edge of the toe guard being spaced inwardly relative to the leading edge of the metatarsal guard and the molded plastics material extending between the metatarsal guard and the toe guard having a flexible hinge portion in the form of a reverse fold such that the trailing edge of the toe guard will pivot inwardly with the leading edge of the metatarsal guard when the toe portion of the boot is being pivoted relative to the boot.

4,366,630
FOOT WEAR
Leslie I. Bloom, Johannesburg, South Africa, assignor to AECI Limited, Johannesburg, South Africa
Filed Dec. 1, 1980, Ser. No. 211,941
Claims priority, application South Africa, Dec. 7, 1979, 79/6644
Int. Cl.³ A43B *13/12;* **A61N** *1/14*
U.S. Cl. 36—30 R **10 Claims**



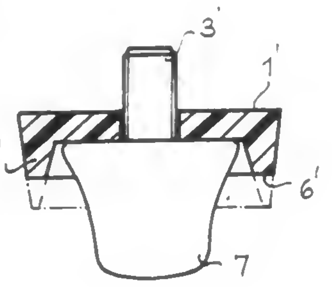
1. A composite sole for use in safety footwear, said composite sole comprising an inner sole of electrically conducting material, a thin flexible outer sole up to 8 mm thick of electrically conducting material, said outer sole being spaced from the inner sole and connected thereto at a multiple plurality of positions spaced apart over the area of the sole in an electrically conducting manner and a layer resistant to flex cracking between the inner and outer soles.

4,366,631
ATHLETIC SHOE
John E. Larsen, Hingham, and Rob R. McGregor, Concord, both of Mass., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 21,366, Mar. 19, 1979, Pat. No. 4,245,408. This application Jan. 15, 1981, Ser. No. 225,171
Int. Cl.³ A43B *11/00, 23/28, 5/00*
U.S. Cl. 36—50 **3 Claims**



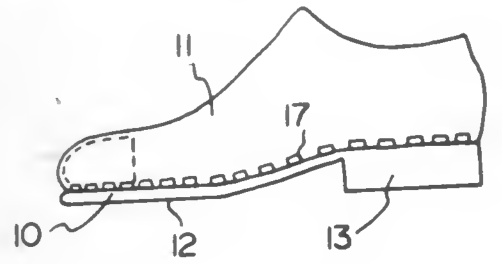
1. An athletic shoe comprising:
(a) a sole;
(b) an upper affixed to the sole having a toe portion, a heel portion and a connecting portion therebetween;
(c) said heel portion having a heel portion embracing counter means having a forwardly extending portion at each side of the heel portion and a rearward portion;
(d) said shoe having a upwardly facing opening in said upper having an edge, through which the ankle portion of a foot protrudes when said shoe is worn;
(e) an eyelet-containing substantially U-shaped portion in said connecting portion extending from proximately rearward of said toe portion to said edge of said opening of said upper and having a row of spaced eyelets in each of said legs of said U-shaped portion by means of which said shoe is laced and tied;
(f) a first ring connecting means affixed to the forwardly extending portions of said counter means at each side of the upper;
(g) a second ring connecting means affixed to said U-shaped portion near said edge of said opening of said upper;
(h) an elongated lace having a portion threaded through said eyelets in said U-shaped portion and one end portion of the lace is threaded through said second ring connecting means, thereafter is threaded through said first ring connecting means and then again is threaded through said second ring connecting means all on the same side of the shoe; and the other end portion of the lace is threaded through said second ring connecting means, thereafter is threaded through said first ring connecting means and then again is threaded through said second ring connecting means all on the other side of the shoe,
(i) the lace is of sufficient length whereby there are end portions capable of being tied over the top portion of the U-shaped eyelet portion to thereby produce drawing together stress between the first ring connecting means and the top portion of the U-shaped eyelet portion at each side of the shoe.

4,366,632
GRIPPING ELEMENT FOR FOOTWEAR
Alfred Bente, Herzogenaurach, Fed. Rep. of Germany, assignor to adidas Sportschuhfabriken Adi Dassler KG, Fed. Rep. of Germany
Filed Feb. 5, 1981, Ser. No. 231,740
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005261
Int. Cl.³ A43C *15/00;* **A43B** *5/02*
U.S. Cl. 36—67 D **1 Claim**



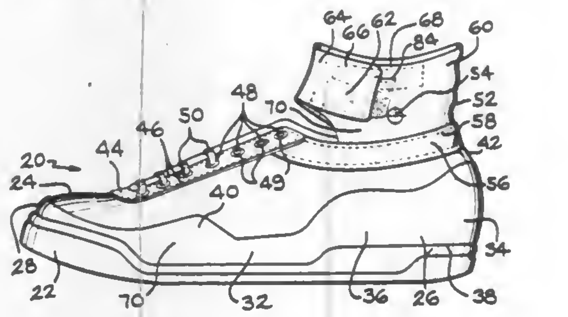
1. An exchangeable gripping structure for athletic footwear comprising, a gripping element and a cleat, said gripping element having a bell-like body including a wall of a predetermined thickness and a free edge, said gripping element being formed of an elastically-yielding material, said cleat being nested within said bell-like body of said gripping element and protruding beyond said edge thereof, said thickness of said wall of said bell-like body decreasing towards said free edge of said gripping element, said free edge of said bell-like body being uninterrupted and encircling said cleat a distance therefrom.

4,366,633
SAFETY TOE CAP
Thomas R. Flottorp, 207 Argyle St., Regina, Saskatchewan, S4R 4C5, Canada
Filed Oct. 1, 1980, Ser. No. 192,817
Claims priority, application Canada, Nov. 9, 1979, 339560
Int. Cl.³ A43B *3/24;* **A43C** *13/14*
U.S. Cl. 36—101 **5 Claims**



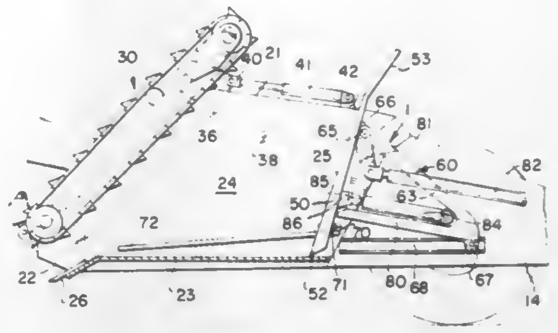
1. Foot wear comprising an upper portion and a sole and heel portion; fastening means extending around the periphery of said portions to detachably connect said upper and said sole and heel portions, said fastening means including a plurality of hooks spaced around the periphery of one of said portions and a continuous wire extending around the periphery of the other of said portions, said hooks partially encompassing said wire to connect said portions; and a toe cap including a peripheral portion having a plurality of hooks formed thereon to receive said continuous wire for detachably securing said toe cap between said upper and said heel and sole portions.

4,366,634
ATHLETIC SHOE
Erik O. Giese, Key Biscayne, Fla., and Roger J. Brown, Aspen, Colo., assignors to Converse Inc., Wilmington, Mass.
Filed Jan. 9, 1981, Ser. No. 223,603
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—114 **16 Claims**



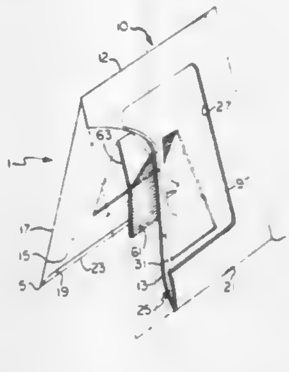
1. A structure for an athletic shoe, comprising:
a rubber outsole portion;
a fabric upper portion;
a unitary molded resilient intermediate portion;
said intermediate portion being bonded to said rubber outsole portion and to said fabric upper portion and extending continuously around the periphery of said shoe on the outside of said shoe external to said fabric upper portion;
said unitary intermediate portion having a heel counter portion, a sidewall portion, a metatarsal portion and a toe cap portion;
said heel counter portion including side portions extended forwardly towards a toe portion of said shoe and adapted to conform at least in part to the tarsus of a foot of a wearer of said shoe to resiliently restrict lateral movement of said tarsus with respect to said outsole portion;
said sidewall portions extending upwardly from said outsole portion and being adapted to resiliently restrain lateral movement of said tarsus and of the metatarsus of the foot of said wearer;
said metatarsal portion extending upwardly from said outsole portion and adapted at least in part conform to the area adjacent the joints between the metatarsus and phalanges of said foot of said wearer to resiliently restrain said area from lateral movement with respect to said outsole;
said toe cap and said heel counter being adapted to resiliently restrain said foot of said wearer from longitudinal movement with respect to said shoe;
said fabric upper portion including a reinforced lacing portion fastened to said upper portion at an instep area of said shoe and adapted to receive a shoelace;
said upper portion defining an ankle opening, said ankle opening adapted to encircle the ankle of said foot of said wearer approximately adjacent to the subtalar joint of said foot and below the malleoli of a leg of said wearer.

4,366,635
PIVOTING EJECTOR FOR ELEVATOR SCRAPER
Hardin Joyce, Jr., Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Nov. 18, 1980, Ser. No. 207,993
Int. Cl.³ B60P *1/36;* **E02F** *5/00*
U.S. Cl. 37—8 **14 Claims**



1. An ejector assembly for the bowl of an earth moving assembly comprising
bowl means for collecting and discharging earth material dislodged by an earth moving vehicle,
said bowl means including a discharge opening for selectively discharging collected earth material,
elevator means pivotally coupled to said bowl means for transporting earth material dislodged by an earthmoving vehicle into said bowl means,
ejector means connected to said bowl means and having an ejector member forming a wall of said bowl means, said ejector member being selectively pivotable relative to said ejector means and movable longitudinally to urge the collected earth material to said discharge opening for discharge from said bowl means,
fluid actuation means coupled to said ejector means for pivoting said ejector member away from said elevator means, and for moving said ejector member longitudinally relative to said bowl means to discharge earth material therefrom, and
control means coupled to said actuation means to control the degree of pivoting movement of said ejector member relative to said longitudinal movement to prevent contact of said ejector member with said elevator means during discharge of earth material.

4,366,636
DOUBLE POCKET EASEL ENVELOPE
Tilford Hearsh, Kansas City, Mo., assignor to Tension Envelope Corp., Kansas City, Mo.
Filed Jun. 17, 1981, Ser. No. 274,415
Int. Cl.³ G09F *1/12*
U.S. Cl. 40—159 **7 Claims**



1. A display easel envelope for simultaneously displaying two pictures comprising:
(a) first and second panel members joined together and foldable relative to each other, said panel members each

having respective top and bottom walls, said top and said bottom walls separated by a respective medial score line; said top wall medial score line and said bottom wall medial score line being colinear and forming an envelope medial hinge line about which said panel members are foldable; said respective panel member top and bottom walls all having free side edges and a free end edge; said respective panel member top and bottom walls connected at a common end edge providing a continuous envelope;

(b) said respective panel member top walls including a display window for viewing of articles received in said envelope;

(c) side flaps attached to free side edges of one of said top and bottom walls and overlying a portion of the other of said top and bottom walls forming envelope side edges; said side flaps including adhesive means to securely retain said top and bottom walls in abutting relation;

(d) a top seal flap including a portion thereof attached to respective first and second panel member top walls at said respective free edge thereof and selectively foldable against a portion of said respective panel member bottom walls about a fold line provided between said respective panel member seal flap portion and top wall free edge; said seal flap portions including adhesive means to secure said seal flaps against said respective bottom walls free edge; said seal flap portions foldable between a first position overlying an associated panel member bottom wall free edge and a second position wherein said respective seal flap portions are unfolded and are substantially co-planar with said associated panel member top wall;

(e) a brace means extending between said first and second panel members to selectively retain said panel members in mutually inclined relationship for freestanding display on said envelope side edges comprising:

(1) a tab having a free end and extending from said first panel member bottom wall;

(2) a slot positioned in said second panel member bottom wall; and wherein:

(3) said tab free end is lockingly insertable in said slot, thereby maintaining said panel members in inclined, spread apart relationship for freestanding, wherein

(f) each of said panel members has an inner portion adjacent said envelope medial hinge line and an outer portion adjacent said respective envelope side edge, and

(g) an adhesive patch applied respectively to the inner portion of the seal flap portion and the rear wall associated with one of said panel members and an adhesive patch is applied respectively to the outer portion of the seal flap portion and the rear wall associated with the other of said panel members; whereby said adhesive patches associated with each panel member seal flap and bottom wall are positioned in interengaging relationship equidistant from said respective seal flap fold line and said medial hinge line for mutual sealing engagement of said adhesive patches upon folding of said seal flap against said rear wall member and, are positioned such that when said panel members are folded about said medial hinge line with said seal flap portions extending outwardly into said second position thereof and with said respective panel member bottom walls overlying and abuttingly engaging one another, the adhesive patches associated with one of said panel members do not sealingly engage the adhesive patches associated with the other of said panel members.

4,366,637
SET OF ADVERTISING COMPONENTS

Dorian V. Dechamps, 12, rue Gatti de Gamond, 1180 Brussels, Belgium

Continuation of Ser. No. 911,482, Jun. 1, 1978. This application Nov. 19, 1980, Ser. No. 208,407

Claims priority, application Belgium, Jun. 2, 1977, 178146

Int. Cl.³ G09F *7/04;* G09B *1/08*

U.S. Cl. 40—621 **5 Claims**

1. A kit of lightweight, inexpensive, reusable and portable components for forming both temporarily and with facility any of a multiplicity of advertising messages comprising a display sheet formed by a flat, thin and flexible mild steel sheet adapted to be mounted in full view and preferably suspended from the ceiling of a commercial area, such as a store and the like, a plurality of characters having a flat, flexible, and blocked-out form each magnetically attractive on one of their sides and of only minimal thickness that said characters mounted on said display sheet on either side and optionally on both sides create the visual impression of a lettered placard, an alignment strip having a body formed of rubber or similar synthetic material including a flat rectangular web portion, a recess on one side of said web portion for supporting a rigid member when it is desired to rigidify said alignment strip in the placement of characters on said display sheet, and said web portion being magnetically attractive on at least the other side adapted to be received on a support surface and a portable loose-leaf filing device including a plurality of thin, flat and flexible mild steel sheets each carrying silk-screen printed images representative of said characters to be received on respective sheets so that these characters may be filed in an orderly fashion for quick access, each said character being susceptible to be manually detached by slight flexure of the sheet to which it is magnetically attached, and each said character being set on said display sheet by implementation of said alignment strip to form said temporary advertising message, said advertising message capable of being set in any of a rectilinear and non-rectilinear fashion according to the capability of said alignment strip to flex along its longitudinal sides with each said character so disposed being retained in the set position by magnetic attraction between said character and said display sheet.

4,366,638
BOX MAGAZINE FOR FIREARMS

Dieter Ketterer, Keplerstrasse 38; Horst Jakubaschk, Im Öschle 28, both of, 7238 Oberndorf, and Erich Weisser, Eichbachstrasse 195, 7441 Tennenbronn, all of Fed. Rep. of Germany

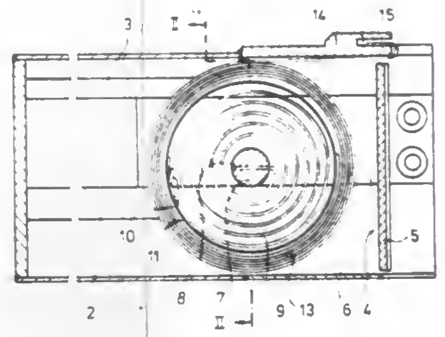
Filed Feb. 27, 1981, Ser. No. 238,918

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011793

Int. Cl.³ F41C *25/02*

U.S. Cl. 42—50 **8 Claims**

1. A box magazine for firearms, having a longitudinal housing, one end thereof being provided with an ejection opening for the frontmost cartridge contained in the magazine, a follower spring loaded in the direction of the ejection opening and being in a contacting relationship with the last cartridges, and with a follower spring generating the spring force, designed as a scroll spring, whose open end is attached to the housing in the vicinity of the ejection opening and whose scroll spring shaft is mounted on the follower and whose axis is arranged at right angles to the direction of motion of the follower, in which when rolled up, the scroll spring assumes generally the full cross-sectional area of the magazine, in which the axis of the scroll spring shaft is arranged at right angles to the longitudinal axis of the cartridges, and in which a spiral spring, supporting the effect of the scroll spring, is housed within the scroll spring.



4,366,639
SHAKING MACHINE FOR FISHING NETS

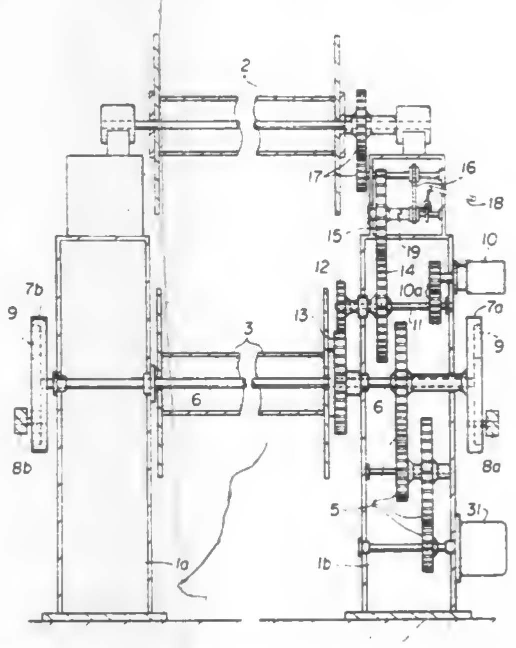
Guobjartur Einarsson, Hafnarfiroi, Iceland, assignor to Veltak, Ltd., Hafnarfirdi, Iceland

Filed Oct. 27, 1980, Ser. No. 200,911

Claims priority, application United Kingdom, Oct. 20, 1978, 41318/78

Int. Cl.³ A01K *69/02*

U.S. Cl. 43—8 **19 Claims**



1. A shaking machine for shaking fish out of drift nets, comprising:

at least first and second spaced apart housing members (**1***a*, **1***b*);

a shaking fence (**4**) pivotally mounted to and between said housing members for receiving a drift net to be shaken, said shaking fence being at the forward end of the shaking machine;

first drive means (**7***a*, **7***b*; **8***a*, **8***b*; **25***a*, **25***b*; etc) coupled to said shaking fence (**4**) for reciprocably pivoting said shaking fence relative to said housing members;

said shaking fence (**4**) comprising first and second spaced apart arms (**21***a*, **21***b*) pivotally mounted to respective housing members (**1***a*, **1***b*), said spaced apart arms each having forwardly and rearwardly directed ends; at least one elongated member (**23**) mounted at the forwardly directed ends of said spaced apart arms and extending between said spaced apart arms for receiving a drift net over said at least one elongated member; and at least one elongated member (**22**) mounted at the rearwardly extending ends of said spaced apart arms and extending between said spaced apart arms for receiving said drift net thereover; said spaced apart arms being reciprocably driven by said first drive means to rock about said pivotal mounting to shake a received drift net;

an upper drum (**2**) rotatably coupled between said housing members and located above said shaking fence, said upper drum being adapted to receive said drift net thereover from said shaking fence;

a lower drum (**3**) rotatably coupled between said housing members and located below said upper drum, said lower drum being adapted to receive said drift net thereunder after it passes over said upper drum; and

second drive means for rotatably driving said upper and lower drums in different rotational directions to propel a drift net received by said drums from said shaking fence at said forward end, to the rear end of the shaking machine.

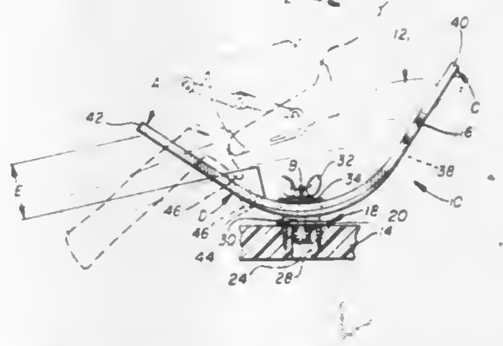
4,366,640
FISHING ROD HOLDER

Guy C. Clapp, P.O. Box 3632, Arlington, Tex. 76017

Filed Jul. 31, 1980, Ser. No. 173,877

Int. Cl.³ A01K *97/10*

U.S. Cl. 43—21.2 **2 Claims**



1. A fishing rod support comprising:

a base for attachment to a structure, the base having a support surface, a threaded opening in said base centrally positioned to extend into said support surface, clearance openings in said base to receive recessed fasteners through said openings to attach said base to said structure, said base being of a shape to accommodate the recessed mounting thereof in said structure with the support surface flush with the surface of said structure;

clamping means releasably attached to said base, said clamping means comprising a washer having a flat surface on one side and a contoured surface on the other side, a guide washer having tab means thereon, a threaded fastener means extending through said washers and threadedly engaging said opening in said base; and

an elongate arcuate support body, an elongate slot formed in said body of a size to receive said fastener therethrough with said guide washer positioned on the concave side of said body and with the tab thereon extending into said slot, said contoured washer positioned with its contoured surface contacting the convex side of said body and the flat side of said contoured washer contacting said support surface whereby said fastener means can be used to releasably clamp said body in position on said base, a socket means in said body for engaging the pistol grip of said rod when said rod is supported on said body, a loop formed in said body at one end thereof, said loop being of a size and shape to receive the butt of said rod therethrough, a bifurcated portion formed on said body at the end opposite said loop to allow said rod to rest therein.

4,366,641

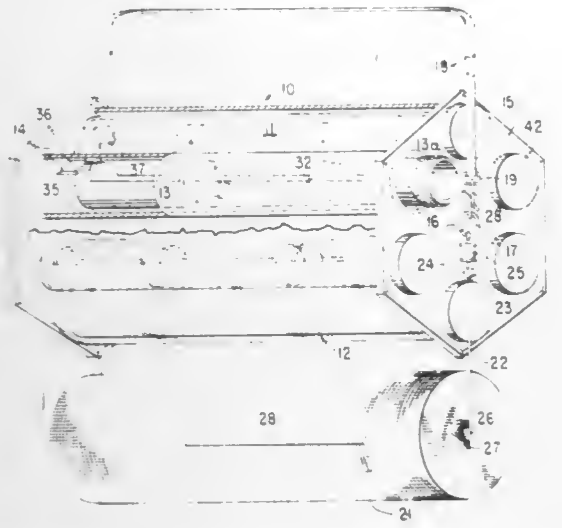
FISHING LURE CONTAINER AND TRANSPORTER

Robert E. Price, 706 W. Buckingham, Chicago, Ill. 60657, and Lawrence S. Suss, 3306 W. North Shore, Lincolnwood, Ill. 60645

Filed Dec. 22, 1980, Ser. No. 218,734

Int. Cl.^{3} A01K *97/06*

U.S. Cl. 43—54.5 R **5 Claims**



1. A fishing lure container comprising a core, a plurality of lure compartments associated with said core, means for selectively removing a lure from said container without exposing the hooks of the other lures contained therein to the fingers of a fisherman, and means for rotatably mounting said container to a carrier and wherein said core is an elongated housing having a first end plate and a second end plate, said first end plate having a plurality of openings, said housing further comprising a plurality of integrally formed, tubular compartments having one open end which is in alignment with an opening in said first end plate, and wherein said lure compartments comprise elongated tubes adapted to be slidably received within said tubular compartments of said housing.

4,366,642

VERMIN TRAP

Brian R. Gardner, and Loraine P. Gardner, both of 59 St. Patrick's Ave., Kuraby, Australia (4112)

Filed Jan. 30, 1981, Ser. No. 230,296

Claims priority, application Australia, Feb. 1, 1980, PE2215

Int. Cl.^{3} A01M *23/30*

U.S. Cl. 43—82 **4 Claims**

1. A vermin trap of the type having a base, a striker hinged to the base, actuating means urging the striker to a striking position near to the base, a retainer adapted to hold the striker releasably in a set position removed from the striking position, and a bait holder adapted, when depressed, to cause the retainer to disengage the striker, freeing it for movement by the actuating means to its striking position, wherein:

the retainer and the bait holder consist of a member hinged to the base, the base, the striker and the retainer and bait holder are formed integrally of a blank of sheet material,

the striker and the retainer and bait holder being hinged to the base along weakened lines in the sheet material.

4,366,643

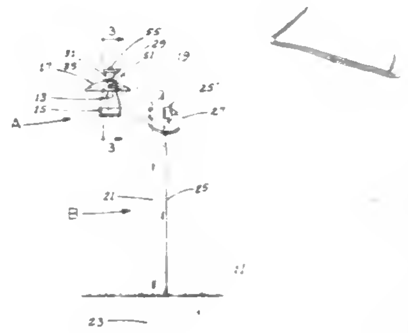
INSECT TRAP

Virgil L. Boaz, Rte. 1 - Box 297, Vandalia, Ill. 62471

Filed Nov. 28, 1980, Ser. No. 211,315

Int. Cl.^{3} A01M *1/04*

U.S. Cl. 43—113 **2 Claims**



1. An insect trap for attracting and killing flying insects comprising light-emitting means for emitting light of a frequency for attracting flying insects thereto, a fluid reservoir containing a quantity of fluid for entrapping and killing insects, structural support means for maintaining said light-emitting means and fluid-containing reservoir in closely spaced relationship for causing insects attracted to said lights to come into contact with said fluid, and universal mounting means for mounting said trap in a location for attracting insects and for permitting orientation of said trap for levelling of the fluid within said reservoir, said emitting means being constituted by at least one fluorescent bulb in substantially horizontal disposition, said fluid reservoir being constituted by a tray below said bulb and having dimensions extending beyond the length and width of said bulb, a cover extending across and beyond said lamp and said tray for preventing precipitation or other falling matter from entering said tray, said trap including a fluorescent lamp fixture for said lamp including a housing, said structural support means comprising at least two strap-like hangers secured to said housing and extending therebelow, each of said hangers defining an opening of cross section for tightly receiving said tray, and centering said tray beneath said lamp, said hangers permitting said tray to be withdrawn for cleaning, refilling, and replacement, said universal mounting means comprising a mounting fixture secured to said lamp fixture housing, said cover being clampingly secured between portions of said fixture and said housing, said fixture being of arcuate form in the shape of "U" extending above said cover and having an elongated slot therein for receiving a mounting bolt or the like, said slot permitting angular orientation of said trap for levelling of the fluid within said tray.

4,366,644

METHOD AND APPARATUS FOR TERMITE CONTROL

Lucas G. Lawrence, San Bernardino, Calif., assignor to Daniel J. Bondy, Sherman Oaks, Calif.

Continuation-in-part of Ser. No. 902,949, May 5, 1978, Pat. No. 4,223,468. This application Sep. 19, 1980, Ser. No. 188,886

The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.^{3} A01M *3/00*

U.S. Cl. 43—132 R **20 Claims**

1. An apparatus for applying electrical energy to termite-infested structures comprising:

- a portable housing;
- a source of electrical energy;

- electric current means connected to the energy source for generating high-voltage multifrequency electrical energy;
- an output electrode connected to the multifrequency generating means extending from the housing;

and

- structure contacting means on the output electrode for establishing physical contact with the termite-infested structure to deliver high-voltage multifrequency energy by electrical conduction to said infested structure.

4,366,645

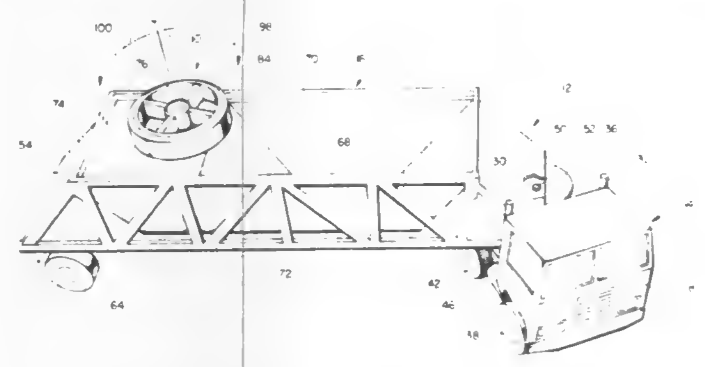
STEERING MECHANISM FOR TOY VEHICLES

Philip W. Crain, San Pedro, and James E. Morse, Lawndale, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 9, 1981, Ser. No. 232,759

Int. Cl.^{3} A63H *11/10*

U.S. Cl. 46—201 **5 Claims**



1. In combination with a toy vehicle comprising a tractor and a semi-trailer, said tractor including a pair of non-steerable front wheels, a pair of non-steerable rear wheels and a simulated fifth wheel intermediate said rear wheels, said semi-trailer including a front end, a rear end, a post depending from said front end of said semi-trailer for pivotably connecting said semi-trailer to said simulated fifth wheel and a rear wall, said rear wall sloping upwardly and forwardly from said rear end of said semi-trailer, said rear wall having a lower end and an upper end, a steering mechanism comprising:

- an annulus mounted to said wall adjacent its upper end;
- an upstanding hollow post mounted to said semi-trailer below said annulus;
- a steering shaft having an upper end and a lower end;
- a steering rod actuator including a pin depending from the lower end of said actuator, a pair of notches provided at the upper end of said actuator, an annular cavity formed in said actuator intermediate its ends and a steering crank mounted to said actuator adjacent said depending pin;
- a steering wheel mounted to said upper end of said steering shaft;
- a pair of tangs depending from said steering wheel, said upper end of said steering shaft being journalled in said annulus, said tangs being coupled to said notches, said lower end of said steering shaft including means trapping said lower end in said annular cavity and said depending pin being journalled in said hollow post;
- a first aperture provided in said steering crank;
- a second aperture provided in said tractor laterally of said simulated fifth wheel; and
- a steering link connecting said first aperture to said second aperture, whereby said vehicle may be steered by manipulating said steering wheel to swing said tractor about said post depending from said front end of said semi-trailer.

4,366,646

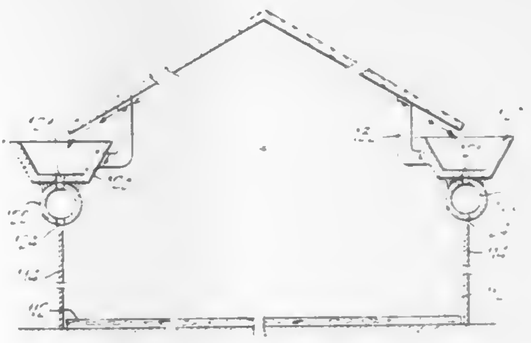
EVAPORATIVE COOLING CHAMBER FOR GROWTH OF PLANTLETS PRODUCED FROM IN VITRO CULTURES

Keith W. Pratt, San Mateo, Calif., assignor to International Plant Research Institute, San Carlos, Calif.

Filed Aug. 13, 1981, Ser. No. 292,393

Int. Cl.^{3} A01G *13/02*

U.S. Cl. 47—27 **10 Claims**



1. An evaporative cooling chamber for growing plants which comprises:

- a floor constructed of a suitable material permitting liquid water to be brought into capillary contact with plant material placed thereon;
- side walls extending upwardly from the floor and constructed of a suitable porous material permitting water retention for a substantial period of time;
- a water delivery means, including conduit means disposed along substantially the entire length of the upper edges of the side walls and provided with openings for delivering water to the upper edges of the side walls and water supply means for introducing water to the conduit means, and
- a translucent roof member attached to at least one side wall and adapted to receive water of condensation formed within the chamber and to deliver the condensed water to the water supply means.

4,366,647

EXPANDABLE TREE SUPPORT COLLAR

Arthur T. Daun, 6635 Lunde Rd., Everson, Wash. 98247

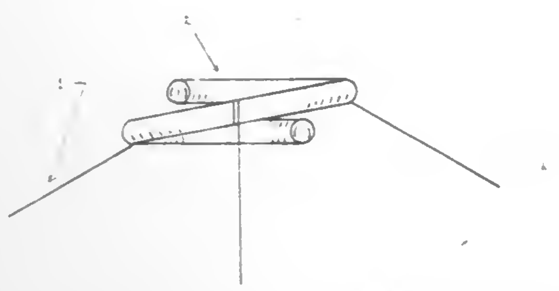
Filed May 26, 1981, Ser. No. 214,224

Int. Cl.^{3} A01G *17/06*

U.S. Cl. 47—42 **1 Claim**

1. A tree support comprised of a coil of material having a fixed diameter prior to being placed around a tree trunk, the coil diameter being expandable as the diameter of said tree trunk expands, the distance between the coil ends being such

that the coil may be readily placed about and removed from said trunk by manipulation of said ends to enlarge said coil, said



coil having attached thereto a plurality of support wires adapted to be connected to fixed points about said tree trunk.

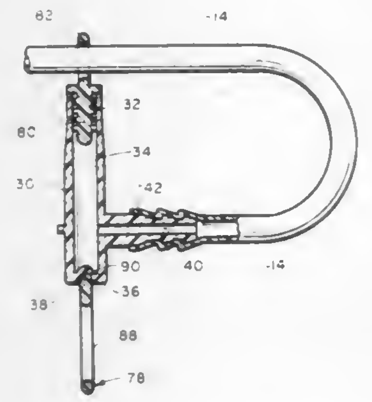
4,366,648
TREE SAP COLLECTION APPARATUS

Marius J. Morin, 1465 Eastwind Cir., Westlake Village, Calif. 91361

Filed Dec. 9, 1980, Ser. No. 214,522

Int. Cl.^{3} A01G *23/10*

U.S. Cl. 47—52 **12 Claims**



1. In combination with a tree insertable spout for sap collection, said spout having an internal passage through which liquid is to flow, the outer end of said passage terminating in an access opening to the ambient, the inner end of said passage being closed at the aft end of said spout, a connecting passage extending through the wall of said spout which connects with said internal passage, a closure means for said access opening of said spout, said closure means comprising:
  a plug for tightly fitting in said access opening, said plug being attached to a locking device, said locking device to tightly engage through engagement means with said aft end of said spout thereby securing the position of said plug in said access opening, with said locking device disengaged from said aft end of said spout the said plug is removable from said access opening;
  said locking device including a frame, said frame having a front end and a back end, said plug being located at said front of said frame, said engagement means being located directly adjacent said back end of said frame, said back end of said frame also including handle means to facilitate installation and removal of said plug from said access opening; and
  said front end also including a ring, a branch conduit connected with said connecting passage of said spout, said branch conduit to extend through said ring in a loose fitting manner.

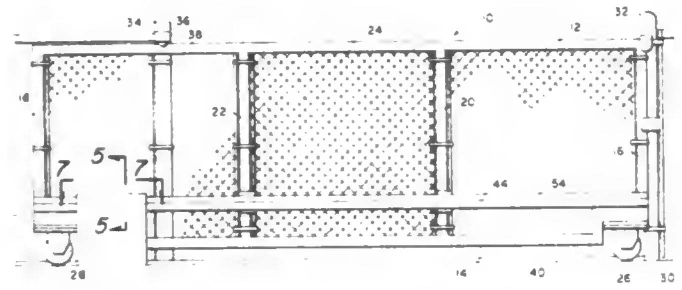
4,366,649
AUTOMATIC GATE

Frederick E. Weigant, 4730 E. 23rd St., Tulsa, Okla. 74114

Filed Jun. 2, 1981, Ser. No. 269,642

Int. Cl.^{3} E05F *11/54*

U.S. Cl. 49—362 **8 Claims**



1. An improved electrically operated gate comprising:
a rectangular frame having a top horizontal rail, a bottom horizontal rail, and vertical ends;
a roller adjacent each end extending below said bottom rail by which the gate rolls from an open to a closed position and vice versa, the gate moving in a longitudinal vertical plane;
means engaging said top rail to maintain said frame in a vertical plane;
an inverted horizontal rack affixed to said frame on one side thereof, the rack providing a series of equally spaced teeth;
an electric motor drive means affixed at a stationary position adjacent the gate frame and having a pinion drive gear rotatably extending therefrom, the pinion drive gear being below said rack and in engagement with the rack teeth; and
means of resiliently urging said pinion gear upwardly into engagement with said rack teeth whereby when said electric motor drive means is energized said gate frame is longitudinally moved to open or close the gate depending on the direction of rotation of the pinion gear.

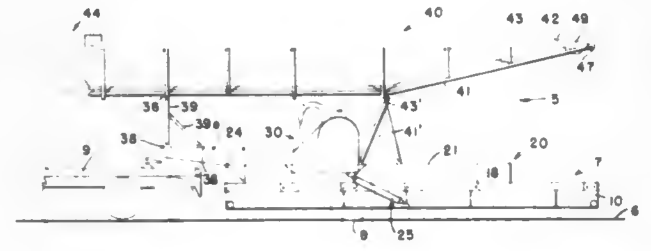
4,366,650
SUPPORT ARRANGEMENT INCLUDING BASE SUPPORT MEANS AND ELEVATABLE SUPPORT MEANS TO TRANSPORT A DRAWWORKS AND DRILLING MAST SUPPORTED THEREON AND FOR POSITIONING AT A DRILLING LOCATION

Bradley C. Patterson, Spring, Tex., assignor to PRE Corporation, Houston, Tex.

Filed Aug. 4, 1980, Ser. No. 175,058

Int. Cl.^{3} E04H *12/34*

U.S. Cl. 52—118 **2 Claims**



1. An arrangement which forms the support for an elevated drilling means and drawworks during drilling operations and which also collapses to form a transportable arrangement for the drilling mast and drawworks comprising:
a. elevatable support means;
b. support means on said elevatable support means supporting the drilling mast means in a longitudinally extending relationship during transport, said support means including:
A-frame means mounted on said elevatable support means and pivotally connected at its upper end to said longitudinally extending drilling mast at a position laterally spaced from the foot of the drilling mast;
c. wheel means connected to said elevatable support means for transport of the arrangement and supported drilling mast and drawworks;
d. base support means;
e. means extending between and pivotally connected to each said elevatable support means and said base support means whereby said base support means may be positioned adjacent the elevatable support means during transport and may be lowered onto the earth's surface at a well location;
f. jack means pivotally connected to and extending between each said base support means and elevatable support means for elevating said elevatable support means with the drawworks and drilling mast supported on the A-frame; and
g. means to pivot said drilling mast about said A-frame whereby the foot of the drilling mast may be swung downwardly and secured to said base support means to retain the drilling mast in an erect position during drilling operations.

4,366,651
FIXING DEVICES

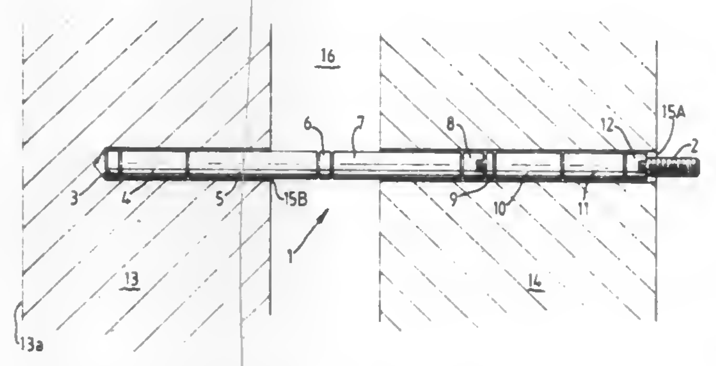
Howard M. Thomas, and Graham R. Duke, both of Newport, Wales, assignors to Newport Borough Council, of Civic Centre, Newport, Wales

Filed Oct. 1, 1980, Ser. No. 192,832

Claims priority, application United Kingdom, Oct. 6, 1979, 7934770

Int. Cl.^{3} F16B *5/00, 13/06*

U.S. Cl. 52—127.12 **5 Claims**



1. A fixing device that can be anchored in bores formed co-axially in each of two spaced-apart members, the device comprising a screw-threaded member that can be passed through the bore in one member so as to extend through this one member and into the bore in the other member with one end terminating in the bore in said other member; a stop at said one end of the screw-threaded member fast with the screw-threaded member; a first sleeve mountable on the screw-threaded member so as to be entered in the bore in said other member and between the stop and a first nut mountable on the screw-threaded member for rotation along the screw-threaded member and with respect to the first sleeve to apply axial force to the first sleeve; a second sleeve mountable on the screw-threaded member so as to be entered in the bore in said one member and between said first nut and a second nut mountable on the screw-threaded member for rotation along the screw-threaded member and with respect to the second sleeve to apply axial force to the second sleeve; the first and second sleeves being of deformable material such that axial force applied by said first nut expands the first sleeve in the bore in said other member to lock the device in this bore, and axial force applied by said second nut expands the second sleeve in the bore in said one member to lock the device in this bore, said first nut being actuable prior to actuation of said second nut.

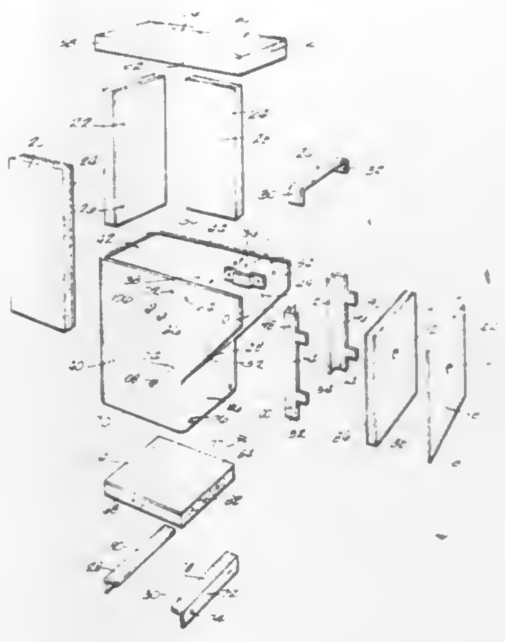
4,366,652
PIPE INSTALLATION FITTING

Robert H. Mueller, Rte. 2, Box 34, Sheboygan Falls, Wis. 53085

Filed Dec. 22, 1980, Ser. No. 219,126

Int. Cl.^{3} E04D *13/03;* **E04B** *7/18*

U.S. Cl. 52—200 **11 Claims**



1. A flashing hood comprising:
(A) a housing having an open bottom, an open top, vertical side walls, an opening in an upper portion of one of said side walls, and paired flange extensions flanking each side of said opening;
(B) a removable cover for said housing which overlies said flange extensions;
(C) a base panel fixed within said housing below said opening to obstruct said open bottom;
(D) a vertically disposed removable panel fixed within said housing to block said opening; and
(E) insulating means within said housing and cover to prevent heat and air transfer to and from the inside of said flashing hood.

4,366,653
LOCKING DEVICE FOR A CYLINDRICAL CAVITY

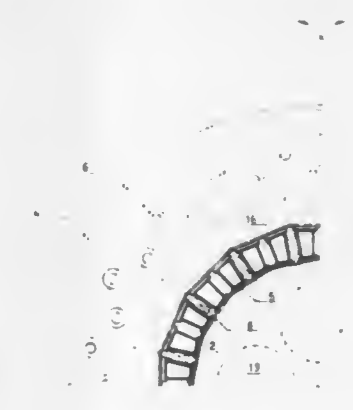
Raymond Lafitte, Lutry; Daniel Marchand, Lausanne; Claus Notheisen, Preverenges, and Rene Walther, Lausanne, all of Switzerland, assignors to Bonnard & Gardel, Ingenieurs-Conseils SA, Lausanne, Switzerland

Filed Jan. 23, 1980, Ser. No. 114,691

Claims priority, application Switzerland, Feb. 1, 1979, 954/79; Feb. 5, 1979, 1079/79; Feb. 15, 1979, 1469/79

Int. Cl.^{3} E04H *7/20;* **E04C** *3/10*

U.S. Cl. 52—224 **6 Claims**



1. Container with an opening and a removable locking closure, for a fluid under pressure, comprising a shell and a countershell forming together a plug and, between the shell and a

support structure connected to the container, wedges provided as prismatic blocks, means exerting a force on each said wedge, the direction of the said force being tangent to a circle concentric to the opening, each wedge having two opposite faces in contact respectively with the said support structure and the shell, at least one of said faces being inclined with respect to the direction of the said force, for producing a wedging effect to secure the plug on the container.

4,366,654

DOUBLE-WALLED TANK FOR LOW-TEMPERATURE LIQUIDS

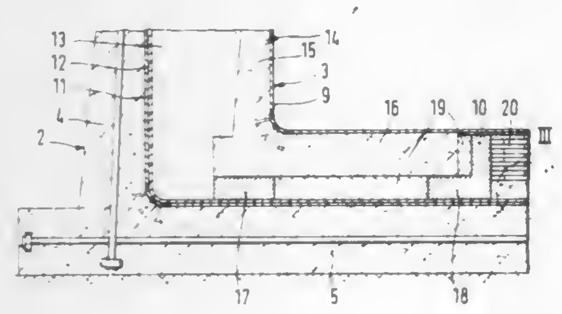
Helmut Bomhard, Starnberg, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,486

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936421

Int. Cl.³ E04B ***1/32***

U.S. Cl. 52—224 **5 Claims**



1. A double-walled tank for low-temperature liquids, such as a liquid gas, comprising an upwardly extending inner tank forming a primary safety casing, said inner tank having a generally horizontally arranged base and an upwardly extending side wall and at least said base being formed of metal, an upwardly extending outer tank enclosing and spaced outwardly from said inner tank and forming a secondary safety casing, a thermal insulation layer located between said inner tank and said outer tank, wherein the improvement comprises a ring of prestressed concrete at least laterally enclosing the junction of said side wall and the base of said inner tank so that compressive stress is provided in said side wall of said inner tank when it is in use, said ring being L-shaped in radial section and having an upwardly extending leg and a generally horizontally extending leg with said upwardly extending leg at the lower end thereof bearing against the outside surface of said metal base at least at the bottom portion of said side wall extending upwardly from the junction with said base, said generally horizontally extending leg is annular and is located below and in contact with the lower surface of said base extending radially inwardly from the junction with said side wall with the radially inner edge of said generally horizontally extending leg spaced a significant distance outwardly from the upwardly extending axis of said inner tank, and a thermal insulation material located below and extending downwardly from said base of said inner tank radially inwardly of the radially inner surface of said generally horizontally extending leg of said ring.

4,366,655

LARGE POST-TENSIONED FLOOR BAY CONSISTING OF A NUMBER OF PREFABRICATED REINFORCED-CONCRETE FLOOR ELEMENTS FOR MAKING FLOOR STRUCTURES

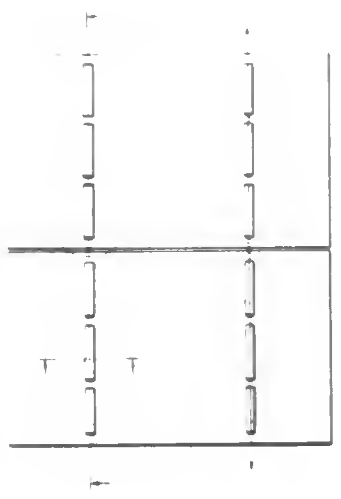
György Mayer, and Laszlo Nemeskeri, both of Pecs, Hungary, assignors to Baranya Megyei Allami Epitoipari Vallalat, Pecs, Hungary

Filed May 27, 1977, Ser. No. 801,366

Claims priority, application Hungary, Feb. 4, 1977, BA 3505

Int. Cl.³ E04C ***3/22***

U.S. Cl. 52—227 **3 Claims**



1. A concrete floor comprising a plurality of prefabricated rectangular concrete floor elements each having intersecting perpendicular cable ducts formed in the concrete thereof parallel to but spaced between opposite side edges thereof, there being a plurality of said elements in edgewise abutting relation in each horizontal direction, each cable duct being at least partly open at least at the top thereof, the ducts in one element being aligned with the ducts in a plurality of adjacent elements, and tensioned cables passing through the aligned ducts at an acute angle to the plane of a plurality of the elements, each said duct being bridged over by a plurality of integral ribs each having a horizontally extending hole therethrough, said cables passing through said holes and being disposed adjacent the upper ends of some of said holes and adjacent the lower ends of others of said holes, one portion of each said cable being downwardly inclined in one direction and another portion of said cable being upwardly inclined in said one direction, said ducts being filled with hardened concrete surrounding said cables.

4,366,656

ROOF PANEL ASSEMBLIES FOR FORMING WEATHERPROOF STANDING SEAM JOINTS AND THE LIKE AND METHODS OF JOINING STANDING SEAM ROOF PANELS

Harold G. Simpson, Oklahoma City, Okla., assignor to The Wickes Corporation, San Diego, Calif.

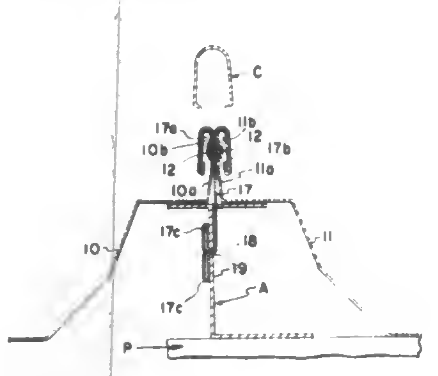
Filed Sep. 3, 1980, Ser. No. 183,717

Int. Cl.³ E04F ***15/14***

U.S. Cl. 52—395 **24 Claims**

1. In a prefabricated roof panel for standing seam roofs and the like; a metal sheet, including a generally longitudinally extending roof panel portion having an upstanding seam forming edge along each side thereof which includes a wall formed with an externally facing pocket therein at a spaced distance downward from its upper end above said panel portion, the pocket being spaced downwardly substantially the same distance at each side so that the pockets of longitudinally adjoining such panels are opposed and open to one another; a preapplied mastic or hot melt weatherproofing bead disposed in each said pocket and protected thereby, and a reversely bent

contiguous wall extending downwardly from the upper end of each wall so that the pocket protrudes toward the reversely bent wall, the upper end of the edge being formed with a bridging portion connecting the two walls.



4,366,657

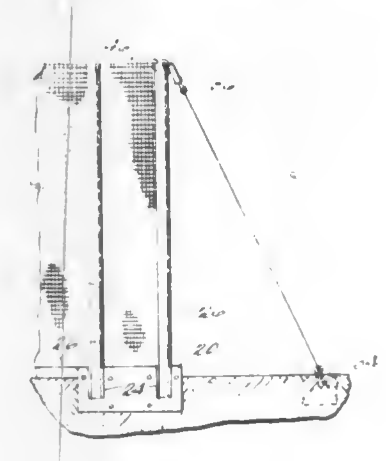
METHOD AND FORM FOR MECHANICALLY POURING ADOBE STRUCTURES

Fred Hopman, Box 171, Arroyo Seco, N. Mex. 87514

Filed Mar. 5, 1980, Ser. No. 127,487

Int. Cl.³ E04B ***2/00***

U.S. Cl. 52—405 **43 Claims**



1. A method of forming an adobe structure including a wall comprising the steps of:

laying a foundation;

inserting a plurality of guide supports into said foundation at separated locations on the inside and outside of said foundation so that said supports extend vertically;

placing mesh having at least horizontally extending strands between said supports on both the inside and outside of said foundation; and pouring adobe into the space between said mesh to form said wall using only the mesh as a form on at least one of the inside and outside of said foundation.

4,366,658

ANNULAR THREE-DIMENSIONAL STRUCTURE

Michel Maistre, Bordeaux, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

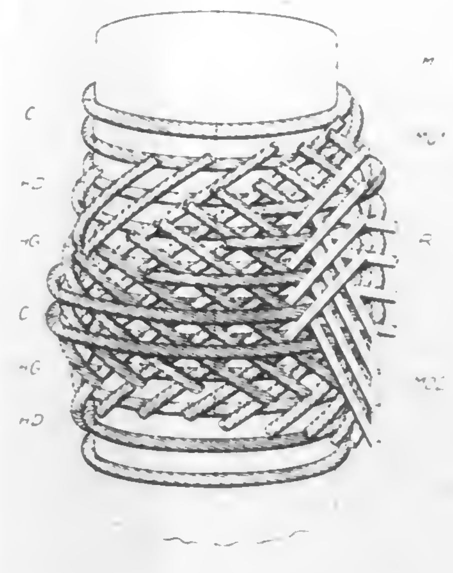
Filed Jan. 12, 1981, Ser. No. 224,479

Claims priority, application France, Jan. 17, 1980, 80 01009

Int. Cl.³ B32B ***5/12***

U.S. Cl. 52—648 **8 Claims**

1. Annular three-dimensional structure constituted by the regular criss-crossing of filiform elements distributed in a plurality of families of elements, each family being composed of elements of a same type occupying the same particular position within the structure, said structure comprising first and second families of meridian rectilinear elements, oblique with respect to the axis of the structure and forming, in each family, meridian sheets regularly distributed about the axis of the structure, and third and fourth families of helical elements forming, in each family, cylindrical sheets of the same axis as the structure and distributed regularly in radial direction, the inclination with respect to the axis of the elements of the first family being equal but opposite to that of the elements of the second family and the helical paths of the elements of the third family having the same pitch as those of the elements of the fourth family, but with an opposite orientation, structure wherein a fifth family is further provided which is selected from the group constituted by a family of radial elements forming meridian sheets distributed regularly about the axis of the structure, a family of circumferential elements forming cylindrical sheets having the same axis as the structure and distributed regularly in radial direction and a family of axial elements forming meridian or cylindrical sheets distributed regularly in the structure.



4,366,659

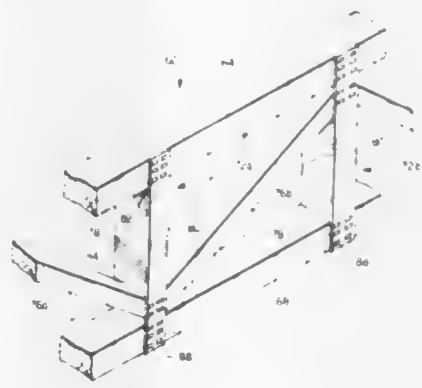
CONSTRUCTION MEMBER AND CONNECTING PLATE STRUCTURE

Keith A. Jensen, Sandy, Utah, assignor to A. Park Smoot, Murray and Reese J. Goodwin, Provo, both of, Utah, a part interest

Continuation-in-part of Ser. No. 906,067, May 15, 1978, Pat. No. 4,241,557. This application Jul. 8, 1980, Ser. No. 166,764

Int. Cl.³ E04C ***3/18***

U.S. Cl. 52—693 **9 Claims**



1. A construction member comprising:

an upper chord;

a lower chord;

a spacer plate or plurality of plates rigidly joining the upper and lower chords, each spacer plate positioned in a direction generally perpendicular to the axes of the chords and having upper and lower slots in its upper and lower edges respectively for receiving the upper and lower chords, a stem portion between the slots, and flanges at each side of the slots and stem portion and folded flush against the sides of the chords in a direction parallel to the axes of the chord; and

one or more struts positioned to extend between the upper and lower chords from one spacer plate to an adjacent plate;
wherein said spacer plates include teeth projecting from said flanges into the chords and struts.

4,366,660

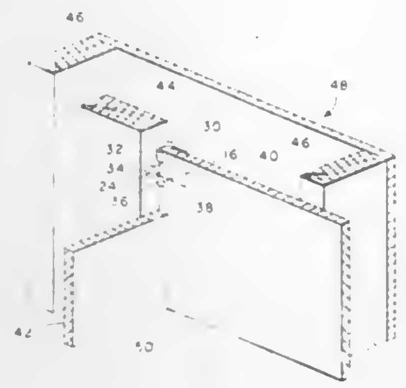
CORNERBEAD AND CORNER CLIP

Robert J. Pearson, Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Division of Ser. No. 66,625, Aug. 15, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 319,571

Int. Cl.^{3} E04B *1/00*

U.S. Cl. 52—741 **4 Claims**



1. The method of forming a corner clip comprising the steps of severing a cornerbead comprising an elongate straight formed sheet of metal adapted to be easily cut into a plurality of sheet metal clips, said cornerbead consisting essentially of a bead section and two opposed flat flanges disposed at about an 80° angle therebetween, at least one of said flanges having a plurality of substantially uniformly repetitive openings, said openings including a plurality of elongate slots adapted for simplifying the making of preplanned cuts for converting portions of said cornerbead into short corner clips, said slots including a repetitive pattern of laterally extending slots, said laterally extending slots being spaced outward from said bead section and inward from the outer edge of said flange, said outer edge being uninterrupted throughout the length of said corner bead, severing said cornerbead to form a short section thereof by completely severing said cornerbead at a pair of locations which are at lateral slots which have at least one lateral slot therebetween, severing the portion of said flange between one or more of said in between-slots and the outer edge of said flange adjacent said one or more slots, thus forming a plurality of separated tabs, and bending at least one but not all of said tabs to form a channel for receiving a wallboard edge and leaving at least one unbent tab for nailing said clip to a framing member.

4,366,661

PACKAGE AND METHOD OF PACKAGING FOR FLAT ELONGATED MATERIAL

James E. McGraner, Columbus, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 95,198, Nov. 19, 1979, Pat. No. 4,274,538. This application Feb. 13, 1981, Ser. No. 234,083

Int. Cl.^{3} B65B *63/04*

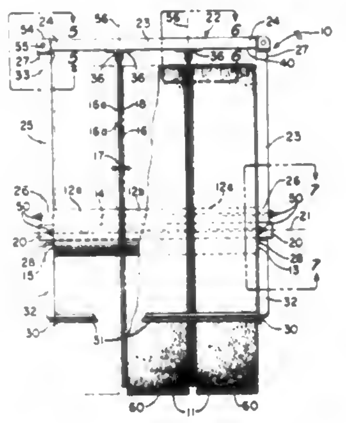
U.S. Cl. 53—397 **4 Claims**

1. A method of packaging for shipment and individual letoff of a plurality of side-by-side lengths of flat elongated material in the form of side-by-side rolls of a predetermined radius comprising:

(a) assembling in end-to-end relation on a common horizontal axis a plurality of cylindrical shells, the adjacent ends of differing ones of said shells each having a separate divider plate rigidly joined thereto, the divider plates being aligned with and parallel to one another to form a pair between each two axially adjacent shells, a portion of each divider plate extending radially outwardly an equal amount beyond the circumference of the shells, said shells each having a central bore extending coaxially therethrough and including an elongated central member passing through the aligned central bores of said end-to-end shells;

(b) rotating the assembled shells about their common horizontal axis and winding a length of flat elongated material on each shell to form a roll on each shell of predetermined radius;

(c) welding each end of an axially extending upper member whose length is at least that of said end-to-end assembled shells to the radially outer end of a side member and welding the radially inner end of each side member to both the elongated central member at each one of its ends and to each one of the axially most distant ends of said assembled shells, the length of each side member being sufficient to extend from said upper member radially inwardly to said central member, the distance from the axis of rotation of the package to said upper member being greater than said predetermined radius;



(d) forming at least two ⊔-shaped tie members, the bottom portions of each ⊔-member being of a length at least equal to that of said assembled shells, the side portion of said tie members being of a length slightly less than said predetermined radius;

(e) positioning each said tie member with its bottom portion extending axially and at said predetermined radius from the axis of rotation of said package and with the side portions of each tie member extending radially inwardly from said bottom portion and overlying the respective outer end of an outer shell, said tie-members being spaced substantially equally apart from one another and said upper member in the circumferential direction of said shells;

(f) welding each said side portion of each said tie member at its radially inner end to each one of the respective axially most distant ends of said assembled shells;

(g) welding a plurality of bifurcated members to said upper member and said divider plates, each of said bifurcated members having one leg extending axially along a radially inner surface of said upper member and another leg extending radially inwardly along one of the axially most distant surfaces of a pair of adjacent divider plates.

4,366,662

PROCESS FOR PREPARATION OF CANS AND CANNED PROVISIONS

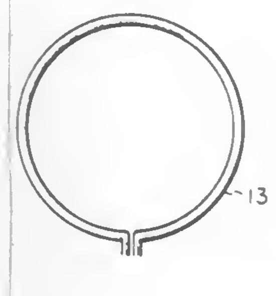
Tadahiko Katsura, Yokohama; Kazuhisa Ishibashi, and Kazumi Hirota, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,892

Claims priority, application Japan, Jun. 30, 1979, 54-82016; Aug. 17, 1979, 54-104050; Aug. 17, 1979, 54-104051

Int. Cl.^{3} B21D *51/26*

U.S. Cl. 53—478 **8 Claims**



1. A method of heat-sealing a heat-sealable lid to an open end of a can body which comprises providing a metallic can body formed of a surface-treated ferromagnetic steel plate, the edge of said open end being formed into a curled portion, feeding a flexible lid comprising an aluminum foil as a substrate and a heat-sealable resin layer formed on the surface of said substrate onto the edge of the opening of the can body in such a positional relation that the curled portion of the can body confronts the resin layer of the lid, pressing the lid to the curl portion of the can body, and induction-heating the curl portion selectively by a high-frequency induction heating coil located in the vicinity of the periphery of the curled portion to form a seal between the curled portion and the lid.

4,366,663

PACKAGING DEVICE

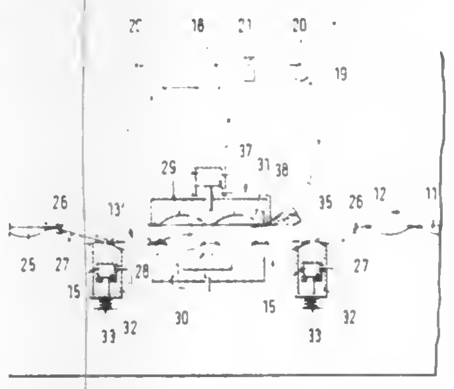
Reiner Grebe, Biedenkopf, Fed. Rep. of Germany, assignor to Kraemer & Grebe GmbH & Co. KG Maschinen- und Modellfabrik, Wallau, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,582

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2930963

Int. Cl.^{3} B65B *47/10, 47/02*

U.S. Cl. 53—559 **5 Claims**



1. In a packaging device for sealingly closing an upper foil and a lower foil comprising a framelike welding device having a separate drive for welding together a lower foil and an upper foil, at least said lower foil being formed into containerlike segments and being engaged to a chain along the lateral edges thereof, said chain effecting a movement of said lower foil through said packaging device, said packaging device further having an evacuating chamber which is formed of two boxlike halves, the improvement comprising wherein one of said two boxlike halves is stationary and the other half is vertically elevatable relative to said upper and lower foils, said stationary half having said welding device mounted thereon, wherein first drive means are provided for initially spacing said other half from said stationary half to facilitate a movement of both foils therebetween, particularly said lower foil with product to be packaged being received in said containerlike segments, wherein said chain is held at least in the region of said packaging device in guides which are vertically elevatable, and wherein second drive means are provided for initially spacing said guides, and thence said lower foil, away from said stationary half and for moving said guides, and thence said lower foil, toward said other half to facilitate the unhindered movement of said product to be packaged between said stationary half and said other half.

4,366,664

SWATHER

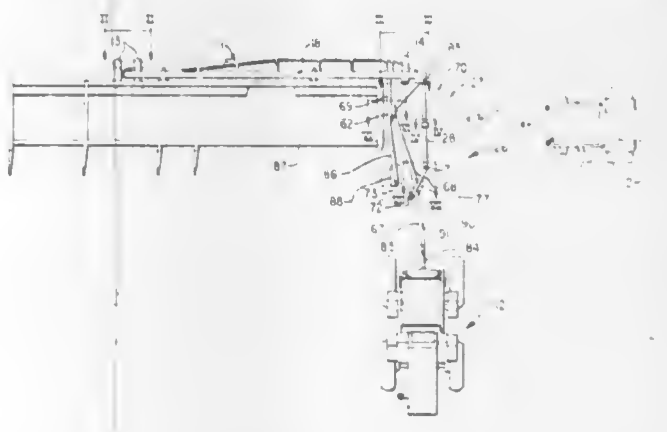
Bernard Penner, and Arthur Kempan, both of Winnipeg, Canada, assignors to Versatile Cornat Corporation, Vancouver, Canada

Filed Aug. 26, 1980, Ser. No. 182,403

Claims priority, application Canada, Aug. 27, 1979, 334474

Int. Cl.^{3} A01D *55/28*

U.S. Cl. 56—15.2 **11 Claims**



1. A position compensating system to alter the side-draft of a pull-type implement pulled by a source of pull power, said system comprising:

(a) a drive wheel for supporting the frame of said implement and adapted to drive said implement;

(b) drive means connected to said drive wheel to drive said drive wheel;

(c) at least two hitch members forming a part of a connection between said source of pull power and said implement, one of said hitch members being movable relative to the other of said hitch members;

(d) a sensing mechanism mounted between said hitch members for sensing said relative movement of said hitch members; and

(e) a compensating means to which said sensing means is connected and connected to said drive means and operable in response to said sensing mechanism for automatically varying the output of said drive means.

4,366,665

PLASTIC FILM DISPENSER FOR ROUND BALER

Robert M. VanGinhoven, Lancaster; Shaun A. Seymour, New Holland, and Harry C. Eberly, Narvon, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

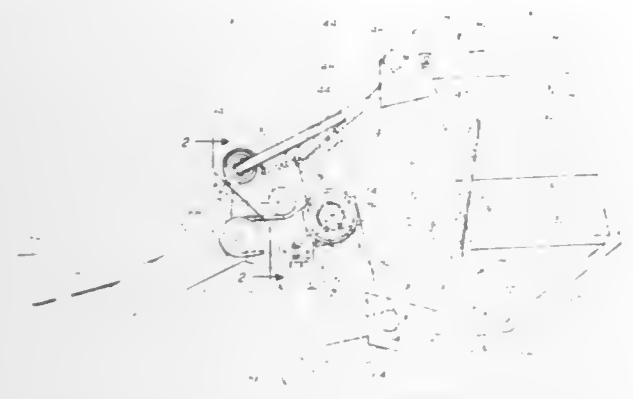
Filed Apr. 24, 1981, Ser. No. 257,054

Int. Cl.^{3} A01D *39/00*

U.S. Cl. 56—341 **7 Claims**

1. A baler to form round roll bales comprising in combination, a mobile frame having means to form a round roll bale from a windrow of forage material and support the same when formed for rotation, means on said frame to support a supply roll of plastic film, means to support a pair of nip rolls for engagement with the outer end of the film on said roll thereof,

power means to rotate said nip rolls in feeding direction, film cutoff mechanism comprising an elongated toothed bar supported by said frame and extending transversely between opposite sides of said frame for movement between operative and inoperative positions relative to said film, means to move said cutoff bar selectively between said positions, forage material pickup means on said baler operable to feed cut material to said bale-forming means, control means for said power means for said nip rolls having a first position operable substantially upon the completion of formation of a roll bale of desired diameter to actuate said nip rolls in feeding direction to advance the outer end of said film toward said material pickup means for engagement of said film with said roll bale while said bale is rotated in said mobile frame to effect wrapping of said film around said bale to a desired extent and said control means having a second position to activate said means to move said cutoff means upon completion of the wrapping of said bale with said film to advance said cutoff bar to the operative position thereof in which it engages a taut portion of said film to penetrate and sever it, and said control means when in said second position also being operable to hold said nip rolls stationary while said cutoff bar is advanced to said operative position so that said nip rolls grip said film and place tension thereon between said supply roll and said roll bale to insure penetration of the teeth of said cutoff bar into said film to cause separation of the roll-encircling film from said supply film.



4,366,666
HAYMAKING MACHINE

Cornelis van der Lely, Zug, Switzerland, and Cornelis J. G. Bom, Rozenburg, Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

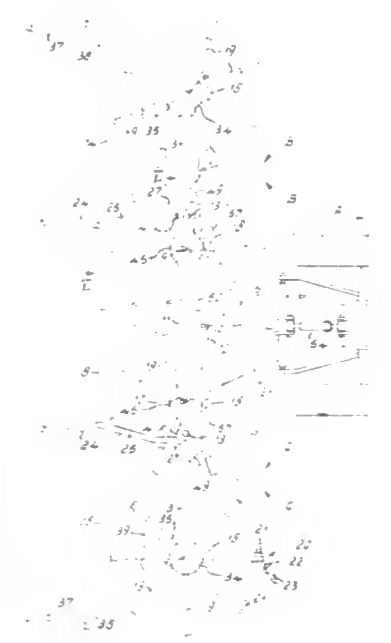
Filed Aug. 11, 1980, Ser. No. 177,137

Claims priority, application Netherlands, Aug. 24, 1979, 7906381

Int. Cl.³ A01D ***79/00***

U.S. Cl. 56—370 **26 Claims**

1. A haymaking machine comprising a frame and a plurality of rake members rotatably mounted on a beam of said frame, driving means connected to rotate said members, said beam including at least two interconnected parts that are relatively pivotable with respect to one another and said parts being joined with pivot means to comprise a coupling, said driving means including shaft means that forms part of said coupling, said shaft means comprising a double universal joint that joins two shaft segments, said pivot means and joint being located adjacent one another and in general vertical alignment with one another, said parts and segments being angularly displaceable with respect to one another by at least 90° about said pivot means and joint, said shaft means remaining operative to rotate said members during displacement.



4,366,667
METHOD AND DEVICE FOR MANUFACTURING A STRANDED UNIT

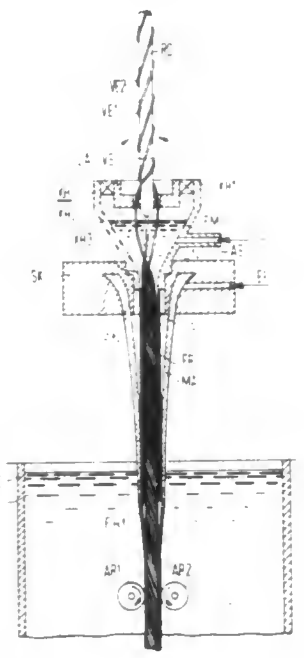
Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,734

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002523

Int. Cl.³ H01B ***13/24, 13/04***

U.S. Cl. 57—7 **17 Claims**



1. A method for manufacturing a stranded unit composed of stranding elements with each element consisting of a least one light waveguide covered by a sheath, said stranding elements being twisted alternately with a left-hand twist and a right-hand twist to form a bundle of a stranded element which is covered by an outer jacket, said method comprising the steps of stranding a plurality of elements to form a bundle of stranded elements with the alternate directions of twist, moving the bundle through a guide tube having an exit end to prevent unraveling of the elements, extruding an outer jacket to surround the guide tube at a distance from the exit end of the

guide tube, and pulling the extruded outer jacket in an axial direction along the guide tube to reduce the inside diameter of the jacket to such a degree that it is substantially the same as the inside diameter of the guide tube, said step of moving the bundle including inserting the bundle in said jacket as the bundle exits the exit end of the guide tube with the jacket then assuming the function of the guide tube and cooling the jacket during the step of pulling.

9. A device for stranding a plurality of stranding elements each composed of at least one light waveguide in a sheath into a bundle having an alternately right-hand twist and left-hand twist, and inserting the bundle into an outer jacket, said device including means for alternately stranding the elements into a bundle having right-hand and left-hand twists, means for producing an outer jacket for receiving the bundle of stranded elements including an injection head having an annular extrusion nozzle surrounding a central aperture, and a guide tube with means supporting said guide tube at the aperture and coaxially within the annular nozzle to receive the moving bundle of elements, means for pulling the jacket along an outer surface of the tube and around the bundle leaving an exit end of the tube so that an outer jacket extruded by said nozzle surrounds said guide tube and moves onto the bundle.

4,366,668
SUBSTOICHIOMETRIC COMBUSTION OF LOW HEATING VALUE GASES

Ajay M. Madgavkar, Irvine, Calif.; Roger F. Vogel, Butler, and Harold E. Swift, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 25, 1981, Ser. No. 238,032

The portion of the term of this patent subsequent to Mar. 4, 1997, has been disclaimed.

Int. Cl.³ F02C ***3/22***

U.S. Cl. 60—39.06 **17 Claims**

1. A method for the recovery of energy from a gas stream having an average heating value in the range of about 15 to about 200 Btu/scf and having a combustible component comprising from about 0.5 to about 80 mol percent methane, from about 10 to about 75 mol percent carbon monoxide, from about 0 to about 50 mol percent hydrogen and from about 0 to about 50 mol percent aliphatic hydrocarbons having from two to about six carbon atoms, which comprises the steps passing said gas stream admixed with air for combustion in contact with an oxidation catalyst in one or more combustion zones, at an overall average air equivalence ratio of between about 0.2 and about 0.95 and at a temperature high enough to initiate and maintain combustion of said gas stream, utilizing the heat energy produced in said gas stream by said combustion and discharging the incompletely combusted gas stream into the atmosphere.

4,366,669
TANK CLOSURE APPARATUS WITH SAFETY FEATURE

David W. Jones, East Northport, N.Y., assignor to Shaw Aero Devices, Inc., East Hampton, N.Y.

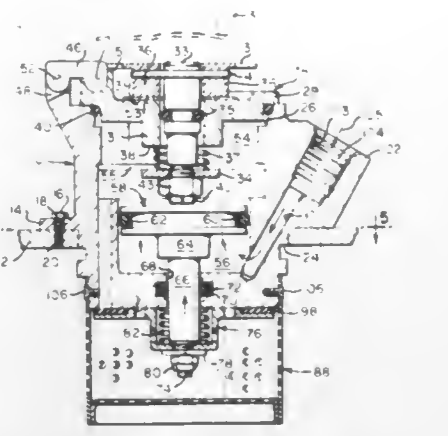
Filed Feb. 20, 1981, Ser. No. 236,340

Int. Cl.³ F02G ***3/00;*** **B64D** ***37/02;*** **B65D** ***51/00***

U.S. Cl. 60—39.09 R **13 Claims**

1. A tank closure apparatus for sealing a tank when a pressure generating device is operative comprising:

(a) a housing adapted to attach to the tank;
(b) a first opening in the housing for accepting liquids, said first opening adapted to be sealed by a filler cap assembly;
(c) a surface of said housing disposed within the tank;
(d) at least one passageway extending from said first opening to passageway openings on said surface;
(e) a sealing member movable from a first position in spaced relationship to said surface to a second position in contact with said surface and covering said passageway openings; and



(f) means responsive to said pressure generated by said device for moving said sealing member from said first position to said second position.

4,366,670
VACUUM CONTROL VALVE FOR EXHAUST GAS CLEANING SYSTEM

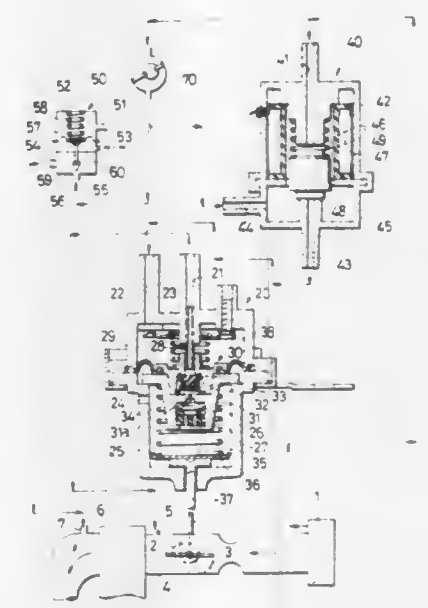
Kazuhiko Kitamura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 19, 1980, Ser. No. 208,263

Claims priority, application Japan, Dec. 5, 1979, 54-157757

Int. Cl.³ F01N ***3/22***

U.S. Cl. 60—290 **3 Claims**



1. A vacuum control valve device for an exhaust gas cleaning system of an internal combustion engine, said valve device comprising:

a casing;
a diaphram dividing the interior of said casing into a first chamber communicating with the intake manifold of said engine and a second chamber communicating with the atmosphere;
a valve member fixed in the center portion of said diaphragm;
first spring means mounted in said first chamber between said valve member and said casing and acting on said valve member in a direction of expanding said first chamber;
second spring means provided in said second chamber between said valve member and a support member acting on said valve member opposingly to said first spring means in a direction of contracting said first chamber;
said support member being displaceable for varying the

biasing force of said second spring means in response to the displacement of the accelerator pedal;

a movable valve body provided within said valve member and a spring normally urging said movable valve body to block communication between said first and second chambers, said valve body allowing communication between said first and second chambers when said diaphragm is displaced by a predetermined distance due to an increase of the vacuum prevailing in said first chamber; and

output port means for transferring vacuum signals from said first chamber;

said first chamber being intermittently communicated with the intake manifold of the engine to produce at said output port on-off vacuum signals having an amplitude proportional to the intake manifold vacuum.

4,366,671

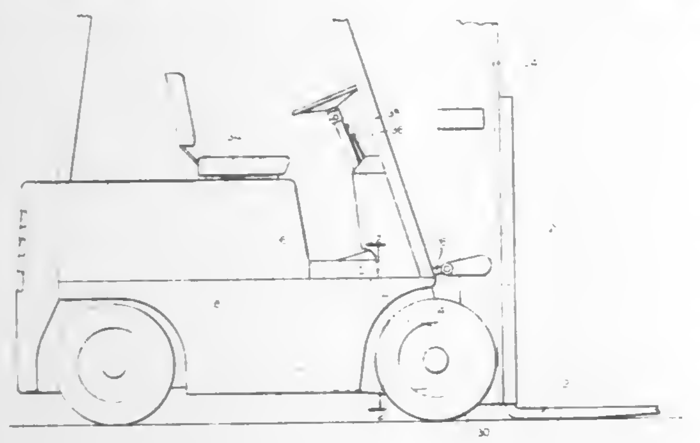
HYDROSTATIC TRANSMISSION

Willard L. Chichester, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 14, 1980, Ser. No. 130,578

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—444 **15 Claims**



1. A hydrostatic transmission for a vehicle having a drive motor and drive wheels, comprising a hydraulic pump including a shaft for attachment of said transmission to the drive motor of the vehicle, a manifold connected to said pump for receiving hydraulic fluid from said pump, a hydraulic motor connected to said manifold for receiving said hydraulic fluid from said manifold, a drive shaft from said motor for attaching said transmission to the drive wheels, an outer housing enclosing said pump, said motor and said manifold and having an opening with a removable cover, a reservoir for said hydraulic fluid contained in said housing to substantially cover said pump, said motor and said manifold with said fluid, servo controls for adjusting the displacement of said pump and said motor, a charge pump for activating said servo controls, fluid flow means between said charge pump and said servo controls for transmitting pressurized fluid from said charge pump to said servo controls, said servo controls including shafts for adjusting the displacement of said pump and said hydraulic motor, levers connected to said shafts for moving said shafts, servo pistons mounted on said cover and being pressurized by said charge pump for moving said levers, and springs behind said pistons biasing said pistons to a preloaded position, said pistons sliding adjacent said levers to abut same as said cover is placed onto said housing.

4,366,672

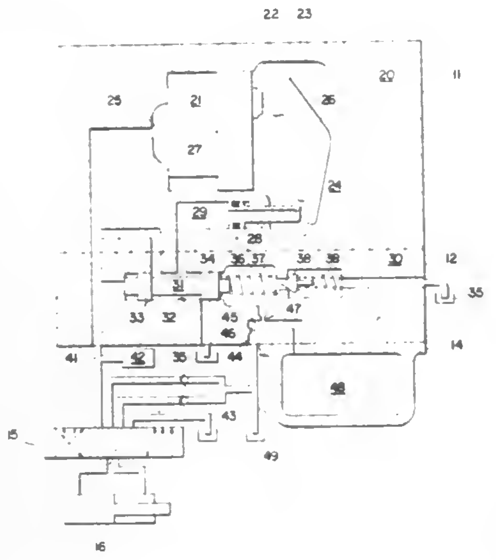
PILOT OPERATED HYDRAULIC DEVICE

Leslie M. Claar, Painesville, and John G. Russell, Highland Heights, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 118,726, Feb. 2, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,647

Int. Cl.³ F04B *1/26, 49/00*

U.S. Cl. 60—452 **6 Claims**



1. A variable hydraulic displacement pump adapted for responding quickly to rapid pump outlet pressure increases comprising a variable displacement flow generating means, an outlet port hydraulically connected to said flow generating means, single actuator means responsive to the rate of change of pressure in said outlet port for changing the fluid displacement rate of said flow generating means, said responsive means including an actuator, a control spool having means for increasing and decreasing fluid pressure acting against said actuator, a first area on said control spool exposed to pressure in said outlet port for moving said control spool in one direction, a control chamber, a second area on said control spool exposed to pressure in said control chamber for moving said control spool in the other direction, a pilot valve hydraulically connected to said control chamber, resistance means and capacitance

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4,366,673

HYDRAULIC AMPLIFIER

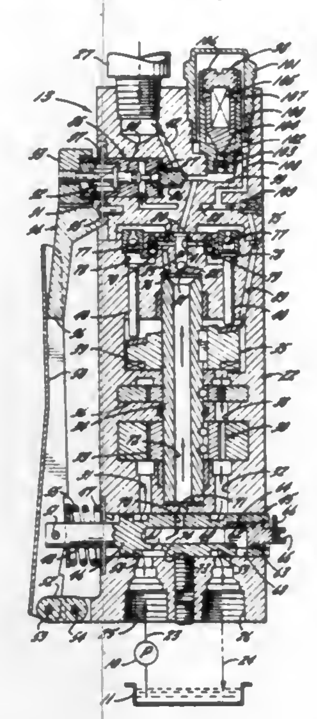
Ellsworth W. Lapp, c/o Lapp Engineering, 4701 Hydraulic Rd., Rockford, Ill. 61109

Filed Dec. 23, 1980, Ser. No. 219,423

Int. Cl.³ F15B *15/18*

U.S. Cl. 60—477 **16 Claims**

1. A hydraulic amplifier operable to receive low pressure fluid from a low pressure pump, to increase the pressure of said fluid and to deliver high pressure fluid to a hydraulic utilization device, said amplifier comprising a hydraulic motor, a high pressure pump, means for connecting said motor to said high pressure pump and operable to drive said high pressure pump when said motor is actuated by low pressure fluid supplied by said low pressure pump, said high pressure pump being operable when driven and when supplied with low pressure fluid from said low pressure pump to increase the pressure of such fluid, the improvement in said amplifier comprising, a first valve normally disposed in a first position blocking the flow of low pressure fluid from said low pressure pump to said motor and to said high pressure pump, said first valve being movable to a second position permitting low pressure fluid to flow from said low pressure pump to said motor and to said high pressure pump, a second valve normally disposed in a first position blocking the flow of high pressure fluid from said high pressure pump to said utilization device, said second valve being movable to a second position permitting high pressure fluid to flow from said high pressure pump to said utilization device, a first actuator associated with said first valve and operable when manually moved in one direction to cause said first valve to shift from its first position to its second position, a second actuator associated with said second valve and operable when moved in a predetermined direction to cause said second valve to shift from its first position to its second position, said first actuator being operable when moved in said one direction to first cause said first valve to shift to its second position and then to move said second actuator in said predetermined direction to cause said second valve to shift to its second position.



4,366,674

INTERNAL COMBUSTION ENGINE WITH RANKINE BOTTOMING CYCLE

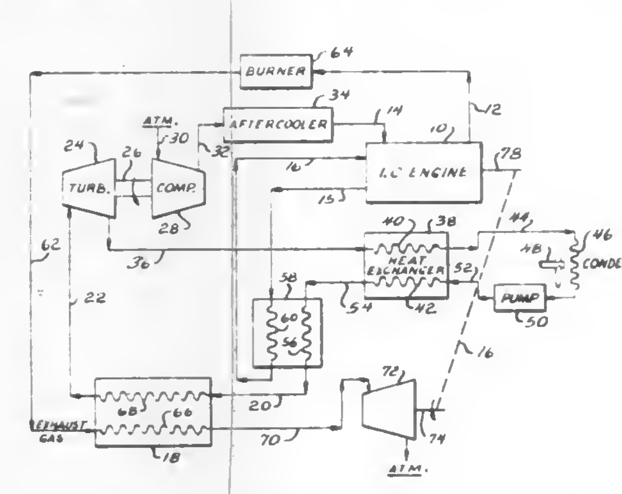
Larry A. Eakman, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00712, § 371 Date Jun. 6, 1980, § 102(e) Date Jun. 6, 1980

PCT Filed Jun. 6, 1980, Ser. No. 193,579

Int. Cl.³ F02B *33/40:* **F02G** *5/04*

U.S. Cl. 60—618 **1 Claim**



1. An internal combustion engine with a Rankine bottoming cycle comprising:

an internal combustion engine (**10**) including an exhaust (**12**) for exhausting combustion gases;

an expander (**24**) having a mechanical output (**26**) for performing work;

a boiler (**18**);

means (**20,50**) for supplying liquid to said boiler to be vaporized therein;

means (**22**) for supplying the expander with vaporized liquid from said boiler;

means (**62**) connecting said exhaust to said boiler so that heat in the exhausted gases of combustion will vaporize the liquid supplied to said boiler;

a condenser (**46**) for condensing vapor received from said expander;

said liquid supply means comprising a pump (**50**) for pumping liquid from said condenser to said boiler;

a heat exchanger (**38**) having a first fluid flow path (**40**) disposed between said expander and said condenser and a second fluid flow path (**42**) in heat exchange relationship with said first fluid flow path and disposed between said condenser and said boiler;

whereby waste heat in the fluid passing from said expander to said condenser preheats liquid flowing from said condenser to said boiler; said internal combustion engine being cooled and including means (**15,16**) for circulating coolant liquid;

an additional heat exchanger (**58**) receiving preheated liquid from said first heat exchanger prior to its entry into said boiler and receiving heated engine coolant from said circulating means for further preheating said preheated liquid prior to its vaporization in said boiler; and

an additional expander (**72**) having a mechanical output (**84**) and connected to said boiler to receive said gases of combustion and expand the same to obtain useful work;

said first named expander comprising a turbine with its mechanical output having a shaft (**26**) connected to a rotary compressor (**28**), said compressor having an inlet (**30**) and an outlet (**32**), said internal combustion engine further including an inlet (**14**) for receiving combustion air, said compressor outlet being connected to said engine inlet by cooling means (**34**);

said engine further including a mechanical output shaft (**78**) and said additional expander comprising a turbine having a shaft (**74**) connected (**76**) to said engine shaft.

4,366,675

GEOTHERMAL TURBINE INSTALLATION

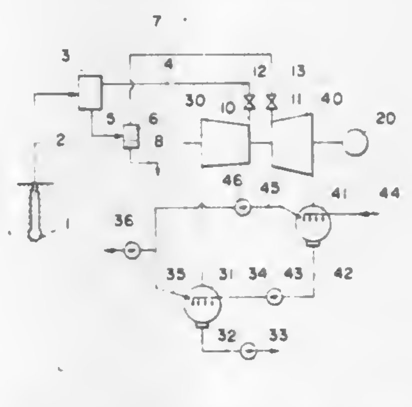
Ryozo Nishioka, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,471

Claims priority, application Japan, Nov. 16, 1978, 53-141386; Feb. 15, 1979, 54-16405

Int. Cl.³ F28B *7/00*

U.S. Cl. 60—693 **7 Claims**



1. A geothermal turbine installation comprising:

a high pressure turbine and a low pressure turbine formed independently of one another;

means for separating geothermal steam into high pressure steam and hot water;

means for coupling said high pressure steam from said separating means to said high pressure turbine;

means for flashing said hot water into steam at a lower pressure than said high pressure steam;

means for coupling said low pressure steam from said flashing means to said low pressure turbine;

a low vacuum steam condenser coupled to receive steam discharged from said high pressure turbine;

a high vacuum steam condenser coupled to receive steam discharged from said low pressure turbine; and

means for connecting a cooling water system of said low pressure turbine in series with and through a cooling water system of said high pressure turbine.

4,366,676

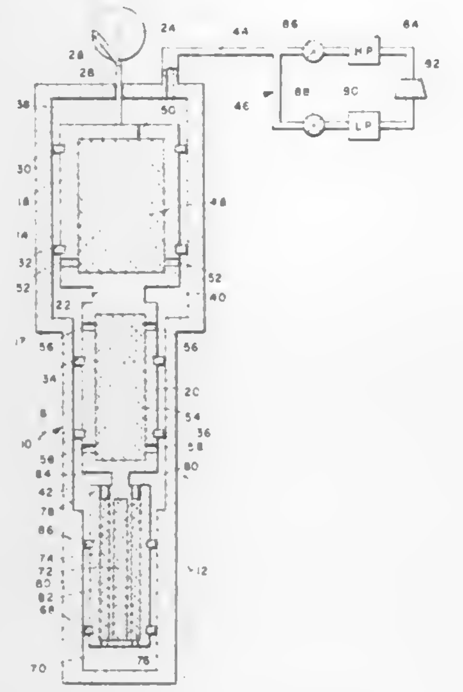
CRYOGENIC COOLER APPARATUS

John C. Wheatley; Douglas N. Paulson, both of Del Mar, and Paul C. Allen, Sunnyvale, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 22, 1980, Ser. No. 218,428

Int. Cl.^{3} F25B *9/00*

U.S. Cl. 62—6 **8 Claims**



1. Cryogenic cooler apparatus comprising:

a vessel;

a displacer slidable within the vessel to define a warm expandable volume chamber and a cold expandable volume chamber;

means for reciprocating the displacer in the vessel;

means for supplying a working fluid selected from the group consisting of ^{4}He, ^{3}He, and a mixture of ^{4}He and ^{3}He to the warm expandable volume chamber of the vessel under high pressure and for having the working fluid discharged therefrom under low pressure; and

a regenerator having one end in fluid communication with the warm expandable volume chamber and its other end in fluid communication with the cold expandable volume chamber, including check valve means for controlling the flow of the working fluid through the regenerator and the cold expandable volume chamber.

4,366,677

HEAT PUMP WATER HEATER WITH REMOTE STORAGE TANK AND TIMED TEMPERATURE SENSING

Robert B. Uselton, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 22, 1981, Ser. No. 275,966

Int. Cl.^{3} G05D *23/32;* **F25B** *27/02*

U.S. Cl. 62—157 **6 Claims**

1. A heat pump water heater comprising:

a. a remote hot water storage tank having respective water inlet and outlet connections for connecting respectively with water supply, circulating and hot water piping system;

b. a heat pump unit adapted to transfer heat from air from conditioned space to water circulated from said remote hot water storage tank including:

i. a heat pump having a compressor, condenser, expansion device, and evaporator connected in a closed refrigerant circuit containing a refrigerant and adapted to circulate hot refrigerant gas in heat exchange relationship with water for heating said water and to circulate cold refrigerant in heat exchange relationship with air for cooling said air; said condenser comprising a double-walled heat exchanger having separate tubular passageways for, respectively, refrigerant and water; said evaporator comprising a heat exchanger having respective cold refrigerant passageways disposed in heat exchange relationship with respective air passageways;

ii. a blower means and air path for circulating air across said evaporator in heat exchange relationship with said cold refrigerant; said air path encompassing said evaporator;

said heat pump unit being portable and disposable at a location distant from said remote hot water storage tank; and

c. water circuit and water circulating means for circulating water from said remote hot water storage tank through said condenser of said heat pump unit in heat exchange relationship with said hot refrigerant gas; said water circuit having its inlet and outlet in fluid communication with said remote hot water storage tank and connected with said water passageway of said condenser;

d. temperature sensing means and control means for sensing water temperature and energizing the heat pump unit when the sensed water temperature is less than a predetermined temperature; said temperature sensing means being disposed at a distance from said remote hot water storage tank and adjacent said heat pump unit and said water circuit so as to be responsive to the temperature of water flowed in said water circuit; said control means being connected also with said water circulating means and said heat pump unit so as to energize and deenergize said water circulating and said heat pump unit; and

e. timer means being connected with said water circulating menas so as to effect energizing of said water circulating means on a periodic basis and retain said water circulating means energized for a time interval sufficiently long to circulate sufficient water to said temperature sensing means to enable sensing a temperature of the water closely approximating the temperature of the water in said remote hot water storage tank;

whereby said water is circulated periodically and heat is added as needed to maintain said water temperature above the predetermined minimum temperature.

4,366,678

TEMPERATURE CONTROL APPARATUS FOR REFRIGERATING MACHINE

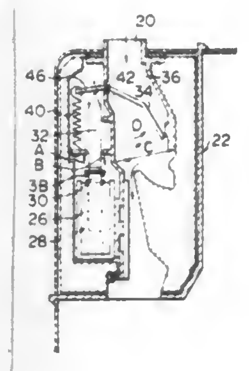
Susumu Yamazaki; Yosinari Nagoya; Ryoichi Fujimoto, all of Ohiramachi; Koichi Nozaki, Kodaira; Terukazu Shirakata, Soka, and Kazuyoshi Yamaguchi, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,721

Claims priority, application Japan, Jan. 7, 1980, 55/151

Int. Cl.^{3} F25D *17/04;* **G05D** *15/00*

U.S. Cl. 62—186 **6 Claims**



1. A temperature control apparatus for use in a refrigerating machine, comprising

an a.c. power source;

an a.c. control element with a control electrode, connected with said a.c. power source;

a holding type solenoid for driving a damper which opens and closes the duct for guiding cooled air from the refrigerator to the refrigerating chamber, said solenoid having a solenoid coil being connected in series with said a.c. control element;

a temperature sensor for detecting the temperature in said refrigerating chamber and for delivering an output corresponding to the detected temperature; and

a triggering means for supplying a trigger signal in synchronous with the phase of the output voltage from said a.c. power source determined in accordance with the output of said temperature sensor, to said control electrode of said a.c. power source at a predetermined period.

4,366,679

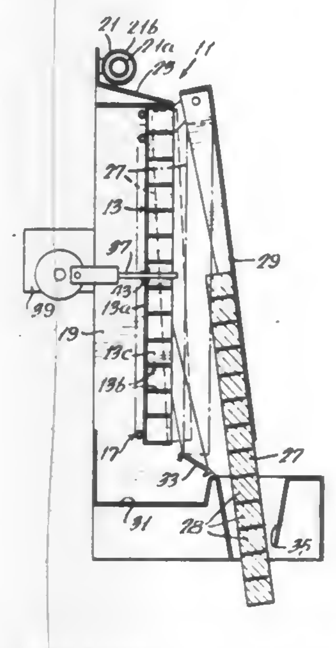
EVAPORATOR PLATE FOR ICE CUBE MAKING APPARATUS

Leon R. Van Steenburgh, Jr., Denver, Colo., assignor to Mile High Equipment Company, Denver, Colo.

Filed Apr. 8, 1981, Ser. No. 252,503

Int. Cl.^{3} F25C *1/04*

U.S. Cl. 62—347 **5 Claims**



1. An evaporator plate for a cube ice making machine comprising a flat rectangular base member having a refrigerant coil in good heat transfer relation to one side thereof and a lattice structure providing ice cube molds on the other side thereof, said coil being formed in a serpentine configuration with a plurality of straight legs disposed in parallel relation with interconnecting radiused portions, said coil being continuous and having one of said legs formed with an input end to receive a low pressure liquid refrigerant and another of said legs formed with an output end from which a super-heated gas/refrigerant is discharged, said one leg extending the length of one edge of said base member and said another leg being disposed extending across the middle portion of said base member, the legs of said coil intermediate the ends of said coil being disposed adjacent to said another leg and at the edge of said base member opposite to said one edge, means for delivering hot gas to said coil for harvesting ice formed on said lattice structure, said hot gas being fed to said coil at said input end and removed at said output end whereby a slab of ice formed on said plate will be melted from said lattice structure at the upper and lower edges prior to melting adjacent said another leg, mechanical means for harvesting said slab of ice including a reciprocable probe mounted on one side of said base member to engage said slab of ice and displace it from said lattice structure.

4,366,680

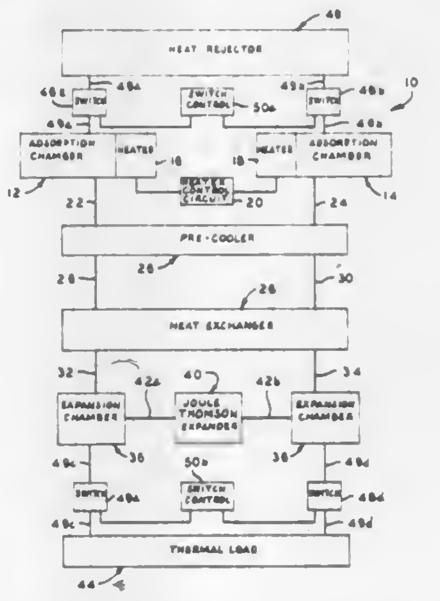
CYCLING JOULE THOMSON REFRIGERATOR

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Emanuel Tward, Northridge, Calif.

Filed Jan. 28, 1981, Ser. No. 229,239

Int. Cl.^{3} F25B *19/00*

U.S. Cl. 62—514 R **6 Claims**



1. In an adsorption refrigeration system the improvement comprising:

A. first system means for alternately adsorbing and desorbing a system pressurizing gas including an adsorption chamber;

B. second system means for alternately adsorbing and desorbing said system pressurizing gas including an adsorption chamber;

C. circuit means interconnecting said first and second system means for sequentially directing a cyclically reversing flow of said system pressurizing gas between said first and said second system means including a Joule Thomson expander for cooling the gas, said circuit means further including a first and a second expansion chamber interconnected in communicating relation through said Joule Thomson expander, and means connecting said expansion chambers in mutually independent communicating relation with said adsorption chambers;

D. a first pair of heat switches connected to said first and second system means for alternately connecting a heat load to said first and second expansion chambers;

E. a second pair of heat switches connected to said first and second systems means for alternately connecting a heat rejector to said adsorption chambers; and

F. means for alternately closing the heat switches of each pair of heat switches.

4,366,681

DETECTION OF FLAWS, BREAKAGES, DISCONTINUITIES AND THE LIKE

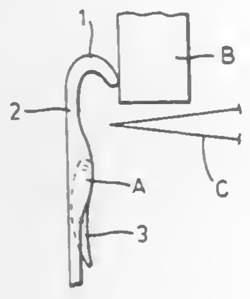
John Homocky, Cheshire, and Joseph Venczel, Manchester, both of England, assignors to Meiners Electronic Controls Ltd., London, England

Filed May 25, 1979, Ser. No. 42,541

Claims priority, application United Kingdom, May 31, 1978, 25099/78

Int. Cl.³ D04B *35/10*

U.S. Cl. 66—165 **26 Claims**



1. A detector device to monitor electrically-conductive surfaces; or beds or arrays of electrically-conductive items or components, for the detection of flaws, breakages, discontinuities and the like, comprising a carrier, a non-electrically conductive feeler element borne by said carrier which feeler element is normally resiliently urged laterally toward and into contact with the surface, bed or array to be monitored as the carrier and said surface, bed or array move relatively past one another, an electrically-conductive probe element mounted on said carrier for lateral movement toward the surface, bed or array in company with said feeler element which probe element is normally out of contact with said surface, bed or array; and electrical fault-sensing circuitry generating fault-indicating signals in response to every electrical contact occurring between said probe element and said surface, bed or array both when consequent upon lateral movement of said probe element in company with said feeler element and when no lateral movement of the probe element occurs.

4,366,682

APPARATUS FOR THE CONTINUOUS TREATMENT OF TEXTILE MATERIALS

Walter Keller, Willich, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

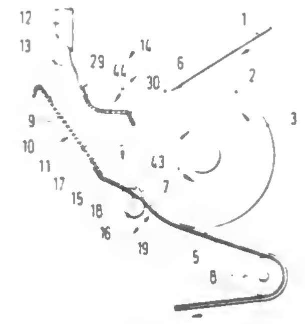
Filed Jul. 29, 1980, Ser. No. 173,339

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010038

Int. Cl.³ D06B *1/06*

U.S. Cl. 68—200 **13 Claims**

1. In an apparatus for the continuous treatment of webs of materials such as textile materials with a foamed treatment medium, said apparatus including a rotating cylinder the length of which is at least equal to the width of the web of material being treated and a portion of the surface of which engages the web of material, said web of material being looped over said cylinder in a looping region, said apparatus further comprising foam feeding means for transferring foam to the web of material in a transfer region located at the circumference of said cylinder, the improvement comprising said foam feeding means including a foam chamber disposed adjacent said cylinder at said looping region, said looping region being located on a side of said cylinder which descends during rotation of said cylinder, said chamber opening adjacent said web of material at said looping region, and wiper means disposed at the lower end of said foam chamber and extending parallel to the longitudinal axis of said cylinder, said wiper means comprising a wiper having an at least partially cylindrical cross section with a surface which is convex at least at said lower end of said foam chamber where said means extend parallel to the longitudinal axis of said cylinder, on the side facing said cylinder, and spaced from said web a preselected amount, whereby a desired layer height of foam will remain on said web after passing said wiper.



4,366,683

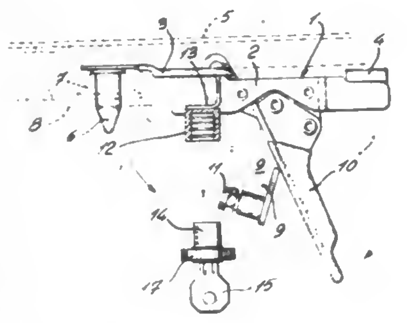
LOCKING LATCH FOR A HATCH DOOR OR THE LIKE

Kirk Labbe, 1749 Antonio Barbeau St., Vimont, Canada (H7M 3P9), and Jacques Leveille, 241 Brien St., Laval, Canada (H7N 3M6)

Filed Feb. 9, 1981, Ser. No. 232,983

Int. Cl.³ E05B *73/00*

U.S. Cl. 70—19 **7 Claims**



1. A locking latch for a hatch door or the like closure adapted to engage a rim defined around an access aperture in a vehicle body with the locking latch comprising a supporting bracket fixedly securable against the inside face of the hatch door along one edge thereof, a clamping latch member movably connected to the supporting bracket and clampingly engageable in latching engagement against the rim defined around the access aperture, a locking cylinder holder fixedly secured relative to the supporting bracket and constructed and arranged for engagement of a lock cylinder therein, and a locking cylinder assembly engaging the locking cylinder holder and the clamping latch member and operatively locking the latter in the latching engagement thereof against the rim defined around the access aperture.

4,366,684

LATCHING DEVICE FOR APERTURED MEMBERS

Lazlo Bako, Woodcliff Lake, and Richard C. Remington, Pompton Plains, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

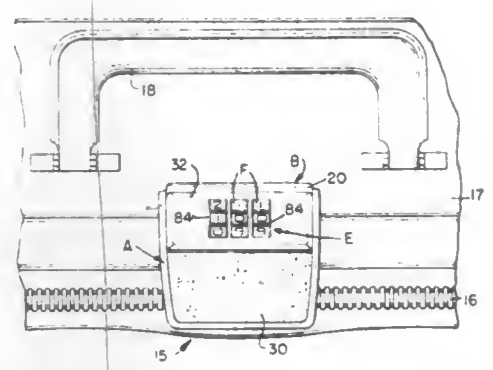
Filed Aug. 25, 1980, Ser. No. 180,926

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—68 **18 Claims**

1. A latching device for latching a slider of a zipper comprising a base, a housing mounted on the base, the base having a portion extending beyond the housing, a stud mounted on the extended portion of the base, the stud formed to be received

through an aperture in a zipper slider pull tab, a latch pivotally mounted on the base, the latch having a latched position at which it covers the stud and the zipper slider and an unlatched position, plunger means slideably related to the housing for releasably engaging cooperable means on the latch for holding the latch in latched position, the plunger means being driven into the housing by the cooperable means when the latch is moved between latched and unlatched positions, spring means for biasing the plunger means toward engagement with the cooperable means, and means releasably engageable with the plunger means for holding the plunger means at least partially driven into the housing when the latch is in unlatched position, the holding means being biased to engage the plunger means and being held against such engagement by the latch when the latch is in the latched position and being permitted to move into said engagement when the latch is in the unlatched position.



4,366,685

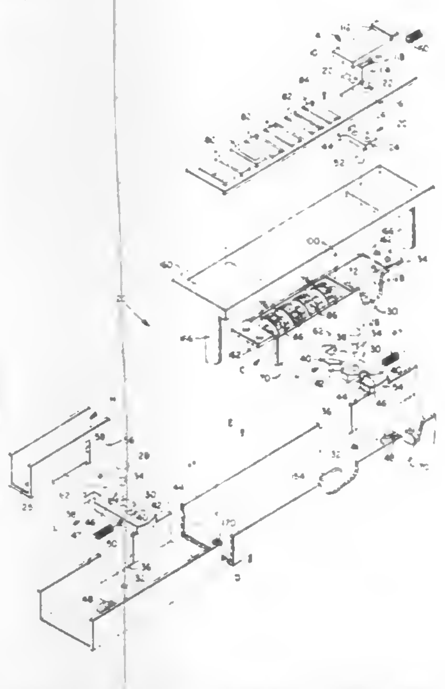
LATCHING ASSEMBLY FOR LUGGAGE AND THE LIKE

Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Oct. 9, 1980, Ser. No. 195,366

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—70 **32 Claims**



1. A latching assembly for luggage cases and the like comprising a pair of spaced pivoting latches adapted to be mounted on a first part of a luggage case adjacent to an edge thereof, the latches being movable between latching and unlatching positions and being cooperable with associated hasps on a second part of the case for holding the case closed when the parts are brought together and the latches are in latching position, an actuator adapted to be slideably mounted on the first part of the case for movement between a rest position and an open position, the actuator being associated with one of the latches for moving said one latch to unlatching position when the actuator moves to open position, and an elongated member extending between the latches so that the latches are constrained for concerted movement between latching and unlatching positions, the elongated member being connected to the latches on opposite sides of their respective pivotal axes so that the latches pivot in opposite directions.

4,366,686

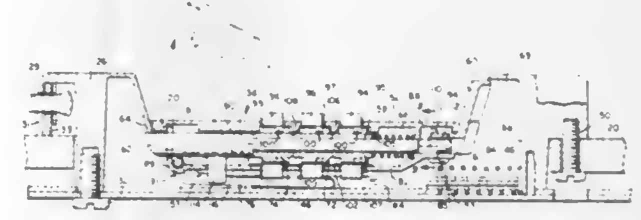
LATCHING SYSTEMS PARTICULARLY FOR ARTICLES OF LUGGAGE

Richard C. Remington, Pompton Plains, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Aug. 20, 1980, Ser. No. 179,832

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—71 **14 Claims**



1. A latching arrangement comprising a housing structure and a latch assembly mounted for pivotal movement on said housing structure toward and away from a hasp associated with said housing structure, said latch assembly including a body member, latch means mounted for movement in said body member between latching and unlatching positions with respect to said hasp, actuator means associated with said latch means for manually moving said latch means in said body member from said latching position to said unlatching position and combination locking means comprising a plurality of individually movable locking devices for permitting manual movement of said latch means by said actuating means only when said locking devices are on-combination, wherein said latch means includes an elongated latch member mounted for longitudinal movement in said body member and wherein each of said locking devices comprises a sleeve carried by said latch member for longitudinal movement therewith and a dial surrounding said sleeve, each of said sleeves and its surrounding dial being rotatable in unison about said latch member and wherein said body member includes blocking means allowing longitudinal movement of said latch member and said sleeves relative to said dials to move said latch member from said latching to said unlatching position only when said sleeves and dials are on-combination.

4,366,687

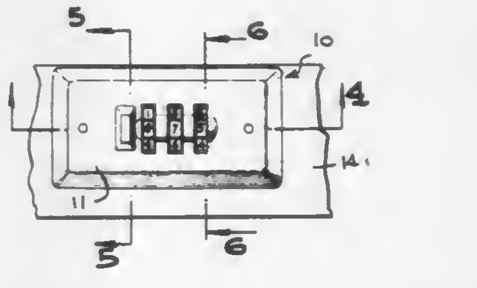
CHANGEABLE COMBINATION LOCK FOR DESK DRAWERS AND THE LIKE

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed Mar. 11, 1981, Ser. No. 242,553

Int. Cl.³ E05B *37/02, 65/44, 65/52*

U.S. Cl. 70—71 **8 Claims**



1. A combination lock for receptacles such as desk drawers and the like, comprising a lock case having a vertical rear wall

and a front face plate secured to the lock case, a horizontal shaft journaled in said case adjacent and parallel to said front face plate, a set of plural rotatable combination dial wheel assemblies disposed in axially spaced coaxial relation along said shaft, said wheel assemblies each comprising an outer annular dial wheel and an inner hub extending therethrough selectively intercoupled at plural relative angular position with respect to said dial wheel, a movable fence rearwardly adjacent said dial assemblies having a locking projection extending rearwardly therefrom and locking and unlocking positions, means on said hubs coactive with said fence for restraining the latter at said locking position and releasing the fence to unlocking position, said hubs being slidably and rotatably journaled on said shaft in endwise abutting stacked relation, means at one end of the stack of hubs biasing them to a first axial position interlocking them against angular displacement relative to their respective dial wheels, means for releasing the hubs from their dial wheels at a second axial position of the hubs, a change and operating lever having a portion abutting the other end of said stack, means journalling said change lever on said shaft for angular movement about the shaft axis over an arcuate range between upper and lower vertically spaced angular positions, a slidable bolt member guided for vertical movement adjacent said rear wall between a projected position and a retracted position, the bolt member having a first slot receiving a rearward end portion of said change and operating lever therein for movement of the bolt member by the lever between said projected and retracted positions and having a second slot for receiving the locking projection of said fence therein only at the projected position of said bolt member to lock the latter at said projected position when the fence occupies its locking position, said front face plate having dial wheel openings therein through which portions of the dial wheels project forwardly for exposing portions thereof to observation and hand manipulation and having a shaped vertically extending guide slot through which a front portion of the change and operating lever extends accommodating lever movement its said vertically spaced angular positions disposing the bolt member at its projected and retracted positions and said guide slot having a lateral extension at one end thereof accommodating a limited extent of lateral angular movement of the lever about its end portion in said first slot to shift the lever axially along said shaft to force said hubs from said first axial position to said second axial position.

4,366,688
MOUNTINGS FOR KEYS

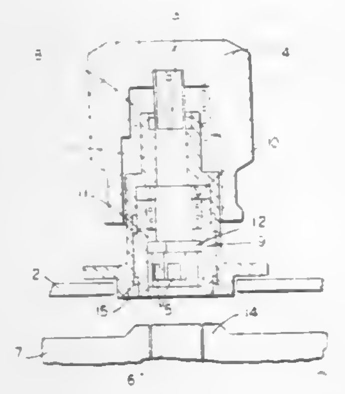
Geoffrey R. Bennett, Reading, England, assignor to Unimax Switch Limited, Maidenhead, England

Filed Aug. 28, 1980, Ser. No. 182,225

Claims priority, application United Kingdom, Aug. 31, 1979, 7930348

Int. Cl.³ E05B ***19/00***

U.S. Cl. 70—395 **7 Claims**



1. A key mounting and lock combination comprising a lock, a mounting movable relative to said lock in guided path towards and away from said lock, a key rotatable in said mounting, about an axis, wards on said key, formations in said lock cooperating with said wards in a given relative orientation thereof about said axis, a member movable within said mounting between a first position in which said member keys said key to said mounting to prevent rotation of said key and a second position in which said key is free to rotate, said key, when said member is in said first position, being held in an angular position such as to result in said given relative orientation of said wards and co-operating formations, and a surface on said lock co-operating with said movable member to move said member from said first position to said second position on approach of said mounting to said lock.

4,366,689
NUMERICAL CONTROL METHOD

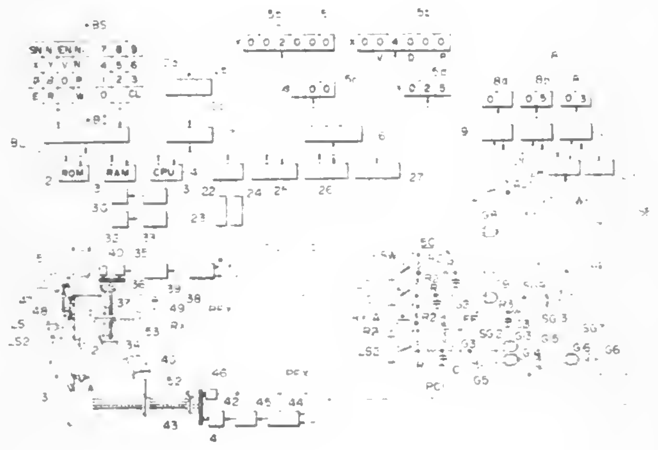
Toshio Yajima, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,312

Claims priority, application Japan, Mar. 5, 1979, 54-25336; Mar. 6, 1979, 54-25846; Mar. 19, 1979, 54-32100

Int. Cl.³ B21D ***5/01***

U.S. Cl. 72—7 **7 Claims**



1. A numerical control method for use in a numerical control device in which positioning control is successively carried out according to numerical control program instructions to bend a working piece, comprising the steps of:

programming a back stopper retracting instruction as well as positioning instruction values in a predetermined process;

subjecting said working piece of normal bending if an escape instruction is not available when a process is carried out;

stopping the lowering of a punch when said punch abuts against said working piece if, when said process is carried out, said escape instruction is available;

executing a back stopper retraction program in a process after the lowering of said punch has been stopped; and

bending said working piece by lowering said punch after said retraction program has been executed.

4,366,690
CENTRIFUGAL SHOTTING TURBINE

Leon Rutten, Liege, Belgium, assignor to Cockerill Sambre, Seraing, Belgium

Continuation-in-part of Ser. No. 962,190, Nov. 20, 1978, abandoned. This application Oct. 30, 1979, Ser. No. 89,461

Claims priority, application Belgium, Nov. 24, 1977, 46239

Int. Cl.³ B24C ***3/24***

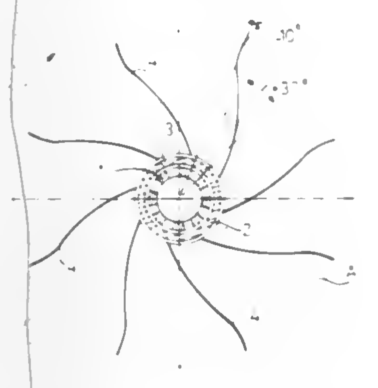
U.S. Cl. 72—53 **2 Claims**

1. A centrifugal shotting turbine for ejecting a jet of shot, comprising:

a shot delivery device;

first and second spaced flanges, said flanges being located on opposite sides of said shot delivery device; and

a plurality of blades interposed between said first and second flanges and projecting radially outward from said shot delivery device, each of said blades having a working face on which shot from said delivery device impinges when said blades are rotated in a given direction about an axis of rotation, the working face of each of said blades comprising a first zone adjacent said shot delivery device wherein said working face is convex and at each point thereof a tangent to the face of the blade makes a fixed angle of curvature with a radius through said point and the axis of rotation, said fixed angle of curvature being between 10° and 30°, the working face of said blade further comprising a second zone adjacent said first zone wherein said working face is concave and at each point thereof a tangent to the face of the blade makes an angle of curvature with a radius through said point and the axis of rotation which varies from the end of said second zone adjacent said first zone to the other end of said second zone, said angles of curvature in said second zone being between 10° and 55°, the ratio of the radial distance between said axis of rotation and the other end of said second zone to the radial distances between said axis of rotation and the juncture of said first and second zones being approximately 1.2, the shape of said working face providing a relatively high rate of shot ejection at relatively moderate blade rotation speeds.



4,366,691
APPARATUS FOR CIRCUMFERENTIALLY CORRUGATING A TUBE

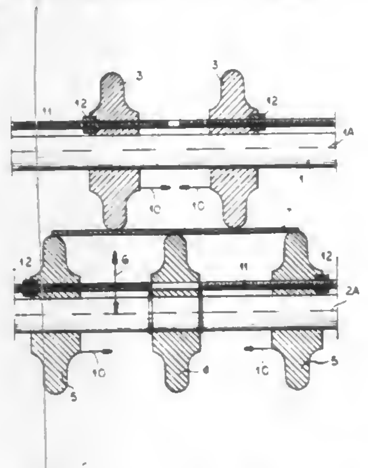
August W. Schäfer, Bautenberger Str. 37, 5901 Wilnsdorf-Wilden, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,242

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035234

Int. Cl.³ B21D ***15/00;*** **F16H** ***37/06***

U.S. Cl. 72—84 **8 Claims**



1. An apparatus for forming a plurality of annular nonhelical corrugations in a cylindrical tube, said apparatus comprising:

two generally parallel shafts centered on and rotatable about respective shaft axes;

means for displacing said shafts radially toward and away from each other;

main drive means having a main output connected mechanically to both of said shafts for synchronously and oppositely rotating same;

a central roller disk fixed on one of said shafts;

a pair of axially displaceable outer disks on said one shaft flanking said central disk;

a pair of axially displaceable roller disks on the other shaft and each lying between a respective one of said outer disks and said central disk;

respective threaded spindles adjacent said shafts and threadedly engaging the respective displaceable roller disks, said spindles being threaded such that when rotated in one rotational sense the respective disks move axially together and when rotated in the opposite rotational sense the respective disks move axially apart;

means including a summing transmission having a pair of outputs connected mechanically to the respective spindles, a first rotary input connected to said main output of said drive means, and a second rotary input for jointly and synchronously rotating said spindles at a rate determined by the rotation speeds and directions of said inputs; and

secondary drive means connected to said second input for rotating same.

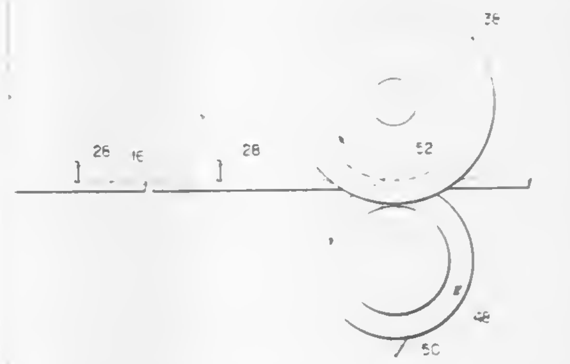
4,366,692
FASTENER STRIP FOR BUILDING WALL CONSTRUCTIONS

Thomas E. Judkins, Baltimore, and Thomas J. Stanton, Ellicott City, both of Md., assignors to The Judkins Associations, Inc., Baltimore, Md.

Filed Sep. 16, 1980, Ser. No. 187,708

Int. Cl.³ B21D ***31/02***

U.S. Cl. 72—186 **4 Claims**



1. A process for manufacturing, from flat coil stock, a fastener strip for assisting in securing foamed sheeting to a wall and for serving as a stud for cover panels which are disposed over the foamed sheeting, said process comprising;

using a roll forming machine including upper and lower rollers to form longitudinal strengthening ribs in a strip of the flat coil stock metal as the strip is pulled from a coil of the metal, and using a rotary die arrangement to form teeth in the web of the strip of metal simultaneously with the passage of the strip past the rollers of the roll forming machine, the step of using a die arrangement comprising employing a said die arrangement including at least one punch located on one of said rollers and a correspondingly shaped circumferential recess located in the other of said rollers such that the at least one punch extends through said web into said recess when the punch forms a tooth in said web.

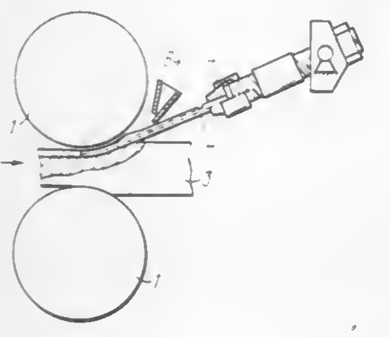
4,366,693
METHOD OF PRODUCING SHAPED ROLLED SECTIONS

Julian M. Chumanov, ulitsa R. Ljuxemburg, 6 kv. 33; Vyacheslav F. Gubaidulin, ulitsa Schorsa 23, kv.; Grigory M. Shulgin, ulitsa Lzjurovskaya kv. 232; Vladimir S. Solod, bulvar Franko, 40, kv. 69; Valery M. Moiseenkov, ulitsa Postyshova, 135, kv. 24; Jury P. Lyashenko, ulitsa Universitetskaya, 58, kv.; Pavel A. Levichev, ulitsa Orbity 131; Nalentin M. Klimenko, bulvar Pushkina, 29, kv. 34; Valery M. Kashaev, pereulok Lista, 53a; Oleg P. Semenovsky, ulitsa Sanitarnaya, 6a, all of, Donetsk; Alexandr V. Bychkov, ulitsa 40 let Gkiyahrya, 71, kv., Nikopol; Valentin B. Shum, ulitsa Artema, 160 kv. 21, Donetsk, and Nikolai Gritsuk, ulitsa Bairona, 161, kv. 12, Kharkov, all of U.S.S.R.

Continuation of Ser. No. 860,074, Dec. 13, 1977. This application Jan. 18, 1980, Ser. No. 113,196

Int. Cl.^{3} B21B *77/06*

U.S. Cl. 72—201 **21 Claims**



1. A method of producing rolled sections shaped along an axis of plastic working, residing in that a blank's external surface is subjected to plastic working in a plastic working zone by being rolled and cold formed by rolls with a former movable with respect to said blank and contacting the external surface thereof during rolling said former being interposed between the external surface of said blank and at least one of said rolls; said former being made as a rod-like structure arranged lengthwise the axis of plastic working and being contacted by said at least one of said rolls during rolling of said blank; said former having a vacant end which remains outside the zone of plastic working during rolling of the blank.

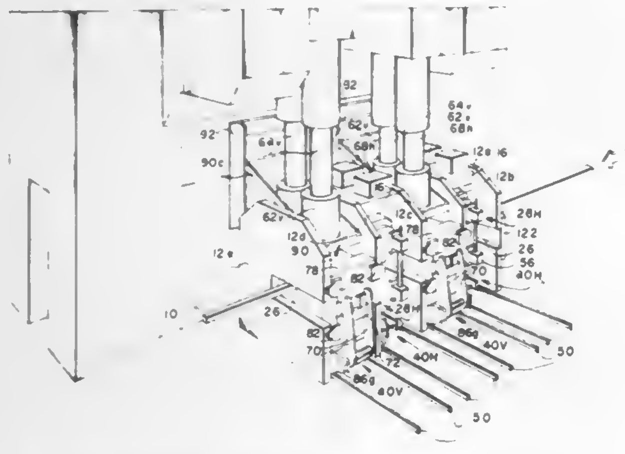
4,366,694
COMPACT ROLLING MILL

David L. Pariseau, Southbridge, and Philip Wykes, Worcester, both of Mass., assignors to Morgan Construction Company, Worchester, Mass.

Filed Sep. 17, 1980, Ser. No. 188,072

Int. Cl.^{3} B21B *13/08*

U.S. Cl. 72—235 **15 Claims**



1. A rolling mill comprising:

a stationary housing structure having a plurality of posts extending transversally across and spaced along the rolling line, openings in said posts aligned with the rolling line to accommodate passage of the product being rolled, said posts being rigidly interconnected by fixed bridging members which cooperate with the posts to define a plurality of rolling bays with open windows facing one side of the housing structure;

a plurality of roll packages each including pairs of work rolls rotatably supported between bearing chocks, said roll packages being adapted for location in said rolling bays in operative rolling positions supported between said posts, with the roll axes of successive roll packages being arranged at 90° relative to each other;

means for driving the work rolls of each roll package; and

transfer means for laterally shifting said roll packages through said windows between said operative rolling positions and inoperative positions located on the said one side of the housing structure.

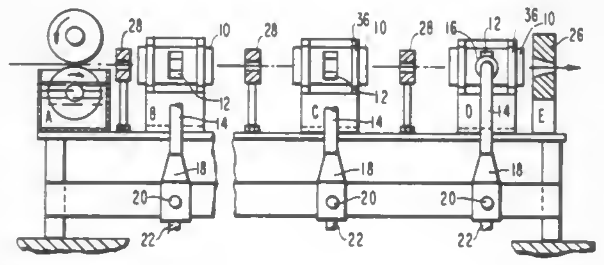
4,366,695
METHOD AND APPARATUS FOR HEATING WIRE PRIOR TO DRAWING

James Petro, Little Falls, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 27, 1980, Ser. No. 181,565

Int. Cl.^{3} B21C *9/00*

U.S. Cl. 72—286 **5 Claims**



1. In a wire drawing process the improvement comprising:

(a) passing the wire through a cylindrical tubular member having heat retaining characteristics and an opening in the side wall thereof and;

(b) heating said wire by:

(1) laterally directing a single burner flame into the opening perpendicular to the wire path, and impinging said single burner flame directly on said wire, by

(2) redirecting a portion of said flame which does not impinge on said wire, and hot gases generated by said flame in both directions longitudinally along said wire and by

(3) exposing said wire to radiant heat generated from said member side walls heated by said flame and said hot gases.

4,366,696
NESTABLE CAN METHOD OF MANUFACTURE

Ronald A. Durgin, Pleasanton; Florentino Q. Apelin, Daly City, and Gordon D. Henderson, Alemada, all of Calif., assignors to Western Can Company, San Francisco, Calif.

Filed Dec. 24, 1980, Ser. No. 219,937

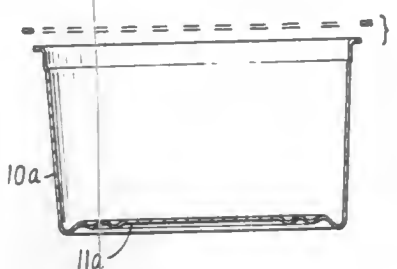
Int. Cl.^{3} B21D *22/00*

U.S. Cl. 72—339 **10 Claims**

1. A method for forming a tapered nestable can from sheet metal stock comprising the steps:

cutting a blank from sheet metal stock, and drawing the blank into a tapered die with a tapered drawhorn while forming a first stage cup having a bottom, a tapered cylindrical sidewall and a peripheral flange, said blank being drawn without coining said sidewall and allowing wrinkles to form therein; and

reforming the first stage cup by expanding the diameter of the tapered cylindrical sidewall to remove the wrinkles while maintaining substantially the same taper, the diameter of said sidewall after expanding being less than five percent (5%) greater than the diameter of the sidewall of the first stage cup.



4,366,697
PRESS FOR PRODUCING WORKPIECES FROM WIRE SEGMENTS

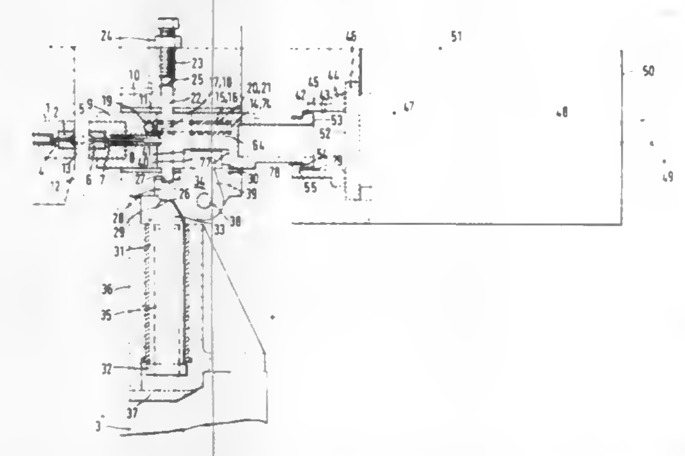
Wilhelm Leopold, Im Vogelsholz 50, 5600 Wuppertal 21, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,241

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1980, 3013472; Jun. 23, 1980, 3023371

Int. Cl.^{3} B21D *22/00*

U.S. Cl. 72—361 **15 Claims**



1. A press for producing workpieces from wire segments, comprising:

a machine frame;

a stationary matrix mounted in said machine frame;

a press carriage which is drivable back and forth in and opposite to a pressing direction;

a stamp mounted in said machine frame in such a way as to be displaceable in and opposite to the pressing direction and relative to said matrix, said stamp being drivably connected with said press carriage and being adapted to lead same;

first spring means operatively associated with said stamp and said machine frame for effecting leading of said stamp relative to said press carriage;

a feeding device for supplying wire segments between said matrix and said stamp;

a buffer operatively associated with said stamp and said machine frame, said buffer being resiliently yieldable in the pressing direction; and

second spring means in the form of a buffer spring mounted between said buffer and said machine frame for supporting said buffer, the spring characteristics and/or preloading of said buffer spring and of said first spring means being coordinated in such a way that upon engagement of a wire segment by said stamp and said matrix, the spring force of said first spring means prevails over the sping force of said buffer spring, and in the course of further movement of said stamp in the pressing direction, the spring force of said buffer spring prevails over the spring force of said first spring means.

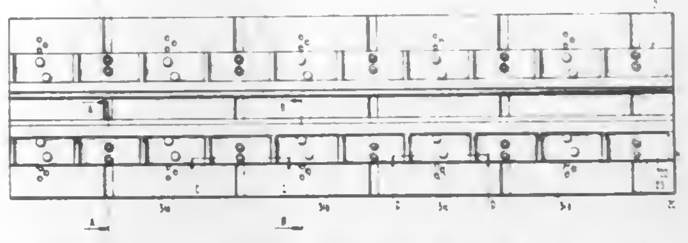
4,366,698
ADJUSTABLE DIE ASSEMBLY

Gregg L. Gill, 1763 Underwood St., Cuyahoga Falls, Ohio 44221

Filed Oct. 6, 1980, Ser. No. 194,011

Int. Cl.^{3} B21D *37/04*

U.S. Cl. 72—389 **13 Claims**



1. An assembly for precisely positioning a pair of die members on the bed of a press beneath a ram mounted for movement toward and away from the bed, said assembly comprising:

a frame member having an upwardly facing surface contacting the pair of die members;

clamping means extending between each of the die members and said frame member for selectively clamping and unclamping each of the die members against said frame member; and

positioning means, independently operable of said clamping means, extending between the die members and preselected locations on said upwardly facing surface of said frame member for accurately positioning the die members relative to one another on said frame member.

4,366,699
HYDRAULIC PRESSES

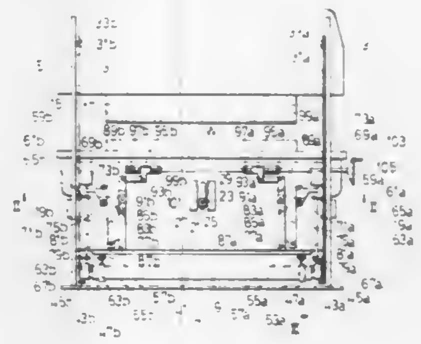
Yuji Tsuchiyama, Hatano, Japan, assignor to Amada Company, Limited, Kanagawa, Japan

Filed May 22, 1981, Ser. No. 266,320

Claims priority, application Japan, May 26, 1980, 55-069041; May 26, 1980, 55-069042

Int. Cl.^{3} B21D *7/06;* **B21J** *7/46*

U.S. Cl. 72—389 **2 Claims**



1. A hydraulic press, comprising:

a fixed tool;

a movable tool;

a ram means for holding the movable tool and being so disposed as to be vertically moved toward and away from the fixed tool;

a pair of upright plate means for holding the fixed tool;

a beam member fixedly supported between the pair of upright plate means;

a pair of dependent plate members pivotally provided at inner sides of the upright plate means;

hydraulic motor means for driving the ram means;

- a pair of valve means, each mounted on one of the pair of dependent plate members;
- rocking arm members pivotally supported by the dependent plate members; and
- a torsion bar member rotatably held at its ends by the rocking arm members;
- whereby linking means is provided to connect end portions of the torsion bar member with end portions of the ram means so that the rocking arm members may actuate the valve means.

4,366,700

APPARATUS FOR MEASURING THE DIFFERENTIAL PRESSURE OF DISSOLVED GASES IN A FLUID MEDIUM

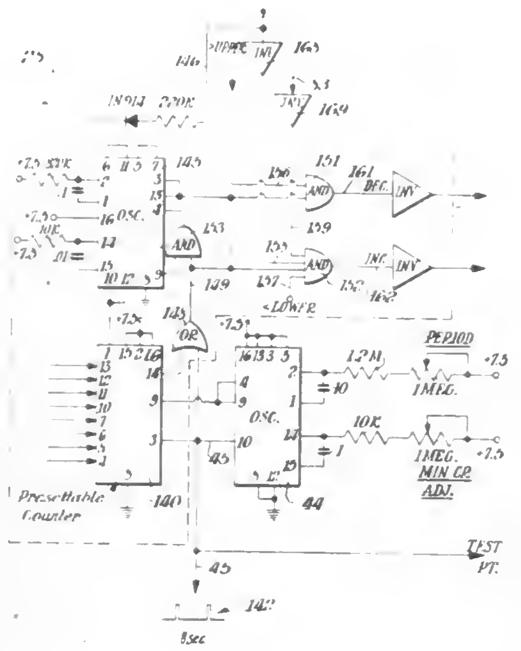
Gerald Bouck, 12609 NE - 5th St., Bellevue, Wash. 98005
Filed Jun. 3, 1981, Ser. No. 270,040
Int. Cl.^{3} G01N *7/00;* B01D *13/00*
U.S. Cl. 73—19 **4 Claims**

1. An apparatus for measuring dissolved gas pressure in a fluid to determine the level of gas saturation of said fluid, comprising:
- a cylindrical container defining a testing chamber for enclosing a semipermeable tubing, said container connected into a fluid communication system;
- said semipermeable tubing being hollow for transmission of gases through to the interior of the tubing but prohibiting the passage of the fluid to the tubing interior, the bottom end of said tubing being closed and the top end fastened to a means for communicating the interior of the tubing with a differential pressure gauge outside of the container;
- a means for supporting the semipermeable tubing inside the testing chamber in a closely spaced spiral shape;
- said differential pressure gauge measuring the pressure difference between the interior of the first tube and the atmosphere;
- an inlet and outlet valve connected between each end of said container and the fluid communication system and
- said valves selectively pressurizing the testing chamber for inhibiting the formation of bubbles on the semi-permeable tubing inside the chamber.

4,366,701

OCTANE MEASURING

John M. Bittner, Trenton, N.J., assignor to Ethyl Corporation, Richmond, Va.
Continuation-in-part of Ser. No. 61,473, Jul. 27, 1979, Pat. No. 4,276,770. This application Jun. 16, 1980, Ser. No. 159,512
Int. Cl.^{3} G01N *33/22*
U.S. Cl. 73—35 **2 Claims**



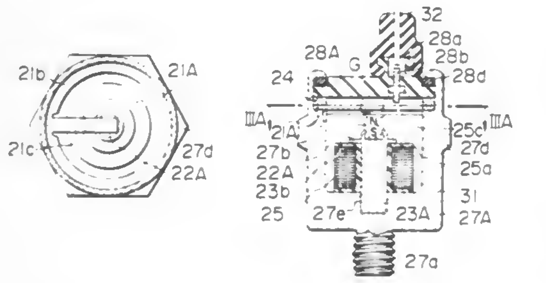
1. An all-electronic controller for responding to error signals, said controller including
- (a) a receiving unit for receiving and periodically locking in a digital error signal,
- (b) a counting unit connected to count down the error signal after it is locked in,
- (c) a control circuit connected to deliver one output signal during the error count-down and to deliver another output signal when the error count-down reduces the locked-in error to zero, and
- (d) shift means connected for external actuation to shift the count-down from a high count rate to a low count rate,

the receiving unit is connected to an octane test engine knock signal output, and the control circuit is connected to deliver its output signals to the compression ratio change actuator of the test engine.

4,366,702

KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okasaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Aug. 15, 1980, Ser. No. 178,282
Claims priority, application Japan, Aug. 23, 1979, 54-107500; Oct. 23, 1979, 54-137165; Oct. 24, 1979, 54-138033
Int. Cl.^{3} G01L *23/22*
U.S. Cl. 73—35 **5 Claims**



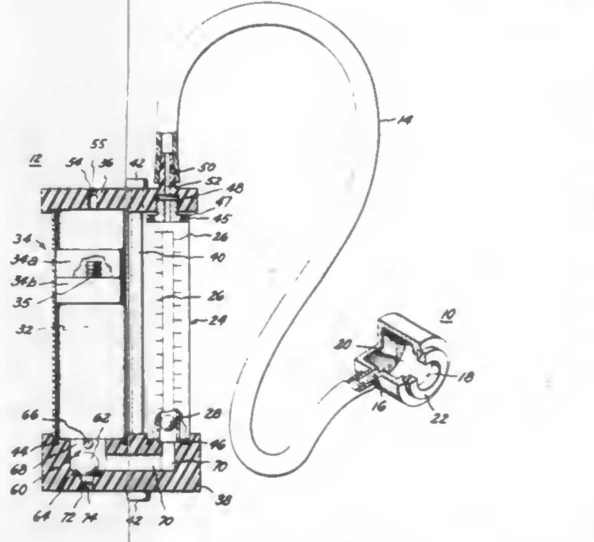
1. A knock detecting apparatus for internal combustion engines comprising:

- a housing having a substantially cylindrical side peripheral wall;
- a vibrating member disposed in said housing in the radial direction and having a ring-shaped support member and a reed segment extending from an inner peripheral edge of said support member toward the center,
- said reed segment being integral with said ring-shaped support member and the peripheral portion of said ring-shaped support member being secured to the inner peripheral surface of said housing, said vibrating member having a resonant characteristic set at a knocking frequency;
- a bar-shaped central magnetic path member having one end spaced from said vibrating member to form an air gap and extending in the axial direction substantially in the center within said housing;
- a radial magnetic path member extending from the other end of said central magnetic path member in the radial direction of said housing;
- an outer cylindrical magnetic path member extending between the outer peripheral side of said radial magnetic path member and said vibrating member;
- a magnetic circuit being formed by said bar-shaped central magnetic path member, air gap, vibrating member, outer cylindrical magnetic path member and radial magnetic path member;
- a permanent magnet member located and included in said magnetic circuit; and
- a magnetic flux detecting means placed in said housing and magnetically coupled with said bar-shaped central magnetic path members for detecting change of the magnetic reluctance of said magnetic circuit due to a change in the width of said air gap caused by vibrations of said vibrating member.

4,366,703

METHOD AND APPARATUS FOR DETERMINING PERMEABILITY AND THICKNESS OF REFRACTORY COATINGS ON FOUNDRY MOLDS AND CORES

Clifford G. Wagner, Clifton Park, and Dallas E. Cain, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jan. 19, 1981, Ser. No. 225,984
Int. Cl.^{3} G01N *15/08*
U.S. Cl. 73—38 **8 Claims**

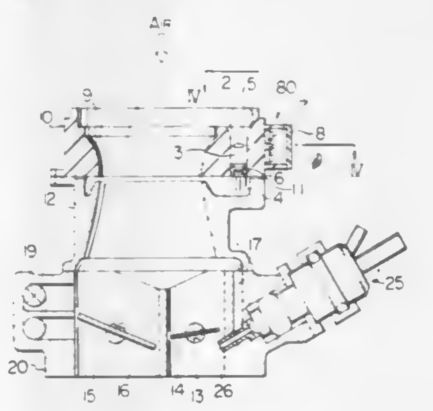


1. Portable apparatus for determining the air permeability of a refractory coating in place upon a foundry mold or core, comprising,
- a hand-held contact probe having an inlet connection, an outlet orifice of predetermined area adapted for sealing contact with the mold or core, and a passageway fluidly interconnecting said inlet connection and said outlet orifice;
- a hand-held measuring unit including a flowmeter having an inlet, an outlet, and a measuring scale calibrated in terms of permeability; a cylinder having a gravity-operated piston sealingly slidable between first and second ends of said cylinder, said first end being fluidly open to the atmosphere and said second end being fluidly connected to the input of said flowmeter; and a gravity-operated check valve connected to admit atmospheric air to said cylinder at said second end; and
- flexible conduit fluidly interconnecting the outlet of said flowmeter and the inlet of said probe;
- whereupon inverting said hand-held measuring unit causes said piston to slide to said first end of said cylinder and said check valve to be opened to admit air to said cylinder so that said piston exerts a constant pressure causing air to flow from said cylinder through said mold at a rate indicative of permeability as determined by said flowmeter when said hand-held unit is repositioned in a non-inverted position and the outlet of said probe is in contact with the mold or core.

4,366,704

AIR INTAKE APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kanemasa Sato; Sadayasu Ueno, and Kazuhiko Miya, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 26, 1980, Ser. No. 210,829
Claims priority, application Japan, Nov. 27, 1979, 54-153947
Int. Cl.^{3} G01M *15/00*
U.S. Cl. 73—118 **12 Claims**



1. An air intake apparatus for an internal combustion engine comprising a bypass body having a bypass passage formed therein for passing air of an amount in a predetermined ratio with respect to air passing through a main air path communicating with the internal combustion engine, said bypass passage detouring said main air path, a heating resistor disposed in said bypass passage, and means for measuring the amount of air taken into said internal combustion engine by use of the radiation of heat from said heating resistor into the air, wherein at least the bypass body defining said bypass passage is made of a synthetic resin material of a low heat conductivity.

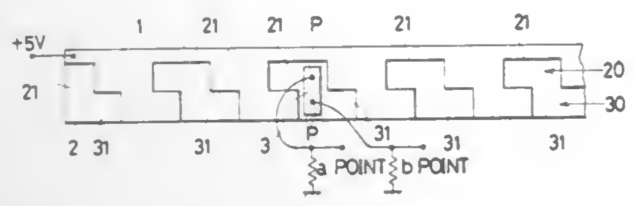
4,366,705

THROTTLE OPENING DETECTOR FOR INTERNAL COMBUSTION ENGINE

Takiji Fuji, Anjo; Toshio Takaichi, Aichi; Shoji Yokoyama, and Hidehiro Kondo, both of Anjo, all of Japan, assignors to Aisin-Warner K.K., Anjo, Japan
Filed Dec. 5, 1980, Ser. No. 213,601
Claims priority, application Japan, Dec. 5, 1979, 54-157843
Int. Cl.^{3} G01M *15/00*
U.S. Cl. 73—118 **6 Claims**

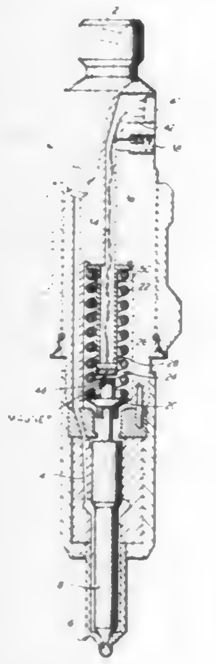
1. A throttle opening detector for internal combustion engine comprising a slide contact device which has first and second contacts, and a throttle opening reading device which reads out throttle opening by the potential variation in the first and second contacts, wherein the potential variation of said

first contact and the potential variation of said second contact are alternatively output by said slide contact, and the throttle opening reading device reads out throttle opening variation by variation of exclusive-OR of potential signals in both contacts.



4,366,706
NEEDLE POSITION SENSING SYSTEM FOR A FUEL INJECTOR NOZZLE HOLDER

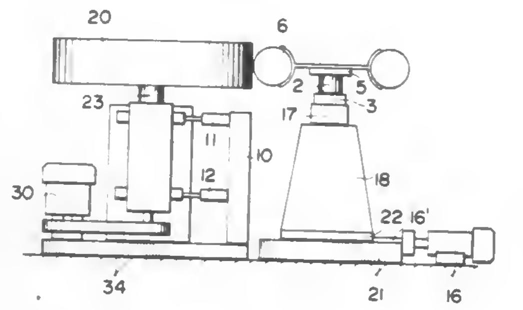
George Wolff, P.O. Drawer 9407, Winter Haven, Fla. 33880
Continuation-in-part of Ser. No. 87,983, Oct. 25, 1979. This application Sep. 15, 1980, Ser. No. 187,171
Int. Cl.^{3} G01M *15/00*
U.S. Cl. 73—119 A **47 Claims**



1. A fuel injector nozzle holder capable of receiving a needle position sensor comprising:
- (a) a needle coupled within said nozzle holder and displaceable between open and closed positions;
- (b) a chamber within said nozzle holder;
- (c) a spring in said chamber for biasing said needle into the closed position;
- (d) a passageway in said nozzle holder and through said spring for establishing communication with said chamber from a location external to said nozzle holder;
- (e) a sensor holder within said chamber and aligned with said passageway for guiding said sensor into a pre-determined position with respect to said needle and for maintaining said sensor in a fixed position after said sensor is fully inserted into said holder; and
- (f) the needle position sensor dimensioned for sliding insertion and removal through said passageway, said sensor including a sensing element at the extremity thereof engageable in said sensor holder.

4,366,707
APPARATUS FOR OPTIMIZING TIRE OR WHEEL CHARACTERISTICS

Rainer Jarschel, Egelsbach, Fed. Rep. of Germany, assignor to Firma Carl Schenck AG, Darmstadt, Fed. Rep. of Germany
Filed Mar. 2, 1981, Ser. No. 239,419
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010315
Int. Cl.^{3} G01M *17/02*
U.S. Cl. 73—146 **14 Claims**



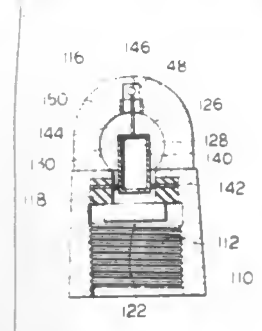
1. An apparatus for optimizing the road characteristics of tires or wheels comprising: mounting means for mounting a wheel or tire for rotation about a wheel mounting axis; drum mounting means and drum means mounted thereon for rotation about a drum mounting axis; machine base means supporting said wheel mounting means and said drum mounting means for rotation of said drum means in the same plane of rotation as a wheel or tire to be mounted on said wheel mounting means, carriage means interposed beneath at least one of said wheel mounting means and drum mounting means on the machine base means for translation of said wheel mounting means and drum mounting means one relative to the other; first drive means constructed and arranged for operatively engaging the drum means and a mounted wheel or tire with a predetermined force by relative translation between said drum mounting means and wheel mounting means, second drive means for rotating a mounted wheel or tire at a desired speed when the drum means and mounted wheel or tire are operatively engaged; oscillation bridge means coupled between the machine base and one of said wheel mounting means and drum mounting means and comprising extended bearing means; first transducer means operatively coupled for measuring oscillations of said oscillation bridge means relative to the machine base means and for generating a corresponding first output signal upon rotation of said operatively engaged drum means and a mounted wheel or tire at the desired speed; second transducer means comprising angular position detector means operatively coupled for generating a signal corresponding to the angular position of a mounted wheel or tire; and signal processing means for multiplying said first and second signals to provide information about the unbalance or non-uniformity of a mounted wheel or tire.

4,366,708
PRESSURE CHECKER FOR PNEUMATIC TIRE

Hisanori Warihashi, 43-4, Daita 1-chome, Setagaya-ku, Tokyo, Japan
Filed Feb. 6, 1981, Ser. No. 232,370
Claims priority, application Japan, Feb. 7, 1980, 55-13473[U]
Int. Cl.^{3} B60C *23/04*
U.S. Cl. 73—146.8 **2 Claims**

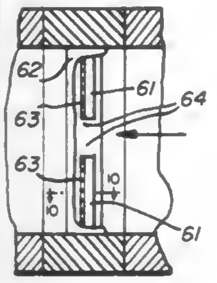
1. A device for checking the pressure of a pneumatic tire having a tire valve, comprising:
- a cap member having a portion formed of transparent material and defining an open-ended chamber therein and adapted for threaded engagement with the tire valve;
- a packing member secured in said chamber and sealingly engageable with the tire valve so that said chamber may be hermetically sealed when said cap member is threaded on the tire valve;

- a pressing member provided in said chamber and adapted to press the tire valve open when said cap member is threaded on the tire valve; and
- an inflatable membrane provided in said chamber to divide said chamber into a closed space contiguous with an open-ended space and inflatable into said closed space by air pressure released into said open-ended space from the tire when the tire valve is opened by said pressing member, said membrane having a pattern on the surface facing said closed space, said pattern being deformable by inflation of said membrane so that by viewing the deformation of said pattern through said transparent portion an abserver can check the air pressure of the tire.



4,366,709
APPARATUS FOR MEASURING THE VELOCITY OF GASES

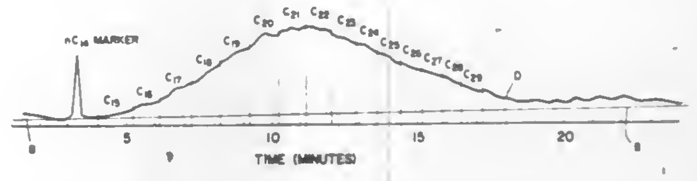
Kurt Eiermann, Pfungstadt, Fed. Rep. of Germany, and Franz Kolb, deceased, late of Hanau, Fed. Rep. of Germany (by Elisabeth Kolb, executrix), assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Continuation of Ser. No. 8,572, Feb. 1, 1979, Pat. No. 4,245,502. This application Oct. 2, 1980, Ser. No. 192,983
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804850
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.^{3} G01F *1/68*
U.S. Cl. 73—204 **14 Claims**



1. In an apparatus for the measurement of the velocity of flow of a gas in a gas stream including an anemometer probe of the hot-wire type for use in a measuring bridge providing current thereto, the anemometer probe having at least two temperature-dependent electrical resistance members, the improvement wherein each temperature-dependent resistance member of said probe comprises:
- an electrically insulating carrier having a flow-facing side and an opposite flow-diverted side; and
- a thin layer of electrically conductive metal adapted for electrical connection within said bridge and positioned at least for the most part on only the flow-diverted side of said electrically insulated carrier.

4,366,710
METHOD FOR MEASURING VAPOR PRESSURE

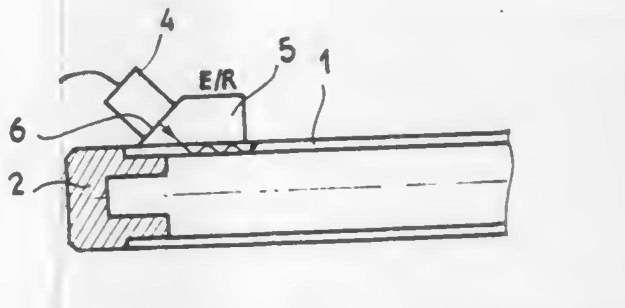
Frank T. Eggertsen, Berkeley, Calif., assignor to Flint Ink Corporation, Detroit, Mich.
Filed Mar. 20, 1981, Ser. No. 246,078
Int. Cl.^{3} G01N *31/08*
U.S. Cl. 73—23.1 **7 Claims**



1. A method for determining the vapor pressure of a hydrocarbon mixture which comprises:
- a. passing a sample of said hydrocarbon mixture through a nonselective chromatographic column,
- b. analyzing the effluent from said chromatographic column in a detector,
- c. recording the signal from said detector,
- d. determining in the resultant record the location of n-paraffin positions,
- e. determining the n-paraffin bisectors at the points halfway between said n-paraffin positions,
- f. determining a base line on said record,
- g. determining the area between said base line and said record between n-paraffin bisectors,
- h. dividing each of said areas by the number of carbon atoms in the n-paraffin position falling within said area to determine the relative moles of the compounds within said areas,
- i. normalizing said relative moles to determine the mole fraction of the compounds within said area,
- j. multiplying each mole fraction thus determined by the saturation vapor pressure of the n-paraffin whose position falls within that area to determine the partial pressure of the compounds within each of said areas, and
- k. totalling said partial pressures to obtain the vapor pressure of said hydrocarbon mixture.

4,366,711
METHOD OF TESTING FUEL RODS FOR ASSEMBLIES FOR NUCLEAR REACTORS AND CORRESPONDING APPARATUS

Jean-Claude Weilbacher, Champagne-sur-Oise; Jean Marini, Marly-le-Roi, and Alain Gravelle, Fontenay-aux-Roses, all of France, assignors to Framatome, Courbevoie, France
Filed Apr. 17, 1980, Ser. No. 142,370
Claims priority, application France, Apr. 20, 1979, 79 09984
Int. Cl.^{3} G01N *29/00*
U.S. Cl. 73—590 **7 Claims**



1. Method of testing new fuel rods for assemblies for nuclear reactors, obtained by introducing the fuel into a tubular can, filling with gas under pressure and sealing of this can by plugs fixed sealingly to the can and constituting the ends of the fuel rod, for detecting traces of moisture which may have been introduced into the rod during its manufacture, characterised by the fact that, in the canning tube of the fuel element disposed in the open, ultrasonic waves are transmitted with an

oblique incidence with respect to the axis of the tube, from one region of the side wall of the tube, these waves producing, by reflection at the walls of the canning tube, plate waves or Lamb waves, that these Lamb waves are picked up after covering a certain distance along the length of the canning tube and that the attenuation undergone by these Lamb waves is measured in order to deduce data therefrom on the possible presence of moisture in the fuel rod by comparison with attenuation results obtained on another part of the length of the tube or on a standard tube.

4,366,712
ULTRASONIC TESTING OF SHEET AND PLATE STOCK

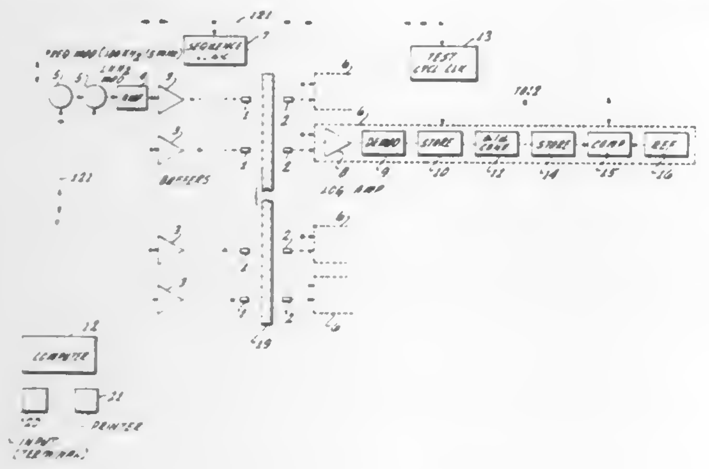
Hans-Jürgen Bäthmann, Moers; Gert Fischer, Mülheim, and Heinz Schneider, Düsseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,565

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936737

Int. Cl.^{3} G01N *29/00, 29/04*

U.S. Cl. 73—600 **10 Claims**



1. Apparatus for ultrasonic testing of sheet or plate metal stock, comprising:

a plurality of ultrasonic transmitting transducers positioned for being disposed on one side of the stock to be tested;

a plurality of ultrasonic receiving transducers disposed on an opposite side of said stock for receiving ultrasonic signals that have passed therethrough;

a plurality of buffer amplifiers, having their respective outputs connected respectively to the plurality of transmitting transducers;

a source for frequency-modulated electrical signals connected for driving the buffer amplifiers;

a plurality of receiving circuit units connected respectively to the receiving transducers, each receiving circuit including a logarithmic amplifier, an amplitude demodulator, a minimum detector and store for storing detected demodulation minima, and a digitizer for the stored minima; and

a computing facility connected to said source to provide thereto operating parameters and further connected to said digitizers to produce test results.

4,366,713
ULTRASONIC BOND TESTING OF SEMICONDUCTOR DEVICES

Robert S. Gilmore, Burnt Hills; Homer H. Glascock, II, and Harold F. Webster, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

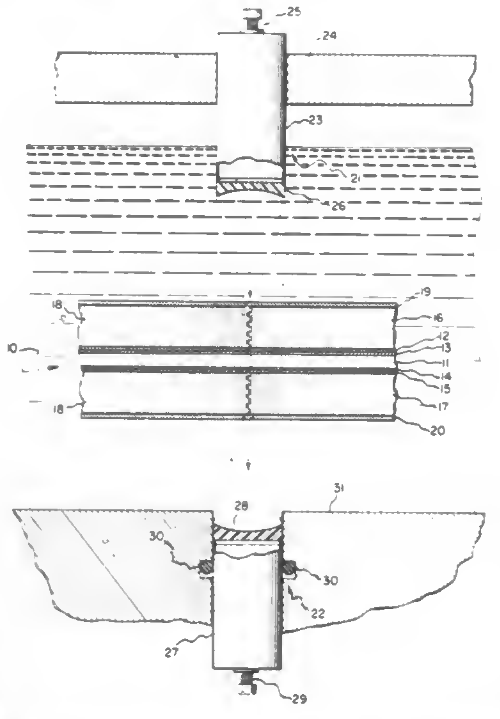
Filed Mar. 25, 1981, Ser. No. 247,199

Int. Cl.^{3} G01N *29/04*

U.S. Cl. 73—618 **10 Claims**

1. The method of testing an assembled semiconductor device for unbonded areas in the bond between a metal layer on a semiconductor wafer and a structured copper heat sink member which has substantially parallel closely packed strands of copper, comprising the steps of:

scanning said assembled device with pulses of ultrasound which are incident on one surface thereof and are transmitted along said copper strands and highly attenuated in the lateral direction, and pass through said bond and metal layer and said semiconductor wafer without significant lateral spreading;



detecting the ultrasound pulses that are transmitted to the other surface of said assembled device and producing received electrical signals; and

processing and displaying said received signals such that a high amplitude signal designates a good bond and a low amplitude or no signal designates voids and unbonded areas in the bond of said structured copper member to the semiconductor wafer metal layer.

4,366,714
PRESSURE/TEMPERATURE PROBE

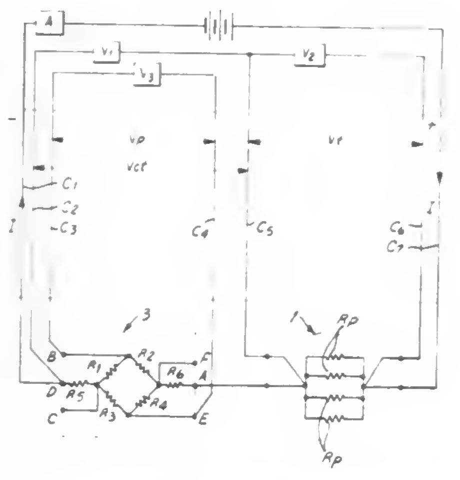
Napoleone Adorni, Milan, Italy, assignor to CISE S.p.A., Milan, Italy

Filed Jan. 8, 1980, Ser. No. 110,368

Claims priority, application Italy, Aug. 1, 1979, 9309 A/79

Int. Cl.^{3} G01L *19/04;* **G01K** *1/26*

U.S. Cl. 73—708 **7 Claims**



1. An improved pressure/temperature measuring apparatus comprising:

a remote measuring probe having a metal tubular sheath including a lower end, said probe having an electrical resistance-type pressure sensor mounted in said sheath and an electrical resistance-type temperature sensor mounted in said lower end of said sheath, said sensors electrically connected in series;

a measurement site distant from said remote probe having a constant direct current source connected to said remote probe, first electrical means for determining the temperature of said temperature sensor to provide a temperature reading at said temperature sensor, second electrical means for determining the pressure at said pressure sensor to provide a pressure measurement at said pressure sensor and third electrical means for determining the temperature of said pressure sensor from a measurement of said pressure sensor after calibration calculation procedures of said pressure sensor to thereby permit the temperature correction of said pressure sensor; and

electrical connector means connecting said first, second and third electrical means and said direct current source to said sensors in said remote probe.

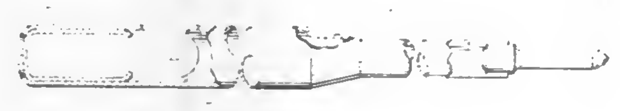
4,366,715
PRESSURE TESTING APPARATUS

John H. Bradshaw, Hingham, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 84,482, Oct. 15, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 212,929

Int. Cl.^{3} G01L *7/00*

U.S. Cl. 73—714 **5 Claims**



1. In apparatus for testing internal pressure of a pressurized container having a sealed end and a ball partially extending outwardly from a ball seat, said ball being free to move between first and second ball seat extremities, the improvement comprising:

a pivotally movable lever arm having a first end and a second end;

means for holding said container in a fixed position with said ball against said lever arm first end;

sensing means being coupled to said lever arm first end for generating an electrical signal proportional to instantaneous pivotal displacement of said lever arm;

transducer means being coupled to said lever arm second end for generating a first force in response to a first electrical signal for pivotally moving said lever arm and causing said ball to move from said first ball seat extremity to said second ball seat extremity, and a second force in response to a second electrical signal for statically holding said ball in a position substantially midway between said first and second ball seat extremities, said second force being substantially proportional to said internal pressure;

electronic control means being coupled to said transducer means and said sensing means, said electronic control means automatically supplying said first and second electrical signals to said force generating transducer means, said second electrical signal being supplied in response to said electrical signal generated by said sensing means; and

recording means being coupled to said electronic control means for indicating magnitude of said second force and displacement of said ball from said first ball seat extremity to said second ball seat extremity.

4,366,716
PRESSURE TRANSDUCER

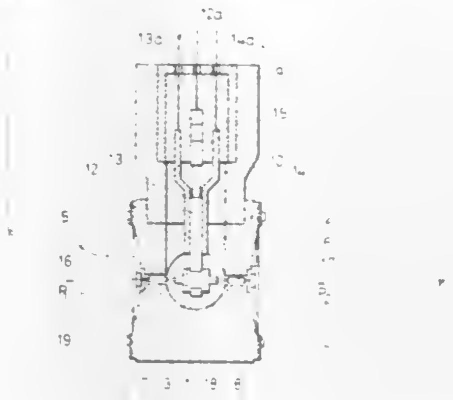
Takeshi Yoshida, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,739

Claims priority, application Japan, Mar. 17, 1980, 55-33567

Int. Cl.^{3} G01L *9/12*

U.S. Cl. 73—718 **8 Claims**



1. A pressure transducer comprising: a capacitance type pressure sensor having a sensing chamber provided at the center of a member forming a pressure sensor body, said sensing chamber being filled with sealed liquid; a moving electrode of a cantilever structure disposed in said sensing chamber, a through hole extending from said sensing chamber to at least one side of said pressure sensor body; a pressure receiving element on at least one side of said pressure body; a rod coupling said pressure receiving element and said moving electrode through said through hole; and two fixed electrodes of a cantilever structure disposed opposite said moving electrode in said sensing chamber to form first and second variable capacitance elements together with said moving electrode, wherein an electric signal corresponding to a pressure is produced in accordance with variations in the capacitances of said first and second variable capacitance elements.

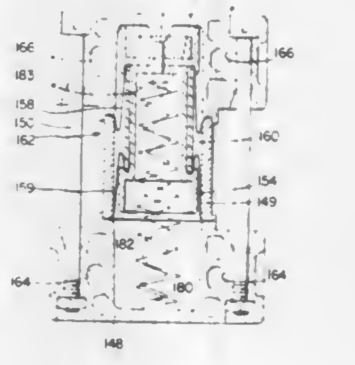
4,366,717
FLUID FILTER AND INDICATOR

Brian A. Foord, and Donald C. Leutz, both of Sylvania, Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 72,382, Sep. 4, 1979, Pat. No. 4,272,368. This application Jan. 26, 1981, Ser. No. 228,435

Int. Cl.^{3} G01L *7/16*

U.S. Cl. 73—744 **2 Claims**



1. A differential pressure indicator, comprising a chamber, a piston reciprocable therein, means sealing said piston in said chamber for response to fluid pressure, means communicating fluid pressure to opposite sides of said piston for movement of said piston as a function of fluid pressure difference, first spring means in the path of movement of said piston to be contacted by said piston and to variably resist movement thereof, means for providing a visual display of the position of said piston, and second spring means in engagement with said piston for biasing

said piston to one end of said chamber, out of contact with said first spring means, to provide an indication of lack of fluid pressure difference, said springs being compression springs concentrically disposed in said chamber, only one of said springs being in engagement with said piston when the latter is at one end of said chamber, said sealing means comprising first and second diaphragms in sealing engagement with said chamber and in sealing engagement with said piston therebetween.

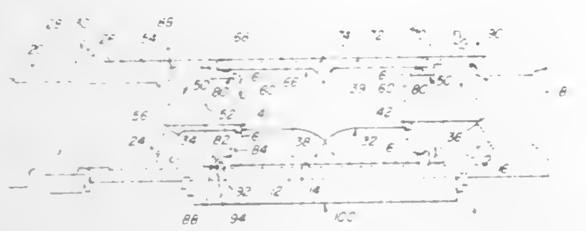
4,366,718
BI-DIRECTIONAL FLOW TRANSDUCER

Roger J. Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 26, 1981, Ser. No. 228,437

Int. Cl.^{3} G01F *1/22*

U.S. Cl. 73—861.58 **14 Claims**



13. A fluid flow transducer comprising:
a housing defining a flow passage for bi-directional fluid flow therethrough;
a hollow cylindrical sleeve movably mounted in the passage and movable in response to fluid flow to positions indicative of the rate of fluid flow through the passage;
a pair of resilient members each biased to urge the sleeve in a direction opposite to the direction of fluid flow;
a pair of guide members each coupling a corresponding one of the resilient members to the sleeve, each guide member comprising a larger diameter portion receiving a portion of the corresponding resilient member, a smaller diameter portion slidably received by the sleeve, a first shoulder engaging the corresponding resilient member and a second shoulder engagable with the sleeve; and
sensor means for generating an output signal indicative of the position of the sleeve.

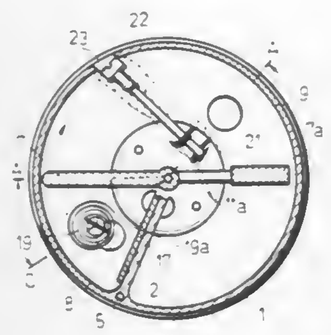
4,366,719
INSTRUMENT FOR MEASURING THE FLOW RATE OF A FLUID IN MOTION

Nandor Böhm; Janos Böhm, and Robert Böhm, all of Budapest, Hungary, assignors to Közuti Közlekedesi Tudomanyos Kutato Intezet, Budapest, Hungary

Filed Dec. 18, 1980, Ser. No. 217,784

Int. Cl.^{3} G01F *1/28*

U.S. Cl. 73—861.76 **6 Claims**



1. A rate-of-flow meter for a fluid, comprising:
a substantially cylindrical housing formed with a generally radial wall;
a blade pivotable about the axis of said housing within the housing and defining with a top, bottom and cylindrical wall thereof, gaps through which said fluid can flow;
an inlet for said fluid opening into one axial end of said housing, and an outlet for said fluid opening into said one axial end of said housing on opposite sides of said blade;
a logarithmic scale on the opposite axial end of said body and a dial cooperating with said scale;
means coupling said dial with said blade whereby said dial and said scale indicate the flow rate of said fluid; and
a logarithmic coil spring in said housing connected to said blade for yieldably biasing same against the force of said fluid flowing from said inlet to said outlet past said blade.

4,366,720
APPARATUS FOR MEASURING STRESS DISTRIBUTION ACROSS THE WIDTH OF FLEXIBLE STRIP

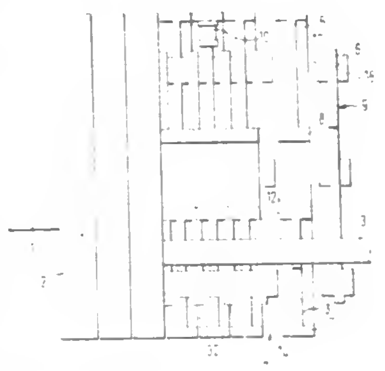
Bernd Berger, Kaarst; Gert Mücke, Hilden; Helmut Thies, Kaarst, and Eberhard Neuschütz, Ratingen, all of Fed. Rep. of Germany, assignors to Betriebsforschungsinstitut VDEh Institut fur angewandte Forschung GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,250

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944723

Int. Cl.^{3} G01L *5/04*

U.S. Cl. 73—862.07 **11 Claims**



1. A device for measuring stress distribution across the width of a flexible, longitudinally advancing strip, particularly as applied to strip steel during cold rolling thereof, said device comprising a deflection measuring roller which consists of a plurality of rotatable sections mounted laterally side-by-side to engage the strip, each said section comprising two parts, one of said parts having an annular intermediate zone which is located between annular peripheral and radially inner zones on the other part, all of said annular zones being mutually concentric, force pick-up devices located in the peripheral zones of a plurality of said other parts, and there is provided a clearance separating each said peripheral zone from a corresponding zone of an adjacent section, said radially inner zones and said intermediate zones having abutment surfaces in engagement with corresponding zones of an adjacent section.

4,366,721
MOLTEN METAL SAMPLING DEVICE

John F. Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

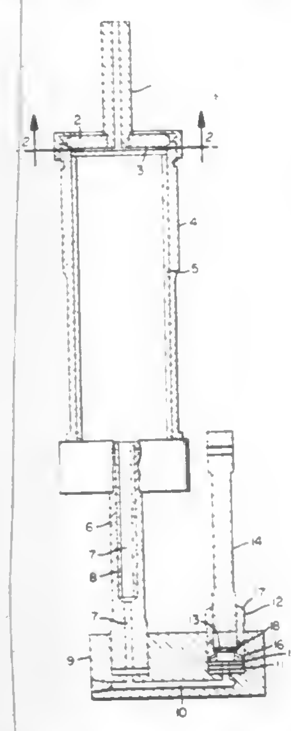
Filed Feb. 10, 1981, Ser. No. 233,110

Int. Cl.^{3} G01N *1/12*

U.S. Cl. 73—863.23 **7 Claims**

1. In a molten metal sampling device comprising the following components in combination:
(i) a porous filter;
(ii) holding means for said filter;
(iii) a hollow conduit running from a point adjacent to and below the filter through the holding means to a covered reservoir; and

(iv) vacuum means connected to the reservoir through an aperture in the cover,
the components being positioned in such a manner that molten metal can be drawn through the filter in a downward direction and, then, through the conduit into the reservoir,
the improvement comprising:
(a) a recess in the holding means;
(b) in the upper portion of the recess, a hollow cup, snugly fitted, but removable; open at both ends; and with a peripheral seat intermediate of both ends on which the filter resides;
(c) a removable stopper rod, which fits into that portion of the cup above the filter, and
(d) a contiguous lining for that part of the conduit, which will not be submerged in the molten metal, and for the reservoir and its cover, said lining comprising an insulating material inert and essentially impervious to molten metal, but permitting the passage of gases therethrough.



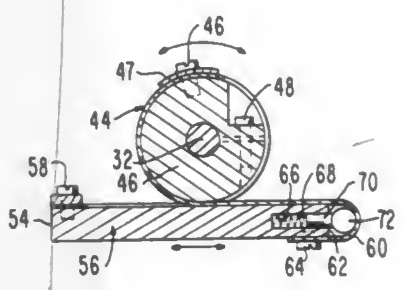
4,366,722
DRIVE CONNECTION BETWEEN LINEAR ACTUATOR AND ROTATABLE DRIVE SHAFT OF REVERSIBLE MOTOR

Alfred Hasler, Mountain View, Calif., assignor to International Memories, Incorporated, Cupertino, Calif.

Filed Jun. 26, 1980, Ser. No. 163,124

Int. Cl.^{3} F16H *21/44;* G11B *5/56*

U.S. Cl. 74—99 R **8 Claims**



1. In a system of the type including a reversible motor having a drive shaft: a rotor on the drive shaft; a shiftable actuator; means coupled with the actuator for mounting the same for reciprocal movement adjacent to the motor; a connector assembly for interconnecting the drive shaft of the motor and the actuator, said assembly including a flexible band having a slot, a part of the band extending through the slot, whereby the band is in the form of a closed loop and presents a pair of end parts, said loop being placed around and coupled to the rotor of said drive shaft for rotation therewith when the motor is energized, said end parts of the band being secured to the actuator at spaced locations thereon, one end part of the band being doubled on itself to form a recess having an inner surface portion; and spring means shiftably carried within the actuator and engageable with said one end part of the band at said inner surface portion for yieldably applying tension to the band.

4,366,723
RECIRCULATING-BALL DRIVE

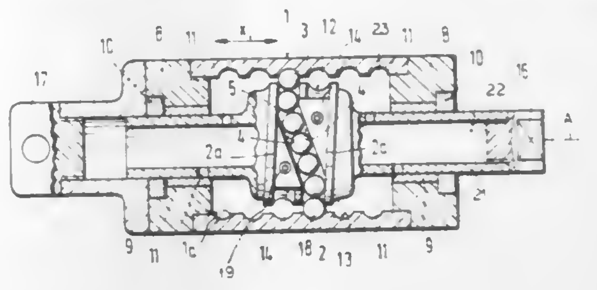
Richard Wilke, Am Weissenfeld 4, 5830 Schwelm, and Helmut Korthaus, Fernblick 3, 5600 Wuppertal 2, both of Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,784

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941565

Int. Cl.^{3} F16H *1/18, 1/20*

U.S. Cl. 74—424.8 R **9 Claims**



1. A recirculating-ball drive comprising:
a ball nut centered on an axis and formed with an internal helical groove;
a spindle centered on said axis, rotatable thereabout relative to said nut, and formed with
an external helical groove of substantially the same pitch as said groove of said nut, and
a substantially planar flat, spaced radially outwardly of said axis and interrupting two adjacent turns of said groove of said spindle;
formations on said spindle at said flat defining thereon a pair of parallel guide surfaces defining with said flat a passage extending between the turns of said spindle but at an angle opposite the pitch angle of said turns; and
an annular row of like balls in said grooves and passage.

4,366,724
TRANSVERSE AXLE AUTOMATIC TRANSMISSION

Takahiro Yamamori, Tokyo; Kazuyoshi Iwanaga, and Kunio Ohtsuka, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2. 1980, Ser. No. 155,258

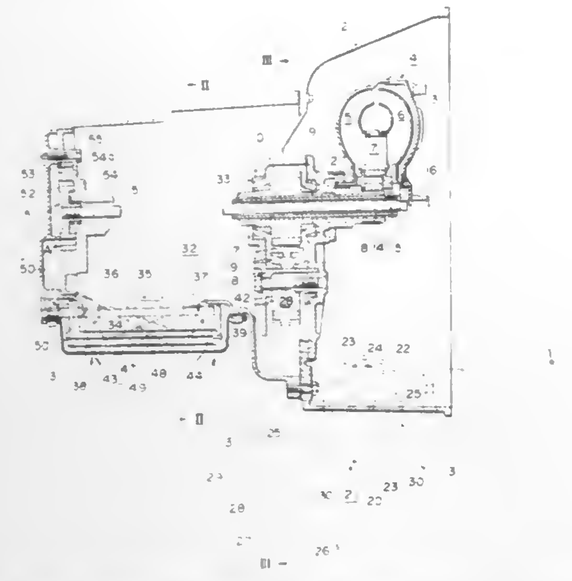
Claims priority, application Japan, Jun. 4, 1979, 54-69673

Int. Cl.^{3} F16H *57/04, 37/08*

U.S. Cl. 74—467 **2 Claims**

1. A transaxle comprising:
a transaxle case including a first portion defining a transmission chamber and a second portion defining a final gear chamber;
means cooperating with said transaxle case for defining an opening providing an oil flow path between said transmission chamber and said final gear chamber; and
an oil pan attached to said transaxle case to form a substantially closed oil chamber, said oil pan enclosing an oil intake port leading to an oil pump;
said first portion of said transaxle case including a wall portion defining a part of said substantially closed oil chamber, said wall portion having apertures which provide an oil flow path between said substantially closed oil

chamber and said transmission chamber so that oil in said substantially closed oil chamber is allowed to enter said final gear chamber only via the apertures of said wall portion. said transmission chamber and said opening.



4,366,725
ENGAGEMENT DEVICE FOR CONTROL CABLE

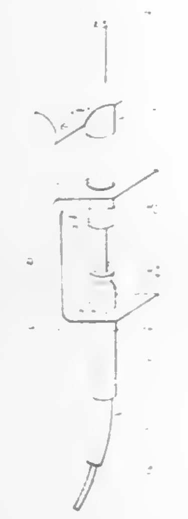
Kazuhiko Kondo, Kawanishi, Japan, assignor to Nippon Cable System, Inc., Takarazuka, Japan

Continuation of Ser. No. 31,915, Apr. 20, 1979, abandoned. This application May 13, 1981, Ser. No. 263,051

Claims priority, application Japan, Jan. 12, 1979, 54/3275[U]

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **4 Claims**



1. A device for engaging the end of a control cable having a central cable wire adapted for axial movement and a conduit therearound for sliding engagement with said central cable wire which comprises

a fitting for engagement with said conduit and having an annular groove on the peripheral surface thereof,

a connecting member having a threaded hole adjacent one end portion and, adjacent its other end portion, a receiving means for slidably receiving said fitting in a direction transversely of the longitudinal cable axis, said receiving means including a cutaway portion to receive said fitting and hold the control cable against axial movement with respect to said connecting member while the control cable is axially alined with said threaded hole, and

a fixing member having threaded portion thereon for threaded engagement in said threaded hole of said connecting member, a guide hole therethrough to permit passage of an activating rod connected to said central cable wire, and a radially extending portion thereon adapted to rotate with respect to said connecting member and thereby adjust the position of said fixing member.

4,366,726
GEAR

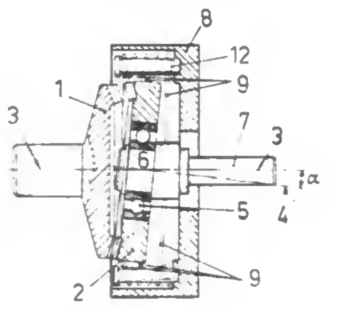
Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Sep. 2, 1980, Ser. No. 183,306

Claims priority, application Sweden, Oct. 5, 1979, 7908262

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—800 **3 Claims**



1. A gear comprising two co-operating gear wheels (**1**,**2**) the axes (**3**,**4**) of which constituting an angle (α) and the axis (**3**) of one wheel, in operation, performing a conical pendulating movement, the apex of the pendulum cone being situated on the axis of the other wheel, one wheel being rotatable in relation to the other wheel, characterized in that the wheel whose axis performs a conical pendulating movement is connected to an adjacent element (**8**) by resilient elongated members (**9**) extending between two supports (**10**,**11**) arranged diametrically on the gear wheel and two supports (**12**,**13**) arranged diametrically on the adjacent element and offset about 90° in relation to the first mentioned supports, the resilient members being resistant to deformation when subjected to axial loads, thereby keeping the gear wheel non-rotatably in relation to the adjacent element, and being resiliently twistable and bendable under the influence of forces directed across their axial extension, thereby permitting the pendulating movement of the axis of the gear wheel.

4,366,727
PLANETARY-TYPE OF GEAR AND PROCEDURE AND APPARATUS FOR ITS PRODUCTION

Sven Jonsson, Storebro, Sweden, assignor to Vena Mekan Aktiebolag, Hultsfred, Sweden

Filed Oct. 1, 1979, Ser. No. 80,305

Claims priority, application Sweden, Oct. 2, 1978, 7810288

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—801 **7 Claims**

1. A gear having a housing (**2**, **5**, **10**, **21**), an input main shaft (**9**) and an output mean shaft (**1**, **22**), which main shafts are coaxially mounted in the housing with respect to each other, a toothed path (**18**) fixedly connected with and coaxial with said input main shaft and having a diametrical pitch (D_A), a toothed path (**4**) fixedly connected with and coaxial with said output main shaft and having a diametrical pitch (D_B), said housing having a toothed path (**3**) in the form of a gear ring with internal teeth which is fixedly connected to the housing and coaxial with said main shafts and has a diametrical pitch (D_H), and there being mounted on one (**9**) of said main shafts a sun wheel which carries the toothed path (**18**) of said input main shaft and around the circumference of which two or more planet wheels (**6**) are evenly distributed, which have a first toothed path (**19**) having a diametrical pitch (D_{P1}) which meshes with the toothed path (**18**) of said input main shaft (**9**) and with the toothed path (**3**) of the housing, and a second toothed path (**20**) having a diametrical pitch (D_{P2}) coaxial with said first toothed path (**19**) and axially offset with respect thereto and having a different pitch diameter and a different number of gear teeth

than said first toothed path, said second toothed path (**20**) being integral with said first toothed path and meshing with the toothed path (**4**) of the output main shaft, both toothed paths (**19**, **20**) of each planet wheel (**6**) having a predetermined peripheral angular offset with respect to each other, said angular offset being dependent both on the relative angles of the planet wheels (**6**) at the center of the gear, and on the number of teeth pitch diameters of all the toothed paths (**3**, **4**, **18**, **19**, **20**), the planet wheels (**6**) being placed in a predetermined rotational position with respect to each other in mesh with the toothed paths (**4**, **18**) of the main shafts (**9**, **1**, **22**) and with the toothed path (**3**) of the housing (**2**, **5**, **10**, **21**), the toothed path (**18**) of said input main shaft having a first number of gear teeth;

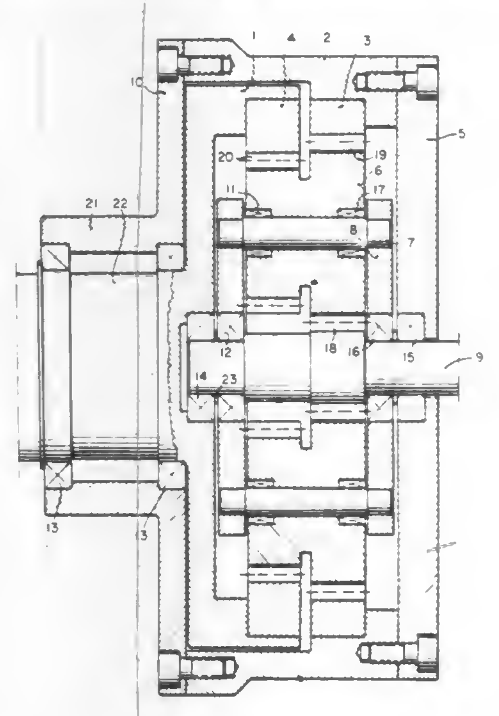
the second toothed path (**20**) of said planet wheels having a second number of gear teeth, the second number being larger than the first number;

the first toothed path (**19**) of said planet wheels having a third number of gear teeth, the third number being larger than the second number;

the toothed path (**4**) of the output main shaft having a fourth number of gear teeth, the fourth number being larger than the third number; and

the toothed path (**3**) of the housing having a fifth number of gear teeth, the fifth number being larger than the fourth number, the relationship between said gear teeth being such that the gear provides a large reduction of the r.p.m. of said input main shaft, and being such that, the ratio of the r.p.m. of the input main shaft (N_A) to the r.p.m. of the output main shaft (N_B) is determined by the formula:

$$\frac{N_B}{N_A} = \frac{(D_{P1} - D_{P2})\, D_A}{2D_{P1}\, D_B}.$$



4,366,728
MACHINE FOR REPAIRING HARD ALLOY TIPPED SAW BLADES

Ernst Beck, Maselheim, and Peter Lenard, Biberach an der Riss, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,451

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940730

Int. Cl.³ B23D *63/00*

U.S. Cl. 76—25 R **8 Claims**

1. A machine for repairing hard-alloy-tipped saw blades having plates brazed on prepared plate seats of a saw blade, said machine comprising:
- (a) a frame;
- (b) a saw blade support on said frame;
- (c) a pair of clamping jaws on said frame for holding said saw blade seated on said saw blade support;
- (d) at least two flank-grinding tools for simultaneously grinding both flanks of one of said plates;
- (e) at least two radial guides;
- (f) at least two radial slides, one each of said radial slides carried respectively on each said radial guide;
- (g) each of said flank-grinding tools being arranged respectively on one of said radial slides;
- (h) each said radial guide being adapted for pivoting adjustment out of a normal position wherein the radial guide extends parallel to a saw blade seated on said saw blade support and about a pivot shaft disposed at right angles to the radial guide and parallel to the saw blade;
- (i) at least two transverse slides, each said transverse slide being disposed, respectively, on said radial slides, each transverse slide being displaceable at right angles to the radial guide and its pivot shaft, and a rotary shaft on said transverse slide, said rotary shaft being parallel to the corresponding pivot shaft, each said flank-grinding tool being adapted for rotary adjustment on said rotary shaft between a working position for face grinding and a work position for peripheral grinding of said plates.

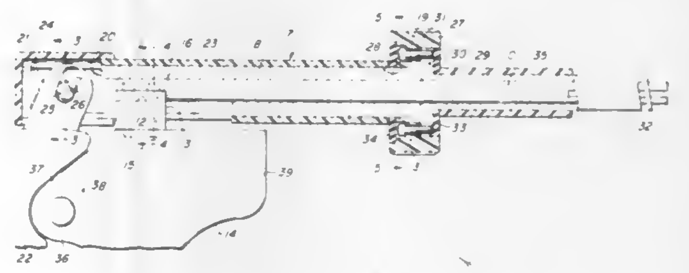
4,366,729
COIL SPRING EXTENDER TOOL

Eric G. Strubing, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 2, 1981, Ser. No. 239,429

Int. Cl.³ B60P *1/48;* B23P *19/04*

U.S. Cl. 81—3 R **13 Claims**

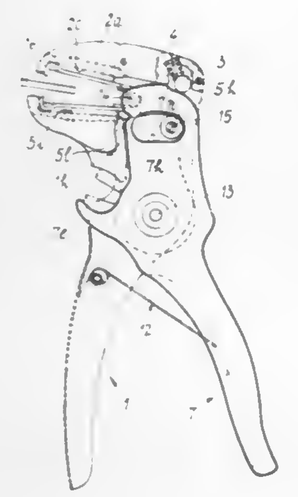


1. A tool for extending a coil spring (**46**) having at one end an end coil and at the other end a coil portion (**48**) extending inwardly toward the longitudinal axis of said spring, said tool comprising a pair of lever arms (**14**, **22**) pivotally connected at one end and separated at the other ends to form a hand grip, characterized in a rod (**10**) fixedly mounted at one end to one of said lever arms (**14**), said rod (**10**) being dimensioned to slidably fit inside the coil of least diameter of said spring (**46**) to said coil portion (**48**), a first coaxial sleeve (**18**) slidably fitted over said rod (**10**) and pivotally connected at one end to an extension (**21**) at said one end of the other of said lever arms (**22**), and a second coaxial sleeve (**29**) slidably fitted over said rod (**10**) and rotatably secured to said first sleeve (**18**) at one end, said second sleeve (**29**) having a finger (**32**) at the other end adapted to capture said end coil of said spring (**46**) when

said rod (**10**) is inserted inside said spring (**46**) and said second sleeve (**29**) is partially rotated, said spring (**46**) being extended between the end of said rod (**10**) and said finger (**32**) as said lever arms (**14**, **22**) are closed.

4,366,730
WIRE STRIPPING PLIERS

Roberto Casadio, Via di Barbiano, 10 Bologna, Italy
Filed Oct. 2, 1980, Ser. No. 192,970
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.5 A **8 Claims**



1. Wire stripping pliers for removing the end portion of a sleeve of an electric wire or cable, characterized in that said pliers comprise a first lever defining a handle and a jaw, a body articulated to said first lever and forming a second jaw cooperating with said first jaw to clamp one end of a wire to be stripped, a second lever articulated to said body and defining a second handle and oscillating with respect to said first lever against the bias of a return spring, to said second lever there being articulated a pair of knife edges extending between said jaws and having cutting edges adapted for engaging the wire sheath at a location determining the length to be stripped, said second lever being adapted to perform a rotational movement and having one portion causing said jaws to contact the wire and clamp it at diametrically opposed locations and another portion producing a movement of said knife edges away from the area of engagement of said jaws and the separation and withdrawal of the sheath portion to be removed and engaged thereby.

4,366,731
SOCKET WRENCH

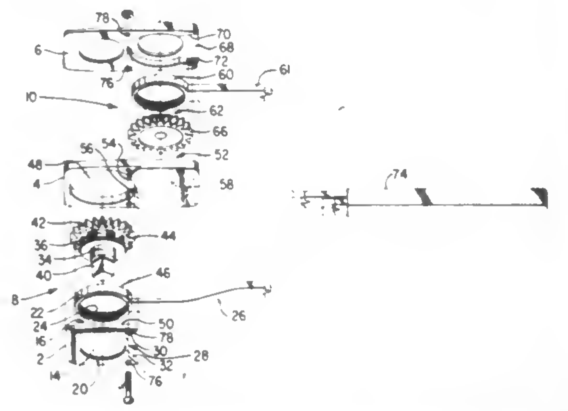
Shawn T. Vallevand, Box 133, Elbow, Saskatchewan, Canada (SOH 1JO)
Filed Jan. 2, 1981, Ser. No. 221,997
Claims priority, application Canada, Sep. 30, 1980, 361466
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.3 **15 Claims**

1. A socket drive tool comprising:

a casing;

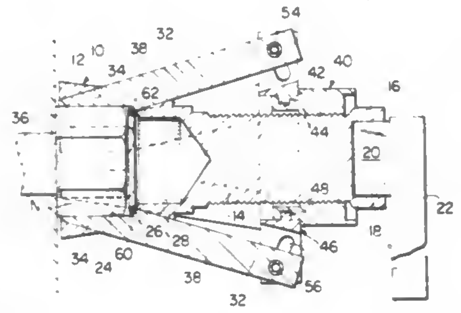
first and second ratchet mechanisms in said casing, said mechanisms having parallel axes and being offset from each other; and

means for selectively transmitting power from said second mechanism to said first mechanism whereby when said first mechanism is in a ratchetting mode, said second mechanism may be selected to transmit power through said first mechanism to a workpiece, said means for transmitting power comprising a gear train consisting of first and second gear wheels, one of said wheels associated with said first mechanism and the second of said wheels associated with said second mechanism, said gear wheels meshing in operative relationship.



4,366,732
ADJUSTABLE SOCKET WRENCH

Edward J. Schliep, 3218 Twin City Dr., Mandan, N. Dak. 58554
Continuation-in-part of Ser. No. 85,381, Oct. 16, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,003
Int. Cl.³ B25B *13/18*
U.S. Cl. 81—128 **6 Claims**



1. An adjustable socket wrench comprising:

(a) a socket housing having a socket head at one end thereof with a recess adapted to receive a socket handle at the other end thereof, and including a threaded shank,

(b) said socket head being formed with a plurality of arcuately spaced openings which extend entirely through said socket head,

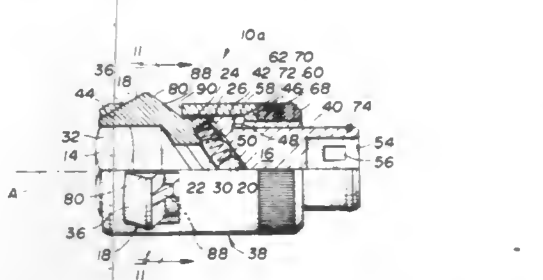
(c) a plurality of gripping jaws fitting relatively closely within and extending through said openings adapted to engage the exterior surface of a nut member,

(d) means operatively connected between said housing and said jaws for moving said jaws either toward or away from each other thereby to accommodate and tightly engage varying size nut members to be rotated by said wrench, said means operatively connected between said housing and said jaws for moving said jaws comprising a plurality of actuator arms corresponding in number to said gripping jaws, with the leading ends of said actuator arms being pivotally connected to said gripping jaws whereby said axial movement of said actuator arms results in pivotally radially inward movement of said gripping jaws.

4,366,733
SOCKET INCLUDING ADJUSTABLE JAWS

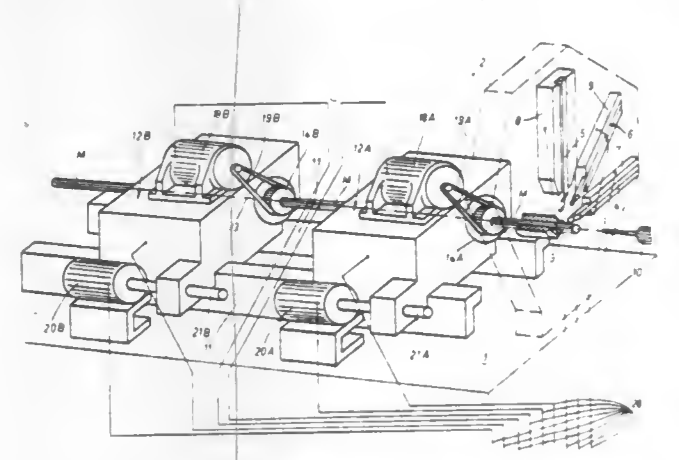
David S. Colvin, 31324 Burbank, Farmington Hills, Mich. 48018
Filed Mar. 2, 1981, Ser. No. 239,263
Int. Cl.³ B25B *13/12*
U.S. Cl. 81—128 **13 Claims**

1. An adjustable socket comprising: a jaw support member having a rotational axis about which the socket is rotatively driven; said support member having a plurality of slideways that extend radially from the rotational axis thereof; a plurality of jaws respectively associated with the slideways of the support member; each jaw having a slide received by the associated slideway of the support member; an adjustment mechanism for moving the jaws along the slideways radially in inward or outward directions with respect to the rotational axis; each jaw having an engagement surface for gripping a nut or bolt head; and each engagement surface facing inwardly toward the rotational axis and extending with a slight inward inclination with respect to the rotational axis in an axial direction away from the slide of the associated jaw, whereby the jaws can accommodate for clearance between the slides thereof and the associated slideways by tilting to position the engagement surfaces thereof in a parallel relationship with the rotational axis to grip a nut or bolt head by surface-to-surface contact.



4,366,734
AUTOMATIC LATHE FOR THE MACHINING OF BAR MATERIAL

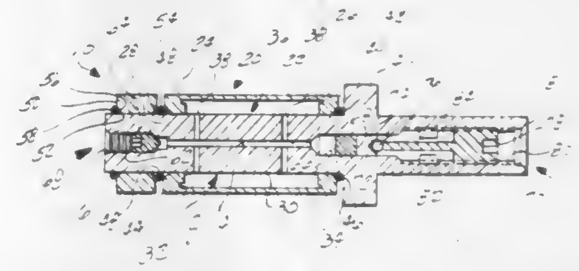
Gottfried Aeschbacher, Delemont, Switzerland, assignor to Tornos S.A., Fabrique de Machine Moutier, Moutier, Switzerland
PCT No. PCT/CH79/00080, § 371 Date Oct. 1, 1980, § 102(e) Date Oct. 1, 1980, PCT Pub. No. WO80/01660, PCT Pub. Date Aug. 21, 1980
PCT Filed May 31, 1979, Ser. No. 209,405
Claims priority, application Switzerland, Feb. 8, 1979, 1248/79
Int. Cl.³ B23B *13/02*
U.S. Cl. 82—2.5 **1 Claim**



1. Automatic lathe for machining bar material, fitted with a fixed steady with material bar guide-bush assembled on the machine-bed, provided on its front side with radially guided tools and on the back side with a headstock guided in the length direction, the spindle in the headstock being motor driven and fitted with a collet and means to open and to close it, means being also provided to corrdinate the control and execution of tool movements, headstock and collet motions, permitting to produce automatically workpieces out of the material bar to be machined in successive and similar sequences of operations, characterized by the presence on the machine-bed, behind said first headstock (**12A**) of a second headstock (**12B**) having a spindle, means for moving said headstock lengthwise, means for driving the spindle of which is revolving around the same axis as that of the first headstock and is also fitted with a collet and means to open and to close same, and additional control means which coordinates and controls the second headstock and its means to open and to close its collet, in concert with said first headstock so that whilst a first workpiece is machined or partially machined from the material bar in the spindle of the first headstock thanks to the gradual advance of that headstock from its starting position, the second headstock is being returned to its start position and that now a second workpiece is being machined or partially machined out of the same material bar in the spindle of the second headstock while it advances gradually and whilst the first headstock is returned to its starting position, whereas during the transition phases the material bar is clamped in the first and also in the second headstock spindle.

4,366,735
WORKPIECE HOLDING DEVICE

Russell E. Dubois, Sr., 142 Chippewa, Clawson, Mich. 48017
Filed Aug. 25, 1980, Ser. No. 180,966
Int. Cl.³ B23B *31/40*
U.S. Cl. 82—44 **1 Claim**



1. A workpiece holding device for engaging a bore of a workpiece comprising:

an elongated generally circular central body with a first central bore for containing pressure adapted to be mounted on a machine tool;

an expandable sleeve of generally cylindrical shape including a thin outer shell and a pair of opposed thick wall circular ends integral with the outer shell extending radially inward forming a second central bore engaging an outer diameter of said central body forming an annular space between said expandable sleeve and said central body, means for communicating said first central bore with said annular space;

a raised collar formed near an end of the central body;

a first chamfer and a second chamfer formed at outer edges of the second central bore;

a first copper ring wedged between the collar and the first chamfer and melted to form a seal;

a second copper ring abutting the second chamfer;

a metallic ring having an inside diameter complementary to the outer diameter with a third chamfer abutting the second copper ring with the second copper ring melted to form a seal; further comprising a pair of opposed arcuate undercut grooves formed at the intersection of said outer shell and said circular ends whereby the arcuate undercut grooves prevent the formation of destructive stress concentrations at said intersection; and

whereby pressure in the first central bore causes a radially outward movement of said outer shell to engage the workpiece.

4,366,736
APPARATUS FOR FINISHING SLIDE FASTENER STRINGERS

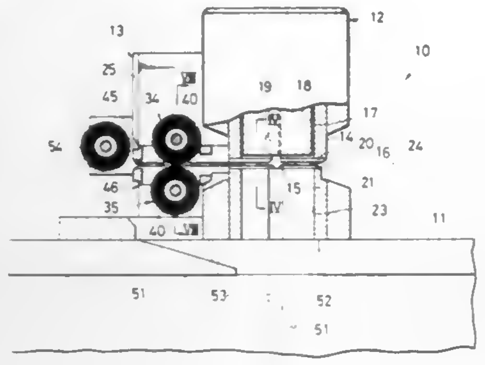
Tatsuo Oosaki, Uozu, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Jun. 4, 1980, Ser. No. 156,421

Claims priority, application Japan, Jun. 22, 1979, 54-79473; Jun. 22, 1979, 54-79474

Int. Cl.³ B26D *7/18*

U.S. Cl. 83—101 **3 Claims**



1. An apparatus for finishing slide fastener stringers, comprising:

(a) cutter means for gapping a chain of interdigitating coupling elements on a pair of stringer tapes fed along a longitudinal path and for severing the stringer tapes across the gapped portion in the chain substantially at the same time the chain of coupling elements is gapped;

(b) brush means located downstream of said cutter means along said longitudinal path and comprising a pair of circular brushes disposed one on each side of said longitudinal path for rubbing on their peripheries the chain at opposite sides thereof, respectively, said brush means being continuously rotatable for frictionally engaging the chain to scrape off coupling element residuals at the gapped portion from the stringer tapes; and

(c) guide means for guiding said pair of slide fastener stringers from said cutter means through said brush means, said guide means defining therein an elongate passage extending along said longitudinal path between said cutter and brush means for guiding the chain into alignment with said cutter and brush means as the chain is fed along said longitudinal path, said guide means including respective pairs of sidewalls disposed on opposite sides of each of said brushes and converging toward said longitudinal path for constraining the brushes to a width generally equal to a width of said chain of interdigitating coupling elements guided by said guide means between said brushes.

4,366,737
CUTTING HEAD FOR FILTER ASSEMBLER

Michael J. Bedford, High Wycombe, England, assignor to Molins Limited, England

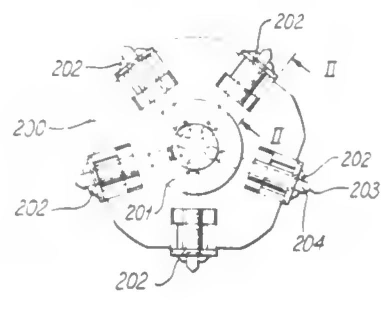
Filed Oct. 28, 1980, Ser. No. 201,614

Claims priority, application United Kingdom, Oct. 31, 1979, 7937713; Mar. 13, 1980, 8008637

Int. Cl.³ B23D *25/02*

U.S. Cl. 83—341 **3 Claims**

1. A cutting head for a filter attachment machine, comprising a carrier drum carrying at circumferentially spaced positions a number of knife bodies each of which is clamped onto the drum by retaining devices engaging the ends of the knife body and adapted to urge the said ends substantially radially inwardly with respect to the drum, and including an interposed layer of elastomeric material lying between the drum and the knife body along substantially the entire length of the knife body, each knife body, its retaining devices and its elastomeric layer being so arranged and dimensioned that with the knife body secured in position by the retaining devices, it is flexed by said elastomeric layer so that its cutting edge is slightly convex.



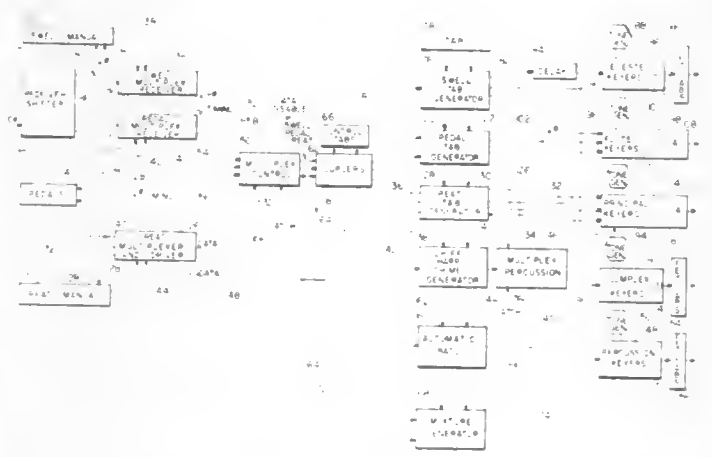
4,366,738
MULTIPLEXING SYSTEM FOR ORGAN HAVING PLURAL MANUALS

Stephen L. Howell, Huntingburg, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Dec. 29, 1980, Ser. No. 220,510

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **16 Claims**



1. An electronic organ including at least one keyboard having playing keys, continuously running multiplex means for cyclically scanning said keyboard and producing on an output a series of time sequential single scan data streams each comprising a plurality of time slots corresponding respectively on a one-to-one basis to said keys and keydown signals in time slots corresponding to actuated keys of the keyboard, said multiplex means generating a control signal synchronized with each scan of the keyboard, tone producing means for generating tones and placing selected tones on an output, and demultiplex means synchronized with said multiplex means for demultiplexing serial data on its inputs and controlling the tone producing means to place selected tones on said output in accordance with the data at the input of said demultiplex means, a plurality of control means, data stream modifying means interposed between the output of said multiplex means and the input of said demultiplex means for modifying the time sequential data streams and placing such modified data streams on the demultiplex means input, said modifying means including delay means connected to said control means for delaying the time successive data streams by a number of time slots selected by said control means, the improvement being a serial data control circuit synchronized with said continuously running multiplex means interposed between said multiplex means and said delay means comprising gate means having a serial data input to which are connected the time sequential data streams and an output, said control signal generated by said multiplex means being connected to said gate means, said gate means periodically passing selected ones of said single scan data streams to said output and blocking the passage of the single scan data stream immediately following each passed single scan data stream under the control of said control signals generated by said multiplex means.

7. An electronic organ including a plurality of manuals each having playing keys, continuously running multiplex means for cyclically scanning said manuals simultaneously to produce on outputs a plurality of synchronized respective parallel data streams each comprising a plurality of time sequential single scan serial data streams wherein each of the single scan serial data streams comprises a plurality of time slots corresponding respectively on a one-to-one basis with the keys of the respective manual and keydown signals in time slots corresponding to actuated keys of the respective manual, said multiplex means generating a control signal synchronized with the scans of the manuals, tone producing means for generating tones and placing selected tones on an output, plural demultiplex means synchronized with said multiplex means for demultiplexing serial data on their inputs and controlling the tone producing means to place selected tones on said output in accordance with the serial data at the inputs of said demultiplex means, footage control means, data stream modifying means interposed between the outputs of said multiplex means and the inputs of said demultiplex means for modifying the synchronized data streams and placing such modified synchronized data streams on the demultiplex means inputs, said modifying means including delay means connected to said footage control means for delaying selected ones of said synchronized data streams by respective numbers of time slots selected by said footage control means, the improvement being a serial data control circuit synchronized with said continuously running multiplex means interposed between said multiplex means and said delay means comprising gate means having serial data inputs to which are connected the respective synchronized data streams and respective outputs, said control signal generated by said multiplex means being connected to said gate means, said gate means periodically passing selected ones of said single scan data streams of each said synchronized data stream to said outputs and blocking the passage of the single scan data stream immediately following each passed single scan data stream under the control of said control signal generated by said multiplex means, the respective data streams for said manuals being either simultaneously blocked or simultaneously passed by said gate means depending on the state of said gate means.

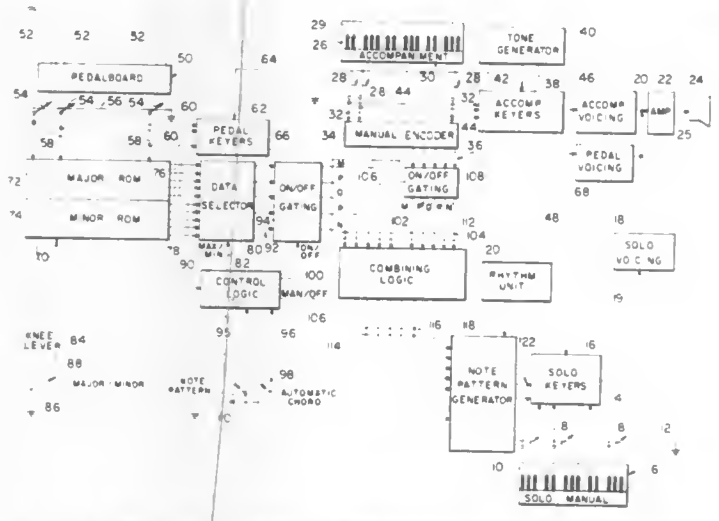
4,366,739
PEDALBOARD ENCODED NOTE PATTERN GENERATION SYSTEM

Charles E. DeLong, Dubois, and John W. Robinson, Jasper, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed May 21, 1980, Ser. No. 151,933

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **7 Claims**



1. An electronic organ comprising:

a keyboard including a plurality of keys corresponding respectively to tones of the musical scale and adapted to be played by the player's hands,

manual keyer means controlled by said keyboard for producing tones corresponding to the depressed keys of said keyboard within a first frequency range,

a pedalboard including a plurality of pedals corresponding respectively to bass tones of the musical scale and adapted to be played by the player's feet,

pedal keyer means controlled by said pedalboard capable of producing bass tones corresponding to said pedals within a second frequency range lower than the first frequency range, said pedal keyer means normally producing at least one continuous bass tone corresponding to a depressed pedal,

selectively operable note pattern generator means connected between said pedalboard and said manual keyer means and responsive to the depression of any one of said pedals for causing said manual keyer means to generate a note pattern comprising a sequence of diverse tones in a rhythmic rate pattern wherein the diverse tones are notes of a chord having as its root the same pitch as the bass tone corresponding to said any one pedal that is depressed,

said pedal keyer means being capable of sounding said bass tone corresponding to said any one pedal that is depressed simultaneously with the sounding of the note pattern by the manual keyer means,

said note pattern generator means causing said note pattern to be sounded independently of the actuation of any keys of said keyboard.

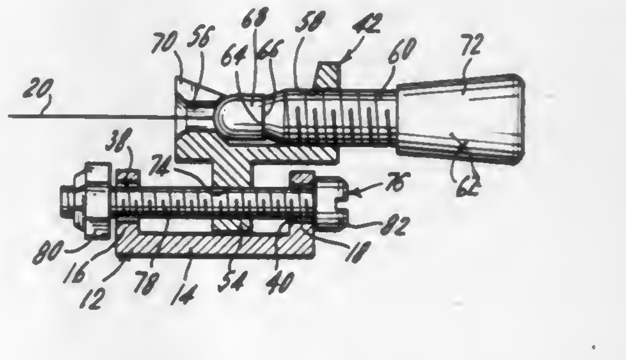
4,366,740
COMBINATION BRIDGE AND TAILPIECE

Jeffrey Tripp, 79 Newton St., Somerville, Mass. 02143

Filed Jan. 16, 1981, Ser. No. 225,758

Int. Cl.³ G10D *3/12*

U.S. Cl. 84—298 **6 Claims**



1. Apparatus for securely fastening at least one musical instrument string and for supporting said string member with respect to a musical instrument in a manner to permit relatively pure tone production thereby with virtually unimpeded sustain, said apparatus comprising: means for anchoring said string proximate an end thereof in a manner to virtually eliminate any extraneous vibration between said string and said anchoring means; said anchoring means being constructed and arranged for receiving said string end and including means for removably clamping said string end thereto; and means for adjustably mounting said anchoring means, in a manner to eliminate extraneous vibration of said string with respect to said musical instrument, a sufficient distance from the surface of the musical instrument to permit unimpeded use of said string to produce sound; said mounting means being constructed and arranged for being fixed relative to said musical instrument to virtually eliminate extraneous vibration between said mounting means and said anchoring means and to permit mounting of said string unsupported between said anchoring means and a support for the other end thereof whereby virtually all of the energy imparted to said string produces sound of desired tone.

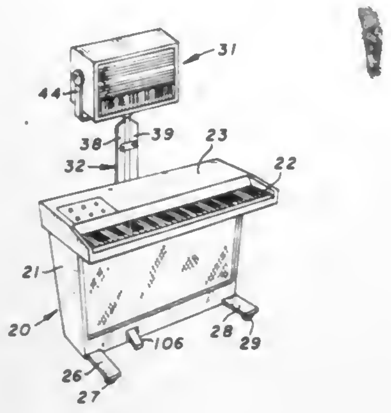
4,366,741
METHOD AND APPARATUS FOR DISPLAYING MUSICAL NOTATIONS

John S. Titus, Prior Lake, Minn., assignor to Musitronic, Inc., Owatonna, Minn.

Filed Sep. 8, 1980, Ser. No. 185,324

Int. Cl.³ G09B *15/08*

U.S. Cl. 84—478 **32 Claims**



1. An apparatus for simultaneously producing audio and visual information of keyboard music comprising: an electronic piano having a keyboard with a plurality of keys adapted to be depressed, an electronic circuit means operatively connected to said keys for generating sounds corresponding to the keys that are depressed, display means including a CRT device having a viewing screen for visually displaying music staff, notes, and notes associated with the staff, signal processor means operatively connected to the electronic circuit means of the piano for controlling the CRT device in a manner so that when a key is depressed a representation of the note corresponding to the depressed key is visually displayed on said screen in association with the staff, said processor means including an information processor programmed to receive signals when one or more of the keys are depressed and transmit control signals to the CRT device so that notes are displayed on the screen in association with the staff at the same time that the key is depressed and the sound of each note corresponding to the depressed key is generated.

4,366,742
HYDRAULIC FORCE MULTIPLYING DEVICE

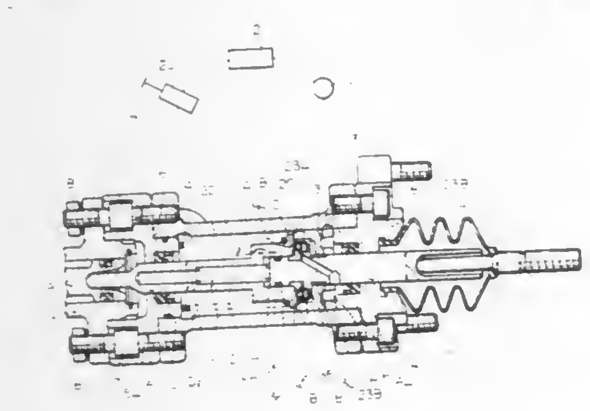
Yoshimoto Ohta, Ichikawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Apr. 11, 1980, Ser. No. 139,220

Claims priority, application Japan, Apr. 16, 1979, 54-50323[U]; Apr. 20, 1979, 54-53099[U]

Int. Cl.³ F15B *9/10;* **F16J** *1/10*

U.S. Cl. 91—49 **4 Claims**



1. A hydraulic force multiplying device comprising:
- a main body having an interior and closed body ends and having inlet and outlet ports opening into said interior;
- input and output rods having portions of the same diameter sealingly and slidingly extending through the opposite body ends of the main body and having the inner ends thereof which are within said interior sealingly and slidingly connected with one another;
- an annular piston separate from said input and output rods and slidingly engaging with the inner circumference of the interior of the main body and slidable on the outer circumference of the input rod for being movable separately from said input rod and said output rod, said piston partitioning the interior of the main body into two chambers which are respectively connected to said inlet and to said outlet ports, said piston normally abutting said output rod, said input rod having a first passage therein for connecting said two chambers;
- a normally open valve associated with said first passage; and
- a bypass passage between the inner circumference of the piston and the outer circumference of the input rod for connecting said two chambers, said bypass passage being closed by the movement of said input rod in the initial stage of the actuation of the device.

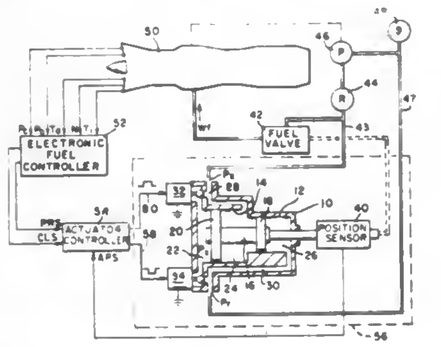
4,366,743
CONTROL SYSTEM FOR DOSER ACTUATOR

Michael J. Leszczewski, Mishawaka, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 27, 1980, Ser. No. 200,870

Int. Cl.³ F15B *9/03, 9/09, 15/17*

U.S. Cl. 91—363 R **6 Claims**



1. In a closed loop control system for an electrohydraulic actuator having means responsive to a periodic pulse width signal, for moving the actuator in one direction; means, also responsive to the pulse width signal, for moving the actuator in the other direction; means for generating the pulse width signal from a schedule with a dead band wherein the schedule is based upon an error signal representative of the difference between the actual actuator position and a desired actuator position; means for gating said pulse width signal to said moving means according to the polarity of the error signal such that the actuator moves in a direction to null said error signal; means for correcting the pulse width signal with an incrementally increasing signal, said increasing signal being incremented each time period that the scheduled pulse width is uncertain to move the actuator in a direction to null the error, said correcting means having a counter which is clocked by a timing signal for each timing period, and means receiving the output count of said counter for converting the count into said increasing signal, wherein the improvement comprises:
- means for selecting time periods when the counter is cleared such that the counter is cleared when the polarity of said error signal changes, said error signal is less than the dead band value, or the change in the error signal is greater than the dead band.

4,366,744
BRAKE BOOSTER

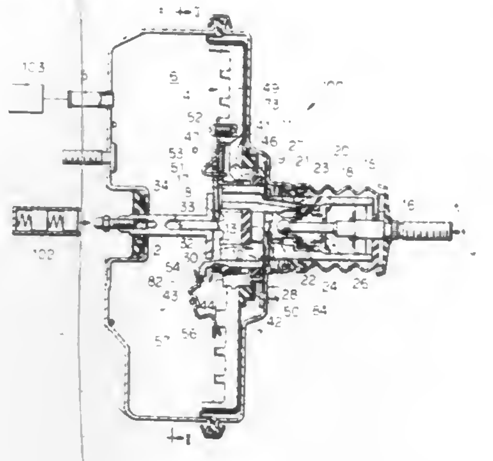
Masayoshi Katagiri, Toyota, and Osamu Ogura, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Sep. 30, 1980, Ser. No. 192,200

Claims priority, application Japan, Nov. 29, 1979, 54-154654

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 A **6 Claims**



1. A brake booster comprising:
- a casing;
- an axially movable input member for receiving an input force;
- an axially movable output member for providing a boosted output force;
- a power piston axially movably received within said casing between said input and output members so as to divide the interior of said casing into two pressure chambers, said power piston being actuated by a pressure difference between said two pressure chambers;
- a control piston axially movable over a predetermined distance relative to said power piston, and advanceable as a unit with said power piston after said predetermined distance of relative movement thereof is achieved through the advancement of said power piston to an advanced position;
- a control valve disposed in association with said input member and said control piston, and actuated by relative movement between said input member and said control piston for controlling said pressure difference;
- first transmission means within said control piston for transmitting forces from said input member and said control piston toward said output member while allowing said relative movement between said input member and said control piston;
- a reaction lever having an intermediate output portion, and first and second input portions on opposite sides of said output portion thereof, said output portion abutting on said output member, and said first input portion abutting on an output portion of said first transmission means;
- second transmission means axially movable for transmitting force from said power piston to said second input portion of said reaction lever as said power piston is advanced relative to said control piston, and for preventing relative movement between said power piston and said control piston after the latter is advanced to its advanced position, said second transmission means abutting first and second abutting portions respectively of said power piston and said control piston so as to define an end limit of said predetermined distance; and
- shock-absorbing means made of resilient material, disposed between said second transmission means and at least one of said first and second abutting portions of said power and control pistons, for reducing noises and impacts occurring therebetween when said power piston is advanced said predetermined distance.

4,366,745
HYDRAULIC BOOSTER

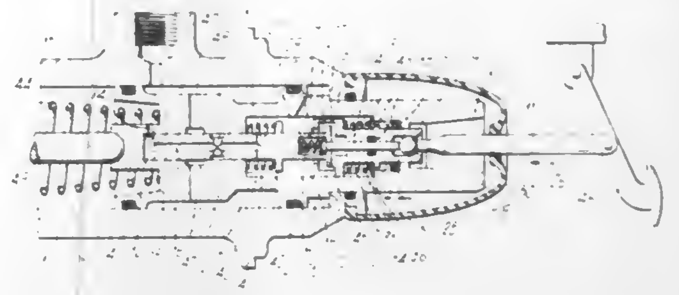
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,131

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948427

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—372 **29 Claims**



1. A hydraulic booster comprising
- a booster piston disposed in a slidably sealed relationship in a housing;
- an annular piston disposed in said booster piston and acting thereon;
- a central piston disposed in said booster piston in a cooperating relationship with said annular piston to enable said central piston to move relative to said annular piston when actuated by a brake pedal to control pressurized fluid flow in said booster and to enable said central piston and said annular piston to move as a unit when the force of a first spring disposed between said central piston and said booster piston is overcome;
- a pin disposed in said booster piston subjected to said pressurized fluid, said pin being operated upon by said brake pedal and penetrating said annular piston in a sealed relationship to impart the force of said brake pedal to said central piston;
- said booster piston accommodating a first chamber bounded by said booster piston and said annular piston;
- said annular piston bearing against said booster piston in a direction opposite to a brake actuating direction via a resilient means; and
- said pin bearing against said central piston via a second spring having a higher preload than said first spring.

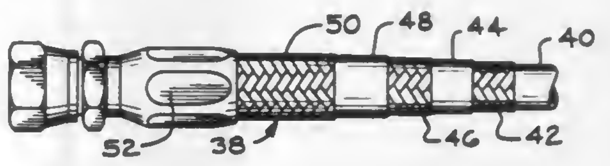
4,366,746
PRESSURIZED HYDRAULIC FLUID SYSTEM USING CROSS-LINKED CHLORINATED POLYETHYLENE HOSE

Alfred E. Rosecrans, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Continuation of Ser. No. 442,379, Feb. 14, 1974, abandoned. This application Jul. 21, 1977, Ser. No. 817,798

Int. Cl.³ F15B *11/08;* **F16L** *11/10*

U.S. Cl. 91—467 **1 Claim**



1. In a pressurized hydraulic fluid system comprising a hydraulic fluid pump, pressurized hydraulic fluid utilizing means, a control valve and a hydraulic fluid supply connected together by conduit members, the improvement comprising at least one of said conduit members constituting a hose including an inner tube having as a prime constituent comprising 30% to

70% by weight of said tube cross-linked chlorinated polyethylene having approximately 36% chlorine by weight, adjacent chlorinated polyethylene molecules being cross-linked by carbon to carbon bonds, said hose tube including a coagent used at 1 to 30 parts per 100 of cross-linked chlorinated polyethylene, said coagent being taken from the group of polybutadiene, ethylene propylene, ethylene vinyl acetate, acrylonitrile, polyethylene, butadiene, ethylenglycol dimethacrylate, triallyl isocyanurate or Dially Phthatate, and said hose tube including 30 to 120 parts carbon black, by weight, per hundred parts of cross-linked chlorinated polyethylene.

4,366,747

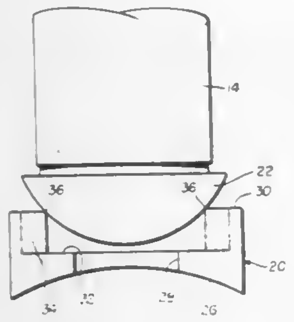
SLIPPER ARRANGEMENT FOR HYDRAULIC PUMP

E. L. Falendysz, and Eldon M. Brumbaugh, both of Racine, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 11, 1980, Ser. No. 176,826

Int. Cl.^{3} F01B *1/02;* F04B *39/10*

U.S. Cl. 92—72 **2 Claims**



1. A piston slipper for fluid pressure pumps of the radial piston type, said slipper including a generally rectangular body having inner and outer surfaces, said inner surface being arcuately shaped for engagement with a cam lobe on a crankshaft, said slipper body including an opening therethrough to permit centrifugal flow of fluid through said slipper, said outer surface including a recess retaining a hardened annular seat insert, said insert including an inner circumferential right angle corner which provides a sharp line of contact for engaging and supporting the spherical end of a piston, and said circumferential inner corner providing a wiping action on said spherical end of said piston and said spherical piston end extending into said seat insert and being movable relative thereto.

4,366,748

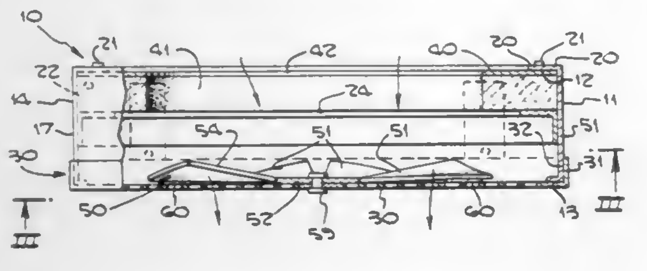
AIR DIFFUSER

Kent D. Wilson, Chatsworth, and John M. Hoffman, Woodland Hills, both of Calif., assignors to Air Components, Inc., Chatsworth, Calif.

Filed Feb. 6, 1981, Ser. No. 232,388

Int. Cl.^{3} F24F *13/08*

U.S. Cl. 98—40 D **9 Claims**



1. In an air diffuser having a perimetric sidewall, a perforated bottom wall attached to the bottom of the sidewall and a top wall attached to the top of the side wall forming a box-like structure, the improvement comprising:

deflector means and connecting means for attaching the deflector means to the bottom wall in the diffuser and for deflecting air as it exits the diffuser, the deflector means having a plurality of arms extending radially out from a central area, each arm having a flat portion generally parallel to the bottom wall and a bent up portion for deflecting air, the connecting means comprising a connecting member through the central portion of the deflector means, a perforation in the bottom wall for fastening the deflector means to the bottom wall, and resilient means between a portion of at least one arm and the bottom wall for reducing contact between the arm and the bottom wall and for providing a space therebetween.

4,366,749

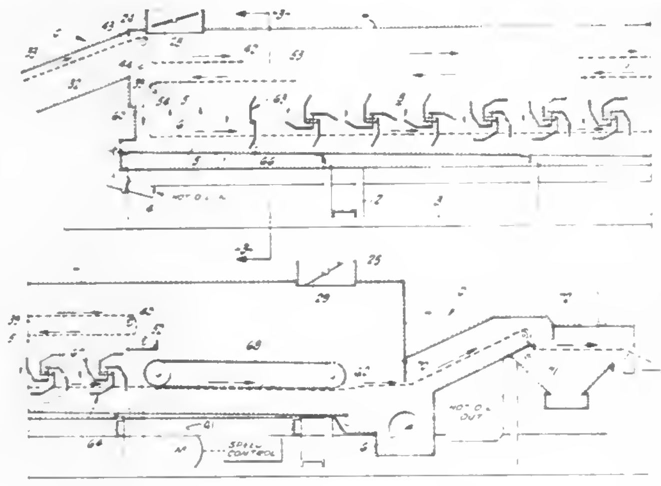
APPARATUS FOR PROCESSING FOOD PRODUCTS

Andrew A. Caridis, Foster City; Lawrence F. Klein, Hillsborough, and Clark K. Benson, Millbrae, all of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.

Division of Ser. No. 698,276, Jun. 21, 1976, abandoned. This application Mar. 27, 1981, Ser. No. 248,203

Int. Cl.^{3} A47J *37/12*

U.S. Cl. 99—339 **4 Claims**



1. Apparatus for cooking a starch-containing food product with a frying medium, comprising the combination of a vat for containing a reservoir of heated frying medium which evolves a mist of the medium, a pre-treatment chamber communicating with the vat, with the chamber containing an atmosphere which includes the mist, air and steam at a temperature of at least 100° C., an endless perforate conveyor for moving the product on an upper path and thereafter along a lower path beneath the upper path through said atmosphere with the mist and steam respectively depositing and condensing on the product so that the latent heat of such condensation begins gelatinization of the starch for partially cooking the product, speed control means for controlling the speed of the conveyor to maintain the product in contact with the mist for a dwell time in the range of twenty to forty seconds, said conveyor directing the partially cooked product into the frying medium in the vat where the product is cooked, paddle wheel means rotatably moving in the reservoir for continually immersing the product and also for controlling the speed of movement of the product through the vat for maintaining the product in contact with the frying medium for a time which is optimum to complete cooking of the product.

4,366,750

ROTARY SKEWER COOKER

Leo F. Brown, and R. A. Williams, both of Chillicothe, Ohio, assignors to Wear-Ever Aluminum, Inc., Chillicothe, Ohio

Filed Feb. 12, 1981, Ser. No. 233,774

Int. Cl.^{3} A47J *37/04*

U.S. Cl. 99—421 V **8 Claims**

1. A rotary skewer cooker comprising

a plurality of skewers, said skewers being generally vertically oriented,

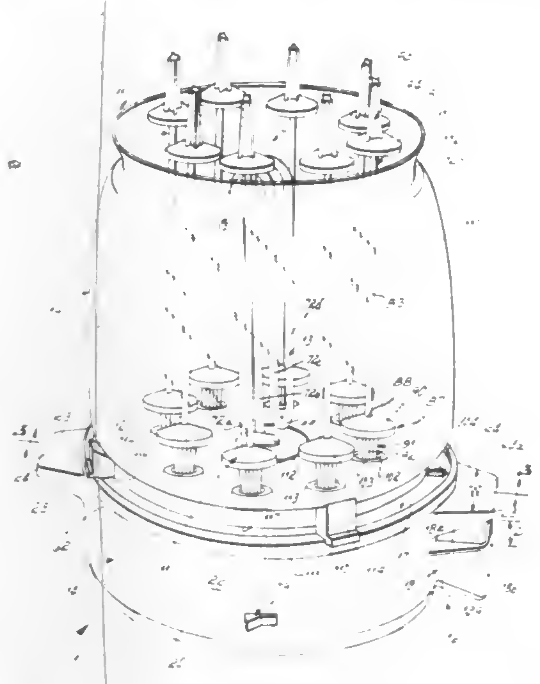
a heat source connected to a housing, said heat source being adapted to cook food on said skewers,

a skewer drive mechanism at least partially mounted in said housing, said skewers being selectively interconnectable with and disengageable from said skewer drive mechanism as desired by a user,

at least one handle on said housing for lifting said cooker,

structure defining a pocket in said housing, said pocket being positioned beneath a drain hole in the top surface of said housing, and said pocket including an opening in said housing's sidewall, and

a drip cup received in said pocket, said drip cup and pocket being sized to cooperate in positioning said cup beneath said drain hole for receipt of drippings from food cooked on said cooker when said drip cup has been located in said pocket, said drip cup being selectively removable when desired by the cooker's user to remove excess drippings from said cooker, and said drip cup being reciprocable into and out of operative position with said housing in a line of reciprocation that extends beneath said handle, the clearance between the top edge of said cup's handle and said housing's handle being such as to permit viewing of the cup's contents by the cooker's user.



4,366,751

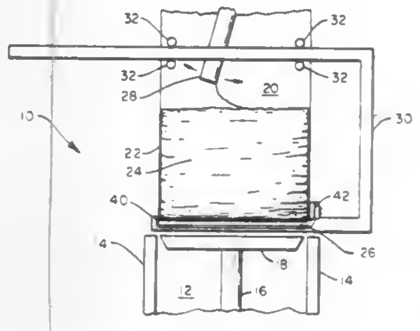
DEVICE FOR TRANSFERRING LAYERS OF TOW IN A TOW BALER

Albert E. Spaller, Jr., Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1981, Ser. No. 286,429

Int. Cl.^{3} B30B *15/30*

U.S. Cl. 100—80 **4 Claims**



1. In a vertically disposed tow baler having walls defining a chamber for receiving layers of tow for the formation of a tow bale of filamentary material; a press ram follow block movable in a vertical plane within said chamber for supporting thereon said layers of tow as they are received; and a hold-up slide having a leading edge, a trailing edge, and an upper flat surface, and being slidably movable in a horizontal plane to an operable position above said press ram follow block and said chamber, and being slidably movable to an inoperable position outside said chamber; a second set of walls disposed above the first-mentioned walls; said hold-up slide in said operable position defining with and above its upper flat surface and with said second set of walls a tow accumulating chamber for temporarily receiving, supporting and accumulating layers of filamentary tow upon said hold-up slide upper flat surface while a previously-formed bale is being removed from the tow baler below the hold-up slide during a tow bale pressout cycle; and means for moving said press ram follow block; the improvement comprising:

means enveloping said hold-up slide and being translatable either to said operable or inoperable positions by said hold-up slide as the latter is removed to either of those two positions;

said enveloping means defining on its upper surface an intervening supporting surface for said accumulating layers between the upper flat surface of said hold-up slide and said accumulating layers when said enveloping means and said hold-up slide are in said operable position, and being slidable with respect to said hold-up slide as the latter is moved and non-slidable with respect to the accumulating tow layers supported on its intervening supporting surface when translated from said operable position to said inoperable position.

4,366,752

ON-MACHINE SUPERCALENDER APPARATUS FOR PAPER OR THE LIKE

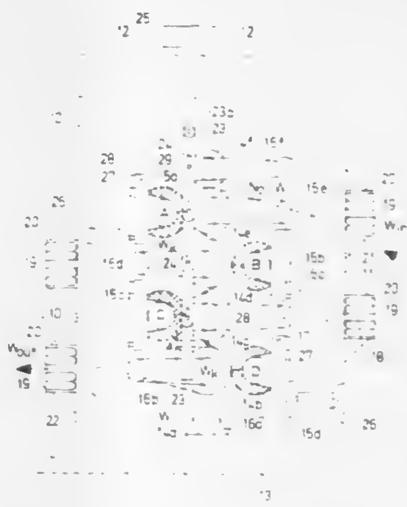
Erkki Koski, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed May 21, 1981, Ser. No. 266,107

Claims priority, application Finland, May 22, 1980, 801665

Int. Cl.^{3} B30B *3/04*

U.S. Cl. 100—162 R **4 Claims**



1. Calender apparatus for paper or the like adapted to be directly associated with a paper machine and to operate as an on-machine supercalender, comprising:

a plurality of hard calendering rolls arranged over one another so as to form a stack of rolls and adapted to define a series of hard nips therebetween;

a plurality of soft rolls adapted to define a series of soft supercalender nips with corresponding ones of said hard rolls;

drivable support means mounting said hard and soft rolls for opening at least some of the hard nips defined between said hard rolls and for closing at least some of the soft supercalender nips in order to subject a web passing through the apparatus to a supercalendering operation; and

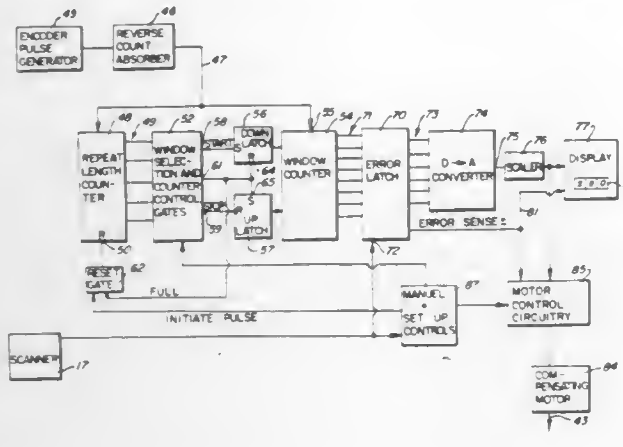
wherein said hard and soft rolls are arranged relative to each other such that as between said rolls, a web passing through said calender apparatus is guided substantially only by said hard rolls, whereby said soft rolls can be replaced without the possibility of web breakage.

4,366,753

CIRCUMFERENTIAL REGISTRATION CONTROL SYSTEM

Richard Glanz, Crystal Lake, and Sun C. Chang, Naperville, both of Ill., assignors to Baldwin Korthe Web Controls, Inc., Addison, Ill.

Filed Apr. 11, 1980, Ser. No. 139,507
Int. Cl.^{3} B41F *5/06, 5/16;* **G05B** *19/29*
U.S. Cl. 101—181 11 Claims



1. A system for controlling registration in a printing press between a moving web having repetitive print patterns and a work station operated cyclically in synchronism with the press by the press drive comprising

pulse generating means coupled to said work station for producing a train of position pulses each of which corresponds to predetermined movement of said work station;

registering means coupled to said generating means for cyclically registering the count of said position pulses during each cycle of said work station;

web scanner means positioned along said web path and adapted to produce an output signal in response to pssage of a selected portion of each successively occurring print pattern on said web; and,

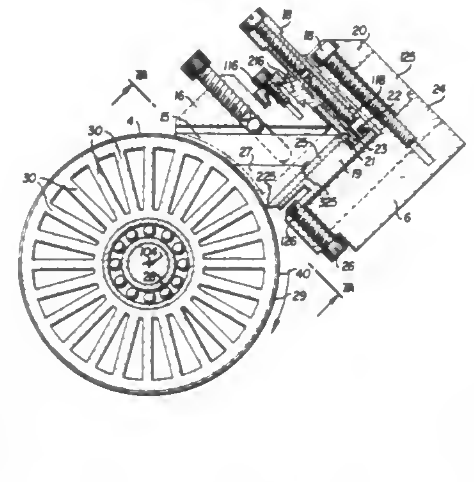
means coupled to said registering means and scanner means for monitoring the output of said scanner means during a predetermined portion of the count in said registering means and for signalling a registration error whenever the interval between successive scanner output signals differs from the repeat period of said registering means, said pulse generating means being operative to produce a first train of pulses during movement of said work station in the forward direction and a second train of pulses during movement of said work station in the reverse direction, gating means for normally coupling said first train of pulses to said registering means and a gate inhibit circuit coupled to said gating means and said pulse generating means, said gate inhibit circuit including a counter for counting the pulses of said second pulse train during reverse operation of said work station and then operating for a corresponding number of counts during forward operation of said work station, said gating means being inhibited during operation of said inhibit circuit counter for inhibiting the registering of a count by said registering means during operation of said inhibit circuit counter in said reverse and forward operation, whereby said registration system is nonresponsive to temporary discontinuities and backups in the operation of said press.

4,366,754

HOLDER FOR INK SEPARATOR ON A DRUM OF A PRINTING PRESS

Jean L. Sarda, 25, rue Pradier, 75019 Paris, France

Continuation-in-part of Ser. No. 27,829, Apr. 6, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,590
Claims priority, application France, Apr. 7, 1978, 78 10437
Int. Cl.^{3} B41F *31/04, 31/06*
U.S. Cl. 101—208 2 Claims



1. A device for inking a printing press, including:

a frame;

a single, rotatable, non-grooved ink drum mounted on the frame;

at least one doctor blade movable across the outer surface of the ink drum;

means, mounted on the frame, for carrying the at least one doctor blade above the ink drum; and

means for adjusting a gap provided between the outer surface of the ink drum and the bottom edge of the at least one doctor blade;

wherein the improvement comprises:

a plurality of means for separating a plurality of inks along the outer surface of the ink drum, each separating means having a first contoured edge for contacting against the outer surface of the ink drum, a second contoured edge for contacting against the front face of the at least one doctor blade, and a third uncontoured edge;

a plurality of means, detachably mounted to the carrying means, for holding the plurality of separating means;

a plurality of clamp means, detachably engaged with the carrying means, for adjusting the position of each of the plurality of holding means transversely along the carrying means by sliding therealong;

said carrying means includes a transverse bar and a dovetail means for engaging with the plurality of clamp means;

an element pressed into contact with the third uncontoured edge of each separating means; and

means, carried by the holding means, for pressing against the pressed element so that the first contoured edge of each separating means acts as a seal against the outer surface of the ink drum and the second contoured edge of each separating means acts simultaneously as a seal against the front face of the at least one doctor blade;

wherein said pressed element is a captive ball traveling in a groove;

wherein said pressing means is an adjustable screw;

wherein said plurality of separating means are a plurality of thin plates;

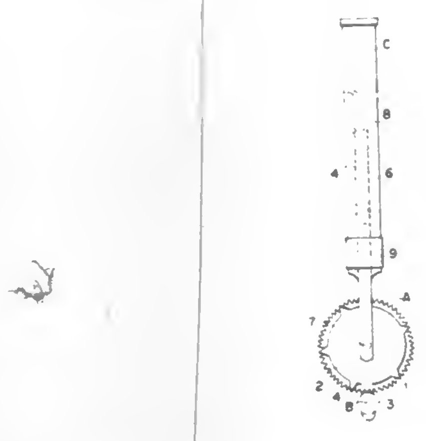
whereby there is formed a plurality of reservoir means for supplying a plurality of inks to flow through the gap provided between the outer surface of the ink drum and the bottom edge of the at least one doctor blade.

4,366,755

SCALE PRINTING INSTRUMENT

Minoru Yoshimura, 55-2 Aoki-cho, Ohgaki-shi, Gifu-Ken, Japan

Filed Mar. 19, 1981, Ser. No. 245,409
Claims priority, application Japan, Mar. 19, 1980, 55/35187
Int. Cl.^{3} B41F *5/00*
U.S. Cl. 101—329 9 Claims



1. A scale printing instrument which comprises:

an elongated hand grip having a pair of straight, elongated, parallel, laterally spaced-apart legs extending longitudinally from one end of said hand grip, said legs defining a recess therebetween which is open at the end thereof remote from said hand grip;

a wheel, said wheel being a planar disc having a multiplicity of uniformly circumferentially spaced-apart, radially outwardly projecting teeth on the entirety of the periphery thereof, said wheel being disposed in said recess so that its plane is parallel with said legs and the periphery of said wheel extending outwardly of the sides and said end of said legs so that the periphery of said wheel is uncovered and exposed except where said legs are joined to said hand grip;

an axle extending between said legs and passing through a central opening in said wheel so that said wheel is supported on said axle for free rotation with respect to said hand grip and said legs;

an elongated, straight arm extending longitudinally along one side of said hand grip and thence extending longitudinally alongside of and parallel with one of said legs and thence extending beyond said end of said one leg and beyond the periphery of said wheel, means supporting said arm on said hand grip for slidable movement in a direction lengthwise of said hand grip and said legs and means for releasably securing said arm to said hand grip to hold said arm in an adjusted position;

and a circular brush mounted on said arm adjacent to the end thereof remote from said hand grip, said brush projecting laterally from said arm to a location adjacent the periphery of said wheel for contact with the apexes of said teeth as said wheel rotates with respect to said hand grip to deposit marking material thereon, said brush being mounted for rotation on said arm about an axis of rotation parallel with the axis of rotation of said wheel.

4,366,756

ELECTRONIC TRACTOR GUIDANCE SYSTEM

Jerry W. Brum, Modesto, Calif., assignor to Geosource Inc., Houston, Tex.

Filed Sep. 9, 1980, Ser. No. 185,410
Int. Cl.^{3} B61F *9/00;* **B62D** *5/04*
U.S. Cl. 104—244.1 15 Claims

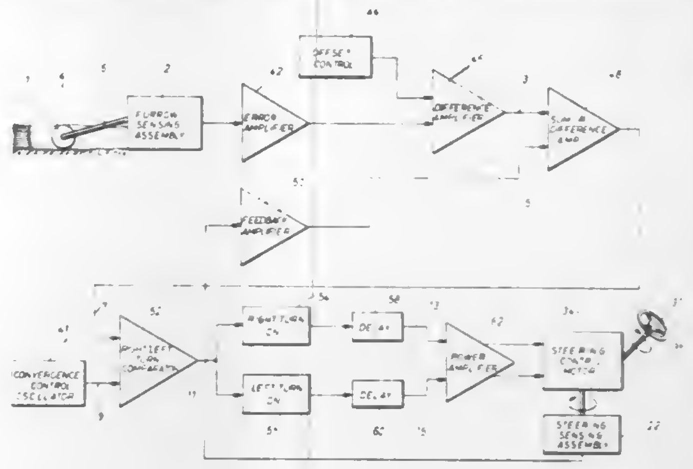
1. An automatic guidance system for controlling the direction of travel of a tractor to follow a guide path by generating a steering control signal to control the steering direction of the tractor, the system comprising:

(a) a direction sensor connected to the tractor, for generating a path direction signal indicative of the direction of the path relative to the direction of travel of the tractor;

(b) a tractor steering means responsive to the steering control signal, for controlling the steering direction of the tractor;

(c) a tractor steering sensor connected to said steering means, for generating a steering direction of the tractor; and

(d) a control means responsive to said sensors, for generating the steering control signal, the steering control signal having a predetermined period with a variable duty cycle defined by an uninterrupted sequence of alternate time intervals of right and left turn steering corrections where the total time for each consecutive pair of right and left turn steering corrections is equal to the period of the steering control signal and where equal time intervals for the right and left turn steering corrections represents a 50% duty cycle so that the steering direction of the tractor is effected when the duty cycle of the steering signal deviates from the 50% duty cycle, said control means generating a variable amplitude convergence frequency signal where the amplitude of the convergence frequency signal determines the steering correction sensitivity of the guidance system to errors between the direction of the guide path and the direction of travel of the tractor by varying the rate of convergence of the steering direction to the direction of the path.

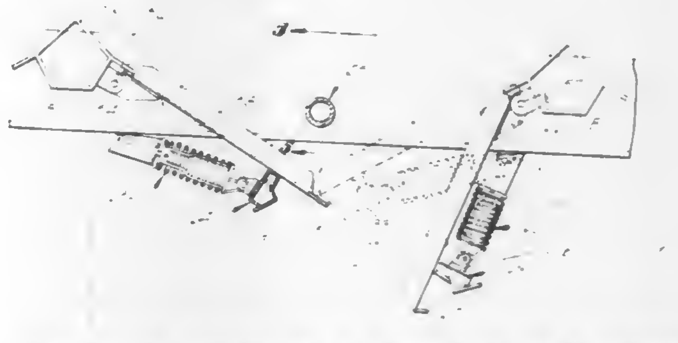


4,366,757

ACTUATING AND LOCKING MEANS FOR THE HOPPER DOORS OF A RAILROAD HOPPER CAR

Stanley Funk, Hamilton, Ohio, assignor to Ortner Freight Car Company, Milford, Ohio

Filed Nov. 20, 1980, Ser. No. 208,576
Int. Cl.^{3} B61D *7/018*
U.S. Cl. 105—248 19 Claims



1. In a railroad hopper car of the type having a longitudinally extending center sill of substantially inverted U-shaped cross section and a plurality of hopper doors arranged in opposed pairs and extending transversely of said center sill, said hopper doors of each opposed pair being swingable between a downwardly depending open position and a closed position wherein their bottom edges meet in abutting relationship, each of said opposed pairs of hopper doors having a pair of inner

hopper sheets and a pair of outer hopper sheets, the improvement comprising a door actuating means for each opposed pair of hopper doors to shift said doors between said open and closed positions from either side of the car, each door actuating means for each opposed pair of hopper doors comprising a rotatable shaft assembly extending transversely of said hopper car between its respective pair of opposed hopper doors and through said hopper car. center sill and said inner and outer hopper sheets of said pair of hopper doors, said shaft assembly having a central portion located within said center sill, a lever structure non-rotatively mounted on said shaft center portion, said lever structure comprising a pair of substantially identical L-shaped lever portions in the same radial relationship with respect to said shaft center portion and in parallel spaced relationship with a spacer portion therebetween, each of said L-shaped lever portions having first and second legs, said first legs of said lever portions being connected to a first door of said pair by two V-shaped links pivotally attached at one end to said first door and pivotally attached at their other ends to their respective first leg, said second legs of said lever portions being connected to a second door of said pair by a single V-shaped link pivotally attached at one end to said second door and pivotally attached at its second end to and between said second legs, means on both ends of said shaft assembly by which either of said shaft assembly ends may be engaged by a rotation-imparting tool, said shaft assembly and said lever structure being rotatable between a first portion in which said pair of hopper doors are in said downwardly depending open position and a second position in which said pair of hopper doors are in said closed position and said lever structure and said links are in an over-center position with respect to said shaft assembly.

4,366,758

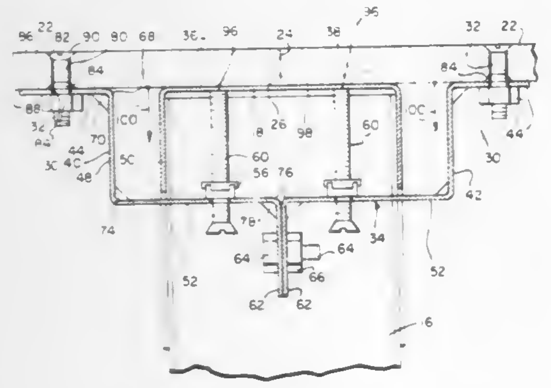
TABLE TOP HOLD-DOWN AND CONNECTING BRACKET

Stanley A. Brecher, 520 Arnold St., Philadelphia, Pa. 19111, assignor to Stanley A. Brecher, Andalusia, Pa.

Filed Mar. 2, 1981, Ser. No. 238,156

Int. Cl.^{3} A47B *57/00*

U.S. Cl. 108—64 **15 Claims**



1. In a bracket for securing juxtaposed ends of adjacent table tops of a modular table construction wherein the structural interface between adjacent modular units comprises a transverse support, and wherein the ends of the adjacent table tops rest upon the support, the combination of

- a bracket means comprising a pair of braces to interconnect the table tops ends,
  - the braces each being configured to define a pair of first and second spaced horizontal legs and a pair of first and second vertical legs,
  - the first horizontal leg of one brace being secured to the end of one table top to the left of the transverse table support and the first horizontal leg of the other brace being secured to the end of the other table top to the right of the transverse table support;
  - means connecting the respective second vertical legs of each of the braces to secure the braces together; and
  - adjustable stabilizer means operative through at least one of the second horizontal legs and adapted to contact the transverse support intermediate the said respective first horizontal legs of the pair of braces,

whereby the ends of the adjacent table tops are secured together and vertical movement of the said table top ends relative to the support is discouraged.

4,366,759

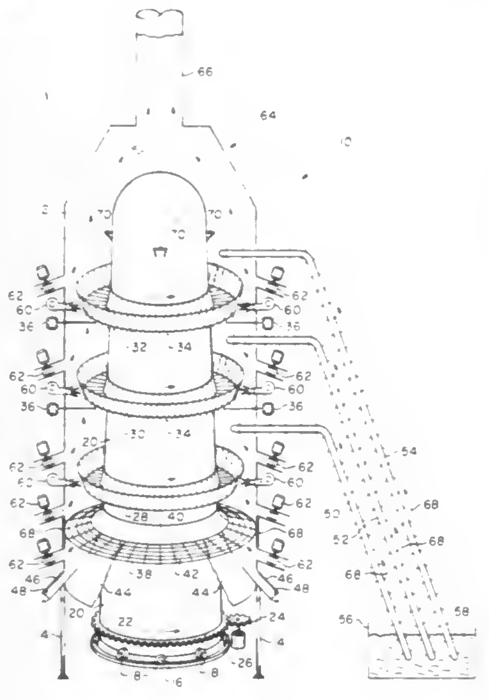
MASS BURNING SELF-CLEANING INCINERATOR

Samuel Foresto, 243 Willis Ave., Mineola, N.Y. 11501

Filed Feb. 16, 1982, Ser. No. 348,977

Int. Cl.^{3} F23G *5/04;* F27B *9/22*

U.S. Cl. 110—225 **13 Claims**



1. A mass refuse incinerator comprising an incinerator enclosure,

- a plurality of refuse support grates,
- means supporting said grates spaced one above the other,
- means operable to supply refuse to selected ones of said support grates for incineration thereon,
- means within said enclosure to ignite and burn the refuse on each of said grates to cause the refuse to be consumed,
- means to rotate said refuse supporting grates while the refuse thereon is burning,
- said grates having openings to permit the refuse supported thereon to fall therethrough to lower grates as the refuse is consumed by burning and is reduced in size so that the grates from which the refuse falls are cleaned,
- and the spaces between said grates enabling the refuse burning on a lower grate to ignite and burn refuse on a grate thereabove.

4,366,760

SEED DRILL

Heinz Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany, assignor to Amazonen-Werke, Hasbergen-Gaste, Fed. Rep. of Germany

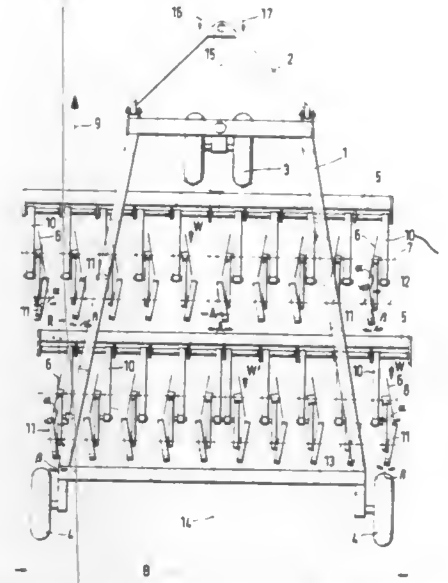
Filed Jul. 18, 1980, Ser. No. 170,212

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930550

Int. Cl.^{3} A01C *5/06*

U.S. Cl. 111—85 **3 Claims**

1. In a seed drill moveable along a direction of travel and having a frame, a plurality of furrow opener disks, means rotatably mounting the furrow opener disks on the frame in two transverse rows disposed one behind the other with the disks alternating and staggered relative to each other and with each disk displaceable vertically relative to the frame and the disks of each row slanted at an acute angle to the direction of travel, the improvement wherein: the total number of disks is divisible by four; one half of the disks in each row are disposed at said acute angle towards one side and the other half of the disks in each row are disposed at said acute angle towards the other side; the rear transverse row is offset to the right with respect to the front row when viewed from the rear of the seed drill; press wheels mounted on the mounting means and disposed in back of the furrow opener disks, wherein the press wheels are disposed in two transverse rows, one behind the other, with each press wheel set at an angle to the direction of travel which is directed oppositely to the angle at which the furrow opener disk in front of it is set.



4,366,761

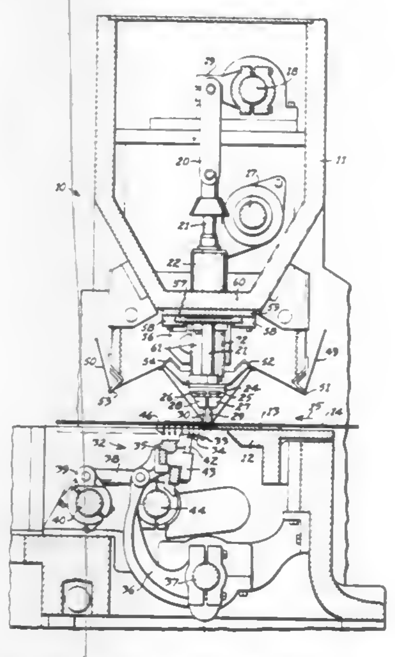
DUAL SHIFTABLE NEEDLE BARS FOR TUFTING MACHINE

Roy T. Card, Chattanooga, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Dec. 2, 1980, Ser. No. 212,147

Int. Cl.^{3} D05C *15/14*

U.S. Cl. 112—79 A **11 Claims**



1. In a tufting machine having means for supporting a base fabric for longitudinal movement in a feeding direction through said machine, a patterned stitching mechanism comprising:

- (a) a first elongated needle bar having a plurality of first needles spaced along said first needle bar,
- (b) a second elongated needle bar having a plurality of second needles spaced along said second needle bar,
- (c) means supporting said first and second needle bars parallel to each other on one side of the base fabric moving through the machine and transversely of said longitudinal feeding direction, for independent reciprocal movement longitudinally of said needle bars, and for reciprocable movement toward and away from the base fabric to cause said first and second needles to reciprocably penetrate the base fabric,
- (d) pattern-controlled actuator means operatively connected to said first and second needle bars to shift said needle bars independently of each other in predetermined increments transversely of said feeding direction,
- (e) yarn supply means supplying first yarn to said first needles and second yarn to said second needles, and
- (f) needle drive means for reciprocably moving said needle bars toward and away from the base fabric to cause said needles to stitch said yarns through the base fabric in accordance with the pattern determined by said pattern-controlled actuator means.

4,366,762

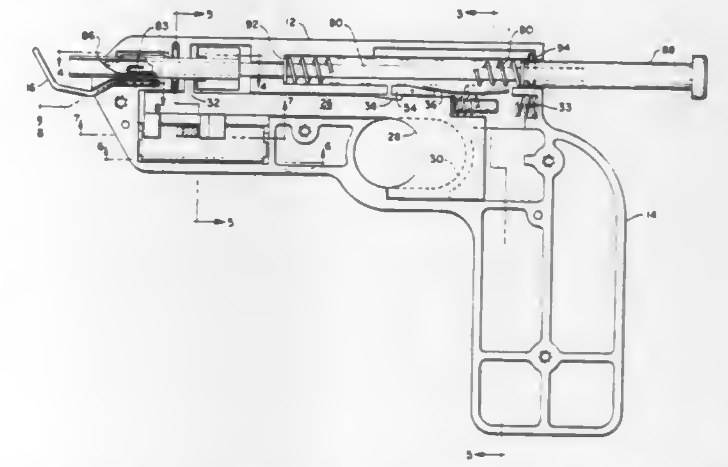
TOOL FOR MAKING TUFTED RUGS AND WALL HANGINGS

Grant N. Willis, Seven Sea La., Hilton Head Island, S.C. 29928

Filed Feb. 9, 1981, Ser. No. 232,870

Int. Cl.^{3} D05C *15/06*

U.S. Cl. 112—80 **14 Claims**



1. A hand operated tool for attaching tufts of yarn to a woven backing sheet comprising an elongated housing having a depending pistol grip at its rear end, a wire loop attached to the front of the housing with the bight of the loop spaced from the front of the housing and extending transversely to the longitudinal axis of the housing, a pair of pivotally mounted clamps at the front of the housing for holding a loop of yarn which has been wrapped around the wire loop close to the housing, an elongated needle mounted in the housing for longitudinal movement in alignment with the clamping means and the bight of the wire loop, the clamps being oppositely channelled in cross-section to permit the needle to pass therethrough, the needle having a bifurcated tip for engaging ends of a loop of yarn held by the clamping means and transport them through the bight of the wire loop as the needle is moved forwardly, a longitudinally movable slide mounted in the housing and having a depending trigger forwardly of the handle whereby the slide may be pulled rearwardly of the housing, the slide having means for closing the clamps when the slide is pulled rearwardly, a plunger attached to the needle and extending rearwardly from the rear end of the housing for engagement by the thumb of the operator to move the needle forwardly and carry the ends of the loop of yarn from the clamps through the bight of the wire loop.

4,366,763

AUTOMATIC EMBROIDERY MACHINE HAVING A PLURALITY OF SINGLE-NEEDLE EMBROIDERY HEADS

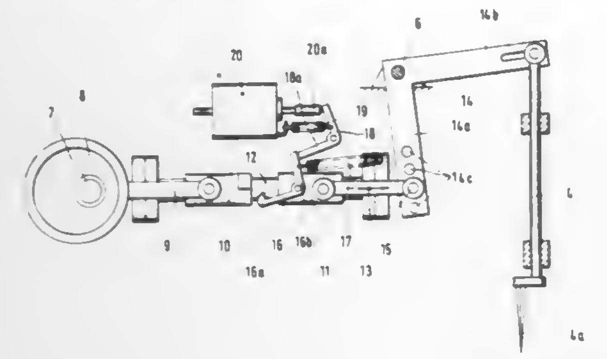
Wolfgang Teetz, Kerken, and Hans-Gerd Ripkens, Goch, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,543

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 7927132[U]

Int. Cl.^{3} D05C *7/04*

U.S. Cl. 112—98 **9 Claims**



1. An automatic embroidery machine having a plurality of embroidery heads having a single embroidery needle in each head driven by a common main drive shaft, comprising
a drill rod mounted in each embroidery head displaceably parallel to the embroidery needles, said drill rod having a drill thereon,
a transmission means for driving said drill rods from the main drive shaft,
said transmission means for stopping said drill rods in a disengaged position thereof,
said transmission means comprises,
a ring eccentric arranged on the main drive shaft,
a linear guide,
two carriages are displaceably mounted in said linear guide and couplably with each other,
one of said carriages is a drive carriage,
a connecting rod connects said ring eccentric to said drive carriage,
the other of said carriages is a driven carriage,
a continuous drive shaft is operatively connected to all said drill rods,
a central drive lever means for actuating said continuous drive shaft, and
a push rod is connected to said driven carriage and said central drive lever means.

4,366,764

APPARATUS FOR FORMING LOOPS OF STRIP MATERIAL

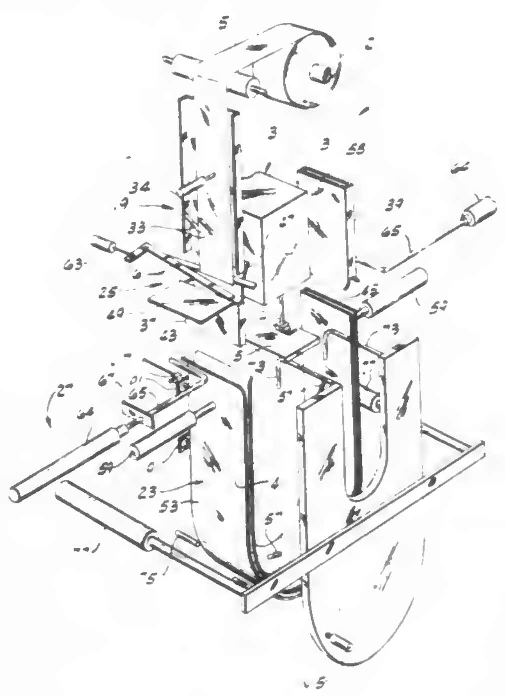
Eugene McCurry, III, Humbolt, Tenn., assignor to Kellwood Company, St. Louis, Mo.

Filed Aug. 8, 1980, Ser. No: 176,392

Int. Cl.^{3} D05B *23/00*

U.S. Cl. 112—121.27 **21 Claims**

1. Apparatus for forming loops of strip material, with each loop comprising a length of the material having its ends secured together comprising:
means for securing the ends of a length of the strip material together to form it into a closed loop;
means for intermittently feeding a length of strip material from a supply;
means for guiding the leading end portion of the strip material as it is fed forward from the supply generally into the form of a U extending in one direction on one side of said securing means and back in the opposite direction on the other side of said securing means;
means for cutting the strip material at the trailing end of the U-shaped leading end portion of the strip material to provide a generally U-shaped length of the material with the sides of said U-shaped length of material extending on opposite sides of said securing means; and
means for folding over the ends of said U-shaped length of material to bring them together in the securing means for being secured together by the latter, said securing means being operable upon the folding over of said ends for securing them together.



4,366,765

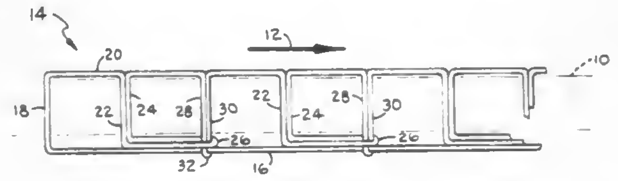
COMBINATION SINGLE THREAD CHAIN AND LOCK STITCH

Joop F. Hoekstra, Medfield, Mass., assignor to The Reece Corporation, Waltham, Mass.

Filed Aug. 14, 1980, Ser. No. 177,903

Int. Cl.^{3} D05B *93/00*

U.S. Cl. 112—429 **7 Claims**



1. A stitch formation for insertion into a work piece, said stitch formation comprising a first loop passing through the work piece and forming the first half of a chain stitch,
a second loop passing spaced from said first loop and passing through the work piece and the closed end of said first loop forming with said first loop the second half of said chain stitch,
a locking thread passing through the closed end of said second loop to form with said second loop a lock stitch,
said chain and lock stitches being continuously alternated for the desired length of the stitch formation,
said stitch formation being formed from a single continuous thread, and
said locking thread comprises a single strand of thread passing through the work piece in spaced relation to the first loop in advance of the first loop and of a length equal to the desired length of stitch formation.

4,366,766

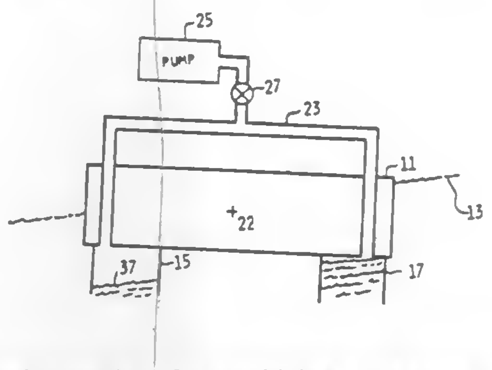
SYSTEM FOR STABILIZING A FLOATING VESSEL

Gunnar B. Bergman, 677 El Bosque Rd., Montecito, Calif. 93108

Division of Ser. No. 28,059, Apr. 9, 1979, Pat. No. 4,261,277, which is a continuation of Ser. No. 831,894, Sep. 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 787,756, Apr. 15, 1977, Pat. No. 4,140,074. This application Dec. 15, 1980, Ser. No. 216,485

Int. Cl.^{3} B63B *39/00*

U.S. Cl. 114—125 **2 Claims**



1. A passive method for stabilizing a seagoing vessel during repetitive cycles of oscillatory motion by reducing the righting moment of said vessel and lengthening the period of oscillation of said vessel beyond the wave period of the sea, said vessel having at least two tanks disposed on opposite sides of an axis of symmetry of said vessel below the water line, the method comprising the steps of:
interconnecting said two tanks with conduit means to provide a continuously open air passageway therebetween;
continuously filling one of the said tanks to a first water level in phase with the travel of said tank into the sea during a cycle of oscillatory vessel motion; and
simultaneously continuously draining the other of said tanks to a second water level in response to the filling of said one tank during the same cycle of oscillatory vessel motion by directing air forced out of said tank being filled into said other tank through said conduit means;
said step of continuously filling one of said tanks including the step of completely filling said one of said tanks in response to predetermined angular displacement of the vessel about its axis of symmetry for rapidly increasing the righting moment thereof as a function of additional angular displacement to prevent capsizing of the vessel when the tank is completely filled.

4,366,767

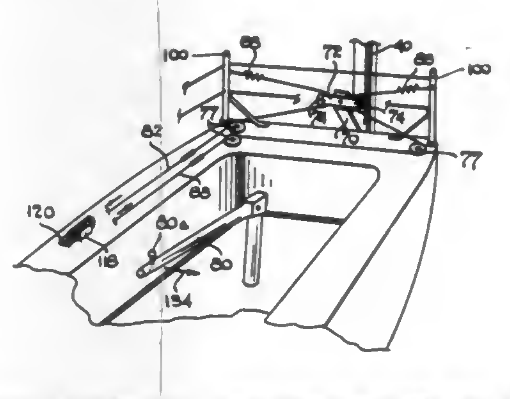
STEERING CONTROL SYSTEM FOR THE STEERING OF A BOAT

Stellan P. Knoos, 27919 Alvarez Dr., Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 115,735, Jan. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 959,326, Nov. 9, 1978, abandoned. This application May 29, 1980, Ser. No. 154,467

Int. Cl.^{3} B63H *25/00*

U.S. Cl. 114—144 R **4 Claims**



3. A control system for controlling the steering of the steering device of a boat in response to movement of control cable means comprising
arm member means,
connector member means mounted on said arm member means for longitudinal movement relative thereto,
quick release connector means for releasably connecting the connector member means to the steering device,
means for coupling the control cable means to the connector means such that movement of the control cable means effects longitudinal movement of the connector member means and a corresponding movement of the steering device,
means for supporting the arm member means on said boat for pivotal movement between an operating position and a stowed side position, the length and tension of the control cable means being unaffected with movement between said two positions, said supporting means comprising a support member mounted on one side of the boat, bracket means attached to the arm member means, and means for pivotally connecting the bracket means to the support member,
said boat having a pulpit, and
clip means attached to the arm member means for pivotally connecting the bracket means to the support member.

4,366,768

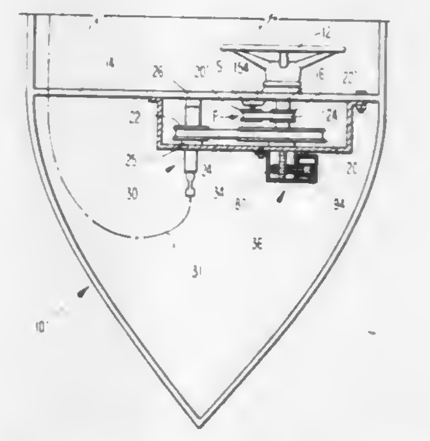
POWER STEERING DIRECTION SENSOR

Walter Kulischenko, East Brunswick, N.J.; Philip E. Bloomfield, Bala Cynwyd, and Richard A. Ferren, Ambler, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 183,548, Sep. 2, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 385,735

Int. Cl.^{3} B63H *25/00*

U.S. Cl. 114—144 E **23 Claims**



1. A sensor unit for instantaneously varying rpm and direction of rotation of a steering power assist motor shaft in marine vessels and the like in response to direction of rotation and speed of rotation of a steering wheel of said vessel in conjunction with available torque from said motor, said available torque being substantially inversely proportional to rpm of engine driving said marine vessel, said sensor unit comprising
an open-ended cylindrical casing,
a plug member disposed at each end of said casing,
a plastic member having piezoelectric properties disposed against each of said plug members,
means for separating said casing into a pair of substantially identical chambers,
means responsive to said direction and speed of rotation of said steering wheel for changing volume within said chambers whereby pressure is exerted against a face of one of said plastic members when said steering wheel is rotated in one direction and against a face of other of said plastic members when said wheel is rotated in other direction to thereby provide signals from said members for causing said motor shaft to assist steering in accordance with said changed volume.

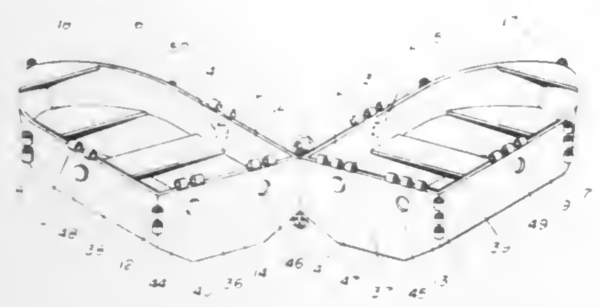
4,366,769
SMALL BOATS

Whitten L. Lingeman, 1106 Collingwood Dr., Indianapolis, Ind. 46208

Continuation of Ser. No. 790,428, Apr. 25, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,231

Int. Cl.^{3} B63B *3/00*

U.S. Cl. 114—352 **2 Claims**



1. A two section small boat structure comprising an independent forward section and a similar independent rear section; each section includes mating releasable hinge means permitting the two section to be interconnected into an integral small boat structure; each of said forward and rear sections comprising a substantially flat rectangular bottom wall and upstranding rear and side walls; said upstanding side walls and said flat bottom wall curving to a common apex to describe a pointed forward end; said flat bottom wall, upstanding side walls, upstanding rear wall and pointed forward end defining a closed, water tight periphery; each section further comprising a transverse center seat adapted to be removably secured and means defining a vertical aperture extending substantially one half the height of the vertical portion of an upstanding side wall and disposed at the pointed forward end of each section; said hinge means comprising first releasable hinge means disposed horizontally in two equal segments along the top transverse edge of the rear wall of each of the forward and rear sections; each first hinge means defining a horizontal aperture extending substantially the length equal to the vertical portion of an upstanding side wall for selectively pivotally interconnecting the rear walls of said sections whereby the forward and rear sections may be selectively pivoted into substantially longitudinal alignment to form a one section six passenger boat and, selectively pivoted, one section over the other, to form an enclosed container adapted to be opened from one end thereof;

second releasable hinge means disposed vertically along each corner of the rear wall of each said forward and rear sections for releasably interconnecting said rear walls of said forward and rear sections when the same are interconnected by said first releasable hinge means and maintained in the longitudinally aligned configuration to prevent relative pivoting movement of the sections about said first hinge means and, for selectively pivotally interconnecting said rear walls whereby, said forward section and said rear section may be pivoted, when disconnected from both first releasable hinge means and one second releasable hinge means, from a longitudinally aligned configuration into substantially side-by-side alignment to form a two section six passenger boat, said second releasable hinge means defining a vertical aperture extending substantially the height of the vertical portion of an upstanding side wall of said sections;

third releasable hinge means disposed lengthwise along both side wall top edges of each of said forward and rear section for selectively pivotally interconnecting said side walls when the same are connected by one said second releasable hinge means and maintained in the side-by-side, aligned configuration whereby, when not interconnected by said one second releasable hinge means, said forward section and said rear section may be selectively pivoted into an over-lying relationship to form an enclosed container adapted to be opened from either side thereof, said third releasable hinge means defining a horizontal aperture extending substantially the length equal to the height of the vertical portion of an upstanding side wall; means for releasably interconnecting said forward and rear sections when the same are interconnected by one said second and one said third releasable hinge means and maintained in a side-by-side configuration to prevent relative pivoting movement of the sections about said second and third hinge means, said interconnecting means disposed on both upstanding vertical side walls of said forward and rear sections fore quarter, just behind the curved portion of said upstanding side walls, said interconnecting means defining a vertical aperture, extending substantially the full vertical height of the vertical portion of said upstanding side walls; and means for aligning said releasable hinge means for preventing movement between each of said section's abutting surfaces when the sections are maintained in a side-by-side aligned configuration, said aligning means comprising a beveled round plug and a round mating socket; said plug and socket, when engaged, being disposed adjacent to each first releasable hinge means, when the sections are maintained in a longitudinally aligned configuration and, adjacent to each third releasable hinge means when the sections are maintained in a side-by-side aligned configuration; said beveled round plug having a diameter substantially equal to one fourth the length of an interconnected hinge means and a penetration depth of one-fifth the diameter of said beveled round plug, said socket being of a diameter and depth to accommodate said round beveled plug without binding and without movement of the plug when inserted within said socket.

4,366,770
APPARATUS FOR APPLYING A WATER REPELLENT SUBSTANCE INTO A CABLE CORE

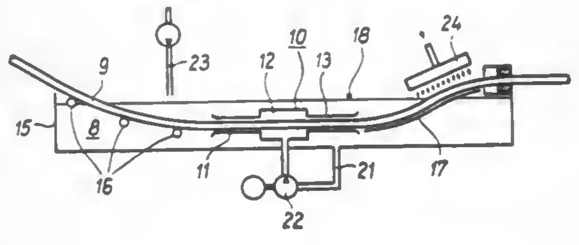
Horst Eckstein, Rödental; Willi Seyfart, Haarbrücken, and Norbert Sutor, Neustadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,484

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1977, 2726404

Int. Cl.^{3} B05C *3/12;* H01B *13/16*

U.S. Cl. 118—405 **5 Claims**



1. In apparatus for applying a water repellent substance into the cable core of a multi-pair communication cable, where the cable core is led through a filling unit consisting of an entry stub, a filling head and an exit stub and in which the water repellent substance to be inserted into the cable core is contained at elevated temperature and relatively high pressure, the improvement comprising:

(a) a filling unit for the insertion of the water repellent substance into the cable core which is pressure proof,
(b) a filling basin surrounding the filling unit including its entry and exit stub, and
(c) a circulation line with a pump interposed connecting the filling basin and the filling unit.

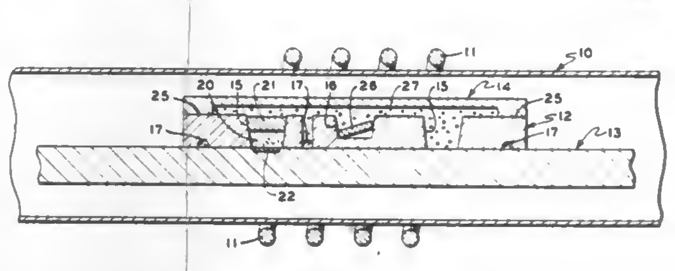
4,366,771
MERCURY CONTAINMENT FOR LIQUID PHASE GROWTH OF MERCURY CADMIUM TELLURIDE FROM TELLURIUM-RICH SOLUTION

John E. Bowers, Mountain View, Calif., and Joseph L. Schmit, Hopkins, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 170,324, Jul. 18, 1980, Pat. No. 4,317,689. This application Oct. 5, 1981, Ser. No. 308,343

Int. Cl.^{3} H01L *21/208*

U.S. Cl. 118—415 **3 Claims**



1. Apparatus for mercury containment in the liquid phase epitaxy growth of mercury cadmium telluride from a tellurium-rich solution comprising:

a furnace enclosure having therein a graphite furnace boat, the boat further comprising:
  a graphite base member having a generally planar top face and having a recess portion in the top face, the recess portion being adapted to receive a semiconductor substrate for epitaxial growth thereon;
  a graphite slider member having a planar lower face adapted to mate with and to be slideable along said base member top face, said slider member having a well extending therethrough from a top surface to the lower face for receiving and holding a charge of $(Hg_{1-x}Cd_x)_{1-y}Te_y$, said top surface further having a depression therein adapted to receive a mercury supplying charge, said lower face further having a peripheral groove therein surrounding the well opening in said lower face, said slider member further having a passage extending from said groove to the top surface thereof to bring said groove in communication with said mercury source receiving depression; and,
  a graphite cover positioned for connecting said slider member top surface.

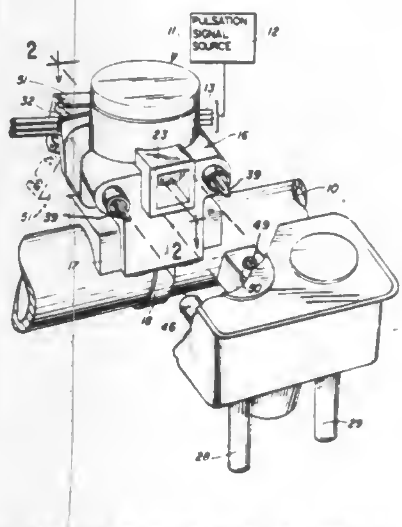
4,366,772
STALL COCK AND PULSATOR FOR A MILKER

Walter C. Panock, Bloomingdale, Ill., assignor to Babson Bros. Co., Oak Brook, Ill.

Filed Mar. 30, 1981, Ser. No. 248,837

Int. Cl.^{3} A01J *5/14*

U.S. Cl. 119—14.01 **2 Claims**



1. In a milker having a pulsation vacuum line, a source of electrical pulsation control signals and a stall cock with a body mounted on said vacuum line for connection of a milker pulsator, the improvement comprising:

a multi conductor flat cable connected with said control signal source, each conductor of the cable having an insulating covering thereon;
a cable connector on said stall cock body to receive said cable;
electrical conductors for the pulsation control signal carried by the stall cock body with ends projecting from the cable connector to pierce the insulating covering of the cable conductors, said conductor ends defining a line generally parallel with the vacuum line on which the stall cock is mounted; and
a clamp for holding the cable in said cable connector said cable connector and cable being canted with respect to said line of conductor ends for engagement of each electrical conductor in said body with a different conductor of the cable.

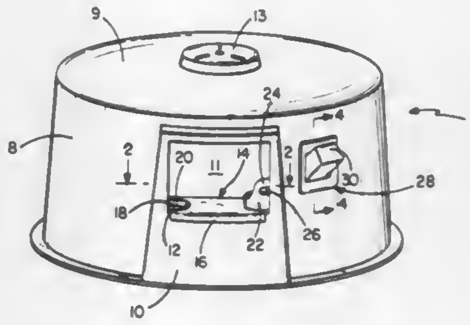
4,366,773
VENTILATION AND FEEDING SYSTEM FOR ANIMAL SHELTER

Richard G. Johanneck, P.O. Box 13A, Rte. 1, Litchfield, Minn. 55355

Filed Mar. 23, 1981, Ser. No. 246,198

Int. Cl.^{3} A01K *1/00*

U.S. Cl. 119—16 **11 Claims**



1. In a freestanding shelter for young animals having a curved exterior side wall, the improvement of a ventilation and feeding system comprising:

an opening in the curved exterior side wall of a shelter having a lower edge appropriately upwardly spaced from the bottom of the shelter for a standing young animal to insert its head;
a feeding station comprising a bucket support conforming in shape to the curved shape of the shelter wall, said feeding station having a flange for engaging the lower edge of the opening to support the feeding station;
said feeding station having at least one generally circular fitting of size to receive and hold a feed bucket;
a bottle bracket adjacent to the opening for holding a bottle having a nipple thereon, in position for use by a young animal; and
a closable all-weather vent apparatus comprising a raised neck protruding from the shelter roof, a generally horizontal wall portion supported on the neck with at least one vent opening in the wall portion, a cap having a peripheral flange fitted about the raised neck, at least one support lug extending from the underside of the cap, said lug fitting within the vent opening when the cap is in a lowered closed position and said cap being rotatable relative to the neck to a raised position wherein the lug is supported on the vent wall portion and a ventilation path is established from the vent opening between the flange and the neck and wherein rain and snow are prevented from entering the vent opening by an overlap of the flange over the neck.

4,366,774

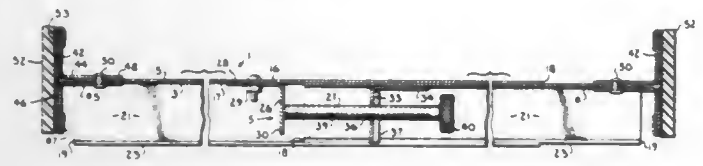
UNIVERSAL ANIMAL SHELF

Lawrence H. Haake, Prairie Village, Kans., and Herschel B. Anderson, Kansas City, Mo., assignors to Schroer Manufacturing Co., Kansas City, Mo.

Filed Jul. 6, 1981, Ser. No. 280,991

Int. Cl.^{3} A01K *1/035;* **A47B** *57/00*

U.S. Cl. 119—17 **6 Claims**



1. A shelf for an animal cage having opposite wall members and comprising:
   - (a) first and second shelf portions telescoped together to provide an adjustable length shelf having opposite free ends;
   - (b) an extensible adjustment means having a first portion mounted on said first shelf portion and a second portion mounted on said second shelf portion with said adjustment means including an extensible member extending from said first portion to said second portion for urging said shelf portions apart; and
   - (c) opposite end plates respectively mounted to said opposite free ends for facing engagement with the opposite wall members of said cage.

4,366,775

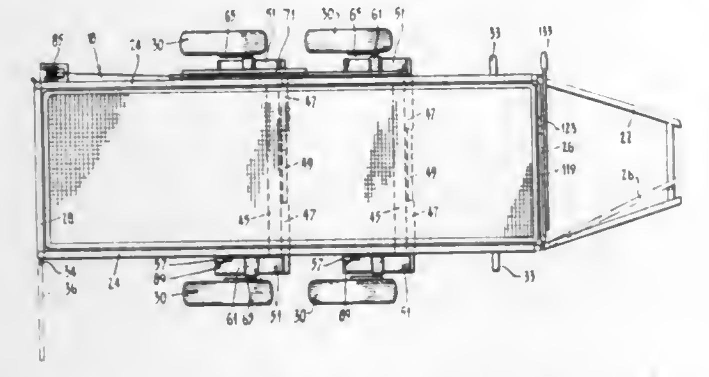
TRANSPORTABLE STOCK UNIT

Bryan J. Tyquin, P.O. Box 22, New Gisborne 3438, Australia

Continuation-in-part of Ser. No. 54,852, Jul. 5, 1979, abandoned. This application Feb. 20, 1981, Ser. No. 236,150

Int. Cl.^{3} A01K *29/00*

U.S. Cl. 119—20 **21 Claims**



1. A portable stock race and yard comprising a stock race mounted on wheels to enable the stock race to be towed and a plurality of wings swingably connected to sides of the stock race and arranged to be folded out to form at least part of the periphery of a stock yard wherein each wing has a section extending at least partially along the length thereof pivotally connected thereto, which is adapted to be pivoted upwardly into a raised position to form an opening through the wing for the passage of said wheels of the stock race through the wing when the wing is folded against the side of the race and retaining means for retaining the said section in a raised position when the wing is folded against the side of the race.

4,366,776

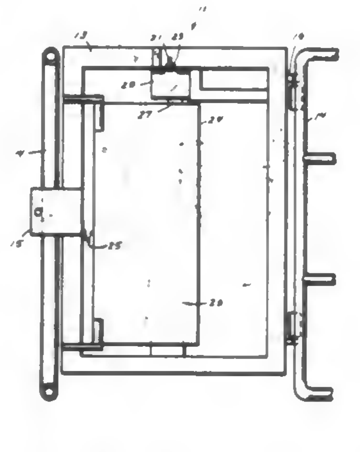
SELF-LOCKING CATTLE HEAD GATE ASSEMBLY

Gary L. Early, P.O. Box 273, 125-A E. Pine St., Elsie, Mich. 48831

Filed Nov. 28, 1980, Ser. No. 211,094

Int. Cl.^{3} A01D *45/02*

U.S. Cl. 119—98 **5 Claims**



1. In a self-locking head gate assembly for selective mounting across an animal chute comprising:
   - a chute gate provided for selective lockable closure across an animal chute, said chute gate defining a pair of spaced-apart vertical edge portions;
   - an animal shoulder engaging head gate pivotally mounted along one vertical edge thereof within said chute gate so as to selectively openable therefrom, said head gate having means for engaging an animal's shoulder so as to be animal actuated to a selectively closable position within the plane of said chute gate so as to restrain the neck of an animal between the free vertical edge of said head gate and the vertical edge portion of said chute gate spaced apart therefrom; and
   - locking latch assembly means provided on the upper portion of said chute gate, said locking latch assembly means actuatable by movement of said head gate thereagainst so as to selectively retain said head gate in a locked position within the chute gate.

4,366,777

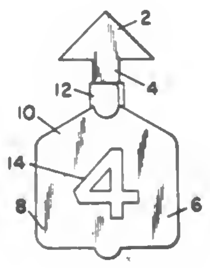
PEST CONTROLLING ANIMAL TAG

Ali A. Akhavein, Goldsboro, and Gavin B. Braithwaite, Fremont, both of N.C., assignors to ICI Americas Inc., Wilmington, Del.

Filed May 27, 1981, Ser. No. 267,631

Int. Cl.^{3} A01K *13/00*

U.S. Cl. 119—156 **30 Claims**



1. A reservoir of a pest controlling active ingredient adapted to surround a part of an animal identification tag, said reservoir comprising:
   - (a) a flexible tape portion having a pressure sensitive adhesive on one side thereof and attached to said tape portion,
   - (b) a depository of an absorbent pad into which a liquid insecticide has been absorbed, said depository being not completely coextensive with the tape portion.

4,366,778

GAS BOILER ABLE TO OPERATE IN A SEALED COMBUSTION CIRCUIT

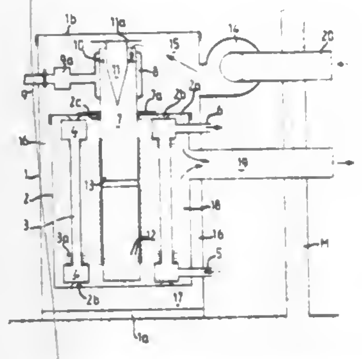
Elie Charrier, Boulogne, and Rene Fourno, Paris, both of France, assignors to Paquet Thermique, S.A., Beaumont S/Oise, France

Filed Mar. 26, 1981, Ser. No. 247,929

Claims priority, application France, Mar. 27, 1980, 80 06823; Oct. 31, 1980, 80 23325

Int. Cl.^{3} F22B *9/02, 21/00*

U.S. Cl. 122—17 **10 Claims**



1. A gas boiler comprising an inner casing having a removable cover, an exchanger disposed within said inner casing and comprising finned tubes disposed vertically and connected to upper and lower manifolds, said inner casing having a top part and a burner disposed vertically through said top part with a portion of said burner extending into the space defined by said finned tubes, said burner having a portion retained by a sealing collar above said top part of said inner casing, said burner comprising a tubular body open at its top and whose section situated interiorly of said inner casing opposite said finned tubes is provided with multiple holes and is closed at its lower end below said multiple holes; a vertically disposed exterior casing surrounding said inner casing and said top part of said burner, said exterior casing having at its upper part a removable cover, said exterior casing forming a sealed fore-hearth comprising a space provided between said inner casing and the interior of said exterior casing; a gas intake means passing through the upper part of said exterior casing and being connected to said top part of said burner, said gas intake means having safety and control apparatus mounted thereon; a combustion air intake means connected to said upper part of said casing, a collector for discharging burnt gases connected to said inner casing and passing through said exterior casing, and means in said combustion air intake means for injecting air under pressure into said space from where the air under pressure penetrates into said burner through the open top thereof, said burner comprising at its top part a mixer for the gas and the air penetrating into said burner, said mixer comprising an annular jacket surrounding the tubular body of said burner and to which is connected said gas intake, a ring of gas injection holes provided in said tubular body of the burner opposite said annular jacket and a core for regulating the air intake section of said burner, slidably mounted for this purpose in the top part of said burner and which is movable, thus allowing easy in situ cleaning of the inside of the burner.

4,366,779

WIND DRIVEN HEATING SYSTEM

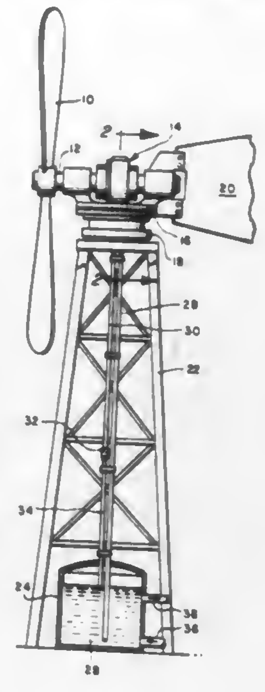
John E. Knecht, 360 N. Michigan Ave., Chicago, Ill. 60601

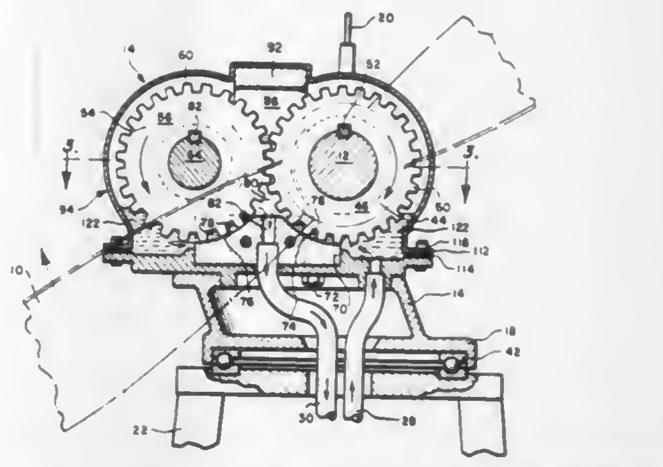
Filed Jan. 16, 1978, Ser. No. 869,424

Int. Cl.^{3} F22B *3/06;* **F04B** *17/02*

U.S. Cl. 122—26 **8 Claims**

1. An apparatus for efficiently converting wind energy into heat for a range of wind velocities, said apparatus comprising:
   - a wind turbine;
   - a positive displacement pump driven by the turbine to pressurize a fluid;
   - means for providing a substantially constant effective discharge area through which substantially all of the pressurized fluid is allowed to pass, said discharge area sized to convert a major portion of the wind energy available to the turbine into kinetic energy of moving fluid such that a major portion of available wind energy is efficiently converted into kinetic energy of moving fluid for a range of wind velocities; and
   - means for slowing the rate of flow of fluid after it has passed through the discharge area in order to efficiently convert kinetic energy of fluid flow into heat.





4,366,780

METHOD OF OPERATING VEHICLE DURING ITS IN-PLANT ASSEMBLY

Raymond A. Anderton, Maldon; Raymond R. Smith, Hawkwell, and Robert S. Tippler, Chelmsford, all of England, assignors to Ford Motor Company, Dearborn, Mich.

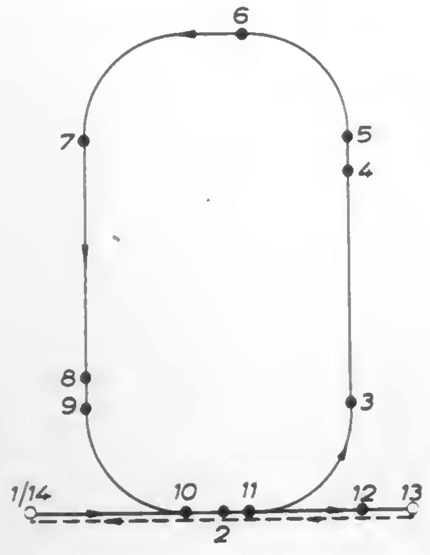
Filed Mar. 16, 1981, Ser. No. 243,977

Int. Cl.^{3} F02B *75/12*

U.S. Cl. 123—1 A **6 Claims**

1. A method of operating a newly assembled vehicle in a vehicle assembly plant or storage depot, the vehicle having a spark ignition internal combustion engine and comprising driving the vehicle under its own power with a fuel-rich mixture between a plurality of locations within the plant and switching off the engine when the vehicle is at rest in the locations so that the engine is operated at 50–70% of normal

operating temperatures, characterized in that the engine is driven from a fuel composition containing a gasoline fuel and a proportion of a mineral oil exceeding 0.2% by volume of the mixture and having a viscosity exceeding said gasoline.



4,366,781

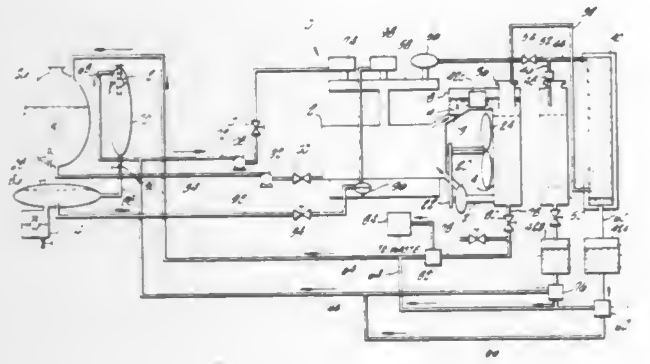
FUEL SYSTEM FOR VEHICLES

Herman Laub, 244 N. San Marino Ave., San Gabriel, Calif. 91775

Filed Jan. 30, 1981, Ser. No. 230,038

Int. Cl.³ F02M *31/14*

U.S. Cl. 123—3 **23 Claims**



1. A method for providing fuel to an engine comprising a carburetor and a cooling circuit having a circulating coolant therein, the method comprising the steps of:

(a) circulating a product of fermentation in the cooling circuit, the product of fermentation comprising a fuel and water;

(b) maintaining the cooling circuit at a sufficiently high temperature to distill fuel-rich vapor from the product of fermentation, the fuel-rich vapor having a higher fuel content then the fuel content of the coolant in the cooling circuit; and

(c) burning at least a portion of the fuel of the fuel-rich vapor in the engine.

17. In an engine comprising a carburetor and a cooling circuit having a circulating coolant therein, the improvement comprising;

(a) a storage tank for a product of fermentation comprising a fuel and water;

(b) means for introducing the product of fermentation into the cooling circuit;

(c) temperature control means for maintaining the cooling circuit at a sufficiently high temperature to distill fuel-rich vapor from the circulating coolant; and

(d) means for introducing at least a portion of the fuel of the fuel-rich vapor into the engine for combustion.

4,366,782

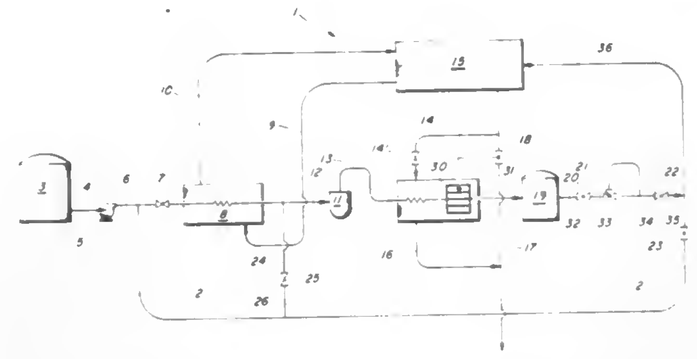
METHOD OF FUEL TREATMENT AND DISTRIBUTION

Robert G. Jackson, Weston, Conn., and Heeyoung Yoon, McMurray, Pa., assignors to Conoco Inc., Stamford, Conn.

Filed Jul. 27, 1981, Ser. No. 286,992

Int. Cl.³ F02M *27/02*

U.S. Cl. 123—3 **5 Claims**



1. A method of fuel treatment and distribution for feeding liquid alcohol mixed with dissociated alcohol into an internal combustion engine comprising the sequence of steps as follows:

(a) continuously vaporizing alcohol pumped from an alcohol storage means to continuously form alcohol vapor;

(b) continuously catalytically dissociating said alcohol vapor in a dissociator means of a capacity no more than sufficient for normal operation to continuously form a hydrogen-rich gaseous fuel mixture;

(c) continuously mixing air with said hydrogen-rich gaseous fuel mixture to form a gaseous combustion mixture;

(d) continuously burning said gaseous combustion mixture in an internal combustion engine;

(e) intermittently atomizing liquid alcohol in an atomization means to form atomized liquid alcohol during periods of peak operating capacity and during said continuously vaporizing, dissociating, mixing and burning, said liquid alcohol atomized being pumped directly from said alcohol storage means to said atomization means;

(f) mixing said atomized liquid alcohol and said gaseous combustion mixture to form an energy enriched combustion mixture;

whereby said continuous burning of said combustion mixture is intermittently energy enriched during periods of peak operating capacity and power demand.

4,366,783

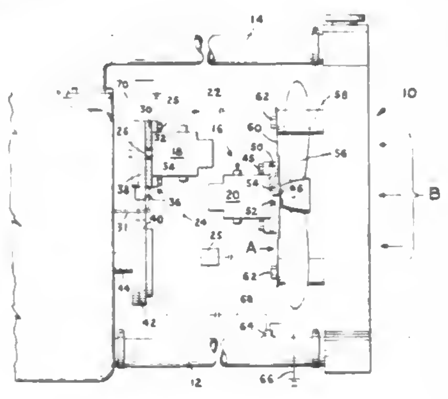
HYDRAULICALLY OPERATED FAN ASSEMBLY FOR A HEAT EXCHANGER ASSEMBLY

Roger Clemente, 1789 Vauxhill Rd., Union, N.J. 07083

Filed Nov. 13, 1981, Ser. No. 320,886

Int. Cl.³ F01P *7/10*

U.S. Cl. 123—41.12 **12 Claims**



1. A fan assembly for a heat exchange assembly associated with a vehicle having an internal combustion engine, wherein a heat transfer fluid is passed through said heat exchanger assembly, which comprises:

a support means positioned proximate said heat exchanger assembly;

a hydraulic motor including a drive shaft mounted to said support means;

a fan mounted on said drive shaft of said hydraulic motor;

a hydraulic pump including a shaft mounted proximate said internal combustion engine including a pulley assembly;

an electrically-operated magnetic clutch assembly disposed on said shaft of said hydraulic pump, and including a pulley;

fluid conduit means including a reservoir disposed between said hydraulic pump and said hydraulic motor;

belt means disposed between said pulley assembly of said internal combustion engine and said pulley of said hydraulic pump; and

a thermostatic switch mounted within said radiator assembly, said thermostatic switch responsive to preselect upper temperature level whereby said thermostatic switch assumes a closed mode to activate said electrically-operated magnetic clutch assembly thereby to cause said shaft of said hydraulic pump to rotate and effect fluid flow of hydraulic fluid from said hydraulic pump to said hydraulic motor thereby to rotate said fan.

4,366,784

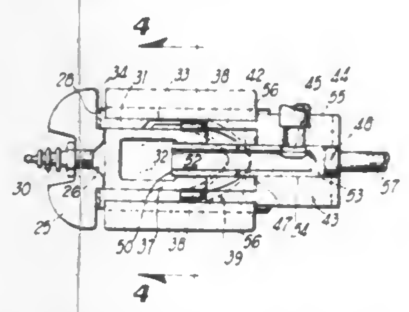
CRANKLESS CAM DRIVEN PISTON ENGINE

Brayton B. Paul, 1134 Wonder La., NE., Marietta, Ga. 30062

Filed Mar. 16, 1981, Ser. No. 244,245

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—45 A **8 Claims**



1. A crankless engine comprising a block and head unit having a bore opening through a surface of the block remote from said head, fixed liner means in said bore defining therein an approximately sinusoidal annular cam slot, a piston mounted within said liner and having follower means engaging said annualar cam slot for reciprocation and rotation responsive to the configuration of said cam slot, and engine output shaft projecting into the interior of the piston and being concentric to and rotationally keyed to the piston and being rotatably supported on the end of the block and head unit remote from said head, said liner means and said unit having exhaust passage means, said shaft having fuel induction passage means, and said liner having bypass induction means communicating with a combustion chamber of the engine when said piston is near the bottom of its stroke for uncovering said exhaust passage means and said piston and output shaft defining a chamber within the body of the piston whose volume is determined by the axial position of the piston, said block having a radial port remote from said head and said fuel induction passage means comprising an axial bore through said output shaft communicating with said chamber within the body of the piston and said axial bore further communicating with a radial passage aligning with said radial port in said block only when the piston is substantially in an axial position most proximate to said head wherein the volume of said chamber within the body of the piston is maximum during each cycle of the engine.

4,366,785

TAPPET WITH WEAR RESISTING INSERT

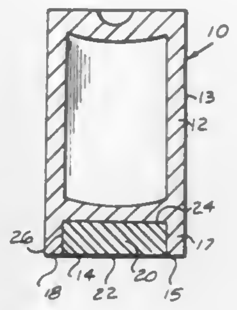
Alexander Goloff, East Peoria, and Paul J. Staebler, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01223, § 371 Date Sep. 19, 1980, § 102(e) Date Sep. 19, 1980, PCT Pub. No. WO82/01034, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 19, 1980, Ser. No. 251,521

Int. Cl.³ F01L *1/14*

U.S. Cl. 123—90.51 **1 Claim**



1. In an iron based alloy tappet (10) controlled by a cam (16) and being adapted for use in an internal combustion engine, comprising:

said tappet (10) having a rim (17) hardened by heat-treatment extending therefrom, said rim (17) defining a recess (19) of generally right cylindrical shape, and having a rim end surface (18);

a wear resisting ceramic insert (20) of cylindrical shape, having an outer wear resisting surface (22), said wear resisting insert (20) being retained by an interference fit within said recess (19) and being free from being overlapped by said rim (17), said rim (17) having a preselected hoop stress exceeding 3,000 pounds per square inch at 20° C.; and

said rim end surface (18) and said wear resisting outer surface (22) forming a wear face (14) for cam (16) contact and remaining substantially flush over the temperature range of from about 50° C. to 200° C.

4,366,786

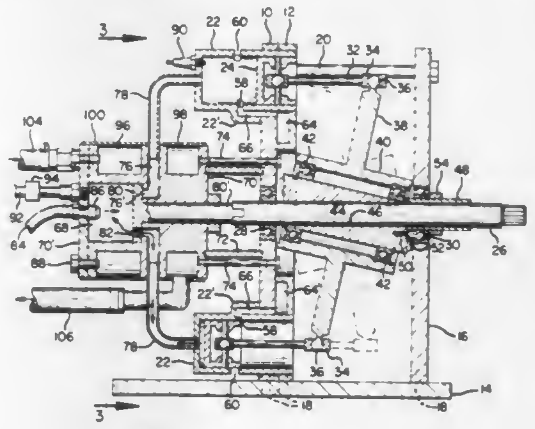
RECIPROCARINT PISTON INTERNAL COMBUSTION ENGINE

Lyle A. Dunstan, 5105 NW. 137th Ave., Portland, Oreg. 97229

Filed Jan. 5, 1981, Ser. No. 222,291

Int. Cl.³ F02M *17/00;* **F02B** *75/26*

U.S. Cl. 123—179 F **11 Claims**



1. In an internal combustion engine having at least one cylinder, a respective piston reciprocative in each cylinder in a compression stroke and a power stroke, and means communicating with each cylinder for introducing combustion air thereto prior to said power stroke and for exhausting combustion gases therefrom after said power stroke, the combination therewith of

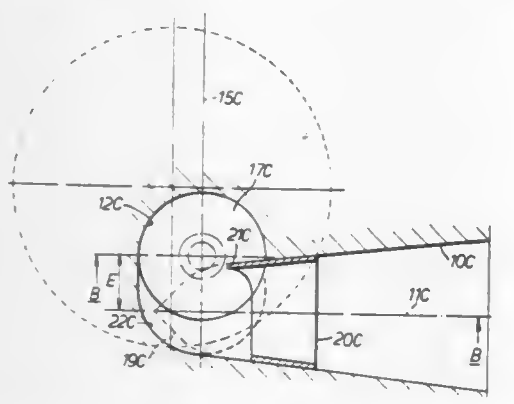
(a) a fuel chamber,
(b) a fuel passageway communicating each cylinder with the fuel chamber,
(c) a fuel supply conduit communicating at one end with the fuel chamber and arranged for communication at its opposite end with a source of combustible fuel under pressure greater than the combustion pressure within each cylinder,
(d) movable distribution valve means associated with the fuel passageways for opening and closing communication between the fuel chamber and each cylinder in a repetitive sequence,
(e) the distribution valve means being operable to communicate each cylinder with the fuel chamber during a period when said respective piston is nearing the end of the compression stroke and starting the power stroke for a time sufficient to allow flow of fluid retained in the fuel chamber to the cylinder, ignition to start substantially when the fluid meets the combustion air from the cylinder, and subsequently flow of a portion of resulting combustion gases from the cylinder to the fuel chamber which is retained within the fuel chamber to maintain a temperature above ignition and a pressure above that of the cylinder until communication with a succeeding cylinder cycle of operation so as to promote sustained combustion of the succeeding cylinder cycle of operation,

and

(f) a starter means associated with the cylinder and distribution valve means being operable prior to said sustained combustion to move the respective piston in a power stroke direction for initiating starting of said engine.

4,366,787
INLET PORTS IN I.C. ENGINES

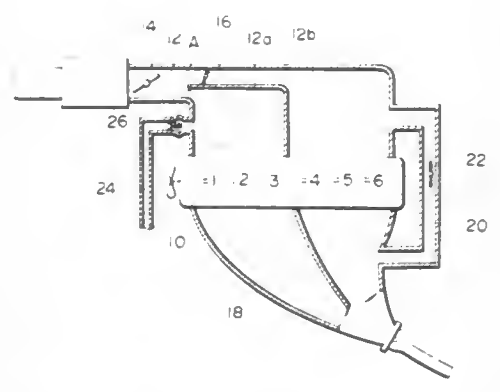
Nigel F. C. Gale, Upper Beeding, England, assignor to Ricardo Consulting Engineers Limited, West Sussex, England
Filed May 30, 1979, Ser. No. 43,894
Claims priority, application United Kingdom, May 31, 1978, 25113/78
Int. Cl.^{3} F01L *3/00*
U.S. Cl. 123—188 M **16 Claims**



1. A cylinder head for a reciprocating-piston internal combustion engine, of the type formed with a helical-swirl-inducing inlet port which comprises an inverted bowl whose upper side is closed by a roof and whose lower side is open and is defined by a circumferential rim, an annular valve seat extending around said rim and a valve guide for the stem of an associated poppet valve opening through said roof, said valve guide having a longitudinal axis, said cylinder head comprising: an open-ended inlet duct extending inwardly from the exterior of the cylinder head and having a means for inducing gas entering said bowl of said port to swirl circumferentially within said bowl and around said valve guide axis before passing out of said bowl across said annular valve seat into an associated engine cylinder comprising a straight downstream end portion of said inlet duct which intersects said bowl asymmetrically with respect to the longitudinal projection of said valve guide axis, substantially the whole of the longitudinal projection of the straight downstream end portion of said inlet duct passing to one side of the projected valve guide axis; and a generally tubular open-ended insert sleeve fitted into said straight downstream end portion of said inlet duct against the internal wall thereof, said sleeve having a longitudinal axis substantially coincident with the central axis of said end portion of said inlet duct and passing to one side of the projected valve guide axis, said sleeve being provided with a wall having an end portion lying near the longitudinal projection of said valve guide axis, said end portion projecting beyond the internal circumferential surface of the bowl and into the interior of said bowl to provide a swirl control vane located immediately adjacent to the open inner end of said inlet duct, said swirl control vane extending into said bowl from a level adjacent the roof thereof to a level further from said roof and nearer to said valve seat whereby said swirl control vane deflects circumferential gas flow around said valve guide axis in the upper part of said bowl from along the lateral bowl surface and in a generally radially inward direction toward said valve guide axis, to thereby enhance the entry of gas from the duct into the bowl by reducing interference between the entering gas and the swirling circumferentially-flowing gas already within said bowl.

4,366,788
INTERNAL COMBUSTION ENGINE

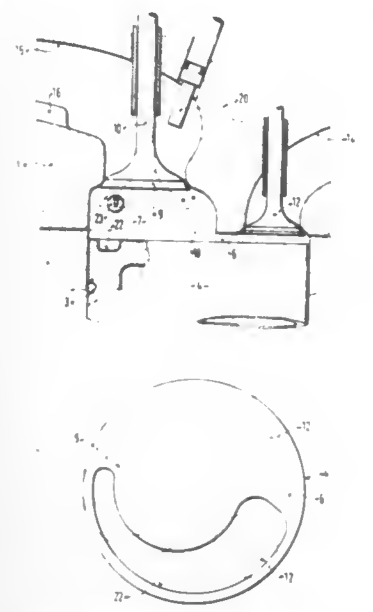
Toshiaki Tanaka, Fujisawa, and Kazuya Kunii, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Sep. 30, 1980, Ser. No. 192,370
Claims priority, application Japan, Oct. 30, 1979, 54-140274
Int. Cl.^{3} F02D *17/00*
U.S. Cl. 123—198 F **2 Claims**



1. An internal combustion engine comprising:
(a) a crankcase;
(b) an exhaust passage;
(c) first and second cylinder units each including at least one cylinder;
(d) an intake passage having therein a throttle valve, said intake passage being divided downstream of said throttle valve into first and second branches respectively communicating with said first and second cylinder units, said intake passage second branch having a stop valve near its entrance;
(e) an EGR passage connected from said exhaust passage to said intake passage second branch for recirculating engine exhaust gases into said intake passage second branch, said EGR passage having therein an EGR valve;
(f) means for disabling said second cylinder unit, closing said stop valve, and opening said EGR valve when the engine load is below a predetermined value; and
(g) a venting passage opening at its one end into said crankcase and at the other end only into said intake passage first branch for introducing blow-by gases only into said first cylinder unit.

4,366,789
PISTON-TYPE INTERNAL COMBUSTION ENGINE

Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Mar. 3, 1981, Ser. No. 239,948
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008124
Int. Cl.^{3} F02B *19/16*
U.S. Cl. 123—263 **7 Claims**

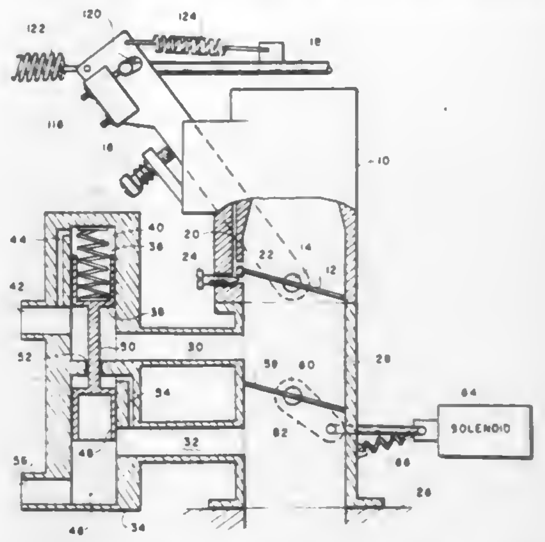


1. A piston-type internal combustion engine comprising at least one cylinder head, an inlet valve plate and at least one outlet valve in said cylinder head, a disc shaped partial combustion chamber disposed in said cylinder head, at least one piston having an annular body and further including a substantially flat bottom surface and when positioned at top dead center forms one surface which substantially encloses said disc-shaped partial combustion chamber disposed in said cylinder head, this partial combustion chamber having the predominant volumetric component of the final compression volume, said combustion chamber being closable by said inlet valve plate, an intake conduit arranged for communication with said combustion chamber when said intake valve plate is opened, a fuel injection nozzle directed toward said inlet valve plate and disposed so that fuel is injected virtually freely into said combustion chamber when said intake valve plate is opened and the injection duration of said fuel is interrupted immediately prior to closure of said inlet valve, characterized in that a gas guidance conduit is provided between said surface of said piston and said cylinder head, said guidance conduit further having a cross-section which gradually varies from a zone which is substantially flat beginning in the region of said outlet valve and extends approximately in the form of a semicircle in a direction parallel to said surface of said piston to thereby create the formation of a compact gas stream for entry into said partial combustion chamber.

4,366,790
CARBURETOR BY-PASS AND FUEL CONTROL SYSTEM

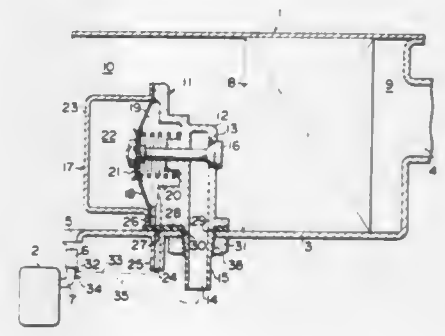
William L. DeBoynton, 520 E. Norman Ave., Arcadia, Calif. 91006
Filed Jul. 22, 1980, Ser. No. 171,246
Int. Cl.^{3} F02D *31/00*
U.S. Cl. 123—325 **13 Claims**

1. A control system for a motor vehicle internal combustion engine fuel dispensing system having a throttle valve and fuel shutoff means including a second valve for shutting off fuel flow between the throttle valve and the engine, said control system including:
first signal means coupled to the throttle valve of said fuel dispensing system for outputting a first signal upon closure of said throttle valve;
second signal means coupled to a rotatable member of the motor vehicle for generating a second signal proportional to the velocity of said vehicle;
velocity threshold adjusting means coupled to the D.C. power source of said vehicle for producing a third signal at a predetermined D.C. level;
circuitry receiving each of said first, second and third signals for generating in response thereto an output signal when said second signal exceeds the threshold of said third signal during existence of said first signal; and
actuating means coupled to the second valve in the fuel dispensing system and responsive to the output signal of said circuitry for closing said valve upon occurrence of said output signal.



4,366,791
COMBINATION OF AN AIR CLEANER AND A DECELERATION COMPENSATING AIR CONTROL VALVE

Takashi Miyake, and Takaaki Nomura, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Jul. 8, 1980, Ser. No. 166,910
Claims priority, application Japan, Jul. 9, 1979, 54-94784[U]; Jul. 9, 1979, 54-94787[U]
Int. Cl.^{3} F02M *23/00*
U.S. Cl. 123—327 **5 Claims**



1. A combination of an air cleaner for cleaning intake air to be inhaled by an internal combustion engine having an intake manifold, said air cleaner comprising a pan-like casing having an an air inlet port which opens at an outer peripheral portion thereof and an air outlet port which opens at a central portion thereof, and an annular filtering element mounted in said casing so as to define an outside inlet air space connected with said air inlet port and an inside clean air space connected with said air outlet port, and a deceleration compensating air control valve for controlling supply of deceleration compensating air to the intake manifold of the engine during engine deceleration, said deceleration compensating air control valve comprising a deceleration compensating air inlet port, a deceleration compensating air outlet port, a deceleration compensating air

control valve element which control connection between said deceleration compensating air inlet port and said deceleration compensating air outlet port, and a diaphragm means which has a vacuum inlet port and operates said valve element in accordance with manifold vacuum supplied to said vacuum inlet port, and a hot compensating air control valve for controlling supply of hot compensating air to the intake manifold of the engine in accordance with temperature rise of engine intake air, said hot compensating air control valve comprising a hot compensating air inlet port, a hot compensating air outlet port, a hot compensating air control valve element which controls connection between said hot compensating air inlet port and said hot compensating air outlet port, and a thermosensitive acutator which operates said hot compensating air control valve element in accordance with temperature of engine intake air, wherein said deceleration compensating air control valve and said hot compensating air control valve are respectively mounted as a whole in said clean air space in said air cleaner casing, with said deceleration compensating air inlet port thereof and said hot compensating air inlet port thereof being directly open to said clean air space, and said air cleaner casing has an air conduction hole which opens through its wall in the area of said clean air space and is connected with said deceleration compensating air outlet port of said deceleration compensating air control valve, while said hot compensating air outlet port of said hot compensating air control valve is connected with said deceleration compensating air outlet port of said deceleration compensating air control valve within said clean air space via a donduit.

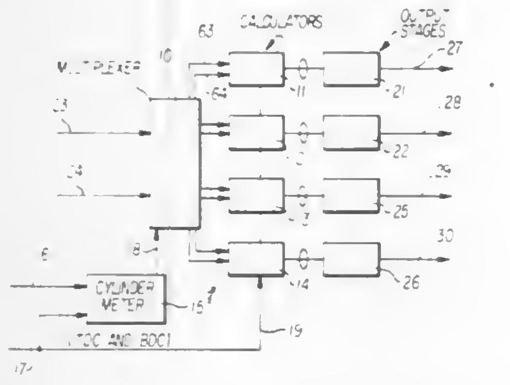
4,366,792
ANGLE OF ADVANCE CORRECTION SIGNAL GENERATOR

Robert Deleris, Bailly, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Oct. 30, 1980, Ser. No. 202,075

Int. Cl.^{3} F02D *11/10*

U.S. Cl. 123—425 13 Claims



1. An angle of advance correction signal generator responsive to the presence of ping signals produced in a controlled ignition internal combustion heat engine of the type in which a pre-ping threshold and a ping threshold is determined and a pre-ping signal and a ping signal produced in the event that a pre-ping or a pinging condition is detected exceeding respective of said thresholds, wherein said pre-ping signal and said ping signal are produced for each cylinder of the engine taken successively in a predetermined order, comprising

multiplexor means having said pre-ping and ping signals as inputs and a number of pairs of outputs corresponding to the number of engine cylinders for selecting the pre-ping and ping signals generated in respective cylinders for application to respective of said pairs of outputs;

a cylinder meter for controlling the signal selection of said multiplexor means, said cylinder meter having a first resetting input for receiving a correction signal to reset said cylinder meter, a second input for receiving a T.D.C. and B.D.C. impulse signal, and a control output applied to said multiplexor means for controlling the signal selection in accordance with the first and second inputs to said cylinder means; and,

plural decrementing angle value calculators, one for each cylinder, each receiving respective outputs from said multiplexor means and said T.D.C. and B.D.C. impulse signal, for calculating and controlling the advance angle of each cylinder based on the occurrance of said pre-ping and ping signals, said calculators each then being preset with a predetermined angle value and subsequently decremented at predetermined rates by said T.D.C. and B.D.C. impulse signal.

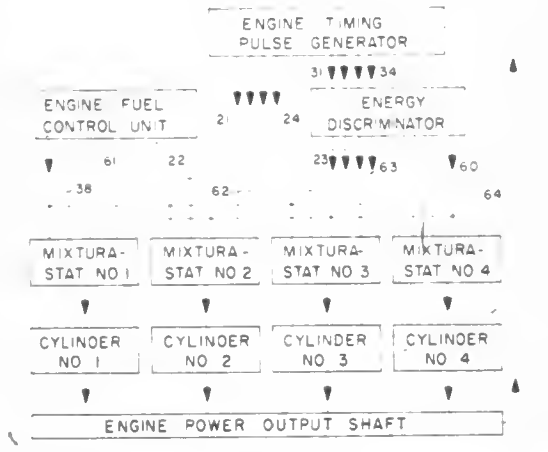
4,366,793
INTERNAL COMBUSTION ENGINE

Donald K. Coles, 2505 Capitol Ave., Fort Wayne, Ind. 46806

Filed Oct. 24, 1980, Ser. No. 200,369

Int. Cl.^{3} F02D *5/00*

U.S. Cl. 123—436 3 Claims



1. An improved internal combustion engine having a plurality of cylinders coupled to a common power output shaft, the engine having means for metering a series of air rations and for metering a corresponding series of fuel rations, means for distributing the series of air rations with their corresponding fuel rations among the cylinders, each cylinder having means for firing each of its fuel rations with its corresponding air ration so as to produce a quantum of energy, the resulting series of energy quanta from all of the cylinders being delivered to the common power output shaft, the improvement comprising:

an individual mixturastat connected to each one of the cylinders, the mixturastat including means for automatically adjusting downward the size of the fuel rations distributed to its associated cylinder while the size of the corresponding air rations is held constant, the average rate of fractional reduction of size, when averaged over a thousand consecutive ones of its fuel rations and constant air rations, not exceeding one half per thousand consecutive ones of its fuel rations;

a mechanical energy discriminator for detecting an abnormal deficiency in the size of one of the series of energy quanta, compared to both the immediately preceding and the immediately succeeding members of the series of energy quanta, the discriminator including means for associating the abnormally deficient quantum of energy with the particular cylinder which produced it and for sending a misfire signal to that mixturastat which is connected to the particular cylinder;

means within each mixturastat for automatically adjusting upward the size of fuel rations distributed to its associated cylinder when the energy discriminator sends it a misfire signal, the single fractional increase in size of the fuel ration not exceeding one fifth when the size of the air ration is unchanged.

4,366,794
FUEL INJECTION CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

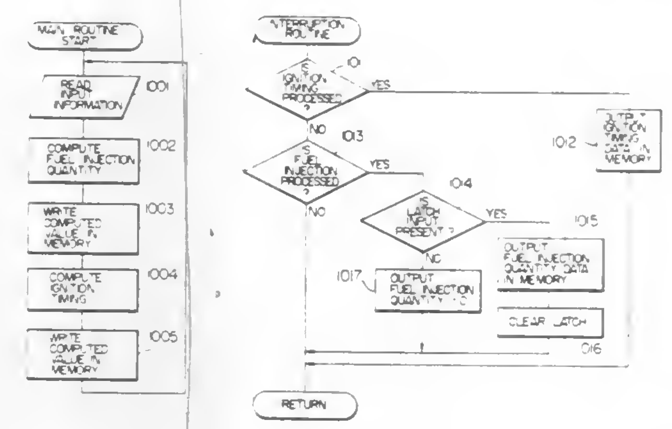
Takasi Hachiga, Kariya; Kazuyoshi Tamaki, Nagoya; Jiro Nakano, Okazaki, and Hironobu Ono, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 6, 1981, Ser. No. 251,704

Claims priority, application Japan, Apr. 8, 1980, 55-46596

Int. Cl.^{3} F02D *17/00*

U.S. Cl. 123—479 4 Claims


MAIN ROUTINE START
READ INPUT INFORMATION
1001
COMPUTE FUEL INJECTION QUANTITY
1002
WRITE COMPUTED VALUE IN MEMORY
1003
COMPUTE IGNITION TIMING
1004
WRITE COMPUTED VALUE IN MEMORY
1005
INTERRUPTION ROUTINE
IS IGNITION TIMING PROCESSED ?
1011
YES
NO
1013
IS FUEL INJECTION PROCESSED ?
YES
NO
1014
IS LATCH INPUT PRESENT ?
YES
NO
1015
OUTPUT FUEL INJECTION QUANTITY DATA IN MEMORY
CLEAR LATCH
1016
1017
OUTPUT FUEL INJECTION QUANTITY = 0
1012
OUTPUT IGNITION TIMING DATA IN MEMORY
RETURN

1. In a method of controlling fuel injection of an internal combustion engine in which a fuel injection quantity of a fuel injection system and ignition timing of an ignition system of said engine are computed, stored and controlled by a microcomputer including memory means by utilizing, as input signals thereto, signals indicative of operating conditions of said engine, the improvement comprising the steps of:

generating a discrimination signal indicative of the presence or absence of misfiring in accordance with an electric signal from said ignition system;

storing temporarily said discrimination signal in a temporary memory circuit;

reading said discrimination signal stored in said temporary memory circuit prior to the operation of said fuel injection system;

causing said microcomputer to output computed fuel injection quantity data stored in said memory means and then to clear said discrimination signal stored in said temporary memory circuit when said discrimination signal indicates that ignition has occurred, and causing said microcomputer to ignore said computed fuel injection quantity data stored in said memory means and to output zero fuel injection quantity data when said discrimination signal indicates that no ingition has occurred; and

injecting a computed quantity of fuel from said fuel injection system in response to said computed fuel injection quantity data output from said microcomputer and stopping fuel injection from said fuel injection system in response to said zero fuel injection quantity data output from said microcomputer.

4,366,795
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINE

Helmut Laufer, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,516

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931937

Int. Cl.^{3} F02M *59/20*

U.S. Cl. 123—502 4 Claims

1. A fuel injection system for internal combustion engines having:

a fuel injection pump;

a supply pump which is driven synchronously to the engine speed and supplies fluid in the system;

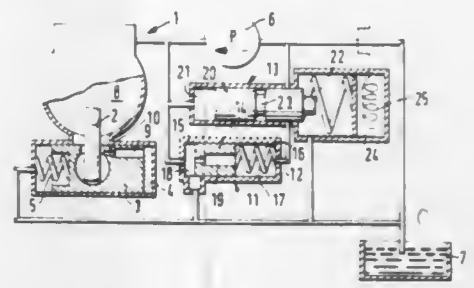
a pressure relief means;

an adjustable piston connected to the pressure side of the supply pump to be biased in a first direction;

a restoring means which generates a restoring force and is connected to the adjustable piston such that the restoring force biases the adjustable piston in a second direction, wherein the adjustable piston is connected to the fuel injection pump to regulate fuel injection onset;

a pressure control valve connected to the pressure side of the supply pump to control pressure of the fluid according to engine rpm;

a control piston having a pressure chamber connected to the supply pump to bias the control piston in a first direction; a restoring chamber which provides a restoring force that biases the control piston in a second direction, a throttle connection in the control piston which connects the pressure chamber and the restoring chamber, a discharge means connected to the restoring chamber to control fluid discharge from the restoring chamber to said pressure relief means wherein the control piston is arranged to define a spill cross section between the pressure chamber and said pressure relief means and is arranged to control the spill cross-section;



said pressure relief means including a valve member interposed in said discharge means said valve member being exposed the pressure of the fluid controlled by the pressure control valve;

a control spring biasing said valve member against said controlled pressure;

a means to detect at least one engine characteristic connected to vary initial stress of the control spring according to the at least one engine characteristic such that said valve member functions according to the at least one engine characteristic.

4,366,796
DISTRIBUTION TYPE FUEL INJECTION PUMP

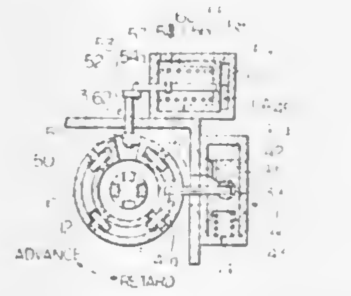
Nobuhiro Kaibara, Higashi-Matsuyama, and Masayoshi Kobayashi, Kawagoe, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Division of Ser. No. 920,627, Jun. 29, 1978, Pat. No. 4,271,806. This application Dec. 31, 1980, Ser. No. 221,909

Claims priority, application Japan, Jun. 30, 1977, 52-77177; Jun. 30, 1977, 52-77178

Int. Cl.^{3} F02M *59/20*

U.S. Cl. 123—502 12 Claims



1. A fuel injection pump for use in a fuel injection combustion engine, comprising:

a housing having a fuel chamber therein;

a plunger movably mounted on said housing and forming a plunger chamber over a head of said plunger;

first cam means fixedly mounted on said plunger;

second cam means turnably mounted on said housing and cooperating with said first cam means so as to cause reciprocal motion of said plunger along the axis thereof during plunger rotation with respect to said second cam means, said second cam means being capable of being positioned in one of a plurality of angular positions thereof;

fuel supply means for introducing fuel into said plunger at the suction stroke of said plunger;

a delivery port for feeding fuel to the engine from said plunger chamber at the delivery stroke of said plunger;

a leak port formed in said plunger and connected to said plunger chamber;

a control sleeve slidably mounted on said plunger for normally closing said leak port and for connecting said leak port to said fuel chamber at the end of the delivery stroke to terminate the fuel injection;

a governor device actuating said control sleeve for controlling the quantity of fuel to be injected;

injection timing control means for controlling the angular position of said second cam means in response to the engine speed; and

injection timing adjusting means for providing an adjusted movement of said second cam means toward a predetermined angular position to advance the injection timing at the engine start;

said injection timing adjusting means comprising a second cylinder mounted on said housing, a second piston slidably positioned in said cylinder, a second pressure chamber formed by said housing and a head portion of said piston, a second spring urging said piston towards said second pressure chamber, an eccentric cam engageable with a side face of a recess formed on said second cam means whereby the engagement of a peak portion of said eccentric cam and the side face of said recess imparts a motion to said cam means to turn towards a predetermined angular position where the injection timing is advanced, and a link mechanism connecting said second piston to said eccentric cam for transferring the movement of said second piston to turn said eccentric cam , said second piston being moved in accordance with the difference between the elasticity of said second piston and the hydraulic pressure in said pressure chamber.

4,366,797

VAPOROUS GASOLINE ASPIRATION SYSTEM AND FUMING TANK

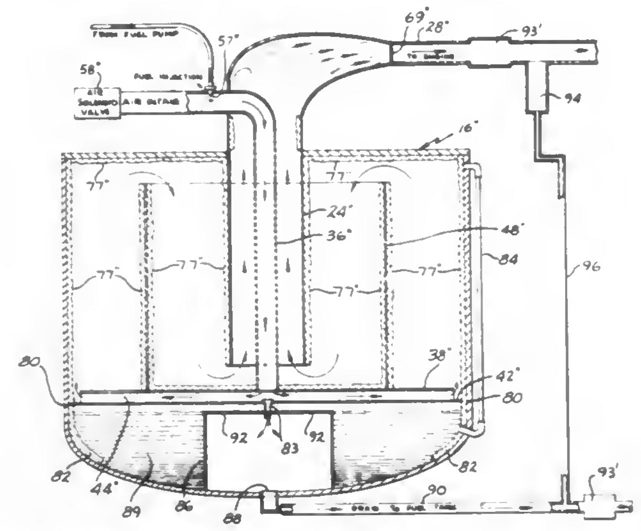
Kenneth A. Jackson, Wooster, and George I. Arndt, Loudonville, both of Ohio, assignors to V.G.A.S., Inc., Loudonville, Ohio

Filed May 19, 1980, Ser. No. 151,170

Int. Cl.³ F02M *17/18*

U.S. Cl. 123—523 **34 Claims**

1. A fuel system for use with an internal combustion engine having associated fuel delivery means and fuel ignitable means for power conversion comprising, a containable source for liquid ignitable fuel, a collector means communicating with said source for collecting fuel fumes or vapor adapted to emanate from said source, means communicatable with atmosphere and extending into the container source being operable to transmit air into said source above the pool of liquid fuel therein for generating a fumed fuel-air mixture therefrom, means for transmitting the fumed fuel-air mixture from said collector means to the associated fuel delivery means of the engine for ignition therein, means coacting with the fourth mentioned means and responsive to actuation of the engine, for insertion of liquid ingitable fuel into said fourth mentioned means for intermixing with intake air therein, and means coacting with the fourth mentioned means for diffusing fuel-air mixture from said fourth mentioned means above the pool of liquid fuel in said source upon its entry into said containable source.



4,366,798

FUEL MIXTURE HEATING DEVICE OF AN INTERNAL COMBUSTION ENGINE

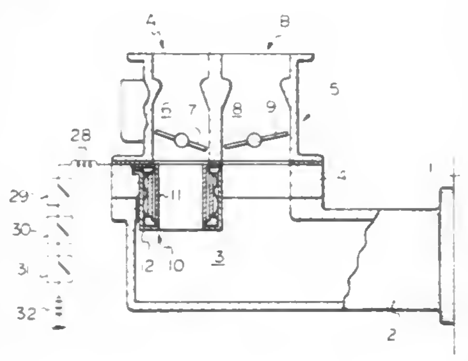
Shuji Goto; Kazuyoshi Tasaka, and Masaru Tanaka, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 23, 1980, Ser. No. 200,097

Claims priority, application Japan, Oct. 30, 1979, 54/149473[U]

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **5 Claims**



1. A fuel mixture heating device of an internal combustion engine having an intake manifold and an intake passage which has an outlet connected to a collecting portion of the intake manifold, the intake passage having a fuel feed apparatus for feeding fuel into the intake passage, said device comprising:

a power source;

a generally hollow cylindrical heater vessel arranged at the outlet of the intake passage and having an outlet portion which projects into the collecting portion of the intake manifold, said heater vessel comprising a hollow inner pipe having an outer wall, a hollow cylindrical outer pipe arranged around said inner pipe and heating means connected to said power source and being in contact with the outer wall of said inner pipe, said inner pipe arranged to be aligned with the intake passage and having a thin wall which has a corrugated cross-section, said corrugated wall of said inner pipe comprising a plurality of continuous corrugated portions, each said corrugated portion having substantially the same inwardly convex arc shaped cross-section and an arc shaped concave outer wall, said heating means comprising a plurality of PTC elements, each said PTC element having an arc shaped cross-section and being arranged to be in contact with corresponding arc shaped concave outer wall, at least one PTC element being provided for each said corrugated portion.

4,366,799

EXHAUST GAS RECIRCULATOR

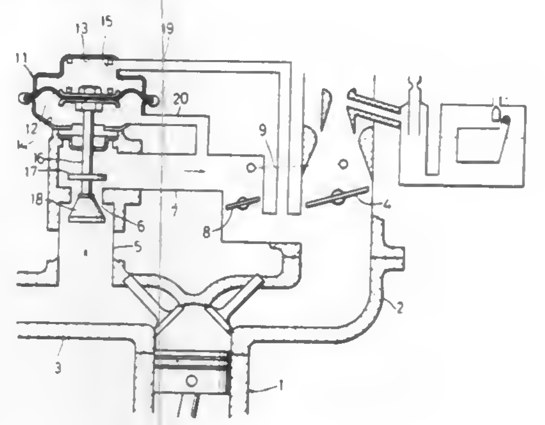
Koichi Suda, Aichi, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Japan

Filed Feb. 24, 1981, Ser. No. 238,000

Claims priority, application Japan, Oct. 31, 1980, 55-154122

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **3 Claims**



1. An exhaust gas recirculator for an internal combustion engine having an exhaust pipe, an intake manifold and a carburetor throttle valve, said exhaust gas recirculator comprising an EGR passage making said exhaust pipe communicate with said intake manifold, an EGR controlling valve and an EGR valve respectively arranged in the upper and lower stream portions of said EGR passage, said EGR valve operating in association with said carburetor throttle valve for metering the flow of EGR gas, said EGR gas chamber communicating with said EGR passage between said EGR controlling valve and said EGR valve and a negative pressure chamber communicating with said intake manifold, said negative pressure chamber containing a compression spring, said diaphragm being connected with a rod member, said rod member being provided on the free end thereof with a reversely tapered cone valve member inserted into the throttle portion in the upper stream of said EGR passage and provided with a lid type stopper downstream of said throttle portion, said EGR controlling valve functioning to control said pressure difference around said EGR valve to be constant.

4,366,800

DWELL ANGLE CONTROL FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Karl Seeger, Markgröningen; Werner Jundt, Ludwigsburg; Manfred Mezger, Markgröningen, and Uwe Kiencke, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,590

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009821

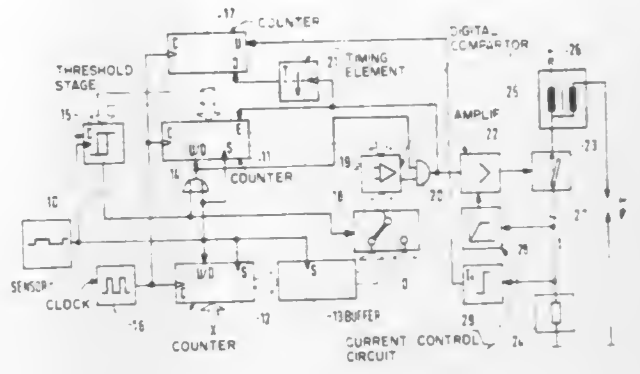
Int. Cl.³ F02P *5/04*

U.S. Cl. 123—609 **6 Claims**

1. Ignition system for an internal combustion engine with an ignition coil, in whose primary circuit an electronic switch (23) and in whose secondary circuit at least one spark gap (27) is connected, with a dwell angle control device for controlling the electronic switch in dependence on the signals from a rotating sensor device (10) having

a first UP/DOWN counter (17) in which the counting process in one direction is controlled by the interval of current flow in the primary circuit of the ignition coil starting with the passing of a current threshold value (I1) and in which the counting process in the other direction is constant with respect to time;

a second UP/DOWN counter (11) to which the counting values of the first counter (17) are transferred under control of the sensed signal, and whose counting direction is also determined by the sensed signals, the electronic switch (23) in the primary circuit of the ignition coil being closed upon reaching of an adjustable triggering threshold value by the count in the second counter (11), the switch being re-opened in response to an edge of the sensed signal, and comprising



a third UP/DOWN counter (12),

the adjustable trigger threshold value being determined by the final count of the UP/DOWN counter (12), the third UP/DOWN counter being set to a fixed value (X) by one edge of the sensed signals;

and wherein the counting direction of the third UP/DOWN counter (12) is also determined by the sensed signals.

4,366,801

PLASMA IGNITION SYSTEM

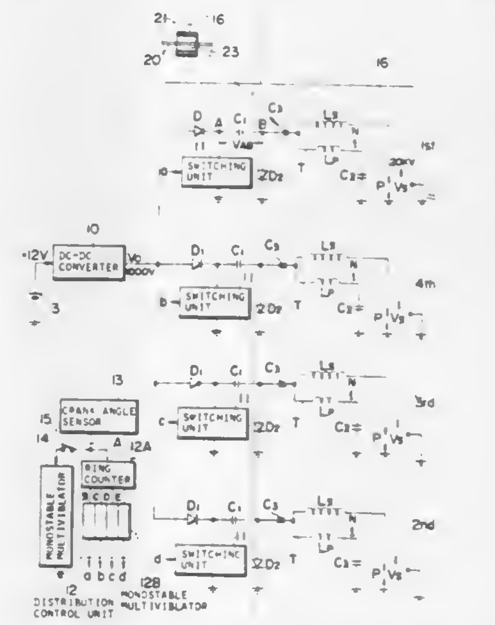
Hiroshi Endo; Yasuki Ishikawa, and Iwao Imai, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 17, 1981, Ser. No. 303,025

Claims priority, application Japan, Sep. 18, 1980, 55-128595

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—620 **18 Claims**



14. A method of plasma-igniting the fuel in the cylinders of an internal combustion engine, which comprises the steps of:

(a) boosting a supply voltage to a high tension;

(b) storing the boosted high-tension ignition energy in a plurality of condensers;

(c) discharging part of the ignition energy stored in each condenser through an oscillation circuit including the primary coil of a boosting transformer and an auxiliary condenser so as to generate a spark due to a still higher voltage across the secondary coil thereof at the appropriate ignition timing, so

that the space between the electrodes of the spark plug becomes conductive with a certain discharge resistance; and
(d) discharging the remaining energy stored in the condenser, through the secondary coil of the boosting transformer, to the space between the electrodes of the spark plug so as to produce a plasma therebetween for igniting the mixture within the cylinder.

4,366,802

SAWDUST AND WOOD CHIP BURNER

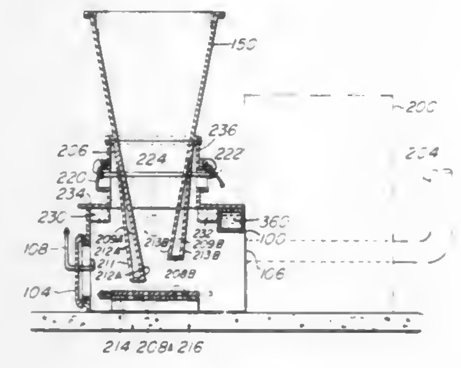
Herbert M. Goodine, R.R. No. 2, Arthurette, New Brunswick, Canada

Filed Nov. 2, 1981, Ser. No. 317,180

Claims priority, application Canada, Feb. 17, 1981, 371058

Int. Cl.^{3} F24H *3/02;* F24B *7/00*

U.S. Cl. 126—110 R 9 Claims



1. A burner for use with sawdust, wood chips or other particulate fuel, comprising:
- (i) a front wall, including a door which is substantially airtight when closed,
- (ii) a rear wall having an aperture therein from which combustion gases may exit from the burner,
- (iii) a first side outer wall including a cold air entry aperture,
- (iv) a first side inside wall spaced inwardly from said first side outer wall, to form a first space,
- (v) a second side outer wall including a hot air exit aperture,
- (vi) a second side inner wall spaced inwardly from said second side outer wall to form a second space,
- (vii) a top member joined to said front, rear and outer walls,
- (viii) a hopper support extending upwardly from said top member, said hopper support including at least one combustion air intake with air flow adjustment means thereon, and,
- (ix) front and rear hopper members fastened to the said hopper support members and extending downwardly therefrom, said front and rear hopper members converging towards each other at the lower ends thereof to provide a space therebetween from which fuel may fall into a combustion region, both said front and rear hopper members being hollow and each extend between and is fastened to said fist side inner wall and said second side inner wall each of which includes apertures corresponding to the space defined by the respective hollow front and rear hopper members, whereby air flow between said first and second spaces is safely through said hollow hopper members.

4,366,803

COUNTERROTATING CIRCULATING HYDRAULIC FURNACE

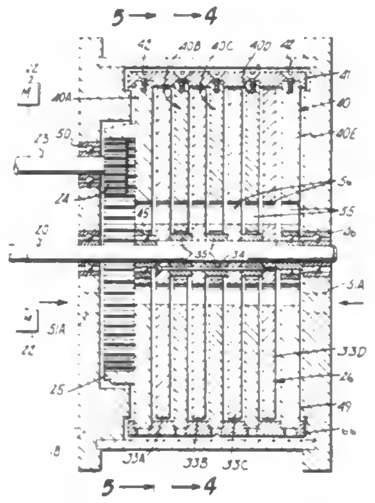
Warren L. Hodge, 525 NE. 6th St., Staples, Minn. 56479

Filed Nov. 19, 1980, Ser. No. 208,157

Int. Cl.^{3} F24C *9/00*

U.S. Cl. 126—247 16 Claims

1. A hydraulic furnace comprising:
an outer housing having an inner chamber with a central axis about which the chamber inner surface is generated, and end walls generally normal to the central axis;
a rotary hydraulic fluid heat developing assembly rotatably mounted within the outer housing, said heat developing assembly comprising;
first disc means extending in direction outwardly from the central axis;
second disc means adjacent to the first disc means and interdigitated with the first disc means;
an inner stabilizer shell within the housing surrounding both said first and second disc means, and being fixed to one of the disc means;
means to rotatably mount the first and second disc means relative to each other;



inlet port means provided through said housing to provide hydraulic fluid to the interior of the stabilizer shell and to the disc means adjacent the axis of rotation of said disc means;
each of said disc means including at least one disc having at least one groove defined in the face of the disc adjacent to another disc of the other disc means, said grooves extending from adjacent the port means to the outer edges of the discs and being oriented to force oil from the port means to the outer edges of the disc means when at least one of the first and second disc means is rotated; and
outlet means defined in the stabilizer shell and the outer housing to permit fluid to flow out of the outlet means.

4,366,804

WARMING DEVICE FOR GENERATING HEAT BY CONTROLLED EXOTHERMIC OXIDATION OF IRON POWDER

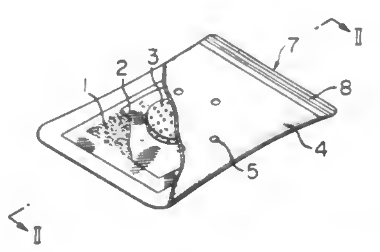
Katsutsugu Abe, 8-3, Wakabayashi 4-chome, Setagaya-ku, Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,695

Claims priority, application Japan, Apr. 19, 1979, 54-47226

Int. Cl.^{3} F24J *1/00;* A61F *7/00;* F24J *3/00*

U.S. Cl. 126—263 5 Claims



1. A heating device for generating heat by an oxidizing reaction caused by contacting iron powder, metal salts of acids, with water and air, to gradually oxidize the iron powder, said device comprising:
an inner pouch having an air and water permeable wall;
a quantity of initially dry iron powder and metal salts of acids within said inner pouch;

means closing said pouch to prevent the escape of the iron filings and metal salts of acids from the pouch;
an outer covering of waterproof material for containing the inner pouch;
means for opening and closing an opening in said outer covering to permit insertion into, and removal of said inner pouch from the outer covering;
an initially dry water absorbing element within said outer covering and engaging said wall of the inner pouch said water absorbing element being selected from the group consisting of, a sponge, synthetic resin-foamed material, or cellulose;
said outer covering having a plurality of thermoregulating holes formed therein on only one side thereof and said water absorbing element facing toward another side of the outer covering which is free of holes;
said air and water permeable wall of said inner pouch cooperating with said water absorbing element and the holes in the outer covering to provide means for moistening the iron filings and salts and for allowing the circulation of air, to provide a controlled exothermic reaction, after supplying the water absorbing element with a predetermined quantity of water;
said water absorbing element moistening said iron powder and salts through the water permeable wall, without excessively wetting said iron powder and salt, so that vapor generated by heat in the pouch can permeate the wall of the pouch together with air to control the generated heat; and wherein
said water absorbing member comprises means for allowing the user, when heat is to be generated, to add to the device a predetermined quantity of water less than that required for complete oxidation of the iron powder, by wetting the moisture absorbing element, so that the device can be reused by later adding more water to the water absorbing element.

4,366,805

SECTOR CONTROL WOOD-TYPE FUEL BURNING FURNACE

Richard C. Hill, Orono, Me., assignor to Board of Trustees of the University of Maine, Bangor, Me.

Filed Apr. 24, 1981, Ser. No. 257,327

Int. Cl.^{3} F23L *3/00*

U.S. Cl. 126—285 R 25 Claims

1. A furnace for controlled combustion of wood-type fuels comprising:
a primary combustion chamber comprising a refractory base portion for high temperature combustion of wood type fuels and an upper portion with water jacket means in heat exchange relation therewith for transferring heat to a heat transfer medium and quenching combustion in the upper portion of said primary combustion chamber;
a plurality of refractory secondary combustion channel pathways leading away from the refractory base portion of the primary combustion chamber for high temperature secondary combustion of flue gases derived from different sectors of fuel contained in the primary chamber;
a plurality of flue draft pathway heat exchange means leading from said secondary combustion channel pathways for transfer of heat from the end products of combustion to the heat transfer medium;
and draft control means for separately controlling the draft through each secondary combustion channel pathway and flue draft pathway heat exchange means for sector control of combustion of fuel in the primary combustion chamber thereby affording a high turn down ratio and permitting

sequential burning of controlled sectors of fuel contained in said primary combustion chamber.

4,366,806

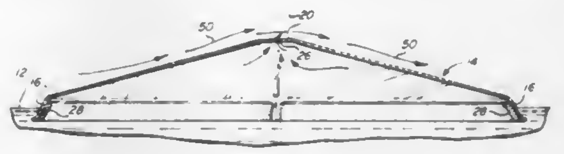
SOLAR POOL HEATER

Loren C. Acker, Tucson, Ariz., assignor to Engineering & Research Assocs., Inc., Tucson, Ariz.

Filed Aug. 18, 1980, Ser. No. 179,014

Int. Cl.^{3} F24J *3/02;* E04H *3/19*

U.S. Cl. 126—415 36 Claims



1. A solar pool heater for heating the water in a pool, said solar pool heater comprising in combination:
- (a) a semi-rigid membrane for defining an air cavity adjacent a circumscribed surface of the water, said membrane including an apex, a surface thereabout sloping downwardly therefrom and a depending perimeter wall;
- (b) means for allowing diametrically oriented flexing of said membrane along predetermined locations in response to non-uniform distribution of upward or downward forces applied to said perimeter wall;
- (c) flotation means disposed upon said perimeter wall for maintaining a portion of said perimeter wall above the surface of the water;

(d) means for maintaining and urging said apex to a location above said perimeter wall, said maintaining and urging means comprising a plurality of troughs, each of which extends from proximate said perimeter wall to a point proximate said apex; and

(e) means for venting a flow of air into and out of the air cavity.

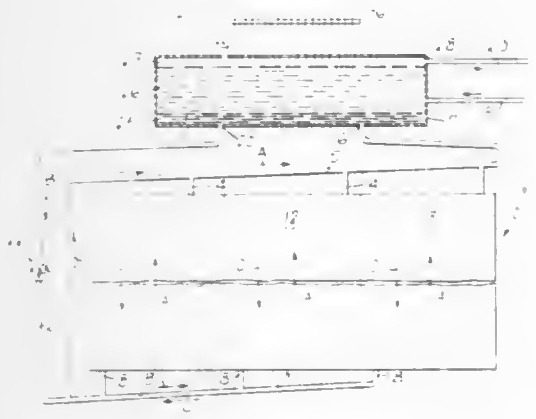
4,366,807
NATURAL CIRCULATION SOLAR HEAT COLLECTION AND STORAGE SYSTEM

Everett M. Barber, Jr., Guilford, Conn., assignor to Sunworks, Inc., Guilford, Conn.

Continuation of Ser. No. 10,040, Feb. 7, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,400

Int. Cl.^{3} F24J *3/02*; F28D *13/00*

U.S. Cl. 126—434 **13 Claims**



1. A solar heating system comprising at least one collector of the liquid heat-exchange type, said collector disposed at an angle to the horizontal to accept solar radiation and such that fluid flow passages of the collector have upper and lower ends, a liquid storage tank mounted above said collector, first conduit means connecting the lower end of said collectors to said tank, second conduit means connecting the upper end of said collector to said tank, said tank containing at least two immiscible liquids of different densities defining a heat-exchange interface, the first, higher density liquid passing through said collector and said first and second conduit means, whereby as the first liquid in said collectors is heated and becomes less dense it moves through said second conduit means to said tank and as it gives up heat to the second liquid at the interface it becomes more dense and flows back to said collectors through said first conduit means, and third and fourth conduit means connecting said tank to a heating load.

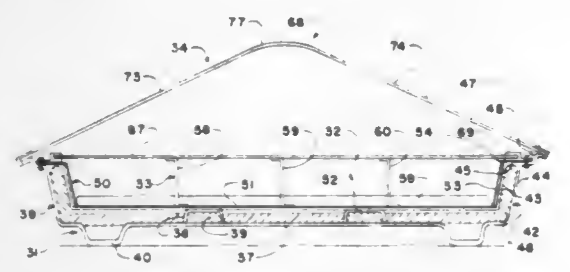
4,366,808
SOLAR ENERGY CONVERSION APPARATUS

Stanley G. Nash, Great Falls, Mont., assignor to Sun Wise, Inc., Great Falls, Mont.

Continuation-in-part of Ser. No. 80,694, Oct. 1, 1979, abandoned. This application Dec. 10, 1981, Ser. No. 329,297

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—450 **12 Claims**



1. Solar energy conversion apparatus including a housing portion, an energy absorption portion, a fluid directing portion and a cover portion; said housing portion including a molded plastic pan member, said pan member including a base section, said base section including upwardly extending spacer sections, said spacer sections being spaced from one another, insulation covering the exposed surface of said base section, said base-covering insulation having a depth less than the height of said spacer sections, said base section including downwardly extending support sections, said pan member including outwardly inclined sidewall sections, said sidewall sections including spaced inner and outer wall sections, the upper edges of said inner and outer wall sections being joined by a top section including an outwardly extending flange section with an inwardly extending slotted frame section extending from said flange section, insulation filling the space between said inner and outer wall sections; said energy absorbing portion including a conductive metal liner member positioned within said housing portion, said liner member including a bottom section, said liner bottom section resting on the upper surfaces of said housing spacer sections, the edges of said bottom section terminating adjacent said housing sidewall sections, said liner member also including sidewall sections extending from the edges of said liner bottom section upwardly to a point closely adjacent to the top section of said housing sidewall sections, flange sections extending outwardly from the upper edges of said liner sidewall sections and bearing on said top section of said pan member, conductive metal absorber members covering the exposed surface of said liner bottom section; said absorber members including a plurality of spaced risers, said fluid directing portion including a plurality of spaced baffle members, said baffle members being disposed longitudinally of said pan member and substantially parallel to one another, said baffle members being arranged in a staggered relationship with alternating baffles each having one end adjacent to a common end of said liner member and the other end of each alternate baffle being spaced from the opposite end of said liner member to provide a tortuous fluid path through said apparatus, an inlet opening adjacent one end of said tortuous path and an outlet opening adjacent the opposite end of said tortuous path, said baffle members extending upwardly from said liner bottom section to a plane connecting the liner flange sections, said risers of said absorber members being disposed transversely of said baffle members; said cover portion including transparent impact resistant flat and dome members, said flat member extending between said top section of said pan member and bearing against the free upper edges of said baffle members, the edges of said flat member being secured to said top section around substantially the entire edge thereof through a peripheral frame section including an inwardly extending slot engageable with the edge of said flat member, said dome member being disposed over said flat member and extending beyond the edges of said flat member, the edges of said dome member being engageable with said inwardly extending slots of said flange section of said pan sidewall sections, said dome member including substantially flat sections extending upwardly from the longitudinal edges of the pan member toward one another at angles between about 20° and 30° to said flat member and a convex central section joining said upwardly extending flat sections extending longitudinally of said apparatus.

4,366,809
ISOLATION ENCLOSURE MEMBERS

Philip C. Trexler, 2 Brook Cottage, Bagshot, Surrey, England

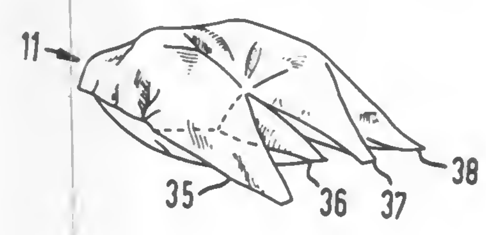
Continuation of Ser. No. 56,690, Jul. 11, 1979, abandoned. This application Oct. 8, 1981, Ser. No. 309,844

Claims priority, application United Kingdom, Jul. 17, 1978, 30077/78

Int. Cl.^{3} A61M *16/02*

U.S. Cl. 128—1 R **17 Claims**

1. An elongated enclosure member for providing an environment isolated from the ambient environment and adapted to be used in an exclusion mode to have a super-atmospheric pressure therein, or in a containment mode to have a sub-atmospheric pressure therein, the enclosure member including a main body defining a chamber extending along a longitudinal axis and having first and second flexible sleeves extending laterally with respect to a side of the main body of the enclosure member and substantially adjacent to each other, the first sleeve having a first end the periphery of which defines a first arm access opening in conjunction with the main body of the enclosure member, and the second sleeve having a first end the periphery of which defines a second arm access opening in conjunction with the main body of the enclosure member, said first and second sleeves each having an opposed second end the periphery of which is provided with or adapted to be secured to a plastic glove, each sleeve, when in its extended state with respect to said main body, extending within a plane individual to said sleeve which is normal to the longitudinal axis of said main body and which intersects the center of said arm access opening of said sleeve, wherein said planes extending through said arm access opening centers are spaced apart to define a space designated as the chest space to accommodate the body of an operator when the arms of the operator are raised to be horizontal in said sleeves, said first and second arm access openings being positioned with respect to said side of said main body and sized to accommodate the arms of an operator manipulating objects inside the enclosure member during normal use of the enclosure member such that, when said sleeves are inside and extend horizontally with respect to said main body, said sleeves are spaced apart with respect to said longitudinal axis of said main body and said first and second arm access openings are in abutting side-by-side relation and a line intersecting the center of each arm access opening lies at an acute angle with respect to the longitudinal axis of said chamber, whereby both sleeves are intersected by a plane mid-way between the sleeves extending normal to the longitudinal axis of said main body.



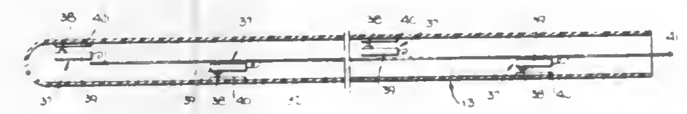
4,366,810
TACTILE CONTROL DEVICE FOR A REMOTE SENSING DEVICE

Charles A. Slanetz, Jr., 107 Ayer Rd., Locust Valley, N.Y. 11560

Filed Aug. 28, 1980, Ser. No. 182,071

Int. Cl.^{3} A61B *1/06*

U.S. Cl. 128—6 **2 Claims**



1. A fiberscope comprising
an elongated flexible insertion tube; and
a plurality of pressure-sensitive devices disposed along the length of said tube and circumferentially of said tube for emitting a signal in response to a predetermined contact pressure on said tube at the locations of said devices.

4,366,811
OTOSCOPE WITH EJECTOR MECHANISM

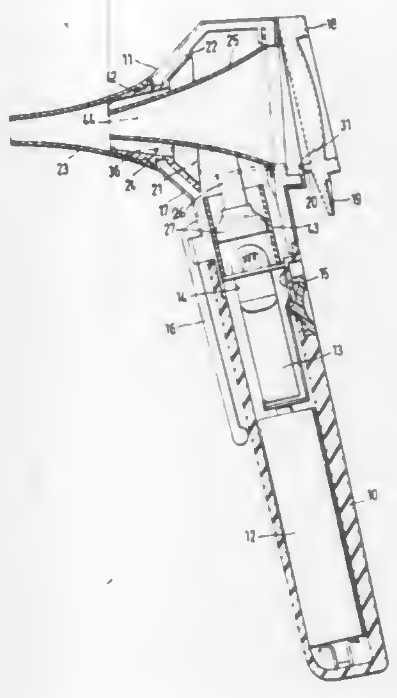
Karlheinz Riester, Jungingen, Fed. Rep. of Germany, assignor to Rudolf Riester GmbH & Co., Jungingen, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,853

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009876

Int. Cl.^{3} A61B *1/22, 1/06*

U.S. Cl. 128—9 **11 Claims**



1. An otoscope comprising having a housing, an observation opening at the first end of said housing for examining a lighted examination field, a magnifying eyepiece at the rear end of said housing with at least one funnel shaped piece in said housing surrounding said opening, the axis of which is substantially parallel to the observation line, and a funnel shaped piece removably mounted ear funnel on the front end of the housing, an ejector movably mounted within said housing with an ejection actuator means mounted on said housing, said ejector engaging at one side said removable ear funnel and at the other side of said ejection actuator means so that operation ejection actuator means moves said ejector to eject said removable ear funnel.

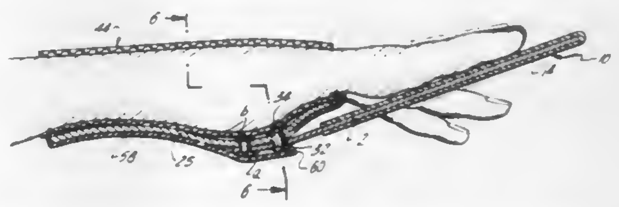
4,366,812
ADJUSTABLE DIGITAL AND METACARPAL SPLINT APPARATUS

Roy Nuzzo, Westfield, N.J., assignor to Delos, Inc., Metuchen, N.J.

Filed May 26, 1981, Ser. No. 266,796

Int. Cl.^{3} A61F *5/10*

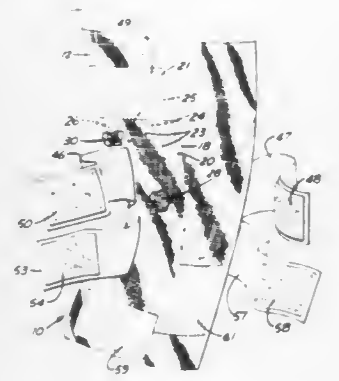
U.S. Cl. 128—77 **12 Claims**



1. An adjustable digital splint for a hand, said splint comprising
an elongate bone splint,
a plate member configured to substantially correspond to, and sized to overlie, the contour of a portion of a user's hand on the palm side thereof;
connector structure that cooperates with said bone splint and with said plate member for holding said bone splint

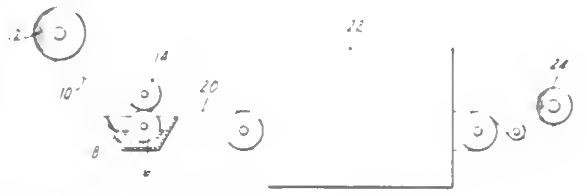
and plate member in immobile assembled position relative one to the other, said connector structure comprising
a pivot device that couples said bone splint to said plate member at a first position, said pivot device permitting pivotal movement of said bone splint relative to said plate member about an axis to select the final use position of said bone splint,
a splint fastener that couples said bone splint to said plate member at a second position, said splint fastener holding said bone splint in the selected pivot position relative to said axis, the first and second connection positions of said bone splint and said plate member being spaced one from the other, the first and second spaced positions of said bone splint and plate member connections maintaining said bone splint and plate member in the immobile non-pivoting assembled position one with the other through use of said splint fastener even if the pivot device connection is a loose connection, and
means for mounting said plate member over the hand of a user on the palm side thereof.

4,366,813
KNEE BRACE
Ronald E. Nelson, 100 S. Main St., Cambridge, Minn. 55008
Filed Jun. 22, 1981, Ser. No. 275,931
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 C **19 Claims**



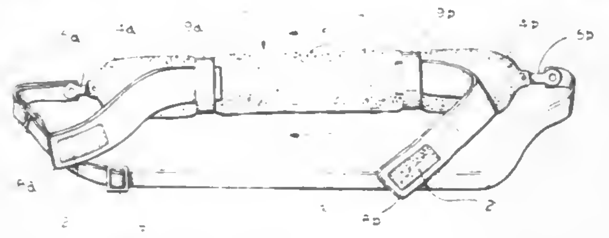
1. A knee brace comprising:
a tubular elastic sleeve positionable in snug covering relationship to a knee and adjacent leg portions;
a first flexible upright support member fixed to a first side of the sleeve, a plurality of first elongate generally vertical pockets formed between the first flexible upright support member and the first side of the sleeve;
first elongate resilient stiffening members located in the first pockets;
a second flexible upright support member fixed to a second side of the sleeve opposite the first support member, a plurality of second elongate generally vertical pockets formed between the second flexible upright support member and the second side of the sleeve;
second elongate resilient stiffening members located in the second pockets;
releasable elastic strap means extendable in tension around the front of the leg between the first upright support member and the second side of the sleeve and between the second upright support member and the first side of the sleeve in the vicinity of the knee for support of the knee joint, said strap means having ends fixed to the first upright support member and the second upright support member forward of one of said resilient members whereby tension pull exerted by the strap means is distributed over a greater portion of the sleeve.

4,366,814
ELASTIC BANDAGE MATERIAL
John E. Riedel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 6, 1981, Ser. No. 251,336
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 **10 Claims**



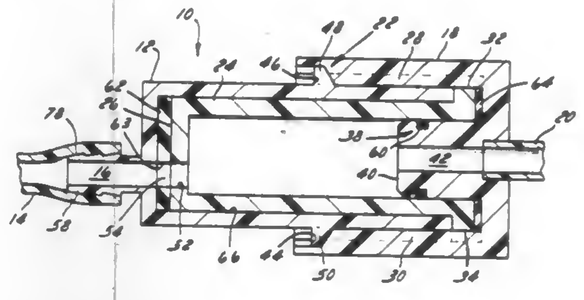
1. An elastic bandage material comprising:
(a) At least 50 percent by weight of an extensible fabric made up of fibers and capable of elongation of at least 30 percent without tearing, and
(b) at least 15 percent by weight of an elastomer uniformly impregnated in said fabric and contained substantially on or within said fibers without filling the spaces between said fibers; a one-inch strip of said bandage material being capable of exerting at least a one-pound recovery force when elongated 20 percent.

4,366,815
ANTI-SNORING APPARATUS
Edward L. C. Broomes, 2301 Lituanica, East Chicago, Ind. 46312
Filed Jun. 4, 1981, Ser. No. 270,380
Int. Cl.³ A61F *13/12*
U.S. Cl. 128—164 **9 Claims**



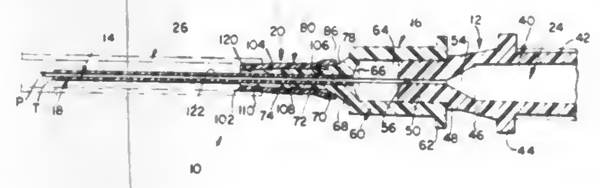
1. An apparatus for maintaining the user's chin in an elevated position during sleep to prevent snoring while otherwise not restricting displacement of the user's head or neck, said apparatus comprising:
cylindrically shaped body means;
said cylindrically shaped body means having a cross-sectional diameter at its center portion sufficient to intercede between the user's chin and chest to restrict forward flexion of the cervical vertibrae of the user;
said cylindrically shaped body means having a cross-sectional area at all portions other than said central portion sufficiently narrow to permit substantial side flexion of the cervical vertibrae of said user;
said cylindrical shaped body means being substantially flexible throughout its length;
end connection means extending from the first and from the second end of said cylindrically shaped body means;
said end connection means attached to and spanning between said first and second ends of said cylindrically shaped body means;
attachment means affixed to said cylindrically shaped body means for maintaining said center portion of said cylindrically shaped body means proximate to said user's neck and substantially centered and secured beneath said user's chin;
said cylindrically shaped body means comprising a resiliant core; and
said cylindrically shaped body means including soft, absorbent, flexible covering.

4,366,816
COMBINATION QUICK DISCONNECT COUPLING AND FLUID CUTOFF VALVE
Michael A. Bayard, Chicago, and James A. Turnbull, Grayslake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 22, 1980, Ser. No. 219,016
Int. Cl.³ A61J *7/00;* A61M *1/00*
U.S. Cl. 128—213 A **15 Claims**



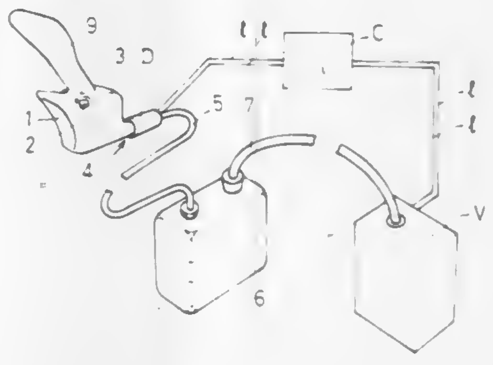
1. A combination quick disconnect coupling and liquid cut-off valve for continuous ambulatory peritoneal dialysis comprising:
a first tubular member connected to a length of flexible tubing and having a fluid passageway therethrough;
a second tubular member connected to a length of flexible tubing and constructed and arranged for telescopic reception of said first tubular member;
movable sleeve means disposed within said first tubular member, partially closed at a first end portion, for the selective opening or closing of said fluid passageway; and
means for selective movement of said movable sleeve;
a first resilient sealing member disposed between the first end of said movable sleeve means and the first end of said first tubular member, said resilient sealing member having an aperture adapted for the selective passage of liquid therethrough when in alignment with said fluid passageways of said movable sleeve and said first tubular member.

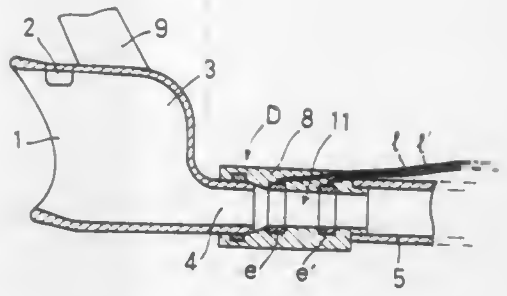
4,366,817
WINGED IV CATHETER
Joseph J. Thomas, Berwyn, Pa., assignor to Burron Medical Inc., Bethlehem, Pa.
Filed May 26, 1981, Ser. No. 266,970
Int. Cl.³ A61N *5/00*
U.S. Cl. 604—174 **6 Claims**



1. A catheter tube anchoring means comprising:
a catheter tube, said catheter tube having an outer surface;
catheter tube supporting means having a stem out of which said catheter extends, said stem having a forward tip thereon; and
a wing section mounted on said catheter tube supporting means and including an elongate tubular body having a bore therethrough, said stem being engaged in one end of said bore and said catheter tube extending through said bore, said body extending beyond said stem forward tip to define a catheter tube kink preventing section on said body, said bore having an inner cross-sectional size greater than the cross-sectional size of said catheter tube outer surface to define a catheter tube kink preventing gap between said catheter tube and said body,
said body kink preventing section and gap preventing said catheter tube from bending at any one location thereon to a degree sufficient to significantly interrupt flow of fluid through said catheter tube.

4,366,818
VACUUM TYPE URINATING AID
Yoshitaka Izumi, Tokyo, Japan, assignor to Kimura Bed Mfg. Company Limited, Tokyo, Japan
Filed Aug. 20, 1980, Ser. No. 179,885
Claims priority, application Japan, Oct. 12, 1979, 54-140958[U]; Oct. 12, 1979, 54-140959[U]; Oct. 12, 1979, 54-140961[U]; Oct. 12, 1979, 54-140962[U]; Oct. 12, 1979, 54-140963[U]
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—295 **2 Claims**



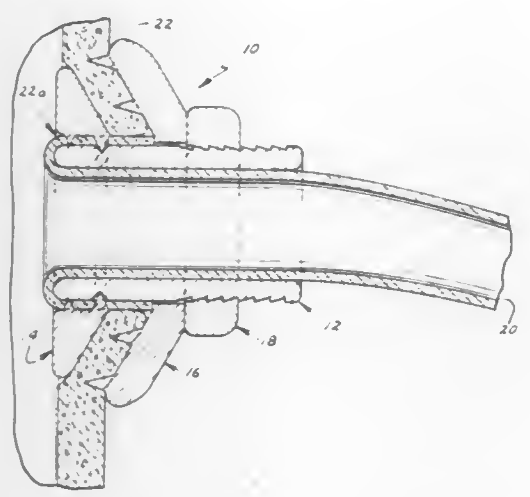


1. A suction type urinating aid comprising:
a urine receiver having a urine suction opening adapted to be applied to the urinating region of a subject to receive therefrom urine, an air suction hole, and a urine outlet;
an electrically insulating cylinder connected to said urine outlet;
a urine tank;
a urine transport tube connected between said cylinder and said urine tank;
vacuum device means connected to said urine tank for drawing air into said urine receiver through said air suction hole therein and for drawing said air and any urine in said urine receiver through said urine outlet, said cylinder and said urine transport tube into said urine tank;
control means connected to said vacuum device means for controlling the operation therof;
detector means located in said cylinder, electrically connected to said control means, for detecting the presence of any urine in said cylinder and for causing said control means to operate said vacuum device means for drawing said air and urine from said urine receiver, said detector means comprising first and second ring-shaped electrodes positioned iinteriorly of said cylinder, said first and second electrodes being spaced from each other axially of said cylinder and electrically insulated from each other by said cylinder, said electrodes being positioned such that when urine exists in said cylinder, an electric current will flow through such urine between said electrodes and will be detected by said control means to start operation of said vacuum device means; and
the inner diameter of a cylindrical portion of said cylinder

between said electrodes being equal to the inner diameter of said electrodes.

4,366,819
ANASTOMOTIC FITTING

Robert L. Kaster, 2730 Vagabond La., Plymouth, Minn. 55447
Filed Nov. 17, 1980, Ser. No. 207,676
Int. Cl.^{3} A61B *17/04*
U.S. Cl. 128—334 C **15 Claims**

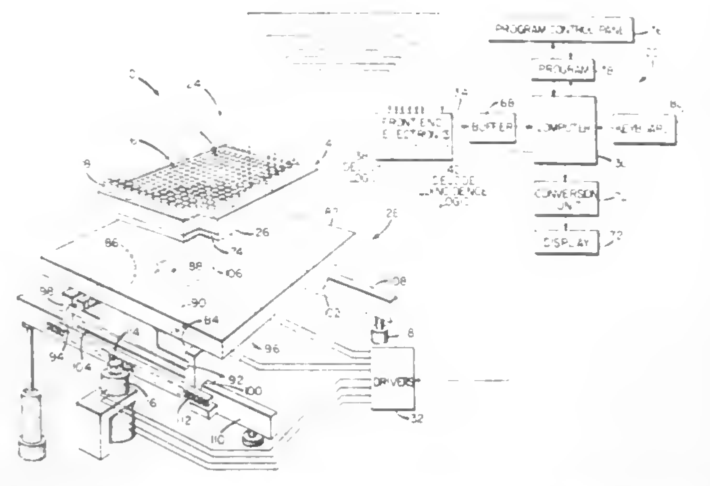


15. Anastomotic fitting for coronary artery bypass surgery for connecting a vascular graft or reconnecting a vessel of a first diameter to a vessel of a second diameter, said anastomotic fitting comprising:
- a. cylindrical tube of longitudinal length including a lumen extending therethrough, serially, a ringflange circumferential indentation adjacent an inflow end of said tube and plurality of external surface sawtooth locking ring grooves spaced and adjacent an outflow end of said tube;
- b. ringflange including a cross-sectional slitted member and a concentric central aperture therethrough, plurality of inwardly extending short spikes on a first circumference and long spikes on a second circumference spaced from said first circumference, said short spikes engaging said vascular graft at a plurality of points and said long spikes engaging through said vascular graft into said ringflange indentation, and said ringflange engaged against an inside vessel wall and over an end of said vascular graft; and,
- c. fixation ring-locking ring including a truncated right conical member and a concentric central aperture therethrough, pluralities of outwardly extending spikes partially engaged into an outside vessel wall, a plurality of inwardly extending locking ring sawtooth ridges, and a cross-sectional slit therethrough whereby said inwardly extending grooves engage with said external grooves for locking said fixation ring-locking ring to said cylindrical tube with said vessel therebetween, thereby providing a surgical connection between said vessel and said vascular graft.

4,366,820
COMPOSING A REFERENCE HEART BEAT SIGNAL

Donald W. Heyda, Cambridge; Richard P. Corley, Sudbury, both of Mass., and Rosalind Sinclair, Nashua, N.H., assignors to Baird Corporation, Bedford, Mass.
Filed Jun. 23, 1980, Ser. No. 162,301
Int. Cl.^{3} A61B *5/00*
U.S. Cl. 128—659 **7 Claims**

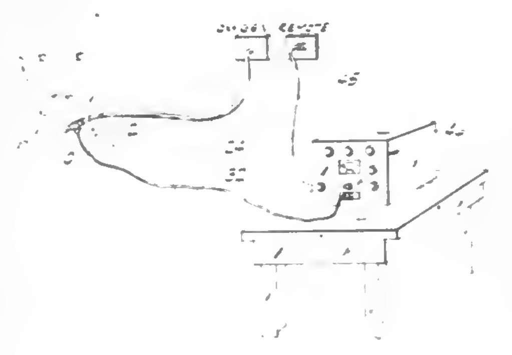
1. A method for composing a reference heart beat signal of a subject under diagnosis, said method comprising the steps of:
- (a) sensing a series of radioactive events emitted from a heart under diagnosis at various address locations to provide representations thereof;
- (b) accumulating said representations of said events in a memory for a plurality of accumulation periods, said representations of said events being accumulated in certain address locations for each of said accumulation periods, certain of said accumulated representations of said events defining one heart beat image signal; and



- (c) synchronously regrouping a series of such heart beat image signals as a function of volumetric maxima and minima and averaging said series of such heart beat image signals to define a reference heart beat.

4,366,821
BREATH MONITOR DEVICE

Edward A. Wittmaier, St. Charles, and Joseph A. Kretschmer, St. Ann, both of Mo., assignors to Marie C. Kercheval, St. Charles, Mo.
Filed Sep. 15, 1980, Ser. No. 187,503
Int. Cl.^{3} A61B *5/08*
U.S. Cl. 128—719 **51 Claims**



1. A breath monitor device comprising means for sensing the chemical composition of exhaled gases and inhaled gases of a patient, means responsive to said sensing means for timing the respective intervals between successive sensed exhaled gases and between successive sensed inhaled gases and means responsive to said timing means including means for generating a warning signal when at least one of the sensed intervals exceeds a predetermined time.

4,366,822
METHOD AND APPARATUS FOR BONE MARROW CELL SEPARATION AND ANALYSIS

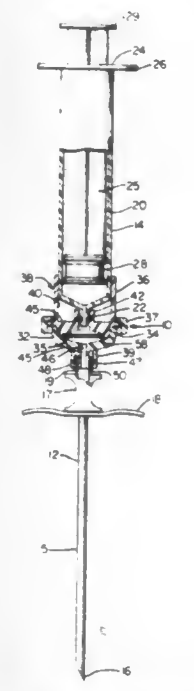
John H. Altshuler, Englewood, Colo., assignor to Applied Medical Devices, Inc., Englewood, Colo.
Filed Dec. 3, 1979, Ser. No. 99,579
Int. Cl.^{3} A61B *10/00*
U.S. Cl. 128—753 **10 Claims**

1. A bone marrow separation apparatus adaptable for separation of bone marrow particles from sinusoidal blood wherein a needle provided with opposed forward and rearward ends has its forward end inserted into a bone of a mammal at the desired site of removal of the bone marrow particles, comprising:

a filtration chamber including a hollow needle-connecting section converging toward said needle, said needle-connecting section including means to effect a positive but sealed connection with said rearward end of said needle while being in fluid communication with the hollow interior of said needle;

a filter support member disposed in said filtration chamber having a seating surface disposed in facing relation to said needle-connecting section and provided with a central bore extending through said seating surface in communication with the interior of said filtration chamber, and a filter member positioned in said filtration chamber between said seating surface and said needle-connecting section;

an annular support wall connected in surrounding relation to said filter support member for extension in a direction away from said needle-connecting section, said annular support wall disposed in outer spaced concentric relation to said central bore;



coupling means releasably interconnecting said needle-connecting section and said filter support member with said filter member interpositioned therebetween; and

a syringe inserted into snug-fitting relation to and within said annular support wall, said syringe having a leading end including a nozzle thereon aligned with and inserted into said central bore in open fluid communication with the interior of said filtration chamber including means in said syringe to induce the withdrawal of sinusoidal blood and bone marrow particles from said needle through said filtration chamber whereby said bone marrow particles are separated from the blood by said filter member as the blood is withdrawn into said syringe.

4,366,823
PROCESS FOR EXPANDING TOBACCO

Norman B. Rainer, and Dean M. Siwiec, both of Richmond, Va., assignors to Philip Morris, Incorporated, New York, N.Y.
Filed Jun. 25, 1981, Ser. No. 277,315
Int. Cl.^{3} A24B *3/18*
U.S. Cl. 131—291 **23 Claims**

1. A process for expanding tobacco comprising the steps of:
- (a) contacting rolled and cut tobacco stems having a moisture content between about 2 and 40% OV with an aqueous solution of a polyvalent salt in an effective amount to prevent clumping and interadherence thereof during subsequent processing;
- (b) partially drying the salt treated stems to a moisture content between about 10 and 40% OV;
- (c) contacting the stems with an alkaline-hydrogen peroxide solution at a temperature below about 55° C. and for a period of time between 5 minutes and 3 hours to effect expansion thereof;
- (d) extracting the expanded stems with water to remove water-soluble substances; and
- (e) drying the expanded, extracted stems at a temperature between about 50° C. and 200° C. to obtain a final moisture content between about 10 to 15%.

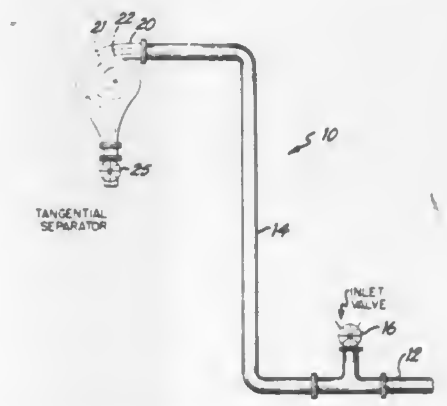
4,366,824
PROCESS FOR EXPANDING TOBACCO

Norman B. Rainer, Richmond, and John R. Hearn, Chesterfield, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Jun. 25, 1981, Ser. No. 277,570
Int. Cl.^{3} A24B *3/18*
U.S. Cl. 131—291 **21 Claims**

1. A process for expanding tobacco comprising the steps of:
- (a) subjecting rolled and cut tobacco stems having a moisture content between about 20 and 50% OV to a pretreatment with gaseous ozone in an effective amount to prevent clumping and interadherence thereof during subsequent processing;
- (b) contacting the ozone-treated stems with an alkaline-hydrogen peroxide solution to effect expansion thereof;
- (c) extracting the expanded stems with water to remove water-soluble substances; and
- (d) drying the expanded, extracted stems at a temperature between about 45° and 200° C. to obtain a final moisture content between about 10 to 15%.

4,366,825
EXPANSION OF TOBACCO

Francis V. Utsch, Midlothian; Henry B. Merritt, and Larry M. Sykes, both of Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Nov. 21, 1979, Ser. No. 96,409
Int. Cl.^{3} A24B *3/18*
U.S. Cl. 131—296 **2 Claims**



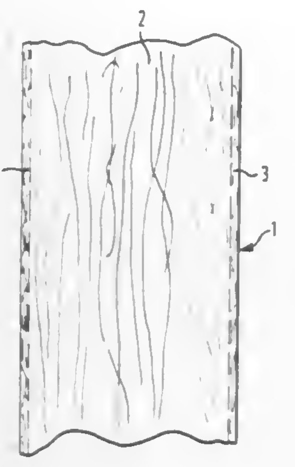
1. In a method for heating a carbon dioxide expansion agent impregnated tobacco to expand same, the steps of:

entraining the impregnated tobacco in a stream of steam-containing air flowing in a generally upwardly vertically directed flow course and heated to a temperature in a range of at least about 525° F. to about 650° F. for a period of between 0.2 and 2 seconds to rapidly volatilize the expansion agent from the tobacco and thereby expand the tobacco; and

then delivering the stream and entrained expanded tobacco along a horizontal flow course for entry to a tangential separation operation to separate therein the tobacco from the stream.

4,366,826
SMOKE FILTRATION

Henry G. Horsewell, Totton, England, assignor to British-American Tobacco Company Limited, London, England
Filed Aug. 18, 1980, Ser. No. 178,883
Claims priority, application United Kingdom, Aug. 28, 1979, 7929769
Int. Cl.^{3} A24D *3/02, 3/06*
U.S. Cl. 131—336 **9 Claims**



1. Smoke-filter rod which comprises a body of rod form having as at least major constituent a thermoplastics smoke-filtration material of the group consisting of cellulose acetate and polypropylene and wrapped in a plugwrap separate from said body but attached thereto by a bonding agent, the plugwrap comprising at least 50% by weight of fibres or filaments of a material of the said group of, respectively, substantially the same chemical identity as said major constituent of the filtration material and which has a permeability for air of not less than 10,000 Coresta units.

4,366,827
PROCEDURE FOR THE PERMANENT RESHAPING OF HAIR, AND COMPOSITION INTENDED FOR CARRYING OUT SAID PROCEDURE

Annie Madrange, Saint Germain en Laye, and Daniel Boixader, Bry sur/Marne, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Filed Dec. 18, 1980, Ser. No. 217,694
Claims priority, application France, Dec. 28, 1979, 79 32078; Dec. 12, 1980, 80 26421
Int. Cl.^{3} A45D *7/00*
U.S. Cl. 132—7 **14 Claims**

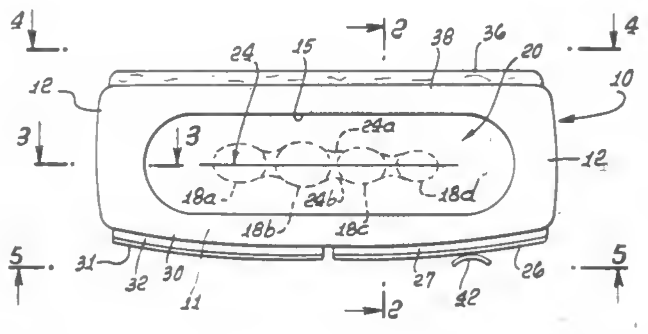
1. Procedure for the permanent reshaping of hair consisting in a first step involving reduction of the bisulfide bonds of the keratin by applying a reducing composition, then in a second step for reforming the said bonds by applying an oxidizing composition, characterized by the fact that the reduction stage is carried out using a reducing composition containing at least one cationic polymer and the fact that the fixing stage is carried out in the presence of at least one anionic tensio-active agent.

4,366,828
MANICURE APPARATUS FOR SMOOTHING AND BUFFING NAILS

Yosh Hokama, Torrance, Calif., assignor to Makaja Inc., Gardena, Calif.
Filed Apr. 3, 1981, Ser. No. 250,572
Int. Cl.^{3} A45D *29/04*
U.S. Cl. 132—75.6 **9 Claims**

1. In manicure nail processing apparatus,

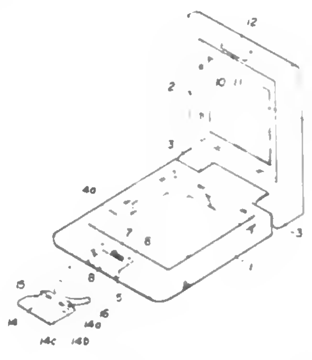
(a) a frame and resiliently compressible foam structure on the frame for defining a generally longitudinally extending zone in the form of a through slit everywhere spaced from the frame to snugly receive a user's fingers, and characterized in that compression is then exerted by such foam structure on opposite sides of the user's fingers, and said frame is then carried by such fingers via said foam structure for reciprocation, the frame defining laterally spaced windows which are longitudinally elongated, the foam structure and said slit exposed at said windows, and



(b) fingernail processing means carried on the frame and extending generally longitudinally to be reciprocated in engagement with a nail being processed, as the user's fingers and the frame are reciprocated generally longitudinally.

4,366,829
VANITY CASE

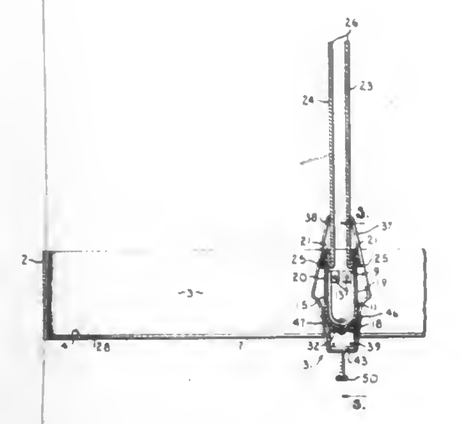
Yukitomo Yuhara, Abikio, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan
Filed Sep. 8, 1981, Ser. No. 300,282
Claims priority, application Japan, Mar. 16, 1981, 56-35388[U]
Int. Cl.^{3} A45D *33/00*
U.S. Cl. 132—83 R **5 Claims**



1. A vanity case comprising a receptacle member for containing cosmetic material therein, a cover member hinged at the rear end thereof with said receptacle member, a cavity formed in either said receptacle member or said cover member and extending therein from a front end thereof, a slider element made from synthetic resin having elasticity and slidably inserted at an inner portion thereof into said cavity and an outer portion of said slider element being enlarged, a first latching member provided in said receptacle or cover member where said cavity is formed, a second latching member provided in the other of said receptacle or cover member and adapted to be engaged with said first latching member when said receptacle member is closed by said cover member, said enlarged outer portion of said slider element being arranged to locate closely adjacent to a front end of said other member where said second latching member is provided in such a manner that when said slider element is pushed inwardly, said enlarged outer portion thereof exerts such a force as to disengage said first latching member from said second member, wherein said slider element has an elastic piece made from the synthetic resin and formed integrally therewith, an outer end of said elastic piece being connected with said slider element while an inner end of said elastic piece is pressed against an inner wall defining said cavity thereby said slider element being always urged outwardly along said cavity.

4,366,830
DAMPER ASSEMBLY

Robert V. Becelaere, Grandview, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.
Filed Dec. 19, 1980, Ser. No. 218,459
Int. Cl.^{3} F16K *17/38*
U.S. Cl. 137—75 **18 Claims**



1. A damper assembly comprising:

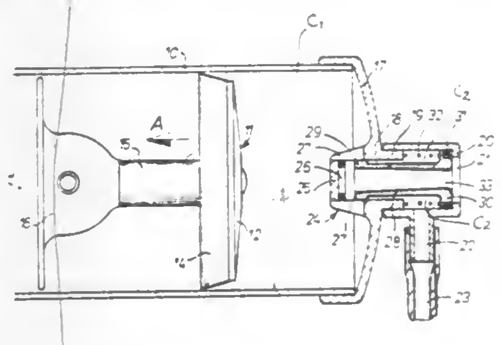
(a) a duct having an opening for the passage of fluid therethrough;

(b) a pair of rigid blades each movable between a closed position in covering relation to a respective portion of said opening and an open position; each of said blades having:
  (1) a proximate edge, the respective proximate edges of said blades being in spaced relationship and defining a gap therebetween when said blades are in said open position;
  (2) a distal edge positioned adjacent said duct whereby the flow of fluid between said distal edge and said duct is substantially prevented when said blades are in said closed position; and

(c) a hinge member attached to said duct and extending unsupported across said opening, said hinge member:
  (1) terminating at opposite longitudinal edges, rigidly attached to said proximate edges of said blades whereby said blades cantilever from said hinge member;
  (2) urging said blades to said closed position;
  (3) substantially preventing the flow of fluid through said gap between said proximate edges of said blades; and
  (4) said hinge member comprising a flexible spring having a substantially flat configuration when said blades are in their closed position.

4,366,831
VACUUM CLOSED VENTING VALVE

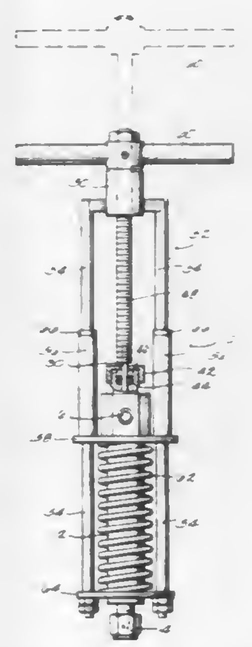
Michael J. Scott, Feilding, New Zealand, assignor to Allflex International Limited, Palmerston North, New Zealand
Filed Nov. 24, 1980, Ser. No. 209,323
Claims priority, application New Zealand, Nov. 22, 1979, 192198
Int. Cl.^{3} A01J *5/10*
U.S. Cl. 137—103 **6 Claims**



1. A venting valve comprising: a body having a first port which is open to atmosphere and an axially opposed second port which is, in use of the valve, located within a chamber to be evacuated; a valve member located in a cavity within the said body for axial movement therein; a venting passage extending axially through said valve member such that said venting passage connects said first and second ports when said valve member is in a first position within said cavity; spring biassing means located within said cavity to bias said valve member to said first position; first sealing means on said valve member slidingly engaged with the wall of said cavity and located adjacent said first port when said valve member is in said first position; second sealing means on said valve member spaced from said first sealing means; a valve chamber defined by the valve member, the first and second sealing means and the wall of said cavity, said valve chamber being closed from said second port by said second sealing means; and said valve member when said valve member is in a second position; a third port opening into said cavity to communicate with said valve chamber, said third port in use, being connected to a vacuum source such that sub-atmospheric pressure within the valve chamber causes the valve member to move axially against the spring biassing means to said second position whereupon said valve chamber is opened into communication with the second port, the valve further including passage sealing means which close said passage to isolate said first port from said second port when the valve member is in said second position.

4,366,832
SELF-CLEANING VARIABLE PRESSURE REDUCING ELEMENT

Richard R. Henszey, Oconomowoc, Wis., assignor to Sentry Equipment Corporation, Oconomowoc, Wis.
Filed Jan. 16, 1981, Ser. No. 225,843
Int. Cl.^{3} F16K *1/52, 47/04*
U.S. Cl. 137—244 **11 Claims**



1. A variable pressure reducing element comprising:

an enlongated body having an inlet at one end, an outlet at the other end and an axially extending, cylindrical bore connecting said inlet with said outlet, said bore including at least a smaller diameter first portion near said inlet and a larger diameter second portion downstream of said first portion;

an elongated, cylindrical valve rod disposed in said bore for reciprocal axial movement relative to said bore, said valve rod including an outer end portion located exteriorly of said body and a pressure regulating portion normally located in said bore and including a smaller diameter first section and a larger diameter second section downstream of said first section;

means connected to the outer end of said valve rod and located exteriorly of said body for adjustably moving said valve rod between a maximum pressure reducing position wherein said first and second valve rod sections are located in said first bore portion and a minimum pressure reducing position wherein both said first and second valve rod sections are removed from said first bore portion;

biasing means located wholly exteriorly of said body and associated with said adjustment means for releasably holding said valve rod in an adjusted position; and

means located exteriorly of said body and associated with said adjustment means for retracting said valve rod against the biasing force of said biasing means a sufficient distance to move said second valve rod section into the next larger bore portion.

4,366,833

STEAM THROTTLE VALVE

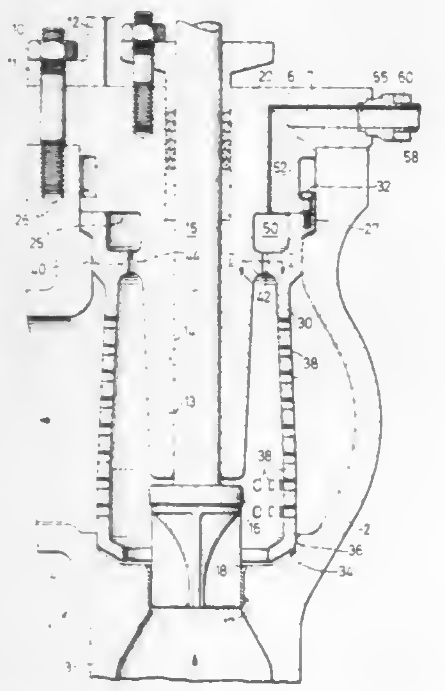
Karlheinz Grotloh, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 10, 1980, Ser. No. 158,309

Claims priority, application Switzerland, Jun. 20, 1979, 5746/79

Int. Cl.^{3} F16K *49/00*

U.S. Cl. 137—334 **7 Claims**



1. A steam throttle valve comprising
- a valve body having a throttle cross-section disposed on a valve axis about a valve seat;
- a valve spindle guide disposed on said valve axis for guiding a valve head relative to said valve seat, said guide having a coaxial contact surface thereon;
- a perforated valve cage disposed on said valve axis downstream of said throttle cross-section concentrically about said spindle guide to define a flow chamber therebetween, said cage having a contact surface concentric to and opposite said contact surface of said guide;
- a plurality of ducts extending along and between said contact surfaces for directing cooling water into said flow chamber; and
- an annulus concentric to said valve axis for receiving cooling water and being in communication with said ducts to deliver cooling water into said flow chamber.

4,366,834

BACK-FLOW PREVENTION VALVE

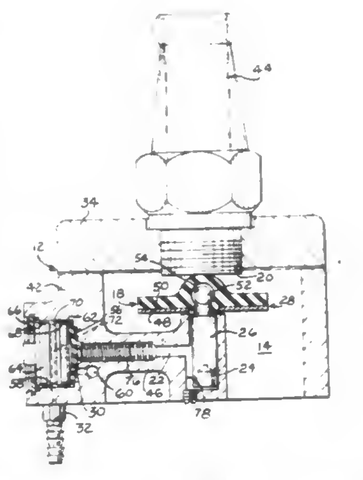
David E. Hanson, Hoffman Estates, and Martin E. Frenkel, Round Lake Beach, both of Ill., assignors to Sargent-Welch Scientific Company, Skokie, Ill.

Filed Oct. 10, 1980, Ser. No. 195,874

Int. Cl.^{3} F16K *31/122*

U.S. Cl. 137—489.3 **27 Claims**

1. A back-flow prevention valve assembly adapted for use with a pump for controlling the direction of flow of the fluid being pumped, said valve assembly comprising:
- housing means defining a fluid flow passageway therethrough;
- valve means carried by said housing means and movable between an open position permitting the flow of fluid through said flow passageway and a closed position blocking said flow passageway;
- said housing defining a chamber and said valve means including a plunger portion slidably received within said chamber and spaced a selected distance from the wall of said chamber;
- an actuating fluid passageway in said housing adapted at one end for communication with a fluid source having a higher pressure than the fluid being pumped and communicating at the other end with said chamber for applying pressure to said plunger portion to assist in moving said valve means to the closed position; and



- an actuating fluid control valve carried by said housing and having a fluid pressure access port for communication with high pressure fluid from the pump, said valve being movable by fluid pressure from the pump to close said actuating fluid passageway and movable upon the release of fluid pressure in the event of pump failure to allow actuating fluid into said chamber to force said valve means quickly into said closed position, and wherein said selected distance between said plunger and said cylinder is sufficiently small to restrict the passage of actuating fluid therebetween so as to delay movement of said plunger portion and said valve means to the open position upon restarting of the pump.

4,366,835

ELECTROMAGNETIC FLOW CONTROL VALVE

Motonobu Akagi, Kariya, and Isshi Nomura, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

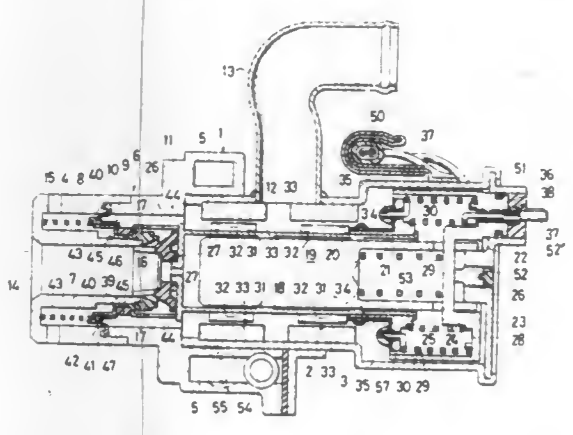
Filed Feb. 6, 1981, Ser. No. 232,352

Claims priority, application Japan, Feb. 29, 1980, 55-25886

Int. Cl.^{3} F16K *31/08;* **F02M** *23/00*

U.S. Cl. 137—495 **3 Claims**

1. An electromagnetic flow control valve for controlling the flow rate of a fluid through a fluid passage between a fluid source and a point of demand for the fluid at which a pressure lower than the level of the fluid source prevails under operating conditions, said valve comprising:
- a casing formed with a first opening communicating with said fluid source and a second opening communicating with said point of demand for the fluid;
- electromagnetic operating means provided in said casing and including a fixed member fixedly located in said casing and a movable member, moving said movable member toward and away from said fixed member under an energization and de-energization state;
- a hollow cylindrical wall provided in said casing, the longitudinal axis thereof being disposed in the direction of movement of said movable member and having an inner cavity in communication with either said first and second opening;
- a plurality of valve elements formed at the opposing ends of said movable member and cylindrical wall for completing or blocking a fluid passage leading from one to the other of said first and second opening through the inner cavity of said cylindrical wall and said casing;
- a first spring biasing said movable member to urge said valve elements on said movable member into abutting engagement with the valve element on said cylindrical wall;
- a slide member mounted on said cylindrical wall;
- a diaphragm having the inner peripheral edge thereof secured to said slide member on the outer periphery of said cylindrical wall and the outer peripheral edge to the inner peripheral wall of said casing to define a pressure chamber in communication with said point of demand, said slide member being slidable axially toward and away from said movable member; and



- a second spring provided in said pressure chamber and biasing said slide member into abutting engagement with said movable member;
- said second spring abutting said slide member against said movable member when no pressure is admitted into said pressure chamber in the de-energized state of said electromagnetic operating means, maintaining said valve elements in open positions against the biasing action of said first spring.

4,366,836

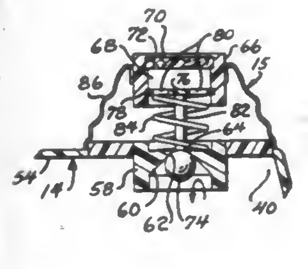
VALVED VENT FOR A LIQUID DRAINAGE SYSTEM

Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Sep. 17, 1980, Ser. No. 187,910

Int. Cl.^{3} F16K *31/00*

U.S. Cl. 137—550 **9 Claims**



1. Valved vent means for a liquid drainage system, comprising:
- a receptacle having a chamber to receive liquid;
- a filter pervious to air and substantially impervious to passage of bacteria;
- a movable housing for retaining said filter, said housing including means for retaining said filter within an upper end of said housing thus to expose an exterior surface of said filter to atmosphere, in an unobstructed manner;
- a valve seat in an upper portion of the receptacle surrounding an opening communicating with said chamber, said seat being located substantially beneath said housing;
- a valve element for sealing engagement with said seat;
- means interconnecting said valve element with said housing, through said opening and substantially entirely beneath said filter, whereby upon depression of said movable housing, said valve element is moved away from said seat thus to vent said chamber through said filter, said filter being located at said upper housing end, remote from said valve element, said valve seat and said means interconnecting said valve element and housing, to minimize the possibility of contact of liquid within said chamber with said filter during venting of said chamber; and
- means for biasing the housing away from the receptacle and the valve element against said seat, whereby passage of liquid from the chamber against the filter is effectively prevented.

4,366,837

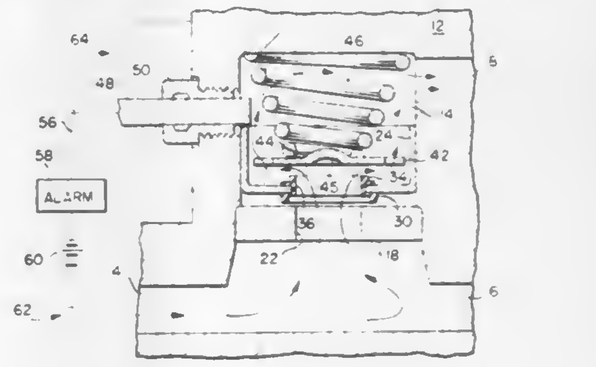
EARLY WARNING BYPASS VALVE ASSEMBLY

Leslie A. Roettger, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 9, 1980, Ser. No. 214,673

Int. Cl.^{3} F16K *37/00*

U.S. Cl. 137—557 **17 Claims**



1. A valve apparatus for governing fluid flow between inlet and bypass conduits in fluid communication with a cavity formed in supporting material at the intersection of the inlet and bypass conduits and for completing an electrical circuit between an alarm device and an electrically-conductive portion of the supporting material, said valve apparatus including:
- (a) terminal means for providing an electrical path between the alarm device and the interior of the cavity;
- (b) piston means mounted within the cavity between the bypass conduit and the inlet conduit for movement between an off position in which said piston means is electrically isolated from said terminal means and an on position in which said piston means electrically contacts both said terminal means and the electrically conductive portion of the supporting structure to energize the alarm device, said piston means having a bypass aperture formed therein to provide for fluid communication between the inlet and bypass conduits;
- (c) disc means mounted within the cavity for movement between a closed position in which said disc means covers said bypass aperture in said piston means to prevent fluid communication between the inlet and bypass conduits and an open position in which fluid flows from the inlet conduit through said bypass aperture to the bypass conduit; and
- (d) biasing means for exerting a biasing force to urge said disc means toward said closed position and for simultaneously urging said piston means toward said off position such that a first predetermined fluid pressure differential between the inlet and bypass conduits will overcome said biasing force to move said piston means to said on position

while a second, relatively greater predetermined fluid pressure differential between the inlet and bypass conduits will overcome said biasing force to move said disc means to said open position.

4,366,838

MOORING ASSEMBLY FOR COUPLING A SUBMARINE CONDUIT TO ANOTHER CONDUIT

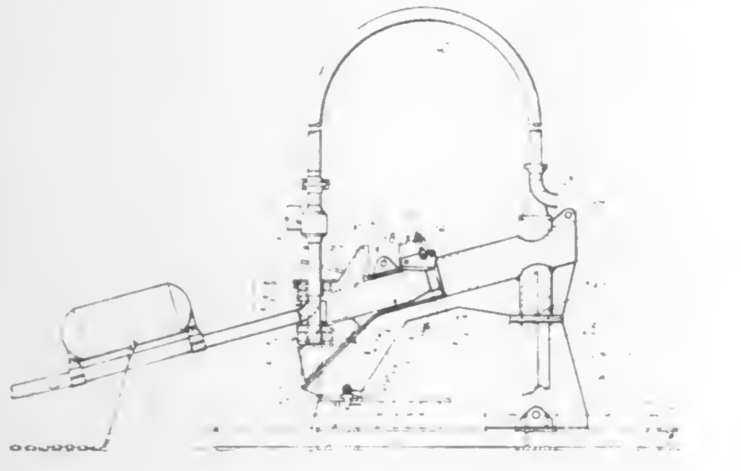
Jean G. M. Martin, Paris, France, assignor to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines"C.G. Doris", Paris, Japan

Filed Aug. 14, 1980, Ser. No. 177,958

Claims priority, application France, Aug. 23, 1979, 79 21241

Int. Cl.^{3} B63B *21/00*

U.S. Cl. 137—615 **8 Claims**



1. In an assembly for mooring and coupling the end of a submarine conduit to a fixed pipeline or fixed installation, and having a mooring frame including means for attaching the fixed pipeline, a movable mooring arm displaceable in a horizontal plane on the mooring frame, and a mooring head having at one end thereof a structural configuration effective to be detachably connected to the movable mooring arm to provide an outwardly extending end of the mooring head, the combination comprising:

- (a) coupling means located at the outwardly extending end of the mooring head to pivotally connect the end of the submarine conduit to allow rotation of the end of the submarine conduit with respect to the mooring head,
- (b) said coupling means includes a body portion having two ends,
- (c) a shaft portion and bearing means,
- (d) said body portion being rigidly connected to the outwardly extending end of the mooring head to receive the end of said submarine conduit,
- (e) said shaft portion being disposed in the body portion for locating the end of the submarine conduit,
- (f) said bearing means includes at least one bearing element disposed at either end of the shaft portion and is coaxially disposed therewith,
- (g) said outwardly extending end of the mooring head including a lateral passage for the end of said submarine conduit to pass through.

4,366,839

MATERIAL PROCESSING APPARATUS

James A. Slavin, East Windsor, N.J., assignor to Nolte and Nolte, P.C., Jericho, N.Y.

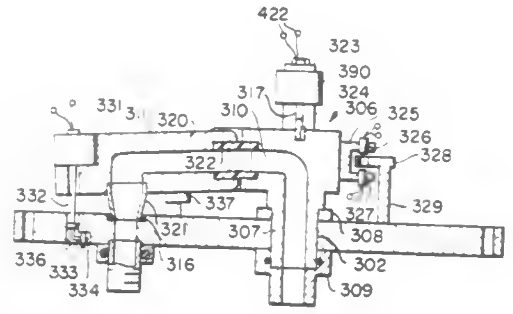
Continuation-in-part of Ser. No. 123,853, Feb. 22, 1980. This application Feb. 12, 1981, Ser. No. 233,131

Int. Cl.^{3} F16K *5/00*

U.S. Cl. 137—625.11 **7 Claims**

1. A selector valve, comprising:

- (a) a base plate having a first aperture constituting a first port and a plurality of second apertures constituting second ports disposed on the circumference of a circle concentric with said first aperture.
- (b) a rotor arm extending radially from said first port and mounted on said base plate for rotation about the center of said first port, said rotor arm including a material passage and means providing a fluid-tight connection between the radially inner end of said passage and said first port,
- (c) said rotor arm including a radially outward extension that is vertically articulated and contains a material passage connected by flexible fluid-tight means to the outer end of said first material passage and terminating at its outer end in an orifice adapted to engage one of said second ports in fluid-tight relationship,



- (d) means normally biasing said articulated extension upwardly and out of contact with said base plate and second ports,
- (e) means for rotating said rotor arm to a selected angular position with said orifice in alignment with a selected one of said second ports,
- (f) means for sensing such alignment, and
- (g) means responsive to said sensing means for urging said extension downward to engage said orifice with said selected second port and maintain such engagement.

4,366,840

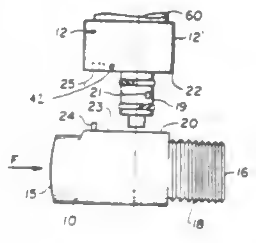
FLUID INJECTOR SPRAY DEVICE

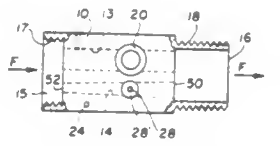
Thomas D. McKane, Jr., 4537 Tradewinds Ave., Lauderdale-by-the-Sea, Fla. 33308

Continuation-in-part of Ser. No. 146,635, May 5, 1980, abandoned. This application Sep. 24, 1981, Ser. No. 305,153

Int. Cl.^{3} F16K *19/00*

U.S. Cl. 137—894 **3 Claims**





1. A fluid mixing device for use with a main fluid flow and an auxiliary fluid, comprising the combination of a main member and a movable member; said main member having fluid inlet means, fluid outlet means, a main fluid flow path, a separate relatively smaller conical fluid flow path, both said paths being in fluid communication with said inlet and outlet means, a cylindrical receiving means, and an auxiliary supply orifice, said receiving means intersecting said main fluid flow path and said auxiliary supply orifice being in fluid communication with said conical fluid flow path; said movable member having orifice means for connection with a container of auxiliary fluid and said auxiliary supply orifice so as to provide fluid communication for said auxiliary fluid to said conical fluid flow path and being alignable with said auxiliary supply orifice, a cylindrical valve gate means connected to said movable member and an air purge orifice; said valve gate means being disposed in said receiving means and including fluid communication means extending through it; said movable member being so characterized that its rotation in said receiving means rotates said valve gate means so as to selectively provide heavy main fluid flow, light main fluid flow and a mixture of light main fluid flow with auxiliary fluid.

4,366,841

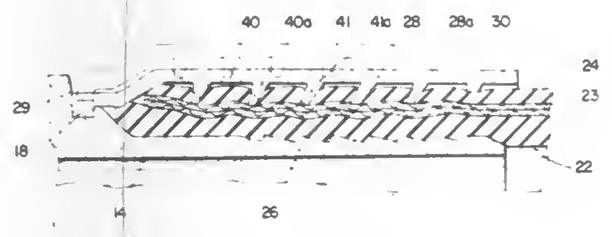
COMPENSATING HOSE FITTING

William E. Currie, Cleveland Heights, and Kenneth J. Korane, Bedford, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Apr. 30, 1980, Ser. No. 145,159

Int. Cl.^{3} F16L *9/00, 11/08*

U.S. Cl. 138—109 **17 Claims**



1. A hose fitting for permanent attachment to the end of a wire reinforced hose which is used for conveyance of fluid under pressure comprising, a body member having a bore therethrough providing a fluid interconnection between connecting means at one end adapted for connection to an external device, and an insert at the other end adapted for insertion within the reinforced hose, said insert comprising a substantially tubular member extending away from said body member, terminating in a remote end and having an outer surface adapted for sealing engagement with the interior of the reinforced hose, a socket member of substantially tubular shape surrounding said insert forming an annular recess therebetween adapted for receipt of the reinforced hose, said socket being supported at one end on said body member and having a free end near said remote end of said insert, said socket having projections on the inner surface in the annular space, directed radially inwardly toward said insert and axially toward said one end of said socket said projections having opposed flanks intersecting with a relatively blunt tip, said flanks being disposed at different angles with respect to a transverse plane so as to form a non-symmetric profile and a tendency for said projections to bend in a predetermined direction toward said one end of said socket, said projections being of equal or greater depth than the thickness of the cover of said inserted hose member and of slender proportions so that, upon application of radially inward clamping force upon said socket member to reduce the diameter of the exterior of said socket member to a predetermined dimension, the tips of said projections will engage the reinforcement layer of said inserted hose member and said projections will be deformed in such predetermined direction, thereby to equalize the gripping force of said projections with said reinforcement layer about the periphery of said inserted hose member regardless of manufacturing variations of the hose member and the fitting.

4,366,842

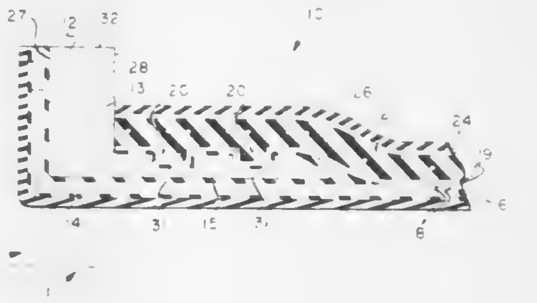
FLANGED HOSE AND METHOD OF MAKING

Benjamin W. Peavy, and Virgil J. Ritter, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 27, 1980, Ser. No. 181,925

Int. Cl.^{3} B31C *5/00;* **F16L** *11/08*

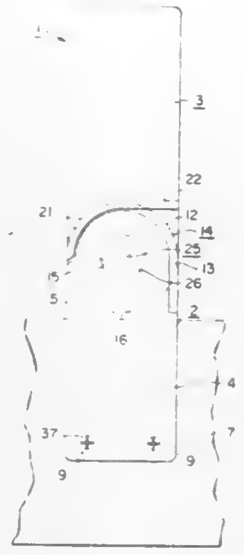
U.S. Cl. 138—109 **3 Claims**



1. A large diameter suction and discharge hose comprised of elastomeric material incorporating reinforcing elements and including at each end thereof a rigid fitting having a cylindrical nipple and a radially outwardly extending flange butt connected to the nipple at that end of the nipple nearest the end of the hose, said nipple including at least one annular groove on its outer periphery, said flange including a planar end face and an oppositely disposed back face parallel thereto, said fitting having a bore extending therethrough in communication with that of the remainder of the hose, said hose comprising in sequence from its inside to its outside, a tube of elastomeric material which extends throughout the length of the hose and fitting, at least one inner reinforcing ply which extends throughout the length of the hose and fitting, at least one partial ply at each end of the hose which extends into the hose a predetermined amount beyond the nipple, said tube and each said inner ply and each said partial ply extending through the bore of the respective fitting and covering and being adhered to the end face of the respective flange where they are terminated, at least one intermediate ply which extends throughout the length of the hose and over said nipples to the back faces of said flanges, each said intermediate ply generally following the configuration of the periphery of said nipples, anchoring means which extend at least over said annular groove, said anchoring means having an inside diameter less than the overall diameter of said nipples, a helically wound heavy gauge wire extending throughout the length of the hose to the back faces of said flanges, the heavy gauge wire being embedded in elastomeric material, and at least one outer ply extending throughout the length of the hose to the back faces of said flanges, and a cover layer of elastomeric material extending throughout the length of the hose to the back faces of said flanges, the hose being cured into an integral structure.

4,366,843
GUIDE PLATE OF A HEDDLE FRAME

Yoichi Shimizu, Izumi, Japan, assignor to Kabushiki Kaisha Maruyama Seisakusho, Sakaishi, Japan
Filed Apr. 2, 1981, Ser. No. 250,176
Claims priority, application Japan, Jul. 14, 1980, 55-98050[U]
Int. Cl.³ D03C *9/06*
U.S. Cl. 139—91 **4 Claims**



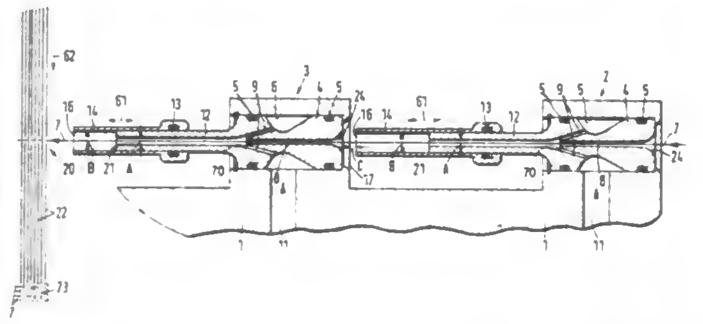
1. A guide plate of a heddle frame, comprising:
a fixed element including lower clipping pieces adapted to fit on and be fixed to a side beam of a heddle frame, said fixed element further including a connecting part connecting said clipping pieces together, said clipping pieces extending upward to terminate in at least one arc, and a fitting part extending from one wall to the other of each said arc;
a movable element including a connection part including a fitting part matable with said fitting part of said fixed element; and
a connection pin pivotally connecting said fixed and movable elements;
whereby said movable element is pivotable about said fixed element.

4,366,844
Patent Not Issued For This Number

4,366,845
NOZZLE ASSEMBLY

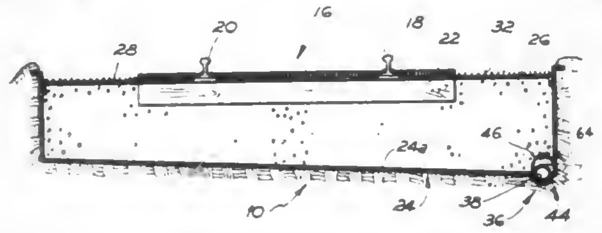
Dionizy Simson, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Jul. 30, 1980, Ser. No. 173,606
Claims priority, application European Pat. Off., Aug. 8, 1979, 79 102848.3
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **12 Claims**

1. A nozzle assembly for a weaving machine comprising:
at least two successively disposed insertion nozzles, each said nozzle having a passage of predetermined cross-sectional area for conveying a yarn therethrough, an inlet opening for the yarn at one end of said passage and an outlet opening for the yarn at an opposite end of said passage; and
a guide tube disposed between an outlet opening of one nozzle and in inlet opening of another nozzle, said guide tube being in sealed relation with said outlet opening and having a passage of a cross-sectional area greater than said passages of said nozzles for conveying a yarn therethrough from said one nozzle to said other nozzle.



4,366,846
METHOD FOR COLLECTING AND STORING LIQUID FROM ALONG A RAILROAD TRACK SECTION

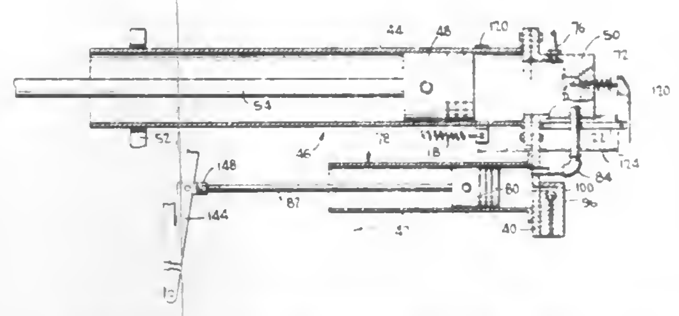
Marino Curati, Jr., Geneva, Ohio, assignor to True Temper Corporation, Cleveland, Ohio
Division of Ser. No. 53,705, Jun. 29, 1979, Pat. No. 4,299,697. This application Aug. 6, 1981, Ser. No. 290,481
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **9 Claims**



1. A method of collecting and storing liquids, such as petroleum based oil, from along a railroad track section, comprising, providing a containment reservoir adjacent to and beneath the track section, said reservoir including a flexible liquid impervious liner defining a containment space for collecting the liquid in the reservoir and preventing its escape into adjacent land areas, said liner comprising a layer of liquid pervious fabric material having on at least one of its sides an attached layer of liquid impervious material, such as rubber which is resistant to oil degradation, providing a relatively coarse particle bed located on said liner to generally fill said containment space, providing a layer of liquid pervious flexible fabric filter material covering the open top of said bed for preventing contaminant material of predetermined size from entering said bed, providing drain means including an apertured drain member for removing liquid from said reservoir and conduit means coacting in liquid communicating relation with said drain member generally adjacent the lowermost level of said containment space, extending said conduit means through the reservoir wall defined by said liner, providing a filter in coacting relation with said drain member and filtering liquid passing thereinto from the containment space, providing sealing means coacting between said liner and said conduit means for preventing inadvertent escape of liquid into the adjacent land areas past said liner at said location of extension of said conduit means through the reservoir wall, providing a storage reservoir in spaced relation to said containment reservoir, and transferring liquid collected in said containment reservoir from the latter via said drain means to said storage reservoir.

4,366,847
LOG SPLITTER

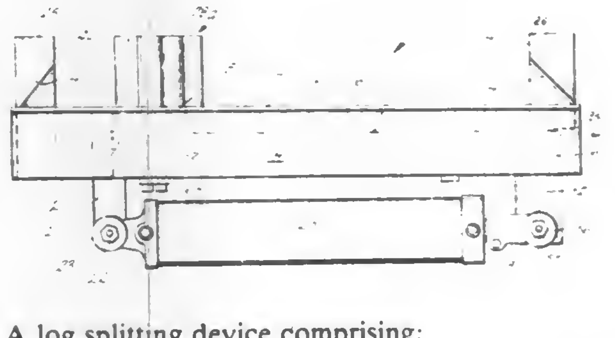
Wayland C. Blecha, Rte. #1 - Box 100, Cochrane, Wis. 54622
Filed Dec. 11, 1980, Ser. No. 215,420
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 R **14 Claims**



1. A log splitter comprising a frame, a log stop carried by said frame and a splitting head mounted on said frame in opposition to said log stop, an internal combustion engine mounted on said frame and extending longitudinally thereof, said internal combustion engine being of a type including cylinder means, piston means, a piston rod, and means for igniting a source of fuel, said piston rod carrying on of said splitting head or said log stop for movement longitudinally of said frame, said cylinder means means being of sufficient diameter whereby when ignition of the fuel occurs, said piston is driven with impacting force sufficient to perform the intended log splitting operation.

4,366,848
LOG SPLITTER

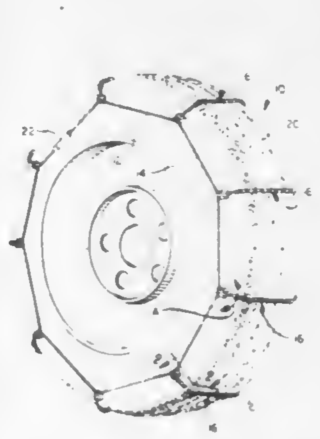
Frank R. Gavinski, Newaygo, Mich.
Filed Jan. 26, 1981, Ser. No. 228,150
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **10 Claims**



1. A log splitting device comprising:
a frame;
a longitudinally extending channel defined by said frame;
a log receiving table defined by said frame;
said frame comprising first and second frame members having a generally L-shaped cross section, said first and second frame members being secured together to define said channel therebetween and said table thereatop;
a double-acting drive cylinder;
means for mounting said drive cylinder on said frame underneath said table;
first and second abutments disposed on opposing longitudinal ends of said channel;
a double-acting wedge mounted for longitudinal reciprocal movement between said abutments;
a dog leg shaped ram interconnecting said wedge and said drive cylinder, said dog leg shaped ram comprising a generally horizontal portion extending longitudinally in said channel, a first generally vertical portion, disposed on one end of said horizontal portion, said first vertical portion extending above said channel, and a second generally vertical portion, disposed on the opposite end of said horizontal portion, said second vertical portion extending below said channel;
said wedge being disposed on said first vertical portion of said dog leg shaped ram, said wedge including means for engaging said table for vertically locating one end of said dog leg shaped ram in said channel;
means for engaging the bottom of said first and second frame members disposed on said horizontal portion of said dog leg shaped ram for preventing withdrawal of said ram upwardly from said channel;
means for engaging said horizontal portion of said dog leg shaped ram, said means for engaging said ram being disposed at the bottom of said channel, proximate the opposite end of said horizontal portion of said dog leg shaped ram and between said first and second abutments, whereby said means for engaging said ram vertically locates the opposite end of said horizontal portion of said dog leg shaped ram;
said second vertical portion of said dog leg shaped ram being insertable between said means for engaging said ram and the abutment proximate said opposite end of said horizontal portion of said dog leg shaped ram, for the purpose of engaging said drive cylinder; and
said opposite end of said horizontal portion of said dog leg shaped ram extending under the one of said first and second abutments disposed proximate said opposite end of said horizontal portion, whereby said dog leg shaped ram is trapped for reciprocal movement relative to said channel in a manner that minimizes the danger of binding.

4,366,849
CABLE-TYPE TIRE CHAINS

Rene J. Martinelli, West Linn, Oreg., assignor to Burns Bros., Inc., Portland, Oreg.
Filed Mar. 23, 1981, Ser. No. 246,362
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—221 **12 Claims**



1. A cable-type tire chain having a pair of elongate side members, cross members connected between the side members, the cross members being provided with traction means, and attachment means between the ends of the cross members and the respective side members, each attchment means comprising complementary connector elements secured to a cross member and side member respectively, one of said elements including a head and the other element comprising a plate having a bent over tab flattened toward the body of the plate and means defining an opening formed through the plate, and through which opening the head is inserted, the head being trapped between the tab and the body of the plate by the flattened tab, and the configuration of the connector elements permitting relative hinging movements therebetween when the head is trapped as aforesaid.

4,366,850

CABLE-TYPE TIRE CHAINS AND CROSS MEMBER AND TRACTION SLEEVE THEREFOR

James W. Coutts, Swanton, Vt., assignor to Burns Bros., Inc., Portland, Oreg.

Filed Mar. 23, 1981, Ser. No. 246,363

Int. Cl.^{3} B60C *27/06*

U.S. Cl. 152—222 18 Claims

1. A traction sleeve for use in a tire chain, the sleeve comprising a body portion having an outer surface in the form of a right cylinder and at least one end portion having an outer surface flared outwardly from the outer surface of the body portion, the end portion defining a notch providing sharp corners on one end of the sleeve.

11. A cable-type tire chain comprising elongate flexible side members adapted to extend circumferentially around opposite side walls of a tire and elongate flexible cross members connected between the side members and being adapted to extend over and across the tire tread, the tire chain including attachment means between the cross members and the side members permitting the cross members to rotate about their longitudinal axes, the cross members comprising cables provided with traction sleeves.

4,366,851

PNEUMATIC RADIAL TIRE FOR HEAVY LOAD VEHICLES

Shigeo Makino, Tokorozawa, and Noboru Sugimura, Kodaira, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,439

Claims priority, application Japan, Jun. 13, 1980, 55-81605[U]

Int. Cl.^{3} B60C *15/06, 9/08*

U.S. Cl. 152—356 R 9 Claims

1. A pneumatic radial tire for heavy load vehicles comprising; a body reinforcement including in combination a carcass composed of at least two organic textile cord plies including cords arranged in a plane inclusive of the rotary axis of the tire or a plane extremely slightly inclined with respect to the above mentioned plane and wound around a bead core from the inside toward the outside thereof to form a turn-up portion; hard and soft stiffeners disposed one upon the other on the bead core and sandwiched between the carcass and its turn-up portion; a belt composed of a plurality of metal cord layers superimposed about the crown portion of the carcass; and a bead portion reinforcement comprising at least two organic textile cord layers extending along the turn-up portion of the carcass and extending beyond and covering the upper ends of the turn-up portion of the carcass, the cords of these plies being crossed with each other, wherein at least two layers of said bead portion reinforcement substantially continuously covers the carcass ply from the bead core radially towards the inside of the tire, the outside upper end of the turn-up portion of the carcass ply and the upper end of the bead portion reinforcement covering the upper end of the turn-up portion of the carcass ply arranged at an area other than a bead portion flexible region defined by a segment BC for connecting a point C at which the outer contour of the bead portion of the tire is separated from the rim on the tire section under the normal internal pressure of the tire mounted on a standard rim and under the normal load to a point B at which a straight line parallel to the rotary axis of the tire and passing through a position corresponding to 27% of a height H of the tire under normal load and crosses with the inner wall of the tire and by a segment AD parallel with the segment BC and drawn from a point A at which a straight line passing through a position corresponding to 40% of the above mentioned height H and parallel to the rotary axis of the tire crosses with the inner wall of the tire, the bead portion reinforcement comprising a cord having a modulus which corresponds to 15 to 60% of that of the ply cord of the carcass, and a tension at 100% elongation of the soft stiffener corresponding to 5 to 30% of that of the hard stiffener.

4,366,852

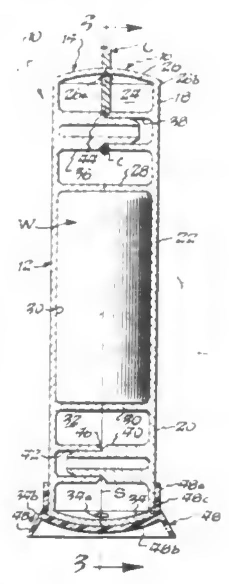
CORD WEIGHT ASSEMBLY

Joseph C. Holzer, Liverpool, N.Y., assignor to Joanna Western Mills Company, Chicago, Ill.

Filed Dec. 5, 1980, Ser. No. 213,396

Int. Cl.^{3} E06B *9/326;* **E05D** *17/00*

U.S. Cl. 160—320 1 Claim



1. A cord weight assembly of the type adapted to be attached to and depend from a cord for normally maintaining same in a taut condition, said assembly comprising:

a housing having an elongated construction including a cylindrical side wall and opposite convex end walls defined by two complementary halves arranged for mating engagement along a plane extending lengthwise of said housing, said halves having a pair of interior partitions cooperating with said side and end walls to define two end cavities each having a pair of spaced openings extending through one of said end walls of said housing and bisected

by said plane and an intermediate cavity, said halves are secured together by means of a pair of bosses and a pair of tubular members frictionally interfitting with said bosses, said bosses and said tubular members extending transversely of said plane with one of said bosses and one of said tubular members being formed on each of said halves, each pair of frictionally interfitting bosses and tubular members being arranged within one of said end cavities and defining an annular channel bisected by said plane, said cord being selectively coupled to one of the ends of said housing by being passed through said pair of spaced openings extending through said end wall thereof and looped about said annular channel defined by the pair of interfitting bosses and tubular members arranged in said end cavity adjacent the last said end wall, and said halves cooperate to define a pair of annular lips disposed one adjacent each of said end walls and projecting radially outwardly of said wall;

a weight located within said intermediate cavity;

a skirt fabricated of a resiliently deformable material and removably secured to an opposite end of said housing remote from said one end for cushioning contacts between said housing and adjacent structure in the event said housing is caused to swing for contact therewith, said skirt including a cylindrical collar closed at one end thereof by a bottom wall substantially complementary in curvature to said end walls and having an inwardly opening annular recess arranged adjacent said bottom wall and a flexible outwardly flared base portion, said collar is sized to receive said side wall adjacent to said opposite end of said housing with the adjacently disposed one of said annular lips snap-fit received within said annular recess, and said flared base portion projects radially outwardly of said side wall and axially beyond said bottom wall.

4,366,853

PROCESS AND DEVICES FOR CAUSING A HEAT CARRIER FLUID TO CIRCULATE IN A CLOSED CIRCUIT COMPRISING A HOT SOURCE AND A COLD SOURCE

Jean Paul Bernier, Rte. de la Sainte Baume-Quartier de Vede, 13390 Auriol, France

Filed Apr. 16, 1981, Ser. No. 254,788

Claims priority, application France, Apr. 18, 1980, 80 08847

Int. Cl.^{3} F28D *15/00*

U.S. Cl. 165—1 11 Claims

1. Process for causing a heat carrier fluid to circulate in a closed circuit, of constant volume, comprising a hot source, a cold source, a first closed tank located at a level higher than that of the hot source, of which the lower part communicates with the upper part of the hot source and a second closed tank which is located at a level at least equal to that of said first tank, which tanks contain a mixture of the liquid and vapour phases of said fluid, the upper parts of said tanks being connected together via a pipe provided with a valve and the lower part of the first tank being connected to the second tank by a circuit passing through said cold source, said process comprising the following steps:

when the level of the liquid in the first tank reaches a high level, said valve is closed, the liquid of the first tank is heated by the hot source, the pressure increases in the first tank and the hot liquid is driven towards the second tank through the cold source and mechanical energy is accumulated;

when the level of the liquid in the first tank reaches a low level, said valve is opened, the pressures in the two tanks become level and the liquid flows from the second tank towards the first under the effect of the accumulated mechanical energy,

and when the level of the liquid in the first tank reaches a high level again, a new cycle recommences and, in the course of these cycles, the heat carrier fluid circulates, conveying calories from the hot source towards the cold source without furnishing energy to the outside, so that the process may ensure a heat exchange between two sources, even remote ones, having a small temperature difference therebetween.

4,366,854

HEAT EXCHANGER FOR NUCLEAR REACTOR

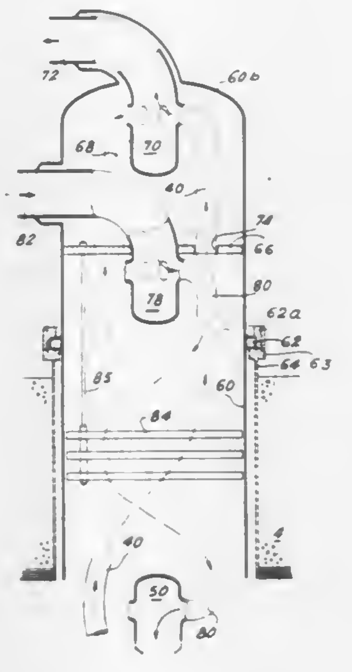
Robert Artaud, Aix en Provence; Michel Aubert, Manosque; Richard Elbeze, Aix en Provence, and Charley Renaux, Jouques, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed May 30, 1980, Ser. No. 155,120

Claims priority, application France, May 31, 1979, 79 13999

Int. Cl.^{3} F28D *1/06*

U.S. Cl. 165—74 5 Claims



1. A vertical heat exchanger for a nuclear reactor of the type in which the main vessel is sealed by an upper slab, the heat exchanger including a plurality of substantially straight exchange tubes mounted between an upper annular tube plate and a lower annular tube plate, said exchange tubes communicating with a supply chamber located under said lower annular tube plate and with a discharge chamber located above said upper annular tube plate, a supporting ferrule surrounding the said tubes and provided with a supply orifice and with a discharge orifice for a primary fluid, a central shaft which traverses the lower and upper annular tube plates and supplies the supply chamber with a secondary fluid, and a supply manifold and a discharge manifold for the secondary fluid, said supporting ferrule being fixed to the upper tube plate and sealed at its upper end by a dome, said ferrule having on its outer periphery a flange by which the ferrule is supported by the said slab, the manifolds being located one above the other in the supporting ferrule and supported by a horizontal plate fixed to the supporting ferrule, the supply manifold being connected by at least one pipe to an upper end of the shaft and the discharge

manifold being connected by at least one pipe to the discharge chamber, said pipes being positioned in the supporting ferrule.

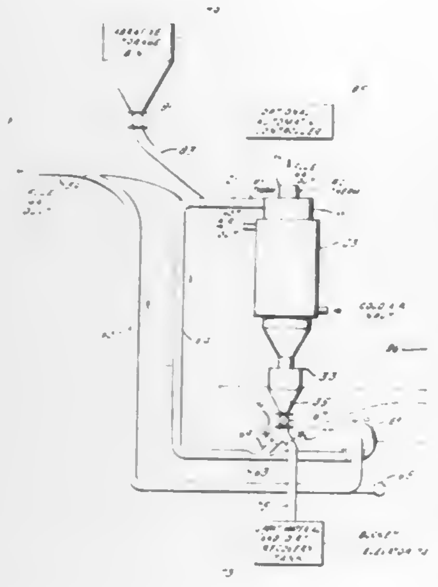
4,366,855
SELF-CLEANING RECUPERATOR

Albert W. Spitz, Elkins Park, Pa., assignor to Milpat Corporation, Glenside, Pa.

Filed Feb. 27, 1981, Ser. No. 238,978

Int. Cl.³ F28G *9/00*

U.S. Cl. 165—95 8 Claims



1. A self-cleaning recuperator comprising:
a cylindrically shaped swirl chamber having top and bottom end closures;
a hot gas inlet passageway entering said chamber through its cylindrical wall and tangentially thereto;
an outlet gas duct extending along the centerline of said chamber and exiting said chamber through the top closure thereof, said outlet duct extending downwardly a distance into said chamber beyond said hot gas inlet passageway entrance;
a cylindrical jacket surrounding said chamber cylindrical wall;
an inlet duct entering said jacket tangentially to said chamber wall;
an outlet duct exiting said jacket tangentially to said chamber wall;
means for introducing abrasive material into said hot gas inlet passageway; and
a collector bin forming said bottom end closure.

4,366,856
APPARATUS FOR STORING HEAT

Michio Yanadori, Hachioji; Kohji Kamejima, Shimoinayoshi; Hideki Tanaka, Shimoinayoshi; Minoru Kano, Shimoinayoshi; Motokazu Uchida, Tokyo, and Yoritsune Abe, Ohiramachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

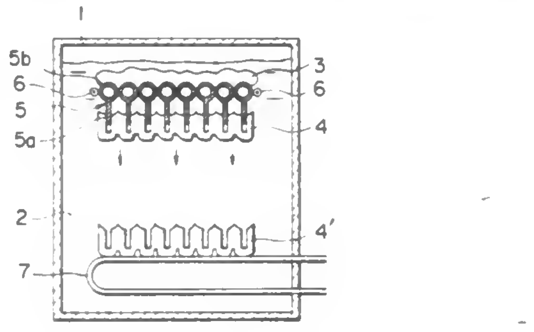
Filed Dec. 3, 1980, Ser. No. 212,341

Claims priority, application Japan, Dec. 5, 1979, 54-156810

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—104.17 18 Claims

1. Apparatus for storing heat of the type having a heat exchanger for cooling immersed in a latent heat type heat-storing material contained in a container for storing heat, wherein said heat exchanger comprises a plurality of pipes horizontally arranged in contact with each other at respective adjacent sides in a manner forming a group having the pipes all disposed on the same level within the container, and means for causing crystals of heat-storing material deposited on the periphery of the group of pipes to be released therefrom as a first mass at an upper side of the group and as a second mass at a lower side of the group.



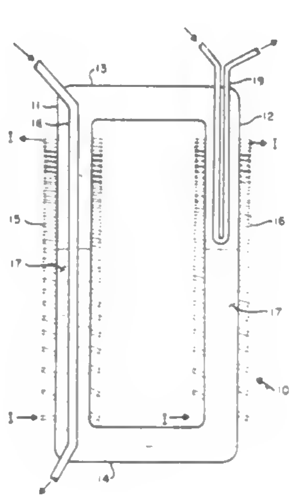
4,366,857
MAGNETIC TWO-PHASE THERMOSIPHON

Arnold H. Mayer, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1981, Ser. No. 258,341

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.23 7 Claims



1. A heat pipe device comprising:
a. a closed, generally tubular member having a first end and a second end;
b. means for heating said first end, and means for cooling said second end of said tubular member;
c. a magnetically susceptible liquid disposed within said tubular member, said liquid serving as the heat exchange medium within said tubular member by vaporization of said liquid near said first end and condensation near said second end; and
d. means, adjacent said tubular member, for producing within said tubular member a magnetic field which increases along the length of said tubular member from one of said ends to the other, said magnetic field interacting with said liquid to force said liquid toward said first end and thereby effect phase separation of said liquid from its vapor.

4,366,858
SELF-DEAERATING HEAT EXCHANGER FOR ENGINE COOLING CIRCUITS

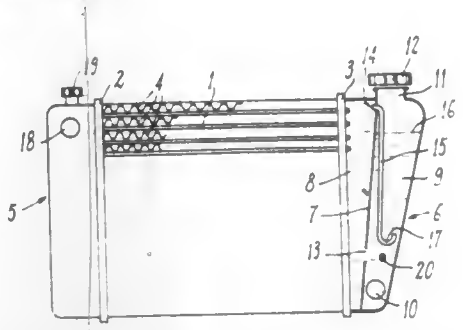
Jean-Pierre Moranne, Saint-Leu-la-Foret, France, assignor to Societe Anonyme des Usines Chausson, France

Filed Nov. 10, 1980, Ser. No. 205,126

Claims priority, application France, Nov. 16, 1979, 79 28313; Mar. 3, 1980, 80 04693

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.32 15 Claims



1. A self-deaerating heat exchanger for engine cooling circuits, of the type in which coolant tubes are placed horizontally and connected by tube plates covered by inlet and outlet header tanks containing coolant liquid, wherein a vertical partition wall divides the outlet tank into first and second compartments, the first compartment communicating with the coolant tubes and the second compartment communicating both with a filling spout opening in the upper portion thereof and with a liquid return means opening in the bottom portion thereof, the partition wall having a lower opening having a passage cross-section causing a pressure loss at least equal to the head of liquid in the outlet tank for the liquid flowing from one compartment to the other, said lower opening being provided below the level of liquid in the second compartment, and a pipe open at the two ends thereof extending from the top portion of the first compartment to a level of the second compartment situated below the level of liquid in said second compartment.

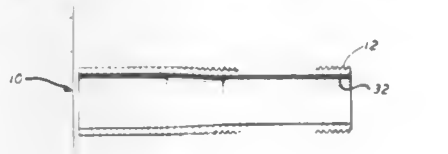
4,366,859
REFRACTORY HEAT EXCHANGE TUBE

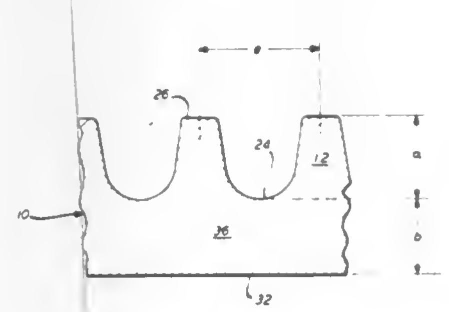
John M. Keyes, 316 6th St., St. Simons, Ga. 31522

Continuation of Ser. No. 564,343, Apr. 2, 1975, abandoned. This application Aug. 31, 1977, Ser. No. 829,264

Int. Cl.³ F28F *1/14*

U.S. Cl. 165—184 2 Claims





1. A refractory metal heat exchange tube made of titanium or an alloy thereof containing more than fifty percent titanium comprising at least one helical fin rolled into the outside wall surface of said tube integrally therewith having a fin height of from 0.022 inch to 0.033 inch and a fin density of from 26 to 50 fins per inch of tube length, the fin surface area being at least 2.4 times greater than the comparable outside surface area of the tube prior to finning, the thickness of the tube wall underneath the fins being less than the fin height.

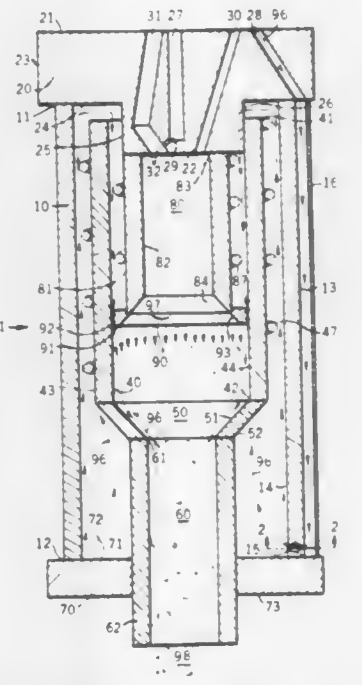
4,366,860
DOWNHOLE STEAM INJECTOR

A. Burl Donaldson, and Donald E. Hoke, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 3, 1981, Ser. No. 269,460

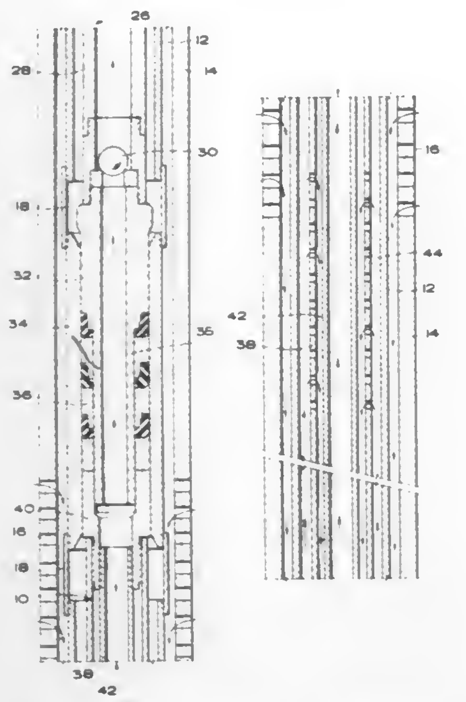
Int. Cl.³ E21B *36/02, 43/24*

U.S. Cl. 166—59 10 Claims



1. A downhole steam injector comprising:
a solid cylindrical top head having separate orifices extending from an outer surface through the head for oxidant and fuel;
a hollow cylindrical body fastened at a top end to said top head;
orifice means for the passage of water from an outer surface to an inner surface of said body at a location adjacent the bottom end of said body;
a hollow cylindrical middle sleeve supported at a top end by said top head, said sleeve being axially aligned with and spaced from said body;
means at said top head for the passage of water from the outer to the inner surface of said middle sleeve;
a hollow cylindrical inner sleeve fastened at a top end to said top head, said inner sleeve being axially aligned with and spaced from said middle sleeve;
an annular water injector fastened at the bottom end of said inner sleeve and having an outer surface contiguous with an inside surface of said middle sleeve, said injector having longitudinal water passages extending between opposed end surfaces;
a reducer axially aligned with said sleeves comprising a hollow truncated cone having a large top diameter fastened to the bottom end of said middle sleeve and a small bottom diameter;
a cylindrical outlet pipe axially aligned with said sleeves having a top end fastened to the small end of said reducer sleeve;
and a cylindrical bottom head providing a water tight seal between the bottom end of said body and the outer surface of said outlet pipe.

4,366,861
DOWNHOLE GAS SEPARATOR
Jay K. Milam, 3005 N. Park, Claremore, Okla. 74017
Filed Jan. 5, 1981, Ser. No. 222,348
Int. Cl.^{3} E21B ***43/38***
U.S. Cl. 166—105.5 **4 Claims**



1. A downhole gas separator for a producing well bore having a perforated well casing, a perforated well tubing string anchored within the casing, and a downhole rod pump disposed within the tubing, said gas separator comprising;

an outer tube having one closed end and one open end, the open end being connected directly to the downhole rod pump and disposed entirely within said well tubing string, said outer tube having perforations provided in the sidewall thereof adjacent the upper portion thereof; and

an inner tube concentrically disposed within said outer tube and having one closed end and one open end, the open end being secured directly to the downhole rod pump and in communication with the interior thereof, said inner tube having perforations provided in the sidewalls thereof adjacent the closed end thereof;

the inner and outer tubes cooperating with the well tubing to provide a circuitous elongated path of travel for well fluid to facilitate the separation of gaseous components from heavier components of the well fluid.

4,366,862
DOWNHOLE PUMP AND TESTING APPARATUS
John T. Brandell, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Continuation of Ser. No. 204,058, Nov. 4, 1980, Continuation of Ser. No. 204,057, Nov. 4, 1980, which is a division of Ser. No. 57,093, Jul. 12, 1979, Pat. No. 4,246,964. This application Apr. 17, 1981, Ser. No. 255,252
Int. Cl.^{3} E21B ***33/124, 33/127, 43/00, 49/08***
U.S. Cl. 166—106 **20 Claims**

1. A downhole tool, comprising:

a downhole pump having an upper pump portion adapted to be connected in a lower end of a pipe string, and having a lower pump portion operably associated with said upper pump portion so that said pump is operated upon relative rotational motion between said upper and lower pump portions, said lower pump portion including:

a relief housing; and

a release mandrel having a lower end received in a central relief housing bore of said relief housing;

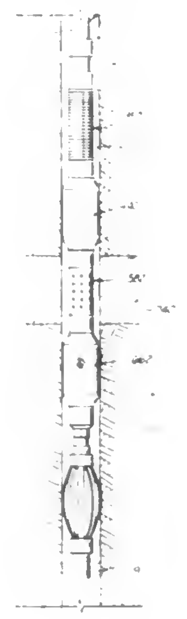
a screen assembly connected in said pipe string below said lower pump portion, said screen assembly having a suction inlet means disposed therein communicated with an intake passage means of said downhole pump;

a first packer assembly, connected in said pipe string below said screen assembly, said first packer assembly including a first inflatable element communicated with a discharge passage means of said downhole pump through an intermediate discharge passage of said screen assembly;

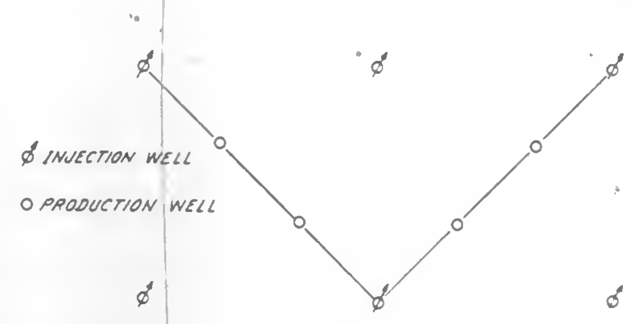
an intake port assembly connected in said pipe string below said first packer assembly, said intake port assembly having a plurality of ports disposed therein for communicating an annular space between said intake port assembly and a well hole with an inner bore of said intake port assembly, said inner bore of said intake port assembly being a part of a flow passage means of said downhole tool, which flow passage means is adapted to be communicated with a central bore of said pipe string when said upper pump portion is connected in said pipe string;

a second packer assembly, connected in said pipe string below said intake port assembly, said second packer assembly including a second inflatable element communicated with said discharge passage means of said downhole pump through said intermediate discharge passage of said screen assembly and second and third intermediate discharge passages in said first packer assembly and said intake port assembly, respectively, so that said first and second inflatable elements may be inflated with fluid from said discharge passage means of said downhole pump to isolate a zone of said well so that a sample of well fluid may be taken therefrom through said intake port assembly; and

relief means, operably associated with said discharge passage means of said downhole pump, for communicating said discharge passage means with said flow passage means of said downhole tool and thereby relieving fluid pressure from said first and second inflatable elements into said flow passage means of said downhole tool to deflate said first and second inflatable elements, said relief means including a relief passage disposed in said relief housing and communicating said central relief housing bore of said relief housing with said discharge passage means, said lower end of said release mandrel being longitudinally movable relative to said central relief housing bore between a first position, wherein said relief passage is open to communicate said discharge passage means with said flow passage means and a second position wherein said relief passage is closed.



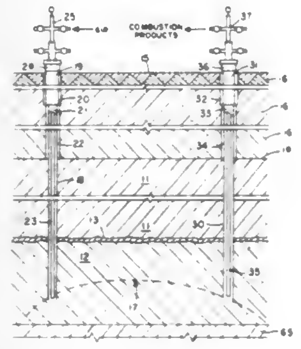
4,366,863
ENHANCED OIL RECOVERY OPERATIONS
Robert J. Frick, Houston; Ralph J. Korstad, Austin, and Charles J. Robinson, III, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Sep. 29, 1980, Ser. No. 191,975
Int. Cl.^{3} E21B ***43/30***
U.S. Cl. 166—245 **4 Claims**



1. In an enhanced oil recovery process utilizing a plurality of wells disposed in a nearly square grid well pattern where the plurality of the wells are utilized as injection wells to inject a fluid into a petroleum reservoir, said fluid being then forced through the reservoir toward a plurality of production wells from which the fluid and mobilized petroleum from the reservoir are produced,

the improvement comprising utilizing the wells at the corners of each nearly square grid unit as injection wells, drilling two additional wells within each square grid unit along only one diagonal of each nearly square grid well pattern, opposite diagonals being utilized from one grid unit to the next within both rows and columns within the nearly square grid well pattern, said two additional wells in each nearly square grid well pattern being spaced thereupon such that a high areal sweep efficiency for the well pattern is achieved, and utilizing these two additional wells as new production wells within each square grid unit.

4,366,864
METHOD FOR RECOVERY OF HYDROCARBONS FROM OIL-BEARING LIMESTONE OR DOLOMITE
Michael A. Gibson, Houston; Robert E. Pennington, and George T. Arnold, both of Baytown, all of Tex., assignors to Exxon Research And Engineering Co., Florham Park, N.J.
Filed Nov. 24, 1980, Ser. No. 209,560
Int. Cl.^{3} E21B ***43/247***
U.S. Cl. 166—259 **12 Claims**



1. A process for the recovery of liquid and/or gaseous hydrocarbons from an underground deposit of oil-bearing limestone or dolomite which comprises:

(a) drilling at least two boreholes into the lower portion of said deposit from the earth's surface;

(b) establishing communication between said boreholes within said deposit near the lower boundary of said deposit;

(c) initiating combustion of the oil in said limestone or dolomite near the lower boundary of said deposit;

(d) introducing an oxygen-containing gas into one of said boreholes and withdrawing gaseous combustion products from said oil from another of said boreholes until a sufficient amount of the alkaline earth carbonate in said deposit is decomposed into the alkaline earth oxide occupying a volume of from about 5 to about 30 percent of the volume of said deposit;

(e) introducing water into one of said boreholes in such a manner that said water contacts said alkaline earth oxide without substantial mechanical agitation thereby disintegrating said alkaline earth oxide and forming an aqueous slurry containing alkaline earth hydroxide;

(f) withdrawing said slurry of alkaline earth hydroxide through another of said boreholes thereby creating a cavity having a volume equivalent to from about 5 to about 30 percent of the volume of said deposit;

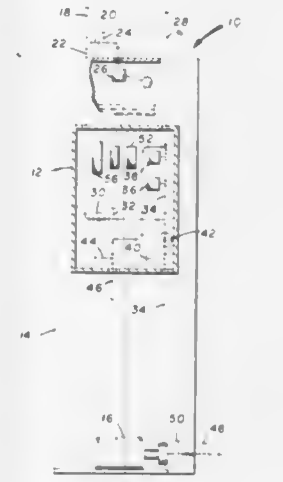
(g) breaking down into said cavity the oil-bearing limestone or dolomite overlying said cavity until a rubblized zone extending vertically to a point near the upper boundary of said deposit has been formed;

(h) establishing a flame front within said rubblized zone;

(i) driving said flame front through said rubblized zone; and

(j) withdrawing liquids and/or gases from said rubblized zone.

4,366,865
PACKAGED SPRINKLER SYSTEM USING A DEAD WATER TANK
James J. Makibbin, 1339 Lincoln Woods Dr., Baltimore, Md. 21228
Filed Apr. 7, 1981, Ser. No. 222,061
Int. Cl.^{3} A62C ***35/00***
U.S. Cl. 169—13 **6 Claims**



1. In a sprinkler system having a plurality of sprinkler heads, a packaged sprinkler system using a dead water tank, comprising:

a plurality of sprinkler heads;

a tank means;

a packaged control means, said packaged control means being compact and self-contained, said packaged control means being affixed to said tank means;

a pump means, said pump means being affixed to said tank means and connected to the interior thereof and communicating therewith, said pump means being further connected to said packaged control means, and a water supply means, said packaged sprinkler system being connected to said water supply means, said water supply means having a first distribution means and a second distribution means in said packaged sprinkler system, said first distribution means being connected to said tank means and communicating therewith, and said second distribution means being connected to said packaged control means, and a water level control means, said water level control means being located in the interior of said tank means and connected to said first distribution means and communicating therewith, said packaged control means consisting of:

an enclosed housing means said enclosed housing means having an access covering on one side thereof;

a first piping means said first piping means being located in said housing means and being connected to said second distribution means and communicating therewith;

a second piping means, said second piping means being located in said housing means and being connected to said first piping means and communicating therewith, said second piping means extending to the exterior of said housing means and being further connected to said plurality of sprinkler heads and communicating therewith;

a third piping means, said third piping means being located in said housing means and being connected to said second piping means and communicating therewith, said third piping means extending to the exterior of said housing means and being further connected to said pump means and communicating therewith;

a first check valve;

a first control valve, said first check valve and first control valve being located in said housing means and installed in line between said first piping means and said second piping means, said first check valve and first control valve communicating with and between said first and second piping means;

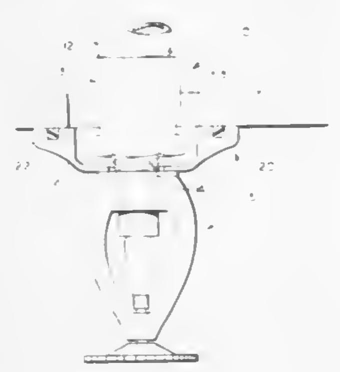
a second check valve;

a second control valve; said second check valve and second control valve being located in said housing means and installed in line between said third piping means and an intermediate point of said second piping means, said second check valve and second control valve communicating with and between said third and second piping means;

a drain valve, said drain valve being located in said housing means, said drain valve being connected to said second piping means and communicating therewith, said drain valve being connected to said second piping means at a location immediately before said second piping means extends to the exterior of said housing means, said drain valve further communicating with the exterior of said housing means.

4,366,866
SPLIT ESCUTCHEON SYSTEM

Thomas M. Sweeney, 7333 Holliday Dr., West, Indianapolis, Ind. 46260
Continuation of Ser. No. 20,993, Mar. 16, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 243,706
Int. Cl.^{3} A62C *37/08*
U.S. Cl. 169—37 **11 Claims**



8. A method of decorating a fire protection system with sprinkler heads extending through the surfaces of a building ceiling comprising

providing two decorative escutcheon parts capable of interfitting engagement by twist-locking mating portions together without the use of tools,

providing a decorative annular shim having an extended decorative outer surface with two ends and having an inner opening permitting it to be fitted over a sprinkler head, said inner opening forming off-center inner surfaces to be engaged by the decorative pipe escutcheon, said off center inner surfaces being so located with respect to the end portions of the extended decorative outer surface of the shim that, upon reversal end for end, it provides a different spacing between each end of the extended decorative outer surface of the shim and the inner surface to be engaged by the decorative pipe escutcheon,

said decorative shim being adapted to be engaged by the two interfitting decorative escutcheon parts and to provide, with said decorative escutcheon parts, a further decorative surface having a plurality of lengths depending upon its engagement with the escutcheon parts,

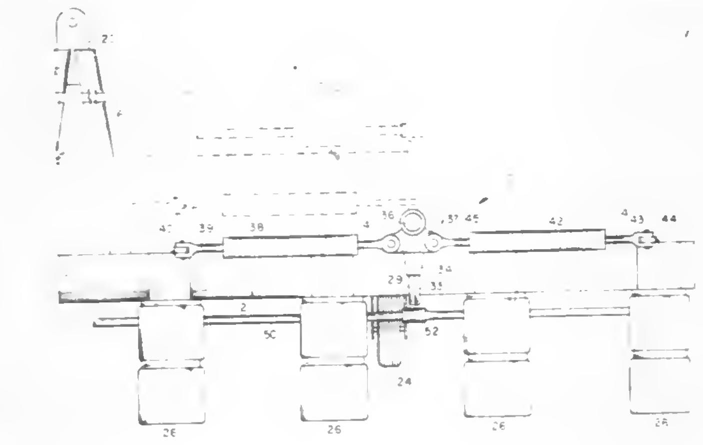
orienting the decorative shim to provide the desired engagement with the escutcheon parts and length of decorative surface and fitting it over the sprinkler head,

fitting the two escutcheon parts over the sprinkler head and twist-locking the two escutcheon parts into a decorative assembly and placing the interfitted escutcheon parts in engagement with the decorative shim to hide thereby the interface between the sprinkler head and the building ceiling.

10. A decorative escutcheon for a pipe system, said escutcheon comprising two identical escutcheon parts, each escutcheon part including a decorative generally semi-annular surface and two end portions, each end portion of each escutcheon part having major surfaces lying in planes that are generally normal to its semi-annular decorative surface, one end surface of each escutcheon part having a portion projecting from the plane of its surface and the other end surface having an opening, said projecting portion of said one surface and said opening of said other surface being designed to be interlockable to permit the identical parts to be assembled into an integral, generally annular decorative escutcheon about a pipe and to be removed therefrom without the use of tools by manipulation of the two parts by relative rotation of each escutcheon part about an axis generally perpendicular to said planes and without breaking the integrity of the pipe system.

4,366,867
HORIZONALLY FOLDING AGRICULTURAL IMPLEMENT AND HINGE

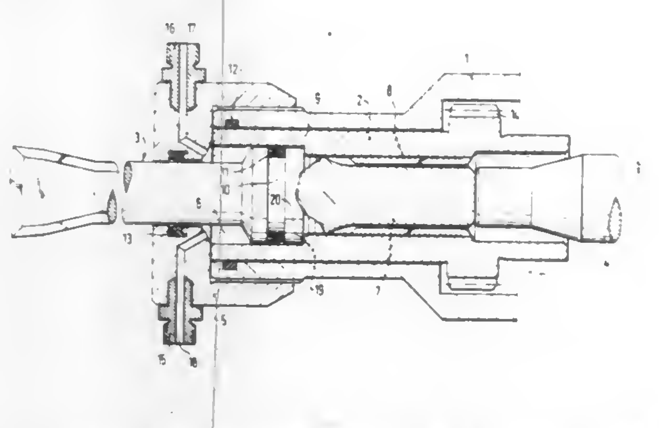
Ronald A. Filbrun, R.R. #4, Box 260, Pendleton, Ind. 46064
Filed Mar. 18, 1980, Ser. No. 131,536
Int. Cl.^{3} A01B *73/00*
U.S. Cl. 172—776 **3 Claims**



1. A hydraulically actuable horizontally folding tool bar for an agricultural implement comprising a transversely elongated main frame section adapted to be operatively attached to a traction vehicle; a plurality of support wheels operatively attached to said main frame section; a pair of foldable outer wing sections, one disposed at each end of said main frame section; a generally vertical hinge assembly mounted at each end of said main frame section operative between said main frame section and the corresponding one of said outer wing sections, each said hinge assembly including at least one bushing rigidly attached to a forward edge of an end of said main frame section, said bushing defining an opening therethrough, at least one other bushing rigidly attached to a forward edge of said corresponding outer folding wing section defining a central opening therethrough positioned in axial alignment with said first bushing, a hinge pin movably positioned within and extending through said openings in said first and second bushings to allow rotation of said outer wing section about the central axis of said hinge pin and a mounting flange associated with one end of said hinge pin; hydraulic actuating means for each of said wing sections, each of said hydraulic actuating means associated with said main frame section, said corresponding outer wing section and said hinge assembly, each of said hydraulic actuating means including a first hydraulic cylinder aligned with said main frame section and connected at one end to said main frame section and said first hydraulic cylinder connected at the other end to said mounting flange and a second hydraulic cylinder aligned with said outer wing section and connected at one end to said outer wing section and said second hydraulic cylinder connected at the other end to said mounting flange, said other end of said first and second hydraulic cylinders being coupled together by said mounting flange, such that said hydraulic cylinders interact through said mounting flange whereby, upon energization of said hydraulic actuating means, said corresponding outer wing section is folded with respect to said main frame section from a first or operating position wherein said outer wing section extends laterally from said main frame section to a second or transport position wherein said outer wing section is folded forwardly and in general transverse alignment with said main frame section and whereby said first and second hydraulic cylinders maintain their alignment with said main frame section and said outer wing section respectively.

4,366,868
ROCK DRILL APPARATUS

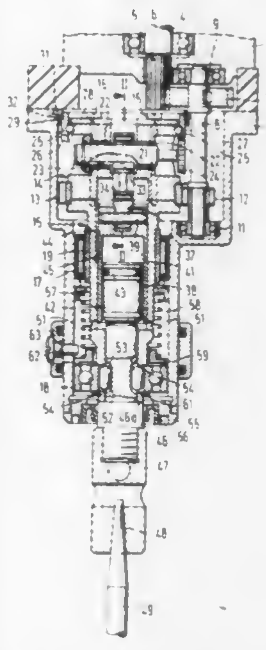
Pekka Salmi, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland
Filed May 7, 1979, Ser. No. 36,652
Claims priority, application Finland, May 11, 1978, 781486
Int. Cl.^{3} B25D *9/00*
U.S. Cl. 173—105 **2 Claims**



1. In a striking apparatus including a reciprocating striking piston operable by a pressure mechanism, a cylindrical body, the improvement comprising a sleeve bushing mounted inside of the cylindrical body in slidably fitted assembly therewith, the sleeve bushing having a drive gear at one end for rotary engagement with a drive motor, a rotary tool and piston shak and piston all integrally combined as a one piece unit and at least partly received in coaxial alignment within said tubular bushing, spline gear means between the tubular bushing and the piston shank enabling co-rotational rotary movement together upon actuation of the drive gear through operation of a drive motor operatively connected therewith, means defining a piston cylinder in the cylindrical body and with the piston being reciprocably movable in the piston cylinder, the shank having a shank face facing in the direction opposing the striking piston and with the shank face transferring the feed force from the body through said sleeve bushing to the rotary tool, and means cooperable with the piston cylinder for assisting a pressure medium to be directed towards the front of the piston so that the latter moves backwards toward the striking piston causing a striking contact between an end surface of the shank and the striking piston when the tool becomes stuck.

4,366,869
HAMMER DRILL

Rolf Bereiter, Buchs, Switzerland, and Franz Chromy, Levis, Austria, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Sep. 18, 1980, Ser. No. 188,559
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938513
Int. Cl.^{3} B23B *45/16*
U.S. Cl. 173—109 **7 Claims**



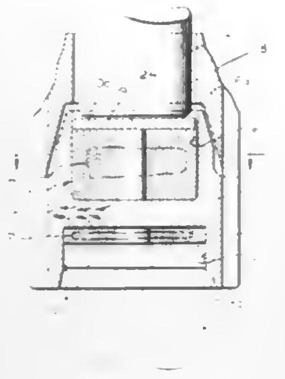
1. Hammer drill comprising a housing having a forward end and a rearward end, a tool receptacle located in the forward end of said housing, a percussion piston located within said housing and displaceable in the forward end-rearward end direction for delivering percussion force to said tool receptacle, a drive piston located within said housing and extending rearwardly of said percussion piston and displaceable in the forward end-rearward end direction for transmitting percussive force to said percussion piston, means mounted on said housing for transmitting reciprocal movement in the forward end-rearward end direction to said drive piston, said transmission means includes a shaft extending perpendicularly of the forward end-rearward end direction, and a bearing located within said housing for rotation about an axis extending in the forward end-rearward end direction and said bearing rotatably supporting said shaft, a contact rim supported on said bearing with said bearing being rotatable relative to said contact rim, means for interengaging said shaft and said contact rim, and means for holding said contact rim against rotation while said bearing rotates relative to said contact rim for affording the rotation of said shaft about its axis extending perpendicularly of the axis of said bearing.

4,366,870
PILE HAMMER CUSHION BLOCK

Leonard L. Frederick, 15 Crestview Ter., Whippany, N.J. 07981
Filed Oct. 31, 1979, Ser. No. 89,780
Int. Cl.^{3} B25D *17/12;* **F16F** *15/04*
U.S. Cl. 173—131 **13 Claims**

1. A cushion block for the drive cap of a pile hammer having a ram for impact driving a pile into strata comprising, in combination, a drive cap having a metal body arranged to be positioned on the upper end of a pile, said drive cap metal body

having an upper portion provided with an upper cavity having an open upper end for accommodating said ram during impact driving of said pile, a convolutely wound body of cushioning material comprising a multiple laminate including a ply of heat conductivity material and a supporting layer of non-metallic material so that the longitudinal axis of said convolutely wound body is coaxial with the longitudinal axis of said cavity and contained and nesting snugly within said cavity in heat transfer relationship with said drive cap and a strike plate disposed in said cavity overlying relationship with the surface of said block of cushioning material for impact engagement by said ram whereby hysteresis heat generated within said block of cushioning material during said impact driving is conducted by said block of cushioning material to said drive cap acting as a heat sink for ultimate radiation of the heat into the ambient air.



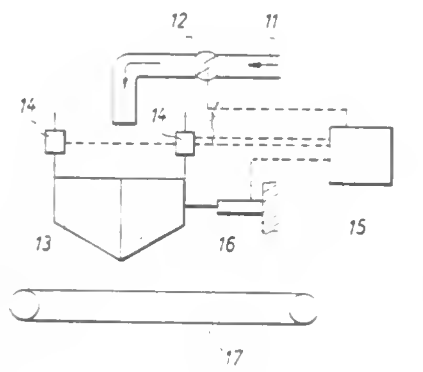
4,366,871
MOTOR-DRIVEN SCREWDRIVER

Herbert Dieterle, Ostfildern; Alfred Hettich, and Karl Roll, both of Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 21, 1981, Ser. No. 226,828
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002439
Int. Cl.^{3} B25B *21/00*
U.S. Cl. 173—163 **10 Claims**

1. A screwdriver comprising a drive motor having a drive shaft and a work shaft spaced from and coaxial with said drive shaft; planetary gear means between said drive shaft and said work shaft for driving the latter at different speeds of rotation during rotation of said drive shaft at a constant speed, said planetary gear means comprising drive elements directly connected with said drive shaft for rotation therewith and a planetary gearing element constructed as a movable coupling element movable between a first position rotating with said drive elements and a second position in which it is prevented from rotation; and means connected to said coupling element for moving the same between said positions thereof.

4,366,872
WEIGHING CONTROLLING FLOW RATE WITH TARING BETWEEN WEIGHINGS

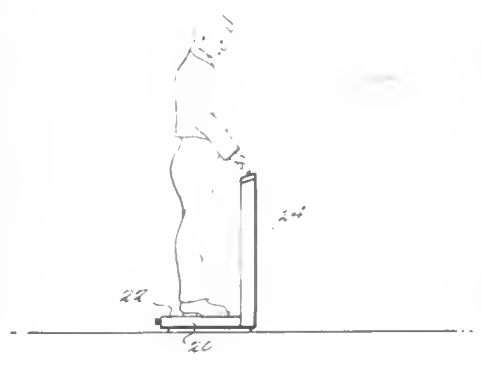
David Brunnschweiler, Balderstone Lodge, Commons La., Balderstone, Blackburn, Lancashire, and Barrie Sedgely, 5, Grange Way, Sandbach, Cheshire, both of England
Filed Sep. 26, 1980, Ser. No. 190,965
Claims priority, application United Kingdom, Oct. 18, 1979, 7936211
Int. Cl.^{3} G01G *19/22, 13/24, 13/14;* **B67D** *5/08*
U.S. Cl. 177—1 **2 Claims**



1. A method for regulating the continuous supply of material, comprising the steps of:
taring a weighpan;
loading a first quantity of material in said weighpan;
comparing the weight of said first quantity with a desired weight and determining the difference;
discharging said first quantity to a subsequent process requiring a consistent quantity of said material per unit time;
taring said weighpan;
determining a second quantity based upon comparing said difference and said desired quantity;
loading said second quantity of material in said weighpan;
discharging said second quantity to said process;
and
repeating the above steps whereby a consistent quantity of material is delivered to said subsequent process.

4,366,873
ELECTRONIC SCALE FOR USE IN A WEIGHT CONTROL PROGRAM

Michael Levy, Plantation; William P. Porter, Coral Springs; Kiran Gandhi, Pembroke Pines, and Rick McKay, Miami, all of Fla., assignors to Lexicon Corporation, Miami, Fla.
Filed May 1, 1980, Ser. No. 145,842
Int. Cl.^{3} G01G *19/44*
U.S. Cl. 177—25 **15 Claims**

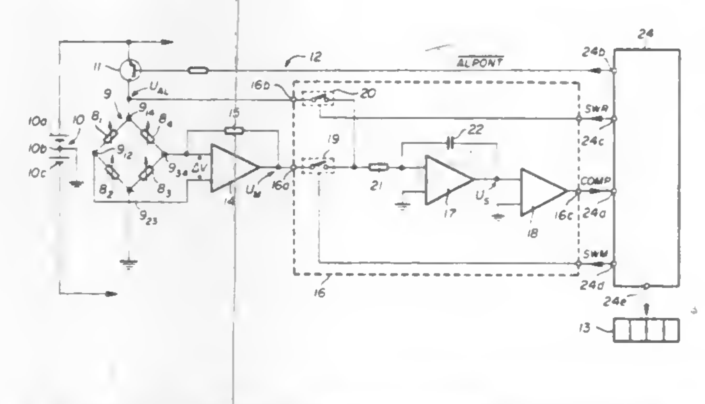


1. An electronic scale for use in a weight control program comprising:
a base including a platform for receiving an individual in said program to be weighed;
means within said base for producing a weigh signal and a weigh signal message indicating the weight of said individual on said base;

keyboard means having a plurality of keys for manually entering information and control signals;
said keyboard means including means for manually entering personal data or a weight goal and producing a signal indicating the desired weight goal for said individual or a personal data signal indicating said personal data;
memory means for storing a previous weighing history for said individual and a plurality of different spoken messages divided into categories with a plurality of messages in each category, each of said categories relating to a particular weighing history pattern and the relationship of weight to weight goal;
means for producing any one of said plurality of different spoken messages;
computer means, responsive to said keyboard, and said weight signal producing means, and connected to said message producing means and said memory means, for determining a weight goal in accordance with manually entered personal data and selecting at least one of said spoken messages from a category selected in accordance with an entered or determined weight goal, said stored weighing history and the difference between said weigh signal and said goal; and
means for causing said selected message and said weigh signal message to be spoken.

4,366,874
DEVICE FOR MEASURING THE MAGNITUDE OF A FORCE APPLIED TO THE FREE END OF A CANTILEVER BEAM

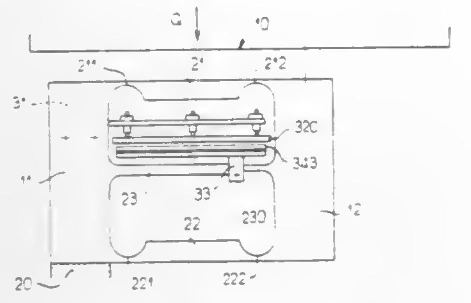
Paul Pidoux, Bassins, and Jean L. Prost, Geneva, both of Switzerland, assignors to Terraillon, Annemasse, France
Continuation of Ser. No. 56,268, Jul. 10, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,084
Claims priority, application Switzerland, Jul. 14, 1978, 7658/78
Int. Cl.^{3} G01G *3/142*
U.S. Cl. 177—25 **3 Claims**



1. A device for measuring the magnitude of a force, comprising:
(a) a deflectable beam;
(b) a beam suppport, the deflectable beam being connected to the beam support so that a length of the beam can be deflected by a force applied to the beam;
(c) a plurality of strain gauges affixed to the beam, the strain gauges being electrically interconnected to form a strain-gauge bridge circuit, the bridge circuit having an electrical-energy input and a strain signal output, the strain-gauge bridge circuit being adapted to produce a strain signal at the strain signal output in response to deflection of the beam on which the strain gauges are affixed when the bridge circuit is energized by electrical energy applied to the electrical-energy input, the strain-signal being a measure of the force deflecting the beam;
(d) a strain-signal amplifier having a signal input and a signal output, the signal input of the strain-signal amplifier being connected to the strain-signal output of the strain-gauge bridge circuit;
(e) a switchable-input, integrate-and-compare circuit having:
  (e.1) two signal inputs; an unknown-signal input connected to the signal output of the strain-signal amplifier, and a reference-signal input connected to the electrical-energy input of the strain-gauge bridge circuit;
  (e.2) a signal integrator having an integrator input and an integrated-signal output;
  (e.3) electronically-controlled signal switch means having a switch-control input and interconnecting the unknown-signal input, the reference-signal input, and the integrator input, for selectively connecting the integrator input to the unknown-signal input or to the reference-signal input in response to switch control signals applied to the switch-control input; and
  (e.4) a comparator having a test-signal input, a comparison-reference input, and a comparator output, the test signal input being connected to the integrated-signal output of the integrator and the comparison-reference input being connected to a comparison reference, so that in operation the comparator generates a crossover-time signal at the comparator output when an algebraic difference between the comparison reference and an integrated signal from the integrator changes sign;
(f) a microprocessor having a clock, an input port, and output ports, an output port being connected to the switch-control input of the signal switch means of the integrate-and-compare circuit so that the integrator input of the integrate-and-compare circuit can be selectively connected to the unknown signal input or to the reference-signal input in response to switch control signals from the microprocessor, and an input port of the microprocessor being connected to the comparator output of the comparator of the integrate-and-compare circuit so that in operation the microprocessor can determine a digital signal-level number representative of an analog-signal level applied to the unknown-signal input of the integrate-and-compare circuit by steps comprising: directing that a first signal input of the integrate-and-compare circuit be connected to the integrator input for a predetermined time interval, subsequently directing that a second signal input be connected to the integrator input, and digitally measuring a time interval between connection of the second signal input to the integrator input and a crossover-time signal from the comparator;
(g) a bridge-energy supply terminal connectable to an electrical-energy source for the strain-gauge bridge circuit;
(h) an electronically controlled bridge-energization interrupter switch having a switch-control input connected to an output port of the microprocessor, the bridge-energization interrupter switch being connected between the bridge-energy supply terminal and the electrical-energy input of the strain-gauge bridge circuit to permit the electrical energy supplied to the strain-gauge bridge circuit to be interrupted in response to switch-control signals from the microprocessor to enable an error signal at the signal output of the strain-signal amplifier when the electrical energy supplied to the strain-gauge bridge circuit is interrupted to be applied to the unknown-signal input of the integrate-and-compare circuit so that in operation a corrected strain-signal number representative of a strain signal from the strain-gauge bridge circuit amplified by the strain-gauge amplifier corrected for the error signal can be determined by the microprocessor; and
(i) a numeric display connected to an output port of the microprocessor for displaying a corrected strain-signal number for the microprocessor representative of the force applied to the beam.

4,366,875
CAPACITY MEASURING DEVICE USING RATIOS OF FREQUENCIES

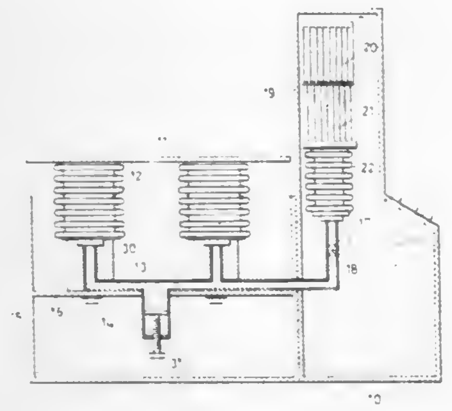
Gilbert V. Dauge, 15, Quai du Pre Long, Lagny, France (77400), and Jacques F. Langlais, 38, rue des Ecoles, Coudray Montereaux, France (77), assignors to Testut Aequitas, Paris, France
Filed Jan. 28, 1981, Ser. No. 229,157
Claims priority, application France, Feb. 4, 1980, 80 02376
Int. Cl.^{3} G01G *3/14*
U.S. Cl. 177—210 C **22 Claims**



1. A measuring device for a weighing apparatus with a capacitive transducer, which comprises:
(a) a first capacity-frequency converter, operating on the capacity to be measured and supplying a measurement frequency FM,
(b) a second capacity-frequency converter, operating on a standard capacity and supplying a standard frequency FE,
(c) a calculation circuit able to determine a numerical magnitude dependent on the ratio of the measurement frequency FM to the standard frequency FE, and
(d) a display circuit connected to the logic calculation circuit and suitable for displaying the numerical value of the said magnitude.

4,366,876
HYDRAULIC BELLOW TYPE SCALE

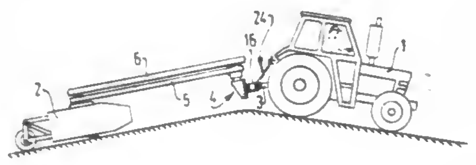
Jien C. Chen, 27-4, Section 2, Taichung Harbor Rd., Taichung, Taiwan
Filed Aug. 28, 1981, Ser. No. 297,221
Int. Cl.^{3} G01G *3/14, 5/04*
U.S. Cl. 177—210 C **6 Claims**



1. A hydraulic bellow type scale comprising
a scale body;
weight transmitting means provided in said scale body, said weight transmitting means comprising a set of weight receiving bellows and a set of weight transmitting bellows;
a pan above said scale body, said pan being secured to the upper ends of said weight receiving bellows;
a variable capacitor in said scale body, said variable capacitor comprising an upper metal plate set pivotally connected to the outer housing of said scale body and a lower metal plate set pivotally connected to said weight transmitting means, said upper metal plate set and said lower metal plate set juxtaposing one another and forming an output end therebetween;
an IC calculator in said scale body, the input end of said IC calculator being connected with the output end of said variable capacitor;
a display unit the input end of which is connected with the output end of said IC calculator; and
a keyboard provided on one side of said scale body so that the operator may control said hydraulic bellow type scale thereby.

4,366,877
POWER TRANSFERRING COUPLING DEVICE FOR A TRACTOR AND AN IMPLEMENT HITCHED THERETO

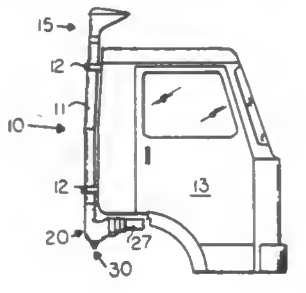
Hermanus H. Vissers, and Gijsbert J. Mijnders, both of Nieuw-Vennep, Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands
Filed Oct. 8, 1980, Ser. No. 195,172
Claims priority, application Netherlands, Oct. 11, 1979, 7907546
Int. Cl.^{3} B60K *25/06*
U.S. Cl. 180—53 R **23 Claims**



1. A combined power transmitting and coupling device for connecting a tractor having a power take-off shaft to an implement in order to travel the implement over a field while imparting power to the implement, said device comprising a carrier having first and second portions relatively rotatable about an upstanding axis, said carrier defining a housing for a power transmission means having an input shaft journalled in the first portion of said carrier about an axis aligned with said power take-off shaft, drawbar means for connecting said second portion of the carrier to the implement for imparting travel to the implement as the tractor is driven, and coupling means for pivotally connecting said input shaft to the tractor for movement about a transverse horizontal axis perpendicular to said input shaft.

4,366,878
MOISTURE-REMOVING LOW-RESTRICTION AIR INTAKE SYSTEM

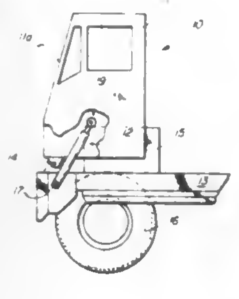
William R. Warf, Willits, Calif., assignor to Paccar Inc., Bellevue, Wash.
Filed Dec. 17, 1980, Ser. No. 217,239
Int. Cl.^{3} B60K *1/00*
U.S. Cl. 180—54 A **5 Claims**



4. A moisture-removing, engine- air intake for a truck powered by an internal combustion engine and having a cab, comprising:
conduit means behind said cab having a long internally unobstructed vertical passage with an unobstructed air intake cap at its upper end and a sharply curved right angle at the lower end of said passage leading horizontally to said engine, whereby moisture is removed from the incoming air at said right angle,
water trapping means just below and at the end of said right angle for collecting the removed moisture, and
drain means for draining water from said trapping means without passing any substantial amount of air therethrough.

4,366,879
TRUCK CAB LIFTER

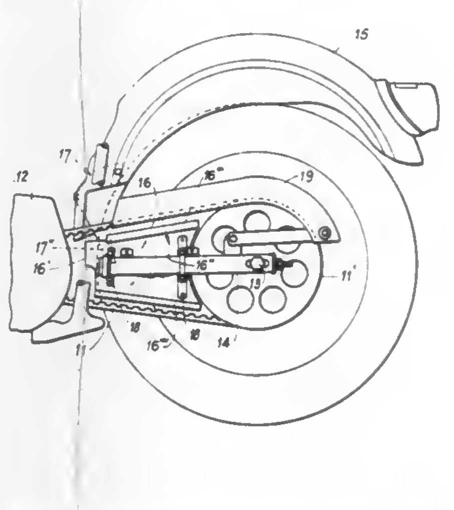
Randy J. Nordell, 176 N. Redwood Rd., Apt. #76, Salt Lake City, Utah 84116
Filed Dec. 29, 1980, Ser. No. 220,788
Int. Cl.^{3} B62D *33/06*
U.S. Cl. 180—89.15 **10 Claims**



1. A truck cab lifter comprising,
lifter means pivotally connected between a truck frame forward of a front axle thereof and a truck cab that is, in turn, pivotally connected to said truck frame, said lifter means for extending a push rod therefrom that connects to said truck cab such that extension thereof will pivot said truck cab around its connection to said truck frame with said lifter means arranged to pivot in an arc across said truck cab pivot coupling to said frame, said lifter means lifting the truck cab until a balance point is reached whereafter, with continued cab travel, it supports the weight of said truck cab as it decends;
means for operating said lifter means to extend and retract said push rod; and means for limiting extension of said push rod corresponding to a balanced state of said truck cab.

4,366,880
DEBRIS DEFLECTOR FOR BELT DRIVE MOTORCYCLES

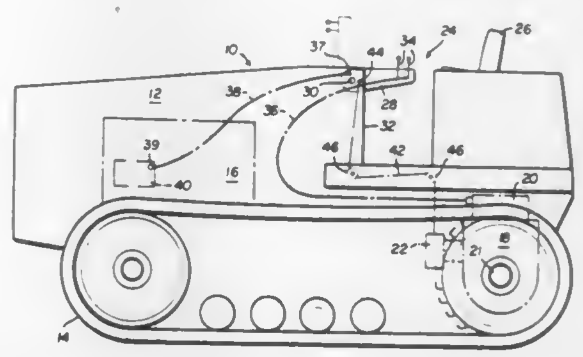
Russell F. Miller, Grafton; William H. Brown, Memomonee Falls, and James M. Perkins, Milwaukee, all of Wis., assignors to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Jan. 15, 1981, Ser. No. 225,169
Int. Cl.^{3} B60J *13/00*
U.S. Cl. 180—219 **3 Claims**



1. In a rear wheel belt driven motorcycle, said motorcycle having a rear wheel mounted on a swing arm and having a belt drive with top and bottom runs extending to said wheel respectively above and below said swing arm, a debris deflector positioned between said arm and said wheel and spanning the space between said runs, said deflector including an upper edge lying beneath and extending beyond the outer edge of said upper run and a lower edge lying above and terminating at a location inwardly of the inner edge of said lower run, said deflector extending across the side wall and peripheral surfaces of said wheel to deflect road debris carried by said wheel off and away from said belt.

4,366,881
FLIP-UP CONTROL CONSOLE

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Dec. 11, 1980, Ser. No. 215,462
Int. Cl.^{3} B60K *28/00*
U.S. Cl. 180—271 **2 Claims**



1. In a tractor having a frame, an engine mounted on said frame, said engine including a fuel supply apparatus, a forward-reverse transmission drivingly interconnected between the engine and an axle means, a parking brake mechanism associated with said tractor, and an operator's station on said frame, said operator's station including an operator's seat, the improvement comprising:
a flip-up control console for automatically engaging said parking brake mechanism and shutting off the fuel supply to the tractor engine when the console is moved to an inoperative position, said console being pivotally connected to the forward end of said operator's station, control handles pivotally connected to said console and connected to said transmission by means of a push-pull cable assembly for controlling movement of the tractor, said console being movable to a generally vertical inoperative position where it is out of the way when the operator is getting onto or out of the operator's seat and said console being movable to a generally horizontal position where the control handles are easily accessible from the operator's seat;
said console being connected to a locking means in said fuel supply apparatus for the engine whereby said locking means shuts off fuel supply to the engine and makes the tractor inoperative in response to said console being moved to its inoperative position; and
means for connecting said console to said parking brake mechanism such that said parking brake is also actuated in response to pivotal movement of said console to its inoperative position.

4,366,882
SOUND ROOM

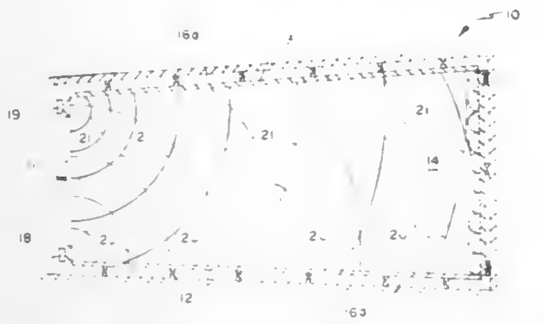
Lance Parker, 1465 S. 50 East, Orem, Utah 84507
Filed Apr. 27, 1981, Ser. No. 257,930
Int. Cl.^{3} E04B *1/82*
U.S. Cl. 181—30 **8 Claims**

1. A sound room comprising
an input end wall;
a floor connected to the input end wall and extending therefrom;

a pair of spaced apart side walls, each said side wall being connected to the input end wall and extending therefrom and to the floor;

a ceiling connected to the input end wall and each of the side walls;

a sound absorbent wall spaced from the input end wall and interconnecting the floor, side walls and ceiling, said absorbent wall having a facing of sound absorbent material on the surface thereof facing the input end wall; and



a pair of speakers, each of said speakers being mounted at the upper edge of and recessed into the input end wall and tightly adjacent to a side wall, with the sound emanating surfaces of said speakers being within one fourth wavelength of the ceiling and adjacent each side wall and positioned to emit into the room formed by the input end wall, floor, side walls, ceiling and absorbent wall.

4,366,883
EQUALIZING SYSTEM FOR LOAD LIFTING APPARATUS

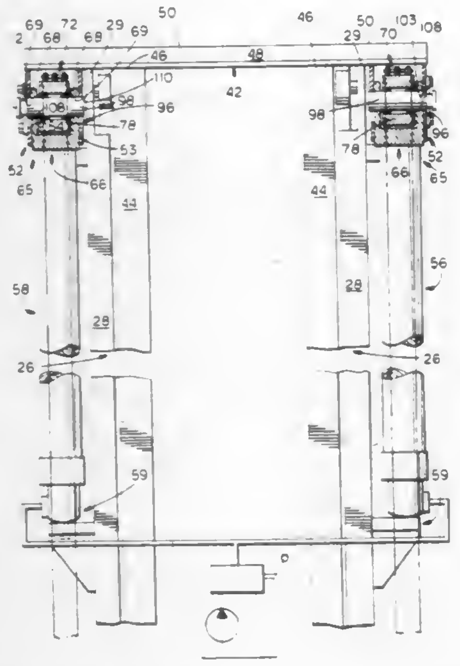
Jerry L. Reeves, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/01089, § 371 Date Aug. 22, 1980, § 102(e) Date Aug. 22, 1980, PCT Pub. No. WO82/00629, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 22, 1980, Ser. No. 250,746

Int. Cl.³ B66B *9/20*

U.S. Cl. 187—9 R **6 Claims**



1. In a load lifting apparatus (**12'**) having a support structure (**26'**), a movable structure (**42'**) defining a mass, a load support (**14'**), first and second laterally spaced apart, longitudinally extending chain assemblies (**70',72'**), each being connected to said support structure (**26'**) and said load support (**14'**), and first and second laterally spaced apart, linearly movable motors (**58**), each connected to said support structure (**26'**), said movable structure (**42'**), and to said first and second, chain assemblies (**70',72'**) respectively, the improvement comprising:

means (**91'**) for permitting a predetermined amount of movement of one (**56 or 58**) of said motors (**56,58**), relative to the other (**58 or 56**) of said motors (**58,56**) and to said movable structure (**42'**) in response to unequal tension in said first and second chain assemblies (**70',72'**) and maintaining substantially equal tension in said chain assemblies (**70',72'**), said means (**91'**) including first and second guide assemblies (**92',94'**) defined by said first and second motors (**56,58**) respectively and said movable structure (**42'**), each of said first and second guide assemblies (**92',94'**) having a slot (**96'**) in said movable structure (**42'**), a stop (**124**) connected to said respective one (**56 or 58**) of said motors (**56,58**), and a pin (**98'**) carried by said respective one (**56 or 58**) of said motors (**56,58**), said stops (**124**) longitudinally movable in said slots (**96'**) between a first position and a second position via an intermediate position, in the first position the pins (**98'**) loadingly engaging the mass of said movable structure (**42'**), in the second position the stops (**124**) loadingly engaging the mass of the movable structure (**42'**), and in the intermediate position the motors (**56,58**) being substantially free of the mass of the movable structure (**42'**).

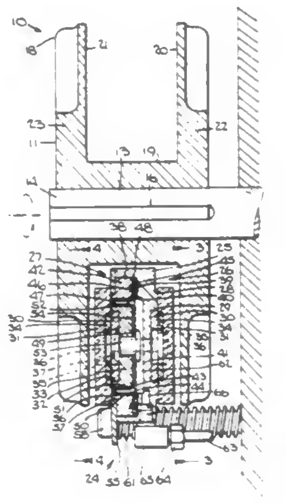
4,366,884
BRAKES AND CLUTCHES

Edwin J. Montalvo, Jr., R.R. #2, Box 323B, Merrill Rd., Freeport, Me. 04032

Filed Oct. 16, 1980, Ser. No. 197,547

Int. Cl.³ F16D *55/04*

U.S. Cl. 188—71.3 **6 Claims**



1. A mechanism for selectively frictionally coupling a rotatable body with a relatively non-rotatable body comprising:

two parallel spaced friction discs connected to the rotatable body transverse to the axis of rotation of said rotatable body;

a fluid actuated expandable piston and cylinder assembly mounted to the non-rotatable body between said friction discs and having two directly opposed friction members for engagement with said friction discs upon expansion of the assembly, wherein said piston and cylinder assembly comprises:

- a cylinder having one closed end and one open end;
- a piston mounted for generally axial movement at the open end of said cylinder;
- a flange-type diaphragm secured to an inner face of said piston;
- a ring within said cylinder for retaining said piston and diaphragm against a gasketed annular internal surface of said cylinder, an annular groove formed in an axially inner surface of said ring securing the flange of said diaphragm against said gasketed surface of said cylinder; and
- a rigid flange for mounting said assembly to the non-rotatable body, said rigid flange being attached to said cylinder at the open end thereof by means of a pair of diametrically opposed rivets extending completely through the assembly, heads of said rivets keeping the assembly tightly joined and preventing dislodgement of said friction members upon engagement of said friction members with said friction discs, said rigid flange also having a hole therethrough to permit axial extension of said piston; and

a plurality of coil springs positioned between the non-rotatable body and an outwardly extending portion of said rigid flange, each spring encircling one of two bolts which secure said piston and cylinder assembly to the non-rotatable body.

4,366,885
PROTECTIVE STRIP FOR A ROAD VEHICLE, AND A ROAD VEHICLE HAVING SUCH A STRIP

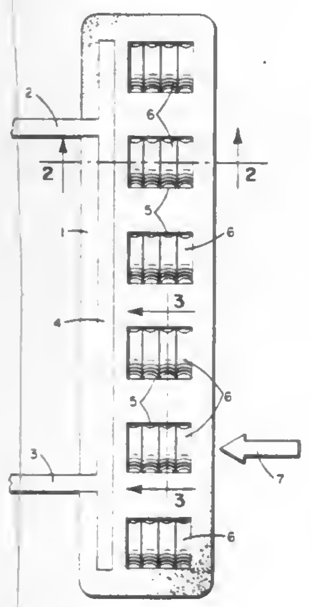
Hans G. Vrijburg, Heemskerk, Netherlands, assignor to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Continuation of Ser. No. 1,858, Jan. 8, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,823

Claims priority, application Netherlands, Jan. 11, 1978, 7800308

Int. Cl.³ F16F *7/12;* B60R *19/04*

U.S. Cl. 188—377 **10 Claims**



1. In a protective strip for a road vehicle, comprising a metal backing element adapted to be secured to the frame of the vehicle and a shock-absorbing structure mounted on the backing element and partially surrounding said backing element so as to face outwardly from the vehicle, said structure being formed partly of plastics material, the improvement comprising incorporating in said structure at least one replaceable metal crushable element which is shaped and arranged so that it only undergoes non-resilient plastic deformation, in order to absorb energy, when said structure is compressed towards said backing element.

4,366,886
ATTACHE CASE INCLUDING EXPANSION GUSSET

Abraham I. Tawil, Brooklyn, N.Y., assignor to H.I.T. Industries, Ltd., Avenel, N.J.

Filed Dec. 5, 1980, Ser. No. 213,418

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ A45C *7/00, 13/00*

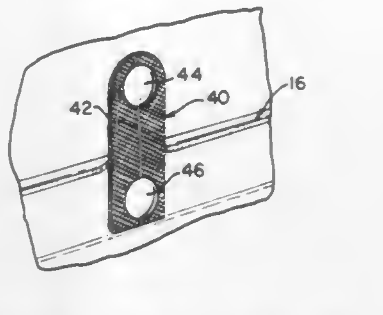
U.S. Cl. 190—44 **1 Claim**

1. An attache case, comprising:

first and second sections relatively movable with respect to each other for opening and closing said case;

at least one of said first and second sections including expansion means for expanding the capacity of said case, said expansion means being movable between a closed position and an expanded position;

a plurality of fastening means disposed about said case for releasably maintaining said expanding means in said closed position, each of said fastening means including a strap and a first releasable fastener on a first side of said expansion means and a second releasable fastener on a second



side of said expansion means so that at least one of said first and second fasteners of each of said fastening means is released when said expansion means moves to said expanded position; and

at least a portion of each of said straps between said first and second fasteners being elastic and being operative to expand when said expansion means is moved to said expanded position.

4,366,887
VEHICLE HAVING A MAIN CLUTCH AND AN AUXILIARY CONTROLLABLE CLUTCH

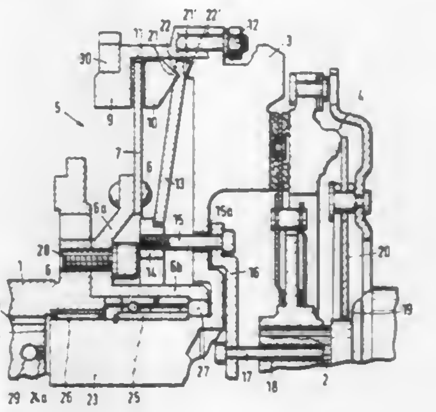
Peter Hofbauer; Paulus Heidemeyer, and Romanus Scholz, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,757

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824730

Int. Cl.³ F16D *13/44, 25/08*

U.S. Cl. 192—48.1 **8 Claims**

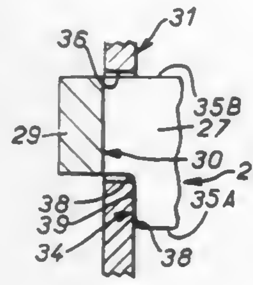


1. In a clutch arrangement for a motor vehicle having an internal combustion engine for driving said vehicle and a flywheel means coupled between a drive transmission of said vehicle and said engine for equalizing the non-uniformity of the engine output torque, the clutch arrangement including a main clutch means arranged between said flywheel means and said transmission for interrupting said coupling for shifting gears, and an auxiliary controllable clutch means, arranged between said engine and said flywheel means, for automatically interrupting said coupling at predetermined operating states of said vehicle, the improvement wherein said transmission comprises an input shaft having a central longitudinal bore there through, wherein said controllable clutch means comprises a spring disc clutch means for producing engagement free from rotational play between said engine and said flywheel means when said disc clutch means are engaged, said controllable clutch means including a spring disc having a central open-

ing, a pull ring arranged in said opening and engaging said disc, and a pull rod coupled at one end to said ring and extending through said central bore, wherein the direction of force for actuating said main clutch for interrupting said coupling is opposed to the direction of force for actuating said controllable clutch.

4,366,888
DIAPHRAGM CLUTCH MECHANISM

Andre Caray, Paris, France, assignor to Valeo Societe Anonyme, Paris, France
Filed Nov. 3, 1980, Ser. No. 203,726
Claims priority, application France, Nov. 6, 1979, 79 27276
Int. Cl.^{3} F16D *13/44*
U.S. Cl. 192—89 B **6 Claims**

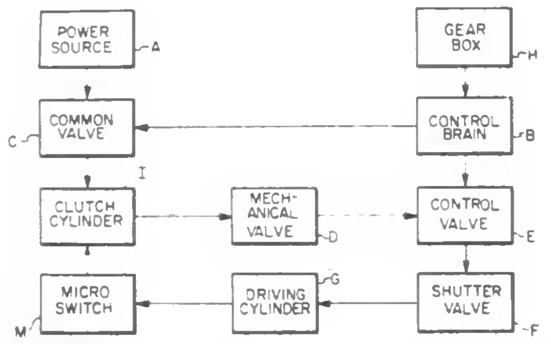


1. A diaphragm clutch cover assembly, comprising a substantially annular cover member, a substantially annular diaphragm spring having a cup spring outer peripheral part and a central part divided into radial fingers, connecting means for mounting said diaphragm spring for pivotal movement on said cover member, an annular pressure plate fixed for rotation with said cover member and axially movable relative thereto, said diaphragm spring outer peripheral part bearing against said pressure plate, said connecting means comprising (a) a plurality of relatively thin, flat lugs extending from said cover member, each of said lugs having an axial part passing through an opening in said diaphragm spring in the region of radially outer ends of said radial fingers, each of said axial parts having two spaced apart axial edges, each of said lugs defines an axially retaining bend on the side of said diaphragm spring remote from said cover member, and (b) pivot ring interposed between said axially retaining bend and said diaphragm spring peripheral part, said pivot ring being anchored between said axially retaining bend and a transverse shoulder formed on the axial parts of said lugs, said transverse shoulders being provided on only one of said axial edges of each of said axial lugs, the other axial edge of each of said lugs being substantially rectilinear.

4,366,889
AUTOMATICALLY AND MANUALLY OPERABLE GEAR SHIFTER

Ching C. Wang, No. 19, La. 238, Sec. 1, Mucha Rd., Tapei 116, Taiwan
Filed Aug. 12, 1980, Ser. No. 177,429
Int. Cl.^{3} B60K *41/28*
U.S. Cl. 192—0.092 **16 Claims**

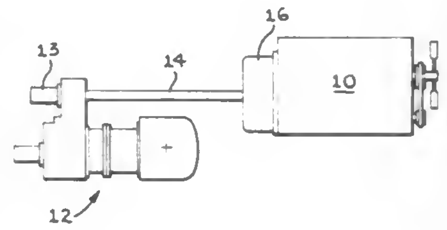
1. An automotive vehicle gear shifting system comprising:
control brain means for providing a control signal indicative of a wheel speed of said vehicle;
a power source;
a common valve means responsive to said control signal for controlling a flow of power from said power source;
clutch cylinder means for receiving power from said common valve for declutching a clutch of said vehicle;
mechanical valve means for controlling, responsive to the position of said clutch, a flow of power from said common valve;
control valve means for receiving power via said mechanical valve means and distributing it in accordance with said control signal from said control brain means;
shutter valve means, coupled to said control valve means, for controlling a flow of power from said control valve;
driving cylinder means, coupled to said shutter valve means, for operating a gear shifter of said vehicle;



switch means, actuated by said gear shifter, for controlling said clutch cylinder for engaging said clutch, and
means for limiting the engine speed of said vehicle during a gear changing operation.

4,366,890
CLUTCH DISENGAGEMENT SYSTEM

David S. Suckow, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US80/00826, § 371 Date Jun. 30, 1980, § 102(e) Date Jun. 30, 1980, PCT Pub. No. WO82/00184, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 30, 1980, Ser. No. 250,752
Int. Cl.^{3} B60K *41/02;* **F16D** *25/08*
U.S. Cl. 192—0.096 **25 Claims**



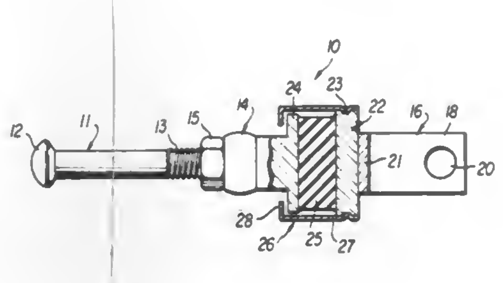
1. In a vehicle having an engine (**10**), a transmission (**12**), and a drive shaft (**14**) drivingly connecting said engine (**10**) with said transmission (**12**), the improvement comprising drive engagement means (**20,63**) for permitting disengagement of said engine from said drive shaft (**14**) only prior to the engine running and for preventing re-engagement of said engine and said drive shaft when said engine is running.

4,366,891
PUSH ROD ASSEMBLY FOR A CLUTCH MASTER CYLINDER

Teruo Maruyama, Chita, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sep. 29, 1980, Ser. No. 192,438
Claims priority, application Japan, Sep. 29, 1979, 54-134943[U]
Int. Cl.^{3} F16D *3/12, 25/12*
U.S. Cl. 192—99 S **3 Claims**

1. A push rod assembly for a clutch master cylinder having a piston for use in conjunction with a clutch pedal comprising:
a stamp forged rod having a spherical portion in abutment with said piston of said clutch master cylinder at one end portion thereof and a flanged portion at an opposite end portion thereof,

a press worked annular plate co-axially opposed to said flanged portion of said rod,
a press worked, U-shaped clevis connected to said annular plate at one end thereof and having a forked end portion operatively connected to said clutch pedal at the other end thereof,
a rubber vibration isolator secured to said flanged portion of said rod and said annular plate by being interposed therebetween during forming of said rubber vibration isolator,



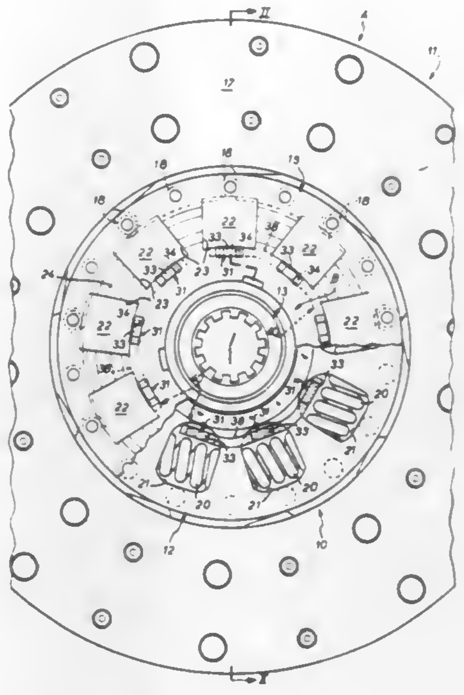
a cover member having a cylindrical portion surrounding said rubber vibration isolator and said flanged portion of said rod, and
an annular stem member extended radially inwardly from one end of said cylindrical portion, wherein said cylindrical portion is secured to an outer peripheral portion of said annular plate at an opposite end thereof and wherein said annular stem is located in closely spaced relationship to said flanged portion of said rod.

4,366,892
Patent Not Issued For This Number

4,366,893
TORSION DAMPING CENTER FOR THE DRIVEN DISC OF A FRICTION CLUTCH FOR A MOTOR VEHICLE

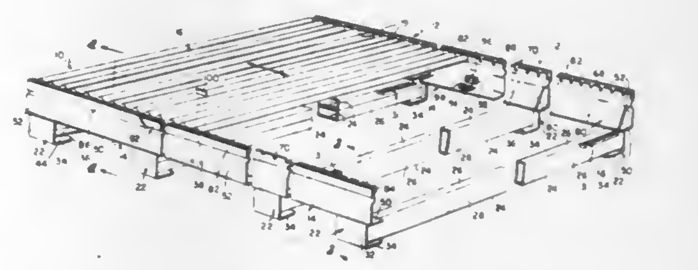
Rene Billet, Lamorlaye, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Jun. 24, 1980, Ser. No. 162,648
Claims priority, application France, Jun. 25, 1979, 79 16229
Int. Cl.^{3} F16D *3/66*
U.S. Cl. 192—106.2 **11 Claims**

1. A torsion damping assembly of the type comprising two coaxial parts rotatably mounted for predetermined limited angular displacement relative to each other against the force of circumferentially acting resilient means, one of the coaxial parts comprising a web and the other of the coaxial parts comprising two annular guide plates disposed parallel to and on opposite sides of said web, spacer members interconnecting said guide plates inside the contour defined by the outer periphery of said guide plates, said spacer members being distinct from said annular guide plates and extending parallel to the axis of the assembly, each axial end of said spacer members extending through its associated guide plate and deformed therebeyond, and a connecting bar circumferentially attaching between said guide plates a group of at least two of said spacer members.



4,366,894
SIDE FRAME ASSEMBLY FOR ROLLER CONVEYOR SYSTEMS

Richard L. Huelster, Indianapolis, Ind., assignor to Pentek Corporation, Indianapolis, Ind.
Continuation of Ser. No. 135,279, Mar. 31, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,397
Int. Cl.^{3} B65G *13/12*
U.S. Cl. 193—35 R **17 Claims**



1. In a frame assembly for a conveyor system including an elongated side rail for supporting rollers for rotation about transverse axes which are suitably spaced apart in the longitu-

dinal direction of the conveyor system, the improvement wherein the side support rail is generally L-shaped in cross section and includes a generally inwardly extending flange portion and a generally upwardly extending web portion angularly formed with the flange portion, the web portion including a lower section connected to the flange portion in an outer vertical plane, an inner upper section in an inner vertical plane, an outer upper section in the outer vertical plane providing a generally planar exterior frame surface, the upper sections forming a channel which is generally Y-shaped in cross section, the channel having an open top and extending in the longitudinal direction of the conveyor system, support means on the inner upper section for receiving the rollers, and a removable outer cover member for closing a longitudinal segment of the open top of the channel to retain selected rollers in the support means.

4,366,895
HANDLING ROD-LIKE ARTICLES

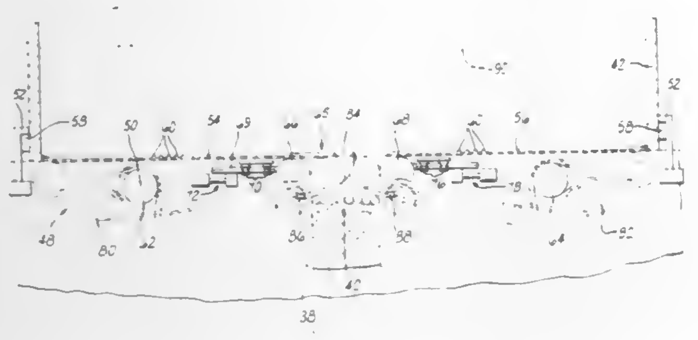
George R. Bennett, and Robert S. Day, both of Deptford, England, assignors to Molins Limited, London, England

Filed Nov. 1, 1979, Ser. No. 90,432

Claims priority, application United Kingdom, Nov. 1, 1978, 7842710

Int. Cl.^{3} B65G *1/00*

U.S. Cl. 198—347 **23 Claims**



1. Apparatus for handling rod-like articles comprising means defining a substantially-continuous path for rod-like articles in multi-layer stack formation, a separating device including guide means and at least one movable surface supported by said guide means, drive means for moving said surface to convey articles on said path, projecting means for movingly projecting said separating device across said path intermediate the ends of said path in a direction transverse to the lengths of the articles on said path and from one side of said path towards the opposite side to locally reduce the width of said path proportionally with said movement, and means for holding at least part of said movable surface stationary in said path as said separating device is moved across said path.

4,366,896
DEVICE FOR ARRANGING HEN'S EGGS IN ERECT POSTURES

Hiroshi Tomosue, 1855 Shimoyokono, Tsuyama City, Okayama-ken, Japan

Filed Dec. 11, 1980, Ser. No. 215,383

Claims priority, application Japan, Mar. 29, 1980, 55-41018

Int. Cl.^{3} B65G *17/32, 13/02, 15/00*

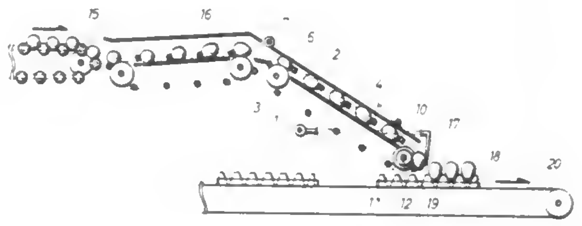
U.S. Cl. 198—384 **5 Claims**

1. A device for arranging hen's eggs in erect postures, said device comprising,

(a) a plurality of passages for said eggs, which are sloped downwardly at an acute angle so that said eggs can readily slide down along said passages keeping their lengthwise postures,

(b) an endless driven member being provided with a number of crossbars arranged in series and for slowly downwardly moving said eggs one by one within said passages,

(c) holders extending along the upper side of each of said passages and substantially throughout lengths thereof so as to lightly hold said eggs which are moving downward, thereby preventing said eggs from rotating in their longitudinal postures, and



(d) U-like shape grooved members which are connected with the terminuses of said passages and inscribed at the front surfaces substantially in the path of said crossbars at the turn-back point of said endless driven member so that said eggs sliding down along the slope of each of said passages are turned to the vertical direction.

4,366,897
SPEED DROP DETECTOR FOR HIGH-SPEED BUCKET BELT CONVEYOR

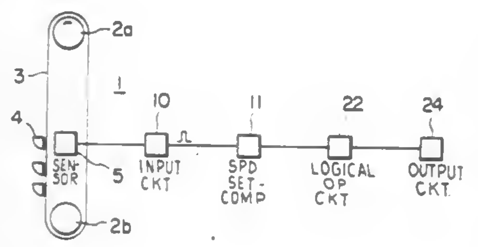
Hiroaki Azuma; Hideo Kato, and Akira Oyama, all of Osaka, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Oct. 20, 1980, Ser. No. 198,561

Claims priority, application Japan, Oct. 31, 1979, 54-139814

Int. Cl.^{3} B65G *43/04*

U.S. Cl. 198—502 **2 Claims**



1. A speed drop detector for a high-speed bucket belt conveyor constructed of a series of buckets attached to an endless moving belt at regular intervals, which detector comprises: an electromagnetic induction sensor for detecting the passage of a bucket, a speed setter for generating a sawtooth voltage which rises with an adjustable gradient and falls sharply upon receipt of a signal from said sensor, a speed drop rate setting circuit for generating a reference voltage that is individually drawn in accordance with one or more set speed drop rates and is increased with respect to the maximum value of said sawtooth voltage at a working speed of the high-speed bucket belt conveyor, said increase being in inverse proportion to a speed corresponding to the set speed drop rate, a comparator for comparing the sawtooth and reference voltages and producing a speed-down signal when the sawtooth voltage reaches the reference voltage, an alarm output circuit actuated by a speed-down signal for a minute speed drop rate which requires no stoppage of the high-speed bucket belt conveyor, and a logic circuit for actuating a stop control output circuit by inputting a speed-down signal for an ordinary speed drop rate which does require the stoppage of the conveyor, the logic circuit having a first and a second quarter divider respectively dividing the sensor and speed-down signals, the first quarter divider being reset by the speed-down signal, and the second quarter divider being reset by a set output of the first quarter divider, the second quarter divider having a forced set terminal, and actuating the stop control output circuit with a set output thereof.

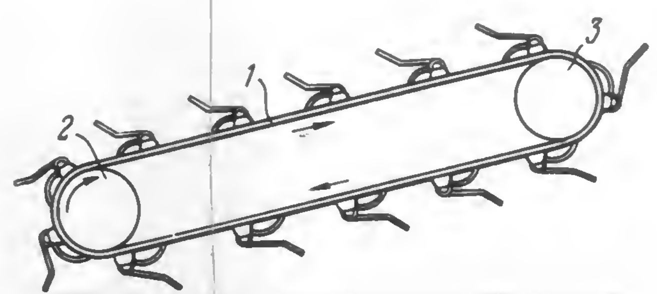
4,366,898
CONVEYOR OF A FARM MACHINE PICKUP

Ljubov V. Bobrysheva, ulitsa Aksaiskaya, 69/1, kv. 69; Boris P. Gavrilenko, ulitsa Matrosskaya, 9, kv. 54; Valery V. Markov, prospekt Selmash, 102"A", kv. 31, and Leonid P. Minenko, ulitsa Narimanova, 72/1, kv. 6, all of Rostov-na-Donu, U.S.S.R.

Filed Apr. 21, 1980, Ser. No. 141,805

Int. Cl.^{3} B65G *15/44, 13/02*

U.S. Cl. 198—692 **2 Claims**



1. An endless driven transport conveyor, said conveyor having a plurality of flexible spring wire pickup fingers mounted on the conveyor spaced in a longitudinal direction of the conveyor, a separate mount for each pickup finger fixed on the conveyor, each mount comprising a channel iron fixed to the conveyor having laterally spaced flanges extending from the conveyor and an open channel extending in a longitudinal direction of the conveyor, each finger comprising a pair of wound coils spaced laterally in said channel between the flanges and having a yoke-shaped crosspiece connected to the coils and a finger extension from a convolution of one of coils extending away from said one of the coils out of the channel and away from the direction of travel of the conveyor, each channel iron having a trailing portion with lateral projections overlying respective legs of the yoke-shaped crosspiece, and a U-shaped holder for each pickup finger extending through the coils and removably fixed extending through the flanges of the corresponding mount for releasably holding the corresponding finger in place, the conveyor being an endless belt, and including driven driving shafts each of a given diameter over which the endless belt travels, each yoke-shaped crosspiece of the corresponding pickup finger being bent in a direction toward the belt at a bend spaced from said trailing portion, each said bend having a rate of curvature corresponding to a radius r, the driving shaft having a radius R in which r<R, and a projection on the trailing portion of each mount being bent in a direction away from the belt and having a free end against which said finger extension bears.

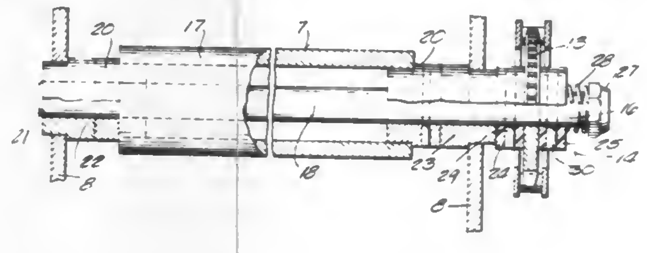
4,366,899
TORQUE LIMITING DEVICE FOR ROLLER CONVEYOR LIVE ROLLER

Robert J. Doro, 8822 Greenview La., Greendale, Wis. 53129

Filed Feb. 23, 1978, Ser. No. 880,432

Int. Cl.^{3} B65G *13/06*

U.S. Cl. 198—781 **4 Claims**



1. A live roller for a roller conveyor that comprises a pair of elongated, laterally spaced supporting elements by which said live roller and a plurality of other rollers are supported, with each of said rollers extending between said supporting elements and rotatable about a fixed axis that extends laterally to the supporting elements, said live roller being rotatably driven from drive means through clutch means so that an article resting on the rollers can be transported by them in a direction lengthwise of the supporting elements but said live roller is prevented from rotating if said article encounters a predetermined resistance to motion in said direction, said live roller being characterized by:

- A. a coaxial shaft for said live roller having
  - (1) a circular cross-section,
  - (2) a uniform diameter along substantially its entire length,
  - (3) a screw threaded portion at one end thereof, and
  - (4) a length to extend across the space between said supporting elements and to have said threaded portion spaced a substantial distance outwardly beyond one of them;
- B. bearing means cooperating with said shaft and each of said supporting elements to mount the shaft for rotation;
- C. said roller being tubular and having an inside diameter larger than the diameter of said shaft;
- D. a pair of annular bushings concentrically securing said roller to said shaft and cooperating with said bearing means to substantially confine the shaft against axial displacement relative to said supporting elements;
- E. axially inner and outer collar-like driven clutch members on said shaft, between its threaded end portion and said one supporting element, each having a flat friction surface which axially faces the friction surface on the other;
- F. a pin extending radially through the axially inner driven clutch member and transversely through the shaft to confine that clutch member against rotation and axial motion relative to the shaft;
- G. a second pin extending radially through the axially outer driven clutch member and through an axially elongated slot in the shaft to confine that clutch member against rotation relative to the shaft but allow it to have limited axial motion relative to the shaft;
- H. a coaxial driving clutch member rotatable and axially slidable on said shaft between said driven clutch members, said driving clutch member
  - (1) having axially opposite flat friction surfaces which frictionally engage said friction surfaces on the respective driven clutch members, and
  - (2) having a peripheral portion arranged for cooperation with said drive means to be rotatably driven thereby;
- I. a nut on said threaded end portion of the shaft; and
- J. a coiled expension spring surrounding the shaft and reacting between said nut and said axially outer driven clutch member to maintain the respective friction surfaces on the driving and driven clutch members engaged under axial bias.

4,366,900
MULTIPLE BELT CONVEYAR WITH SYNCHRONIZER

Rolf Johansson, Blombergsvagen 5, 702 30 Orebro, Sweden

PCT No. PCT/SE80/00109, § 371 Date Dec. 20, 1980, § 102(e) Date Nov. 20, 1980, PCT Pub. No. WO80/02277, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 17, 1980, Ser. No. 233,598

Claims priority, application Sweden, Apr. 20, 1979, 7903475

Int. Cl.^{3} B65G *23/00*

U.S. Cl. 198—855 **4 Claims**

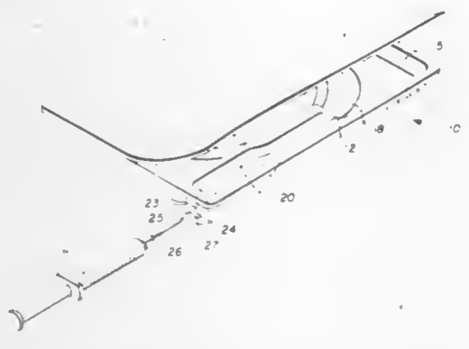
1. A belt conveyor for moving roofing tiles or the like comprising an elongated body member, guide roller means on each

end of the body member, a pair of narrow endless parallel conveyor belts passing over and guided by said roller means, at least one pusher lug on the surface of each of the belts, at least one magnetic position indicator means on each belt, the guide roller means on one end of said body including separate rollers for each belt, a drive shaft on the one end of said body, motor means for driving said shaft, said separate rollers on the said one end of the body being freely rotatable on said shaft clutch means for drivingly and independently connecting each of said rollers on the said one end to said shaft, electromagnetic means for operating said clutch means, stationary magnetic control means for sensing the proximity of said magnetic position indicator means, and synchronizer means acting in conjunction with said magnetic control means and said electromagnetic means to automatically synchronize the two belts to maintain the pusher lugs thereon directly opposite to each other.

4,366,901
IN SITU REHYDRATING IN STERILE PACKAGES

David H. Short, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 2, 1981, Ser. No. 230,695
Int. Cl.^{3} B65D *85/00, 81/24;* **A61B** *1/22*
U.S. Cl. 206—210 **13 Claims**

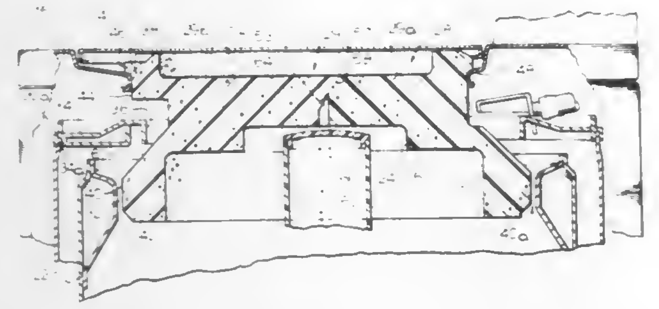


1. In a package of the type having a container for housing an article including at least one dry component, the container being adapted to maintain a specialized internal environment until opened, the improvement comprising an inner receptacle housed within the container for receiving and holding the dry component, and normally closed inlet means communicating with the inner receptacle for introducing a quantity of hydrating fluid thereto to hydrate the dry component without compromising the container internal environment.

4,366,902
SHIPPING SYSTEM FOR AUTOMATIC WASHER

Richard L. Fanson, St. Joseph Township, Berrien County, and William L. Kennedy, Coloma Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 30, 1981, Ser. No. 258,931
Int. Cl.^{3} B65D *81/06*
U.S. Cl. 206—320 **10 Claims**



1. For use with a washing machine of the vertical axis type having a movable mechanism enclosed within a stationary cabinet and mounted for movement on a base secured to said cabinet and having foot holes formed therein, a shipping system comprising bracing means including:

- a split block upper portion which locks into position as it is installed in a top opening formed in said cabinet, said upper portion having leg members extending adjacent said movable mechanism for securing an upper end of said mechanism with respect to the stationary cabinet, and
- a lower portion attached to the foot holes formed in the base, said lower portion connected by a retaining means to a lower end of said movable mechanism for securing said lower end with respect to said stationary cabinet,

wherein said movable mechanism includes an agitator within a washing tub, and the upper portion is formed with a generally hollow interior opening downwardly and adapted to receive the agitator without necessitating contact therewith.

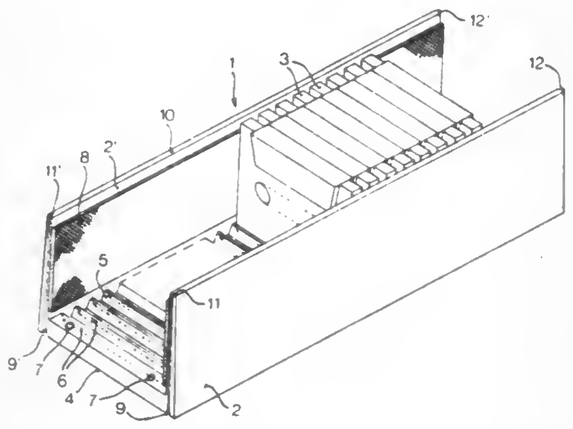
4,366,903
MAGAZINE FOR MAGNETIC TAPE CASSETTES

Dieter Gaiser, Rheinau-Diersheim; Kurt Schmidts, Kehl; Volker Scherer, and Hubert Koob, both of Willstaett, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 113,021, Jan. 17, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,867

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 7903580[U]

Int. Cl.^{3} B65D *85/30, 85/672*
U.S. Cl. 206—387 **4 Claims**



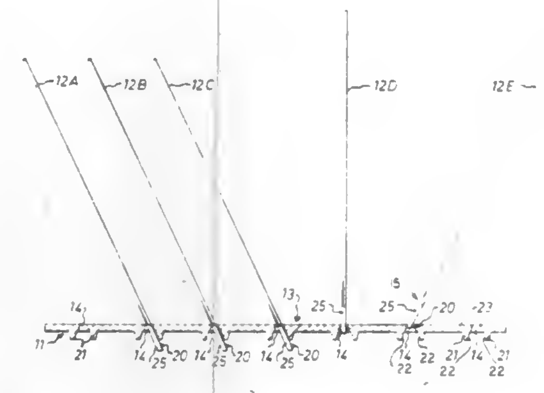
1. A magazine for magnetic tape cassets, comprising a trough which is U-shaped in cross section and possesses a plurality of transverse ribs on the bottom, the ribs being arranged at intervals corresponding to the thickness of a magnetic tape cassette, said trough is open at both ends and the two side members of the trough project above the inserted magnetic tape cassettes, said trough is designed so the two side members are capable of being resiliently bent apart for insertion of said cassets and are each provided on their inner surfaces over their entire length and nearly their entire height with a strip of resilient material, the clear width between the side members as covered by said strips being smaller, by an amount about equal to the reduction in the thickness of the strips in the compressed state, than the relevant dimension of the magnetic tape cassettes which are to be inserted, such that the cassettes, upon insertion into the magazine, are held for storage, in any attitude of said magazine, due to the combined holding action of said side members of said strips.

4,366,904
STORAGE CONTAINER FOR CARDS AND SIMILAR ARTICLES

Carl-Eric B. Roskvist, Lavendelvägen 18, S-237 00 Bjärred, Sweden

Filed Sep. 30, 1981, Ser. No. 307,292
Int. Cl.^{3} B42F *17/12, 7/12*
U.S. Cl. 206—425 **7 Claims**

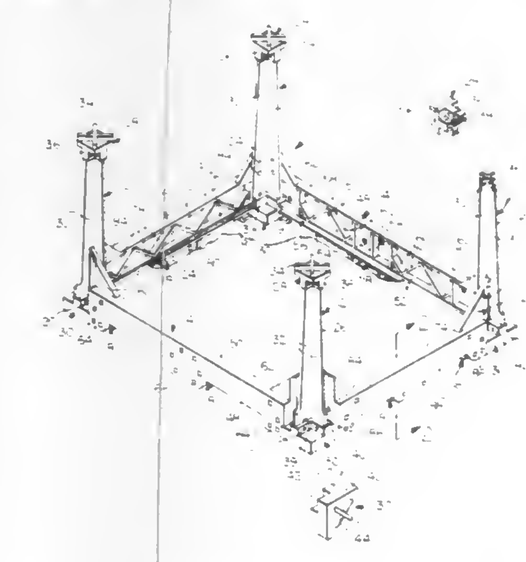
1. A storage container for cards and the like, which comprises a base tray; means defining a plurality of apertures in said base tray; a plurality of index separator panels, each of said panels having at least one tab received in a corresponding one of said apertures to support the panel upon the base tray for limited pivotal movement relative thereto, said tab having a projecting lug and a tapered rib; and a pair of oppositely disposed ridge members on said base tray adjacent said one aperture; said ridge members having respective configurations co-operating with those of said lug and tapered rib to limit the pivotal movement of said panel; said lug and tapered rib of the tab co-operating with said ridge members to prevent removal of the tab from the corresponding aperture except when the tab is at a predetermined inclination with respect to the base tray.



4,366,905
PLASTIC MATERIAL HANDLING RACK

David J. Forshee, Oxford, Mich., assignor to Syn-Trac Systems Inc., Oxford, Mich.

Filed Mar. 23, 1981, Ser. No. 246,725
Int. Cl.^{1} B65D *6/24, 21/02, 19/18, 19/32*
U.S. Cl. 206—511 **22 Claims**



1. A plastic stackable rack of relatively low weight in comparison with steel and of relatively high load-carrying capability comprising in combination

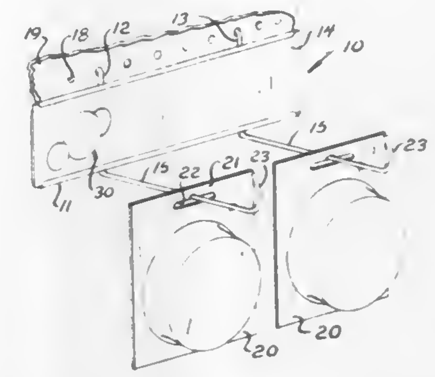
- a plurality of unitary molded plastic corner posts,
- a pair of unitary molded plastic side rails removably conjoined to said corner posts,
- a pair of unitary molded plastic end rails removably conjoined to said corner posts and forming a rectilinear frame with said corner post conjoined side rails,
- a unitary molded plastic stacking cap removably affixed to the upper end of each of said corner posts,
- a unitary molded plastic base plate removably affixed to the lower end of each of said corner posts,
  - each said base plate having a recess in the bottom surface thereof to receive and seat at least the upper projecting end of a stacking cap,

and means removably securing said side and end rails and said stacking caps and base plates to said corner posts, assembling said rack for its load-carrying capability.

4,366,906
MERCHANDIZING HOLDER DEVICE

Patrick H. Joyce, 28 Plymouth Ct., Lincolnshire, Ill. 60015

Filed Oct. 14, 1980, Ser. No. 196,392
Int. Cl.^{1} A47F *5/08*
U.S. Cl. 211—59.1 **13 Claims**



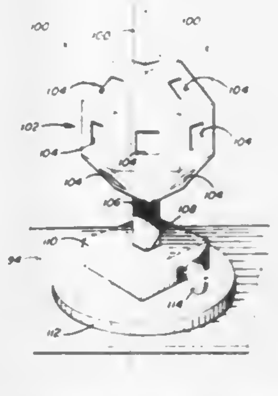
1. A flattenable merchandising device comprising:
- a display panel;
- a mounting element having a cylindrical portion and a noncylindrical portion;
- support means on said mounting element for supporting a plurality of articles to be merchandised forwardly of said panel;
- connecting means on said mounting element for connecting the mounting element to a vertical wall; and
- means on said panel defining a mounting channel complementary in section to said noncylindrical portion of the mounting element and receiving said mounting element for axial movement therein between a first position wherein said cylindrical portion is pivotally disposed in the channel and a second position wherein the noncylindrical portion is held against pivotal movement in the channel, with said support means and connecting means extending outwardly from said panel, said support means and connecting means being swingable to be substantially flat with said panel in a retracted disposition when said mounting element is in said first position.

4,366,907
GARMENT DISPLAY RACK SUPPORT

Malcolm D. Toy, 310 Peebles St., Sewickley, Pa. 15143

Division of Ser. No. 129,242, Mar. 11, 1980, Pat. No. 4,311,260. This application Jun. 30, 1981, Ser. No. 279,163

Int. Cl.^{1} A47F *7/00;* **F16M** *13/00*
U.S. Cl. 211—60 R **2 Claims**



1. A support for a garment display comprising,
- a block member,
- means for rigidly supporting said block member,
- said block member having a plurality of angularly disposed

planar faces, each of said planar faces being positioned at an angle relative to said other planar faces,

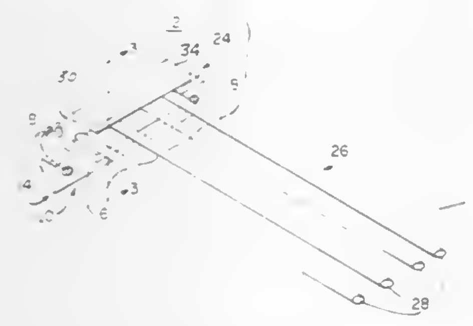
a socket in each planar face of said block member thereby providing a plurality of sockets arranged at a plurality of angular positions in a plurality of planes,

a brace member releasably engageable with a selected one of said sockets,

said brace member being adjustably arranged to extend at a preselected angle from said block member by positioning said brace member in a socket of a preselected one of said angularly disposed planar faces, and

a plurality of said brace members being positioned in said sockets and being adaptable to support a plurality of display racks to thereby permit a plurality of garments to be positioned on a plurality of display racks supported at a plurality of angular positions on said block member.

4,366,908
ARTICLE SUPPORT
H. Victor Anderson, P.O. Box 327, Frazee, Minn. 56544
Filed Sep. 2, 1980, Ser. No. 182,990
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—87 **4 Claims**



1. A device for supporting articles comprising in combination:

means forming an aperture including a bracket suitable for mounting on a generally upright surface;

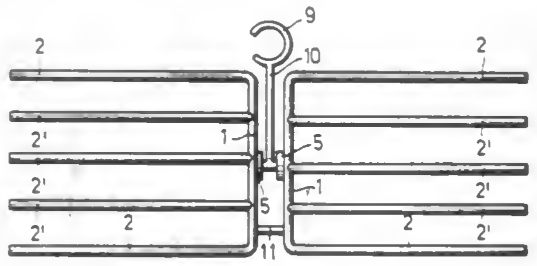
an insert body member comprising plate means having first and second end portions and a third center portion, the first portion forming a first insert element removably positionable in the aperture;

an elongated article support means mounted on the third center portion of the plate means generally perpendicular to the plate means, whereby the elongated article support means is positioned for use generally perpendicular to a generally upright surface on which the bracket is mounted when the first portion of the plate means is positioned in the aperture,

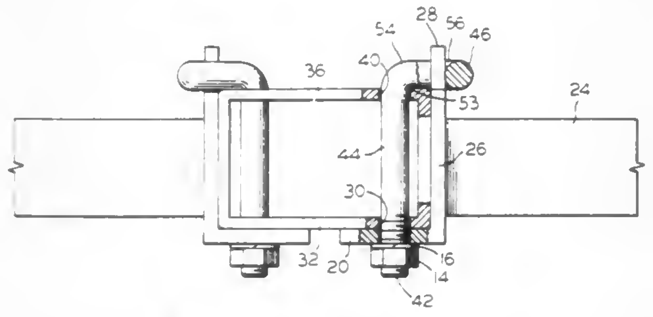
panel means mounted on the second portion of the plate means generally perpendicular to the plate means and spaced from and generally parallel to the elongated article support means, said panel forming a second insert element and being selectively positionable in said aperture, whereby the elongated article support means is positioned for storage generally parallel to a generally upright surface on which the bracket is mounted when the second insert element is positioned in the aperture.

4,366,909
CLOTHES HANGER WITH MULTIPLE CLOTHES SUPPORTS
Ibrahim Fahmi, Lewrenzstr. 119, 4150 Krefeld, Fed. Rep. of Germany
Division of Ser. No. 67,302, Aug. 17, 1979, Pat. No. 4,278,177. This application Mar. 25, 1981, Ser. No. 247,407
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 7824917[U]
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—116 **3 Claims**

1. Clothes hanger with multiple clothes supports comprising a dependent support rod having a first and second end, a hook formed in the first end of said dependent support rod and spaced from the second end thereof, a pair of U-shaped members each located on an opposite side of said dependent support rod, each U-shaped member being formed of bending-resistant material and having a bight portion and two laterally spaced leg portions, each leg portion having a first end and a second end with the first end of each said leg portion forming a junction with said bight portion and the second end of each said leg portion being spaced outwardly from said bight portion, said bight portion comprising a support rod and said leg portions comprising an upper and lower strut, at least one additional rectilinear strut secured to said bight portion between said leg portions and extending outwardly therefrom, said struts forming the multiple supports for the clothes hanger, said struts formed of a bending-resistant material and secured to and extending horizontally from said support rod when said support rod is arranged vertically, said struts being spaced apart along said support rod and being located in a plane including said hook, means for hingedly connecting the second end of said dependent support rod to said bight portion of each of said U-shaped members at a location spaced from said leg portions extending from said bight portion for pivotally displacing said U-shaped members about an axis extending transversely of said dependent support rod and of said bight portions of said U-shaped members so that with said dependent support rod maintained in the vertical position each of said U-shaped members can pivot about the hinge connection between a position where said bight portion is vertical to a position where said bight portion is horizontal.



4,366,910
STORAGE RACK ASSEMBLY AND METHOD OF ASSEMBLING SAME
Salvatore A. Uccello, Glastonbury, and Barry M. Weinbaum, Manchester, both of Conn., assignors to Lok-Rak Corporation of America, East Hartford, Conn.
Filed Oct. 27, 1980, Ser. No. 201,176
Int. Cl.³ A47F *5/10*
U.S. Cl. 211—191 **12 Claims**



1. In a storage rack, the combination comprising:

a. a post having a vertically extending wall with at least one pair of vertically spaced apertures therethrough, said post also providing a vertical abutment surface in a plane perpendicular to that of said wall;

b. a rail extending horizontally from said post;

c. a mounting plate at the end of said rail adjacent said post, said mounting plate having contiguous first and second planar portions lying in substantially perpendicular vertical planes, each planar portion having an interior surface adjacent said post and an exterior surface, said first planar mounting-plate portion having its interior surface disposed against said first wall and having a pair of apertures aligned with said pair of apertures through said post wall, said rail extending from said exterior surface of said second mounting-plate portion, said interior surface of said second mounting-plate portion abutting said abutment surface on said post;

d. a generally U-shaped connector including a pair of substantially parallel leg portions extending horizontally through said pairs of apertures in said first mounting-plate portion and said post wall, each of said leg portions including a locking portion at the free end thereof extending exteriorly of said first mounting-plate portion, said connector further including a laterally offset web portion extending between said leg portions in a plane spaced from that of said post wall, said web portion extending substantially perpendicularly to said leg portions and beyond said abutment surface of said post to define an opening between said connector web portion and said post, said second mounting-plate portion including a tongue portion extending into said opening defined between said post and said connector web portion; and

e. locking means engaged on said locking portions of said connector outwardly of said mounting-plate portion, abutting said exterior surface thereof, and holding the several elements in assembly, said connector web portion bearing against the exterior surface of said mounting-plate tongue portion when the several elements are in assembled position, said locking means thereby causing said connector web portion to hold said mounting-plate tongue portion against said abutment surface of said post to hold said rail rigidly in position on said post.

11. In a method of assembling a storage rack, the steps of:

a. providing an elongated post having an elongated wall having at least one pair of longitudinally spaced apertures therethrough, said post also providing an abutment surface in a plane substantially perpendicular to that of said wall;

b. providing an elongated rail and a mounting plate at one end of said rail, said mounting plate having contiguous first and second planar portions lying in substantially perpendicular planes, said second planar portion providing a tongue portion, said rail extending perpendicularly in one direction from one surface of said second planar mounting-plate portion, said first planar mounting-plate portion extending in the other direction from the other surface of said second mounting-plate portion, said mounting plate being dimensioned and configured to receive the edge margin of said first post wall in the corner formed between said first and second planar mounting-plate portions with said first planar mounting-plate portion abutting said post wall and said other surface of said second planar mounting-plate portion abutting said abutment surface, said first planar mounting-plate portion including apertures therethrough positioned for alignment witn said apertures in said post wall when said post wall abuts said first mounting-plate portion with said post edge margin in the corner provided by said first and second planar mounting-plate portions;

c. providing a generally U-shaped connector including a pair of substantially parallel leg portions spaced and dimensioned to extend through said pair of apertures in said post wall and to further extend through said apertures in said first mounting-plate portion to provide a locking portion of said connector exterior to said first mounting-plate portion when said first mounting-plate portion abuts said post wall with its apertures aligned with said apertures in said post wall, said connector locking portions being threaded on the exterior surfaces thereof, said connector further including a web portion extending between said leg portions and being laterally offset to extend, when said leg portions are received in said apertures in said post wall, beyond said abutment surface of said post to define an opening between said connector web portion and said post sized to receive said mounting-plate tongue portion therein;

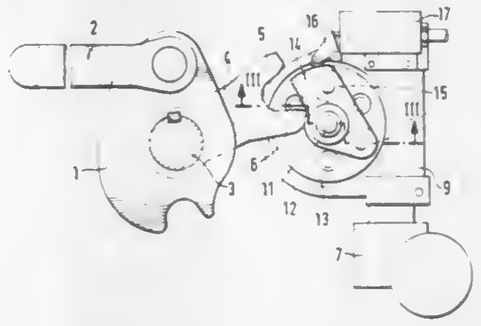
d. assembling said rail and mounting plate on said post with said post wall and said first mounting-plate portion in abutment with the apertures therein aligned and with said second mounting-plate portion abutting said abutment surface;

e. inserting said leg portions of said connector through said apertures in said post wall and said first planar mounting-plate portion to extend said connector locking portions exteriorly of said first planar mounting-plate portion, thereby providing the opening defined between said connector web portion and said post;

f. providing nut means threadedly engageable with said threaded locking portions of said connectors; and

g. threadedly engaging said nut means on said locking portions and tightening them to urge said first mounting-plate portion against said first post wall and causing said connector web portion to bear against said tongue portion of said second planar mounting-plate portion on said surface thereof from which said rail extends, thereby fixing said rail rigidly in position on said post.

4,366,911
UNCOUPLING CENTRAL BUFFER COUPLINGS ON RAIL VEHICLES
Wilhelm Günther, Wolfenbuttel, and Joachim Kreher, Brunswick, both of Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany
Filed Jun. 9, 1980, Ser. No. 157,545
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923195
Int. Cl.³ B61G *3/016*
U.S. Cl. 213—100 R **5 Claims**



1. A device for uncoupling a central buffer coupling on a rail vehicle of the type having a rotatable disk hook with an articulated coupling eye, comprising an elongated bridgepiece fixedly connected at one end thereof to the disk hook and having spaced prongs at an opposite end thereof, a housing, an electric motor mounted to said housing, switch means for energizing and de-energizing said electric motor, cam means rotatably mounted to said housing for engaging said prongs to impart rotation to the disk hook and for engaging said switch means to energize and de-energize said electric motor, said electric motor and said cam means being interconnected so that when said motor is energized, said cam means rotates relative to said housing, said motor having a worm shaft and said cam means including a worm wheel mounted to said housing for rotation relative to said housing and a cam plate fixedly connected to said worm wheel and engageable with said switch means.

4.366.912

RUBBER CLOSURE DEVICE FOR VIALS

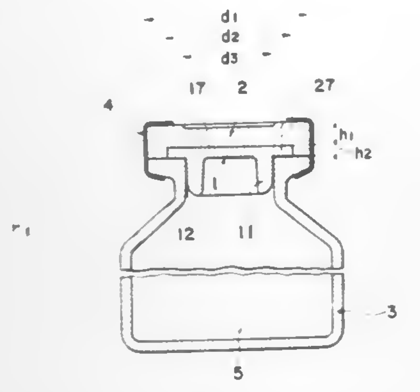
Yoshiharu Matukura. Ikoma: Tokio Kataoka. Kawanishi. and Hiroshi Fujisawa. Toyonaka. all of Japan. assignors to Takeda Chemical Industries. Ltd.. Osaka. Japan

Filed Feb. 25. 1981. Ser. No. 238,362

Claims priority. application Japan. Feb. 25. 1980. 55-22953

Int. Cl.^{3} B65D *39/00*

U.S. Cl. 215—247 **11 Claims**



1. A rubber closure device for closing the mouth of a vial or like vessel which comprises an inner closure member having a thickness required to achieve a sufficient resistance to chemicals which may be contained in the vial and a diameter larger than the diameter of the opening of the mouth. said inner closure member being made of vulcanized synthetic rubber containing fluorine atoms. said inner closure member being composed of a disc body having one of its opposite surfaces formed integrally with a leg means which. when the closure device is held in position to close the mouth. protrudes into the mouth and contacts tightly the inner peripheral wall defining the mouth. and an overlay closure member overlaying in contact with the inner closure member and made of vulcanized gas-impermeable synthetic rubber. said overlay closure member having a thickness sufficient to avoid the flow of fluid therethrough and being so sized as to cover both the other of the opposite surfaces of the disc body and the peripheral face of the disc body.

4.366.913

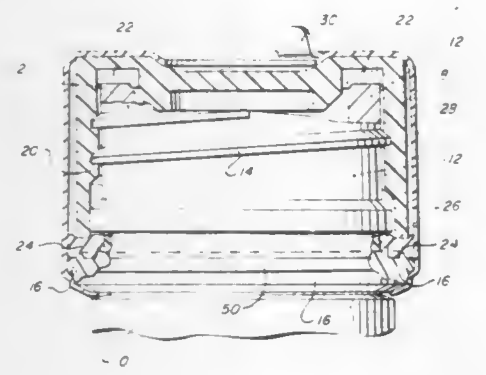
PLASTIC CLOSURE SYSTEM WITH AN ANNULAR RIB GASKET RETENTION MEANS

David A. Winchell, Twin Lakes, Wis., and Thomas A. Fowles. McHenry, Ill.. assignors to Baxter Travenol Laboratories, Inc.. Deerfield. Ill.

Filed Oct. 17. 1980. Ser. No. 197.876

Int. Cl.^{3} B65D *41/04*

U.S. Cl. 215—329 **2 Claims**



1. In a closure system for a container having a neck with a cap support flange extending radially outwardly from the neck. the neck having threads above the support flange engaging cooperating threads carried by a closure cap carried by said neck. and a resilient gasket encircling said neck and overlying said cap support flange. said gasket being positioned directly underneath said closure cap and compressed between said closure cap and cap support flange in a sealing position. the improvement comprising. in combination:

first annular rib means projecting from said support flange into said gasket to retain said gasket in its sealing position. said first annular rib means being positioned radially outwardly beyond said closure cap: and

second annular rib means projecting from said support flange into said gasket at a position which is radially inward of said first annular rib means and closure cap. the gasket-facing surface of the cap support flange being free of parting lines and other irregularities between said first and second annular rib means. said gasket projecting into an annular groove defined between said second annular rib means and said neck.

4.366.914

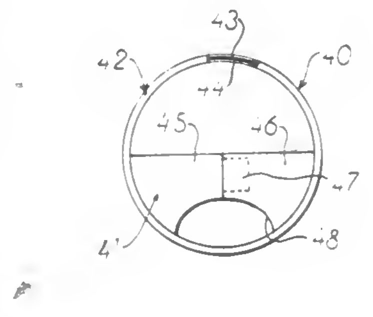
DRINKING CONTAINER DEVICE WITH ADJUSTABLE CLOSURE

Eleanor P. Ingram. 120 Washington St., Helena. Mont. 59601

Filed Jul. 25. 1980. Ser. No. 172,387

Int. Cl.^{3} A47G *19/22*

U.S. Cl. 220—287 **1 Claim**



1. A device for a drinking container including a positioning portion and a contents-restraining portion, said positioning portion including a periphery-engaging section. said periphery-engaging section including a resilient sidewall contacting member. said contents-restraining portion extending between opposite sides of said periphery-engaging section. said contents-restraining portion including a barrier section. said barrier section covering only a portion of the cross-sectional area circumscribed by the periphery of said container. said periphery-engaging section being expandable and including a cavity in one end thereof and a second end insertable into and slidable with respect to said cavity: said contents-restraining portion including a pair of adjacent barrier panels disposed in substantially the same plane. the adjoining edges of said barrier panels overlapping. a slot in an adjoining edge of a first of said barrier panels. and an adjoining edge of a second of said barrier panels insertable into and slidably engageable with said slot in said first barrier panel. whereby said device when positioned on a container whose contents includes solid material, restrains the solid material within said container while allowing the liquid contents to pass therefrom.

4,366,915

HINGED LID CONTAINER

David Seidler, Forest Hills, N.Y., assignor to Revlon Inc., Tuckahoe, N.Y.

Filed Sep. 17, 1980, Ser. No. 187,887

Int. Cl.^{3} B65D *43/14. 51/04*

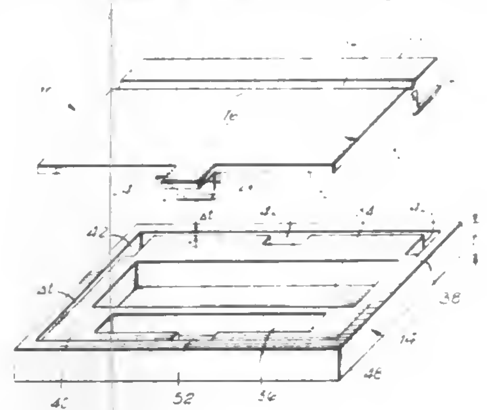
U.S. Cl. 220—339 **28 Claims**

1. A hinged lid container comprising:

a lid including a hinge;

a container body, said container body including at least one body surface required to be selectively covered or uncovered;

means for joining said lid to said container body, said joining means including at least one tab extending from a portion of said lid on one side of said hinge, and at least one recess in said container body having offset means for engaging said tab therein. and being adapted to position said lid in registry with said at least one body surface. selective operation of said hinge causing said body surface to be covered or uncovered by said lid.



4,366,916

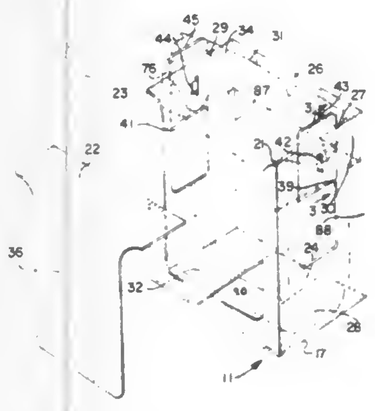
CONVERTIBLE BAG PACKING CONTAINER AND BAG SUPPORT DEVICE

Joseph J. Guido, Hinsdale, and Richard Buck, Lombard, both of Ill., assignors to Inter Ocean Marketing Corporation, Hinsdale, Ill.

Filed Jul. 22, 1981, Ser. No. 285,823

Int. Cl.^{3} B65D *90/04;* **B65B** *1/04*

U.S. Cl. 220—404 **14 Claims**



14. In combination. a flexible bag with handle means. together with a packing container for bulk quantities of the flexible bags which container is convertible into an assembled bag support device. the combination comprising:

a flexible bag having handle means near the top of an open end thereof: and

a container including multiple side faces having perforations defining upstanding ears for receiving said handle means of the flexible bag; a front face having perforations defining a removable front panel of a size to permit passage of said flexible bag when filled with goods: a back face that is between and connected to said multiple side faces: a bottom face between said multiple side faces. said front face and said bottom face. said bottom face being of a size to accommodate one of said flexible bags when fully opened. said bottom face being spaced from said upstanding ears by a distance generally equal to the vertical length of said flexible bag: and a top face having multiple flaps that are connected to and that are foldable against said faces.

4,366,917

CRYOGENIC TANK

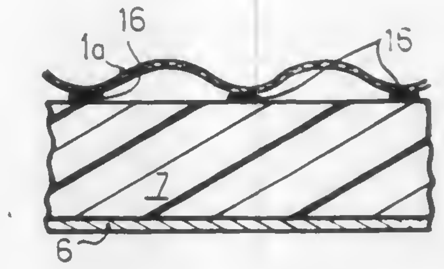
Michel Kotcharian, Paris, France, assignor to Technigaz, France

Continuation of Ser. No. 914,681, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 748,755, Dec. 8, 1976, abandoned, which is a division of Ser. No. 622,414, Mar. 1, 1976, Pat. No. 4,105,819. This application Aug. 11, 1980, Ser. No. 177,225

Claims priority, application France, Mar. 4, 1975, 75 06732; Feb. 20, 1976, 76 04810; May 23, 1978, 78 15303

Int. Cl.^{3} B65D *25/14. 25/18. 90/02*

U.S. Cl. 220—442 **1 Claim**



1. A heat-insulated fluid-tight tank for holding very cold fluids. comprising a substantially rigid self-sustaining wall means for surrounding a hollow interior space in which a cryogenic fluid is adapted to be situated. said wall means having inner and outer surfaces. heat-insulating means engaging the inner surface of said wall means. said heat-insulating means terminating in a surface which is distant from and directed away from said wall means. and barrier-layer means situated next to and in engagement with the latter surface of said heat insulating means so as to be situated at the interior of said heat-insulation means and adapted to directly engage the cryogenic fluid. said barrier layer means being in the form of a relatively thin flexible laminated sheet material which includes a flexible glass-fiber fabric layer directly bonded to said surface of said heat insulation means. a thin. flexible. fluid-impervious metallic sheet made of a metal selected from the group consisting of aluminum. stainless steel. and Invar alloy and bonded to said glass-fiber fabric at a surface thereof opposite from said insulation means. a third layer bonded to the surface of said metallic sheet which is opposite from said glass-fiber fabric layer. said third layer being a glass-fiber fabric layer. said metallic layer having a thickness which is substantially less than the thickness of said glass-fiber fabric layer and said third layer. said barrier layer means further including a fourth layer for directly engaging the cryogenic fluid. said fourth layer being in the form of a thin. protective continuous film of plastic material. and wherein said barrier layer means is corrugated and has spaced portions which are directly bonded to said heat-insulation means while having between said spaced portions elongate portions. the area of which is sufficiently greater than the area of and distance between said spaced portions.

4,366,918

VARIABLE RATIO METERING, MIXING AND DISPENSING APPARATUS

Kozo Naka, Hirakata, Japan, assignor to Naka Seiki Company Limited, Japan

Filed Apr. 14, 1980, Ser. No. 140,144

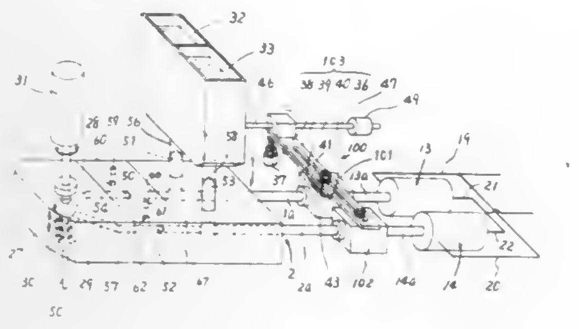
Claims priority, application Japan, Apr. 20, 1979, 54/49421; Dec. 12, 1979, 54/162000; Dec. 12, 1979, 54/162001

Int. Cl.^{3} G01F *11/06*

U.S. Cl. 222—134 **18 Claims**

1. A variable ratio metering, mixing and dispensing apparatus comprising a plunger pump having input-output switching means for withdrawing a main component from a main component source. a plunger pump having input-output switching means and disposed in parallel to the main component pump for withdrawing a hardener from a hardener source. a first piston-cylinder assembly for driving the main component pump. a second piston-cylinder assembly for driving the hard-

ener pump, a mixer for mixing together the main component from the main component pump and the hardener from the hardener pump, and adjustable metering means for determining the ratio of the main component to the hardener to be mixed therewith, the metering means including a first actuating member, a second actuating member and an adjustable control mechanism for connecting the first actuating member to the second actuating member, the first actuating member, the plunger of the main component pump and the piston rod of the first piston-cylinder assembly being connected so as to be movable together, the second actuating member, the plunger of the hardener pump and the piston rod of the second piston-cylinder assembly being connected so as to be movable together, the control mechanism including a first arm turnable about a pivot forward or backward longitudinally of the plungers of the pumps, a second arm movable forward or backward longitudinally of the pump plungers, a pin mounted on the first actuating member and connected to the first arm slidably along the first arm, and a pin mounted on the second arm shiftably therealong and connected to the first arm slidably therealong.

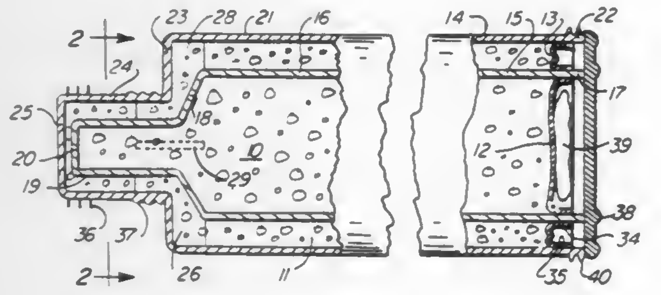


4,366,919

COMPOSITE CARTRIDGE AND DEVICE FOR METERING EXTRUSION OF CONTENTS

Steven R. Anderson, Edina, Minn., assignor to Coaxial Cartridges, Inc., Edina, Minn.

Continuation-in-part of Ser. No. 901,857, May 1, 1978, abandoned. This application Apr. 20, 1979, Ser. No. 31,789
Int. Cl.^{3} B67D *5/52*
U.S. Cl. 222—137 10 Claims



1. An apparatus for the storage, shipping, metering, mixing and dispensing of at least two different fluid compositions which cure when mixed together, said apparatus comprising:

an elongated cylindrical main body including an elongated cylindrical outer wall member and an elongated cylindrical inner wall member positioned coaxially within and spaced radially inwardly of said outer wall member;

said inner wall member defining an elongated central chamber containing therein a first fluid composition;

said outer wall member and said inner wall member defining therebetween an elongated annular chamber containing therein a second fluid composition different from said first fluid composition;

said main body having at a forward first end thereof a shoulder integral with said outer and inner wall members, said shoulder closing adjacent forward ends of said central chamber and said annular chamber, said shoulder having an inner wall extending substantially transverse to the longitudinal axis of said main body;

a cylindrical neck integral with said shoulder and extending forwardly therefrom at a position radially offset from said longitudinal axis of said main body, said neck having a forward end defined by a plane extending substantially transverse to said longitudinal axis;

a first passageway extending through said shoulder and said neck, said first passageway having a rear end in communication solely with said central chamber and a forward end opening onto said transverse plane, said rear end of said first passageway comprising a circular hole opening in said transverse inner wall of said shoulder;

a second passageway extending through said shoulder and said neck, said second passageway having a rear end in communication solely with said annular chamber and a forward end opening onto said transverse plane, said rear end of said second passageway comprising a circular hole opening in said transverse inner wall of said shoulder;

said neck including an integral solid wall separating said first and second passageways throughout the entire length of said neck, said solid wall having a rear end separating said rear ends of said first and second passageways and a forward end terminating substantially at said transverse plane;

a disc-shaped closure member positioned within a rear end of said central chamber, said disc-shaped closure member having on the outer periphery thereof means forming a sliding seal with the inner surface of said inner wall member;

an annular closure member positioned within a rear end of said annular chamber, said annular closure member having on the inner and outer peripheries thereof means forming respective sliding seals with the outer surface of said inner wall member and the inner surface of said outer wall member;

said disc-shaped closure member and said annular closure member being capable of simultaneous axial sliding movement respectively through said central chamber and said annular chamber thereby to achieve metered extrusion of said first and second fluid compositions through said first and second passageways;

said disc-shaped closure member and said annular closure member being free of any direct attachment or connection to any structure capable of imparting axial sliding movement thereto;

said disc-shaped closure member and said annular closure member each having a concave configuration with the respective concavities thereof facing forwardly, such that upon extrusion force being applied thereto said disc-shaped closure member expands radially outwardly against said inner surface of said inner wall member and said annular closure member expands radially outwardly and inwardly respectively against said inner surface of said outer wall member and said outer surface of said inner wall member;

said sliding seal forming means on said outer periphery of said disc-shaped closure member and on said outer and inner peripheries of said annular closure member comprising rearwardly extending annular skirts having on the respective peripheries thereof flexible annular scrapper elements adapted to be pressed against the respective said wall member surfaces upon said radial expansion, said scrapper elements being inclined to extend forwardly from said skirts in the absence of said radial expansion; and

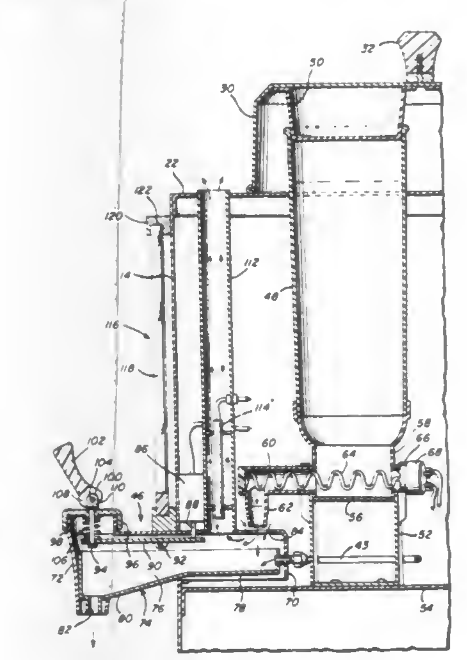
mixing and dispensing nozzle means, removably connected to the outer surface of said neck, for receiving said first and second fluid compositions extruded through said first and second passageways, for mixing said first and second fluid compositions to form a mixed composition, and for dispensing said mixed composition, said mixing and dispensing nozzle means having fixed structure capable of achieving said mixing solely due to the pressure of extrusion of said first and second fluid compositions and without any relative movement of said structure.

4,366,920

DEMAND PREPARATION SOLUBLE COFFEE URN

Irving E. Greenfield, Jr., 5331 SW. 92 Ave., Miami, Fla. 33156, and Ronald C. Jacobson, 14500 Kendale Lakes Blvd., Miami, Fla. 33183

Filed Dec. 28, 1977, Ser. No. 865,324
Int. Cl.^{3} B67D *5/60, 5/62*
U.S. Cl. 222—145 26 Claims



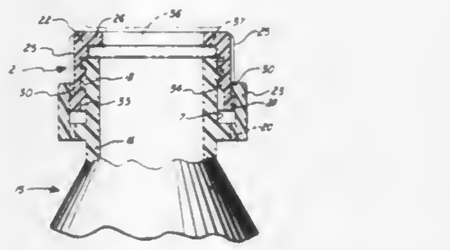
1. A soluble coffee urn comprising a housing, a canister in said housing for freeze-dried coffee, hot water supply means in said housing, a discharge and mixing assembly projecting from said housing and communicated with the canister and the hot water supply means, said discharge and mixing assembly including manually actuated means for discharging freeze-dried coffee and hot water into the discharge and mixing assembly for blending and dispensing coffee into a receptacle continuously while the manually actuated means is actuated, a lid on said housing forming a closure for said canister, said housing, said lid, said manually actuated means and the portion of said discharge and mixing assembly disposed externally of the housing being constructed to simulate the shape, size and appearance of a conventional roasted coffee urn thereby enabling the soluble coffee urn to replace a conventional roasted coffee urn so that discharge of mixed coffee from the soluble coffee urn will simulate the discharge of brewed coffee from a conventional roasted coffee urn and an observer will not recognize that a roasted coffee urn has been replaced by the soluble coffee urn, said hot water supply means including a hot water tank having a plurality of discharge lines communicated therewith, each of said discharge lines having a control valve therein for controlling discharge of hot water therefrom, said hot water tank, said discharge lines and said control valves being closely associated whereby the hot water tank and the hot water therein forms a heat sink for maintaining the discharge lines and the control valves heated during periods of non-use so that initial water discharged after a long period of non-use will be at an elevated temperature, said discharge valves being in communication with the hot water tank, said tank including a vertical portion to provide full flow through all of said valves without pressure and flow fluctuations regardless of the number of said valves which may be opened simultaneously.

4,366,921

CHILD-RESISTANT CLOSURE DEVICE

Donald C. Kirk, Jr., Midlothian, Va., assignor to Ethyl Products Company, Richmond, Va.

Filed Sep. 28, 1981, Ser. No. 305,917
Int. Cl.^{3} B67B *5/00;* B67D *5/32*
U.S. Cl. 222—153 12 Claims



1. A child-resistant closure for attaching a dispensing device to a container including:

(a) a container having a cylindrical neck, with a thread provided on its outer surface,

(b) a plurality of ratchet-teeth located on said neck below said thread,

(c) a closure member provided with a central opening in its top surface and having a cylindrical skirt that is provided with a thread on its interior surface; said closure member being coupled to said dispensing device;

(d) a collar member received on the lower end of said closure member and being axially movable thereon, said collar member being provided with a plurality of ratchet-teeth adapted to engage said ratchet-teeth on said neck when said collar is in its lowermost position; and

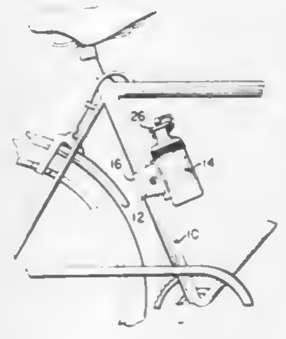
(e) engaging means on said collar and on said closure whereby said collar can be moved axially on said closure but cannot be moved radially with respect thereto.

4,366,922

BOTTLE AND HOLDER ASSEMBLY

Edward H. Levine, Providence, and F. E. Dixon Newbold, Newport, both of, R.I, assignors to Rhode Gear U.S.A., Providence, R.I.

Filed May 7, 1981, Ser. No. 261,682
Int. Cl.^{3} B62J *11/00*
U.S. Cl. 224—32 R 6 Claims

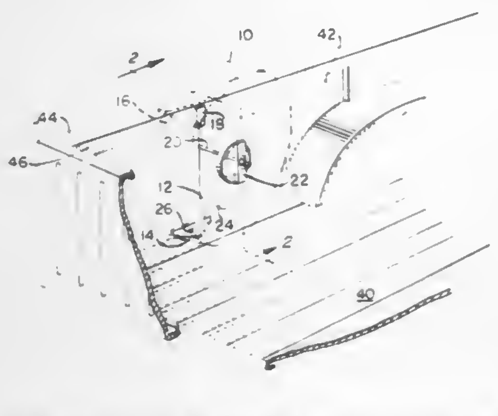


1. A container and holder assembly for attachment to the frame of a cycle comprising:

an integrally formed plastic container having an elongated body with an integrally formed tongue projecting from the sidewall of the container body and extending longitudinally of the longitudinal axis of the container;

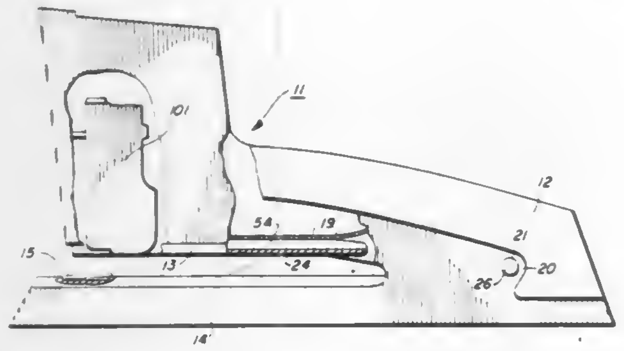
a plurality of ribs formed on the surface of said tongue and extending normal to the longitudinal axis of said container body;
said holder comprising a U-shaped clamp having a segement adjacent the bight of the U that is adapted to engage a tubular member of said cycle, said U-shaped clamp including a pair of legs extending from the bight;
means for spanning the space between said legs at a distance sufficient from said bight to permit said tubular member to be positioned within said bight, said means for spanning said legs adapted to secure said holder to said tubular member and to provide means for engaging said ribs.

4,366,923
SNAP-IN TIRE CARRIER
Harold D. Koch, Rte. 2, Box 15, Gann Valley, S. Dak. 57341
Filed Apr. 6, 1981, Ser. No. 251,284
Int. Cl.^{3} B62D *43/08*
U.S. Cl. 224—42.24 **8 Claims**



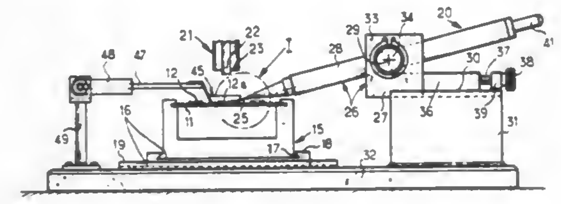
1. A tire carrier for holding a spare tire along a side wall of the bed section of a pick-up truck, said tire carrier comprising:
- (a) a brace having an upper end and a lower end and adapted to extend generally between the floor of the bed section of the pick-up truck and the body flange of the side wall;
- (b) a spring operative to secure said brace in an upright position generally between the floor of the bed section of the pick-up truck and the body flange of the side wall;
- (c) an elongate transverse piece for attachment to said brace and to extend inwardly from said brace; and
- (d) a securing piece adapted to attach to said elongate transverse piece so as to secure a tire in an upright position in between said securing piece and the side wall of the bed section of the pick-up truck.

4,366,924
STAPLER HAVING AN ABUTMENT FOR LIMITING STAPLER REPENETRATION
Larry L. Leiter, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 3, 1980, Ser. No. 203,740
Int. Cl.^{3} B25C *7/00*
U.S. Cl. 227—155 **2 Claims**



1. A stapling machine comprising a stapling head member and a base, said stapling head member being pivotally movable relative to said base, said stapling head member having a lower portion and a downwardly movable upper portion, said base having an anvil formed with clinching grooves, rails within said lower portion adapted to support a plurality of staple elements, a drive channel at one end of said rails, a staple driver blade movable within said drive channel by downward movement of said upper portion, a pair of movable follower members positioned on opposite sides of said rail and adapted to abut portions of the staple elements disposed upon said rails, said follower members forming a U-shaped staple during downward movement thereof and said driver blade driving legs of the U-shaped staple against said anvil thereby bending the legs during a stapling operation, and means positioned within and supported for pivotal movement with said rails and being adjacent said drive channel and arranged to resist bending of at least one of said legs of the staple beyond a predetermined limit during the stapling operation.

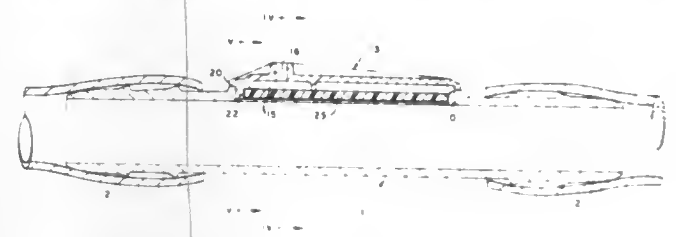
4,366,925
DEVICE FOR NON-DESTRUCTIVE DESOLDERING AND REMOVAL OF A MODULAR ELECTRONIC COMPONENT FROM A SUBSTRATE
Bernard Fanene, Trelaze, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France
Filed Jun. 12, 1980, Ser. No. 158,708
Claims priority, application France, Jun. 13, 1979, 79 15126
Int. Cl.^{3} B23K *3/00*
U.S. Cl. 228—20 **33 Claims**



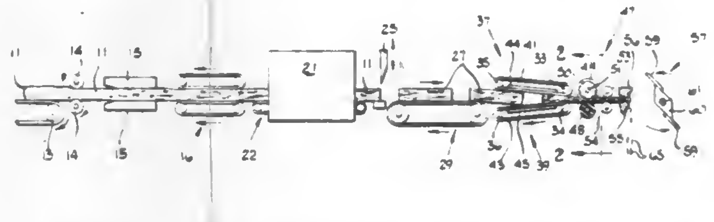
1. A device for dismantling an electronic modular component having a plurality of connecting pieces soldered on a substrate forming a printed circuit, the said modular component being itself attached by its base on to the said substrate by means of a thermofusible adhesive agent, comprising in combination:
- (a) a substrate support having means for adjustably positioning the substrate support to permit said component to be guided to a predetermined position;
- (b) a positioning support adjacent said substrate support and at least one flexible member having a free end, said member being supported by said positioning support which includes means for bringing said free end of the flexible member in lateral contact with said component near its said base;
- (c) means for causing said flexible member to apply an adjustable resilient ejection force on said modular component when the latter is in said predetermined position
- (d) heating means for directing a hot gas toward said predetermined position to cause fusion of the solder and softening of the adhesive so that said adjustable force causes consequent ejection of said modular component in response to the applied thrust force.

4,366,926
IRRIGATION EMITTER UNIT
Raphael Mehoudar, Tel-Aviv, Israel, assignor to Hydro-Plan Engineering, Ltd., Tel-Aviv, Israel
Filed Jul. 22, 1980, Ser. No. 171,048
Claims priority, application Israel, Aug. 6, 1979, 57986
Int. Cl.^{3} B05B *15/00*
U.S. Cl. 239—542 **8 Claims**

1. An in-line emitter unit comprising a tubular connector member having end portions adapted to connect together two successive lengths of irrigation conduit, a substantially rectangular shaped well structure formed integrally with an outer wall portion of the connector member, an inlet formed in said outer wall portion serving to effect communication between the interior of the tubular connector and the well structure; a correspondingly substantially rectangular shaped cover member adapted to cover the well structure, an elongated groove formed in an inner wall of the cover member, a recessed cavity formed in said inner wall and communicating with one end of the groove and being of extended dimensions as compared with the width of the groove, an outlet bore constituting a unit outlet and formed coaxially in a base portion of the cavity and having a rim area substantially less than that of the cavity, a resiliently flexible membrane located in the well strucure and juxtaposed with respect to the inner wall so as to define with said groove a flow restricting flowpath, a second and opposite end of said groove communicating with the interior of the well structure; the arrangement being such that the membrane is displaceable towards and away from the base portion of the cavity in accordance with pressure variations so as to stabilize the output rate of the emitter unit with respect to the variations.

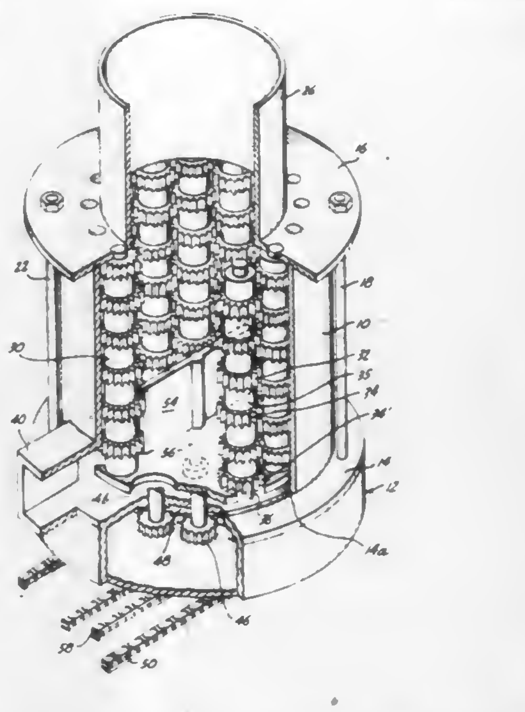


4,366,927
METHOD OF MAKING A LOOSE-FILL INSULATION
William H. Kielmeyer, Englewood, Colo., assignor to Manville Service Corporation, Denver, Colo.
Continuation of Ser. No. 834,616, Sep. 19, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,694
Int. Cl.^{3} B32B *31/18*
U.S. Cl. 241—4 **2 Claims**



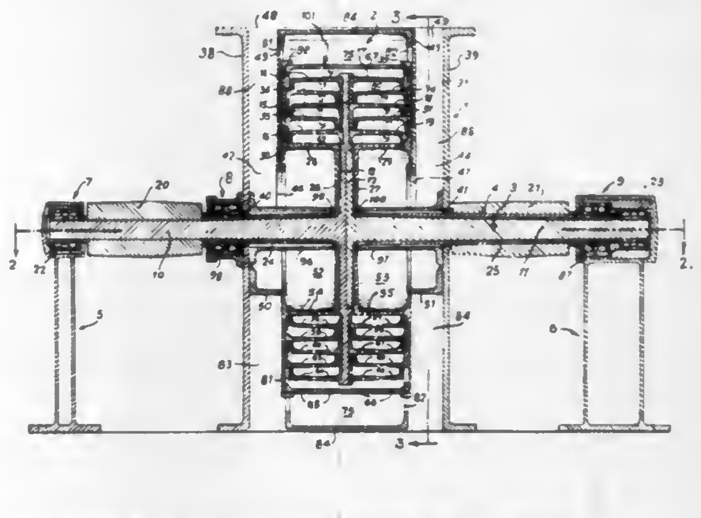
1. A method of providing diced thermal insulation, suitable for installation in building spaces using pneumatic means, comprising:
- (a) advancing a low density blanket of resin bonded fibers in a predetermined path,
- (b) compressing said blanket to less than 20% of its original thickness,
- (c) advancing said compressed blanket,
- (d) slicing said compressed blanket, along the direction of advance of said compressed blanket, into a plurality of compressed strips of material, said compressed strips being of equal width,
- (e) cutting through said compressed strips at regular intervals, said cuts lying in a plane perpendicular to the compressed surfaces of said compressed strips to provide a plurality of fibrous columns that are substantially uniform in length, width and thickness, and
- (f) delaminating said fibrous columns in planes substantially parallel to said compressed surfaces through agitation of said columns to provide a multitude of smaller pieces that are uniform in length and width.

4,366,928
APPARATUS AND METHOD FOR COMMINUTING SOLID MATERIALS
John H. Hughes, 458 Wynooche Rd., Montesano, Wash. 98563
Filed Jul. 7, 1980, Ser. No. 166,232
Int. Cl.^{3} B02C *18/12*
U.S. Cl. 241—30 **41 Claims**



1. An apparatus for reducing solid material objects to particulate form comprising an annular array of substantially parallel rollers forming within the array an enclosure of generally round tubular form adapted to receive the objects, means forming an opening for introducing objects into said enclosure, means to move the objects orbitally around the interior of said enclosure, means mounting said rollers to rotate about substantially parallel axes and operable to roll on the orbiting objects under bearing pressure produced by centrifugal force of the objects, said rollers operating to impact the objects under such bearing pressure to thereby progressively comminute the objects.

4,366,929
PROCESS AND APPARATUS FOR GRINDING MATERIALS
Federico de los Santos, Villa Ol'impica, Edificio 17, Depto. 302, Mexico 22, D.F., Mexico
Filed May 1, 1980, Ser. No. 145,739
Int. Cl.^{3} B02C *19/00*
U.S. Cl. 241—85 **4 Claims**



1. An apparatus for grinding materials comprising:
a cylindrical housing;
first rotor means within said housing;
a plurality of first concentrical channel-like annular flanged

grinding members carried by said first rotor means, each having an annular element and a pair of flanges extending from each side edge of said annular element, radially inwardly thereof;

second rotor means within said housing;

a plurality of second concentrical channel-like annular flanged grinding members carried by said second rotor means, each having an annular element and a pair of flanges extending from each side edge of said annular element, radially inwardly thereof, said plurality of second concentrical grinding members comprising an innermost or center member, an outermost or peripheral member, and at least one intermediate member, each one of said first grinding members being arranged concentrically between a pair of said second grinding members for forming closed grinding chambers therebetween, a plurality of holes distributed throughout said annular elements, said holes having a decreasing size from one grinding member to the next from the center to the periphery of the housing;

first drive means for rotating said first rotor means in a predetermined direction;

second drive means for rotating said second rotor means in the opposite direction;

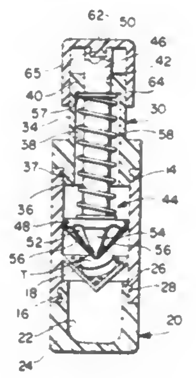
feed means for feeding material to be ground into said innermost grinding member; and

discharge chamber means for receiving ground material passing through the holes of the annular element of said outermost grinding member and for discharging said ground material outwardly of the apparatus, wherein said first drive means comprises a shaft assembly comprising two coaxial shafts extending toward both ends of the center of said first rotor means, bearing means for supporting said shaft assembly on both ends thereof, and a pulley arranged on one of the shafts of said shaft assembly at the outermost part thereof in order to receive the driving action of a suitable motor; and said second drive means comprises a hollow shaft assembly comprising two coaxial hollow shafts, concentrically arranged around said first shaft assembly, each one of said coaxial hollow shafts being joined to each one of said parallel disks of said second rotor means, and a pulley provided on one of said coaxial hollow shafts in a position opposite to the first above mentioned pulley, the other of said coaxial hollow shafts being of a sufficiently short length to provide for the mounting of the pulley of the shaft of the first rotor means, said holes of the annular flanged grinding members comprising bushings, said bushings having a cylindrical member passing through said hole and a frustoconical extension outwardly directed therefrom and extending to a distance outwardly of the inner face of each hole of each grinding member such that, when the materials impact against the inner surface of the grinding members, said extensions cause the building up of a thickness of material to form layers of said material around each bushing, in order to avoid impact of materials against the walls of the said grinding members.

4,366,930
TABLET PULVERIZER

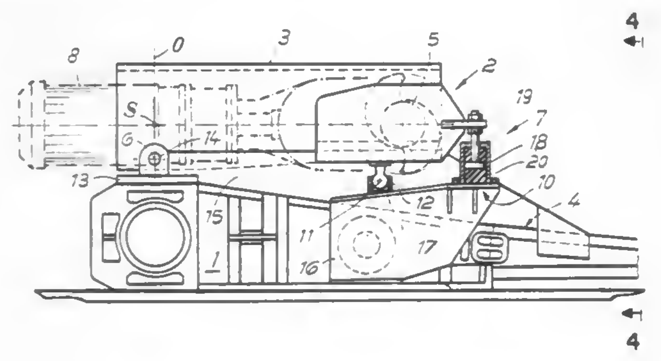
Albert V. Trombetti, Jr., 23 Richland Rd., Cranston, R.I. 02910
Filed Apr. 27, 1981, Ser. No. 257,637
Int. Cl.³ B02C *1/00, 19/12*
U.S. Cl. 241—169 **4 Claims**

1. A hand-operated tablet pulverizer for crushing solid tablets into powder, comprising a tubular body portion having a screen located therein adjacent to the bottom thereof, said tablets to be crushed being received in said body portion and in engagement with said screen, said screen having a plurality of small diameter openings formed therein and being molded in a one-piece construction to the interior of said tubular body portion, said screen having an inverted conical configuration that defines a pocket for receiving said tablets therein, a bottom container removably mounted on the lowermost end of said body portion, the interior of said bottom container being disposed directly beneath said screen, an elongated axially movable crusher member extending into said body portion, the lowermost end of said crusher member being movable into engaging relation with said tablets as located on said screen, a cap member engaging the upper end of said crusher member and defining the top of said pulverizer, said cap member being movable axially with said crusher member to urge the lower end of said crusher member into intimate contact with said tablets and being rotatable to cause said lower end to produce a grinding action on said tablets, wherein said tablets are ground into powder, the powder filtering through said screen for collection in said bottom container, said crusher member including an elongated shank portion, a spring surrounding said shank portion for a major portion of the length thereof, and engaging said crusher member for normally urging the lower end thereof into engagement with the tablets as located in the screen pocket, a sleeve mounted on said tubular body portion and surrounding said shank portion and a portion of said spring, said sleeve receiving the uppermost end of the spring in abutting relation thereagainst, wherein a downward thrust is exerted on said crusher member, the uppermost end of said sleeve having an opening formed therein through which the uppermost end of said shank portion extends, wherein said cap member is received on said shank portion for movement therewith, said cap member being slidably received on said sleeve for being movable in the axial and rotatable motion thereof with said crusher member during a crushing and grinding action of said tablets.



4,366,931
CRUSHING DEVICE

Gert Braun, Hofackerstrasse 12 a, 4300 Essen-Heisingen, Fed. Rep. of Germany
Filed Aug. 25, 1980, Ser. No. 180,855
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934213
Int. Cl.³ B02C *13/06*
U.S. Cl. 241—186 R **10 Claims**



1. A crushing device for fragmenting coarse material comprising

a frame,

an elongated housing,

means for mounting said housing to said frame for oscillatory motion about a horizontal swing axis adjacent a first end of said housing,

a rotatable crushing roller mounted in said housing adjacent a second end opposite to said housing first end,

a conveyor trough movably mounted to said frame spaced from said crushing roller by a distance defining a passage clearance for the material to be crushed therebetween,

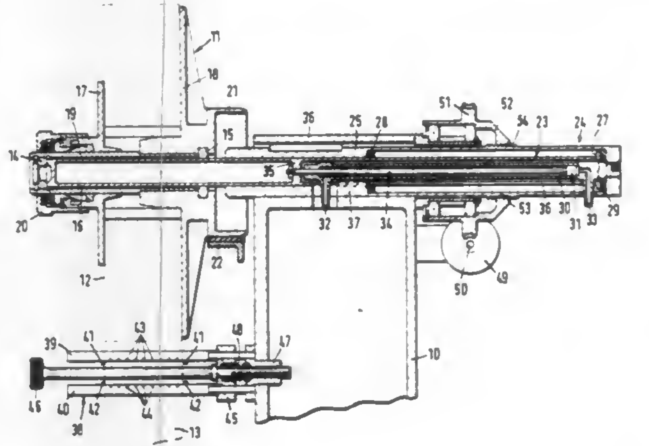
means for damping the oscillatory motion of said housing,

drive means laterally connected to a first side of said housing for driving said crushing roller,

and a counterweight laterally connected to a second side of said housing, said second side being disposed opposite said first side, for counterbalancing said drive means, said drive means having a center of gravity substantially disposed on a vertical line perpendicularly to said horizontal swing axis.

4,366,932
AXIALLY DISPLACEABLE REEL HOLDER FOR PACKING MACHINE WEBS

Heinz H. Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany
Filed Sep. 5, 1980, Ser. No. 184,445
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937661
Int. Cl.³ B65H *19/12, 25/26*
U.S. Cl. 242—58.6 **4 Claims**



1. A reel holder mounting arrangement for a packaging apparatus, especially for wrapping groups of cigarettes into cigarette packs, comprising:

(a) a machine base (**10**),

(b) a reel holder (**11**) for receiving a replaceable web roll of packaging material,

(c) an axle (**16**) embodying means for removably mounting the reel holder at one end thereof,

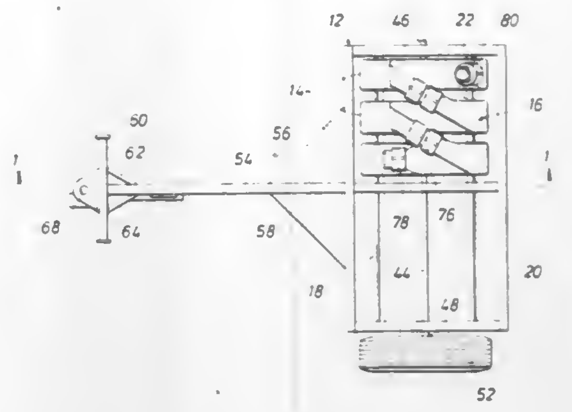
(d) a hollow elongated bearing section (**23**) coaxial with and extending from the other end of the axle,

(e) fluid piston and cylinder means (**30, 31**) disposed within the bearing section, and

(f) means individually coupling relatively axially displaceable elements of the piston and cylinder means to the axle and to the machine base, whereby the axle and a web roll carrying reel holder mounted thereon may be axially retracted to an operating position proximate the machine base for web withdrawal, or axially extended to a position remote from the machine base to enable safe web roll replacement.

4,366,933
APPARATUS FOR FIRE HOSE DEPLOYMENT

Kenneth W. Broussard, 6956 Hansen, Groves, Tex. 77619
Filed Jul. 17, 1980, Ser. No. 169,664
Int. Cl.³ B65H *75/34*
U.S. Cl. 242—86.1 **8 Claims**



1. Mobile apparatus for storage and deployment of fire hose, comprising:

(a) an elongated axle having wheels mounted at each extremity thereof;

(b) a plurality of bottom support bars being secured intermediate the extremities thereof to said axle and oriented in transverse relation with said axle;

(c) a plurality of side bars extending upwardly from the extremities of said bottom support bars and being oriented in upwardly diverging pairs;

(d) a pair of upper side bar members being secured to the upper extremities of said side bars;

(e) a pair of end members connected to the extremities of said upper side bar members and cooperating therewith to define a generally rectangular upper frame;

(f) elongated support members being secured intermediate the extremities of said side bars and extending in generally parallel relation with said axle, said support members and said axle forming support means for coils of collapsed fire hose with the axis of rotation thereof being oriented in generally parallel relation with said axle; and

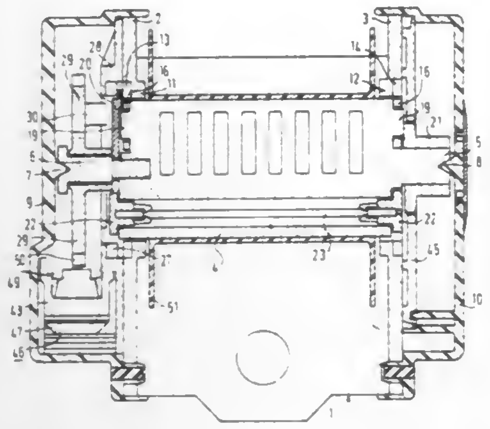
(g) an elongated tongue element extending from one of said upper side members.

4,366,934
ROLL-UP DEVICE FOR SAFETY BELT

Helmut Seifert, Schwäbisch Gmünd; Wolf-Dieter Hönl, Mutlangen; Johannes Schmid, Schwäbisch Gmünd, and Bernhard Frey, Waldstetten, all of Fed. Rep. of Germany, assignors to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany
Continuation of Ser. No. 59,624, Jul. 23, 1979, abandoned. This application Jun. 9, 1981, Ser. No. 271,829
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832159
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **11 Claims**

1. Roll-up device for a safety belt in a motor vehicle having a metal frame with two side plates, a rotatable belt shaft on which a safety belt is wound, locking pawl means which include locking teeth and a locking pawl at each end of said belt shaft with one of said locking teeth and said locking pawl attached to each said side plate and the other to said belt shaft, a control element and a release mechanism, said locking pawl means activated by said control element operable by said release mechanism which is triggered when the vehicle exceeds a permissible acceleration or deceleration to cause said locking pawl to engage said locking teeth, a cutout in each of the side plates, each end of said belt shaft extending into one of said cutouts of the two side plates, and said locking teeth and said locking pawl which when activated by said control element block the belt shaft, also disposed in said cutout, and wherein the side plates are shaped in the regions of the cutouts to form

annular projections which are offset with respect to the side plates leaving spaces adjacent the projections in the side plates,



said projections acting as bearings for the belt shaft, and the locking teeth arranged within said spaces of said cutouts of the side plates.

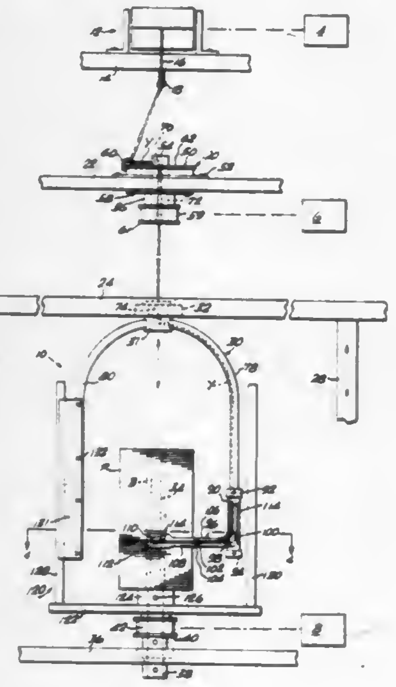
4,366,935
DEVICE AND PROCESS FOR SPINNING OR TWISTING AND WINDING YARN

Jacobo G. Maria, 93 Ave. Norte #630, San Salvador, El Salvador

Continuation-in-part of Ser. No. 162,049, Jun. 17, 1980, abandoned. This application Dec. 19, 1980, Ser. No. 218,252

Int. Cl.³ D01H *1/04, 1/02, 7/44, 7/90*

U.S. Cl. 242—159 **30 Claims**



1. A machine comprising a twisting means to receive material to be twisted and wound on a package, said twisting means being at a first fixed station, said material being received through the twisting means from a roller assembly; said twisting means including a rotor, a first yarn guide passageway through said rotor to direct a twisted strand of yarn radially inwardly and axially, a spindle including support means at a second fixed station in spaced relation from said first station, means rotatably journaling said spindle to said support means in coaxial relation to said rotor, a carrier bar disposed between said stations, said carrier bar having a hole substantially coaxial with said rotor and said carrier bar including means to impart reciprocable movement to said carrier bar, a substantially free spinning rotatable yarn guide on the carrier bar and in coaxial relation with said rotor and said spindle, said yarn guide including at least one outwardly and downwardly formed guide portion for yarn, means rotatably journaling said yarn guide to said carrier bar, yarn guide arm means on said yarn guide to direct the yarn strand for convolutely wound engagement about the length of a bobbin on said spindle in response to said up and down movement of said carrier bar and yarn guide, and means to rotatably drive said rotor and spindle.

15. The process of twisting and winding material to make a yarn package in a continuous operation comprising the steps of:

(a) delivering the material to be twisted and wound on a package;
(b) guiding the material which is delivered to a point on a predetermined straight path;
(c) twisting the material about the straight path at a first fixed station, and,
(d) simultaneously winding the material about the straight path on a bobbin to make a yarn package at a fixed second station at a predetermined location; and
(e) axially distributing the twisted material onto the bobbin after the twisting step utilizing a substantially free spinning twisted yarn guide rotatable about the straight path.

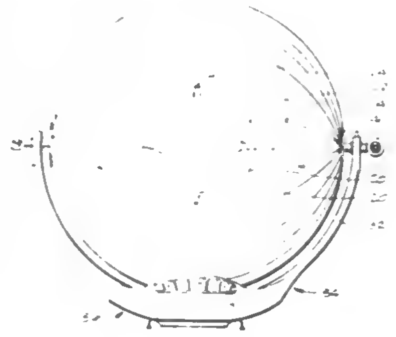
4,366,936
AIRCRAFT HAVING BUOYANT GAS BALLOON

Frederick D. Ferguson, c/o Van Dusen Commercial Development Corporation, P.O. Box 1151, Station "B", Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 64,286, Aug. 6, 1979, abandoned. This application Nov. 4, 1981, Ser. No. 318,248

Int. Cl.³ B64B *1/02, 1/58*

U.S. Cl. 244—2 **30 Claims**



1. An aircraft comprising:
a spherical non-elastic balloon for containing a buoyant gas and having essentially fixed dimensions and shape when inflated,
a rigid load supporting yoke including two arms extending upwardly from central load engaging means and each with an upper end, said yoke arms being curved to conform with the balloon curvature and to support the load engaging means in such position that the gap separating the outer surface of the balloon from the adjacent surface of the load engaging means is less than ⅓ of the balloon radius,
means rotatably connecting the upper ends of said arms to the balloon in such manner as to allow the balloon to rotate about a normally horizontal axis passing through the centre of the balloon,
means for propelling the aircraft through the air in a forward direction transverse to said axis, and
means for rotating the balloon about said horizontal axis in such direction that the surface of the balloon facing said forward direction moves upwards relative to the centre of the balloon.

25. An aircraft comprising:
a spherical non-elastic balloon for containing a buoyant gas and having essentially fixed dimensions and shape when inflated,
end plates secured to said balloon on opposite ends of a central axis passing through the centre of the balloon,
a rigid load supporting yoke including two arms extendinfg upwardly from central load engaging means and each with an upper end,
means rotatably connecting the upper ends of said arms to the end plates in such manner as to allow the balloon to rotate about said central axis,
two air containing ballonets each comprising flexible material having its periphery sealed to one of said end plates,
compressor means for supplying pressurized air through conduits in said arms to each of said ballonets, and
means for separately controlling the air supply to the ballonets for trimming the aircraft.

4,366,937
DEVICE FOR MOUNTING AN OBJECT TO A POST

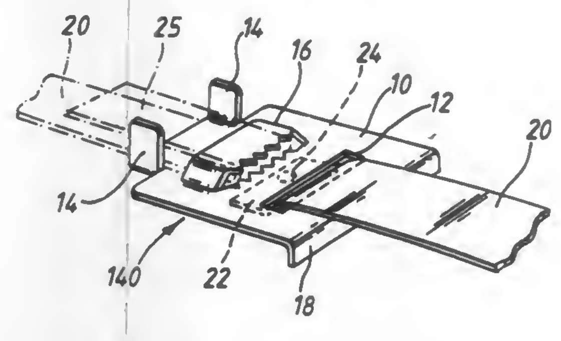
Robert A. H. Heard, Church Farm, 63 Church La., Backwell, Bristol, BS19 3JJ, England

Filed May 9, 1980, Ser. No. 148,148

Claims priority, application United Kingdom, May 10, 1979, 7916137; Jun. 26, 1979, 7922106

Int. Cl.³ E01F *9/01*

U.S. Cl. 248—231 **4 Claims**



1. An improved device for mounting an object to a post, in which a steel strap for attachment to the object and for passing around a post has a sheet steel buckle adapted to interconnect the ends of the strap and hold them around the post in a tightened condition, where the improvement comprises a unitary steel strap of predetermined fixed length secured at one end to the buckle, its other end being free for connection to the buckle after passing it around the post, the buckle comprising a unitary stamped body and being provided with a sheet steel flange bent out of the plane of the buckle and arranged so as to present a sheet steel edge inwardly to bear upon the surface of the post when the strap is tightened, whereby said flange edge is pressed against the post by tightening of the strap, so as to resist rotation of the strap and buckle around the post.

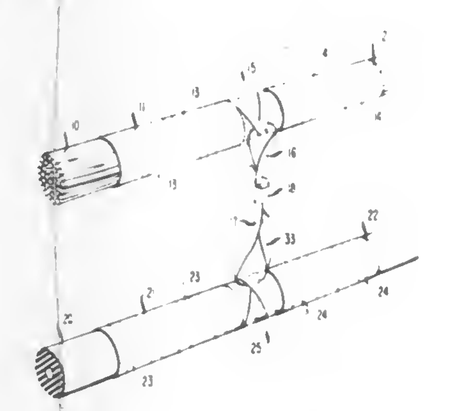
4,366,938
GRIP FOR CABLE OR THE LIKE

John S. McSpadden, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1981, Ser. No. 247,506

Int. Cl.³ F16L *3/14*

U.S. Cl. 248—61 **4 Claims**



1. A stopper for cable and the like comprising a pair of straps formed into opens loops, joined at their bights, laid with open ends opposed and adapted to be overlapped in counter helical directions away from said bights about the surface of a generally cylindrical body; and a pair of shrinkable tubes fitted over said spread-out loops and separated by a gap at the junction of said bights to provide a nonslip attachment point on such cylindrical body.

4,366,939
WIRE HOLDER SYSTEM AND METHOD OF POSITIONING AND MAINTAINING A BUNDLE OF WIRES

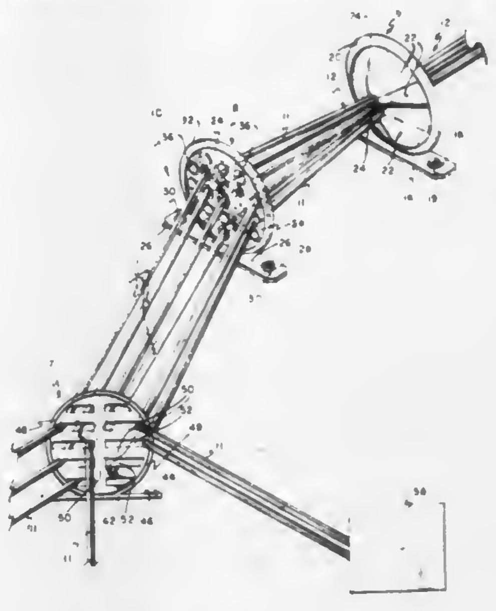
Ronald R. McMillan, 3318 W. 30th Ave., Anchorage, Ak. 99503

Continuation-in-part of Ser. No. 82,608, Oct. 9, 1979, Pat. No. 4,267,995. This application Apr. 24, 1981, Ser. No. 256,987

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ F16L *3/22*

U.S. Cl. 248—68 R **12 Claims**



1. A wire holding system comprising in combination a first wire holder means for holding a bundle of wires having a generally circular shape; and a second wire holder means which disperses the individual wires in the wire bundle and maintains the generally circular shape of the wire bundle in addition to providing tightness and neatness of the dispersed wire bundles when the same makes a turn from a normal straight path; said first wire holder means including a first base; a first rim integrally bound to said first base; a plurality of overlapping generally triangular shaped elastic members, each elastic member having a base and an apex, said base of each elastic member being mounted in said first rim to have said members radially disposed with respect to said first rim, said elastic members in a closed position essentially define a plane and unidirectionally flaring when receiving and holding said bundle, said elasticity of each member when holding said bundle bias said members toward said closed position for firmly gripping, holding, and restraining said bundle.

4,366,940
SURVEY TRIPOD

Roderick Vargas, 2748 Mansfield Dr., Burbank, Calif. 91504

Filed Oct. 6, 1980, Ser. No. 194,704

Int. Cl.³ F16M *13/00, 11/38*

U.S. Cl. 248—542 **4 Claims**

1. A tripod comprising:
a pole adapted to be ground supported in a vertical attitude;
first and second support means for supporting said pole, each said support means comprising:
a brace;
a generally diagonal rod having two portions, the portion between said pole and said brace being diagonal with

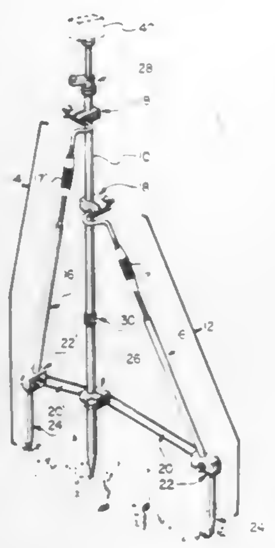
respect to said pole, the portion below said brace being substantially vertical and adapted to be ground supported;

a slider slideably mounted for vertical movement along said pole;

a pivotal connection between the upper end of said rod and said slider;

a pivotal connection between the outer end of said brace and said rod;

a pivotal connection between the inner end of said brace and said pole and vertically adjustable along said pole;



a turnbuckle for adjusting the length of said rod;

a level bubble for levelling said pole;

a circular sleeve having at least one O-ring for securing the end of a tape measure to said pole and being vertically adjustable along said pole; and

weights placed adjacent to said pivotal connection between the outer end of said brace and said rod for stabilizing said pole.

4,366,941

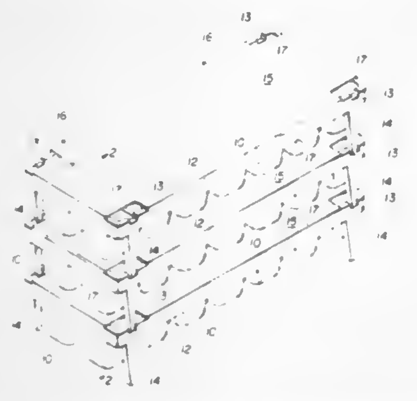
ICE CUBE TRAY

Carl H. Harris, P.O. Box 245, Pavo, Ga. 31778

Filed Nov. 19, 1981, Ser. No. 322,940

Int. Cl.^{3} F25C *1/22;* **B29C** *1/00*

U.S. Cl. 249—120 **2 Claims**



1. An ice cube tray adapted for stacking with identical trays in a manner preventing freeze bonding of the stacked trays, comprising a tray body portion including plural ice cube compartments of a common depth, said body portion having an upper marginal flange defining the perimeter of the tray and the flange being provided near the four corners of the tray with stacking leg locator notches, depending corner stacking legs on the tray projecting below the bottoms of the ice cube compartments and adapted when trays are stacked to engage in said locator notches of underlying trays, and a lid for the tray hinged thereto at one side of the tray and substantially covering the tops of all said compartments when the lid is closed against the top of said marginal flange, the lid having four corner stacking leg clearance notches and the longitudinal edges of such notches guiding said legs when trays are stacked and preventing lateral displacement of the legs from the locator notches, the lid when closed serving to retain ice cubes in an inverted tray until it is desired to open the lid and release the cubes over a storage receptacle, and said legs maintaining the bottoms of cube compartments in stacked trays spaced from the tops of closed lids of other trays to prevent the freezing together of stacked trays.

4,366,942

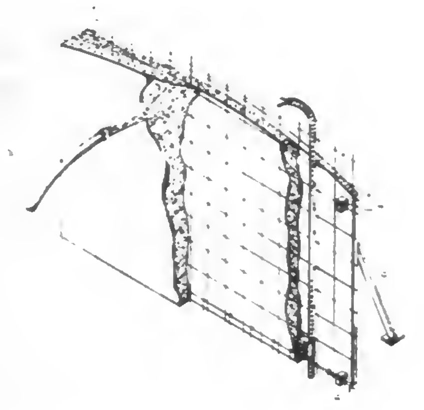
SPACER MEMBER

Giacomo F. Michienzi, 282 Old Bedford Rd., Concord, Mass. 01742

Filed Dec. 29, 1980, Ser. No. 220,353

Int. Cl.^{3} E04G *17/04, 17/06*

U.S. Cl. 249—210 **3 Claims**



1. A spacer apparatus for use in erecting shelter structures, the apparatus comprising a base member, an extension upstanding from said base member, attachment means disposed on said extension and adapted to receive and retain a portion of a mesh panel, and an enlarged head member disposed on an end of said extension removed from said base member, said attachment means comprising a hook means disposed between said base member and said head member for retaining said mesh panel at a position between said base member and said head member.

4,366,943

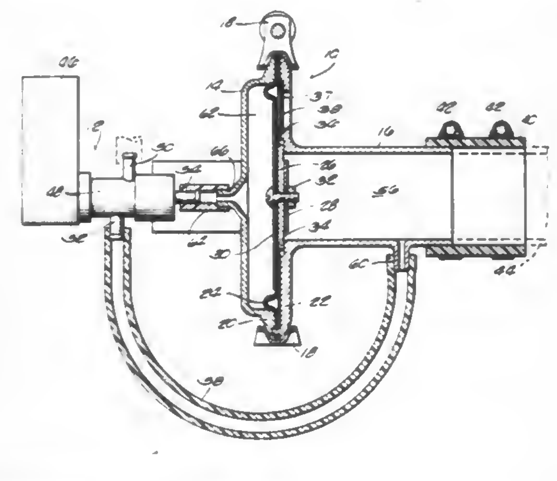
METHOD AND APPARATUS FOR INTRODUCING AIR INTO A VACUUM MILKING SYSTEM DURING THE WASHING CYCLE

Frank J. Licary, Madison, Wis., assignor to DEC International, Inc., Madison, Wis.

Filed Oct. 22, 1979, Ser. No. 86,938

Int. Cl.^{3} A01J *5/00;* **F16K** *31/42*

U.S. Cl. 251—30 **6 Claims**



1. A valve assembly comprising:

a first housing member (**16**) having a first interior chamber therein (**56**) and a flange (**22**), said first housing member adapted for connection to a vacuum line;

a second housing member (**14**) having a second interior chamber therein (**62**) and a flange (**20**);

a flexible diaphragm means mounted between the flanges of said first and second housing members and positioned with one side facing said first interior chamber and with the other side facing said second interior chamber, said diaphragm adapted to move between an unflexed position and a flexed position in response to forces exerted on opposite sides thereof, the effective surface area of said diaphragm means facing said second interior chamber being greater than the effective surface area facing said first interior chamber;

valve means (**26**) mounted on said diaphragm means to place said first interior chamber in communication with the atmosphere through a plurality of openings (**36**) in said first housing flange when said diaphragm is in its flexed position and to cut off said first interior chamber from the atmosphere when said diaphragm means is in its unflexed position; and

a control valve means (**12**) operable to selectively place said second interior chamber in communication with the atmosphere wherein said diaphragm means is forced to assume its unflexed position and to alternatively place said second interior chamber in communication with the vacuum in said first interior chamber wherein said diaphragm means is forced to assume its flexed position.

4,366,944

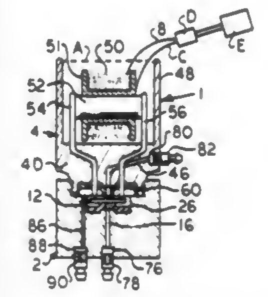
MAGNETICALLY ACTUATED PILOT VALVE

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Division of Ser. No. 973,299, Dec. 26, 1978, Pat. No. 4,310,023. This application Aug. 21, 1981, Ser. No. 294,947

Int. Cl.^{3} F16K *31/08*

U.S. Cl. 251—141 **1 Claim**



1. A magnetically actuated pilot valve having a housing, said housing having two parts, means connecting said two parts together, a chamber being located between said two parts, a first passage having a first opening into said chamber from one part thereof, an armature plate positioned in said chamber against said first opening to close said first opening, pole piece means extending into said chamber toward said armature plate, said pole piece means having a spacing with the armature plate when it is against said first opening, a second passage having a second opening into said chamber, spring means for biasing said armature plate against said first opening, said pole piece means including two pole pieces extending into said chamber toward the same side of said armature plate, each pole piece having a free end, the free end of one of said pole pieces being located closer to one location on the edge of the armature plate when it is positioned in said chamber against said first opening to close said first opening than the free end of the other pole piece which is spaced further from another location on the edge of the armature plate when it is positioned in said chamber against said first opening to close said first opening, means for magnetically energizing said pole piece means to move said armature plate away from said first opening and against the free ends of said two pole pieces, said pole piece means being formed as a permanent magnet for latching the armature plate, means for magnetically energizing said pole piece means to overpower the magnetic flux flow of said permanent magnet to release the armature plate so that said armature plate will be placed against said first opening by said biasing means.

4,366,945

HOSE COUPLING WITH DOUBLE LOCK

Arnold Bläuenstein, Cham, Switzerland, assignor to Abnox AG, Switzerland

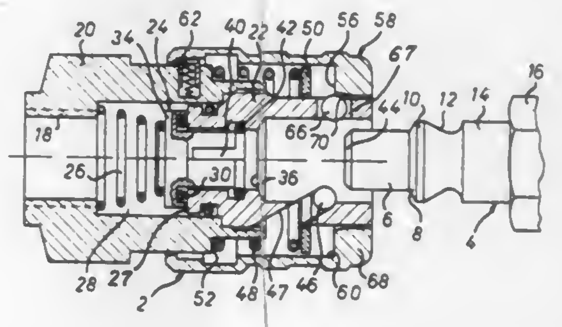
PCT No. PCT/CH79/00158, § 371 Date Aug. 20, 1980, § 102(e) Date Aug. 14, 1980, PCT Pub. No. WO80/01311, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 11, 1979, Ser. No. 201,482

Claims priority, application Switzerland, Dec. 20, 1978, 12963/78

Int. Cl.^{3} F16L *37/28*

U.S. Cl. 251—149.6 **8 Claims**



1. A pipe-coupling comprising: a socket member adapted to receive a nipple having a circumferential groove; a valve arranged in the socket-member, the socket-member having an external sliding sleeve which encloses a hollow cylindrical coupling body having a cage and an inclined channel; at least one spring and spring-loaded first locking element guided within the inclined channel of the coupling body, which first locking element engages in a locked position in the circumferential groove of the nipple and is movable out of said locked position against the action of said spring by axial movement of said external sliding sleeve, into an unlocked position, at least one second locking element which is arranged in the cage of the coupling body and which engages in the circumferential groove of the nipple in a locked position, and which is in contact with the sleeve when the sleeve is in an axial position which corresponds to the unlocked position of the first locking element, the locked positions of the first and second locking elements being at a distance from one another in an axial direction of the socket-member, so that a nipple inserted into the socket-member has two spaced locked positions relative to the socket-member, the valve being closed when the second locking element is engaged in its locked position; the pipe-coupling further comprising a resilient latch-element movably mounted to the socket-member, which in a latched position thereof engages the sliding sleeve in a displaced position of the sleeve in which the second locking element is in its locked position and is located for engagement in the circumferential groove of the nipple which is inserted into the socket-member.

4,366,946

BALL VALVE MECHANISM

Earl L. Roark, Houston, Tex.

Filed Dec. 30, 1980, Ser. No. 221,276

Int. Cl.^{3} F16K *25/00*

U.S. Cl. 251—159 **15 Claims**

1. A ball valve mechanism comprising:

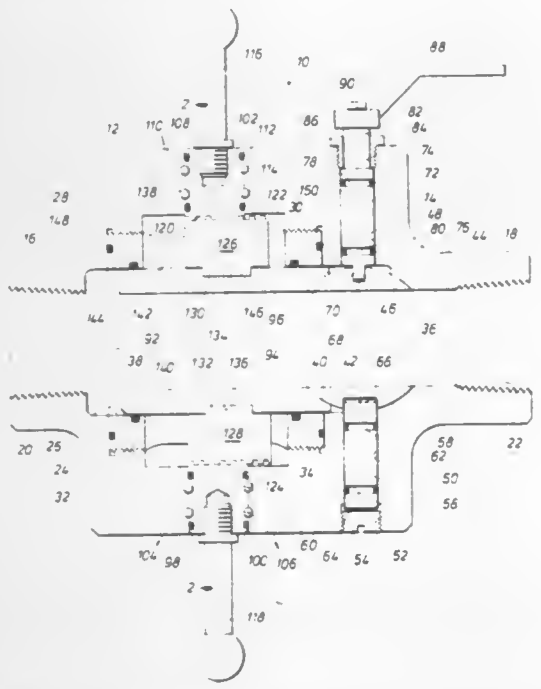
a pair of body sections each being formed to define flow passage means and defining connection means for interconnection of said valve mechanism within a flow system, said body sections cooperating to define a valve chamber and forming an annular actuator opening disposed about the valve body and extending from the exterior of said body sections to said valve chamber, a first seat surface being provided within one of said body sections;

retainer means interconnecting said body sections in assembled relation;

a ported valve ball element being movably positioned within said valve chamber and being rotatable between open and closed positions with respect to said flow passage means to control the flow of fluid through the flow passages, said valve ball element adapted for sealing enegagement with said first valve seat;

means for inducing selective rotation of said valve ball element to the open and closed positions thereof;

a valve seat element being positioned for linear movement within said valve chamber and defining a second seat surface for sealing engagement with said valve ball element;



seat drive means being interconnected in force transmitting relation with said valve seat element and defining first drive thread means; and

an annular actuator element exposed externally of said valve body and being maintained in sealed movable relation within said annular actuator opening of said body sections and defining second drive thread means, said second drive thread means establishing driving relation with said first drive thread means, said second drive thread means establishing driving relation with said first drive thread means, said annular actuator element being manually movable in rotatable manner to induce linear movement to said seat drive means and said valve seat element to establish forcible sealing contact of said valve ball element with said first and second seat surfaces.

4,366,947

CALIBRATED GAS-METERING APPARATUS

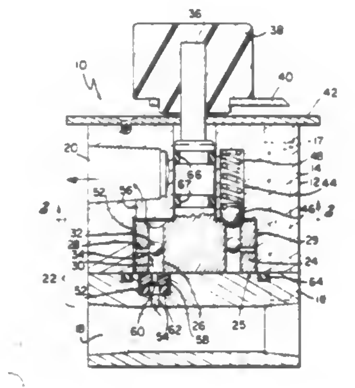
Clayton B. Voege, Indianapolis, Ind., assignor to AMP Corporation, Indianapolis, Ind.

Filed May 20, 1981, Ser. No. 265,625

Int. Cl.^{3} F16K *3/32, 51/00;* **B23P** *19/02*

U.S. Cl. 251—206 **15 Claims**

1. A calibrated gas-metering valve comprising a valve body having a gas inlet, a gas outlet, and a dividing wall therebetween, the dividing wall having a metering element including at least a first and a second hole therein, which first and second hole intersect and together define a passage for gas flow from the gas inlet to the gas outlet, and a ball of a diameter approximately equal to the diameter of the first hole press-fitted in the first hole so as to be solidly positioned therein by the fitting engagement of its surface with the wall of the first hole, the ball being positioned adjacent the intersection of the first and second holes so as to define a region in the passage having a cross-sectional area less than the cross-sectional area of either the first or second hole.



4,366,948

CAR JACK

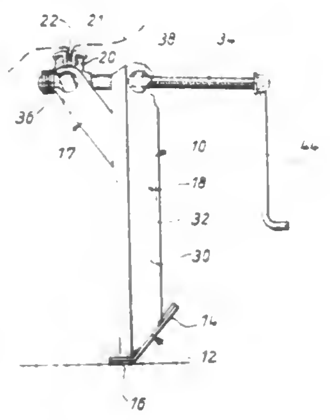
Franz X. Hafner, Wurmlingen, Fed. Rep. of Germany, assignor to E. A. Storz GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Continuation of Ser. No. 129,707, Mar. 12, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 281,225

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910210

Int. Cl.^{3} B66F *3/12*

U.S. Cl. 254—126 **6 Claims**



1. A car jack of the type having a stand column and a supporting arm which is pivotable about a transverse pivot axle mounted on the stand column and is equipped with a bearing head for engaging a vehicle and is pivotable by means of a threaded spindle rotatable by a hand crank, in which the supporting arm and the stand column are constituted by metal profiles of substantially U-shaped cross section, said stand column being rigidly connected at its lower end with a platelike supporting base having a front base portion and a rear base portion disposed at an angle to said front base portion, said portions thus forming a transverse edge between them over which edge the jack tilts when raising a car, wherein the stand column, supporting arm and supporting base consist of light metal, at least the major part of the front base portion is arranged under the stand column, the rear base portion having supporting zones for contacting the ground which are all at the same level, and the front base portion has a central supporting zone between two side zones in a plane defined by the longitudinal axis of the stand column and the supporting arm, said central supporting zone projecting downwardly beyond said side zones, means at said side zones connecting the supporting base to the stand column.

4,366,949

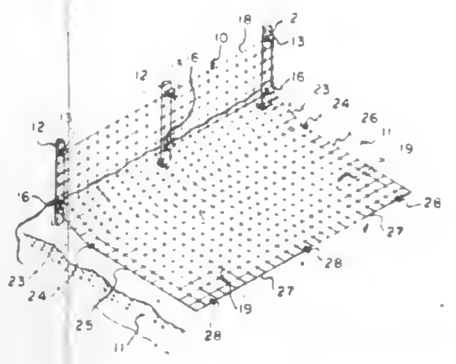
LEAF CATCHING AND COLLECTING DEVICE

Thomas J. Staub, Sr., Rte. 2, 504 Washington Blvd., Browns Mills, N.J. 08015

Filed Sep. 8, 1980, Ser. No. 185,304

Int. Cl.^{3} E04H *17/00;* **A01D** *46/22;* **B65D** *65/02*

U.S. Cl. 256—1 **8 Claims**



1. A device for catching and collecting leaves and other debris for expedient disposal which comprises a flexible netting means for gathering and collecting said debris or leaves, said netting means comprising a leading edge, which, when said net is in position, is directed toward the source of said debris or leaves, two side edges and a rear edge set away from said debris or leaves, means for securing said leading edge of said netting means to a surface upon which said netting is disposed, means for attaching said rear edge of said netting means and means for securing said side edges of said netting means to said surface upon which said netting is disposed at a position a short distance from said attaching means for said rear edge such that said netting is held between said rear edge and said position of securing said side edges at an inclined plane which enhances the leaf and debris collecting capability of said device.

4,366,950

METHOD AND APPARATUS FOR CUTTING STAINLESS STEEL

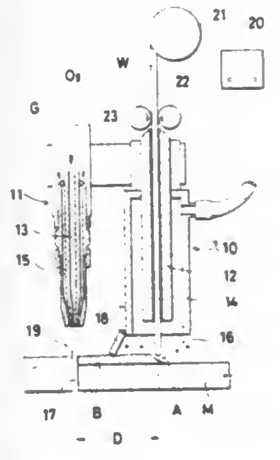
Masanobu Hamasaki, Takamatsu, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,357

Claims priority, application Japan, Feb. 26, 1980, 55-23575

Int. Cl.^{3} B23K *7/08*

U.S. Cl. 266—49 **7 Claims**



1. An apparatus for cutting a material such as stainless steel, which comprises a welding torch for melting a mild steel to form a mild steel bead on the material to be cut; a cutting torch having two nozzles from which a mixed gas for preheating the material and a jet of oxygen for burning said bead and material to be cut are respectively discharged toward and along said bead; and a connector for connecting said welding torch with said cutting torch at a fixed distance, wherein said welding torch is provided around its lower end with a wire brush curtain and said cutting torch is provided at its lower end with a circular nozzle for discharging a jet of water to form a water curtain.

2. An apparatus for gas cutting of a stainless steel substrate, which comprises a welding torch for melting a mild steel to form a mild steel bead on said substrate to be cut, said welding torch including means for discharging a shielding gas, a cutting torch having two nozzles from which a mixed gas for preheating said substrate and a jet of oxygen for burning said bead and said substrate to be cut are respectively discharged toward and along said bead, a holding connector for connecting said welding torch and said cutting torch at a fixed distance, and a separator provided in fixed relationship with said welding torch and said cutting torch for preventing said shielding gas discharged from said welding torch from being disturbed by said jet of oxygen discharged from said cutting torch.

4,366,951

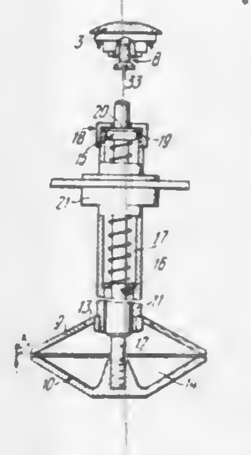
APPARATUS FOR REFINING METAL MELTS FROM INSULUBLE IMPURITIES

Valentin I. Belsky, ulitsa Petukhova, 68, kv. 61; Gennady I. Orlov, ulitsa Vatutina, 27, kv. 20; Serafim N. Suturin, ulitsa Kozhevnikova, 2, kv. 22; Anatoly V. Dolgov, Morskoi prospekt, 36, kv. 30; Vladimir I. Antonov, ulitsa Petukhova, 26, kv. 47, and Jury A. Naryshkin, ulitsa Bljukhera, 7, kv. 55, all of Novosibirsk, U.S.S.R.

Filed Feb. 16, 1982, Ser. No. 348,984

Int. Cl.^{3} B01D *35/02*

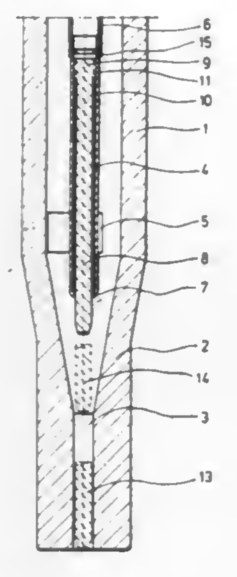
U.S. Cl. 266—204 **4 Claims**



1. An apparatus for refining metal melts from insoluble impurities, comprising: a housing; a filtering device mounted on said housing; a mechanism for driving said filtering device for rotation about the longitudinal axis thereof, mounted on said housing; a mechanism for driving said filtering device through reciprocation along the longitudinal axis thereof, mounted on said housing; a device for discharging impurities from said filtering device, mounted on said housing; said filtering device including: a first stem which is hollow and supported by said housing; a second stem supported by said housing and extending through said first stem; a top plate mounted on the end of said first stem; a bottom plate mounted on the end of said second stem and spaced from said top plate; a resilient member supported by said second stem of said filtering device, adapted to cooperate with said first stem to retain the relative position of said plates; a first abutment carried by the end of said second stem, remote from the end thereof having said bottom plate mounted thereon, for cooperation with said resilient member; an adjustable abutment carried by the end of said first stem to adjoin said first abutment, with the relative position of said adjustable abutment and of said first abutment defining the required spacing of said plates.

4,366,952
IMMERSION-LANCE FOR INTRODUCING A FINELY DIVIDED, PARTICULATE SOLID MATERIAL INTO A METAL MELT

Heino Sorger, Winsen, Fed. Rep. of Germany, assignor to Klockner Stahltechnik GmbH, Hamburg, Fed. Rep. of Germany
Filed May 13, 1981, Ser. No. 263,220
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021523
Int. Cl.³ C21B *7/16*
U.S. Cl. 266—266 7 Claims



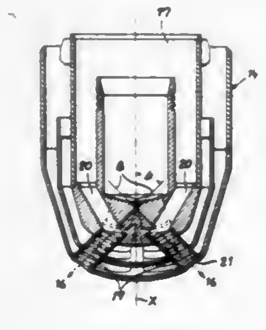
1. An immersion lance for introducing a fine particulate solid material into a metal melt by means of a carrier gas comprising:

a hollow outer tube having a main portion and an end portion, said end portion being tapered so that the internal diameter of said end portion is reduced towards the outlet of said end portion; and

a restrictor having a constant diameter and disposed within said outer tube and movable along the longitudinal axis of said outer tube to vary the diameter of the outlet in said end portion of said outer tube to permit the flow of gas or gas-particulate mixture therethrough by adjusting the position of said restrictor.

4,366,953
OXYGEN LANCE

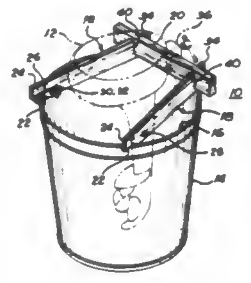
J. Colling, and C. Heintz, both of Luxembourg, Luxembourg, assignors to ARBED S.A., Luxembourg, Luxembourg
Filed Oct. 13, 1981, Ser. No. 311,013
Claims priority, application Luxembourg, Oct. 13, 1980, 82846
Int. Cl.³ C21B *7/16*
U.S. Cl. 266—266 12 Claims



1. A nozzle head for an oxygen lance trained from above upon a ferrous melt in a refining furnace, comprising a generally cylindrical body with a central axis, said body having a bottom penetrated by a plurality of main tuyeres and by a like plurality of ancillary tuyeres, said main tuyeres having axes inclined to said central axis at an angle of about 14° to 17°, said ancillary tuyeres having internal diameters smaller than those of said main tuyeres and having axes inclined to said central axis at an angle exceeding the angle of inclination of said main tuyeres by about 30° to 50°.

4,366,954
OUTBOARD MOTOR SUPPORT FRAME

Donald R. Cash, and Wesley E. Ellison, both of Auburn, Wash.
Filed Feb. 9, 1981, Ser. No. 232,823
Int. Cl.³ B23Q *3/00*
U.S. Cl. 269—289 R 8 Claims

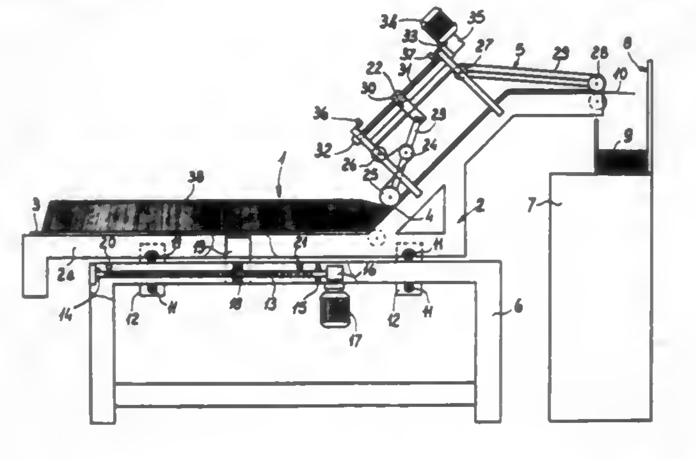


1. For use with a receptacle fillable with water and having an open, rimmed top, a portable mounting frame for supporting an outboard motor within the receptacle, said mounting frame comprising:

- a pair of elongate, spaced apart leg members of a length long enough to span across at least a portion of the receptacle, said leg members having:
  - first and second end portions resting on the rim of the receptacle, and
  - a corner notch formed in the underside of each leg first end portion for bearing against the top and inside of the rim of the receptacle;
- hook members mounted on the first end portion of said leg members to hook over the outside of the receptacle rim to cooperate with said corner notches to lock the first end portion of said leg members in engagement with the rim of the receptacle; and
- a cross member detachably interconnectible with the leg second end portions to transversely interconnect said leg members, said cross member serving as a mounting member for the outboard motor.

4,366,955
LOADER FOR SIGNATURES

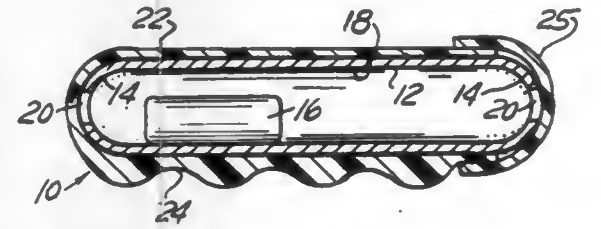
Giorgio Pessina, and Aldo Perobelli, both of Paderno-Dugnano, Italy
Filed May 5, 1980, Ser. No. 146,766
Claims priority, application Italy, May 18, 1979, 22806 A/79
Int. Cl.³ B65H *5/22*
U.S. Cl. 271—7 7 Claims



1. A loader for signatures, loose sheets, gathered sheets and the like, particularly for use on collating, pamphltizing, stitching and similar bookbinding machines, comprising a loader frame, said loader frame having feeder belts and inclined elevator belts for feeding signatures to the bookbinding machine and provided with an associated transport device, wherein the loader frame has a stationary base member and a supporting frame carrying said feeder belts and elevator belts as well as the associated transport device, said supporting frame being mounted on said base member by rolling means for reciprocating movements thereon, actuating means interposed between said base member and said supporting frame to move the supporting frame relative to said base member and said bookbinding machine to position said supporting frame when switching from one size signature format to another and safety travel limit switches, said switches being positioned on said base member to regulate the movement of the supporting frame relative to said base member.

4,366,956
RHYTHM INDICATING EXERCISERS

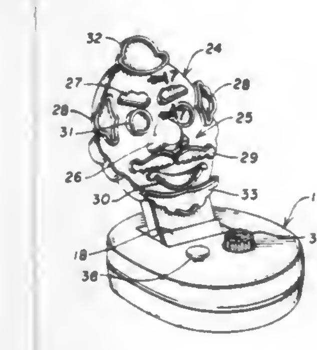
Harry P. Kifferstein, 27250 Harvard Rd., Southfield, Mich. 48076
Continuation-in-part of Ser. No. 51,113, Jun. 22, 1979, Pat. No. 4,278,248. This application Aug. 25, 1980, Ser. No. 180,840
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—70 19 Claims



1. An exercising device comprising an elongated circularly cylindrical member of a convenient diameter to be gripped by a hand, a longitudinal bore of substantially constant diameter extending from end to end within said elongated member, a freely movable single-piece weighted mass within said bore adapted to be displaceable from end to end therein, and a pair of substantially rigid end walls, each of said end walls being disposed at an end of said bore for impacting by said weighted mass and for emitting an audible sound upon impact shock with said weighted mass, wherein the ratio of the length of said weighted mass to the length of the bore in said elongated member between said end walls is at most 4 to 7 and wherein one of said end walls is formed integral with said elongated member at an end of said elongated member.

4,366,957
GAME APPARATUS

Gary T. Aldcroft, Prior Lake; Robert L. Claussen, Crystal, both of Minn.; A. Edward Fogarty; Bonnie R. Fogarty, both of Sarasota, Fla., and John P. Kearney, Maple Grove, Minn., assignors to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed Jan. 23, 1981, Ser. No. 227,811
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 GF 1 Claim



1. Game apparatus comprising:

(a) a base member;

(b) an upright panel pivotally mounted upon said base member for limited pivotal movement between vertically and rearwardly inclined positions only and having a forwardly facing surface constructed and arranged to receive thereon game pieces which are selected in accordance with a predetermined design;

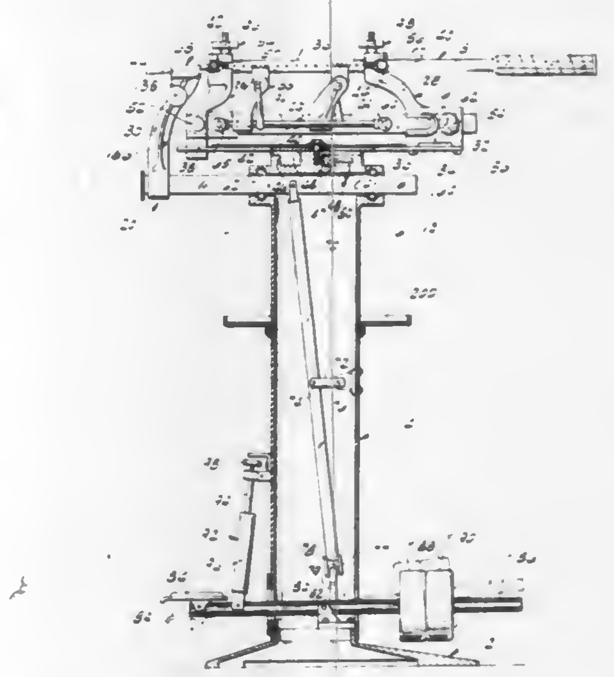
(c) bias means carried by said base member and connected to said upright panel and continuously urging the latter forwardly toward vertically extending position;

(d) retaining mechanism carried by said base member and associated with said panel and constructed and arranged to releasably hold the latter in biased rearwardly inclined position; and

(e) timing mechanism connected with said retaining mechanism in releasing relation and constructed and arranged to cause the latter to release said panel upon the expiration of a predetermined period of time to thereby permit said panel to be snapped forwardly to its vertically extending position by said bias means and thereby cause the game pieces received by said forwardly facing surface to be ejected therefrom.

4,366,958
RACKET STRINGING MACHINES

Warren Bosworth, Glastonbury, Conn., assignor to Tennis Machines, Inc., St. Louis, Mo.
Filed Jun. 23, 1980, Ser. No. 161,670
Int. Cl.³ A63B *51/14*
U.S. Cl. 273—73 A 12 Claims



1. In a machine for stringing rackets including a column having a pedestal attached to the lower end thereof and means attached to the upper end for supporting a racket during stringing, said racket support means including a first member fixedly attached to the upper end of the column, a second member mounted for rotation relative to the first member and means for locking said second member in a fixed position relative to the first member, means mounted for movement on said column including string clamping means extending to adjacent a racket to be strung for applying tension to a reach of string attached to the racket frame, means operatively connected to the string clamping means for controlling the position thereof relative to the racket frame including operator actuatable means pivotally attached to the column, the improvement comprising a rod member mounted on the racket support means and a clamp assembly formed by a pair of similar clamp members each having a first portion engageable with the rod member and a second portion extending to adjacent to the racket frame for engaging a reach of string extending across the racket frame, aligned apertures through said clamp members intermediate the ends thereof and an elongated member extending through said aligned apertures, said elongated member having a

threaded portion adjacent to one end, a member threadedly engageable with said threaded portion for engaging the clamp member on one side of the clamp assembly, yieldable means positioned between the clamp members urging the second portions thereof apart while simultaneously urging the first portions into engagement with respective opposite sides of the rod member, and an operator member pivotally attached to the elongated member adjacent to the opposite side of the clamp assembly, said operator member having a cam portion thereon and said operator member being movable between a first position substantially perpendicular to the elongated member whereby the cam portion bears against one of the clamp members so that the second portions of the clamp members clampingly engage a reach of string while the first portions of the clamp members simultaneously engage the rod member and a second position substantially aligned with the elongated member whereby the cam portion allows the second portions of the clamp members to move apart sufficient so that the clamp assembly is in non-string clamping condition and the first portions remain engaged with the rod member under pressure of the yieldable means, said second portions being movable toward each other in the second position of the operator member and in opposition to the yieldable means whereby the first portions are able to be moved apart sufficiently to enable separation from the rod member.

4,366,959
RACKET FOR TENNIS AND SIMILAR GAMES

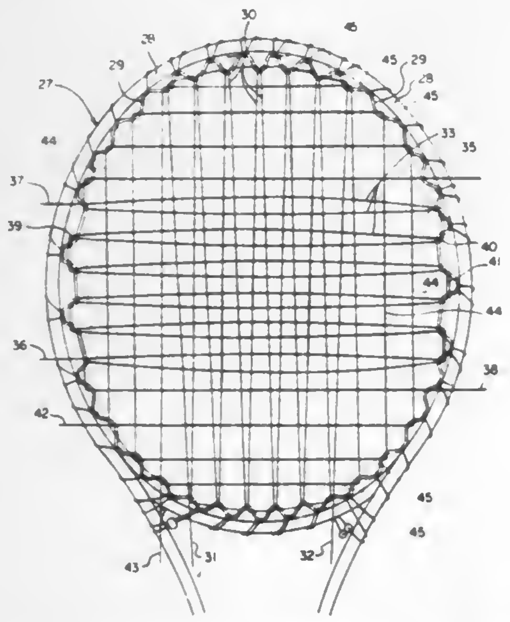
Francois R. Lacoste, Hauts-de-Seine, France, assignor to Patentex (Societe Anonyme), Fribourg, Switzerland

Continuation-in-part of Ser. No. 78,497, Sep. 24, 1979, which is a continuation-in-part of Ser. No. 881,046, Feb. 24, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 234,989

Claims priority, application France, Aug. 3, 1977, 77 06718; Aug. 3, 1977, 77 06719; Nov. 21, 1977, 77 34877; Oct. 11, 1978, 78 29021

Int. Cl.^{3} A63B *51/00*

U.S. Cl. 273—73 D **4 Claims**



1. In a racket for tennis and similar games comprising a handle; a generally oval frame attached to said handle; a striking surface comprising a plurality of spaced main strings extending across said frame in a direction generally parallel to the axis of said handle and a plurality of spaced cross strings extending across said frame in a direction generally perpendicular to said main strings; a middle zone in the central part of the striking surface in which the density of the strings is increased by a predetermined stringing pattern; and fixing means associated with said frame providing a plurality of spaced fixing points at which the respective ends of said strings are fixed relative to said frame when said strings are under tension; the improvement wherein:

said middle zone includes a plurality of said main strings or said cross strings, the strings in said zone being formed of a continuous length of stringing material arranged in said predetermined pattern in which said stringing material passes consecutively from a first fixing point on one side of said frame to a second fixing point on the other side of said frame, then to a third fixing point adjacent said second fixing point on said other side, and back to said first fixing point,

each of a pair of adjacent strings in said zone engages a common fixing point at one of their respective ends, and passes to different adjacent fixing points before reversing their direction to the other side of the frame to different fixing points at their other respective ends, and

wherein only a single length of said stringing material passes directly between any two adjacent fixing points in said middle zone.

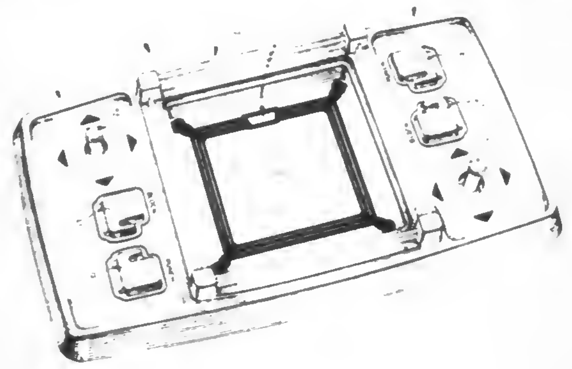
4,366,960
ELECTRONIC BOXING GAME

Eric Bromley, West Simsbury, Conn.; Alfred C. Mecklenburg, and Jon P. Rosenfeld, both of Arlington, Mass., assignors to Coleco Industries, Inc., Hartford, Conn.

Filed Jul. 16, 1981, Ser. No. 284,123

Int. Cl.^{3} A63F *9/00*

U.S. Cl. 273—85 G **11 Claims**



1. A self-contained electronic device for simulating a boxing match or the like comprising:

a. a housing;

b. a display panel on said housing providing a visual simulation of a boxing ring and including a plurality of substantially parallel rows of visual-image-producing devices, said display panel being operable by application of electrical signals thereto to display a pair of opposing boxer symbols, each of said boxer symbols including a body portion, and to display arm symbols of said boxer symbols extending therefrom, said display of arm symbols being in both punching and blocking modes, said display panel being operable to display said body portion of each of said simulated boxers in a plurality of said rows;

c. status-information means in said housing and operable by application of electrical signals thereto to display status information;

d. operational circuit means in said housing and electrically connected to said display panel for application of electrical signals thereto, said operational circuit means being operable and including means to transmit electrical signals to said display panel to display said body portions of said boxer symbols, means to move them along said rows, means to move them from row to row, and means to display said arm symbols extending from said body portions of said boxer symbols in said punching mode and from at least one of said body portions in said blocking mode, said operational circuit means detecting a simulated hit on the body portion of a boxer symbol upon the display, adjacent the body portion of that boxer symbol, of the arm symbol of the opposing boxer symbol during a simulated punch and including means for transmitting

signals to said display panel to present an indication of the simulated hit, at least one of said rows being a safe row associated with at least one of said boxer symbols where a safe row is a function of the handedness of the boxer symbols, a simulated hit on the body portion of a boxer symbol when it is in said safe row associated therewith being possible when the body portion of the opposing boxer is in said safe row but not when it is in a row opposite said safe row, said opposing boxer symbol thereby being required to move to the opponent's said safe row in order to score a hit on said body portion in its associated safe row, said operational circuit means detecting the simulated interruption of a punching arm symbol from a boxer symbol by a blocking arm symbol from the opposing boxer symbol to prevent display of a simulated hit, said operational circuit means also being electrically connected to said status-information means for transmission of signals thereto, said operational circuit means monitoring the simulated action and the boxer row locations to record information concerning the status of the simulated match and having means transmitting signals to said status-information means to display said status information;

e. manually operable control elements electrically connected to said operational circuit means for transmission of electrical signals thereto upon manual operation of said manually operable control elements by a player of the game to operate said operational circuit means to move at least a controlled one of said boxer symbols along said rows and from row to row under manual control of the player, and having means to display an arm of said controlled boxer symbol in said punching mode under manual control of the player, and means to display an arm of said controlled boxer symbol in said blocking mode under manual control of the player, the player thereby being able to selectively cause simulated blocks and punches by a boxer symbol under manual control, said manually operable control elements being able to move the controlled boxer symbol along said rows and from row to row to maneuver it into position for successful punches.

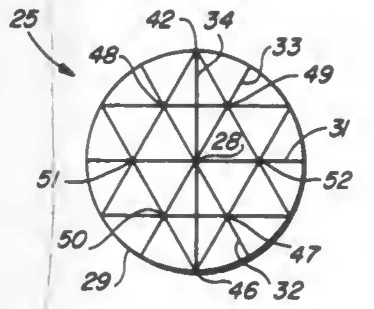
4,366,961
METHOD AND APPARATUS FOR CONSTRUCTING PYRAMID

William E. Busse, Box 1121, Oracle, Ariz. 85623

Filed Jun. 29, 1981, Ser. No. 278,835

Int. Cl.^{3} A63H *33/16*

U.S. Cl. 273—155 **1 Claim**



1. A method for forming a pyramid having four triangular faces of equal area, comprising the steps of

(a) forming fold lines on a circular piece of material having a circular front surface and a circular back surface, said fold lines being formed on at least one of said surfaces and including

(i) six chord lines defining a first and a second equilateral triangle, the apexes of each of said triangles lying along the circumference of said circular face and each side of said first triangle being parallel to one side of said second triangle,

(ii) three diameter lines each traversing and passing through the center point of said surface and through a pair of the points at which said chord lines forming said triangles intersect, and

(iii) a fourth diameter line traversing and passing through said center point of said surface and intersecting a pair of said apexes of said triangles at the circumference of said surface, said fold lines defining a plurality of secondary equilateral triangles on said surface smaller than said first and second equilateral triangles, including a group of six secondary equilateral triangles of equal size forming a hexagon in the center of said surface, one apex of each of said six triangles lying at the center point of said surface, and a mirror image pair of said six triangles being bisected by said fourth diameter line, the remaining four of said six triangles being free of fold lines traversing the area thereof,

(b) sequentially folding said piece of material along said fold lines to form a pyramid, the four faces of said pyramid each corresponding to one of said four secondary triangles free of fold lines traversing the area thereof.

4,366,962
LOW DRAG, LIGHT WEIGHT TOWED TARGET

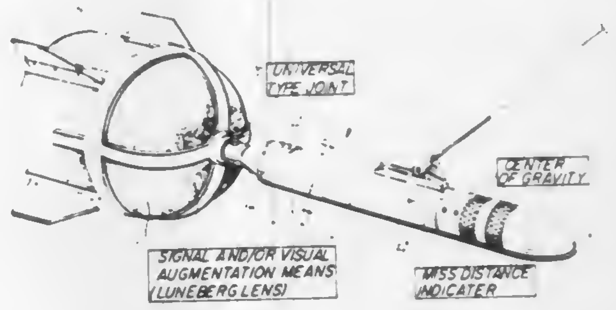
Richard L. Campbell, and Clayton G. Coffey, both of Medicine Hat, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Aug. 14, 1980, Ser. No. 178,185

Claims priority, application Canada, Mar. 5, 1980, 347192

Int. Cl.^{3} F41J *9/08, 9/12*

U.S. Cl. 273—360 **13 Claims**



6. Modular target apparatus adapted to be towed behind a towing vehicle, comprising:

a tubular fore body module housing a miss distance indicator device, said module having a forward end and a trailing end, and having means for releasably connecting to a tow cable carried by the towing vehicle;

thrust bearing means at the trailing end of said module to enable relative motion; and

an aft body of a larger cross-sectional area than said fore body module and releasably connectible to the latter by said thrust bearing means, said aft body having a hemispherical front end shaped aerodynamically to promote dynamic stability thereof when being towed, the aft body also having a trailing circular skirt which coacts with said front end to produce said dynamic stability, said aft body housing selected augmentation means for predetermined signal enhancement, and the trailing circular skirt having guide means to cause the aft body to follow a predetermined path of motion.

4,366,963
CONVERTIBLE INFLATED PLAY VEHICLE

Lloyd Reeves, and L. W. Sorensen, both of Lethbridge, Canada, assignors to Funsafe (Canada) Ltd., Lethbridge, Canada

Filed Jul. 2, 1979, Ser. No. 53,823

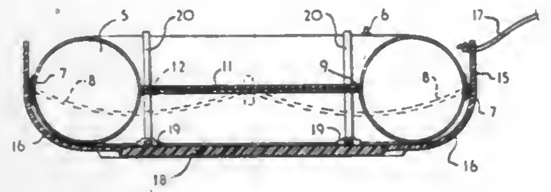
Claims priority, application Canada, Jun. 26, 1979, 330608

Int. Cl.^{3} B62B *15/00*

U.S. Cl. 280—12 B **9 Claims**

1. A play vehicle comprising: a flotation unit comprising two

superimposed circular discs of rubber-like material vulcanized together at their circumferences, forming an outer vulcanized circular portion, and vulcanized at an inwardly spaced circular portion of said disks, concentric with said outer vulcanized circular portion, and forming an inner vulcanized circular portion to provide an inflatable endless tube between said outer



and inner vulcanized circular portions, having an integral two-ply platform disposed midway of the height of the endless tube when said tube is inflated, and within said vulcanized inner circular portion, said platform being stretched taut when said endless tube is inflated, and a sled portion releasably secured across the underside of said endless tube.

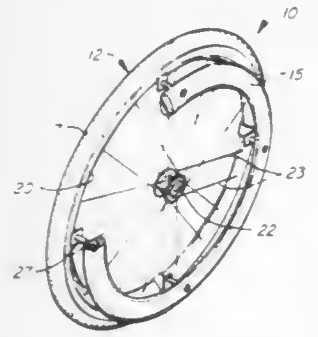
4,366,964
WHEELCHAIR HAND RIM

Francis A. Farey, 2060 Monterey Ave., Menlo Park, Calif. 94025, and Richard A. Fayram, Palo Alto, Calif., assignors to Francis Arden Farey, Menlo Park, Calif.

Filed Dec. 11, 1980, Ser. No. 215,481

Int. Cl.^{3} B62M *1/14*

U.S. Cl. 280—242 WC 14 Claims



1. A hand rim for a wheelchair, said hand rim having a cross section at top dead center characterized by:

an inboard generally vertical portion;

an outboard gently curved portion sloping inboard from bottom to top;

a lower curved portion of sufficient radius for firm finger grip and smooth control by a user, said lower curved portion defining the overall width of said hand rim;

and

an upper curved portion spaced upwardly from said lower curved portion by said inboard generally vertical portion and said outboard gently curved portion, the curvature of said upper curved portion being greater adjacent said inboard generally vertical portion than adjacent said outboard gently curved portion;

said outboard gently curved portion, said lower curved portion, and said upper curved portion together defining a contour that optimizes engagement with said user's hand to increase said user's ability to efficiently propel said wheelchair.

4,366,965
GLADHAND AND PLUG KEEPER FOR TRUCKS

Murray G. Rhodes, 110 Stanton Lake, Leesburg, Ind. 46538

Filed Sep. 19, 1980, Ser. No. 188,809

Int. Cl.^{3} B60D *7/04*

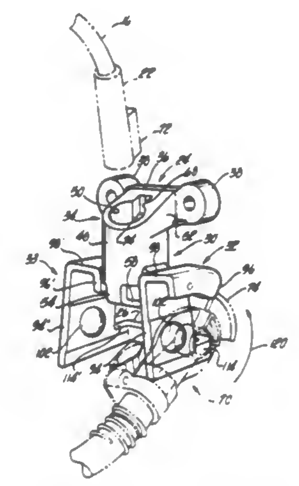
U.S. Cl. 280—421 10 Claims

1. A gladhand keeper for mounting on a vertical panel of a truck cab having at least one air hose terminating in a first gladhand, said gladhand being of the type having a heel portion, a palm portion, and a finger portion, a fitting for an air hose at the heel portion with an air passage extending to an opening in the palm portion, said opening being surrounded by an annular seal, a first flange on the finger portion and a second flange on the heel portion, the first and second flanges being on opposite sides of said opening, said keeper comprising,

mounting means defining a surface adapted to be seated against said panel,

a body connected with the mounting means,

said body having a first J-shaped receptacle member with a longer stem and a shorter stem connected by a transverse bar and defining a gladhand receptacle slot,



the inner wall of said longer stem being adapted to receive the annular seal of the gladhand with the first flange being disposed between the stems and the second flange being disposed outside the longer stem,

said slot having a length extending substantially parallel to said surface of the mounting means and having a depth extending substantially perpendicular to said surface,

said inner wall of said longer stem being substantially perpendicular to said surface of the mounting means,

whereby said gladhand may be inserted into said receptacle slot and rotated in a plane substantially perpendicular to said surface to interlock it with the first receptacle member.

4,366,966
JACKKNIFING-ANGLE LIMITING DEVICE FOR ARTICULATED MOTOR VEHICLE

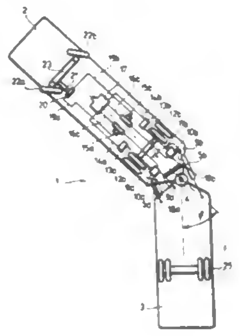
Istvan Ratsko; Jozsef Ivony; György Karaszy, and Jenö Madi, all of Budapest, Hungary, assignors to Autoipari Kutato Intezet, Budapest, Hungary

Filed Dec. 24, 1980, Ser. No. 219,958

Claims priority, application Hungary, Dec. 28, 1979, AU 439

Int. Cl.^{3} B62D *53/06*

U.S. Cl. 280—432 5 Claims



1. A jackknifing limiting device for articulated motor vehicles wherein said vehicle has a front section and a rear section which are connected by a hinge therebetween, said device acting to limit the angle between said front and rear section when said vehicle is turning, said device comprising:

a pair of hydraulic cylinders flanking said hinge and connected between said front and rear sections;

a reservoir containing hydraulic fluid for said cylinders;

respective pressure regulating valves connected between said reservoir and said cylinders and opening unidirectionally toward said reservoir;

respective solenoid stop valves connected between said pressure regulating valves and said reservoir, said solenoid stop valves being normally open;

respective check valves provided in respective bypass lines connected between said reservoir and said cylinders, said check valves opening unidirectionally toward said cylinders; and

respective switches connected to said solenoid valves and being selectively operable upon the turning of said vehicle in a particular direction, said switches acting to selectively energize and close the respective solenoid valve associated with the cylinder on the side of said hinge opposite from the direction of turning, the closing of said respective solenoid valve acting to prevent the opening of the respective pressure regulating valve associated therewith.

4,366,967
COUPLING HOOK ASSEMBLY

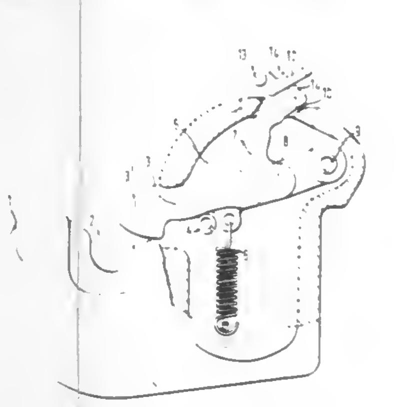
Jürgen Vollmer, Lohmar, and Norbert Müller, Ruppichteroth, both of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,576

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951070

Int. Cl.^{3} A01B *59/042*

U.S. Cl. 280—504 3 Claims



1. A coupling hook assembly for use in an attaching device between an agricultural tractor and a trailer for locking an implement pin therein comprising: a hook body defining an enclosed coupling hook pocket and a jaw within which said implement pin may be received in locked engagement; means defining a first aperture in said hook body opening toward said jaw; a locking bolt adapted to extend through said first aperture in operative relationship with said jaw to effect locking of an implement pin therein; an operating lever mounted within said pocket for pivotal movement relative to said hook body about a fixed axis; means pivotally mounting said locking bolt on said operating lever; spring means urging said locking bolt toward a locking position relative to said jaw; means defining in said hook body a second aperture having said operating lever extending therethrough; an annular segment formed in said operating lever having a curvature with a radius centered at said fixed pivoting axis of said operating lever; a recess formed in said annular segment of said operating lever at a point thereon adapted to be brought externally of said hook body by pivotal movement of said operating lever about said fixed axis; a notch formed on the external surface of said hook body on the side of said second aperture closest to said jaw; and a yoke pivotally mounted on a part of said operating lever located externally of said hook body, said yoke being adapted to be swung into engagement with either said recess, to secure said locking bolt in the unlocked position, or with said notch, to secure said locking bolt in the locked position.

4,366,968
COMBINATION SKI BOOT RETAINER AND SKI BRAKE

Gerd Klubitschko, Oberau, Fed. Rep. of Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany

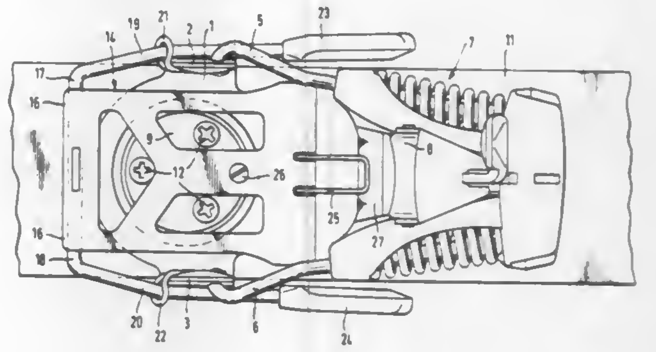
PCT No. PCT/DE80/00014, § 371 Date Oct. 21, 1980, § 102(e) Date Oct. 21, 1980, PCT Pub. No. WO80/01760, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 8, 1980, Ser. No. 198,133

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906726

Int. Cl.^{3} A63C *7/10*

U.S. Cl. 280—605 11 Claims



1. A ski binding for releasably attaching a ski boot to a ski, said binding having an open condition when no ski boot is mounted in the binding and a closed condition when a ski boot is mounted in the binding, said binding comprising:

a base fixed to the top of said ski;

a turntable mounted over said base, said turntable being rotatable relative to said base and having guide means thereon;

a ski boot retainer mounted to said turntable for releasably holding a ski boot;

a pedal pivotably attached to said base and positioned over said turntable, said pedal being movable between a position adjacent said base and a position away from said base;

biasing means for biasing said pedal away from said base;

at least one brake arm comprising a first limb hinged to said pedal, a second limb having a free braking end and being pivotable upwardly into a skiing position above the bottom of said ski when said pedal is urged toward said base by a ski boot held by said ski boot retainer and being pivotable downwardly into a braking position below the bottom of said ski by said braking means urging said pedal away from said base when said ski boot is released from said pedal;

said guide means of said turntable guiding said brake arm for sliding movement therethrough when said second limb moves between the skiing and braking positions.

4,366,969
ADJUSTABLE LEVELING SUSPENSION UNIT FOR VEHICLES

Robert J. Benya, St. Charles, and Gary D. Swinney, Lake St. Louis, both of Mo., assignors to Moog Automotive, Inc., St. Louis, Mo.

Filed Jul. 21, 1981, Ser. No. 287,496

Int. Cl.^{3} B60G *17/02*

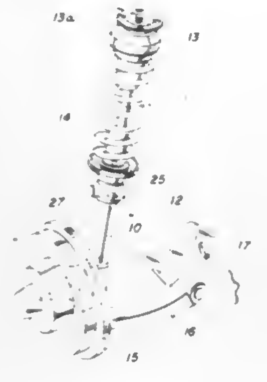
U.S. Cl. 280—668 8 Claims

1. An adjustable suspension unit for a vehicle provided with a coil spring surrounding a shock absorber of the type having two relatively telescoping elongated members with one member securable to a portion of the vehicle frame and the other member securable to a wheel of the vehicle, the improvement comprising:

(a) a collar fixed to one of said members and having a base margin and a stepped margin, said stepped margin presenting a series of surfaces which are spaced from said base margin at different distances as measured in the direction of elongation of said one member;

(b) a sleeve cooperating with said collar and formed with means for permitting adjustment of said sleeve relative to said fixed collar;

(c) sleeve support means carried by said sleeve in position to engage any one of said series of surfaces of said stepped margin of said collar upon adjusting the position of said sleeve relative to said collar;



(d) seat means slidably carried by said one member in position to rest upon said sleeve and be moved thereby upon sleeve movement; said seat means being engaged by one end of the coil spring; and

(e) means on said seat means and said one member in position to direct movement of said seat means along said one member during adjustment of said sleeve relative to said collar.

4,366,970

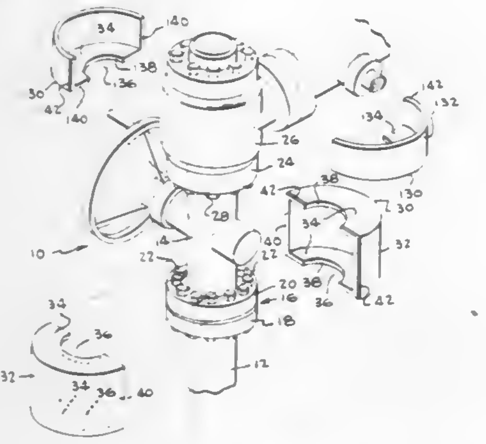
THEFT PREVENTION METHOD AND APPARATUS FOR WELLHEADS

Robert J. Hogan, Jr., Rte. 1, Mobeetie, Tex. 79061

Filed Aug. 15, 1980, Ser. No. 178,365

Int. Cl.³ F16L *13/02*

U.S. Cl. 285—45 **1 Claim**



1. A wellhead including a flange juncture joining first and second wellhead components, first and second stainless steel clam shell closure members of substantially identical construction with each clam shell closure member including a beveled facing surface, a purely cylindrical wall portion from which no other means extends outwardly therefrom and which has no inward depressions or grooves and first and second parallel end wall members oriented perpendicular to the axis of said cylindrical wall portion provided in axially spaced array and connected to said cylindrical wall portion to define an internal chamber fitted over half of the flange juncture and first and second end openings provided in said end wall members and matingly fitted over approximately 180° of the periphery of the first and second wellhead components on opposite sides of the flange juncture, wherein said clam shell closure members matingly fit over the flange juncture to cooperatively provide enclosure of the flange juncture and a permanent stainless steel welding connection effected along the facing surfaces of said clam shell closure members.

4,366,971

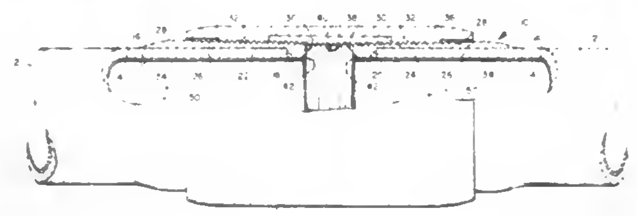
CORROSION RESISTANT TUBE ASSEMBLY

Remus A. Lula, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1980, Ser. No. 188,179

Int. Cl.³ F16L *9/14, 15/00*

U.S. Cl. 285—55 **20 Claims**



1. A corrosion resistant tube assembly comprising:

a plurality of corrosion susceptible metal tubes each having an outside surface, an inside surface and end surface,

an overlay of corrosion resistant metal extending along a portion of the outside surface and across the annular end surfaces of the peripheral end portions of each tube, said overlay having an inside surface and an outside surface, said outside surface provided with threads at a depth less than that which would expose the corrosion susceptible tube, and

a corrosion resistant, tubular metallic liner, having an outside surface, an inside surface and end surfaces adjacent the inside surface of each corrosion susceptible metal tube, around the circumference thereof, extending at least to the end surfaces of each corrosion susceptible metal tube, with the end surfaces of the liner secured to the inside surface of the overlay, and

a metallic connector having threads and a corrosion resistant inside surface and being threaded onto the outside surface of each overlay on the peripheral end portions of adjacent, longitudinally aligned tubes, such that all inside surfaces of the tube assembly comprise corrosion resistant material.

4,366,972

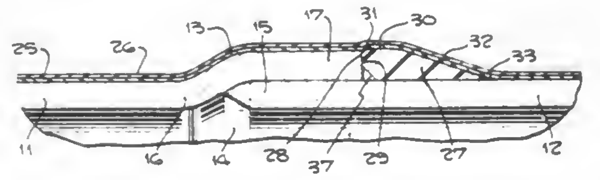
PIPE COATING SYSTEM

M. James Franklin, Hacienda Heights, Calif., assignor to Ameron-Price Company, Fontana, Calif.

Filed Apr. 2, 1981, Ser. No. 250,207

Int. Cl.³ B29C *27/28;* **F16L** *57/00*

U.S. Cl. 285—55 **11 Claims**



1. A seamless coating system for a multiple unit steel pipe assembly having an overlapping type joint between effective overlying and underlying ends of adjacent units wherein there is an annular sealing weld at the joint between the underlying end of one unit and the overlying end of the adjacent unit, an annular end wall on the overlying end, and an exterior annular corner at the exterior edge of said overlying end, said system comprising a first coating strip on said assembly extending throughout the length of both units and over said joint in spiral partially overlapping turns, a second coating strip overlying the first coating strip and extending throughout the length of the both units and over said joint in spiral partially overlapping turns, and an annular filler bridge at the joint between the exterior surface of the assembly and the interior surface of said first coating strip, said filler bridge comprising an elastomeric material in the recess formed by the annular end wall of said overlying end and the exterior surface of said one adjacent unit, said filler bridge having an initial thickness in excess of the thickness of said overlying end at said corner, said filler having a composition such that the outer surface of the filler bridge will not be depressed sufficiently to expose said annular corner under loads imposed during fabrication of said system and during handling, storage, and shipment of the system.

10. A method for forming a seamless coating system on a multiple unit steel pipe assembly having an overlapping type joint therebetween comprising effective overlying and underlying ends of adjacent units and wherein there is an annular sealing weld between the overlying end of one unit and the underlying end of the other unit, an annular end wall on said overlying end, an exterior annular corner at the exterior edge of said overlying end and an annular recess between said annular corner and said underlying end, said method comprising applying a filler bridge of elastomeric material in strip form and of thickness in excess of the thickness of said overlying end to the exterior of the other of said units at said recess and abutting one end of said filler bridge against said annular end wall, said filler having a composition such that the outer surface of the filler bridge will not be depressed sufficiently to expose said annular corner under loads imposed during fabrication of said system and during handling, storage, and shipment of the system, continuously moving said assembly in an endwise direction past an extruding station and at the same time continuously rotating said assembly, first projecting an endless strip of adhesive material onto the exterior of a first of said units at said extruding station and simultaneously projecting an endless strip of synthetic plastic resin material onto the exterior surface of the adhesive material at said extruding station, projecting said adhesive material and said synthetic plastic resin material successively over said filler bridge as the filler bridge passes the extruding station, and then continuing projection of said adhesive material and said synthetic plastic resin material onto said other unit until said other unit is coated.

4,366,973

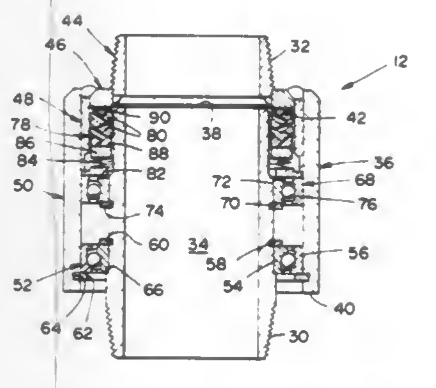
ROTATING PIPE COUPLING

Carroll E. Brekke, 2229 Parkland Way, Petaluma, Calif. 94952

Filed Mar. 6, 1978, Ser. No. 883,729

Int. Cl.³ F16L *27/08*

U.S. Cl. 285—276 **31 Claims**



1. A rotating pipe coupling, comprising:

an inner cylindrical tube;

an outer cylindrical tube coaxially placed about said inner tube with an end of said inner tube extending into said outer tube from an end thereof;

a first bearing interiorly of said outer tube and adajcent said end thereof, said first bearing being exterior of said inner tube;

removable means for preventing an inner race of said first bearing from moving axially toward said end of said inner tube;

removable means for preventing an outer race of said first bearing from moving axially toward the end of said outer cylindrical tube, said outer race communicating only with said outer cylindrical tube and said removable preventing means therefor whereby said first bearing is attached to said inner and outer tubes for absorbing substantially all expansive axial forces imposed therebetween;

a second bearing interiorly of said outer tube and exteriorly of said inner tube, said second bearing being intermediate said first bearing and said end of said inner tube and the outer race of said second bearing being spaced to be from and out of communication with the outer race of said first bearing;

removable means for preventing an inner race of said second bearing from moving axially away from said end of said inner tube, said inner race communicating only with said inner cylindrical tube and said removable preventing means therefor whereby said second bearing is attached to said inner and outer tubes for absorbing substantially only radial forces imposed therebetween;

packing radially intermediate said inner and outer tubes adjacent said end of said inner tube; and

means for axially compressing said packing to produce radial expansion sealing between said outer tube and an outer race of said second bearing, said axial compressing means being spaced from and not communicating with said inner race of said second bearing.

4,366,974

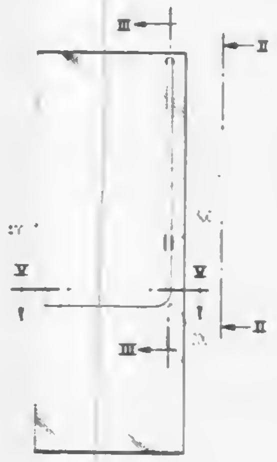
PANIC HANDLE FOR DOORS

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed May 22, 1980, Ser. No. 152,403

Int. Cl.³ E05C *15/02*

U.S. Cl. 292—336.3 **12 Claims**



1. A door and panic handle combination comprising a bar along and carried by the inside of the door; pivot mounting means at the inside of the door adjacent a perimeter edge thereof and mounting the bar for limited pivotal movement of the bar between positions toward and away from the door; said bar having a latch mechanism longitudinally disposed therein and terminating in a latch bolt at the end of the bar adjacent said door edge; a stationary actuator post carried by said door at a location along said door spaced from said pivot mounting means and operationally engagable with said latch mechanism for movement of said latch mechanism between latched and unlatched positions as said bar is moved correspondingly between respective positions away from and toward said door.

4,366,975

STOP DEVICE FOR SECURING DOORS AND PORTALS

Didier A. J. Cotard, Le Bourg, Montpinchon, 50210 Cerisy La Salle, France

Filed Jun. 2, 1980, Ser. No. 155,668

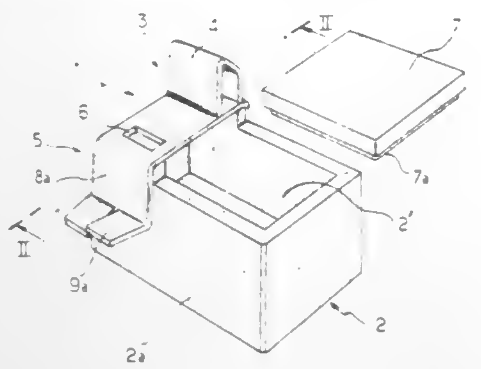
Claims priority, application France, Jun. 21, 1979, 79 15935

Int. Cl.³ E05C *13/00*

U.S. Cl. 292—340 **10 Claims**

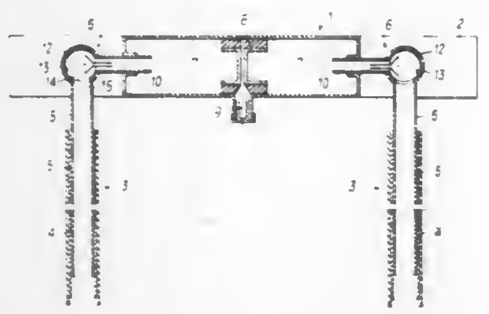
1. A stop device fixed to the floor for securing a door in cooperation with a floor bolt when the door is in its normally closed position and comprising a recess formed in the floor, the

recess having an upper opening defining an access entrance, a removable closure for covering in part the entrance of the recess, and a stop element having first and second parts, the first part provided with a projection forming a stop for the door, the second part provided with a bore for receiving the free end of the floor bolt when the door is secured against the projection, the removable closure and the second part of the stop element each being situated, at least in part, substantially at floor level in overlying relation to the entrance of the recess with the bore communicating with the recess.



4,366,976
CUSHIONING MEANS FOR MOTOR VEHICLES

Hubert Granig, Feldkirchnerstr. 30/87, Klagenfurt, Austria
Division of Ser. No. 916,739, Jun. 19, 1978, Pat. No. 4,225,168. This application Apr. 8, 1980, Ser. No. 138,621
Claims priority, application Austria, Jun. 22, 1977, 4415/77
Int. Cl.^{3} B60R *19/08*
U.S. Cl. 293—134 **10 Claims**



1. Cushioning means for motor vehicles, comprising bumper bar means,

fluid pressure-operable actuator means carrying said bumper bar means and extensible to project said bumper bar means,

reservoir means which define a chamber adapted to hold a fluid and communicating with said actuator means and adapted to supply fluid to said actuator means so as to extend the latter,

pressure-applying means operable to apply pneumatic pressure to said fluid in said chamber to cause fluid to be forced from from said chamber to said actuator means to extend the same,

said actuator means comprise a plurality of fluid pressure-operable actuators carrying said bumper bar and extensible to project said bumper bar,

said reservoir means define a plurality of chambers, each of which is adapted to hold said fluid and adapted to supply the fluid to one of said actuators so as to extend the latter,

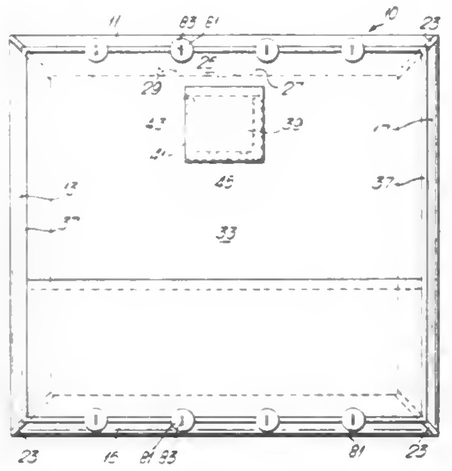
said reservoir means comprise a plurality of floating pistons, each of which defines one of said chambers,

said pressure-applying means are operable to apply pneumatic pressure to said fluid in said chambers by means of said floating pistons, and

said reservoir means comprise two of said floating pistons arranged to move in mutually opposite directions in response to pneumatic pressure applied by said pressure-applying means to said floating pistons.

4,366,977
PARTITION FOR A CARGO TRANSPORTER

Philip W. Davis, Bristol, and Hendrik J. Buzink, Kidderminster, both of England, assignors to Avon Industrial Polymers (Melksham) Ltd., Melksham, England
Filed Oct. 28, 1980, Ser. No. 201,532
Claims priority, application United Kingdom, Nov. 1, 1979, 7937907
Int. Cl.^{3} B62D *33/04*
U.S. Cl. 296—24 R **9 Claims**



1. In combination, a transport means having a hollow body for cargo transportation and a partition for removably and adjustably dividing said body into compartments,

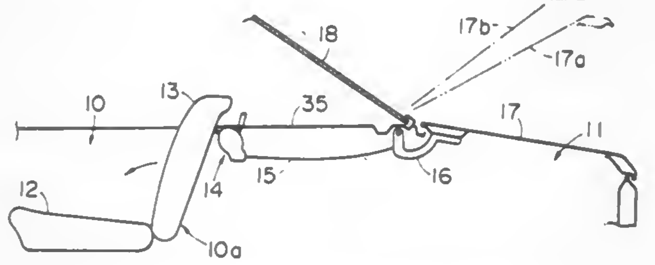
the body being of substantially rectangular cross-section,

the partition comprising a boundary having mututally perpendicular tubular portions and two dividing sheets extending to said boundary, said tubular portions being made substantially entirely of flexible material; and,

means for inflating at least said tubular portions of the partition, whereby by expansion of said tubular portions upon inflation, the partition is retained in and by the body at a predetermined position along its length with the two dividing sheet being spaced apart to extend between said tubular portions and form an efficient thermal barrier between the compartments of the body.

4,366,978
LOCKING MEANS FOR A FORWARDLY FOLDABLE SEAT BACK

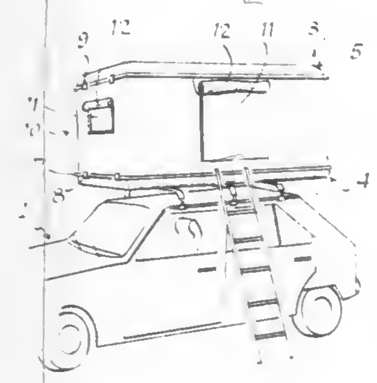
Teruo Hamatani, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Mar. 16, 1981, Ser. No. 243,716
Claims priority, application Japan, Mar. 20, 1980, 55-36014[U]
Int. Cl.^{3} B60N *1/02*
U.S. Cl. 296—68 **5 Claims**



1. An automobile including a body having a rear panel connected with said body through hinge means so that it is moved between a closed and open positions and further to an unlocking position which is beyond the open position, rear seat means having rear seat back means foldable forwardly from an upright position, locking means for locking said rear seat back means in said upright position, said locking means including unlocking means which is connected with said rear panel so that said locking means is actuated to an unlocking position when the rear panel is moved beyond the open position to the unlocking position.

4,366,979
EXTENDIBLE STRUCTURE FORMING SHELTER ADAPTABLE ON THE ROOF OR TOP OF AN AUTOMOBILE VEHICLE

Bernard Pillot, Romans, France, assignor to Societe Anonyme: Fralch, Romans, France
Filed Jul. 29, 1980, Ser. No. 173,277
Claims priority, application France, Jul. 30, 1979, 79 19920
Int. Cl.^{3} B60P *3/32*
U.S. Cl. 296—160 **4 Claims**



1. In an extendible structure forming a shelter of the type adapted for a roof of an automobile vehicle comprising a lower shell having members thereon for fixation on the roof, an upper shell, a supple peripheral envelope connecting said lower shell and said upper shell, means for controlling the relative displacement of said upper shell with respect to said lower shell, said means for controlling including four articulated assemblies, each said articulated assembly comprising two arms articulated on each other and on the shells, said arms being connected by a return member urging said arms into open position, said assemblies being positioned so that each extends parallel to an axis of said extendible structure which axis is placed parallel with the line of advance of said automotive vehicle where said structure is attached thereto; said open position of said arms stretching said supple peripheral envelope between said lower and upper shells; said articulated assemblies being mounted so that the articulation of the assemblies located on the same side of said axis of the structure are opposed to one another; and said articulated assemblies disposed on opposite sides of said axis of the structure being coupled by a coupling bar whereby the arms of each said pair of articulated assemblies are constrained to open simultaneously.

4,366,980
STACKABLE ARMCHAIR

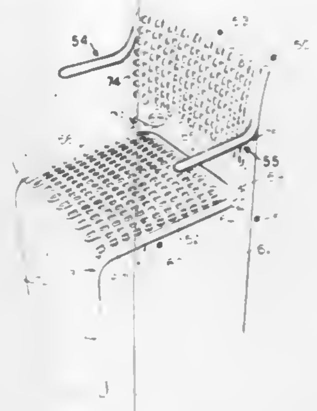
David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021
Continuation-in-part of Ser. No. 46,836, Jun. 8, 1979. This application Jun. 9, 1980, Ser. No. 157,682
The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.
Int. Cl.^{3} A47C *3/04*
U.S. Cl. 297—239 **31 Claims**

1. A frame for a stacking chair, including in combination:

a main frame element having a U-shaped, horizontal portion from which extends a pair of vertical front legs, said U-shaped portion having a rear, horizontal lateral stretcher portion joined at each end by a curved corner to a horizontal side portion, each of which is joined by a curved corner to a said front leg, said front legs being substantially parallel to each other and said side portions being generally parallel to each other, but diverging somewhat from rear to front,

a pair of frame-juncture-and-spacing members, each having a generally horizontal portion with a pair of opposite generally horizontal edges and a generally vertical portion having a pair of generally vertical edges, each continuous with a said horizontal edge, one said horizontal edge and one vertical edge of each frame juncture member being secured to the side of said main frame element adjacent to one of the corners at each end of said lateral portion and extending laterally beyond said side portions,

frame means for providing a pair of separate rear legs each having an upwardly extending back-support portion, each said rear leg being secured to the other said horizontal edge and to the adjacent vertical edge of a said frame-juncture-and-spacing member and held thereby at a distance apart greater than the distance between the outermost portions of said side members,



said back-support portion terminating at the upper end in an oblique edge surface, said back support portions being generally parallel to each other but diverging somewhat upwardly, and

a pair of arm members each having an inboard rear surface welded to the oblique edge surface of said back-support portion and extending downwardly and forwardly therefrom and a generally horizontal forward portion continuous with said rear portion, and arms being substantially parallel with each other, but diverging somewhat from top to bottom and the inner surfaces thereof lying outboard of the outer surfaces of the rear legs.

4,366,981
STANDING WORK SEAT

Horst Ziegler, Albbruck, and Dagobert Bögle, Laufenburg, both of Fed. Rep. of Germany, assignors to Christof Stoll GmbH & Co. KG, Waldshut-Tiengen, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 135,185
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912398
Int. Cl.^{3} A61G *15/00*
U.S. Cl. 297—328 **8 Claims**

1. A portable standing work seat with a substantially flatly tapered non-slip base, a vertically adjustable support column on said base and a dish-shaped seat with an updrawn rear edge and forwardly declining front edge, said seat being mounted at the top of said support column, wherein:

said support column and said base are rigidly fixed perpendicular to one another;

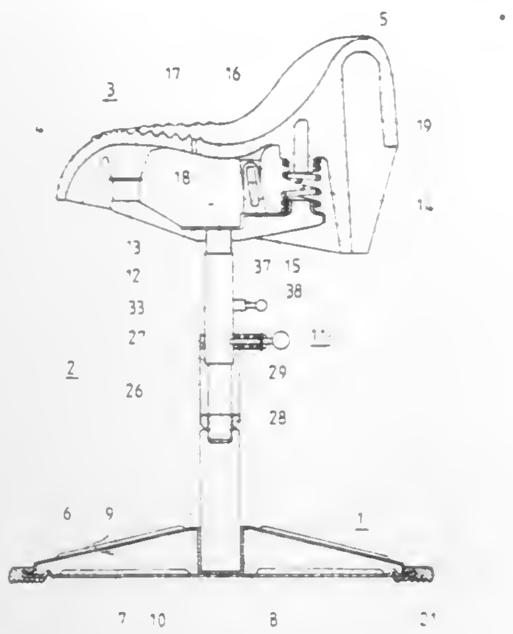
said seat is rotatable about the longitudinal axis of said support column for providing angular adjustment;

a rotational locking device is associated with said support column for preventing the rotation of said seat about said longitudinal axis of said support column;

a seat bracket plate is fixed to said support column, said bracket plate being articulated to the front part of said seat by at least one articulation point;

an inclination adjustment device is connected between said seat bracket plate and the rear part of said seat for adjusting the inclination of said seat about said at least one articulation point;

- the seat surface of said seat has raised side edges and a raised central bead extending in a first direction connecting the front and reat ends of said seat;
- said rear edge of said seat is elevated approximately to the iliac crest of an average user;



- said front edge of said seat is rounded; and
- the surface of said seat exhibits a configuration which inhibits the forward slipping of a. user.

4,366,982
ADJUSTABLE POSITIONER FOR RECLINING SEAT BACKS

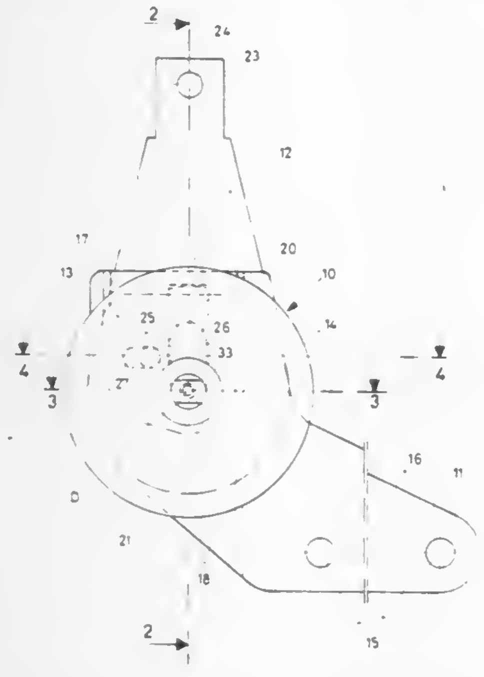
Alberto Bassi, Turin, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy

Filed Dec. 18, 1979, Ser. No. 104,927

Claims priority, application Italy, Dec. 20, 1978, 31035 A/78; Jun. 22, 1979, 23802 A/79

Int. Cl.³ A47C *1/024*

U.S. Cl. 297—362 **8 Claims**



1. A device, particularly adapted for the adjustable setting of the position of a reclining seat back icluding a stationary bracket fixedly secured to a seat portion, a movable bracket fixedly secured to a seat back, and means for interconnecting said stationary and movable brackets; one of said stationary and movable brackets including a U-shaped slideway, the other of said stationary and movable brackets including a first portion of a crank arm means; said means for interconnecting including a slider adapted to be confined by and to slide rectilinearly along said slideway, an actuating means actuated by a control knob for transforming the rotational motion imparted to said control knob into a rectilinear motion of translation of said slider, and a pivot means; said slider including a second portion of said crank arm means, and a laterally projecting means for engagement by said actuating means; said crank arm means being arranged at a location offset with respect to the pivot means interconnecting said movable bracket and said stationary bracket so as to provide a crank arm capable of angularly moving said movable bracket and thereby said seat back upon rotational actuation of said control knob.

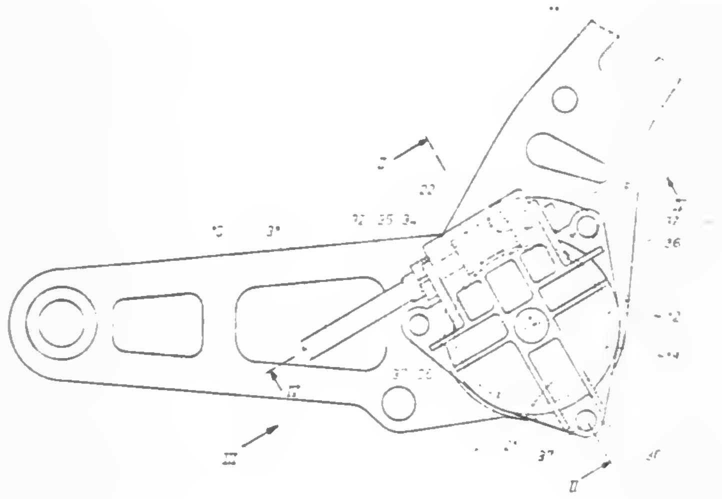
4,366,983
POWER RECLINER

Bernd A. Klueting, Radevormwald, Fed. Rep. of Germany, and Daniel R. Boyer, Battle Creek, Mich., assignors to Keiper U.S.A., Inc., Battle Creek, Mich.

Filed Jul. 25, 1980, Ser. No. 172,161

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—362 **6 Claims**



1. Hinged recliner for seats with adjustable seat backs, specifically for automobile seats, where a fixed hinge part attached to the seat, and a swingable hinge part attached to the seatback are connected via an axis of rotation, and where an adjustment and locking device, designed on a taumel gear principal, determines the position of both hinge parts to each other and the eccenter of the taumel gear system is connected to a power device through the mediation of a reduction gear by means of a flexible shaft, wherein said recliner is characterized by a gear box enclosed worm and worm gear means attached to the fixed hinge part (**10**) with an open side of the gear box overengaging the other pivot taumel part (**11**) in it's tooth area.

4,366,984
SEAT BACK INERTIA LATCH SYSTEM

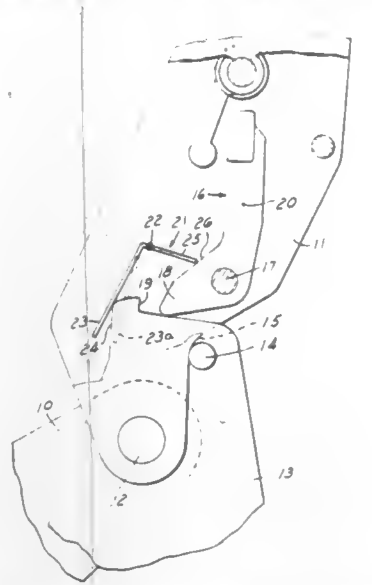
Bernd A. Klueting, Radevormwald, Fed. Rep. of Germany, and Vikram Zaveri, Springfield, Mich., assignors to Keiper U.S.A., Inc., Battle Creek, Mich.

Continuation-in-part of Ser. No. 90,343, Nov. 1, 1979, Pat. No. 4,295,682. This application Jun. 26, 1980, Ser. No. 163,223

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—379 **11 Claims**

1. A hinge fitting for a vehicle seat having a forward tiltable backrest comprising a first hinge member attachable to a lower seat member, a second hinge member attachable to a backrest seat member and pivotally connected to said first hinge member, an abutment stop for establishing the occupant's seated position of said second hinge member, an inertia latch system including means for arresting forward pivotal movement of said second hinge member under conditions of sudden vehicle deceleration and including automatic means for permitting manual forward tilting of said seat back under a stationary vehicle condition, said system being characterized by a pivoted latch inertia element having an installed center of gravity horizontally displaced from the pivotal center to provide a pivotal moment in one direction toward a latch release orientation and vertically displaced from the pivotal center to provide an inertial pivotal moment in the opposite direction toward latch engagement orientation when the vehicle is subject to sudden deceleration, and inertia latch return linkage means mounted separately from said inertia element responsive to movement of said second hinge member to said stop position to overcome said gravity moment and bias said inertia element in said opposite direction toward an operative latching orientation, including linkage deactivating means responsive to initial forward seat back tilting permitting said gravity moment to move said inertia element to a latch release orientation when said vehicle is stationary.



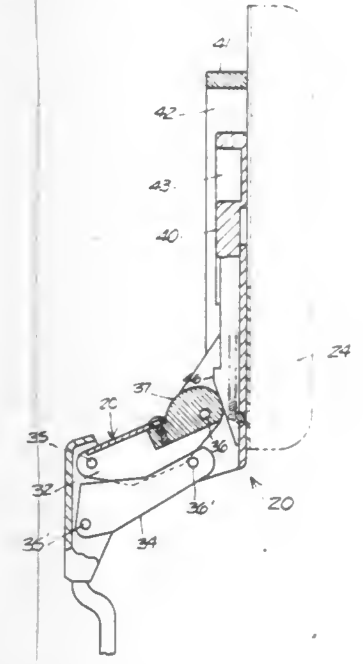
4,366,985
ADJUSTABLE HEADREST FOR TREATMENT CHAIR

Dennis F. Leffler, Charlotte, N.C., assignor to Pelton & Crane, Charlotte, N.C.

Filed Feb. 13, 1981, Ser. No. 234,121

Int. Cl.³ A47C *7/38*

U.S. Cl. 297—409 **6 Claims**



1. An adjustable headrest for dental, medical or the like treatment chairs comprising:
- a headrest;
- a support for attachment to a treatment chair;
- moveable arm means having a first end pivotally mounted on said support and a second end pivotally mounted on said headrest whereby movement of said headrest approximates the normal movement of the head of a patient; and
- locking means for said headrest including an activating member slideably mounted on said headrest said member being wedge-shaped at one end and a cam-shaped member mounted on said moveable arm and bias means normally urging said wedge-shaped portion of said member into engagement with said cam to lock said headrest in a desired position.

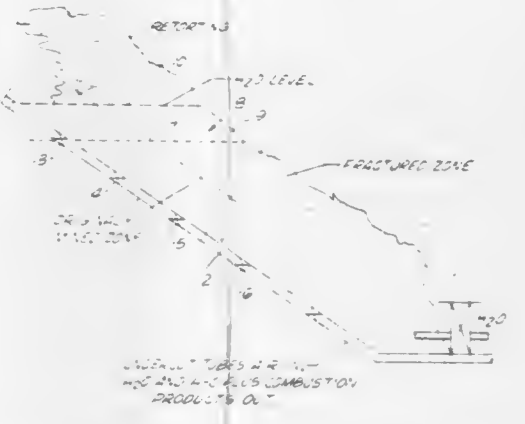
4,366,986
CONTROLLED RETORTING METHODS FOR RECOVERING SHALE OIL FROM RUBBLIZED OIL SHALE AND METHODS FOR MAKING PERMEABLE MASSES OF RUBBLIZED OIL SHALE

Jack R. Bohn, Rancho Palos Verdes, and Durk J. Pearson, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Rędondo Beach, Calif.

Filed Apr. 11, 1980, Ser. No. 139,493

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **13 Claims**



1. In a process for the in-situ recovery of carbonaceous values from a subterranean kerogen-bearing shale deposit, the steps of:
- undermining a portion of said deposit and breaking an overlying portion thereof to provide a chamber filled with rubblized particulate shale having a porosity substantially exceeding that of the original deposit;
- flooding said rubblized shale with water in a manner to define a first pyrolysis zone of limited height between the water surface and the ceiling of said chamber;
- pyrolyzing the shale within said first zone;
- lowering the water level in said chamber to define a second pyrolysis zone of limited height between the surface of said water and the previously pyrolyzed material in said first zone;
- pyrolizing the shale within said second zone; and
- recovering from said zones liquid and gaseous carbonaceous products of pyrolysis.

4,366,987
METHOD FOR FORMING AN IN SITU OIL SHALE RETORT WITH HORIZONTAL FREE FACES

Thomas E. Ricketts, Grand Junction, Colo., and Robert J. Fernandes, Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

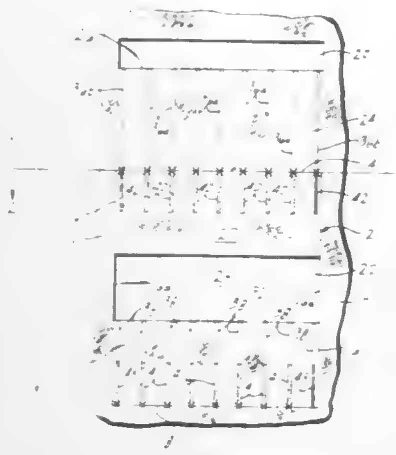
Filed Nov. 21, 1980, Ser. No. 208,862

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **41 Claims**

1. A method for forming a fragmented permeable mass of formation particles in an in situ oil shale retort in a retort site in a subterranean formation containing oil shale, the in situ oil shale retort site having top, bottom, and side boundaries of unfragmented formation, comprising the steps of:
- excavating at least one void in the subterranean formation within the boundaries of the retort site, leaving at least one zone of unfragmented formation adjacent such a void;
- placing an array of spaced apart explosive charges in such a zone of unfragmented formation, the array of explosive charges comprising a plurality of central explosive

charges spaced apart from the side boundaries of the retort site and a plurality of outer explosive charges adjacent such a side boundary of the retort site, each such outer explosive charge having a powder factor in the range of from about one-half to less than twice the powder factor of each such central explosive charge; and

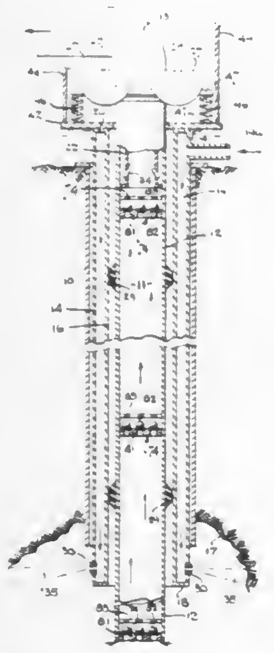


detonating the explosive charges for explosively expanding the zone of unfragmented formation toward the void for forming a fragmented permeable mass of formation particles in the situ oil shale retort.

4,366,988

SONIC APPARATUS AND METHOD FOR SLURRY WELL BORE MINING AND PRODUCTION

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406
Continuation-in-part of Ser. No. 12,669, Feb. 16, 1979, Pat. No. 4,252,189. This application Apr. 7, 1980, Ser. No. 137,855
Int. Cl.^{3} E21B *7/24, 10/34;* **E21C** *37/04, 37/12*
U.S. Cl. 299—14 **34 Claims**



1. A system for mining mineral material from a bed of such material located in a well bore comprising

means installed in said well bore for feeding liquid to said bed,

elastic column means adapted to boring hard mineral material installed in said well bore,

means for vibratorily driving said column means at a sonic frequency to develop sonic elastic wave energy therein,

said sonic elastic wave energy being transferred from said column means to the liquid and mineral material in the side walls of said well bore in said bed so as to cause the mineral material to comminute from said bed and mix with the liquid to form a slurry, and

means for bringing the slurry to the surface.

31. A method for mining mineral material from a bed of such material comprising the steps of

sonically driving a drill pipe into the ground to form a well bore running down to said bed of material,

feeding water into said well bore to said bed of material,

placing a conduit within said well bore, said conduit running down to said bed of material, and

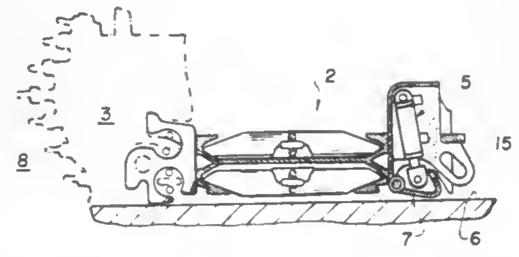
sonically driving said conduit so as to generate vibratory energy therein,

whereby said energy comminutes the bed material causing said material to mix with the water to form a slurry.

4,366,989

COAL PLANER CONTROL DEVICE

Gert Braun, Essen-Heisingen, Fed. Rep. of Germany, assignor to Halbach & Braun, Fed. Rep. of Germany
Filed Oct. 8, 1980, Ser. No. 195,298
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942089
Int. Cl.^{3} E21C *27/32*
U.S. Cl. 299—34 **8 Claims**



1. A coal planer control device for a coal planer connected to a longwall conveyor having a waste side comprising, a bracket connected to the conveyor, a skid rest pivotally connected to the bracket and adapted to be pivotally moved against a mine floor to raise the bracket and tilt the coal planer, lifting means connected between the bracket and the skid rest for pivotally moving the skid rest into a selected position to tilt the planer into a selected position, locking means connected to the bracket and engaged with the skid rest to hold the skid rest and planer in the selected position, and the bracket and skid rest extending the entire length of the longwall conveyor, the skid rest being hinged to the bracket, at a lower edge of the bracket along the entire length of the bracket and skid rest.

4,366,990

MECHANISM FOR GUIDING A COAL PLANER ON THE TROUGH OF A SCRAPER CHAIN CONVEYOR

Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany
Filed Feb. 5, 1981, Ser. No. 231,807
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004891
Int. Cl.^{3} E21C *27/35*
U.S. Cl. 299—34 **7 Claims**

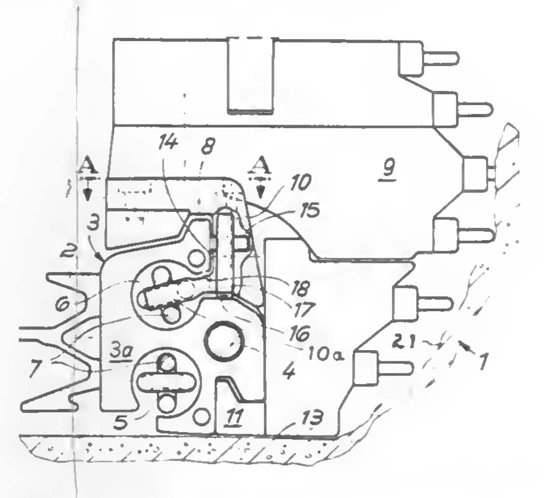
1. A device for guiding a planer having a planer body on a conveyor trough for planing a mine face, comprising:

a shaped planer guide formed of a plurality of segments articulatedly connected together along the mine face, said planer guide secured to a side of the through facing the mine face and having an upper and a lower chain channel for receiving a moving planer chain for moving the planer body, said upper chain channel being open toward the mine face, said planer guide having an upper guide rail;

a guide claw detachably connected to the planer body, embracing said upper guide rail and having a portion extending into said upper chain channel for engaging the chain;

said upper guide rail having a substantially vertical track surface and said shaped planer guide having a substantially horizontal track surface disposed below and adjacent said vertical track surface;

a first guide roller rotatably mounted about a vertical axis in said detachably connected guide claw in rolling contact with said vertical track surface; and



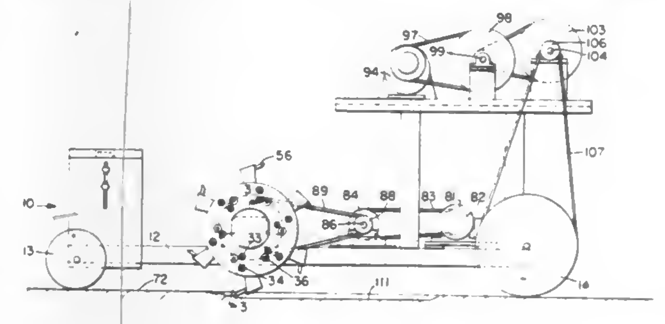
a second guide roller rotatably mounted about a horizontal axis in said guide claw in rolling contact with said horizontal track surface;

said rollers mounted substantially above said upper chain channel.

4,366,991

PAVEMENT PLANING DEVICE

Howard H. Hilshorst, 10226 Roppelt Rd., Cincinnati, Ohio 45247
Continuation-in-part of Ser. No. 604,601, Aug. 14, 1975, Pat. No. 4,332,422. This application Feb. 2, 1981, Ser. No. 230,863
Int. Cl.^{3} E01C *23/12*
U.S. Cl. 299—39 **8 Claims**

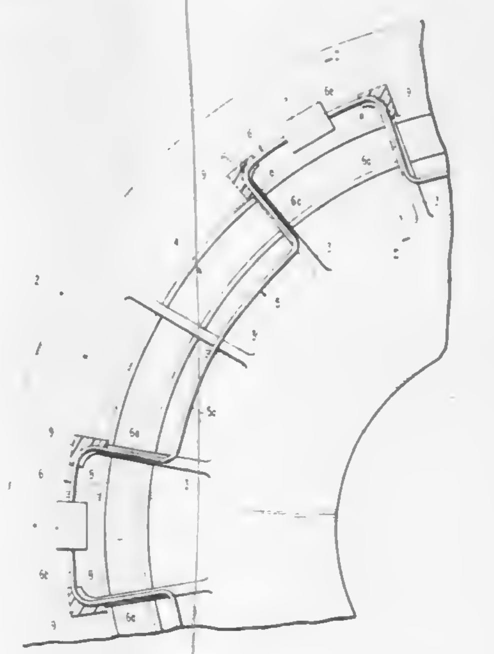


1. A planing device for removing portions of a non-metallic surface, said device comprising: a frame; at least one wheel rotatably carried by said frame; means for rotating said wheel; a plurality of cutter members pivotally mounted on said wheel and having cutting edges which extend beyond the periphery of said wheel; a plurality of restraining stop members equal in number to the number of said cutter members and each of which is positioned on said wheel between a pair of cutter members and radially outwardly of the pivot points of said cutter members, each of said restraining stop members being positioned with respect to an associated cutter member to restrain the forward movement of said cutter member when said wheel is rotated and to maintain the center of gravity of said cutter member behind a radial line from the center of rotation of said wheel through the pivot point of said cutter member, whereby upon rotating said wheel said cutter members are restrained from reaching a fully-extended position; and a plurality of retraction stop members equal in number to the number of said cutter members and each of which is positioned on said wheel between a pair of cutter members, each of said retraction members being so positioned with respect to an associated cutter member as to limit the rearward movement thereof after said cutter member has impacted the surface being cut, said retraction stop members each having elastic line contact with its associated cutter member whereby to permit said cutter member to rebound therefrom and into touching relationship with said restraining stop member, said retraction stop members have an arcuate surface and have a surface hardness within the range of 37 to 40 on the Rockwell C scale and wherein said retraction stops are replaceable annular members.

4,366,992

WHEEL COVER FOR A PASSENGER MOTOR VEHICLE

Kurt Enke, Kirchheim, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Oct. 24, 1980, Ser. No. 200,466
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943137
Int. Cl.^{3} B60B *7/06*
U.S. Cl. 301—37 P **11 Claims**

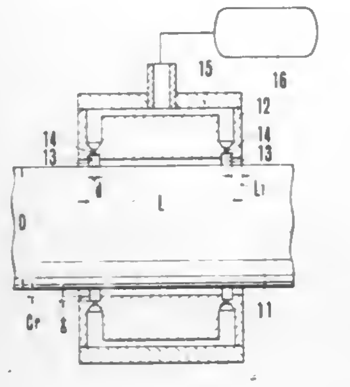


1. A wheel cover for passenger motor vehicles, the wheel cover including wire spring ring means for enabling a mounting of the wheel cover to a rim of a wheel, the wire spring ring means includes a plurality of circumferentially spaced radially outwardly projecting bracket members adapted to be locked in a recess of the rim of the wheel, characterized in that the wheel cover comprises at least two independent mutually concentrically disposed wheel cover members respectively forming an inner and outer wheel cover member, a plurality of circumferentially spaced web means for connecting the inner and outer wheel cover members to each other so as to define at least one vent slot between the wheel cover members, the spring ring means includes circular shaped sections respectively disposed between adjacent bracket members, the bracket members each include brace means which extend outwardly from the circular shaped sections; means are provided for mounting the spring ring means on the wheel cover such that the circular shaped sections are disposed behind the inner wheel cover member so as to be covered thereby and the web means are arranged axially in front of the respective brace means, the means for mounting the spring ring means includes guide means arranged on the web means for securing a position of the respective brace means in a circumferential direction, the guide means includes a pair of circumferentially spaced bearing means provided on an outer end of each of the web means for broadening an area of the respective web means, and in that an arcuate inner groove is provided in each of the bearing means for accommodating the brace means.

4,366,993
GAS BEARINGS

Kyosuke Ono, Kodaira, and Koshi Murata, Hoya, both of Japan, assignors to Nippon Telegraph & Telephone Corp., Japan

Filed Jan. 7, 1980, Ser. No. 110,029
Int. Cl.^{3} F16C *32/06*
U.S. Cl. 308—9 **14 Claims**



1. In a gas bearing of the type wherein compressed air is supplied from a source thereof to a bearing clearance between a bearing and a rotary shaft for rotatably supporting the same, the improvement wherein said bearing is provided with a plurality of circumferential annular grooves extending about the entire inner surface of the bearing and axially spaced from each other located near opposite ends of said bearing, the axial distance between a groove and the corresponding bearing end being in the range from 5 to 15% of the length of the bearing, a plurality of angularly spaced small diameter gas supply ports in communication with respective annular grooves, and a gas passage for connecting said plurality of gas supply ports to said source of compressed gas the depth of the groove and the bearing clearance satisfying the following relationship:

$$g=Cr\,[\{(D/2n)^2/bL_1\}^{\frac{1}{3}}-1]$$

where
Cr is the bearing clearance,
D is the bearing diameter,
n is the number of air supply ports,
b is the annular groove width,
L_1 is the distance between one side of the groove and the corresponding bearing end.

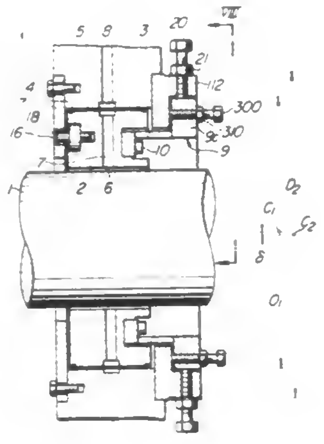
7. In a gas bearing of the type wherein compressed gas is supplied from a source thereof into a bearing clearance between a circular disc shaped thrust bearing and a member supported thereby, the improvement wherein said bearing is provided with a central opening; a plurality of concentric annular grooves formed in one surface of the bearing to open into said bearing clearance, an inner one of the annular grooves being located near said central opening, an outer one of the grooves being located near the outer periphery of the bearing; a plurality of small diameter gas supply ports in communication with respective annular grooves and spaced from one other in the circumferential direction; and gas passages communicating said plurality of gas supply ports with said source of compressed gas.

13. In a gas radial bearing of the type wherein pressurized gas is supplied from a source thereof into a bearing clearance between a bearing and a rotary shaft for rotatably supporting said shaft, the improvement wherein said bearing is provided with a plurality of angularly spaced radial small gas supply ports opened to said clearance, said gas supply ports being located close to opposite ends of the bearing surface of said bearing, and a gas supply passage connecting said gas supply ports with said source, and wherein said rotary shaft is provided with a plurality of circumferential annular grooves respectively opposing said gas supply ports and opened to said bearing clearance.

4,366,994
DAMPED BEARING DEVICE

Masahiro Yoshioka, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,692
Claims priority, application Japan, Nov. 2, 1979, 54-141326; Mar. 26, 1980, 55-37457
Int. Cl.^{3} F16C *27/02*
U.S. Cl. 308—26 **4 Claims**

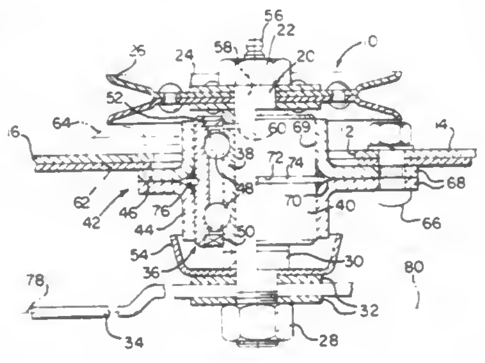


1. In a damped bearing device wherein a bearing in support of a shaft of a rotor is suspended to a housing through a bearing supporting spring assembly, and a damper portion including a squeeze film is formed between the outer periphery of the bearing and the housing, said damper portion and said bearing supporting spring assembly cooperating with each other in damping vibration of the bearing, the improvement comprising a biasing means having a biasing member disposed at a connection between said housing and a fixed portion of said bearing supporting spring assembly adapted to be fixed to said housing, said biasing member having an offset corresponding to an amount of deflection of said bearing supporting assembly due to weight of the rotor including said rotor shaft, said biasing member connecting the fixed portion of said bearing supporting spring assembly to said housing at said offset in an opposite direction to the deflection of said bearing supporting spring assembly, to thereby compensate for a loss of uniformity of said squeeze film in said damper portion.

4,366,995
MOWER DRIVE WITH YIELDABLE SPINDLE MOUNT

Frank A. Kocian, Frankfort, Ill., assignor to Federal-Mogul Corporation, Detroit, Mich.

PCT No. PCT/US81/00114, § 371 Date Jan. 26, 1981, § 102(e) Date Jan. 26, 1981
PCT Filed Jan. 26, 1981, Ser. No. 269,063
Int. Cl.^{3} F16C *27/04*
U.S. Cl. 308—26 **12 Claims**

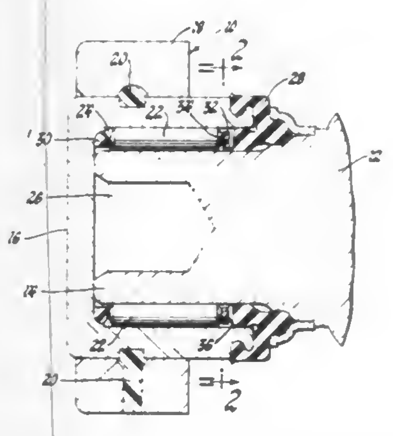


8. An arbor assembly (10) having a spindle (20) journaled for rotation within a tubular bearing outer ring (40) enclosing rolling elements (48) therebetween, a bipartite retainer (42) having first and second elements (44,46) each element having an annular portion (94) and a flange portion (68) at one end of said annular portion, said flange portions being adapted to be secured together with said annular portions in axial alignment to define an opening (69) for receiving said bearing outer ring, wherein the improvement comprises:
- said first and second elements (44,46) defining an annular groove (70) about the inner diameter of the flange portions of said elements;
- an annular member (74) attached to said outer ring and extending radially outwardly into said annular groove; and
- at least one resilient ring (108) abutting said annular member and engaging said retainer to resiliently support said outer ring within said retainer.

4,366,996
NEEDLE BEARING WEAR REDUCTION ARRANGEMENT

Leonard F. Grandel, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1981, Ser. No. 257,739
Int. Cl.^{3} F16C *33/30, 35/04*
U.S. Cl. 308—187 **2 Claims**



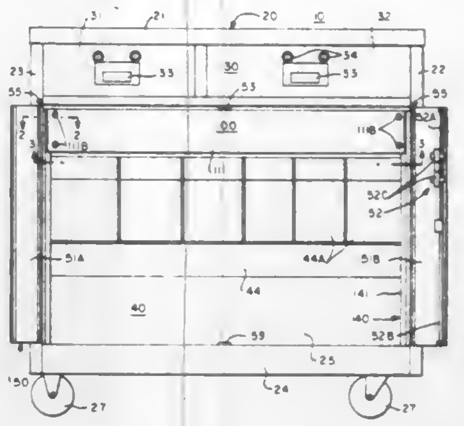
1. In combination with a pair of annular members rotatably supported respective to one another by a series of circumferentially spaced needle bearings arranged in an annular space between said members, said annular space being sealed and filled with a lubricant, a wear reduction arrangement for inducing circumferential migration of the needle bearings, comprising, a free-floating annular member contained in the lubricant in the annular space proximate one of the ends of the needle bearings, the free floating member being moved within the annular space by the lubricant during relative rotation of the annular members, the free floating member including a series of radially extending grooves spaced circumferentially therearound, the circumferential spacing of the grooves being different than the circumferential spacing of the one ends of the needle bearings, a number of said grooves being intermittently engageable with a number of the one ends of the needle bearings during relative rotation of the annular members to randomly cause such needle bearings to migrate with respect to the annular members.

4,366,997
HIDDEN DRAWER ARRANGEMENT FOR BANK TELLER CABINET

Bernard V. Lopez, Orinda, and David T. Olsen, Petaluma, both of Calif., assignors to BankAmerica Corporation, San Francisco, Calif.

Filed May 2, 1980, Ser. No. 146,170
Int. Cl.^{3} A47B *17/04;* **E05C** *5/00*
U.S. Cl. 312—204 **7 Claims**

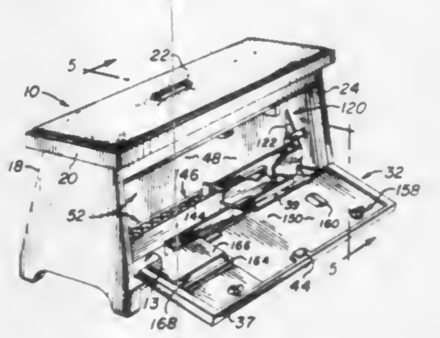
1. A hidden drawer arrangement for a compartment in a cabinet comprising means defining a pair of front facing wall sections on interior side walls of said compartment with said front facing wall sections being recessed a moderate distance into the interior of said compartment and extending throughout at least substantially the entire height of said compartment to have the appearance of working structual elements of said cabinet, a drawer having a preselected height equal to less than one-fourth the height of said compartment and a preselected depth less than the depth of said compartment, and means for slidably suspending said drawer in a top portion of said compartment, said drawer including a substantially plain, continuous, rectangular face panel having a width substantially equal to the width of said compartment such that edge portions of said face panel abut and overlap said front facing wall sections when said drawer is closed to give said face panel the appearance of an immobile structural element of said cabinet.



4,366,998
TRADESMAN'S TOOL CARRIER AND SUPPORT STAND

David A. Kaiser, Rte. 2, Box 43A, Bowie, Tex. 76230

Filed Oct. 14, 1980, Ser. No. 196,471
Int. Cl.^{3} A47B *81/00*
U.S. Cl. 312—235 R **1 Claim**



1. A tool carrier and support stand for carpenters, tradesman and the like, the device comprising:
- a rigid frame including a generally rectangular, rigid, planar base having a predetermined width and length and including a plurality of downwardly projecting, spaced apart supportive feet adapted to be disposed upon a solid supporting surface, each of said feet including non-skid surfaces provided at their undersides for frictionally contacting said supporting surface;
- a rigid, generally rectangular planar top parallel with said base and spaced-apart therefrom, the top having a length substantially equal to said base length, a width smaller than said base width, and an upper surface;
- a generally planar layer of non-skid fabric material secured to said outer, upper surface of said top for preventing a user of said device from slipping when using the device as a stool or chair;
- a pair of parallel, spaced-apart, generally triangular end walls extending between said base and said top, the width of said walls decreasing towards said top;
- a pair of generally rectangular, similarly shaped planar doors hingeably coupled at opposite bottom sides of said device and forming side walls thereof when in a closed position, the doors manually displacable between a substantially horizontally oriented open position whereby to selectively facilitate user access to the interior of the device, and, when in said closed position, flushly nested within

suitable door receptive recesses provided in said frame, said doors each including interiorly recessed sides provided with a plurality of storage compartments or pockets;

a rigid, fixed internal, planar reinforcement partition extending vertically between said base and said top, said partition occupying a plane perpendicularly bisecting said top, said bottom, and both of said end walls, whereby to divide the interior of said device into two regions of equal volume and symmetrical geometry while bracing said top to facilitate use of said device as a support stand;

a plurality of separate, generally spaced-apart compartments defined interiorly of the device for storing tools and the like; and,

magnetic latch means for yieldably maintaining said doors in a closed position.

4,366,999

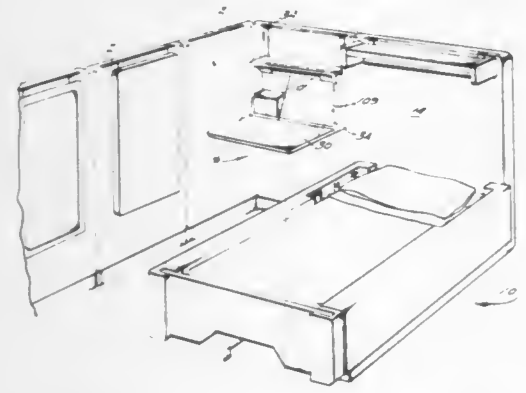
FOLD-DOWN DESK

Joseph A. Koncelik, 1638 Dolliver Dr., Worthington, Ohio 43085, and David B. Chaney, 1944 Wolverhampton, Powell, Ohio 43065

Filed Sep. 17, 1980, Ser. No. 188,023

Int. Cl.^{3} A47B *83/00, 27/00*

U.S. Cl. 312—237 **4 Claims**



1. A desk assembly for removeable mounting on, and in combination with, a wall panel, said assembly comprising: a casing; a plastic writing surface comprising a flat body portion with a raised edge around substantially the entire circumference thereof; means for pivotally mounting said writing surface to said casing; means for interconnecting said writing surface and said casing so that as said writing surface is moved away from said casing about said pivot means the movement of said writing surface is slow and gradual until it is positively stopped at a predetermined position; and means for mounting said casing to said wall panel so that said writing surface is moveable from a first position wherein it is substantially vertical and abuts said casing, to a second position wherein it is stopped with respect to said casing and is substantially horizontal; said wall panel and said casing mounting means being dimensioned so that said writing surface when in said second position is spaced from the ground a distance convenient for use by a person in a wheelchair, and wherein an edge of said writing surface opposite said pivotally mounting means is spaced from said wall panel a distance so that the writing surface is convenient for use by a person in a wheelchair, wherein said casing comprises means defining large elongated recesses around the entire periphery of said casing so that when said writing surface is substantially vertical and abuts said casing said writing surface may be readily grasped and pivoted downwardly by an individual inserting a portion of their hand between the writing surface and said casing at said recess.

4,367,000

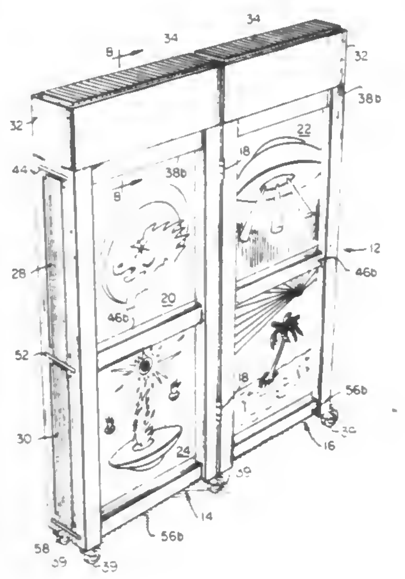
DISPLAY APPARATUS

Robert J. Sparks, 1412 E. 15th, and Ronald S. Nichka, 1521 N. 1st Ave., both of Upland, Calif. 91786

Filed Jun. 16, 1980, Ser. No. 159,831

Int. Cl.^{3} A47B *81/06;* **F16B** *12/00*

U.S. Cl. 312—249 **13 Claims**



1. A modular display apparatus which comprises:

at least one module which includes at least four elongated first members which are disposed in generally parallel spaced relationship;

two of said first members intersecting a first plane along substantially the entire axial extent thereof, two other of said first members intersecting a second plane along substantially the entire extent thereof, the first and second planes being spaced;

four elongated second members which are disposed in generally parallel relationship, two of said second members being disposed in generally perpendicular relationship to two of said first members and intersecting the first plane along substantially the entire axial extent thereof, two other of said second members being disposed in generally perpendicular relationship to two other of said first members and intersecting the second plane along substantially the entire axial extent thereof;

each of said first members and each of said second members having a first slot disposed in a third plane which is generally perpendicular to the first and second planes;

each of said first and second members including a second slot which is disposed in a fourth plane which is disposed in generally perpendicular relationship to the first and second planes;

a first generally planar member carried in said first slots of said first and second elongated members; and

a second generally planar member carried in said second slots of said first and second elongated members.

4,367,001

MULTIFUNCTION CONCENTRIC PLUG

Yoshitaka Munakata, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,521

Claims priority, application Japan, Oct. 5, 1979, 54-138676

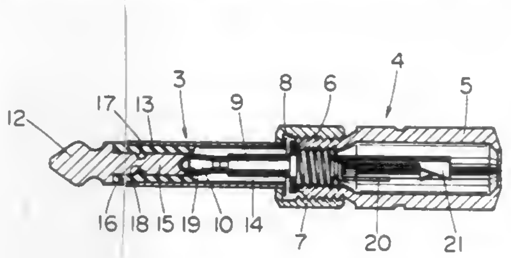
Int. Cl.^{3} H01R *11/02*

U.S. Cl. 339—31 R **9 Claims**

1. In a prior art multifunction concentric plug assembly formed of a large-size concentric plug portion and a small-size concentric plug portion, each of said plug portions having a knob, sleeve extending from the knob, and a tip conductor at an end of the sleeve opposite the knob the small-size plug having a small sleeve and the large-size plug having a large sleeve, and wherein the small-size plug portion plugs into a receiving aperture of the large-size plug portion to form an assembly of given overall length, wherein the improvement comprises:

the sleeve of the large-size plug portion being hollow and the tip conductor having a portion positioned in and at the end of said hollow so as to form a free space in said hollow defined by an end of said tip conductor within the sleeve and walls of the hollow said free space extending to an end of said sleeve at the knob;

the substantially entire sleeve of the small-size plug portion being received within said free space and the tip of the small-size plug portion being in electrical contact with the large-size plug tip conductor when assembled with the large-size plug portion;



a first combining means in one of said knob and a second combining means formed in the other of said knob, said large-size plug portion and small-size plug portion being combined with each other by said first and second combining means; and

a length of the combined sleeve assembly being substantially shorter than said given length of assembled prior art large-size and small-size plug portions.

4,367,002

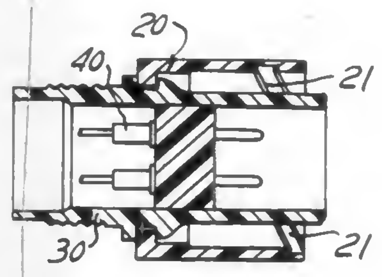
COUPLING RING HAVING LINED BAYONET SLOT

Robert D. Waghorn, Oneonta, and Robert W. Brush, Jr., Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,791

Int. Cl.^{3} H01R *13/625*

U.S. Cl. 339—90 R **5 Claims**



1. In combination with an electrical connector of the type having: a plastic housing having a central axis, a forward portion, and a rear portion; at least one electrical contact mounted in said housing; and a tubular coupling member comprised of plastic and mounted to and disposed around a portion of said housing, said coupling member having a rear portion and a forward mating portion having a groove on the inside thereof, said coupling member adapted to connect to a similar housing having at least one contact adapted to mate with said contact in said housing, the improvement wherein the forward mating portion of said coupling member includes:

a strip of metal mounted in and along the sides of said groove on the inside of said coupling member.

4,367,003

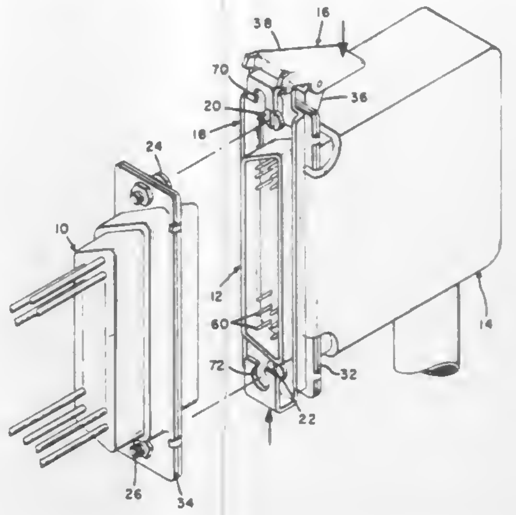
CONNECTOR LATCHING MECHANISM

Robert H. Frantz, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 15, 1980, Ser. No. 187,103

Int. Cl.^{3} H01R *13/629*

U.S. Cl. 339—91 R **11 Claims**



1. A latching system for securing a pair of mating electrical connector members together in a mated condition and operable by one hand acting on only one end of the connector members, said latching system comprising:

at least two first abutment members mounted in spaced relationship on one of said pair of connector members;

at least two second abutment members, each mounted on the other connector member and aligned to abut a respective first abutment member;

an elongated latching member defining a profiled opening similar to but longer than mating portions of said connector members, oppositely directed first slots at each end of said profiled opening, an extension at each end of said latching member overlying each said first slot, a second slot formed in each said overlying portion parallel to and spaced from the first slot, said latching member being mounted on one of said connector members with said first abutment members engaging in said first slots and said mating portion of said connector member being exposed in said opening;

actuating means mounted on one end of said one connector member and connected to drive said latching member transversely with respect to the mating portion of said connector member;

whereby upon mating of said connector members and actuation of said latching member said second abutment members are engaged by said second slots to secure said connector members together in a mated condition.

4,367,004

ELECTRICAL CONNECTOR

Yoshitsugu Fujiura, Tokyo; Takahiko Miyamura, Hatano, and Ryoji Nishimura, Fussa, all of Japan, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 22, 1980, Ser. No. 109,385

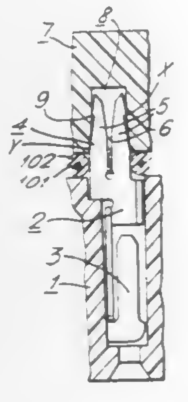
Claims priority, application United Kingdom, Jan. 22, 1979, 7902247

Int. Cl.^{3} H01R *11/20*

U.S. Cl. 339—97 R **2 Claims**

1. An electrical connector for use in establishing electrical connections to the conductors of a flat cable of the type comprising a plurality of conductors held in spaced side-by-side parallel relationship by plastics insulating material, comprising a first housing member carrying a plurality of terminals each having a conductor-receiving portion projecting from one face of the first housing member, the conductor-receiving portions of all the terminals all projecting in the same direction, and

each comprising a pair of spaced arms extending normally of the one face of the first housing member, the arms having opposed edges defining a conductor-receiving slot and having pointed extremities for piercing the insulating material of the cable, and a second housing member having a plurality of holes extending inwardly from one face thereof each to receive the arms of a respective one of the terminals carried by the first housing member when the two housing members are positioned with their one faces facing and with the cable located between their one faces with conductors of the cable received in the conductor-receiving slots of respective terminals, the arms of the conductor-receiving portion of each terminal being formed adjacent their free ends with outwardly directed projections which are an interference fit in the associated hole in the second housing member, the interference fit between the projections and the walls of the associated holes in the second housing member serving to latch the second housing member to the terminals and thus to the first housing member, in which in use, each arm of each terminal engages the second housing member not only at the projection on the arm but also at a second position adjacent the engagement between the arm and a conductor of the cable received in the slot partially defined by the arm whereby stress concentrations at said second position of engagement which are caused by the engagement at the projection on the arm, are dispersed into the plastics insulating material and contact between the arms and the conductor is improved.



4,367,005

STRAIN RELIEF COVER

George H. Douty, Mifflintown, and Clair W. Snyder, Jr., York, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

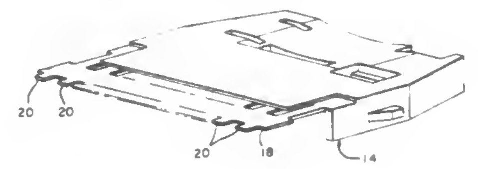
Filed Nov. 5, 1980, Ser. No. 204,145

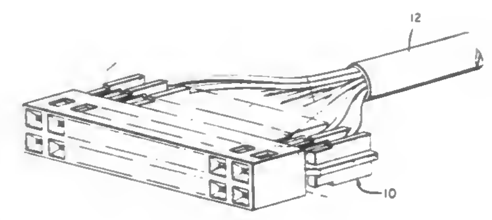
Int. Cl.³ H01R *13/58*

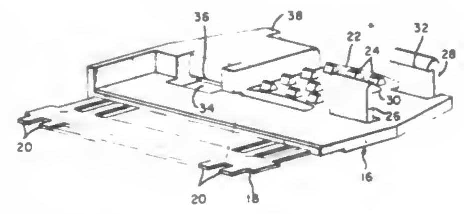
U.S. Cl. 339—107 **4 Claims**

1. In combination with an elongated electrical connector of rigid insulative material having a plurality of terminal receiving passages each having therein a respective terminal terminating a respective conductor of a cable formed by a plurality of individual conductors held in a circular configuration by an outer jacket, a strain relief assembly providing a low profile and comprising:

a pair of hermaphroditic cover members of rigid insulative material, each said cover member having a forward mating edge with a plurality of parallel spaced tongues projecting therefrom for reception in said terminal passages of said connector, latching means at opposite ends of a rearwardly spaced edge to latchingly secure said cover members together and passage means centrally of said latching means and having an inwardly directed arcuate portion on each said cover member, said inwardly directed arcuate portion becoming slightly reversedly bowed when engaged with a cable, but remaining within the overall configuration of said cover member, to grip said cable so that when said cover members have their mating ends inserted in said connector and said latching members engaging said cable gripping means applies sufficient strain relief force to the cable.







4,367,006

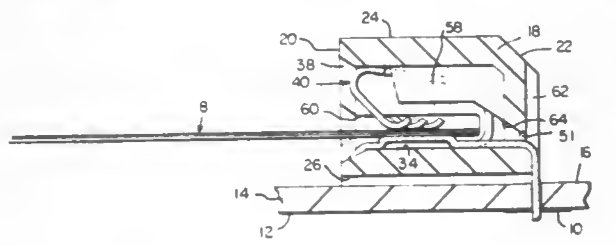
CONNECTOR FOR FLAT CABLE

Andrew J. Rehbogen, Jr., Harrisburg, and Robert N. Whiteman, Jr., Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 10, 1980, Ser. No. 214,859

Int. Cl.³ H01R *9/07*

U.S. Cl. 339—176 MF **9 Claims**



1. A multi-contact electrical connector which is intended to receive and establish electrical contact with, terminal areas on a flat flexible cable means which has at least two electrically separate terminal areas thereon, said connector being of the type comprising an insulating housing having a cable receiving face and having a trough-like cable receiving opening extending into said cable receiving face, first and second contact terminals in said opening, said terminals being in side-by-side spaced-apart relationship and being electrically separate from each other, each of said terminals having a contact spring means which is deflected by said cable means when said cable means is inserted into said opening, each of said spring means having a contact portion which is against, and in electrical contact with, one of said terminal areas when said cable means is fully inserted into said opening, said connector being characterized in that:

said contact portion of said first contact spring means is relatively proximate to said cable receiving face and is spaced inwardly from said cable receiving face by a predetermined distance,

said contact portion of said second contact spring means is spaced inwardly from said cable receiving face by a distance which is greater than said predetermined distance whereby,

during insertion of said cable means into said opening, said cable means first encounters and deflects said first contact spring means and upon further movement of said cable means into said opening, said cable means encounters and deflects said second contact spring means.

4,367,007

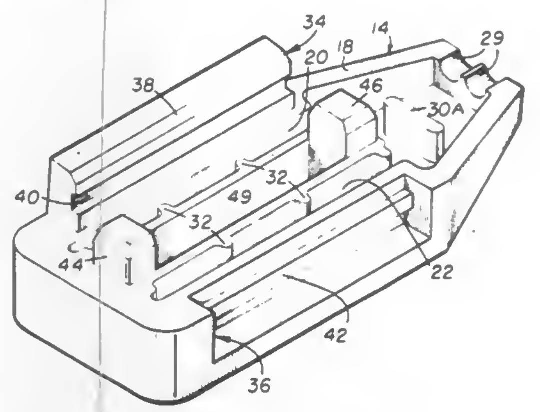
HOUSING FOR CUBE TAP ELECTRICAL CONNECTOR

John Nickence, Montgomery, Ill., assignor to Belden Corporation, Geneva, Ill.

Filed Jun. 13, 1980, Ser. No. 159,297

Int. Cl.³ H01R *13/506, 21/08*

U.S. Cl. 339—210 M **2 Claims**



1. An electrical connector comprising: contact strips defining at least three socket means for receiving at least three plug-type connectors, and

a housing formed by transversely opposed interlocking sections, one of said sections having at least one pair of openings in communication with two spaced-apart slots for transversely receiving a plug-type connector, the other of said sections being formed with at least two pairs of openings in communication with two spaced-apart slots for transversely receiving up to two plug-type connectors, each section having:

(a) a surface extending generally longitudinally and laterally and adapted to lie in face contact with the corresponding surface of said other section,

(b) two laterally spaced, longitudinally extending slots for receiving respective of said contact strips therein,

(c) inlet means formed at one longitudinal end of said section for communication with both slots,

(d) a longitudinally extending cavity situated between said slots,

(e) a tab located along one lateral side of said section and extending transversely from said surface, said tab being elongated longitudinally, said longitudinal tab extending substantially parallel to said cavity and having a length at least equal to said three socket means, said tab having along a transverse extremity a detent projecting laterally therefrom and being partially formed by a groove in the transverse surface of said tab, and

(f) a complementary recess formed along the other lateral side of said section and extending transversely from said surface, said recess being elongated in a longitudinal direction, said longitudinal recess extending substantially parallel to said cavity and having a length at least equal to said three socket means, said recess defining a detent-receiving portion by having

  (i) an inner ledge formed by a longitudinally extending flange having an upper surface so as to cooperate in face contact with the detent of the other of said sections and having a lower surface to lie in face contact with the corresponding surface of said groove to provide locking engagement of said sections against transverse relative motion upon assembly of said housing, and

  (ii) an outer ledge formed to cover and obstruct access to the distal end of said tab of said other of said sections and all of said detent thereon upon assembly of said housing; one of said sections having a pair of alignment pins located at opposing longitudinal ends of its cavity for insertion into the ends of the cavity of the other of said sections providing for the alignment of said sections upon assembly of said housing, said alignment pins being located and formed so as to prevent rotational, lateral and longitudinal movement of one of said sections relative to the other.subsequent to assembly of said housing.

4,367,008

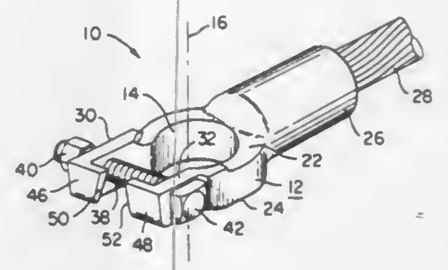
UNIVERSAL BATTERY POST CONNECTOR

Jose M. Piriz, Hillside, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 30, 1980, Ser. No. 221,394

Int. Cl.³ H01R *11/26*

U.S. Cl. 339—230 R **16 Claims**



1. A post clamping apparatus, comprising:

a deformable body having an aperture extending therethrough along an axis for receiving a post;

a pair of arms extending outwardly from said body in spaced relation relative to each other and defining therebetween an opening in communication with said aperture, said body being contractable about said post upon movement of said arms toward each other;

a projection on at least one of said arms spaced outwardly from said aperture and extending toward an inner surface of said other arm for engagement therewith when said arms are moved toward each other, said projection having an inner surface facing the inner surface of said opposing arm, one of said inner surfaces being inclined obliquely relative to said axis and converging toward said other inner surface;

means operative for moving said arms toward each other and said projection into engagement with said opposing arm, said means being further operative to move said arm inner surface and said projection inner surface into contact in a common plane.

4,367,009

OPTICAL SCANNING APPARATUS WITH BEAM SPLITTER TO PROVIDE PLURAL LIGHT BEAMS

Akiyoshi Suzki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 43,267, May 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 871,763, Jan. 23, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,502

Claims priority, application Japan, Jan. 21, 1977, 52/5501; Fed. Rep. of Germany, Jan. 20, 1978, 2802417; Jan. 20, 1978, 7801680[U]

Int. Cl.³ G02B *27/17, 27/10*

U.S. Cl. 350—6.5 **3 Claims**

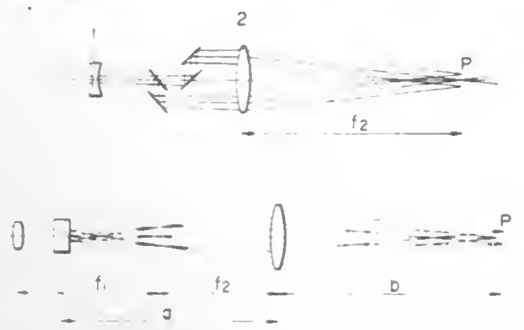
1. An optical scanning apparatus comprising:

a light source;

a beam splitter for dividing a light beam from said light source into plural light beams directed in parallel with each other;

a lens system interposed between said light source and said beam splitter for controlling the condition of the light beam incident upon said beam splitter;

lens means upon which said plural light beams impinge, said lens means having an optical axis parallel to the direction of said plural light beams, wherein the optical path length of the plural light beams incident on said lens means are all the same; and



a deflector disposed in the second focal plane of and on the optical axis of said lens means and having a deflecting surface pivotable around an axis.

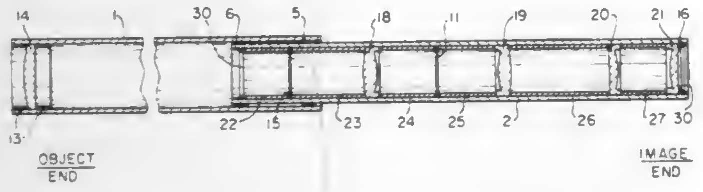
4,367,010
ERECTING TELESCOPE

Barry Broome, Glendora, Calif., assignor to Sport-O-Scope, Inc., Bethlehem, Pa.

Filed Aug. 11, 1980, Ser. No. 177,140

Int. Cl.³ G02B *23/00*

U.S. Cl. 350—563 **7 Claims**



1. In an erecting telescope comprising an outer tube, an object lens fixed at the object end of said outer tube, an inner tube slidable within the outer tube, erector lens and eye piece lens elements fixed in said inner tube, the improvement comprising all elements being rigid optical plastic, the eye piece lens comprising two convex elements with facing spherical surfaces, the erector lens comprising a couplet of biconvex elements having facing spherical surfaces and opposite aspherical surfaces, whereby aberrations are reduced and the field of view is increased.

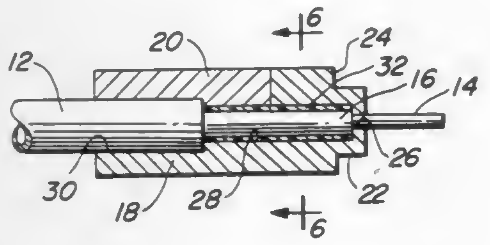
4,367,011
OPTICAL FIBER CONNECTOR AND MEANS AND METHOD FOR CENTERING OPTICAL FIBERS

Kevin J. Monaghan, Middlebury, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 37,260, May 9, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,303

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **22 Claims**



1. A fiber optic connector for optically coupling a pair of fiber optic cables or a single fiber optic cable and a light source or detector, wherein said cable includes an outer coating and an inner fiber core which may or may not be concentric with said outer coating, comprising:

a terminal member having a through hole extending axially therethrough, said through hole having a first portion extending through a forward extension of said terminal member, said first portion being sized to snugly receive a length of said fiber core stripped of said outer coating to locate said core in a selected position in said terminal member, said through hole having a second portion rearwardly of said first portion for receiving said outer coating of said fiber optic cable, said second portion being sized sufficiently larger than said outer coating to accommodate any eccentricity between said fiber core and said outer coating; and

means for fixedly securing said outer coating of said fiber optic cable within said second portion of said through hole to thereby maintain said fiber core in said selected position in said terminal member;

said forward extension being constructed so as to be readily removable from the remainder of said terminal member to form a forward mating end with said fiber core located in said selected position in said terminal member.

4,367,012
OPTICAL GLASS FIBER HAVING COVER GLASS OF SODIUM ZINC ALUMINO BOROSILICATE

Yoshirou Ikeda; Yoshikazu Kaite, both of Nishinomiya, and Toshiro Ikuma, Amagasaki, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 81,257, Oct. 2, 1979, abandoned. This application Dec. 23, 1980, Ser. No. 219,535

Claims priority, application Japan, Oct. 6, 1978, 53-123721

Int. Cl.³ C03C *3/08, 13/00;* G02B *5/14*

U.S. Cl. 350—96.34 **5 Claims**

1. A light-transmitting glass fiber having a core and a cover for the core, said cover being a multicomponent glass composition consisting of, in % by weight based on the total weight of SiO_2, B_2O_3, Na_2O, Al_2O_3 and ZnO:

SiO_2	46-70
B_2O_3	6-19
Na_2O	16-24
Al_2O_3	2-15, and
ZnO	3-12, and

in parts by weight per 100 parts by total weight of the aforesaid components:

Sb_2O_3	0 - less than 1, or
As_2O_3	0 - less than 1,

provided that Al_2O_3+ZnO is 5 to 20%.

4,367,013
PREPARATION OF SEMIFINISHED PRODUCT FOR MANUFACTURE OF OPTICAL FIBERS

Pierre Guerder, Pithiviers, and Andre Ranson, Rueil-Malmaison, both of France, assignors to Quartz & Silice, Paris, France

Filed Feb. 11, 1981, Ser. No. 233,512

Claims priority, application France, Feb. 15, 1980, 80 03369

Int. Cl.³ C03B *19/00, 37/075;* G02B *5/14*

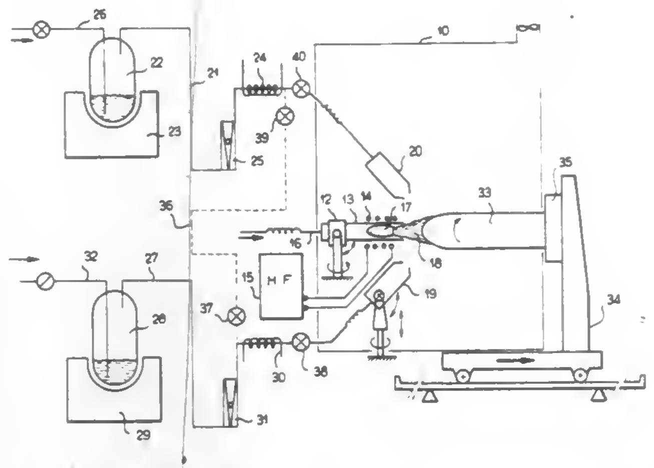
U.S. Cl. 350—96.34 **19 Claims**

11. In the manufacture of optical fibers using doped silicas, a process for making a doped ingot comprising the steps of:

forming a cylindrical ingot by axial deposition, on a heat-stable support, of titanium-doped silica obtained by decomposition and oxidation of at least a silicon compound and a titanium compound in the flame of an induction plasma burner, at least one of said compounds containing a predetermined supply of hydrogen, and

coating said ingot surface by a radial deposition of at least a doped silica so that the index of refraction of this silica is less than that of the ingot,

wherein, during the first step, the silicon and titanium compounds are decomposed and and oxidized to form SiO_2, TiO_2 and H_2O and the supply of hydrogen is determined



so as to deposit directly on said heat-stable support a vitreous mass having a concentration of hydroxyl groups between 10 and 50 parts per million.

4,367,014
POLYGONAL ROTARY SCANNERS

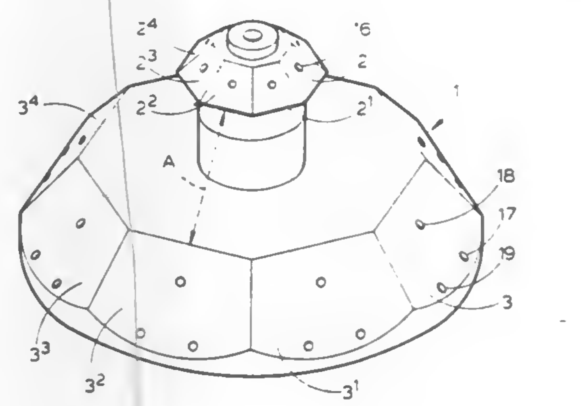
Harry Howden, Smallfield, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,594

Claims priority, application United Kingdom, Dec. 13, 1979, 7942998

Int. Cl.³ G02B *5/08;* B29D *11/00*

U.S. Cl. 350—320 **6 Claims**



1. A method of manufacturing a polygonally shaped, multifaceted rotary scanner, said scanner comprising a multifaceted polygonal base having an axis of rotation and having optically flat, reflective surfaces integrally bonded to each facet of the base at precise angles relative to the axis of rotation, characterized in that the method comprises the steps of:

providing at least one master preform having an optically flat surface;

coating the optically flat surface of the master preform with a reflective layer;

providing a master, multifaceted polygonal fixture comprising pairs of upper and lower facet members defining planes for locating the reflective surfaces;

mounting the polygonal base in the fixture such that each facet of the base is located below a plane formed by a pair of upper and lower facet members of the fixture;

coating a facet of the base with an adhesive;

locating the reflective layer over the adhesive-coated facet by placing the coated master preform on the pair of upper and lower facet members of the fixture which are associated with the adhesive-coated facet of the base, the adhesive being contacted and displaced by the reflective layer on the master preform;

hardening the adhesive; and

removing the master preform from the reflective layer so as to leave the reflective layer integrally bonded to the facet of the polygonal base at the precise angle desired.

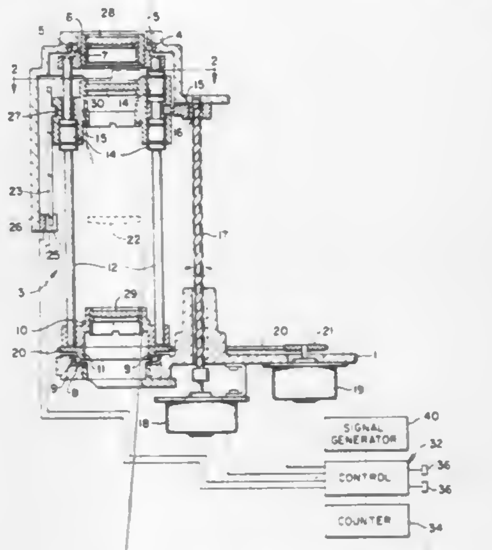
4,367,015
CONTROL MEANS FOR OPTICAL INSTRUMENTATION

Morey H. Waltuck, Worcester, Mass., and David L. Guyton, Baltimore, Md., assignors to Warner Lambert Technologies, Inc., Southbridge, Mass., a part interest

Filed Oct. 30, 1980, Ser. No. 202,267

Int. Cl.³ G02B *13/08, 15/00*

U.S. Cl. 350—429 **4 Claims**



1. In an optical instrument for automatically adjusting amount of axial change required in an astigmatic finding wherein said instrument has variable cylinder lens means for evaluation of astigmatic visual errors, first drive means for changing the effective power of said cylinder lens means, second drive means for changing the effective cylinder axis of said lens means and control means for selectively actuating said first and second drive means wherein the improvement comprises: counter means to generate a first signal of a level representative of adjustment of cylinder power of said variable cylinder lens and store said first signal; and actuating signal generator means for producing a signal to said second drive means for changing cylinder axis according to said stored signal.

4,367,016
FLAT FIELD LENS WITH IMAGE SPLITTING EFFECT

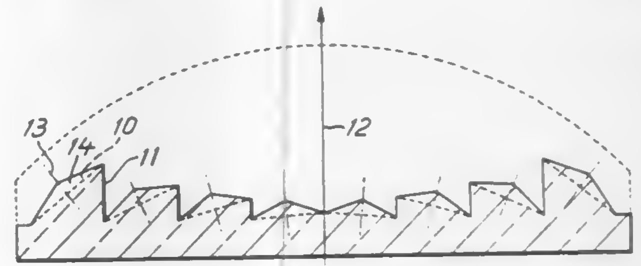
Joerg Willhelm, Wetzlar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,183

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 7911041[U]

Int. Cl.³ G02B *3/08;* G03B *13/02*

U.S. Cl. 350—452 **13 Claims**



1. A flat field lens having an image splitting effect, comprising:

a generally planar lens of substantially transparent material having an optical axis; and

a plurality of deformations of identical cross-sectional configuration formed on concentric paths about the optical axis transparent lens, each of said deformations having at least two light-refracting surfaces which are symmetrical to an axis of the deformation, wherein the axis of symmetry of each deformation lying on the same concentric path has the same inclination with respect to the optical axis and the inclination of the axes of symmetry of deformations located on radially adjacent concentric paths varies with respect to the optical axis.

4,367,017

LASER BEAM REFLECTION SYSTEM

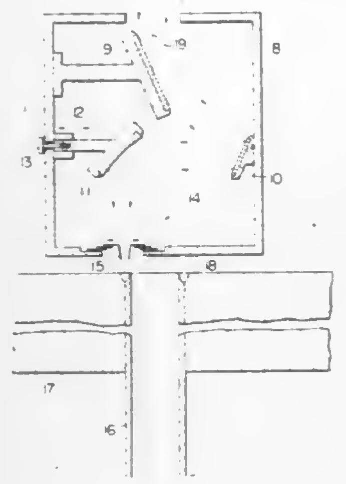
Ryutarou Jimbou, Hitachiota; Tomio Umino; Tomohiko Shida, both of Hitachi; Tomio Iizuka, Tokaimura, and Shoji Isobe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,202

Claims priority, application Japan, Sep. 28, 1979, 54-123808

Int. Cl.^{3} B23K *26/08;* **G02B** *5/10*

U.S. Cl. 350—486 **11 Claims**



1. A laser beam reflection system for applying a laser beam to an area to be treated, comprising

a hollow head housing having an axis of rotation;

first reflecting mirror means disposed in said head housing and adapted to reflect said laser beam introduced into said head housing so that said reflected laser beam forms an acute angle with respect to the axis of rotation of said head housing;

second reflecting mirror means disposed in said head housing and adapted to change the direction of said laser beam reflected by said first reflecting mirror means to such a direction as to traverse said axis; and

third reflecting mirror means disposed in said head housing and movable in the direction traversing said axis, said third reflecting mirror means being adapted to reflect said laser beam which is reflected from said second reflecting mirror means on said area to be treated.

4,367,018

EYEBALL MICROSCOPE

Kuniomi Abe, Kobe, Japan, assignor to Konan Camera Research Institute, Hyogo, Japan

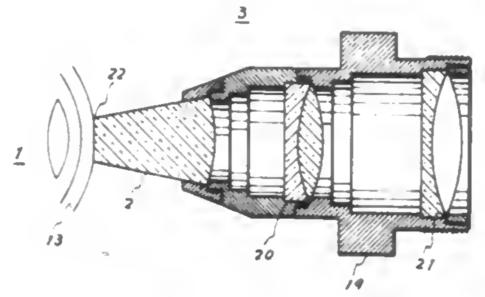
Filed Apr. 10, 1980, Ser. No. 139,142

Claims priority, application Japan, May 8, 1979, 54-56560; May 8, 1979, 54-61440[U]; Nov. 5, 1979, 54-143625; Nov. 5, 1979, 54-153887[U]; Nov. 5, 1979, 54-153888[U]; Dec. 20, 1979, 54-177512[U]

Int. Cl.^{3} A61B *3/14, 3/10*

U.S. Cl. 351—213 **9 Claims**

1. An eyeball microscope, comprising an objective structure having an optical tip member, the front surface of which faces an eyeball cornea, wherein said optical tip member is made of a transparent material having refractive index which is intermediate those of the objective structure and cornea.



4,367,019

IMAGE ROTATING MEANS FOR EYE REFRACTOMETERS

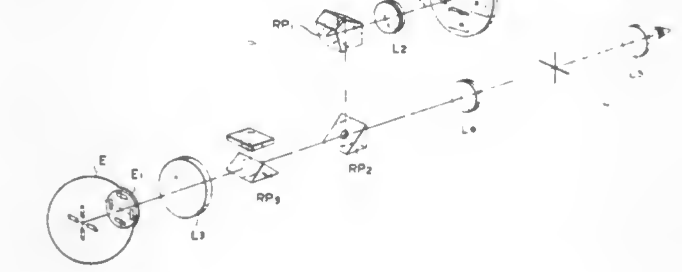
Ikuo Kitao, and Kiichi Kamiyama, both of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,720

Claims priority, application Japan, Apr. 27, 1979, 54-52241

Int. Cl.^{3} A61B *3/10*

U.S. Cl. 351—211 **3 Claims**



1. An eye refractometer comprising a target projecting optical system including a target and an optical axis for projecting the target to produce a target image on a patient's eye, an observing optical system for observing the target image on the patient's eye, and means for rotating the target image, said image rotating means comprising an image rotating device provided along the optical axis of the target projecting optical system, a first member engaged with said image rotating device for producing a rotation of the image, a second member engaged with said first member so that the first member can be actuated for rotation without producing a rotation of the second member but an actuation of the second member produces a rotation of the first and second members as a unit, and means for stopping relative rotation between the first and second members after a relative rotation corresponding to a rotation of the target image of substantially 90°.

4,367,020

PROJECTION DEVICE AND LOOP BOX THEREFOR

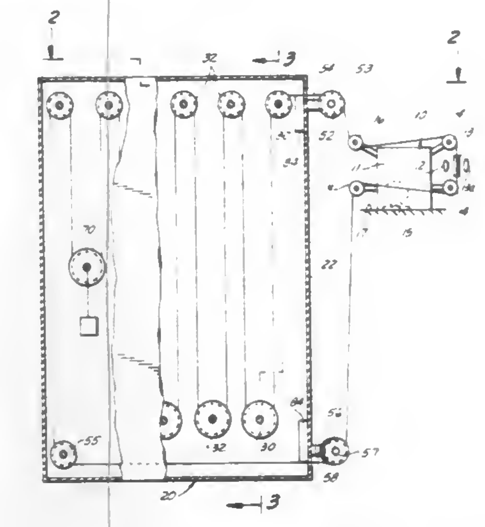
Jaren P. Vowles, Centerville, Utah, assignor to Corporation of the President of The Church of Jesus Christ of Latter-Day Saints, Salt Lake City, Utah

Filed Apr. 13, 1979, Ser. No. 29,649

Int. Cl.^{3} G03B *21/00;* **B65H** *75/02*

U.S. Cl. 353—120 **5 Claims**

1. A projection device comprising a film projector and a loop box for a continuous film; said projector comprising a film gate, a feed sprocket at each side of said film gate for feeding film through said film gate and means to drive said feed sprockets; said loop box comprising a plurality of upper and lower rotatably mounted shafts having rollers rotatably mounted thereon, said rollers adapted, with the feed sprockets of said projector, to hold a continuous strip of film, each said roller being rotatable on its shaft by movement of the film in contact with it, and means for driving said shafts in the direction in which the rollers move when said feed sprockets are driven to feed the film through said film gate.



4,367,021

METHOD AND APPARATUS IN TUNNELING

Bo G. Nordgren, Vikingavagen 57, Box 6020, S-183 06 Täby; Bo Akerlind, Ludgovägen 8, S-125 40 UM/ A/ lvsjö, and Klaus Biedermann, Föreningsvagen 4, S-182 74 Stocksund, all of Sweden

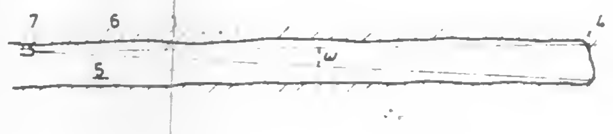
PCT No. PCT/SE79/00223, § 371 Date Jul. 3, 1980, § 102(e) Date Jun. 23, 1980, PCT Pub. No. WO80/01003, PCT Pub. Date May 15, 1980

PCT Filed Nov. 1, 1979, Ser. No. 201,485

Claims priority, application Sweden, Nov. 3, 1978, 7811422

Int. Cl.^{3} G01C *7/06;* **E21D** *9/14;* **F42D** *3/04*

U.S. Cl. 353—121 **10 Claims**



1. A method for marking out drill hole patterns on the surface of a rock in accordance with a predetermined pattern by projecting spots of drilling hole positions onto the rock face within the cross-section of a tunnel, comprising:

projecting from a light source a substantially unidirectional light beam constituting a fixed reference beam representative of the tunnel direction;

deflecting a part of said beam;

directing said part of said beam through beam deviation means toward the face of the tunnel within an angle at least corresponding to a space angle within which the cross-section of said tunnel appears from said light source;

causing said part of said beam to pass towards the surface of said cross-section of said tunnel solely within portions of the space angle scanned by said beam deviation means corresponding to coordinates of drill spots on said surface in accordance with said predetermined pattern.

4,367,022

EXPOSURE CONTROL CIRCUIT FOR CAMERA OF TTL REFLECTIVE PHOTOMETRY TYPE

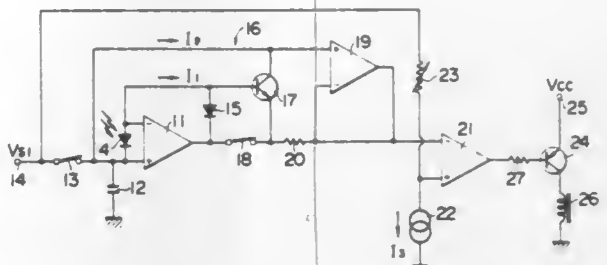
Masafumi Yamasaki, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,512

Claims priority, application Japan, Mar. 24, 1981, 56-43052

Int. Cl.^{3} G03B *7/083*

U.S. Cl. 354—24 **8 Claims**



6. An exposure control circuit for a camera of the TTL reflective photometry type comprising:

a capacitor;

amplifier means including a photoelectric transducer element for photometry being coupled to said capacitor for leading current away from said capacitor along a first current path in accordance with the incidence of light from an object being photographed falling upon said transducer element, whereupon a first current is led away from said capacitor in accordance with the magnitude of the light incident on said transducer element;

a second current path including switch means responsive to said first current for leading away a second current from said capacitor;

means for comparing the voltage across said capacitor against a reference level for generating an exposure termination signal when the voltage across said capacitor drops below said reference level;

means responsive to running of the opening shutter blind for deactivating said switch means at a predetermined time to terminate the flow of current in said second current path whereby the total current led away from the capacitor is increased during at least an initial portion of the running of the first shutter blind.

4,367,023

CAMERA FLASH LIGHT CONTROL CIRCUITRY

Tokuji Ishida, Daito, and Hiroshi Hosomizu, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 24, 1981, Ser. No. 257,238

Claims priority, application Japan, Apr. 25, 1980, 55-55740; Apr. 25, 1980, 55-55741

Int. Cl.^{3} G03B *7/16*

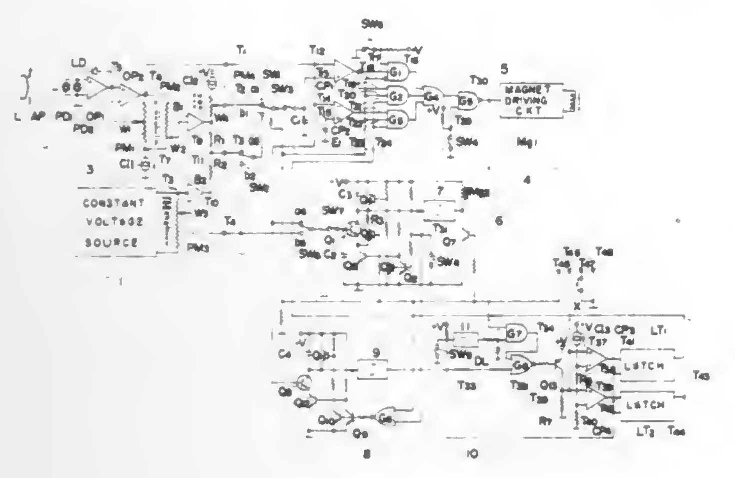
U.S. Cl. 354—33 **6 Claims**

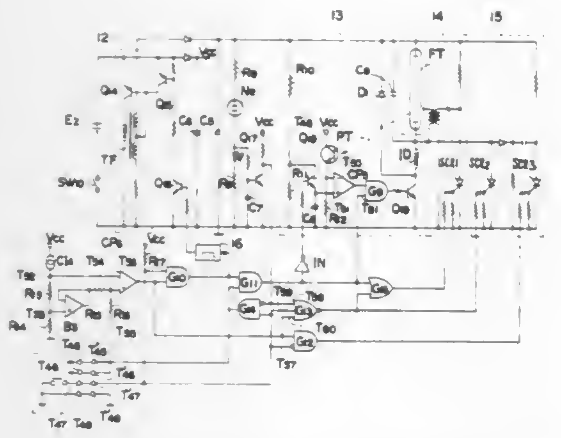
1. In a camera capable of being combined with a dedicated flash device for producing preliminary flash light of a relatively long duration at a substantially constant intensity prior to the production of primary flash light to be used in actual photographing, wherein said preliminary and primary flash light are produced from power derived from a common capacitor, said camera comprising:

a diaphragm aperture changeable from an initial aperture size to another aperture size during the duration of said preliminary flash light;

first means for receiving light through said diaphragm aperture during the duration of said preliminary flash light to generate a first signal response to the intensity of the received light;

means for interrupting the change in the aperture size of the diaphragm aperture in response to said first signal to determine the aperture size; and means for transmitting a second signal to said flash device in response to the determination of the aperture size for

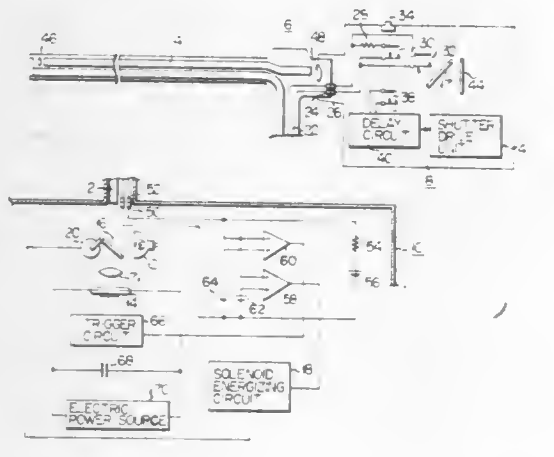




terminating the duration of said preliminary flash light to reserve the power of said common capacitor for generation of primary flash light.

4,367,024
PHOTOGRAPHING SYSTEM FOR ENDOSCOPE

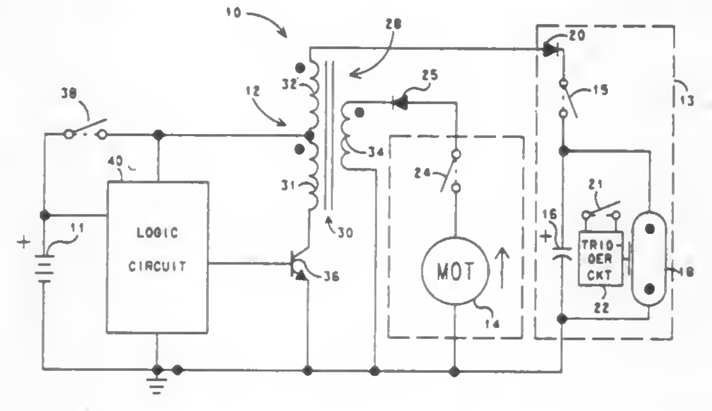
Syuichi Takayama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 3, 1980, Ser. No. 193,648
Claims priority, application Japan, Oct. 13, 1979, 54/132000
The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.
Int. Cl.³ G03B *29/00*
U.S. Cl. 354—62 **5 Claims**



1. A photographing system for an endoscope comprising:
an endoscope including a light guide for transmitting light to a region of interest for photographing or observation, and an image guide for transmitting an image of said region of interest;
a light source unit including a first light source for producing photographing light which is supplied to said light guide through a first optical path, a second light source for producing observation light which is supplied to said light guide through a second optical path, an optical path switching means for selectively switching the second optical path to the first optical path, energizing means for energizing said first photographing light source, and operating means for operating said optical path switching means; and
a camera unit having film therein, and including a shutter means for opening an optical path from said image guide to said film, a shutter drive means for driving said shutter means, a shutter release button for producing an instruction signal for starting a photographing cycle, means coupled to receive said instruction signal for producing an optical path switching signal for energizing said operating means of said light source unit in synchronism with said instruction signal, delay means coupled to receive said instruction signal for producing a shutter release signal for starting said shutter drive means a predetermined delay time period after receiving said instruction signal, said delay time period being at least as long as the time required to switch said second optical path to said first optical path, said shutter drive means being coupled to said delay means to receive said shutter release signal from said delay means and for driving said shutter means responsive to said shutter release signal, and means coupled to said shutter means and to said energizing means of said light source unit for producing a photographing light emission signal for starting said energizing means in synchronism with the release of said shutter means to cause said first light source to produce light, whereby observation light is prevented from reaching the film in said camera unit.

4,367,025
BATTERY-POWER DISTRIBUTION APPARATUS

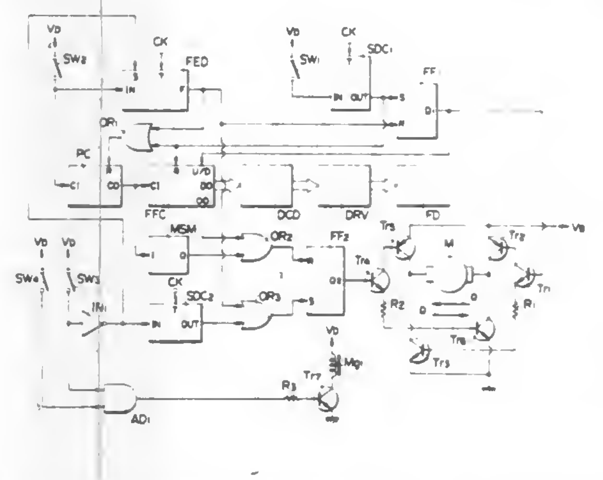
Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 7, 1981, Ser. No. 290,997
Int. Cl.³ G03B *1/00, 15/05*
U.S. Cl. 354—145 **4 Claims**



3. Apparatus in a camera for controlling the transfer of power from a battery to first and second loads, said apparatus comprising:
a transformer having a step-up winding, a secondary winding and a primary winding, said primary winding being connected in series with the battery;
switching means connected in series with the battery and said primary winding;
means for rendering said switching means conductive and non-conductive to produce respectively alternately positive and negative voltages across each of said windings;
first circuit means for connecting the first load in series with said step-up winding for transferring power from said step-up winding to the first load, said first circuit means including first rectifier means which is reverse biased to interrupt the transfer of power to the first load when said switching means is rendered non-conductive; and
second circuit means for connecting the second load in series with said secondary winding for transferring power from said secondary winding to the second load, said second circuit means including second rectifier means which is reverse biased to interrupt the transfer of power to the second load when said switching means is rendered conductive.

4,367,026
AUTOMATIC CAMERA

Katumi Terada, Hachioji, and Yukio Nakajima, Kanagawa, both of Japan, assignors to Olympus Optical Company Ltd., Japan
Filed Aug. 14, 1981, Ser. No. 292,998
Claims priority, application Japan, Oct. 13, 1980, 55-143281
Int. Cl.³ G03B *1/12, 1/66*
U.S. Cl. 354—173 **20 Claims**

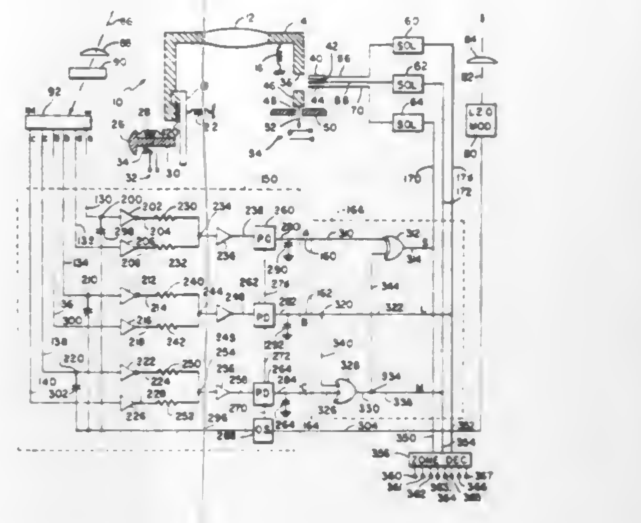


1. An automatic camera comprising
a rear lid interlock switch adapted to be turned on and off in response to the opening and closing of a rear lid of a camera;
a film winding motor responsive to a rear lid close signal from the rear lid interlock switch for causing a film loaded into the camera to be wound up once until its terminal end is reached;
perforation detecting means for producing a film passage signal in response to the passage of perforations in the loaded film as the film is wound by the winding motor;
a counter responsive to said film passage signal for counting the number of perforations as the film is wound; and
a frame number memory for storing a number corresponding to the number of frames of the loaded film, the number of frames being calculated in response to the number of perforations counted by the counter.

4,367,027
ACTIVE AUTO FOCUS SYSTEM IMPROVEMENT

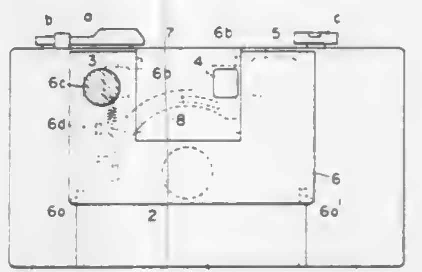
Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 129,529, Mar. 12, 1980, Pat. No. 4,317,991. This application Sep. 28, 1981, Ser. No. 305,878
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—195 **3 Claims**

1. Apparatus for positioning the taking lens means of a camera comprising:
housing means carrying the lens means and movable along a first path;
a first member positioned a predetermined space from the housing means in the first path, the housing means moving in the first path, contacting the first member and being restrained from further movement in a first position after the housing means has contacted the first member; and
spacing means operable to move into and out of the predetermined space and operable when in the predetermined space to cause the housing means in its movement in the path to contact the spacing means, said housing means and said spacing means thereafter moving together in the first path, contacting the first member and being restrained from further movement with the housing means in a position other than the first position after the housing means together with the spacing means has contacted the first member.



4,367,028
CAMERA WITH PROTECTIVE COVER

Masakazu Tomatsuri, Naka; Hiroshi Wakabayashi, Yokohama, and Takeshi Okuyama, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed May 19, 1981, Ser. No. 265,212
Claims priority, application Japan, Jun. 7, 1980, 55-76069
Int. Cl.³ G03B *17/02, 13/02*
U.S. Cl. 354—288 **5 Claims**

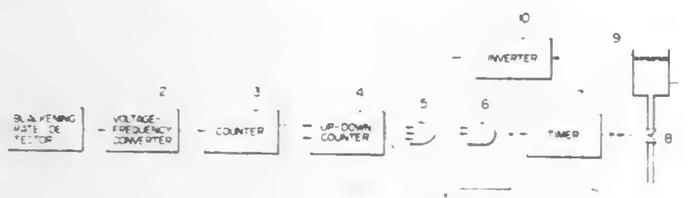


1. In a camera having a camera housing, an objective optical system disposed on a front face of said camera housing, and a protective cover slidable along the front face of said housing between a position covering said optical system and a position exposing said optical system, the improvement wherein:
said front face of said camera housing has gripping portions on opposite sides of said objective optical system, respectively, the gripping portions being capable of being held by a user during photography;
said protective cover is located between said gripping portions and is slidable vertically between said positions;
the objective optical system includes a lens and left- and right-hand objective windows on opposite sides of the lens and wherein said cover has portions for covering and exposing said lens and said windows simultaneously by movement between said positions; and
said lens is disposed substantially centrally of said front face, and said objective windows are disposed above said lens adjacent an upper edge of said camera housing, said portions of said protective cover comprising a base portion for covering said lens and a pair of upright portions for covering the respective objective windows, with a cutout between said pair of upright portions, said protective cover being brought from said covering position to said exposing position by downward sliding of the cover, whereby said lens becomes

exposed in said cutout portion of the cover and said pair of objective windows become exposed above said upright portions.

4,367,029
METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING AN ACTIVITY OF A DEVELOPING LIQUID FOR USE IN A DEVELOPER

Masaji Mizuta, Uji, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan
Filed Nov. 27, 1981, Ser. No. 325,388
Claims priority, application Japan, Dec. 16, 1980, 55-176611
Int. Cl.³ G03D ***3/02, 13/00***
U.S. Cl. 354—298 **4 Claims**

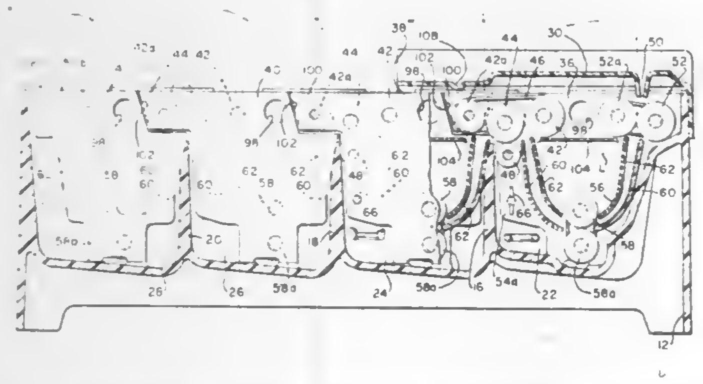


1. A method for automatically controlling an activity of a developing liquid, for use in a developer, comprising the steps of:

(a) detecting a blackening area rate of a film developed by a blackening area rate detector to obtain an analog signal;
(b) converting the analog signal into a digital signal by a voltage-frequency converter;
(c) frequency-dividing the digital signal by a dividing counter to obtain a supplement signal;
(d) counting up an up-down counter by the supplement signal to output a high level signal from the up-down counter counted up;
(e) sending the high level signal to a timer via a gate to actuate the timer; and
(f) actuating a valve by an output signal of the timer so as to supply a supplemental developing liquid to a developing tank, wherein the gate is closed by using the output signal of the timer during the actuation of the timer, and wherein the up-down counter is counted down by the high level signal through the gate.

4,367,030
PHOTOGRAPHIC DEVELOPER-PRINTER ASSEMBLY, AND A CONVEYING ROLLER UNIT THEREFOR

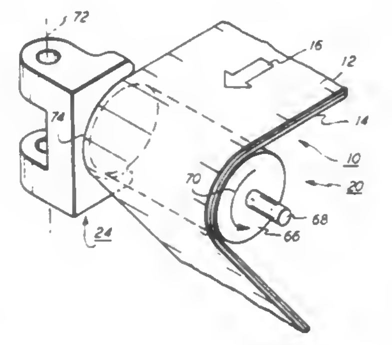
Gary E. Raymond, 755 Rainbow Dr., Hollywood, Fla. 33021
Continuation of Ser. No. 82,652, Oct. 9, 1979, Pat. No. 4,291,969. This application Jul. 1, 1981, Ser. No. 279,524
Int. Cl.³ G03D ***3/08***
U.S. Cl. 354—322 **7 Claims**



1. A photographic developer-printer assembly, comprising:
first means defining a reservoir;
partitions subdividing said reservoir into a plurality of tanks;
conveying roller assemblies replaceably disposed in said reservoir;
second means coupled to said first means, and engaged with said roller assemblies, for rotatably driving said roller assemblies; and
guide means disposed adjacent to said roller assemblies, for directing photographic papers, which are to be developed and printed, to said roller assemblies successively; wherein
roller assemblies of a plurality thereof each comprises a pair of spaced apart rollers, an intermediate roller interposed between said pair of rollers, and band means replaceably looped about said pair of rollers and atop said intermediate roller; and
said band means comprises a multitude of substantially parallel strands, closely spaced apart, lying normal to said rollers' axes of rotation, for constraining photographic papers which are directed to, and conveyed between, said roller assemblies, firmly to said intermediate rollers; and further including
means mounted adjacent to each of said intermediate rollers, of said plurality of roller assemblies, for cleansing the intermediate rollers of any substances borne on the surface thereof;
said cleansing means having means defining a wiping surface which makes an axially-extended, substantially line contact with the intermediate roller adjacent thereto;
said reservoir having a prescribed fluids level line therefor;
said cleansing means have substantial portions thereof below said fluids level line;
said guide means define a pathway for photographic papers to follow; and
said cleansing means is spaced apart from said pathway, insuring non-contact of said cleansing means with photographic papers conveyed through said assembly.

4,367,031
EDGE GUIDE FOR BELT TRACKING

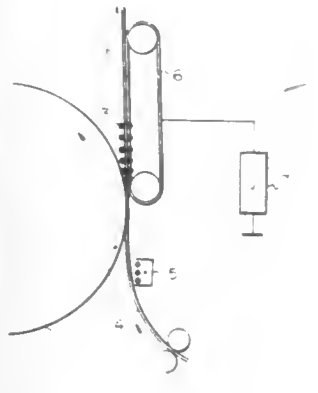
Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 11, 1980, Ser. No. 168,938
Int. Cl.³ G03G ***15/00;*** **B65G** ***39/16***
U.S. Cl. 355—3 BE **5 Claims**



1. An electrophotographic printing machine of the type having a photoconductive belt arranged to move in a predetermined path through a plurality of processing stations disposed therealong, wherein the improvement includes:
means for supporting the photoconductive belt so as to form an arcuate region therein;
means for engaging the side edge of the photoconductive belt in the arcuate region, said engaging means applying a force on the side edge of the belt sufficient to prevent lateral movement thereof and maintain the belt in the predetermined path; and
means for pivotably holding said engaging means so that the side edge of the photoconductive belt pivots said engaging means relative to and independent of said supporting means so as to be in contact with substantially the entire side edge of the belt in the arcuate region thereof.

4,367,032
ELECTROSTATIC COPYING APPARATUS

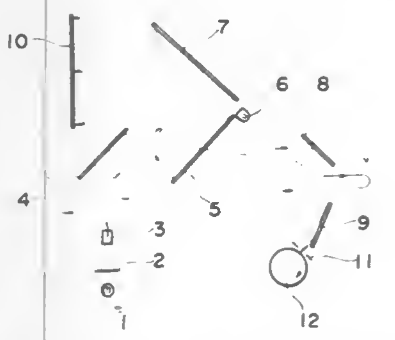
Koji Sakamoto; Koji Hirakura; Yoshihiro Ogata, and Harumi Takahashi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Feb. 9, 1981, Ser. No. 232,488
Claims priority, application Japan, Mar. 27, 1980, 55-39358; Apr. 24, 1980, 55-54696
Int. Cl.³ G03G ***15/18***
U.S. Cl. 355—3 TR **5 Claims**



1. An electrostatic copying apparatus including a moving photoconductive member, imaging means for forming a toner image on the photoconductive member and transfer means for moving a copy sheet into contact with the photoconductive member and applying an electrostatic charge of a polarity to the copy sheet to transfer the toner image thereto, characterized by comprising:
a conductive member disposed so that the copy sheet engages therewith after the toner image is transferred to the copy sheet and the copy sheet is electrostatically separated from the photoconductive member by the conductive member; and
power source means for applying a voltage of said polarity to the conductive member substantially as a leading edge of the copy sheet engages with the conductive member;
the power source means comprising a power source for providing said voltage, switch means for connecting the conductive member to the power source or ground and time constant means for controlling a rate of increase of said voltage applied to the conductive member;
the conductive member comprising an endless belt.

4,367,033
COMBINED READER-PRINTER

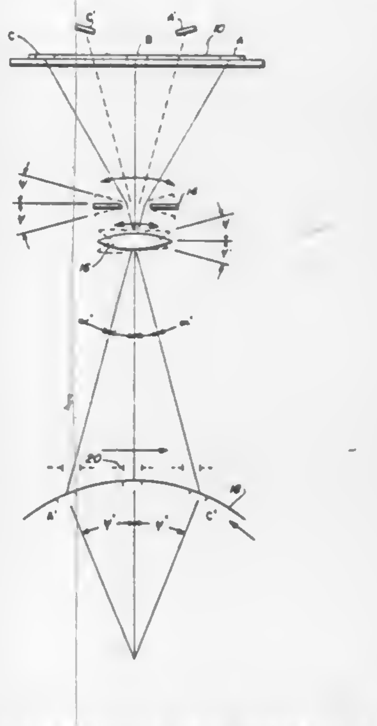
Yutaka Watanabe, Tokyo, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jun. 5, 1981, Ser. No. 270,830
Claims priority, application Japan, Jun. 30, 1980, 55-91865[U]
Int. Cl.³ G03G ***15/00***
U.S. Cl. 355—5 **5 Claims**



1. A combined reader-printer apparatus operable in two different, reader and printer modes one at a time for projecting an optical image of an original onto a viewing screen and reproducing the optical image of the original on a photosensitive medium, which comprises, in combination:
an image forming means for forming the optical image of the original irrespective of the mode in which the apparatus is set to operate;
first and second reflectors;
a carriage carrying the first and second reflectors in spaced relation to each other, said first and second reflectors being so arranged and so supported thereby that, when the apparatus is set to operate in the printer mode, the optical image can be guided from the image forming means onto the photosensitive medium after having been reflected by the first reflector and then by the second reflector;
a guide means for supporting the carriage for scanning movement between start and scanned positions in a direction parallel to an imaginary line drawn between the first and second reflectors;
means for holding the carriage at a normal position when and so long as the apparatus is set to operate in the reader mode;
a pivotable reflector supported for pivotal movement between first and second positions, said pivotable reflector when in the first position intercepting an optical path between the first and second reflectors for guiding the optical image, which has been reflected by the first reflector, towards the viewing screen, said pivotable reflector when in the second position being clear from the optical path between the first and second reflectors and also from the path of movement of the carriage, said pivotable reflector being set in the first and second positions respectively when the apparatus is in the reader and printer modes; and
means operable when the apparatus is in the printer mode for driving the carriage reciprocately between the start and scanned positions.

4,367,034
SCANNING SYSTEM FOR COPIER

David K. Shogren, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 1, 1981, Ser. No. 269,522
Int. Cl.³ G03G ***15/28***
U.S. Cl. 355—8 **4 Claims**



1. A scanning system for projecting light images of a stationary object along an optical path onto a curvilinear photosensitive surface comprising:
an object plane for supporting an object to be copied;
a projection lens having a rotational and translational motion;
a pivoting mirror for scanning said object and reflecting said light image towards said projection lens;
an aperture slit located adjacent the curvilinear surface, the

aperture slit moving in a direction opposite the direction of movement of the curvilinear surface;

means for maintaining constant conjugate during scan; and

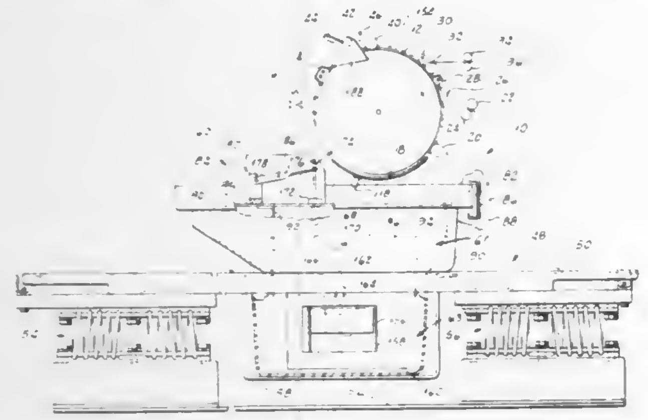
means for synchronizing the motions of said lens, mirror and aperture slit so as to maintain parallel object lens and image planes during the entire scan cycle;

whereby said lens rotates simultaneously with said reflector and slit motion to continually maintain said projected image at the photosensitive surface at the same angle of incidence as the angle of the principal scanning ray at the object plane.

4,367,035
LIQUID DEVELOPER ELECTROSTATIC COPIER FOR SHIPBOARD USE

Tatsu Hori, Los Altos, Calif., assignor to Savin Corporation, Valhalla, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,146
Int. Cl.³ G03G *15/10*
U.S. Cl. 355—10 9 Claims



4. In a liquid developer electrostatic copier for shipboard use, apparatus including a drum having an axis of rotation and adapted to receive a latent electrostatic image to be developed, a developer applicator for applying developer to said drum over an area thereof, said applicator forming a narrow elongated trough having a bottom and a mouth opening toward said drum, the length of said trough extending in the direction of said drum axis, means for supplying developer liquid to the bottom of said trough, and a plurality of filler elements disposed in said trough at spaced locations along the length thereof for controlling the flow of developer liquid therein to facilitate copying when said machine tilts around an axis perpendicular to the drum axis.

4,367,036
TEMPERATURE AND HUMIDITY COMPENSATING DEVICE IN AN IMAGE FORMING APPARATUS

Hisashi Sakamaki, Yokohama; Yoshimasa Kimura, Kawasaki; Toshio Honma, Tokyo, and Ikuo Souma, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 865,690, Dec. 29, 1977, abandoned, which is a continuation of Ser. No. 655,245, Feb. 4, 1976, abandoned. This application Nov. 13, 1979, Ser. No. 93,854
Claims priority, application Japan, Feb. 8, 1975, 50-16611
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R 19 Claims

1. An electrographic apparatus having a device for controlling the temperature of a photosensitive surface therein, comprising:

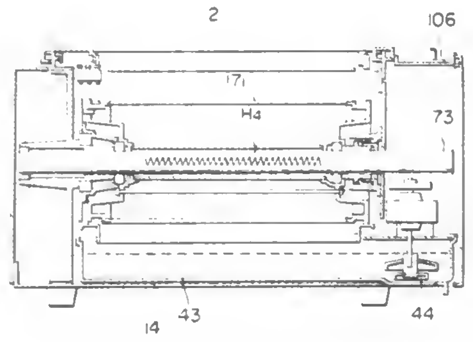
a photosensitive medium having a photoconductive layer;

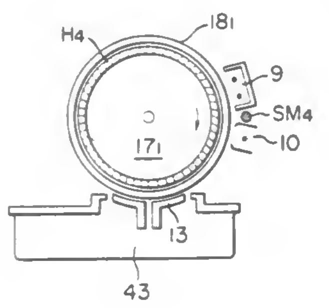
means for forming an electrostatic latent image on a surface of said photosensitive medium;

a heat source disposed near said photosensitive medium so as to heat the latter;

temperature detector means disposed remotely from said heat source for detecting the temperature of said photosensitive medium; and

control means for controlling the heating of said heat source so that the temperature on the surface of said photosensitive medium detected by said detector means is not lower than the ambient temperature thereof wherein the temperature of said photosensitive medium is controlled to prevent moisture absorption thereby permitting normal image formation to occur, wherein said control means includes first power supply means for supplying a predetermined power to said heat source when the temperature detected by said detector means is below a predetermined level, and second power supply means for supplying to said heat source a power less than said predetermined power when said detected temperature reaches the predetermined level.

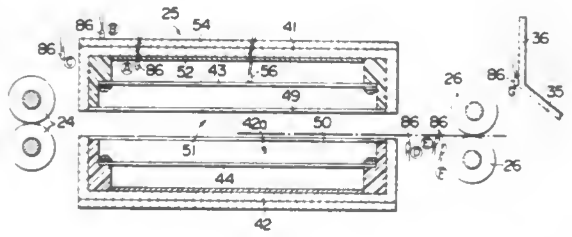




4,367,037
TEMPERATURE CONTROLLER FOR PHOTOGRAPHIC HEAT FIXING UNIT

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 250,067
Claims priority, application Japan, Apr. 25, 1980, 55-55091
Int. Cl.³ G03G *15/00;* H05B *1/02*
U.S. Cl. 355—14 FU 16 Claims



1. A temperature controller for a photographic heat fixing unit, comprising:

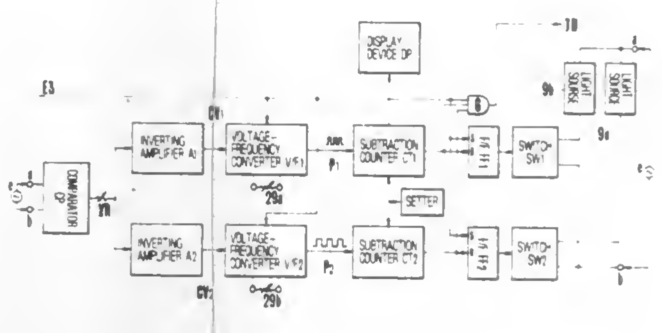
temperature control means for controlling the temperature of a heater or heaters in the heat fixing unit, the temperature control means including a main temperature sensor for detecting the temperature of a heater or heaters in the fixing unit, and an auxiliary temperature sensor for detecting the temperature of a marginal member spaced from the heater or of a record sheet; and

said auxiliary sensor being disposed at a small distance from a path along which a record sheet runs after it has left the heat fixing unit.

4,367,038
EXPOSURE CONTROL SYSTEMS FOR USE IN COPYING MACHINE

Satoshi Hisabayoshi, Hachioji; Masahiro Kogiso, Fussa; Yousuke Igarashi, Tachikawa, and Yoshio Horiguchi, Hachioji, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,540
Int. Cl.³ G03G *15/00;* G03B *27/54, 27/52*
U.S. Cl. 355—70 11 Claims



4. An exposure control system for a copying machine comprising:

a pair of light sources adapted to illuminate a manuscript mounted about the periphery of a manuscript support;

first and second pulse generator means each having a time constant circuit connecting terminal and a terminal for reception of a control voltage to generate a pulse train of a frequency which is determined by the time constant circuit and the control voltage, said first and second pulse generator means being connected to first and second CR circuits through the time constant circuit connecting terminals, respectively, and said first and second CR circuits having each a variable resistor which is varied in accordance with the magnifying power;

first and second voltage variation detecting means connected to receive source voltage acting as drive for the light sources for illumination of the manuscript, and comparing the source voltage with a reference voltage to detect a variation in said source voltage relative to the reference voltage and supplying the detected variation to the control voltage terminal of said first and second generator means; and first and second drive means associated with the respective paired light sources and including first and second counters respectively associated with said first and second pulse generator means to receive said pulse train so as to count a number of pulses corresponding to a preset exposure index, for lighting said light sources for illumination of the manuscript only during an interval for counting the number of pulses corresponding to the preset exposure index following reception of said pulse train.

4,367,039
WET MODULAR FILM PRINTER

Walter Hrastnik, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 170,478, Jul. 21, 1980, abandoned. This application Mar. 11, 1982, Ser. No. 356,966
Int. Cl.³ G03B *27/20*
U.S. Cl. 355—91 13 Claims

1. A modular wet film printer wherein the components specific to wet printing are removable to permit dry printing components to replace them when desired, said printer comprising:

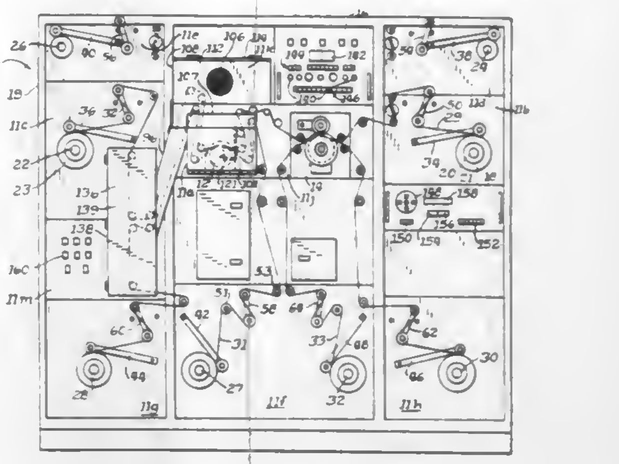
a frame for receiving a plurality of removable modules;

a wet printing module removably located in said frame including a wet picture printing head;

an enclosure means for containing a printing head submerging bath and for retaining the fumes produced by the bath, said enclosure means including a liquid inlet situated away from said printing head located near the bottom of said enclosure means and a liquid outlet located near the printing head near the top of the liquid bath, said inlet spaced from said wet printing head in the direction in which the film is forwarded;

replaceable module means for removing the immersion liquid from the raw stock and master at high film transport speeds including a series of wipers positioned above the level of said immersion liquid, an air stripper positioned after said wipers along the path of movement of said raw stock and master and a dual drying tower having separate drying columns for the raw stock and master, each of said drying columns having air directing means for exposing said films to progressively hotter air as the films proceed through each column; and

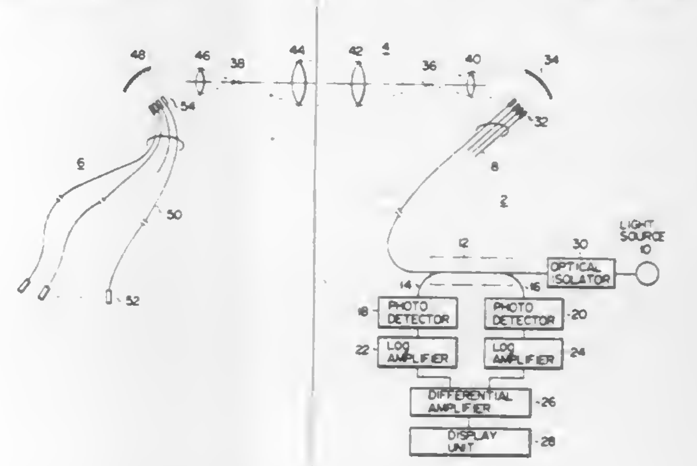
means for forwarding and taking up a film raw stock and a film master.



4,367,040
MULTI-CHANNEL OPTICAL SENSING SYSTEM

Kenya Goto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 22, 1980, Ser. No. 152,163
Claims priority, application Japan, May 29, 1979, 54/66390; Jul. 25, 1979, 54/94700
Int. Cl.³ G01J *5/48*
U.S. Cl. 356—44 8 Claims



1. An optical sensing system comprising:

means for producing unmodulated light beams having different wavelengths;

a plurality of sensors provided at measuring points respectively, the sensors modulating the intensities of said unmodulated light beams in response to physical quantities at the measuring points respectively;

first multiplexing and demultiplexing means for spectroscopically multiplexing the unmodulated light beams having different wavelengths into unmodulated light and spectroscopically demultiplexing modulated light into modulated light beams having different wavelengths;

second multiplexing and demultiplexing means for spectro-

scopically multiplexing the modulated light beams into modulated light and spectroscopically demultiplexing unmodulated light into the unmodulated light beams;
means for comparing the modulated light beams with the unmodulated light beams generated from said producing means to detect the physical quantities of the measuring points respectively;
a plurality of first optical waveguides which are optically coupled between said first multiplexing and demultiplexing means and said comparing means, through which said modulated and unmodulated light beams are transferred between said first multiplexing and demultiplexing means and said comparing means;
means for transferring the modulated light and the unmodulated light through space between said first multiplexing and demultiplexing means and said second multiplexing and demultiplexing means; and
a plurality of second optical waveguides which are optically coupled between said second multiplexing and demultiplexing means and said plurality of sensors, through which the modulated and unmodulated light beams are transferred between said second multiplexing and demultiplexing means and sensors.

4,367,041

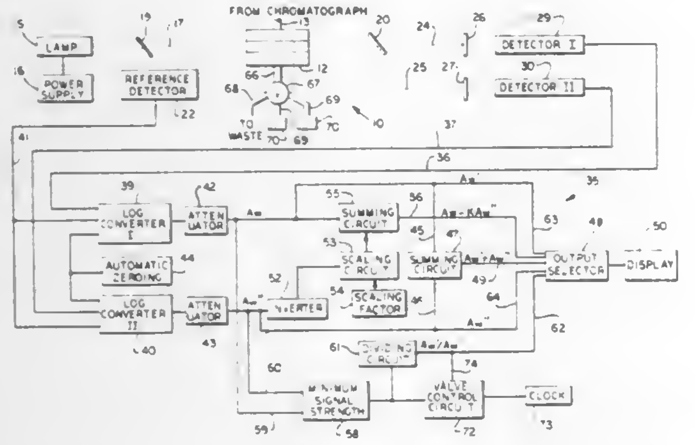
CHROMATOGRAPH DETECTION SYSTEM

Paul A. Webb, Jr., Lawrenceville; Alan H. Small, Atlanta, and Dean M. Ball, Norcross, all of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Filed Aug. 25, 1980, Ser. No. 180,867

Int. Cl.³ G01N *21/85*

U.S. Cl. 356—72 7 Claims



1. In a liquid chromatograph, a detection system comprising:
a flow cell for receiving a continuous flow of eluent including a plurality of components separated according to retention time by said chromatograph;
means for passing a beam of light through said flow cell;
means subsequent to said flow cell for splitting said beam of light into two beams of selected differing wavelengths;
detector means for detecting each of said beams;
means responsive to each of said detector means for converting said beams into a first electrical signal proportional to the absorbance of one of said beams by the component passing through said flow cell at said selected wavelength of said one of said beams, and a second electrical signal proportional to the absorbance of said component at said selected wavelength of said other of said beams;
ratio means for continuously determining the ratio of said first and second signals and providing a ratio signal;
and means for simultaneously displaying said first signal, said second signal and said ratio signal.

4,367,042

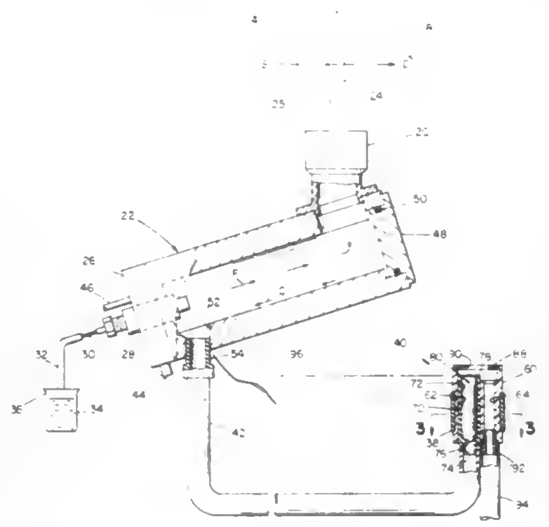
SPECTROANALYTICAL SYSTEM

Stanley B. Smith, Jr., Westford, and Carl Shapiro, West Roxbury, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Dec. 12, 1980, Ser. No. 215,674

Int. Cl.³ G01N *21/72*

U.S. Cl. 356—315 10 Claims



1. In a spectroanalytical instrument comprising means defining an optical axis, a burner disposed below said optical axis for producing a flame to energize a sample to be analyzed so that said flame passes through said optical axis,
a premix chamber connected to said burner structure, and means for furnishing sample in fog form to said premix chamber so that said sample may be aspirated for flow through said premix chamber to said burner structure,
a pressure control system for maintaining pressure in said premix chamber so that sample fog flow velocity is in excess of the flame propagation velocity while allowing discharge of condensate from said premix chamber comprising flow path structure extending from a port in said premix chamber to a drain port to provide a condensate discharge path, trap structure in series in said condensate discharge path,
flow path closure apparatus having a first condition in which said discharge path is closed blocking liquid flow to said drain port and a second condition in which said discharge path is open to liquid flow, and control means responsive to liquid in said trap structure for switching said closure apparatus between said first and second conditions.

4,367,043

METHOD AND MEANS FOR DELIVERING LIQUID SAMPLES TO A SAMPLE SCANNING DEVICE

Richard G. Sweet, Palo Alto; Wayne A. Moore, San Francisco; Tom Nozaki, Jr., and Richard T. Stovel, both of Palo Alto, all of Calif., assignors to Leland Stanford Junior University, Palo Alto, Calif.

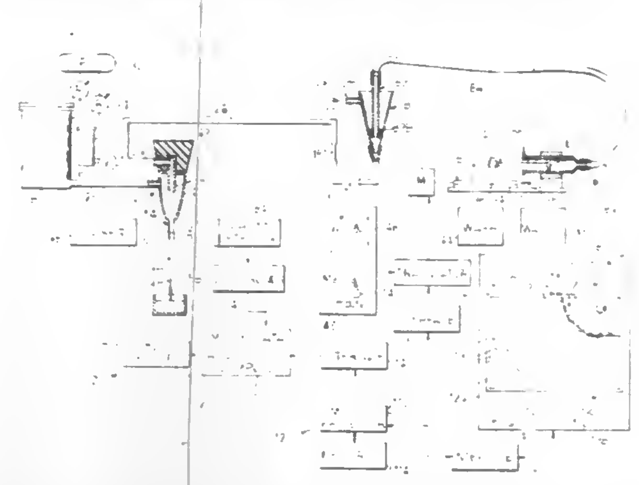
Filed May 5, 1980, Ser. No. 146,219

Int. Cl.³ G01N *21/11, 21/00, 15/02*

U.S. Cl. 356—338 38 Claims

1. A multiple sample delivery system for use in sequentially feeding liquid samples from a plurality of sample sources to sample scanning, analyzing, and like means of the type which produces signals related to contents of the liquid samples, said system comprising
sample source identification signal means for identifying individual sample sources from which liquid samples for delivery to sample scanning means are obtained,
visual display means responsive to said sample source identification signal means for visually indicating to the operator the sample source from which the next liquid sample for delivery to the sample scanning means is to be obtained,

means under operator control for obtaining liquid samples from the visually-indicated sample source, and



means for feeding the liquid sample obtained from said visually identified sample source to said scanning means for producing signals related to contents or the liquid sample.

4,367,044

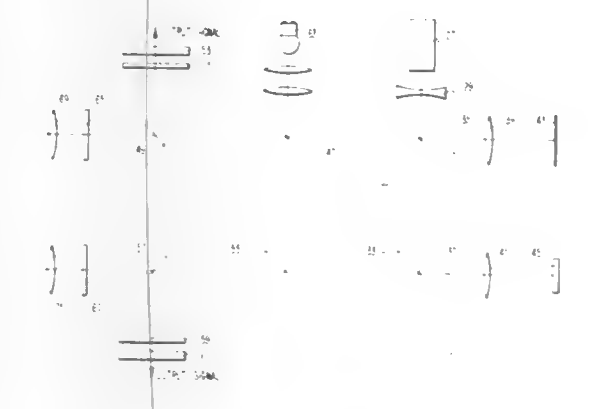
SITU RATE AND DEPTH MONITOR FOR SILICON ETCHING

Robert M. Booth, Jr., Wappingers Falls, and Chester A. Wasik, Poughkeepsie, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,868

Int. Cl.³ G01B *21/08, 17/02*

U.S. Cl. 356—357 22 Claims



1. A process for monitoring changes in thickness of a layer of product material in an environment arranged to produce such changes, comprising the steps of;
selecting a reference material which exhibits thickness changing characteristics in said environment correlatable to those of the product material in said environment;
depositing said reference material on a substrate therefor to form a monitor device that exhibits an optical discontinuity between said reference material and substrate;
positioning said monitor device in the said environment with said product material so that said reference material and product material undergo changes in thickness; and
directing light to said monitor device so as to obtain reflected light therefrom to monitor the thickness of said reference material, whereby changes in thickness of said reference material may be correlated to changes in thickness of said product material.

4,367,045

METHOD AND APPARATUS FOR CHECKING THE WIDTH AND PARALLELISM OF MARGINS FOLLOWING CENTERING OF A PRINT WITH RESPECT TO A SUPPORT

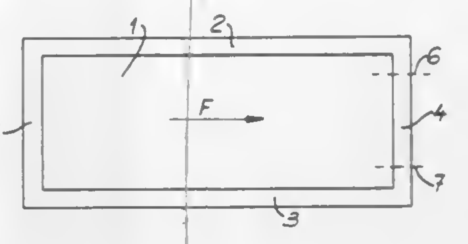
Claude-Arnold Grosvernier, Hauterive, Switzerland, assignor to Compagnie Industrielle Radioelectrique, Switzerland

Continuation of Ser. No. 957,412, Nov. 3, 1978, abandoned. This application Jan. 14, 1981, Ser. No. 224,911

Claims priority, application Switzerland, Nov. 4, 1977, 13417/77

Int. Cl.³ G01B *11/00; 11/14*

U.S. Cl. 356—394 7 Claims



1. In a method of checking the width and parallelism of transverse margins following the centering of a print with respect to a support, the combination of steps of moving said support in a direction perpendicular to said transverse margins in front of two opto-electronic devices which are disposed respectively at two locations spaced laterally from one another in a direction perpendicular to the direction of said movement, deriving two concurrent counting periods for each transverse margin from said two opto-electronic devices respectively the duration of said periods corresponding to the width of the transverse margins at said two laterally spaced locations corresponding to said lateral spacing of said two opto-electronic devices, producing clock pulses depending on said movement of the support by means of an opto-electronic detector, counting said clock pulses appearing during each of said counting periods, comparing the resultant counts with maximum and minimum reference values to check the width of the margins at said two laterally spaced locations, counting the clock pulses appearing during one of said counting periods at one of said locations only when said two counting periods at said two locations respectively do not coincide with regard to time, subtracting, from the last mentioned count of clock pulses, the clock pulses appearing during the other of said counting periods at the other of said locations only when said two counting periods do not coincide with regard to time, and comparing the result of this counting/subtracting with a reference value representing the tolerance limit of non-parallelism.

4,367,046

OPTICAL SYSTEM FOR ALIGNING TWO PATTERNS AND A PHOTOREPEATER EMBODYING SUCH A SYSTEM

Michel Lacombat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 3, 1980, Ser. No. 212,618

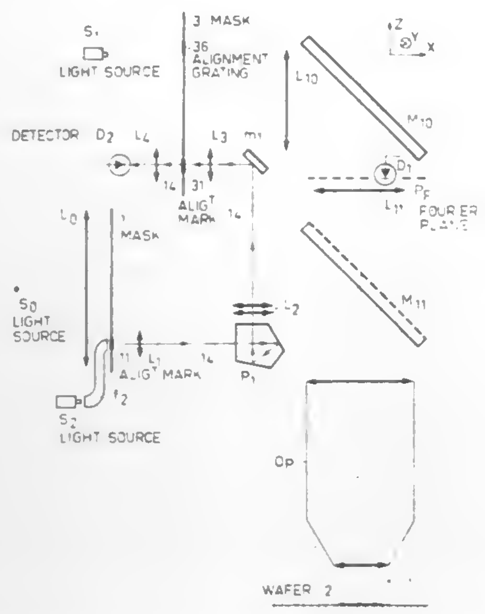
Claims priority, application France, Dec. 18, 1979, 79 30935

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—400 14 Claims

1. An optical system for aligning with respect to each other a first pattern having a first and second portion borne by a first mobile support and a second pattern borne by a second mobile support by means of a third intermediate pattern having a first and second portion forming a reference, said system comprising radiant energy source means and having, with said third pattern borne by a fixed support, first optical means with +1 magnification, combining means for optically combining said first portion of said first pattern and said first portion of said third pattern and first opto-electronic means detecting the coincidence of the optical projection of one of said first portion of said first and third patterns on the other of said first portion

of said first and third patterns, and comprising further second optical means with a given magnification for optically combining said second pattern and said second portion of said third



pattern and second opto-electronic means detecting the coincidence of the optical projection of said second portion of said third pattern on said second pattern.

4,367,047
APPARATUS FOR THE DETECTION OF DOWNLINES ON COATED WEB MATERIAL

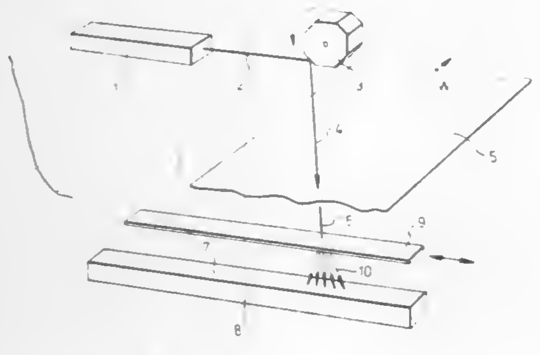
John B. Ikin, Leigh-on-Sea, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 28, 1980, Ser. No. 210,956

Claims priority, application United Kingdom, Dec. 7, 1979, 7942267

Int. Cl.³ G01N *21/84*

U.S. Cl. 356—431 **6 Claims**



1. An apparatus for the detection of downlines on web material transported past an inspection zone which comprises means for projecting a narrow beam of light onto said web, means for deflecting said beam to scan said web repeatedly in a direction transverse to the direction of web motion, light sensitive means responsive to light transmitted by said web, an optical diffusing element arranged between said inspection zone and said light sensitive means and means for moving said diffusing element along a path at least partly transverse to the direction of web transport.

4,367,048
SLURRY STORAGE TANK

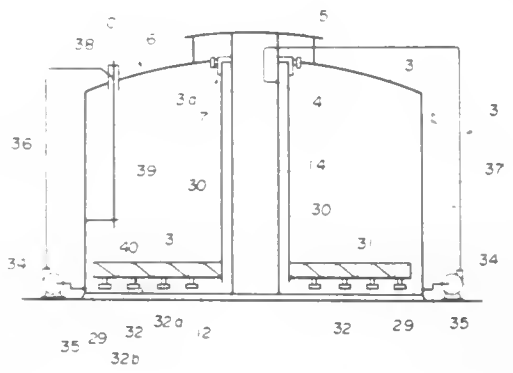
Minoru Morita, Kodaira, Japan, assignor to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,617

Claims priority, application Japan, Jun. 12, 1980, 55-082292

Int. Cl.³ B10F *7/16*

U.S. Cl. 366—137 **5 Claims**



1. A slurry storage tank for holding a slurry having a suspended sedimentatable solid material, said tank having a cylindrical side wall, a flat bottom wall and a top wall, said tank comprising:
(a) a hollow cylindrical column arranged centrally within said tank and fixedly secured at its lower end to the tank bottom wall, said column extending through the tank top wall at its upper portion;
(b) a drive mechanism mounted on the upper portion of said column;
(c) a connecting means operatively connected at its one end to said drive mechanism and extending downwardly toward the tank bottom wall;
(d) a plurality of rake arms connected to the lower end of said connecting means and extending radially outwardly relative to said column, said rake arms being rotated at a low speed by said drive mechanism through said connecting means, each of said rake arms having at its underside a plurality of rake elements for directing the lower portion of the slurry on the bottom wall radially toward the tank side wall;
(e) a pumping means located exteriorly of said tank;
(f) a first pipe means connected between the suction side of said pumping means and the lower portion of the tank side wall for withdrawing the slurry from said tank;
(g) a second pipe means connected at one end to the delivery side of said pumping means and extending to a position above the tank top wall; and
(h) a plurality of vertical guide pipes connected to the other end of said second pipe means, said guide pipes extending through the tank top wall into said tank and arranged radially and circumferentially of said column for distributing the slurry over the entire surface of the slurry in said tank whereby the slurry in said tank is maintained in a homogeneous state.

4,367,049
DRIVING DEVICE ESPECIALLY FOR A TIMEPIECE

Claude Laesser, La Chaux-de-Fonds; Gerard Piller, and Jean Depery, both of Neuchatel, all of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed Aug. 31, 1978, Ser. No. 938,522

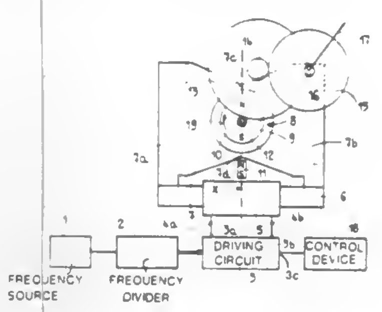
Claims priority, application Switzerland, Sep. 2, 1977, 10768/77; Jun. 20, 1978, 6672/78

Int. Cl.³ G04B *19/00*

U.S. Cl. 368—76 **10 Claims**

1. A driving device especially for a timepiece, comprising:
a stepping motor including
stator means including two yokes and one common coil wrapped around the yokes, the yokes delimiting a substantially cylindrical space therebetween and having end

surfaces disposed in facing relationship with respect to each other and defining two zones of high reluctance,
a permanent magnet rotor having at least one pair of diametrically opposed magnetic poles, the rotor being rotatably mounted in said cylindrical space, and
at least one permanent magnet mounted in the vicinity of one of said zones and having a magnetic field to set the rotor in a rest position in the absence of any magnetic field other than that created by said magnet and said rotor; and



application means for applying to said coil one first pulse having a first polarity and a given amplitude followed by one second pulse having a second polarity and said amplitude in response to a control signal of one value to cause said motor to make one step clockwise and for applying one first pulse having said second polarity and said amplitude followed by one second pulse having said first polarity and said amplitude in response to a control signal of another value to cause said motor to make one step counterclockwise.

4,367,050
VERY THIN ELECTROMECHANICAL WATCH

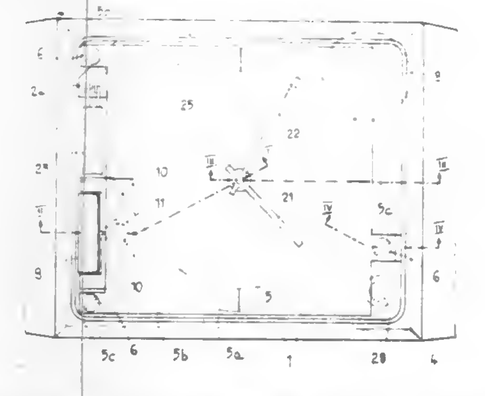
Maurice Grimm, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Continuation of Ser. No. 69,587, Aug. 24, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,605

Claims priority, application Switzerland, Sep. 21, 1978, 9854/78

Int. Cl.³ G04B *19/04;* **G04C** *23/02*

U.S. Cl. 368—80 **8 Claims**



1. An extra thin electromechanical watch comprising:
a case having a front face, a back face and a lateral face interconnecting said front and back faces, said front and back faces being substantially plane and parallel, at least a part of said front face consisting of a transparent glass plate;
a dial comprising a plate substantially parallel to and located between said front and back faces and a wall connecting the periphery of said plate with said front face;
at least two hands for displaying time, located within a space delimited by said plate, said wall and said front face;
a gear train for moving said hands, substantially completely located in a zone between said plate and said back face; and
motor means including a coil for driving said gear train, electric power means including a battery for powering said motor means, and control means including a crystal resonator for controlling said motor means, said coil, battery and crystal resonator being located substantially completely out of said zone and between said wall, said lateral face and said front face, at least one of said coil, battery and crystal resonator having a part at the level of the plane of said dial plate.

4,367,051
RELATIVE TIME INTERVAL MEASURING INSTRUMENT

Akigoro Inoue, Otsu 3, Sekimachi, 1 chome, Nerima-ku, Tokyo, 177, Japan

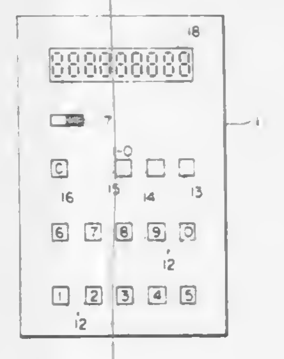
PCT No. PCT/JP79/00222, § 371 Date Apr. 23, 1980, § 102(e) Date Apr. 7, 1980, PCT Pub. No. WO80/00503, PCT Pub. Date Mar. 20, 1980

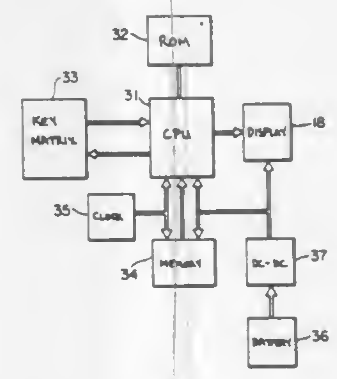
PCT Filed Aug. 21, 1979, Ser. No. 201,093

Claims priority, application Japan, Aug. 23, 1978, 53-103197

Int. Cl.³ G04F *8/00, 10/00*

U.S. Cl. 368—111 **7 Claims**





1. A relative time interval measuring instrument comprising a plurality of number keys; a relative difference key; a plurality of timer memories respectively corresponding to said number keys and each of which is individually adapted to performing counting operations during time intervals defined by depression of their associated number keys; a display unit; and control means connected to the number keys, the relative difference key, the timer memories and the display unit; said control means comprising timer memory starting means for starting the counting operations of the timer memories in response to depression of the corresponding number keys, timer memory stopping means for stopping the operations of the timer memories in response to subsequent depression of the corresponding number keys, means responsive to depression of the relative difference key for selecting a minimum value from the count contents of the timer memories and calculating the differences between said minimum value and each of the count contents of the timer memories in a sequential order upon each depression of the relative difference key, and display means for displaying on said display unit the calculated difference relative to said minimum value, the number of the number key corresponding to the timer memory whose count content is used to calculate the difference, and the ranking of the count content.

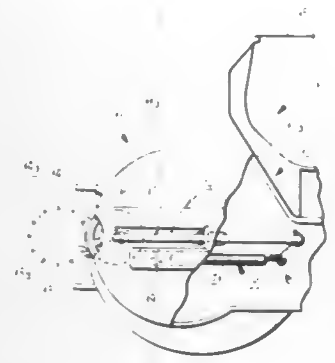
4,367,052
FLAT RATE SPRING PARTICULARLY ADAPTED FOR TYPEWRITER CARTRIDGES

Donald J. Steger, Corinth, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1980, Ser. No. 154,681

Int. Cl.^{3} B41J *33/14*

U.S. Cl. 400—208 **9 Claims**



1. A ribbon cartridge for a typewriter, said cartridge including a case and a ribbon extending externally of said case;

a take up member for said ribbon in said case, said take up member comprising a ribbon take up spool mounted for rotation and translation in said case and for effecting a winding of layers of ribbon thereon, and a drive member for engagement with the periphery of said ribbon take up spool;

and biasing means for biasing said take up member against said drive member, said biasing means comprising a spring under tension for operation beyond the elastic limit of the material of which said spring is constructed, said spring comprising a length of resilient material having terminal end portions and a central body portion, one of said terminal end portions including means for connection to one of said case and members;

the other of said terminal end portions comprising a convoluted portion of said resilient material having a central axis substantially perpendicular to said body portion and for connection to one of the other of said case and members, at least said convoluted portion being dimensioned so that upon separation of said drive and take up members due to an increase in the diameter of said take up member caused by an increase in the layers of ribbon on said spool, said convoluted portion uncoils and is stressed beyond the yield point of said material whereby a substantially constant and limited load placed on said convoluted portion by separation of said drive and said take up members effects further uncoiling of said convoluted portion.

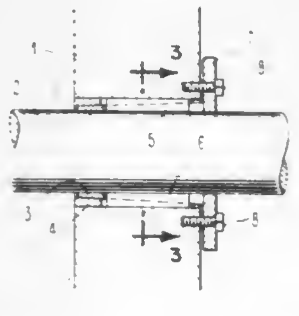
4,367,053
CLAMPING DEVICE

Andrew Stratienko, 8503 Elliston Dr., Philadelphia, Pa. 19118, and Philip Trainer, 237 Highland Ave., Devon, Pa. 19333

Filed Nov. 6, 1978, Ser. No. 957,800

Int. Cl.^{3} F16B *2/14*

U.S. Cl. 403—371 **25 Claims**



1. In a clamping device for keyless mounting of a hub on a shaft, which comprises a nesting pair of radially flexible wedge rings for placement within the annular space between the hub bore and the shaft and axial force means for forcing the wedge rings into nesting engagement to thereby radially expand one of the wedge rings and radially contract the other wedge ring, the pair of wedge rings being provided by an inner wedge ring having a cylindrical inner surface for gripping the shaft when contracted and an outer wedge ring having a cylindrical outer surface for gripping the bore surface of the hub when expanded, the inner wedge ring having an outer annular surface and the outer wedge ring having an inner annular surface with matching, shallow-angle axial tapers from 2° to 10° for nesting the inner wedge ring within the outer wedge ring and at least one of the matching tapered surfaces having coated thereon a stable dry antifriction material preventing metal-to-metal contact, the angle of the matching tapered surfaces and the coeficients of friction of the annular surfaces of the wedge rings providing self-locking and self centering characteristics,

the improvement comprising each of the inner and outer wedge rings being provided by an equal number of a plurality of circumferential sectors with each sector of the inner wedge ring aligning circumferentially with a sector of the outer wedge ring, the circumferential sectors in each wedge ring being separated from each adjacent circumferential sector by a rotational stop slot of predetermined width extending axially through each wedge ring for a predetermined length less than the length of the wedge ring to provide a web interconnecting adjacent circumferential sectors with the strength capability to transmit the force acting between adjacent sectors, and each pair of aligned sectors being separated from the adjacent pair of aligned sectors by a common member of a plurality of rotational stop members positioned in aligned stop slots, whereby each circumferential sector transmits only part of the rotational force between the wedge rings to thereby provide maximum rotational securement of the hub to the shaft and substantially reduced circumferential deflection of the wedge rings under load.

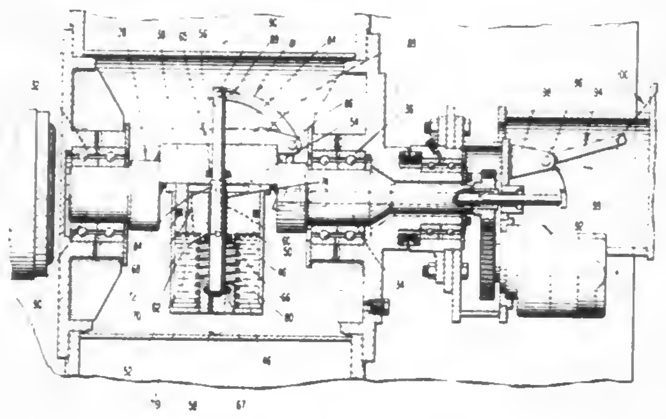
4,367,054
VIBRATORY ROLLER

Chittaranjan Salani, Springfield, and Gary L. Jackson, South Charleston, both of Ohio, assignors to The Koehring Company, Brookfield, Wis.

Filed Feb. 24, 1981, Ser. No. 237,596

Int. Cl.^{3} E01C *19/38*

U.S. Cl. 404—117 **8 Claims**



6. In a vibratory compacting roller apparatus of the type including a rotatable compacting roller; vibrator means operably connected to said roll to vibrate the latter, said vibrator means including shaft means rotatable relative to said roll in either direction, a casing rotatable with the shaft means and including a chamber and an eccentric mass disposed within the chamber, said mass being displaceable within said chamber transversely of the shaft means; and position regulating means for regulating the position of said mass within said chamber to provide variable amplitude for vibration induced thereby; said position regulating means comprising a fluid storage space, passage means including a port communicable with said chamber for interconnecting said fluid storage space with a portion of said chamber on an outward side of said mass so that during rotation of said shaft said mass is displaced outwardly under the influence of centrifugal force to push fluid from said outer portion of said chamber and into said storage space to enable said mass to move radially outwardly to increase the amplitude of vibration, the improvement wherein said storage space comprises a second portion of said chamber located on an inward side of said mass opposite said outer portion of said chamber; a valve rod slidably mounted in said mass, said passage means formed in said rod; manually actuable means for displacing said rod to shift said port outwardly relative to said mass to enable said mass to displace fluid from said outer portion to said inner portion of said chamber under the influence of centrifugal force until said mass reaches and covers said port of said passage whereupon further displacement of said mass is prevented.

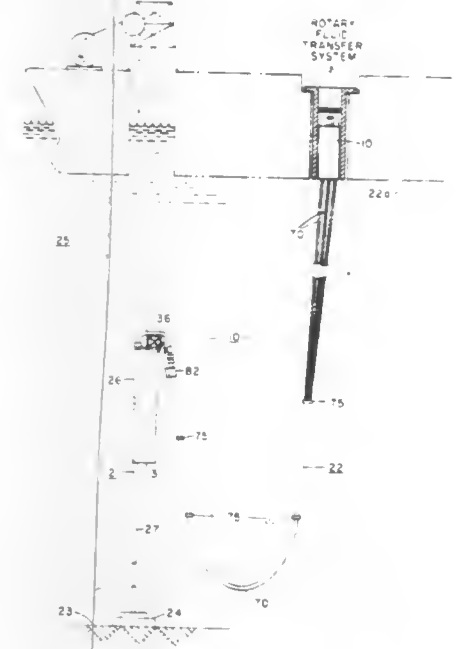
4,367,055
SUBSEA FLOWLINE CONNECTION YOKE ASSEMBLY AND INSTALLATION METHOD

Larry L. Gentry, Sunnyvale; Herbert H. Moss, Cupertino, both of Calif.; Narayan N. Panicker, Grand Prairie, and Irvin R. Yancey, Irving, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,323

Int. Cl.^{3} E21B *17/01;* **F16L** *1/04*

U.S. Cl. 405—169 **6 Claims**



1. In a marine compliant riser system for connecting a subsea hydrocarbon source to a floating surface facility through a lower multi-conduit riser section to a submerged buoy section located below a turbulent water zone and a flexible flowline comprising a plurality of flexible conduits for fluid connection between corresponding lower riser conduits and the surface facility, the improvement which comprises:

a yoke assembly mounted on the buoy section including beam means for receiving a plurality of flexible conduit terminations in spaced apart recesses;

a plurality of pivotally-mounted loading gates operatively connected to the yoke beam adjacent respective recesses, each of said gates having annular termination-supporting means with side access to permit lateral loading of a corresponding flexible conduit onto the gate for supporting the flexible conduits in a substantially vertical position;

means for closing and locking each of said locking gates to retain the flexible conduits in position for connection to the lower riser conduits;

connection assembly means for connecting upwardly directed flexible conduits with corresponding upwardly-directed lower riser conduits in fluid flow relationship; and

means for lifting said flexible conduit termination from said loading gates into operative connection with a corresponding vertically-aligned connection means.

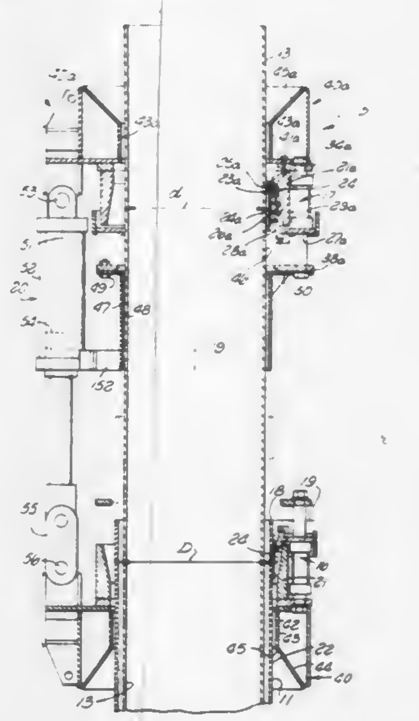
4,367,056
MARINE PLATFORM JACKET JACK

Padmasiri D. Seneviratne, Fullerton, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Jan. 23, 1981, Ser. No. 227,735

Int. Cl.^{3} E02D *13/00*

U.S. Cl. 405—228 **18 Claims**



1. A jack for moving a tubular first member and a second member extending therethrough relative to one another, comprising:

a first gripping unit adapted to extend about said tubular first member and actuable between an active condition in which it grips an outer surface of said first member to apply jacking force thereto in a first axial direction and a released condition permitting movement of the gripping unit relative to said first member in said axial direction;

a second gripping unit adapted to extend about said second member axially beyond said first member and actuable between an active gripping condition in which it grips an outer surface of said second member smaller in diameter than said outer surface of the first member in a relation to apply jacking force thereto in said second axial direction and a released condition permitting movement of the second gripping unit relative to said second member in said second axial direction; and

power actuated means for moving said gripping units axially relative to one another in a direction applying force from said first gripping unit to said tubular member in said first axial direction and applying force from said second gripping unit to second member in said second axial direction to jack the members axially relative to one another.

4,367,057

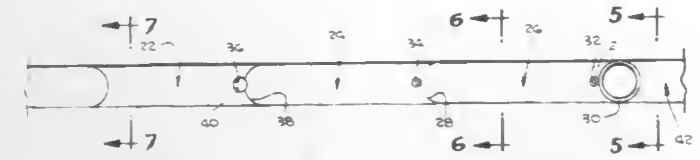
METHOD OF FORMING A FOUNDATION WITH LIQUID TIGHT JOINTS

John Hughes, Arlington Heights, Ill., and Heinz Rasbach, Zellhausen, Fed. Rep. of Germany, assignors to American Colloid Company, Skoki, Ill.

Continuation-in-part of Ser. No. 964,000, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 831,358, Sep. 8, 1977, abandoned. This application Sep. 21, 1979, Ser. No. 77,650

Int. Cl.^{3} E02D *5/10, 27/00*

U.S. Cl. 405—267 **4 Claims**



1. In the constructing of a water impermeable wall by a process comprising the steps of:

excavating a generally vertical trench;

substantially filling the trench with a water sealing slurry simultaneously with excavation thereof;

placing a pair of spaced generally vertical disposed isolating members in the trench with the members extending across the full width of the trench to isolate a first trench section therebetween, one of the members supporting a void forming member adjacent its side which faces the trench section, the void forming member being generally vertically disposed and substantially parallel to its supportive isolating member;

introducing a setable, water impermeable material into the first trench section and substantially simultaneously therewith displacing the slurry therefrom;

permitting the water impermeable material to harden sufficiently to assume the lateral contours of the isolating members;

detaching the void forming member from its supportive isolating member and removing only the isolating members from the trench;

placing a generally vertically disposed isolating member in the trench on the void forming members' side of and laterally spaced from the first section, thereby isolating a second trench section;

introducing a setable, water impermeable material into the second trench section, and substantially simultaneously therewith displacing slurry therefrom;

permitting the water impermeable material to harden to form a second wall section having a substantially continuous common lateral boundary with the first wall section;

removing the void forming member by withdrawing it intact leaving a void adjacent to the boundary of the first and second trench sections;

cleaning out the void;

boring the length of the void and adjacent water impermeable material with a drill of sufficient diameter to form a bore which overlaps the boundary along its full vertical extent and simultaneously extends into the wall material on either side of the boundary; and,

introducing a water sealant material into the bore to establish a water-tight joint between the sections, the improvement comprising:

(a) providing the void forming member of a drillable material so as to be a drill guide member and releasably attaching it to the supportive isolating member in a manner such that the void forming drill guide member will automatically release from the supportive isolating member and remain in the water impermeable material when the supportive isolating member is removed; and

(b) following removal of the supportive isolating member, drilling out the void forming drill guide member with a drill of sufficient diameter to form the overlapping bore along the full vertical extent of the boundary whereby the prior steps of manually detaching the void forming member, removing the void forming member by withdrawing it intact, and cleaning the void are eliminated from the procedure.

4,367,058

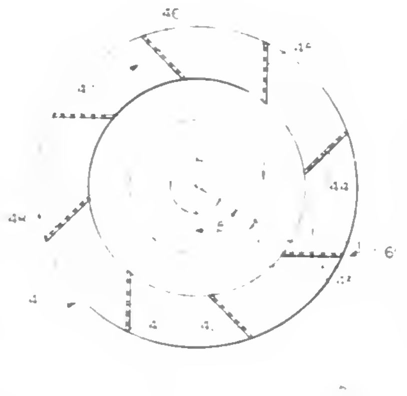
BEVOLUTE GEAR SYSTEM

Willis M. Carter, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Division of Ser. No. 880,368, Feb. 23, 1978, Pat. No. 4,238,970. This application Jun. 3, 1980, Ser. No. 156,107

Int. Cl.^{3} B23F *9/14*

U.S. Cl. 409—26 **6 Claims**



1. The method of generating a bevolute pinion gear adapted to mesh with a bevolute wheel gear, said bevolute wheel gear including teeth shaped in the form of an involute spiral generated from a base circle comprising:

positioning a pinion cutter adjacent a pinion gear-blank, said pinion cutter including a plurality of rack shaped cutters being tangential to a base circle which corresponds to the base circle of said bevolute wheel gear;

rotating said pinion cutter adjacent to said pinion gear-blank;

rotatably feeding said pinion gear-blank relative to and concurrently with said rotating pinion cutter; and

cutting said pinion gear-blank to include teeth which are shaped in the form of an involute spiral which mesh with said bevolute wheel gear having a corresponding base circle.

4,367,059

VARIABLE SIZED COIL CARRYING CAR

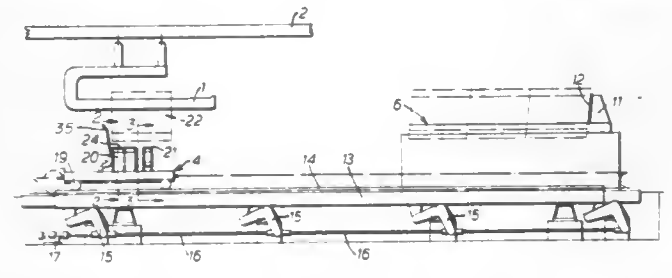
Derek Stubbins, Sheffield, England, assignor to Davy-Loewy Limited, Yorkshire, England

Filed Nov. 24, 1980, Ser. No. 209,517

Claims priority, application United Kingdom, Nov. 30, 1979, 7941416

Int. Cl.^{3} B60P *7/12, 9/00;* **B61D** *3/16*

U.S. Cl. 410—44 **3 Claims**



1. A transporter car for conveying a coil of metal with the longitudinal axis of the opening through the coil arranged substantially horizontal, comprising:

a wheeled trolley,

a first structure on the trolley providing a fixed support situated in the direction of movement of the trolley which is capable of engaging the periphery of a coil with the longitudinal axis of the coil opening arranged substantially horizontal;

a second structure on the trolley and spaced from the first structure for providing a support capable of engaging the periphery of a coil to support the coil;

said first and second structures being arranged such that the supports are aligned and the total effective length of the supports in the direction of movement of the trolley is greater than the length of said first structure such that said first structure and second structure together are capable of supporting a coil of greater longitudinal length then said first structure alone; and

means for displacing the support of the second structure relative to the trolley between a first position in which the first and second supports are in a coil carrying position and a second position in which the second support is in a retracted carrying position.

4,367,060

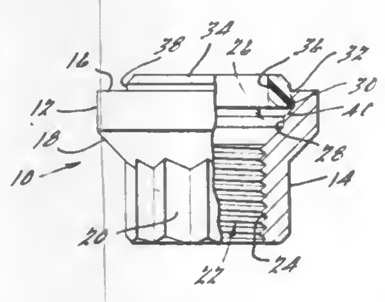
METHOD OF MAKING A SEAL NUT

Imre Berecz, Dana Point, Calif., assignor to Microdot Inc., Darien, Conn.

Continuation of Ser. No. 947,821, Oct. 2, 1978. This application Jun. 2, 1980, Ser. No. 155,846

Int. Cl.^{3} F16B *39/34*

U.S. Cl. 411—303 **1 Claim**



1. In a metal seal nut comprising a body having an internally threaded bore and an external wrenching surface, the improvement comprising a truncated conical annulus at one end of said bore, a relatively wide flat bearing surface on said nut body extending radially outwardly directly from the minor diameter of said annulus for the acceptance of axial loads on said nut, the grain structure of the metal of said nut subject to axial loads being uninterrupted and extending radially generally parallel to said axial load bearing surface, thence axially inwardly and radially outwardly generally parallel to the conical outer wall of said annulus, thence radially inwardly from the major diameter of said annulus to said thread bore so as to maximize the load carrying capability of said nut, and a sealing ring in said annulus.

4,367,061

METHOD AND APPARATUS FOR PRODUCING BOOK COVERS, FOLDERS, BOOKLETS AND THE LIKE

Sture Wiholm, Stockholm, Sweden, assignor to Semotex Aktiebolag, Stockholm, Sweden

Filed Mar. 20, 1980, Ser. No. 132,257

Claims priority, application Sweden, Mar. 30, 1979, 7902871

Int. Cl.^{3} B42C *7/00*

U.S. Cl. 412—3 **18 Claims**

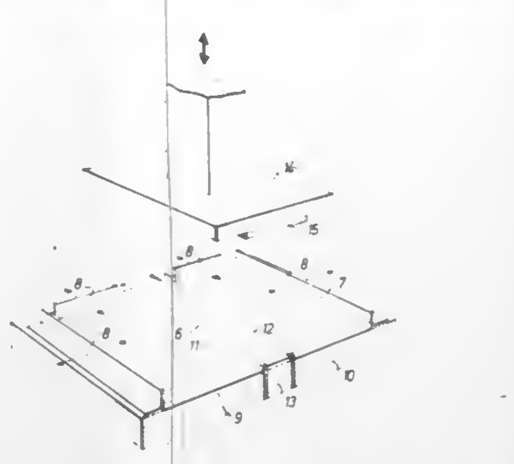
1. A method of producing a book cover and the like from a blank, the book cover including at least one cover, a spine connected to the cover by at least one crease line, and a bonding agent for adhering pages and the like inserted in the book cover to the spine, comprising the steps of:

forming said bonding agent as a strip;

placing the strip on a base so that at least one of the longitudinal side edges of the strip is oriented relative to at least one creasing means projecting above the surface of said base;

aligning the blank to a predetermined position relative to the base and the creasing means, and

pressing the blank, and the creasing means and the strip,



against each other with press means to form said crease line in the blank to form the cover and the spine of the book cover and to attach the strip to the inside of the spine.

4,367,062

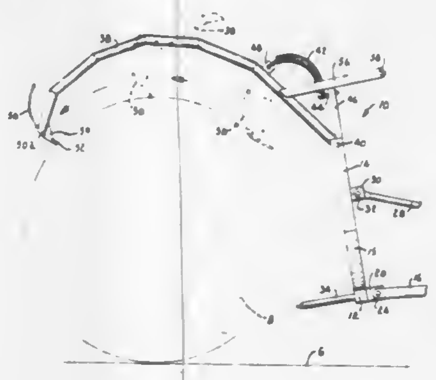
BALE CARRYING DEVICE

Michael C. Duenow, Rte. 5, Fulton, Mo. 65251

Filed Jun. 19, 1980, Ser. No. 161,163

Int. Cl.^{3} B60P *1/04;* **A01D** *87/12*

U.S. Cl. 414—24.5 **8 Claims**



1. Bale carrying apparatus for attachment to a lift mechanism of a traction vehicle to handle large cylindrical hay bales, said apparatus comprising:

a frame adapted to be attached to the lift mechanism in a manner to be raised and lowered thereby;

a pair of tines projecting from said frame at a location to pierce one side of a hay bale resting on the ground upon movement of the traction vehicle toward the bale;

a curved arm member having a free end carrying a bale penetrating element for piercing a side of the bale opposite said one side thereof;

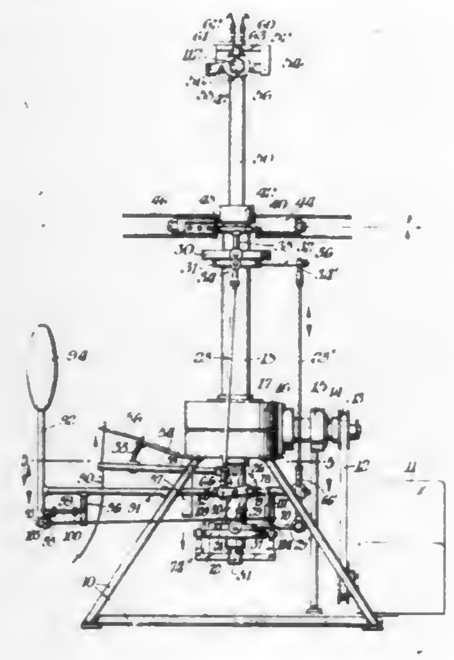
means for pivotally coupling said arm member with said frame at a location generally above said tines and in a manner permitting free pivotal movement of the arm member about a generally horizontal pivot axis; and

deformable spring means for normally holding said arm member at a position wherein the free end thereof is maintained at an elevation to engage said one side of the bale and to pass along and over the top of the bale in contact therewith and into engagement with said opposite side of the bale as the vehicle approaches the hay bale, and said tines penetrate said one side thereof, said bale penetrating element piercing said opposite side of the bale to effect pinching of the arm member toward the frame about said pivot axis when the bale tends to roll off of said tines during raising of the lift mechanism to lift the frame,

whereby the bale is pinched between said tines and the free end of the arm member when the lift mechanism is raised to raise said frame and bale.

4,367,063
PITCH CONTROL MECHANISM FOR COAXIAL HELICOPTER STEERING

Juan C. Herruzo, Nunez de Balboa, 5, 2° A, Madrid, Spain
Filed Mar. 6, 1981, Ser. No. 241,387
Claims priority, application Spain, Apr. 18, 1980, 490.715
Int. Cl.³ B64C *27/80*
U.S. Cl. 416—115 **7 Claims**



1. A rotor blade pitch control for a coaxial helicopter comprising:

coaxial counter-rotating first and second rotors having adjustable pitch blades, first and second coaxial counterrotating torque transmitting shafts having an axis connected to said first and second rotors respectively,

a coaxial enclosure surrounding said torque transmitting shafts extending partially along said shafts fixedly mounted with respect to said helicopter, upper and lower pitch control ring assemblies slideably mounted on said enclosure each comprising a non-rotating inner ring surrounding said enclosure and an outer ring rotatably mounted on the inner ring, said upper and lower ring assemblies spaced from each other along said enclosure,

a non-rotating main pitch control ring also surrounding said enclosure slideably and tiltably mounted thereon,

mounting means supporting said main pitch control ring at a point intermediate of said upper and lower ring assemblies

at least two shafts extending radially from the main pitch control ring, mounted rotatably around their axis on the perimeter on the main pitch control ring,

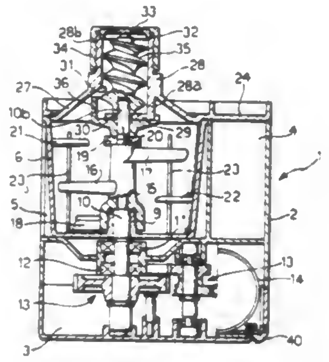
an elongated plate mounted at the end of each shaft perpendicular thereto, a pair of link rods pivotably mounted on each of the elongated plates on either side of the shaft, each of said rods connecting the non-rotating inner ring of the upper and lower ring assemblies respectively to the main pitch control ring;

a stub extending from said shaft whereby pulling or pushing on said stub rotates said shaft around its axis and displaces the link rods in each pair and the upper and lower ring assemblies in opposite directions and,

cam assemblies connected to said outer rings of the upper and lower ring assemblies and to said upper and lower rotor blades respectively for continuously adjusting the rotor blades pitch as a function of the position and angle of the upper and lower pitch control ring assemblies relative to said enclosure.

4,367,064
MACHINE FOR THE PRODUCTION OF HOME-MADE PASTA AND DOUGH

Achille Prandelli, and Roberto Prandelli, both of Concesio, Italy, assignors to Ottopran S.r.L., Collebeato, Italy
Filed May 21, 1981, Ser. No. 265,947
Claims priority, application Italy, May 23, 1980, 5160 A/80; Dec. 22, 1980, 5253 A/80
Int. Cl.³ A21C *3/04, 11/20*
U.S. Cl. 425—204 **3 Claims**



1. A machine for the production of home-made pasta and dough comprising:

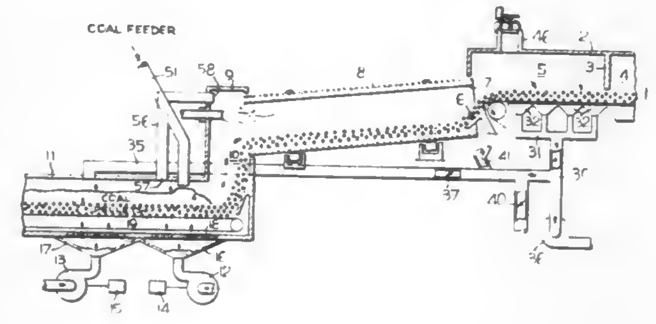
(i) a mixing bowl wherein a bladed shaft is rotated in order to mix the ingredients of the dough,

(ii) an extrusion bowl comprising a sleeve element having a portion extending inside said mixing bowl, an Archimedean screw rotatably arranged in said sleeve element in order to extrude the ingredients mixture through a die, an aperture longitudinally provided in said portion of said sleeve element,

(iii) a feeding-measuring member consisting of a cylindrical cup shaped element, an arm having an L cross section tangentially projecting from said cup shaped element, an aperture provided in the wall of the cup shaped element, said cup shaped element being arranged in the mixing bowl, coaxially surrounding said portion of the sleeve element and rotating integrally with the extrusion screw.

4,367,065
METHOD FOR FIRING COAL IN PYRO-PROCESSES USING DIRECT HEAT RECUPERATION FROM A CROSS FLOW HEAT EXCHANGER

Robert F. Cnare, Pewaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Feb. 23, 1981, Ser. No. 236,724
Int. Cl.³ F27B *15/00;* F23D *1/00*
U.S. Cl. 432—14 **6 Claims**



1. A method of treating material in a pyro-process system in which the material is processed through at least a final heat treatment zone and a cooling treatment zone in which the material received from the final heat treatment zone is formed into a relatively level bed and cooled by an updraft of air passing through the bed, comprising the steps of:

A. supplying said material to said cooling zone at a temperature which will ignite coal;

B. adding a quantity of coal particles on top of the material bed in the cooling zone, with at least a major portion of the particles being of a minimum size large enough to remain on the bed with the updraft of air passing through the bed;

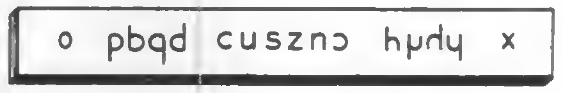
C. adjusting the velocity of the updraft air through the bed to maintain the velocity of off-gases emerging upwardly from the bed below the velocity required to entrain in said off-gases more than a minor portion of ash formed by combustion of the coal on the bed;

D. maintaining the coal on the material bed in the cooling zone for a period of time sufficient to burn the coal and heat the off-gases; and

E. returning the heated off-gases from the combusted coal and said material to the final heat treating zone as system heat.

4,367,066
DEVICES FOR DISPLAYING OR PERFORMING OPERATIONS IN A TWO-VALUED SYSTEM

Shea Zellweger, 1483 Robinwood Rd., Alliance, Ohio 44601
Division of Ser. No. 44,170, May 31, 1979, Pat. No. 4,273,542, which is a continuation of Ser. No. 729,119, Oct. 4, 1976, abandoned. This application Jun. 11, 1981, Ser. No. 272,634
Int. Cl.³ G09B *1/32*
U.S. Cl. 434—433 **29 Claims**



1. An apparatus for displaying and performing operations upon a complete set of the sixteen binary connectives in a two-valued notational system, said apparatus comprising:

at least one device;

said at least one device having means displaying a plurality of symbols, wherein each symbol represents one of said binary connectives, said means having said plurality of symbols in a predetermined configuration, and when more than one device, said devices being movable and belonging to a set, and when used in a selected combination, said combination of movable devices capable of being assembled in a predetermined conformation;

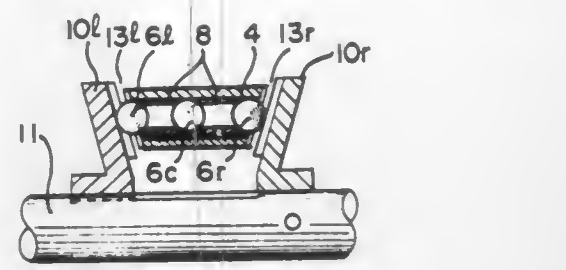
each of said symbols having a shape selected to indicate a selected number of from zero to four components arranged with respect to the quadrants of a set of Cartesian coordinates, wherein said shape has iconicity, frame consistency, and eusymmetry with respect to said quadrants of Cartesian coordinates, and wherein the alignment of said shape is symmetry positional with respect to the x-y axes of said Cartesian coordinates;

and further wherein said shape is taken from at least six shapes capable of generating a set of sixteen symbols, said symbols having four levels of symmetry such that two of said symbols are two-way self-flippable and self-rotatable, two of said symbols are not self-flippable, but are self-rotatable, four of said symbols are one-way self-flippable but are not self-rotatable, and eight of said symbols are neither self-flippable nor self-rotatable;

said symbols, said configuration of said symbols, said set of movable devices, and said conformation of said devices selected so that said at least one device is, or said devices are, adaptable by transformations taken from the group consisting of reflections, rotations, translations, counterchanges, and combinations thereof to display and perform said operations.

4,367,067
BALL CHAIN POSITIVE DRIVE STEPLESS TRANSMISSION

Yau-Shing Chao, No. 224, Chi-Lin Rd., Taipei, Taiwan
Filed Aug. 7, 1980, Ser. No. 175,958
Claims priority, application Japan, Aug. 10, 1979, 54-102345
Int. Cl.³ F16G *1/28, 13/18*
U.S. Cl. 474—154 **6 Claims**



1. A ball chain positive drive stepless transmission comprising:

a pair of V sheaves each having two bevel wheels deployed oppositely on a shaft and each bevel wheel having an undulating surface with the peaks thereof radially disposed at an angle to the axis thereof;

an endless ball chain comprising a plurality of links each having at least one tunnel formed transversely of the link, and a plurality of balls rotatably inserted in said tunnel with a snap cylinder in between adjacent balls and having the ends thereof in contact with the balls located adjacent to the ends of the snap cylinder, said plurality of balls including an end ball located on each side of the link and partially protruding outwardly from the link tunnel, each snap cylinder being flexible and having a relaxed configuration in which the outer diameter of the relaxed snap cylinder is less than the inner diameter of the tunnel so that movement of the balls within the tunnel is permitted, each snap cylinder being split longitudinally thereof to form means for effecting radially outward expansion of the cylinder when both of the balls located adjacent to the snap cylinder ends are forced against those cylinder ends, said radially outward expansion of the snap cylinder causing said cylinder to lock itself against the inner wall of said tunnel and thus to firmly hold the balls located adjacent thereto, said flexible cylinder being biased into said relaxed configuration so that the cylinder disengages from the tunnel inner wall and releases the balls when force is removed from the cylinder, the links in said plurality of links being pivotally connected to each other;

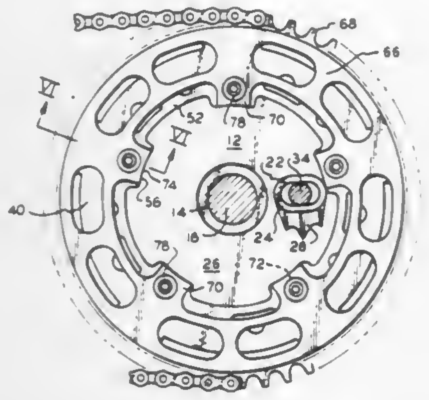
said pair of V sheaves being disposed on a parallel pair of shafts to be connected to a suitable driving and driven device, and said endless ball chain being suspended around said V sheaves with said balls at both sides of the links in meshing engagement with said undulating surfaces.

4,367,068
UNIVERSAL BICYCLE SPROCKET HUB

Ronald Johncox, and Robert Kingsbury, both of Jackson, Mich., assignors to Kingsbury Products Incorporated, Jackson, Mich.
Filed Oct. 29, 1980, Ser. No. 202,257
Int. Cl.³ F16H *55/30, 55/12*
U.S. Cl. 474—162 **5 Claims**

1. A universal bicycle chain sprocket hub for selective use with a plurality of chain sprockets wherein the sprockets comprise annular members having an axis, a toothed periphery, a flat side wall, fastener receiving holes radially spaced from and equally spaced about the axis and an inwardly facing locating surface concentric to the axis comprising, in combination, an annular body of generally circular configuration having a periphery, a central crank receiving opening having an axis, a first side and a second side, a crank pin receiving opening defined in said body intermediate said central opening and said

periphery and intersecting said sides, said first body side including a first planar locating surface substantially perpendicular to said axis adjacent to and intersecting said body periphery, a plurality of first shoulder surfaces defined on said body first side concentrically radially spaced from said axis and evenly spaced angularly about said axis transversely intersecting said first locating surface, a plurality of second shoulder surfaces defined on said body first side concentrically radially spaced from said axis inwardly of said first shoulder surfaces and evenly spaced angularly about said axis transversely intersecting said first locating surface, a second planar locating surface substantially parallel to and axially spaced from said first locating surface defined on said first body side having a periphery substantially defined by said first and second shoulder surfaces, a plurality of third shoulder surfaces defined on said body first side concentrically radially spaced from said axis and evenly spaced angularly about said axis transversely intersecting said second locating surface, a plurality of fourth shoulder surfaces defined on said body first side concentrically radially spaced from said axis inwardly of said third shoulder surfaces and evenly spaced angularly about said axis transversely intersecting said second locating surface, and a plurality of sets of fastener receiving sprocket mounting holes defined in said first and second locating surfaces intersecting said body first and second sides, the holes of each set being equally angularly spaced about said central opening axis.



4,367,069
APPARATUS FOR STRIPPING SCRAP FROM DIE CUT BLANKS

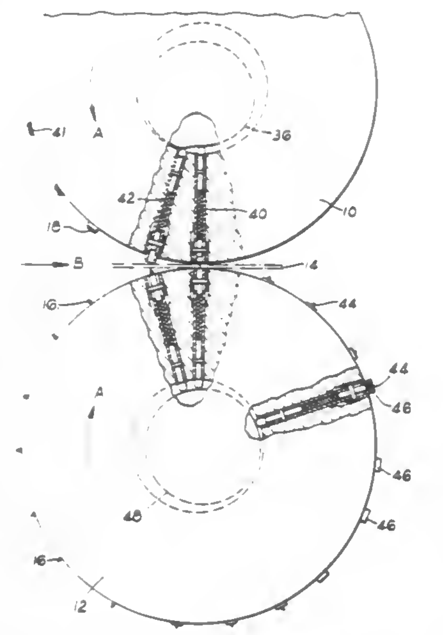
Thomas D. Bishop, Solihull, England, assignor to The Deritend Engineering Company Ltd., Birmingham, England

Filed Feb. 2, 1981, Ser. No. 230,872

Claims priority, application United Kingdom, Mar. 20, 1980, 8009356

Int. Cl.^{3} B26F *3/02;* B31B *1/74*

U.S. Cl. 493—342 **3 Claims**



1. Apparatus for stripping scrap from a web, comprising a pair of rolls rotatable in opposite directions about parallel axes in contact with opposite sides of the web, one roll carrying at least one radially movable tubular abutment and the other roll having a projecting spike for each such abutment, arranged to enter such abutment, and means for controlling radial movement of each tubular abutment to maintain the abutment extended substantially to the plane of one side of the web while the corresponding spike is penetrating the web from the other side, whereby the spike enters the tubular abutment and impales the web.

CHEMICAL

4,367,070
PROCESS FOR TREATING FIBROUS STRUCTURE

Kazuya Hayashi; Masato Shimada; Teruo Nakamura, and Yoshihiro Fujii, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,948

Claims priority, application Japan, Feb. 21, 1980, 55-19747

Int. Cl.^{3} D06Q *1/02;* D06C *1/04*

U.S. Cl. 8—114.6 **16 Claims**

1. In a process for treating a fibrous structure comprising a plurality of components, at least one of which is a polyester containing an SO_3M group, wherein M represents hydrogen or a metal, the steps which comprise pre-treating the fibrous structure with a degrading agent for the SO_3M group-containing polyester which preferentially degrades said SO_3M group-containing polyester, thereby producing a fibrous structure capable of being treated in a subsequent alkali treatment step to produce a soft fibrous product.

4,367,071
HEAT TRANSFER PRINTING

Shogo Mizuno, Toride; Kyoichi Shimomura, and Michiaki Kobayashi, both of Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

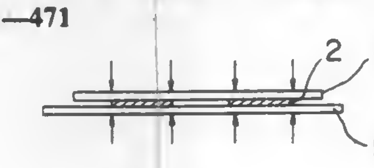
Division of Ser. No. 962,901, Nov. 22, 1978, Pat. No. 4,272,292.

This application Feb. 4, 1981, Ser. No. 231,395

Claims priority, application Japan, Nov. 28, 1977, 52-142423; Nov. 28, 1977, 52-142424

Int. Cl.^{3} B41M *3/12;* D06P *1/41, 5/00*

U.S. Cl. 8—471 **16 Claims**



12. A heat transfer printing process which comprises:
superposing a transfer sheet comprising
  a substrate sheet and
  a coloring layer of a desired pattern
provided on the substrate sheet, the coloring layer containing from about 1 to about 80 weight percent of a coloring agent comprising at least one of carbinol bases of basic dyes and their derivatives, wherein each of said derivatives is the product of the reaction between a corresponding basic dye and an alcoholate, and said coloring agent is sublimable at a temperature between about 80° C. and about 250° C.; from about 1 to about 80 weight percent of a strong base, wherein the mole ratio of said strong base to said coloring agent is between about 1:1 to about 40:1; and the remainder a binder, wherein all weight percents are based on the total weight of said coloring layer,
on a transfer receiving base material consisting of a fiber dyeable with cationic dyes in such a manner that the surface of the transfer sheet provided with the coloring layer contacts the base material to form a superposed structure; and
maintaining the superposed structure under heat, at a temperature sufficient to sublime said coloring agent, and pressure.

4,367,072
LIGANDS ASSAYED BY HOST MOLECULES INCLUDING CYCLOPHANES, CROWN ETHERS, CRYPSTANDS AND PODANDS

Friedrich Vögtle, St. Augustin; Johannes P. Dix, Bonn-Beuel, and Dieter Jaworek, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

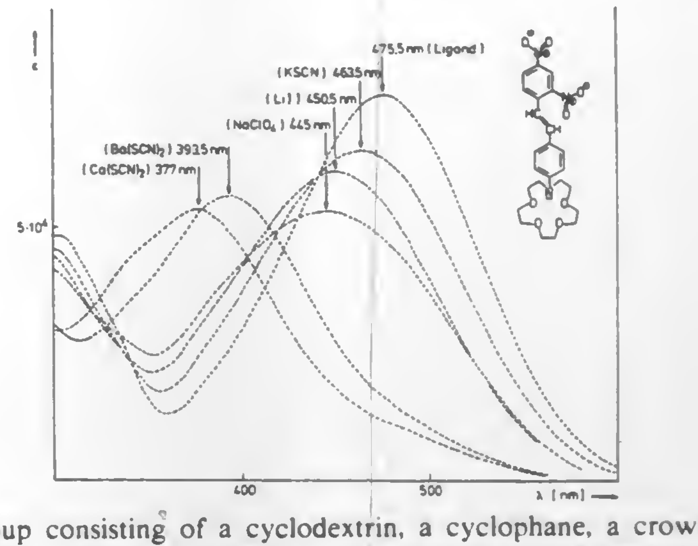
Filed Sep. 25, 1979, Ser. No. 78,738

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842862

Int. Cl.^{3} G01N *31/22, 33/52*

U.S. Cl. 436—501 **33 Claims**

1. Method for the determination of a component in a liquid which component is selected from ions, polar substances and lipophilic substances, which method comprises contacting a liquid sample containing said component with, and allowing same to act upon, a complex ligand or hose molecule which is selective toward the component, and being selected from the group consisting of a cyclodextrin, a cyclophane, a crown ether or derivative thereof, a cryptand or derivative thereof, a podand or derivative thereof, a valinomycin, a gramacidin and a nonactin said complex ligand or host molecule being bonded to a chromophore material, and measuring the change of extinction or the wavelength displacement of the resulting mixture as a measure of the initial content of said component.



4,367,073
PREPARATION OF SOLID, CRYSTALLINE, SUBSTANTIALLY ANHYDROUS SODIUM METASILICATE

Günther Just, Hilden, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 319,916

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124893

Int. Cl.^{3} C01B *33/32*

U.S. Cl. 23—302 T **9 Claims**

1. A process for the preparation of solid, crystalline, substantially anhydrous sodium metasilicate which comprises the steps of:
(a) reacting an SiO_2-containing material with a concentrated aqueous solution of sodium hydroxide in an SiO_2 to Na_2O molar ratio of from about 1.2:1 to 1:1.2 under elevated pressure and at an elevated temperature, to form a sodium metasilicate suspension;
(b) filtering the suspension from step (a) to obtain a filter cake and filtrate;
(c) crushing the filter cake from step (b) at elevated temperature;
(d) removing water from the crushed filter cake to recover substantially anhydrous sodium metasilicate;
(e) concentrating the filtrate from step (b); and
(f) returning the concentrated filtrate from step (e) to the reaction mixture of step (a).

4,367,074
NOVEL FILTER AID COMPOSITIONS FOR IMPROVING THE LIMITING FILTERABILITY TEMPERATURE AND INHIBITION OF N-PARAFFIN CRYSTAL FORMATION DURING LOW TEMPERATURE OF MIDDLE DISTILLATES

Paul Maldonado, St Symphorien d'Ozon; Pierre Etchart, Francheville, and Daniele Eber, Lyons, all of France, assignors to Elf France, Paris, France

Filed Sep. 16, 1981, Ser. No. 302,768

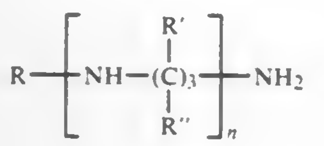
Claims priority, application France, Sep. 19, 1980, 80 20148

Int. Cl.^{3} C10L *1/22*

U.S. Cl. 44—62 **13 Claims**

1. A gasoil composition, comprising a major proportion of a

middle distillate cut and a proportion sufficient to improve the cold filterability properties of a filter aid constituted by the mixture of a constituent A and a constituent B, in which: constituent A is a member selected from the group consisting of an ethylene polymer, a halogenated ethylene polymer, a copolymer of ethylene and a monomer, and a hydrogenated butadiene and isoprene copolymer, constituent B is a condensation product of at least one cyclic anhydride and at least one N-alkyl-polyamine of the formula:



$$R-\left[NH-\overset{R'}{\underset{R''}{(C)_3}}\right]_n-NH_2$$

in which $0 \leqq n \leqq 3$

R represents a saturated or unsaturated alkyl chain having between 10 and 22 carbon atoms, R' and R" can be identical or different and are either a hydrogen atom or a C_1 to C_3-monovalent hydrocarbon radical.

4,367,075

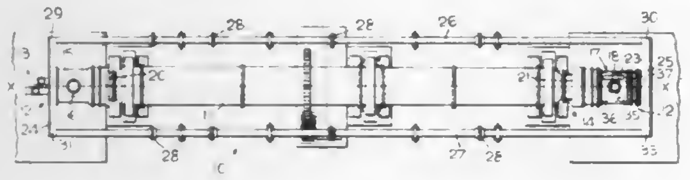
PRESSURIZED ROTARY KILN WITH THRUST CONTAINMENT

Walter J. Hartwig, Watertown, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 16, 1981, Ser. No. 321,748

Int. Cl.^{3} C10B *1/10*

U.S. Cl. 48—89 **4 Claims**



1. A rotary kiln apparatus for the gasification of solid carbonaceous material; said kiln having a cylindrical kiln shell with a central axis being inclined downwardly from a material feed end of said kiln shell to a material discharge end; means to feed the solid carbonaceous material to said material feed end; a nonrotary feed hood having a gas outlet and engaging said material feed end; and a nonrotary discharge hood, having gas and ash outlets, and engaging said material discharge end; the improvement comprising:

a. a feed end brace adjacent to said nonrotary feed hood on an end thereof remote from said kiln shell; said feed end brace disposed in a plane generally perpendicular to said axis of said kiln shell;

b. expansion means adjacent said discharge hood on an end thereof remote from said kiln shell; said expansion means permitting expansion along the axis of said kiln shell;

c. a discharge end brace adjacent said expansion means on an end thereof remote from said discharge hood; said discharge end brace disposed in a plane generally perpendicular to said axis of said kiln shell;

d. rigid means for connecting said feed end brace with said discharge end brace;

whereby said feed end hood and said discharge hood are maintained in fixed and stationary position against said kiln shell by said feed end brace and said discharge end brace; said end braces relieve forces on said hoods by transmitting said forces to said connecting means and with said expansion means permitting expansion of said rigid connecting means while maintaining gas-tight connection between said discharge hood and said discharge end brace.

4,367,076

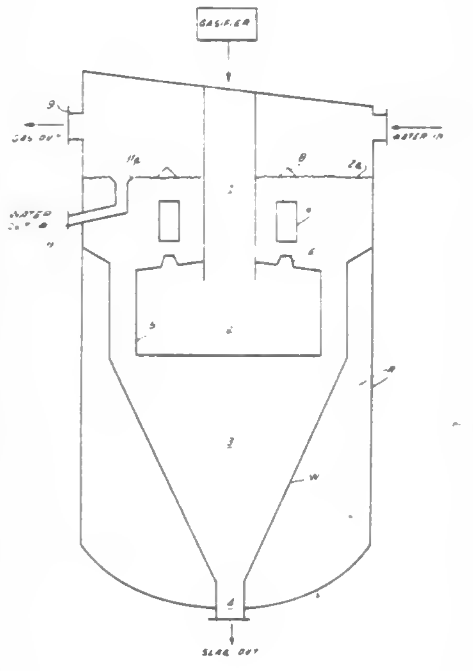
METHOD AND APPARATUS FOR PROCESSING OF DUST-CONTAMINATED HOT PRODUCT GAS

Helmut Peise; Reinhard Brausse; Klaus Lucas; Klaus-Otto Kuhlbrodt, all of Freiberg; Friedrich Berger, Brand-Erbisdorf; Peter Göhler, Freiberg; Manfred Schingnitz, Freiberg; Dieter König, Freiberg, all of German Democratic Rep.; Aleksander Jegorow; Vasilij Fedotov; Vladimir Gavrilin; Ernest Gudymov; Vladimir Semenov; Igol Achmatov, all of Moskwa; Nikolaj Majdurov, Moskovsk, and Evgenij Abraamov, Moskwa, all of U.S.S.R., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep. and I Projektnyi Institut Asotnoj Promyschlennosti I Produktow Organitschewkogo Sintesa Gosudarstwennyi Nautschno-Issledowatelski, Moskow, U.S.S.R.

Continuation of Ser. No. 104,895, Dec. 18, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 249,662

Int. Cl.^{3} C10J *3/72*

U.S. Cl. 48—128 **9 Claims**



1. A method of processing hot gas containing dust and/or liquid slag and produced by gasification of finely divided fuel under pressure and at high temperature, by introducing said hot gas into a water bath and causing it to ascend through said water bath, comprising the steps of admitting a stream of said hot gas into a vessel located within the water bath and having an open lower end and a plurality of upper outlet openings through which the gas escapes to ascend through the bath; confining the gas ascending from the respective outlet openings to flow in respective upright paths, so that the ascending gas causes agitation and turnover of the bath and is cooled and scrubbed of its dust and slag during the ascent, and the slag is solidified and granulated by the contact with the water bath; intercepting the ascending gas substantially at the level of an upper surface of the bath to prevent roiling of the upper surface; discharging the cooled and scrubbed gas from the space above the upper bath surface; discharging at least a part of the dust and the solidified granulated slag, which settle in a lower portion of the water bath, via an outlet from the lower portion of the bath; and continuously discharging dust-contaminated water via an overflow from the bath while replenishing the latter.

4,367,077

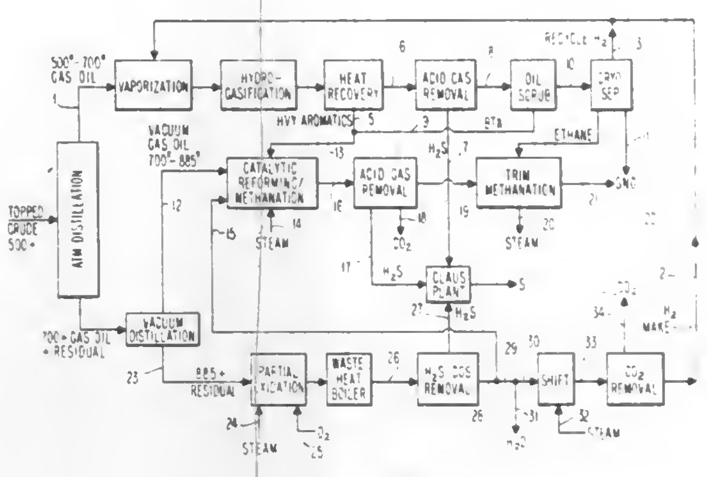
INTEGRATED HYDROGASIFICATION PROCESS FOR TOPPED CRUDE OIL

John C. Tao, Perkiomenville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 20, 1981, Ser. No. 255,593

Int. Cl.^{3} C01B *3/38*

U.S. Cl. 48—213 **7 Claims**



1. Process for making synthetic natural gas from a topped crude oil fraction feedstock comprising:

(a) separating said feedstock by distillation into three subfractions having boiling point ranges of
 (i) below 750° F.;
 (ii) above 800° F.;
 (iii) above that of subfraction (i) and below that of subfraction (ii);

(b) partially oxidizing sub-fraction (ii) to produce a hydrogen, carbon monoxide, and carbon dioxide stream, separating a part of said stream as a carbon monoxide-hydrogen-rich stream and shifting the remainder of said stream to produce a hydrogen-rich stream therefrom;

(c) hydrogenating sub-fraction (i) by noncatalytic hydrogasification to produce a low boiling point gas mixture, aromatics, and hydrogen, and separating said aromatics and hydrogen therefrom;

(d) catalytically reforming and methanating said fraction (iii) and said aromatics of step (c) in a combined reaction stage to produce a low boiling point gas mixture which is then subjected to a trim methanation step to increase the methane content of the mixture;

(e) recycling said hydrogen-rich stream removed from the product of said partial oxidation to said hydrogenation stage;

(f) recycling said carbon monoxide-hydrogen-rich stream from said partial oxidizing stage to said catalytic reforming and methanation stage;

(g) recovering said remaining low boiling point gas mixtures from said hydrogenation and catalytic reforming stages as a synthetic natural gas product.

4,367,078

LIQUID DEGASSER WITH SELF-CLEARING EXHAUST ORIFICE

Eugene R. Hendrix, Pittsfield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,610

Int. Cl.^{3} B01A *45/12;* B04C *3/00*

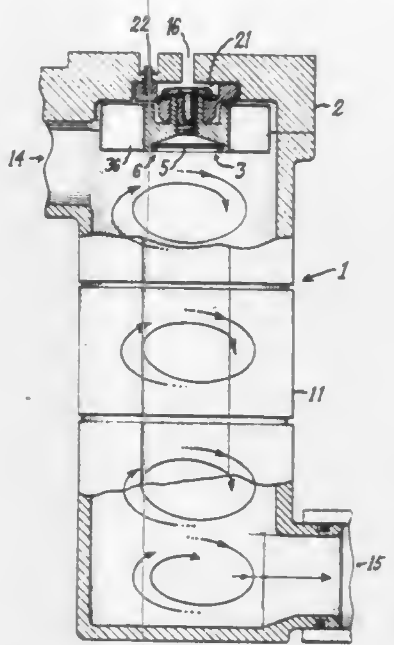
U.S. Cl. 55—184 **2 Claims**

1. A centrifugal separator for removing entrained gas from a liquid including a body which is symmetrical about an axis, an inlet port for introduction of liquid tangentially to the wall of the body proximate one end thereof to cause a spin induced vortex about said axis, an exit port remote from said one end for discharge of degassed liquid, a gas exhaust orifice in the body at said one end, and a filtering device at said orifice, wherein:

said filtering device is interposed between said orifice and said vortex and comprises a vaned spin member mounted for rotation about said axis responsive to liquid flow in said body;

said vaned spin member is attached to said body, is supported for rotation about said axis by a bearing structure and has radial vanes extending into the flow path of liquid about said vortex;

said spin member includes a gas inlet centered on said spin axis, a gas conduit to convey gas from said gas inlet to said orifice and means for retaining a filter in said gas inlet;



said gas conduit includes a conical portion wherein the base of said conical portion constitutes said gas inlet and lies in a plane normal to said axis and the apex of said conical portion communicates with said orifice; and

a planar filter is secured in said gas inlet by said means for retaining to interdict all fluid flow from said vortex to said orifice;

whereby liquid flowing through said separator to be centrifugally degassed will rotate said vaned spin member to cause said planar filter to spin off liquid entrained in gas enroute to said orifice; and

whereby aerosol passing the filter and collecting in the gas conduit will be centrifuged back to the gas inlet rather than being allowed to choke off the orifice.

4,367,079

UNIT CONTAINING SORBENT MATERIAL

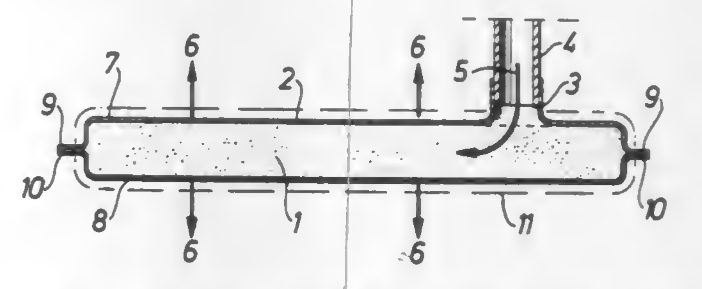
Hans I. Wallsten, Chemin de la Lisiere 6, Lausanne, Switzerland (CH-1018)

Filed Apr. 29, 1980, Ser. No. 144,874

Claims priority, application Sweden, Apr. 30, 1979, 7903788; Nov. 1, 1979, 7909062

Int. Cl.^{3} B01D *53/04*

U.S. Cl. 55—208 **17 Claims**



1. A unit for use as a thermal accumulator element comprising a sorbent material, a substantially gas tight casing tightly surrounding said sorbent material, wherein said casing is

formed of a flexible, relatively thin material having a low gas permeability and wherein said casing is provided with at least one port for admitting a gaseous substance into said interior to be adsorbed and desorbed by said sorbent material, and comprising means for maintaining the interior of the casing at a pressure substantially lower than the pressure at the exterior of said casing, said sorbent material and said casing thereby forming a rigid body, wherein the sorbent material comprises a plurality of elements of sorbent material hermetically enclosed in a common casing composed of several casing parts, the wall sections of adjacent casing parts being joined together in zones, in which passages are arranged which communicate between the casing parts for the flow of said gaseous substance to be sorbed and de-sorbed.

4,367,080
PRESSURE-GAS CONNECTION FOR DUST-LADEN GAS FILTERS

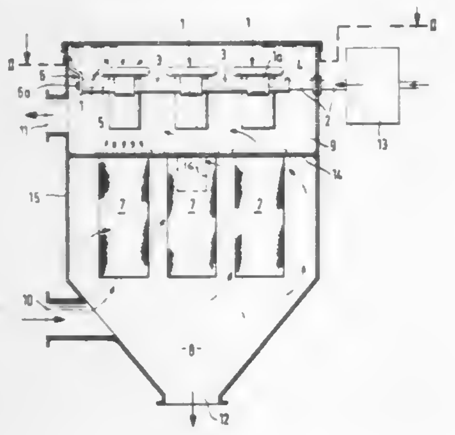
Friedel Kordas, Recklinghausen, Fed. Rep. of Germany, assignor to Intensive-Filter GmbH & Co KG, Velbert, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,734

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005146

Int. Cl.^{3} B01D *46/04*

U.S. Cl. 55—302 7 Claims



1. In a filter apparatus comprising a housing having a gas inlet and a gas outlet and having therein a plurality of filter elements for cleaning gas flowing therethrough and a two-stage injector device for reverse-flow purging of the filter elements comprising a plurality of injectors of a first stage and a cooperating plurality of injectors of a second stage positioned and arranged to direct a cleaning gas into said filter elements, and a pressure gas connection to a conduit which feeds a pressure gas to the injectors of the first stage, the improvement in the pressure gas connection wherein

said conduit is a single continuous conduit,

said plurality of injectors of said first stage include connecting sockets, respectively,

spacer sleeves and said connecting sockets are disposed on said conduit in alternating arrangement, said conduit communicates with said plurality of injectors of said first stage via said connecting sockets,

an end sleeve is disposed over a free end of said conduit,

clamping means for clamping said end sleeve to said free end and holding fast said injectors of said first stage with said connecting sockets and said sleeves, for pressure-tightly securing said connecting sockets and said sleeves with respect to each other and closing off said end sleeve such that pressure gas in said conduit only communicates with said plurality of injectors of said first stage via said connecting sockets.

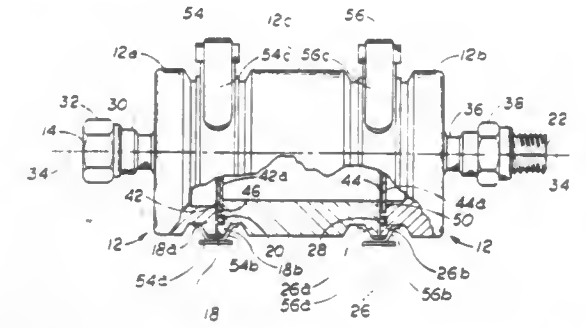
4,367,081
PARTICULATE FILTER ASSEMBLY

Robert N. Harvey, Santa Ana, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 16, 1981, Ser. No. 225,485

Int. Cl.^{3} B01D *46/12*

U.S. Cl. 55—503 6 Claims



4. In a particulate filter assembly for use with at least one removable filter element, in combination:

(a) a housing including at least
  - (i) an inlet housing section having a tapered flange at its outlet end,
  - (ii) an outlet housing section having a tapered flange at its inlet end,
  - (iii) an intermediate housing section having tapered flanges at each end,

said housing sections being adapted to be joined together at the flanges thereof,

(b) means for mounting a filter element between at least two of said housing sections, and

(c) a plurality of quick release clamps for applying and releasing radially directed clamping forces to the joined flanges of said housing sections,

(d) the clamps and the housing sections being so shaped that, upon the unclamping of the clamps, said intermediate housing section may be removed without substantial disturbance to any filter element and without substantial movement of the inlet and outlet housing sections.

4,367,082
AIR SEPARATING SYSTEM

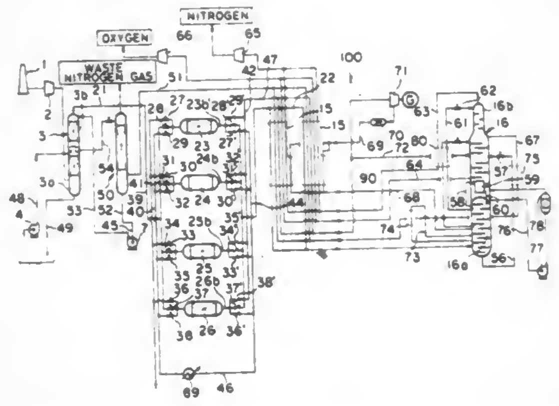
Yasushi Tomisaka, Kobe, and Yuji Horii, Nishinomiya, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 15, 1981, Ser. No. 273,393

Claims priority, application Japan, Jun. 14, 1980, 55-80635

Int. Cl.^{3} F25J *3/04*

U.S. Cl. 62—13 4 Claims



1. An air separating system, comprising:

an air cooling tower;

a plurality of reversing heat exchangers from which nitrogen gas is discharged;

a plurality of air feed conduits interconnecting said air cooling tower with said reversing heat exchangers for water-cooling air fed to said reversing heat exchangers;

at least three impurity adsorbers;

a plurality of on-off valves and a plurality of follower valves interconnecting said impurity adsorbers connected to said air feed conduits leading from said air cooling tower for water-cooling the air feed to reversing heat exchangers of the system to thereby remove impurities from said feed air;

an expansion turbine for producing chilling necessary for said system;

a plurality of turbine output gas conduits for feeding part of output gas of said expansion turbine to one said at least three impurity adsorbers through said reversing heat exchangers;

a plurality of regeneration gas conduits for again feeding to said adsorbers the outflow of the turbine output gas from said adsorbers after heating; and

a cooling water circuit for circulating cooling water between said water cooling tower for cooling said cooling water against said waste nitrogen gas discharged from said system through said reversing heat exchangers and said air cooling tower, wherein said feed air from said air cooling tower is fed to said reversing heat exchangers in operation through at least one of said three adsorbers while discharging part of said turbine output gas through the remaining adsorbers and wherein the remaining adsorbers are connected in series by said plurality of on-off valves, said plurality of follower valves and said plurality of regenerating gas conduits.

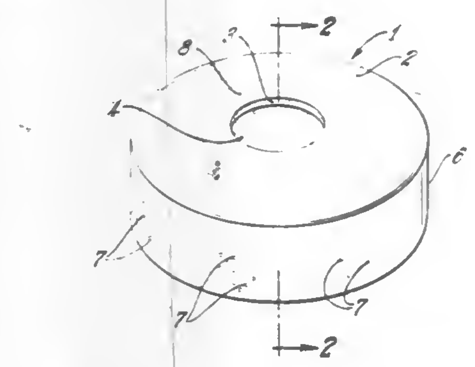
4,367,083
NICKEL-BASE SPINNER ALLOY

David J. Gaul, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 6, 1981, Ser. No. 318,728

Int. Cl.^{3} C03B *37/04;* C22C *19/05*

U.S. Cl. 65—1 10 Claims



1. A composition of matter consisting essentially of the following elements in amounts expressed in weight percent:

Chromium—from about 11.75 to about 13
Wolfram—from about 9 to about 11
Cobalt—from about 9 to about 11
Tantalum—from about 5 to about 6.8
Carbon—from about 0.5 to about 0.7
Silicon—from about 0.5 to about 0.7
Nickel—balance

10. A spinner comprised of the composition of claim 1, said spinner having foraminous walls and being adapted for rotation.

4,367,084
THREADING MEANS FOR STRAND PULLING AND CHOPPING APPARATUS

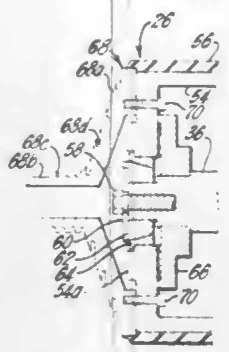
Dan Cox, and Bernard H. Jones, both of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 10, 1981, Ser. No. 329,541

Int. Cl.^{3} C03B *37/025;* B23D *25/12*

U.S. Cl. 65—10.2 4 Claims

1. Strand pulling and chopping apparatus comprising a rotatably mounted cot roll, a rotatably mounted chopping roll cooperable with the cot roll to attenuate glass filaments from molten glass streams supplied by a bushing, draw the filaments through a gathering shoe to form a strand, and draw the strand partially around the cot roll and between the two rolls to chop the strand into discrete lengths, means for rotatably driving one of the rolls, and means for threading a strand safely and easily between the two rolls while they are rotating at their



normal operating speeds for attenuating glass filaments and chopping a strand, said threading means comprising a threading member secured to an outer free end portion of the cot roll and having a cam surface for laterally moving a strand to the periphery of the cot roll as the member is rotated therewith at the normal operating speed thereof and the strand is held in engagement with the cam surface.

4,367,085
METHOD OF FABRICATING MULTI-MODE OPTICAL FIBER PREFORMS

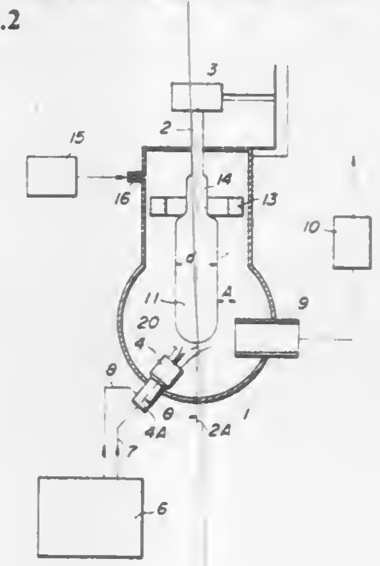
Shoichi Suto; Fumiaki Hanawa; Masao Kawachi; Takao Edahiro, and Motohiro Nakahara, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,916

Claims priority, application Japan, Jan. 7, 1980, 55/33; Jan. 7, 1980, 55/34

Int. Cl.^{3} C03B *19/06, 37/07*

U.S. Cl. 65—18.2 10 Claims



10. A method of fabricating a multi-mode optical fiber preform from a seed rod having an axis of rotation, comprising the steps of:

translating said seed rod along said axis of rotation while rotating said seed rod about said axis;

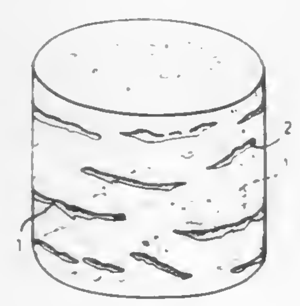
blowing out a glass raw material gas and a flame forming gas separately from a single synthesizing torch inclined at a predetermined inclination angle with respect to the axis of rotation of said seed rod to synthesize glass particles and then to deposit said glass particles onto one end of said seed rod so that a cylindrical porous preform is grown in the direction of said axis of rotation, said glass raw material gas including an additive material for controlling the refractive index of said preform, the inclination angle of said synthesizing torch resulting in a temperature distribution across said one end of said seed rod whereby the temperature of said one end decreases from the center toward the periphery thereof, said glass raw material gas reacting in accordance with the surface temperature of said seed rod and the concentration of said additive material in said preform to provide a predetermined refractive index profile across said preform; and

heating said cylindrical porous preform at a high temperature to vitrify said cylindrical porous preform into a transparent optical fiber preform.

4,367,086

METHOD FOR PRODUCING DECORATIVE GLASS OBJECTS

Timo Sarpaneva, Via Navegna 7, Minusio, Switzerland
PCT No. PCT/FI80/00001, § 371 Date May 13, 1981, § 102(e) Date May 13, 1981, PCT Pub. No. WO81/01142, PCT Pub. Date Apr. 30, 1981
PCT Filed Oct. 24, 1980, Ser. No. 269,037
Claims priority, application Finland, Oct. 26, 1979, 793360
Int. Cl.³ C03B *19/02; 19/08*
U.S. Cl. 65—22 **6 Claims**



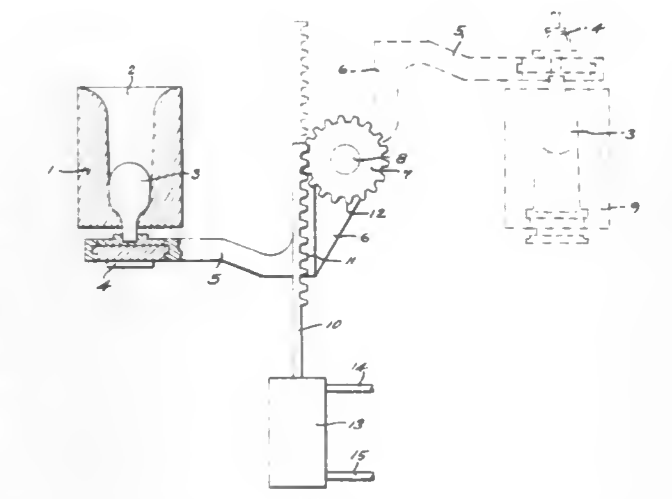
1. A method for producing a decorative glass object in which the decoration is created by blisters formed by air bubbles within solid glass and/or by a pattern on the outer surface of the glass, characterized in that molten glass is poured from above in the shape of a band into a hot mould at a suitable distance above said mould whereby said molten glass is spread in layers into said mould between which air bubbles remain to form said blisters, the temperature of the mould being lower than the temperature of the molten glass, whereby as the glass surface cools, the core still remains hot and air enclosed within the bubbles expands in the still molten glass which, while cooling, forms clear pearls inside the glass.

4,367,087

SYSTEM FOR CONTROLLING MOVEMENT OF ROTARY ARTICLE CONVEYING MECHANISM IN GLASSWARE FORMING MACHINES

Luis Cardenas Franco, and David Figueroa Sanchez, both of Monterrey, Mexico, assignors to Investigacion Fic Fideicomiso, Monterrey, Mexico
Filed Dec. 18, 1980, Ser. No. 217,680
Claims priority, application Mexico, Dec. 14, 1979, 180535
Int. Cl.³ C03B *9/40*
U.S. Cl. 65—163 **12 Claims**

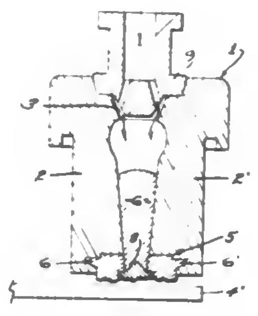
1. A system for controlling the state of movement and operating fluid pressure of a rotary article conveying mechanism in glassware forming machines, including a rotatable transporting arm, a rotatable shaft on which said transporting arm is mounted, a glassware article handling mechanism carried by the free end of said transporting arm, an initial movement station and a terminal movement station between which the transporting arm carries an article of glassware to be formed, the improvement comprising a pinion carried by said shaft, a rack engaging said pinion, a piston rod extending from one end of said rack, a double-acting dual chamber fluid actuator for moving said piston rod to actuate the rack and pinion and shaft to move the transporting arm between its two stations, an intake and a discharge conduit for said actuator, a state of movement sensor mounted on said shaft to transmit intermittent position signals, pressure sensors for each of the chambers in the actuator, a control system means comprising a logic circuit to receive signals from the sensors of the state of movement and the chamber pressures, said logic circuit including a memory of a viscoelastic-cyloidal equation, a control panel including a mode of operation switch for transmitting signals of the mode of operation to said logic circuit, and a series of digital switches for transmitting to said logic circuit timing signals for transporting of the article being formed, a closure valve operated by a solenoid which receives signals from the logic circuit, a directional valve for determining the direction of movement of the fluid actuator, said directional valve receiving signals from the logic circuit, and a digital valve in the fluid actuator discharge conduit, the opening of said digital valve being constantly controlled by the logic circuit to regulate the discharge of fluid from the actuator in conformity with the viscoelastic equation and in conformity with the signals from said sensors of state of movement and pressure.



4,367,088

SYSTEM FOR FABRICATING PREFORMS IN MACHINES FOR GLASS CONTAINER PRODUCTION

Alide B. Belletti, Monterrey, Mexico, assignor to Investigacion Fic Fideicomiso, Monterrey, Mexico
Filed May 12, 1981, Ser. No. 263,001
Int. Cl.³ C03B *9/24, 9/197*
U.S. Cl. 65—234 **2 Claims**



1. Improved blow and blow system for fabricating preforms in machines for glass container production, comprising: a parison mold of the type divided in two halves, said parison mold being suitably supported by respective opening and closing devices, wherein the preform is formed by blowing a gob of molten glass; an inversion arm carrying the preform from an inverted position to a normal position; a crown mold mounted on the inversion arm and of the type that divides and splits in

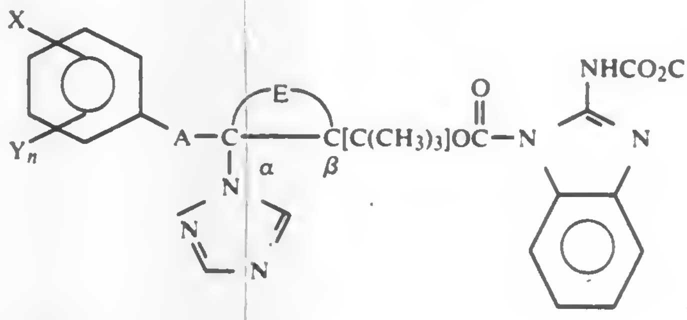
two halves, having a counter blowing nozzle and a retractable plunger centrally disposed therein and securely engaged to the lower part of the parison mold when both its halves are closed, to form the crown; wherein the improvements for reducing the time for mechanical dislogement are characterized by including a funnel coincidently and centrally integrated on the upper part of the parison mold to guide and form the molten glass gob to the inside of the parison mold; a first compression head engaged and disengaged through respective inlet and outlet devices with the integrated funnel and parison mold to provide a seating blowing that ensures uniform glass contact with the internal walls of the parison mold and the filling of the crown mold for suitable forming of the container crown; and a second bottom closure engaged and disengaged through respective inlet and outlet devices with the integrated funnel and parison mold and having its lower internal part shaped to the shape of the preform bottom and that closes the parison mold for a counter blowing to inflate the molten glass gob and shape the preform.

4,367,089

FUNGICIDAL CARBAMATES OF TRIAZOLE ETHANOLS (OR ETHENOLS)

John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 195,085, Oct. 8, 1980, abandoned. This application May 6, 1981, Ser. No. 260,909
Int. Cl.³ A01N *47/18;* **C07D** *403/12;* **A01N** *43/64;* **C07D** *249/08*
U.S. Cl. 71—76 **24 Claims**

1. A compound of the formula:



(I)

wherein

A is O or CH_2;

X is hydrogen, halogen, cyano, alkyl (C_1–C_4), alkoxy (C_1–C_4), haloalkoxy (C_1–C_3, 2–6 halogens), alkylthio (C_1–C_4), trifluoromethyl, alkylsulfonyl (C_1–C_4), trifluoromethanesulfonyl, phenyl, 2- or 4-halophenyl, or azido;

Y is halogen;

n is 0 to 1 and can be 0 to 2 when X is halogen; and

E is a hydrogen atom on each of carbons α and β, or can be a bond when A is oxygen.

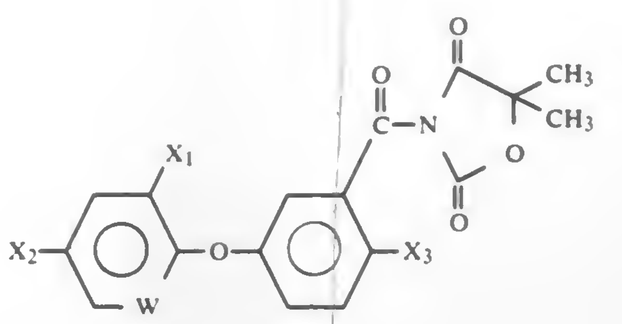
17. A method for controlling fungus diseases in plants comprising applying to the locus to be protected an effective amount of the compound of claim 1.

4,367,090

HERBICIDAL N-(5,5-DIMETHYLOXAZOLIDENEYL-2,4-DIONE) 5-(SUBSTITUTED PHENOXY-2-SUBSTITUTED BENZAMIDES

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-Poulenc Agrochimie, Lyon, France
Filed Jul. 17, 1981, Ser. No. 284,310
Int. Cl.³ C07D *263/32;* **A01N** *43/76*
U.S. Cl. 71—88 **5 Claims**

1. A herbicidal compound of the formula



(I)

where:

(i) W is C-X_4; and

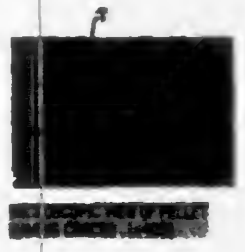
(ii) X_1, X_2, X_3 and X_4 are groups which are capable of being incorporated into Formula I and which collectively impart herbicidal activity thereto.

5. A method for combating unwanted plants which comprises contacting them with a herbicidally effective amount of a compound according to any one of claims 1 to 3.

4,367,091

FIRED IRON-ORE PELLETS HAVING AT LEAST TWO DIFFERENT PRECIPITATED SLAG PHASES AND PROCESS FOR PRODUCING THE SAME

Isao Fujita, Kobe; Mamoru Onoda, Midorigaokahigashi; Takeshi Sugiyama, and Shoji Shirouchi, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan
Continuation of Ser. No. 777,662, Mar. 15, 1977, abandoned. This application Aug. 29, 1978, Ser. No. 937,836
Claims priority, application Japan, Mar. 15, 1976, 51-28296
Int. Cl.³ C21B *5/00;* **C22B** *1/16*
U.S. Cl. 75—0.5 R **3 Claims**



1. Fired iron ore pellets, comprising:

a slag containing Rankinite and Tridymite slag phases which precipitate among the iron oxide grains in said pellets, said pellets being of a diameter of not less than 16 mm and having the characteristics of developing large cracks when the pellets are heated during reduction of the pellets, said heating fragmenting the pellets to an extent sufficient to substantially improve the reducibility of the pellets, the raw materials of said pellets being blended in amounts such that the amount of $CaO + SiO_2$ in said fired pellets ranges from 4% to 12% by weight and the CaO/SiO_2 ratio ranges from 0.5 to 1.28, and said fired pellets cooled at a rate from a firing temperature of at least 1280° C. which ensures slag phase precipitation in an amount sufficient to achieve said crack development during reduction.

2. In a process for producing fired iron ore pellets in which the raw materials including iron ore are crushed, pelletized, fired and cooled, the improvement comprising:

mixing the raw materials of said pellets comprising CaO, SiO_2 and iron ore such that the amount of $CaO + SiO_2$ in the fired pellets ranges from 4% to 12% by weight and the CaO/SiO_2 ratio ranges from 0.5 to 1.28;

pelletizing said mixed raw materials;

firing said pellets to a temperature not less than 1280° C.; and

cooling said fired pellets which have a diameter of not less than 16 mm at a rate sufficient to precipitate slag phases of Rankinite and Tridymite thereby forming said fired pellets which develop large cracks when the pellets are heated during reduction of the pellets.

4,367,092

CORROSION-INHIBITING ACID BURNISHING COMPOUND

Bruno E. Unzens, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed Jul. 16, 1981, Ser. No. 284,060

Int. Cl.^{3} C09G *1/04*

U.S. Cl. 106—3 16 Claims

1. In a metal finishing composition for burnishing of metallic components while subjecting said metallic components to the action of a solid finishing media, said composition comprising an aqueous acidic burnishing media and a rust and discoloration inhibitor the improvement comprising, as said inhibitor, an effective amount up to about 6% of a mixture of the compounds 6-[methyl(phenylsulfonyl) amino] hexanoic acid and 2,2',2''-nitrilotris(ethanol).

4,367,093

WELL CEMENTING PROCESS AND GASIFIED CEMENTS USEFUL THEREIN

John F. Burkhalter; Jerry D. Childs, and David L. Sutton, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 10, 1981, Ser. No. 282,321

Int. Cl.^{3} C04B *7/00*

U.S. Cl. 106—87 25 Claims

1. A cement composition for cementing an oil and gas well comprising:

a hydraulic cement;

water in an amount of from about 20 to about 135 percent by weight of said dry hydraulic cement;

aluminum powder;

an inhibitor selected from the group consisting of sorbitan mono-oleate, sorbitan dioleate, sorbitan trioleate, triethanol amine and diisopropyl amine.

4,367,094

SLUMP REDUCTION-PREVENTING AGENT AND METHOD FOR IMPROVING APPLICABILITY OF MORTAR CONCRETE

Yukio Fujimaru, Iwakuni; Toshihiro Sugiwaki, Yamaguchi; Keiji Ueoka, Ohtake, and Shigenobu Fujioka, Iwakuni, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

PCT No. PCT/JP79/00243, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO80/00835, PCT Pub. Date May 1, 1980

PCT Filed Sep. 12, 1979, Ser. No. 198,949

Int. Cl.^{3} C04B *7/35*

U.S. Cl. 106—90 2 Claims

1. A method for improving the workability of mortar concrete, which comprises adding thereto an agent for preventing deterioration in the slump properties thereof which agent contains as a main ingredient a lignin sulfonate having a carboxyl group content of at least 0.2 mols and a sulfon group content of at least 0.1 mols per phenyl propane unit, in an amount of 0.05 to 0.5% in relation to cement and at the starting point of mixing, in the course of mixing or at any point of time between mixing and placing, followed by mixing or re-mixing.

4,367,095

PROCESS AND DEVICE FOR MANUFACTURING CEMENT CLINKER

Gérald Namy, Saint-Etienne, France, assignor to Creusot-Loire Entreprises, Suresnes and Lafarge S.A., Paris, both of, France

Filed Jan. 21, 1981, Ser. No. 226,993

Claims priority, application France, Jan. 30, 1980, 80 02001

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—100 15 Claims

1. Process for manufacturing cement clinker by firing raw material previously prepared in the form of pellets in an apparatus comprising, from top to bottom, a zone for drying, preheating and pre-calcination, a clinkering zone, and a cooling zone through which said pellets pass successively in a downward direction, in countercurrent to a combustive fluid introduced into the bottom of said cooling zone and passing upwardly, carrying with it the gases formed in said apparatus, said pre-heating and cooling zones each operating as a tunnel kiln, said clinkering zone comprising a restricted conduit having a vertical axis and connected upwardly with said pre-heating zone by at least one pellet distribution hopper, said restricted conduit opening at the bottom into the upper part of said cooling zone and channeling said combustive fluid flowing in an upward direction so that said pellets form a fluidized bed into which a fuel is injected, said process comprising the steps of

(a) supplying said apparatus with pellets having a size in excess of 6 mm and comprising a quantity of carbon so determined that its combustion produces within each pellet just the amount of heat required to effect decarbonation of said raw material, taking account of the amount of heat introduced by the gases flowing in said pre-heating zone, the latter comprising at least a portion of the gases leaving said clinkering zone, and being introduced at an adjustable rate through said at least one hopper below said pre-heating zone;

(b) adjusting the flow of said gases and of said raw materials as a function of one another during the operation, so that decarbonation due to combustion of the carbon is achieved at the base of said pre-heating zone, and said pellets are then heated by contact with hot gases while passing downwardly through said at least one hopper, whereby they reach a temperature close to the clinkering temperature as they enter said clinkering zone; and

(c) introducing into said clinkering zone an amount of fuel sufficient to bring about and maintain the clinkering reaction.

4,367,096

METHOD AND APPARATUS FOR PREHEATING AND BURNING OFF COMBUSTIBLE CONSTITUENTS OF RAW MATERIAL OIL SHALE PRIOR TO INTRODUCTION OF SAME INTO A PREHEATER SYSTEM SUPPLYING A ROTARY KILN

Darius A. Wadia, 96 Marine Dr., Bombay, India

Filed Oct. 13, 1981, Ser. No. 310,770

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—100 36 Claims

1. A method for processing raw meal such as powdered limestone together with carbonaceous material or oil shale, said method including the steps of metering a quantity of powdered limestone into a first input stream in a cement processing system comprising a preheater system including at least a first stage cyclone preheater and one later stage cyclone preheater, said first stream leading directly to said first stage cyclone preheater, metering another quantity of oil shale and supplying it to a second input stream in said processing system, said second stream including a separate combustion chamber, supplying fuel to said combustion chamber and igniting said fuel and the compustible constituent of said oil shale, heating said oil shale in said combustion chamber to a temperature between 100° and 700° C., pumping said heated oil shale from said combustion chamber to said later stage cyclone preheater of said preheater system, processing said dry raw meal fed into said preheater system in said two streams through said cyclone preheater system to a rotary kiln for making cement clinker whereby the temperature of the gas exiting from the cyclone preheater system is increased so as to provide recoverable heat and whereby the thermal efficiency of said kiln and preheater system is increased.

4,367,097

METHOD FOR MANUFACTURING GRANULAR ORGANIC RUBBER CHEMICAL COMPOSITION

Yasuhiro Sakanaka, Shinnanyo; Takao Hayashi, Hikari; Tatsuya Koizumi, and Sumio Akashi, both of Yamaguchi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,799

Claims priority, application Japan, Aug. 21, 1980, 55-115157

Int. Cl.^{3} C09K *3/00*

U.S. Cl. 106—901 6 Claims

1. A method for manufacturing a granular organic rubber chemical composition characterized in that an organic rubber chemical mixture consisting of an organic rubber chemical selected from the group consisting of a vulcanizing agent, a vulcanizing accelerator and an antioxidant and, relative to this organic rubber chemical, 5 to 45 wt. % of a liquid polybutene which is of mean molecular weight of 200 to 10,000 and of viscosity not exceeding 37,000 centi-stokes at 100° F., 0.1 to 20 wt. % of a nonionic or an ionic surface active agent and 0.1 to 2 wt. % of a water-soluble anionic macromolecule which contains a carboxyl group or a hydroxyl group within the molecule thereof is hardened by bringing the mixture into contact with an aqueous solution containing an alkaline earth metal salt and/or a zinc salt.

4,367,098

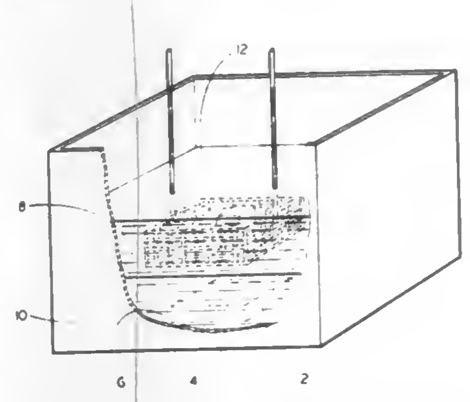
PROCESS FOR ULTRASONIC CLEANING USING TWO IMMISCIBLE FLUIDS

James W. McCord, 9101 Nottingham Pkwy., Louisville, Ky. 40222

Filed Jun. 22, 1981, Ser. No. 276,205

Int. Cl.^{3} B08B *3/12*

U.S. Cl. 134—1 4 Claims



1. A process for cleaning objects in a system comprising a first layer of a relatively heavy liquid and a second layer of cleaning liquid lighter than, immiscible with and layered on top of the first layer of liquid, said system having an ultrasonic vibrating means immersed in the first layer of relatively dense liquid thereby protected from the effects of the cleaning liquid of the second layer, the ultrasonic vibrating means creating cavitation in said first and second layers, comprising the steps of: immersing the objects to be cleaned only in the second layer of cleaning liquid during said cavitation and removing the objects from the second layer of cleaning liquid after a preselected period of time.

4,367,099

TRIVALENT CHROMIUM PASSIVATE PROCESS

Ronald J. Lash, Rochester, and David E. Crotty, Highland Park, both of Mich., assignors to Occidental Chemical Corporation, Warren, Mich.

Filed Jun. 15, 1981, Ser. No. 273,526

Int. Cl.^{3} C23F *7/00*

U.S. Cl. 148—6.2 28 Claims

1. A process for treating a receptive metal substrate to impart an improved chromate passivate film thereon which comprises the steps of providing an aqueous acidic solution containing chromium ions, substantially all of which are in the trivalent state, in an amount from about 0.05 g/l up to saturation, hydrogen ions in an amount sufficient to provide a pH of from about 1.2 to about 2.5, an oxidizing agent selected from peroxides, alkaline metal persulfates and ammonium persulfate, in an amount sufficient to activate the hydrated trivalent chromium to form a chromate film on the substrate, and at least one additional metal ion selected from the group consisting of iron, cobalt, nickel, molybdenum, manganese, aluminum, lanthanum, cerium, lanthanide mixtures, as well as mixtures thereof; contacting the substrate with said aqueous acidic solution for a period of time sufficient to form a passivate film thereon; contacting the passivated substrate with a dilute aqueous rinse for a period of at least one second, which rinse solution contains a bath soluble and compatible silicate compound present in an amount sufficient to impart improved corrosion resistance and hardness to the passivate film; and, thereafter, drying the passivated silicate rinsed surface.

4,367,100

SILICON STEEL AND PROCESSING THEREFORE

Clarence L. Miller, Jr., Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1979, Ser. No. 85,094

Int. Cl.^{3} H01F *1/04*

U.S. Cl. 148—113 6 Claims

1. In a process for producing grain oriented electromagnetic silicon steel, which process includes the steps of: preparing a melt of silicon steel having, by weight, from 2.5 to 4% silicon; casting said steel; hot rolling said steel; cold rolling said steel; decarburizing said steel; coating said steel and final texture annealing said steel; the improvement comprising the steps of applying a coating consisting essentially of:

(a) 100 parts, by weight, of aluminum hydroxide;

(b) magnesium oxide present in minor amounts of up to 20 parts, by weight, for reacting with impurities; and

(c) up to 10 parts, by weight, of inhibiting substances;

and final texture annealing said steel with said coating thereon, said annealed steel having a substantially uniform metallic surface substantially free of glass reaction products.

4,367,101

METHOD OF PROVIDING AN ANTI-STICK COATING ON NON-ORIENTED, SEMI-PROCESSED ELECTRICAL STEELS TO BE SUBJECTED TO A QUALITY ANNEAL

Michael H. Haselkorn, Franklin, and James D. Evans, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Apr. 6, 1981, Ser. No. 251,136

Int. Cl.^{3} C23F *7/10*

U.S. Cl. 148—113 10 Claims

1. A process of providing an anti-stick coating directly on non-oriented, semi-processed electrical steels chosen from the class consisting of cold rolled, non-oriented, semi-processed silicon steels, cold rolled, semi-processed carbon steels for motor laminations; and semi-processed, low-oxygen silicon bearing lamination steels, to prevent sticking together of laminations during a quality anneal, comprising the steps of applying to said steel a coating solution containing an Al^{+++}, Mg^{++} and $H_2PO_4^-$ concentration in the following relative relationship on a water free basis: from 3 to 11% by weight

Al^{+++} calculated as Al_2O_3, from 3 to 15% by weight Mg^{++} calculated as MgO and from 78 to 87% by weight $H_2PO_4^-$ calculated as H_3PO_4, the total weight percentage of Al^{+++} (as Al_2O_3), Mg^{++} (as MgO) and $H_2PO_4^-$ (as H_3PO_4) being 100 on a water-free basis, said concentration of Al^{+++}, Mg^{++} and $H_2PO_4^-$ comprising 100 parts by weight calculated as Al_2O_3, MgO and H_3PO_4 respectively on a water-free basis, and from 0 to 150 parts by weight of colloidal silica on a water-free basis, said solution being diluted with water so as to form a uniform coating having a coating weight of less than 2 grams per square meter on each side of said steel, and subjecting said coated steel to a heat treatment at a temperature of from 700° F. (371° C.) to about 1600° F. (870° C.).

4,367,102

METHOD FOR THE MANUFACTURE OF A SUPERCONDUCTOR CONTAINING AN INTERMETALLIC COMPOUNDS

Manfred Wilhelm, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,398

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002177; Jan. 22, 1980, 3002196

Int. Cl.^{3} H01L *39/00*

U.S. Cl. 148—133 **12 Claims**

1. In a method for manufacturing a superconductor containing a superconductive intermetallic compound of at least two elements, wherein an intermediate conductor product is prepared by bringing into contact (a) a first component, in the form of at least one ductile wire or rod, containing one element of the desired intermetallic compound and (b) a second component, in the form of a jacket or matrix into which said first component is embedded, consisting of an alloy of a carried metal and the remaining elements of the desired intermetallic compound, and wherein said intermediate product is subjected to one or more cross-section reducing processes and thereafter subjected to a heat treatment sufficient to effect solid-state diffusion of said remaining elements into said element of the first component and to effect a reaction therebetween so as to form said intermetallic compound, the improvement comprising conducting said heat treatment in a hydrogen atmosphere thereby to effect hydrogen doping of the superconductor intermetallic compound.

11. In a method for manufacturing a superconductor containing the superconductive intermetallic compound Nb_3Sn, wherein an intermediate conductor product is prepared by bringing into contact (a) a first component, in the form of at least one ductile wire or rod, containing niobium and (b) a second component, in the form of a jacket or matrix into which said first component is embedded, consisting of a tin-copper alloy, and wherein said intermediate product is subjected to one or more cross-section reducing processes and thereafter subjected to a heat treatment sufficient to effect solid-state diffusion of said tin into said niobium and to effect a reaction therebetween so as to form said Nb_3Sn compound, the improvement comprising conducting said heat treatment in a hydrogen atmosphere.

4,367,103

EXPLOSIVE COMPOSITION

James A. Enever, Kilmarnock, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 20, 1980, Ser. No. 123,076

Claims priority, application United Kingdom, Mar. 7, 1979, 7908001

Int. Cl.^{3} C06B *45/34*

U.S. Cl. 149—7 **14 Claims**

1. A powder blasting or detonating explosive composition comprising particulate inorganic oxidising salt, finely divided metal sensitiser and, optionally, additional fuel, in the form of discrete granules containing oxidising salt and metal, said granules being coated with a tough, cohesive, resilient, non-explosive jelly consisting essentially of inorganic oxidizing salt and gelling agent dissolved in a non-explosive liquid which is retained in the coating.

4,367,104

FINELY COMMINUTED WATER-SOLUBLE MATERIALS AND AQUEOUS SUSPENSIONS THEREOF

Hugh S. Paton, Irvine, and James A. Enever, Kilmarnock, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 26, 1980, Ser. No. 181,344

Claims priority, application United Kingdom, Sep. 18, 1979, 7932303

Int. Cl.^{3} C06B *31/52*

U.S. Cl. 149—7 **14 Claims**

1. A water-soluble crystalline material which has been comminuted in a saturated aqueous solution of said material in the presence of dissolved crystal-growth inhibitor having a hydrophobic portion and a hydrophilic portion in its molecular structure, said material being in admixture with a deflocculant whereby flocculation of said material caused by interaction of the said hydrophobic molecular portions in inhibited whenever said material is suspended in water, the chemical nature of the deflocculant being different from that of the crystal-growth inhibitor.

4,367,105

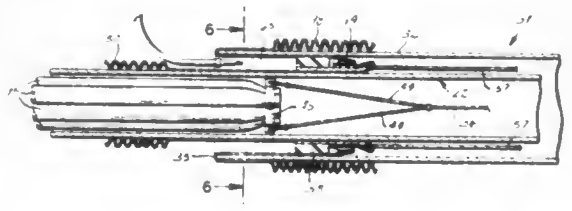
METHOD AND APPARATUS FOR MAKING ELONGATED ARTICLES HAVING SHEATHED FOAM INSULATION

Lawrence L. Rosier, 812 Lindell Dr., Ballwin, Mo. 63011, and William C. Mulder, 1891 Catlin, Barnhart, Mo. 63012

Filed May 15, 1981, Ser. No. 264,149

Int. Cl.^{3} B32B *31/06, 5/20*

U.S. Cl. 156—79 **19 Claims**



1. The method of covering a previously formed elongated article with foam insulation sheathed seamlessly both against the said article and also on the outer side of such insulation, comprising the preparatory steps of

loading a length of seamless tubular flexible outer sheathing bunched axially on the outer side of an elongated mold sleeve,

loading a similar length of seamless flexible inner sheathing bunched axially on an intermediate portion of the outer side of an elongated tubular core supported by its upstream portion and positioned co-axially with and upstream of such mold sleeve,

passing the leading end of the previously formed article through said tubular core,

joining said leading end with the downsteam end of said inner sheathing and with the upstream end of said outer sheathing,

moving said joined ends downstream inside said elongated mold sleeve whereby to reverse and invert the outer sheathing, and

while continuing to move said ends downstream, introducing foam insulation material between said sheathings upstream of said joined ends.

4,367,106

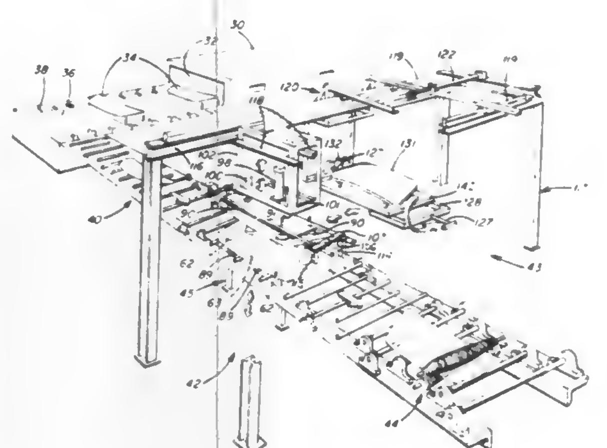
METHOD AND APPARATUS FOR ASSEMBLING SANDWICHES COMPRISING HOT BENT GLASS SHEETS

James L. Valimont, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,595

Int. Cl.^{3} B32B *17/10;* **C09J** *5/06*

U.S. Cl. 156—102 **6 Claims**



1. A method of assembling a sandwich comprising a pair of aligned bent glass sheets of conforming shape having a temperature above 200° F. (93° C.) and a sheet of flexible interlayer material for lamination into a bent transparent laminated window comprising supporting said pair of bent glass sheets at an assembly station, providing a sheet of flexible interlayer material, separating said bent glass sheets from one another, moving said sheet of flexible interlayer material into alignment with at least one of said bent glass sheets to bring a surface thereof into alignment with a concave surface of one of said bent glass sheets, and bringing a convex surface of the other of said bent glass sheets into engagement with the opposite surface of said sheet of flexible interlayer material to conform the shape of said flexible interlayer material to that of said bent glass sheets, characterized by engaging the opposite surfaces of said sheet of flexible interlayer material with substantially the entire extent of said bent glass sheets before the conclusion of a time interval sufficient to cool said bent glass sheets from the temperature at which said glass sheets are bent to a temperature below that at which the sheet of flexible interlayer material develops sufficient tackiness to resist sliding relative to the bent glass sheets on engagement therewith.

4,367,107

ALIGNING BENT GLASS SHEETS FOR ASSEMBLY INTO BENT GLASS SHEET SANDWICHES

James L. Valimont, Cheswick, and Barry L. Shadle, Leechburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

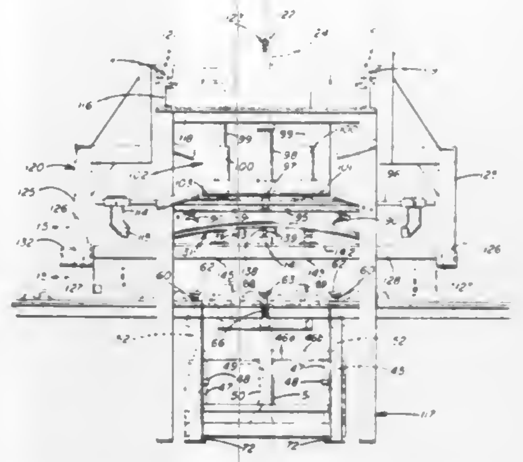
Filed Jul. 28, 1981, Ser. No. 287,608

Int. Cl.^{3} B32B *17/04, 17/10*

U.S. Cl. 156—102 **6 Claims**

1. A method of aligning and bonding a pair of bent glass sheets comprising an upper bent glass sheet and a lower bent glass sheet of matching concave elevational configuration comprising assembling said glass sheets with a sheet of flexible interlayer material therebetween comprising supporting said pair of bent glass sheets on a support, engaging each of the opposite longitudinal end edge surfaces of said bent glass sheets at transversely spaced portions at an upper level with a pair of transversely spaced, linear rotating rolls mounted for free rotation about oblique axes extending approximately parallel to the thickness of corresponding end edge surfaces adjacent thereto to align said glass sheets longitudinally of an assembly station, engaging each of the opposite side edges of said sheets at longitudinally spaced portions at a lower level with a pair of side edge alignment rolls to align said glass sheets transversely of said assembly station, disengaging said linear rotating rolls from engagement with said longitudinal end edge portions, lifting said bent glass sheets in unison from said support on a first set of vacuum cups while maintaining said side edge alignment rolls in engagement with said opposite side edge portions, engaging the top surface of the upper bent glass sheet of said pair with a second set of vacuum cups, applying vacuum to said cups to hold the engaged glass sheet surfaces thereagainst, separating said side edge alignment rolls from said side edges, and separating said bent glass sheets in a direction of their thickness as to form a gap between said glass sheets at said assembly station,

inserting a sheet of flexible interlayer material into said gap into a position of alignment over said lower bent glass sheet and bonding said glass sheets to said sheet of flexible interlayer material.



4,367,108

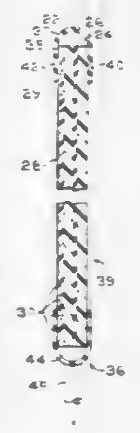
MANUFACTURE OF LAMINATED ASSEMBLIES

James L. Valimont, Cheswick, Pa., and George W. Shoop, Seminole, Fla., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 29, 1980, Ser. No. 154,210

Int. Cl.^{3} B29C *27/06;* **B32B** *31/20;* **C03C** *27/12*

U.S. Cl. 156—104 **25 Claims**



1. A method of manufacturing a laminate assembly, said laminate assembly comprising two matched rigid sheets about a thermoplastic interlayer, comprising the steps of:

positioning heating means over a first exposed major surface of the laminate assembly in alignment with the marginal edge portions thereof;

forming an evacuatable peripheral conduit about the laminate assembly by sealingly engaging a first channel arm of an endless channel shaped member to marginal portions of said heating means and sealingly engaging an opposing channel arm of the channel shaped member to the opposite exposed major surface of the laminate assembly, the channel arms terminating short of the center portion of the major surfaces of the laminate assembly and biased against the heating means and the opposite exposed major surface with a force sufficient to seal the peripheral conduit when a vacuum is drawn therein;

drawing a vacuum in the peripheral conduit to evacuate the interfacial surfaces between said sheets and said interlayer; and

heating the marginal edge portions of the laminate assembly with said heating means to bond the interlayer to the sheets about the marginal edge portions thereof to seal the periphery of the laminate assembly, wherein at least one exposed major surface thereof provides visual access to the effect of the practice of said drawing step and said heating step.

16. An apparatus for manufacturing a laminate assembly, said laminate assembly having two matched rigid sheets about a thermoplastic interlayer, comprising:

means for heating the marginal edge portions of said laminate assembly; and

a flexible endless channel shaped member, said channel shaped member including a first channel arm sealingly engagable to said heating means and an opposing channel arm sealingly engagable to an exposed major surface of the laminate assembly, the channel arms of the channel shaped member terminating short of the center portion of the major surfaces of the laminate assembly to form an evacuatable peripheral conduit about the laminate assembly, wherein the channel arms are biased against the heating means and the exposed major surface with a force sufficient to seal the peripheral conduit when a vacuum is drawn therein, wherein said exposed major surface provides visual access of the effect of said heating means and a vacuum in said peripheral conduit on said laminate assembly.

4,367,109

PROCESSES FOR MANUFACTURING INNER TUBES OF THE SO-CALLED PUNCTURE-PROOF TYPE FOR VEHICLE WHEELS AND SIMILAR AND PUNCTURE-PROOF INNER TUBES THUS OBTAINED

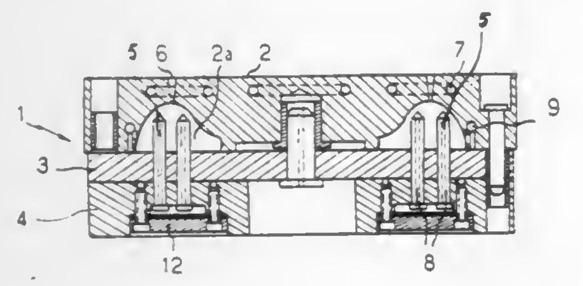
Robert Estrade, Alencon, and Jean Michaut, Maisons-Laffite, both of France, assignors to Hutchinson-Mapa, Paris, France

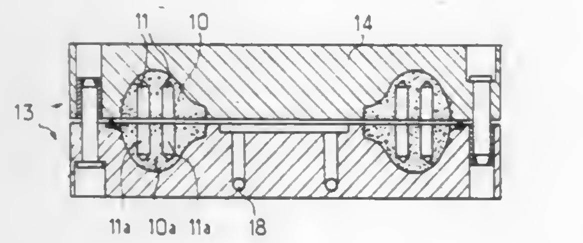
Filed Oct. 7, 1980, Ser. No. 194,892

Claims priority, application France, Oct. 11, 1979, 79 25303

Int. Cl.³ B29H ***13/00;*** **B32B** ***31/20***

U.S. Cl. 156—113 **14 Claims**





1. A process for manufacturing an inner tube for a puncture-proof tire formed by a toric cushion made from an elastomer material comprising independent cells containing therein a gas at a predetermined pressure, said toric cushion being preformed in a preforming mold comprising a male portion, a female portion having heating means and a flat closure plate separate and separable from said male portion and said female portion and disposed therebetween, said female portion having a semi-toric cavity formed therein and having a plane face formed by said flat closure plate, said toric cushion being subsequently vulcanized in a vulcanizing apparatus separate and different from said preforming mold and having first and second mutually facing shells, wherein said method comprises:

filling said cavity of said female portion of said preforming mold with said elastomer material, said cavity of said female portion being closed by said flat closure plate;

preforming within said preforming mold a substantially semi-toric element having a flat face;

molding a plurality of recessed cavities within said semi-toric element within said preforming mold such that said cavities are open on said flat face of said semi-toric element;

undervulcanizing said flat face on said semi-toric element while contacting said flat face with said flat closure plate;

performing a first vulcanizing operation on said semi-toric element in said preforming mold under predetermined conditions of time, temperature and temperature distribution so as to stabilize the dimensions of said semi-toric element and to obtain an even flatness on said flat undervulcanized face of said semi-toric element;

removing said semi-toric element from said preforming mold to obtain a first undervulcanized semi-toric element;

forming a second undervulcanized semi-toric element;

introducing said first and second semi-toric elements into said separate vulcanizing apparatus; and

subjecting said first and said second semi-toric elements to a second vulcanizing operation for assembling said flat undervulcanized faces of said first and second semi-toric elements to form said toric cushion having optimum mechanical characteristics.

11. An apparatus for manufacturing a puncture-proof pneumatic tire inner tube formed by first and second semi-toric elements joined to form a toric cushion made from an elastomeric material and having a plurality of independent cells formed therein, said cells containing a gas at a predetermined pressure, wherein said apparatus comprises:

a first mold for preforming said semi-toric elements wherein said first mold further comprises;

a female portion in the form of a half-shell having an open plane face, and having a plurality of transfer channels formed therein for introducing said elastomer material into said first mold;

a male portion provided with a plurality of fingers for molding said cells;

a plate separate and separable from said male portion and said female portion of said first mold for closing said open plane face of said half-shell of said female portion and for forming a flat face on each of said semi-toric elements;

a heating network provided in said female portion of said first mold and in said plurality of fingers provided on said male portion, to the exclusion of said closure plate; and

a second mold separate from said first mold for joining and vulcanizing said first and second semi-toric elements to form said toric cushion.

4,367,110

DECORATIVE LAMINATE AND A MANUFACTURING METHOD THEREFOR

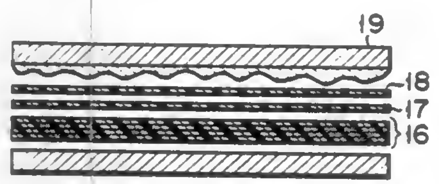
Akira Yoshikawa, Tokyo, Japan, assignor to Toppan Printing Co., Japan

Filed Jun. 27, 1980, Ser. No. 163,689

Claims priority, application Japan, Jul. 2, 1979, 54-83751; Jul. 6, 1979, 54-93200[U]; Jul. 18, 1979, 54-99223[U]; Aug. 17, 1979, 54-105205

Int. Cl.³ B32B ***31/00***

U.S. Cl. 156—219 **5 Claims**



1. A method for manufacturing a decorative laminate including the step of hot pressing decorative laminate elements with a press plate that includes a dense enamel layer joined directly to the surface of a metal substrate.

4,367,111

SEWING METHOD

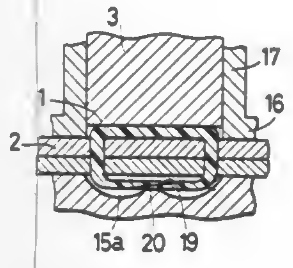
Tokuzo Hirose, 7-26 Hashimoto-cho, Abenoku, Osaka, Japan

Division of Ser. No. 46,631, Jun. 7, 1979, Pat. No. 4,262,836. This application Aug. 22, 1980, Ser. No. 181,397

Claims priority, application Japan, Apr. 13, 1979, 54-45842

Int. Cl.³ B31F ***1/00***

U.S. Cl. 156—221 **1 Claim**



1. A sewing method comprising:

providing a sewing apparatus which comprises:

- a bed adapted to receive thereon work;
- a rigid arm fixedly positioned above said bed, said arm having fixed thereto a stationary external cylinder;
- an internal cylinder mounted within said external cylinder for vertical movement with respect thereto toward and away from said bed, said internal cylinder having therein a vertical passage;
- a staple feeder attached to said external cylinder;
- said internal cylinder having at a lower end thereof an outwardly extending work presser;
- a staple driver mounted for vertical movement within said vertical passage;
- a recessed anvil positioned in said bed at a location confronting the lower end of said vertical passage, said anvil having extending upwardly from the bottom thereof a projection; and
- a heater located adjacent said anvil;

moving said internal cylinder vertically upwardly within said external cylinder to a raised position spaced from said bed;

positioning work on said bed;

moving said internal cylinder vertically downwardly within said external cylinder to a lowered position whereat said work presser presses said work against said bed;

positioning within said staple feeder a supply of synthetic resin staples each having an inverted U-shaped configuration with spaced downwardly extending legs;

feeding said staples sequentially from said staple feeder through said external cylinder and said internal cylinder into said vertical passage;

moving said staple driver downwardly within said vertical passage and thereby driving a leading of said staples downwardly through said vertical passage, penetrating said legs of said staple through said work on said bed, pressing said legs of said staple against said anvil, thereby bending said legs of said staple inwardly into abutting relationship with each other at a position beneath said work, and pressing said abutted staple legs against said projection and into tight attachment with said work; and

operating said heater and thereby heating and fusing together said abutted staple legs to thus form an integral and uniform dimensioned member on the underside of said work:

4,367,112

HEAT-SEALABLE LAMINAR THERMOPLASTIC FILMS

Hee C. Park, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 99,171, Nov. 30, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 248,937

Int. Cl.³ B29C ***19/00***

U.S. Cl. 156—244.23 **6 Claims**

1. A continuous method for manufacturing heat-sealable polypropylene film comprising the steps of:

forming a continuous thin film substrate comprising a substantially uniform layer of polypropylene homopolymer;

uniaxially orienting the polypropylene layer by machine direction stretching of the film substrate;

applying by melt coating or extrusion coating a thin coating of low-melting ethylene-copolymer to the uniaxially oriented film substrate, said copolymer consisting essentially of about 6 to 30 weight percent methylacrylate and about 94 to 70 percent ethylene, and having a minimum seal temperature between about 180° F. and below about 270° F.;

biaxially orienting the coated film by stretching the film transversely to the machine direction at a temperature above the melting point of the ethylene copolymer; and

cooling the film to recover a biaxially-oriented product.

4,367,113

MULTICOMPONENT POLYMER COMPOSITIONS

Khalid A. Karim; Pallavoor R. Lakshmanan, and James H. Rea, all of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 29, 1981, Ser. No. 278,762

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ C08G ***93/00;*** **C09J** ***5/00;*** **B29F** ***3/10***

U.S. Cl. 156—327 **21 Claims**

1. A compatible blend of polymers consisting essentially of:

(a) an olefin polymer,

(b) an ethylene copolymer,

(c) an ionomer resin, and

(d) a tackifying resin;

said olefin polymer being a polymer comprising polymerized ethylene with any comonomer polymerized therewith being a C_3 or higher alpha-olefin and having a density of at least about 0.95 gram/ml or an isotactic propylene polymer; said ethylene copolymer having polymerized therein about 70 to 90 weight % of ethylene and the balance an alkyl ester of acrylic or methacrylic acid or vinyl acetate; said ionomer resin having a high load melt index of at least about 1.0 and a normal load melt index of up to about 50, and being a metal salt of an ethylene-acid copolymer which is a copolymer of ethylene and acrylic or methacrylic acid having an acid content of about

1-10 mol %; and said tackifying resin being selected from the group consisting of:
- (a) terpene resins having a Ring and Ball softening point of about 10°-150° C.,
- (b) aliphatic hydrocarbon resins having a Ring and Ball softening point of about 10°-135° C.,
- (c) rosin esters having a Ring and Ball softening point of about 65°-140° C.,
- (d) alpha-methylstyrene/vinyl toluene copolymers having a Ring and Ball softening point of about 75°-120° C.,
- (e) polystyrene resins having a Ring and Ball softening point of about 25°-100° C., and
- (f) terpene-phenolic resins having a Ring and Ball softening point of about 80°-135° C.; and
- (g) rosin,

said composition containing the olefin polymer and the ethylene copolymer in the combined amount of 100 parts by weight and containing the ionomer resin and the tackifying resin in the combined amount of about 15-200 parts by weight; and the olefin polymer and the ethylene copolymer being present in proportions such that the alkyl ester or vinyl acetate moiety of the ethylene copolymer constitutes about 4-12 weight % of the total weight of said two polymers.

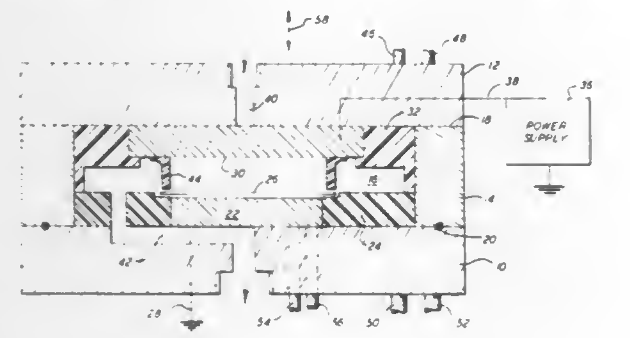
11. In an adhesive method for bonding together two articles having surfaces of paper, aluminum, copper, and ethylene homopolymer, an ethylene-vinyl alcohol copolymer, an isotactic propylene polymer or a polyethylene terephthalate polyester in which a hot melt adhesive heated above its melting point is placed between the surfaces to be bonded together, said surfaces are assembled together and the assembly is cooled to ambient temperature to solidify such adhesive; the improvement which consists essentially of employing as the hot melt adhesive a polymer composition of claim **1**.

12. In a coextrusion process for preparing a composite polymer film construction having polymers in the two surface layers which are fusion-bonded to each other by an intermediate polymer layer in which three polymer streams are fed into three channels of a film die, and the three polymer streams flow into the film die and are extruded to form an extrudate in which the three polymer streams form a film having three fusion-bonded layers; the improvement which consists of employing an ethylene homopolymer, an ethylene-vinyl alcohol copolymer, an isotactic propylene polymer, or a polyethylene terephthalate polyester as the polymer to form each of the two surface layers and employing a polymer composition of claim **1** and to form the intermediate polymer layer.

4,367,114
HIGH SPEED PLASMA ETCHING SYSTEM

George N. Steinberg; Alan R. Reinberg, both of Westport, and Jean Dalle Ave, Stamford, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 6, 1981, Ser. No. 260,668
Int. Cl.³ C23C *15/00*
U.S. Cl. 156—345 **28 Claims**

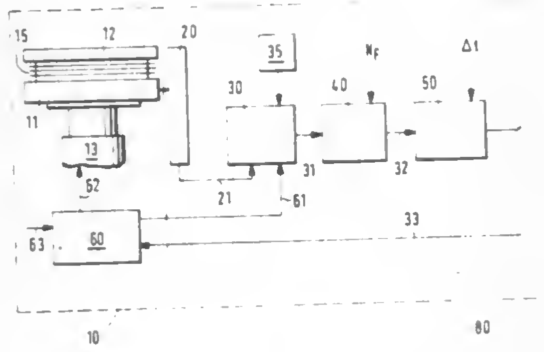


1. A plasma etching system comprising a lower flange and a spaced upper flange;
- a chamber wall mounted between said flanges to form a closed etching chamber;
- a wafer support plate disposed in said chamber for receiving thereon a wafer to be processed;
- means for electrically grounding said wafer support plate;
- means for clamping the wafer firmly to the wafer support plate to enhance electrical coupling of the wafer to ground;
- electrical insulating spacer means interposed between said chamber wall and said support plate;
- a sintered or sintered-like porous electrode plate, means for mounting said electrode plate in the chamber in spaced relationship with respect to the wafer; said plate having gas inlet means for receiving a supply of etching gas; means for applying an excitation operating voltage to said electrode plate; and
- said chamber having a gas outlet leading to a vacuum source for discharging gas and etching products.

4,367,115
DEVICE FOR CONTROLLING A PANEL PRESS FOR THE ASSEMBLY OF MULTILAYER PRINTED CIRCUIT BOARDS

Hans Bohn, Schopfloch; Wolfgang Stein, Freudenstadt; Peter Bernsau, Wittlensweiler, and Fred Staubitzer, Dornstetten, all of Fed. Rep. of Germany, assignors to Robert Bürkle GmbH & Co., Freudenstadt, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,929
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038288
Int. Cl.³ G05G *15/00*
U.S. Cl. 156—358 **4 Claims**

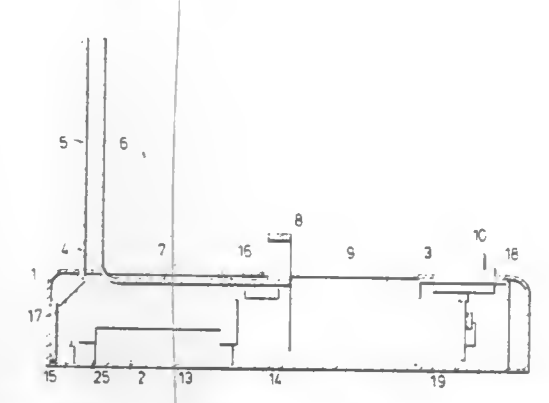


1. A device for controlling a heated panel press in the switchover from a contact pressure mode to a curing pressure mode, in connection with the assembly of multilayer printed circuit boards with interposed thermosetting resinous bonding layers, the switchover control device comprising in combination:
- pressure switchover means operable to change the contact pressure mode of the panel press to the curing pressure mode, in response to the receipt of a threshold signal;
- transducer means operable to generate displacement pulses representing increments of displacement between two plates of the panel press through which pressure is applied to a multilayer;
- pulse counting means operable to count the displacement pulses received from the transducer means;
- count initiating means operable to start the counting means in response to the establishment of the contact pressure mode;
- count comparing means operable to produce a threshold signal representing the presence of the flux state of the resin of the bonding layers, when the count of the displacement pulses has reached an empirically predetermined threshold count; and
- signal delaying means operable to transmit the threshold signal to the pressure switchover means with an adjustable time delay.

4,367,116
BINDING APPARATUS

Sture H. Wiholm, Johanneshov, Sweden, assignor to Semotex AB, Stockholm, Sweden

Filed Apr. 6, 1981, Ser. No. 251,073
Claims priority, application Sweden, Apr. 15, 1980, 8002830
Int. Cl.³ B42C *19/00*
U.S. Cl. 156—366 **9 Claims**

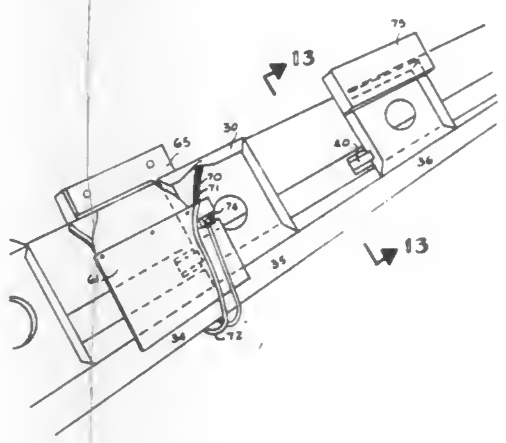


1. Apparatus intended for binding sheets in a folder or file provided with a heat-sensitive binding agent and comprising a hotplate on which the folder with inserted sheets is placed for heating the binding agent, said hotplate having at least one electrical heating element and being supported within a housing having a cover provided with an opening for inserting the folder, the heating element being supplied with electrical current via a current regulating circuit, automatic time control means, power means for continuously supplying current to the heating element to cause said heating element to be heated to working temperature independent of said time control means for binding several folders successively while maintaining said current supply to said heating element, said time control means being electrically connected to light sensor means for sensing the insertion of a folder including a photocell located in the path of a light beam projecting across said cover opening from a light source supported by such housing such that said light beam is changed by the insertion of a folder through said opening thereby causing the photocell to transmit a signal to the time control means for automatically starting its set timing cycle, at the termination of which said time control means automatically activates an alarm means, and means for adjusting the time control means to select between different preset time cycles.

4,367,117
MACHINE FOR SEALING DISC COVERS

Paul E. Seaborn, Los Gatos, Calif., assignor to Discover Technology, Inc., Campbell, Calif.

Filed Mar. 16, 1981, Ser. No. 243,834
Int. Cl.³ B65C *1/00*
U.S. Cl. 156—443 **3 Claims**

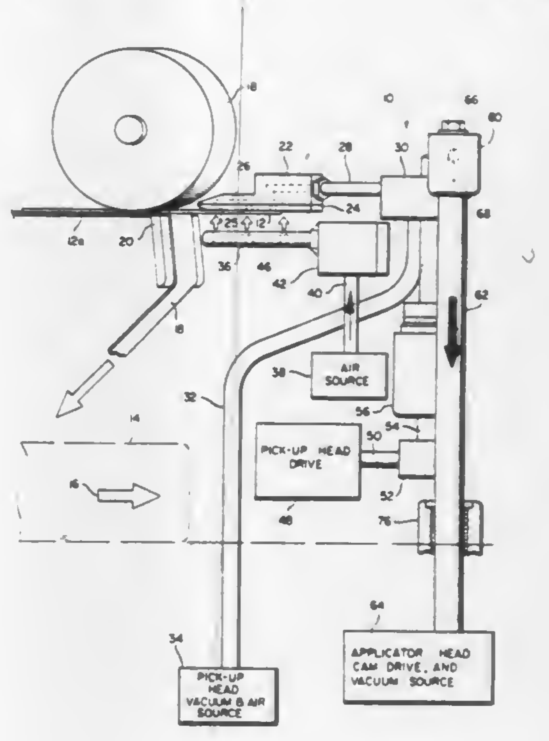


1. A machine for sealing a disc cover having first and second parallel-positioned walls for enclosing a disc and a flap fixed to the first wall and extending beyond both walls to be folded over at a fold line and glued to the second wall, said machine comprising:
- a platen to hold the disc cover; means to heat said flap fold line;
- a folding arm configured to contact the flap;
- an actuator connected to said folding arm and energizable to move said folding arm against said flap and fold the flap over said second wall;
- a glue system comprising;
- a glue nozzle;
- means supporting said glue nozzle for passage between said folded flap and said second wall;
- means to supply glue to said glue nozzle to be deposited between said flap and second wall as said nozzle is passed therebetween; and
- means to press said flap against said second wall to form a close bond therebetween.

4,367,118
LABEL APPLICATOR

Edward C. Karp, Belvidere, Ill., assignor to Sanitary Scale Co., Belvidere, Ill.

Filed Oct. 9, 1981, Ser. No. 310,220
Int. Cl.³ B65C *9/14, 9/36*
U.S. Cl. 156—497 **5 Claims**


AIR SOURCE
PICK-UP HEAD DRIVE
PICK-UP HEAD VACUUM & AIR SOURCE
APPLICATOR HEAD CAM DRIVE, AND VACUUM SOURCE
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5. A label applicator for transferring printed, adhesive-backed labels from a label pick-up station to a commodity, comprising:
- a vacuum assisted pick-up head having a downwardly facing surface containing apertures for vacuum-seizing a label, said pick-up head being adapted to be positioned closely above the non-adhesive side of a label at the pick-up station so as to seize the label by its non-adhesive side such that about one-half of the label is held by the pick-up head and the other half of the label extends beyond the pick-up head, the pick-up head being further adapted to swing the label in a substantially horizontal plane to a label transfer station, and to then release the label for seizure by an applicator head;
- means positioned at the pick-up station and beneath an incoming label for air driving the label upwardly toward the pick-up head so as to assist in establishing full contact between the pick-up head's downwarding facing surface and the portion of the label to be seized;
- a vacuum-assisted applicator head positioned at the transfer station such that, when the pick-up head arrives at the transfer station, the applicator head is situated above and closely adjacent the pick-up head for vacuum-seizing the

extending half of the label by its non-adhesive side, the applicator head being further adapted to move downwardly for applying the label to the commodity.

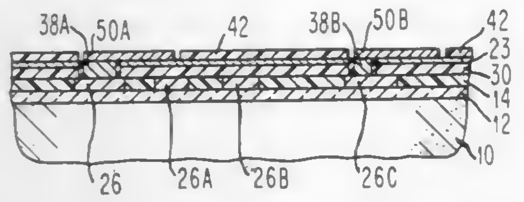
4,367,119
PLANAR MULTI-LEVEL METAL PROCESS WITH BUILT-IN ETCH STOP

Joseph S. Logan, Poughkeepsie, N.Y.; John L. Mauer, IV; Laura B. Rothman, both of Sherman, Conn.; Geraldine C. Schwartz, Poughkeepsie, and Charles L. Standley, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,145

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*

U.S. Cl. 156—643 **12 Claims**



1. In the fabrication of an integrated circuit package comprised of a substrate having a conductive interconnected pattern on a surface thereof, the method of forming superposed levels of metallurgy comprising:
- (A) forming a first layer of an electrically insulating polymer on said surface,
- (B) coating said first layer with a second layer of silicon nitride,
- (C) coating said second layer with a third layer of a polymer that is selectively soluble in a solvent substantially inert to the first said polymer,
- (D) coating said third layer with a fourth layer resistant to reactive ion etching in oxygen,
- (E) forming on said fourth layer a resist mask defining at least one via opening to a portion of said conductive pattern,
- (F) reactive ion etching in an ambient comprised of CF$_4$ the exposed portion of said fourth layer in said via opening,
- (G) reactive ion etching in am ambient comprised of O$_2$ the exposed portions of said third layer in said via opening,
- (H) reactive ion etching in an ambient comprised of CF$_4$ the exposed portions of said silicon nitride in said via opening,
- (I) reactive ion etching in an ambient comprised of O$_2$ the exposed portion of said first layer in said via opening to expose said portion of said conductive pattern,
- (J) blanket coating said substrate inclusive of said via opening with a conductive metal layer having a thickness substantially matching the thickness of said first layer,
- (K) exposing said substrate to said solvent for a time sufficient to remove said third layer and all overlying layers thereon, to expose said silicon nitride second layer and said deposited metal via-connection in said via opening,
- (L) sequentially coating said silicon nitride second layer with fifth, sixth and seventh layers of, corresponding, respectively to the compositions of said first, third and fourth layers,
- (M) forming a second resist mask having openings corresponding to desired metallurgy patterns to be deposited on said silicon nitride second layer, said opening encompassing said via connector and adjacent discrete portions of said silicon nitride second layer,
- (N) reactive ion etching in an ambient comprised of CF$_4$ the exposed portions of said seventh layer in the openings of said second resist mask,
- (O) sequentially reactive ion etching in an ambient comprised of O$_2$ said sixth layer and said fifth layers in the opening of said second resist mask, to expose said via connector and adjacent portions of said silicon nitride second layer,
- (P) depositing a blanket coating of a conductive metal over said substrate inclusive of said via connector and said adjacent exposed portion of said silicon nitride second layer,
- (Q) exposing said substrate to a solvent selective to the sixth layer for a time sufficient to remove said sixth layer and all overlying layers thereon.

4,367,120
DOCTOR BLADE MOUNTING ASSEMBLY

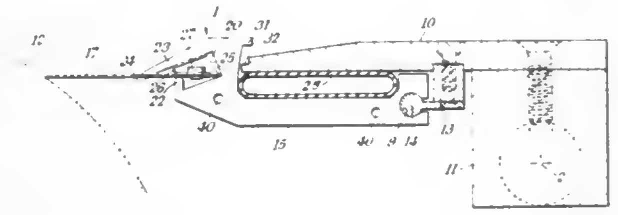
John M. Hendrikz, Bristol, England, assignor to Vickerys Limited, London, England

Filed Aug. 14, 1981, Ser. No. 292,915

Claims priority, application United Kingdom, Mar. 13, 1980, 8008560; Mar. 12, 1981, 8107818

Int. Cl.³ D21G *3/02, 3/04*

U.S. Cl. 162—281 **10 Claims**



1. A doctor assembly for doctoring a cylinder, comprising a doctor blade, a support bar extending parallel to the cylinder for applying pressure to the doctor blade to urge it into contact with the cylinder, a rigid support member extending forwardly from the support bar towards the cylinder, a pivot shaft disposed beneath and fixed to the support member and disposed parallel to the cylinder, a blade holder which accommodates the rear end of the doctor blade, extends forwardly towards the cylinder from the pivot shaft and is constituted by a multiplicity of closely adjacent rigid pivot plates which are mounted side-by-side on the pivot shaft, are devoid of connection with one another so that they are capable of free and independent pivotal movement on the pivot shaft and bear directly at their forward ends against the doctor blade, and a fluid-filled bag which extends parallel to the length of the doctor blade between the support member and the pivot plates at a location between the rear end of the doctor blade and the pivot shaft, the bag bearing directly against the pivot plates.

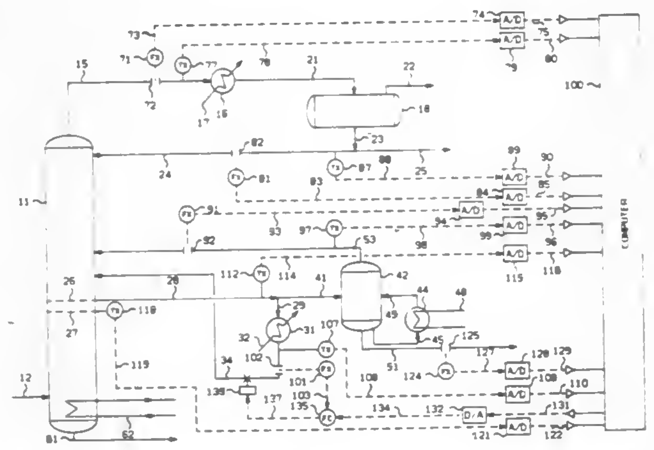
4,367,121
FRACTIONAL DISTILLATION COLUMN CONTROL

Danny L. Furr, Broken Arrow, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 145,640, May 1, 1980, Pat. No. 4,319,330. This application Oct. 19, 1981, Ser. No. 313,073

Int. Cl.³ B01D *3/42*

U.S. Cl. 203—2 **7 Claims**



1. A method for maintaining a desired ratio between the flow rate of the internal reflux at a first intermediate portion of a fractional distillation column and the flow rate of a side draw product stream, wherein a side draw stream is withdrawn from said first intermediate portion of said fractional distillation column, a portion of said side draw stream being returned as an intermediate external reflux to a second intermediate portion of said fractional distillation column which is above said first intermediate portion of said fractional distillation column, a portion of said side draw stream providing said side draw product stream, said method comprising the steps of:
- using computing means to establish a first signal representative of the flow rate of said intermediate external reflux required to maintain said desired ratio between the flow rate of the internal reflux at said first intermediate portion of said fractional distillation column from which said side draw stream is withdrawn and the flow rate of said side draw product stream;
- establishing a second signal representative of the actual flow rate of said intermediate external reflux;
- using computing means to compare said first signal and said second signal and to establish a third signal responsive to the difference between said first signal and said second signal; and
- manipulating the flow rate of said intermediate external reflux in response to said third signal.

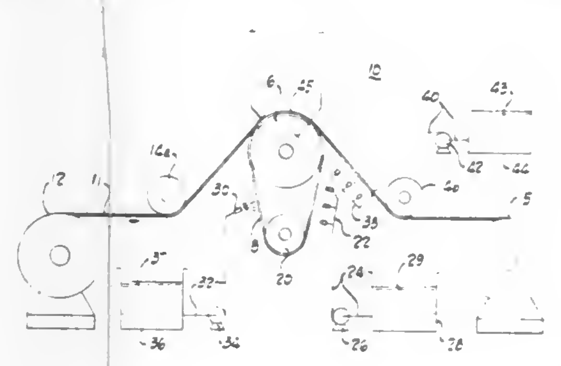
4,367,122
METHOD FOR ANODIZING ALUMINUM

Joseph F. Bednarz, 287 Euclid Ave., Hackensack, N.J. 07601

Filed Jul. 6, 1981, Ser. No. 280,899

Int. Cl.³ C25D *11/04, 11/08, 11/16*

U.S. Cl. 204—15 **7 Claims**



1. A method of anodizing an aluminum workpiece comprising the steps of:
- (a) moving the workpiece and a belt of cloth fabric through a contact zone over an electrically conductive rigid backing member;
- (b) adjusting the relative speeds of the workpiece and the belt so that the belt is caused to wipe across the surface of the workpiece;
- (c) supplying an anodizing solution to the workpiece in the contact zone, whereby the wiping action of the belt continuously removes reaction products from the workpiece surface and exposes fresh surface area to the solution; and
- (d) applying a direct electric potential with the backing member as the cathode and the workpiece as the anode.

4,367,123
PRECISION SPOT PLATING PROCESS AND APPARATUS

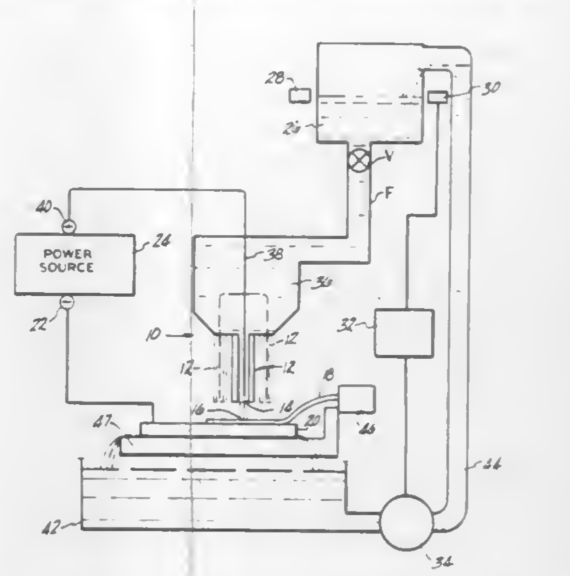
Alexander F. Beck, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 167,077, Jul. 9, 1980. This application Oct. 22, 1981, Ser. No. 313,848

Int. Cl.³ C25D *5/08, 17/00*

U.S. Cl. 204—15 **16 Claims**

1. An apparatus for selectively electroplating at least one spot of metal on a substrate, said apparatus comprising:
- means for electroplating said spot of metal on said substrate, said electroplating means comprising:
  - an anode;
  - means for forming an unmasked flowing column of electrolyte having no substantial fanning out and a transverse cross-section substantially corresponding to the shape of said spot extending between said anode and said substrate, said column of electrolyte having a width from about 0.25 millimeters to about 5 millimeters and a flow rate of about 0.5 milliliters per second to about 1.0 milliliters per second;



  - said unmasked column forming means comprising a tubular nozzle having a nozzle outlet opening spaced from said substrate;
  - means for supplying by gravity said electrolyte to said column forming means at a hydrostatic head pressure in the range of about 1 to 3 psi;
  - means for connecting said substrate as a cathode; and
  - means for applying a current to said anode and said cathode for depositing said spot of metal on said substrate whereby said spot has a dimension substantially approximating the size of said nozzle opening.

4,367,124
PROCESS FOR PREPARING LITHOGRAPHIC PRINTING PLATE BASES

Nobuji Kikuchi, Hazaki; Yoshiyuki Kisaka; Kazuo Torige, both of Tokyo, and Masayuki Onose, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,757

Claims priority, application Japan, Jul. 18, 1980, 55/98247

Int. Cl.³ C25D *11/16;* **C25F** *3/04*

U.S. Cl. 204—17 **10 Claims**

1. A process for preparing lithographic printing plate bases, which comprises electrolytically etching a sheet made of aluminum or an aluminum alloy in an electrolytic solution containing sufficient amount of hydrochloric acid and a β-dicarbonyl compound to produce grains suitable for use as printing plates.

4,367,125
APPARATUS AND METHOD FOR PLATING METALLIC STRIP

Richard C. Avellone, Mayfield Heights, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 22,618, Mar. 21, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,806

Int. Cl.³ C25D *5/02, 7/06, 17/00*

U.S. Cl. 204—28 **13 Claims**

1. A method for plating a surface of a metallic strip comprising the steps of:
- (a) providing a source of electric potential difference between the strip and an electrode;
- (b) substantially filling space between said surface and said

electrode with sufficient plating solution to establish a current flow path between the electrode and the surface;

(c) providing a sump for receiving gravity flow of solution off the strip while maintaining separation of the workpiece and the solution in the sump; and

(d) shielding from solution impingement a portion of the strip side facing the electrode by use of shielding means separated from the strip and from the electrode.

4,367,126
PROCESS FOR PRODUCING ALKALI METAL HYDROXIDE

Kimihiko Sato; Yasuo Sajima; Junjiro Iwamoto; Makoto Nakao; Manabu Suhara, and Makoto Noshiro, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 253,016

Claims priority, application Japan, Apr. 30, 1980, 55-56358

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **7 Claims**

1. In a process for producing an alkali metal hydroxide by electrolyzing an aqueous solution of an alkali metal chloride fed into an anode compartment in a cell having an anode compartment and a cathode compartment formed by partitioning with a cation exchange membrane, an improvement characterized in that a cation exchange membrane of a fluorinated polymer having carboxylic acid groups at a content of 0.9 to 2.0 meq./g/dry resin is used as said cation exchange membrane and a metal or a metal ion is incorporated in said aqueous solution of an alkali metal chloride to form a thin layer made of a metal hydroxide or oxide on the surface of said membrane in the anode compartment, wherein said metal for the metal or metal ion is selected from the group consisting of elements of IV-B group and iron group of the periodic table, and aluminum, copper, ruthenium, cerium, niobium, beryllium, palladium, scandium and yttrium.

4,367,127
METALS RECOVERY CELL AND ELECTRODE ASSEMBLY FOR SAME

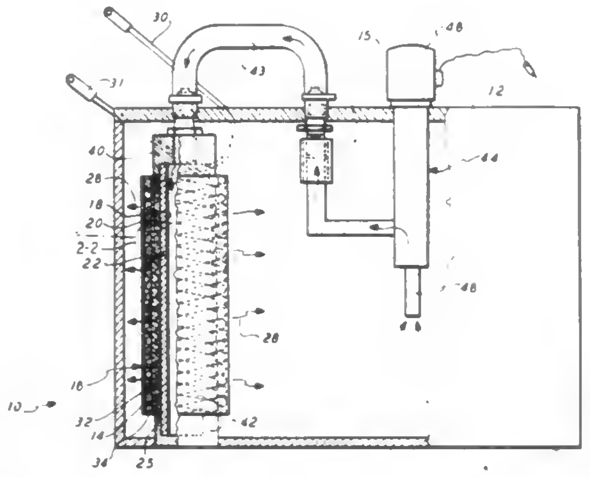
Gilbert S. Messing, Palm Beach, Fla.; Thomas R. Stanford, Monmouth Beach, N.J.; Jean A. Lochet, Metuchen, N.J., and Rajendra B. Patel, Piscataway, N.J., assignors to Vanguard Research Associates, Inc., South Plainfield, N.J.

Filed Jun. 29, 1981, Ser. No. 278,099

Int. Cl.³ C25C *1/00, 7/00;* **C25B** *11/12, 11/03*

U.S. Cl. 204—105 R **35 Claims**

1. A method for recovering from electrolytes metals, the ionic species of which are present at relatively low concentrations; said method comprising: introducing said electrolyte under pressure into the central cavity of an electrode assembly including at least 2 concentric electrodes which are permeable to said electrolyte in a radial direction, said electrodes being narrowly spaced by an intervening liquid-permeable dielectric, and being provided with an electrolyzing potential therebetween, said electrolyte thereby flowing radially outward from said central cavity through said electrode pair and intervening dielectric spacer to effect electrolytic deposition of the metal species upon the cathodic electrode.



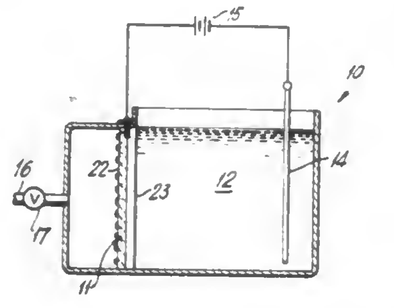
4,367,128
ENERGY EFFICIENT SELF-REGULATING PROCESS FOR WINNING COPPER FROM AQUEOUS SOLUTIONS

John S. Batzold, Union, and James E. Hoffmann, South Plainfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 5, 1981, Ser. No. 240,756

Int. Cl.³ C25C *1/12*

U.S. Cl. 204—108 **9 Claims**



1. A method of electrowinning copper from aqueous solutions thereof comprising:

introducing said aqueous copper solution into a cell having an anode and cathode such that said copper solution contacts said anode and said cathode, said anode being a porous catalytic anode; and,

applying a constant current density ranging from about 1 mA/cm^2 to about 150 mA/cm^2 between said anode and said cathode while supplying hydrogen to said anode, the amount of hydrogen supplied to said anode being at least a stoichiometric amount required to generate a quantity of copper equivalent to that deposited electrolytically at the cathode whereby a dynamic equilibrium is imposed upon said anode so that said anode operates at a potential approximating the copper potential and whereby copper is deposited from said solution at said cathode.

4,367,129
WIRE-ELECTROEROSION METHOD AND APPARATUS FOR FORMING A TAPERED CONTOUR IN A WORKPIECE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 12, 1981, Ser. No. 273,051

Int. Cl.³ C25F *3/00, 5/00;* **B23P** *1/02, 1/12*

U.S. Cl. 204—129.55 **5 Claims**

1. A wire-electroerosion method of forming a workpiece with a contour having a non-tapered and tapered portions

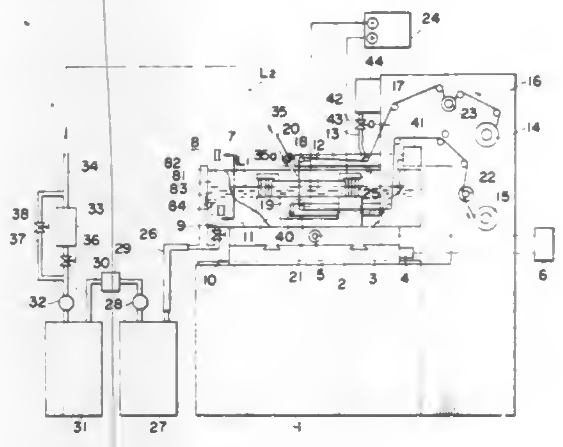
stepped in the direction of thickness of the workpiece, the method comprising the steps of:

disposing the workpiece in a worktank containing a first electroerosion-machining liquid so that said workpiece is partially immersed therein to a preselected height from the lower surface of the workpiece with the liquid surface level extending in a horizontal plane dividing said workpiece into a non-immersed upper portion and an immersed lower portion;

passing a continuous wire electrode vertically through said workpiece to define an elongate machining gap extending across said non-immersed upper and immersed lower portions, and axially displacing said wire electrode from a supply means to a collection means through said machining gap;

supplying from above said workpiece, a stream of a second electroerosion-machining liquid having a specific resistivity greater than that of said first liquid into said machining gap in said non-immersed upper portion and permitting said stream at least partially to diffuse into said machining gap in said immersed lower portion of the workpiece while applying a machining electric current between said wire electrode and said workpiece whereby electroerosive material removal from said workpiece occurs across said machining gap along said upper portion uniformly at a first rate and along said lower portion at a second rate which is not less than said first rate and which increases as the distance from said horizontal plane is increased;

maintaining said surface level of the liquid in said worktank substantially constant;



maintaining the specific resistivity of the liquid in said worktank substantially constant; and

relatively displacing said wire electrode and said workpiece orthogonally to the axis of said wire electrode along a predetermined path.

5. A wire-electroerosion apparatus for forming a workpiece with a contour having a non-tapered and tapered portions stepped in the direction of thickness of the workpiece, the apparatus comprising:

a worktank for containing a first electroerosion-machining liquid and receiving the workpiece therein in such a manner that it is partially immersed in said liquid to a preselected height from the lower surface of the workpiece with the liquid surface level extending in a horizontal plane dividing the workpiece into a non-immersed portion and an immersed portion;

means for guiding a continuous wire electrode to pass vertically through said workpiece, thereby defining an elongate machining gap therebetween extending across said non-immersed upper and immersed lower portions;

means for axially displacing said wire electrode from a supply means to a collection means through said machining gap;

nozzle means disposed above said workpiece for supplying a stream of a second electroerosion-machining liquid having a specific resistivity greater than that of said first liquid into said machining gap in said non-immersed portion and permitting said stream at least partially to diffuse into said machining gap in said immersed portion of the workpiece;

power supply for applying a machining electric current between the wire electrode and said workpiece to produce electroerosive material removal from the workpiece across said elongate machining gap whereby the material removal occurs along said upper portion uniformly at a first rate and along said lower portion at a second rate which is not less than said first rate and increases as the distance from said horizontal plane is increased;

means for maintaining said surface level of the liquid in said worktank substantially constant;

means for the maintaining specific resistivity of the liquid in said worktank substantially constant; and

machining feed drive means for relatively displacing said wire electrode and said workpiece orthogonally to the axis of said wire electrode along a predetermined path.

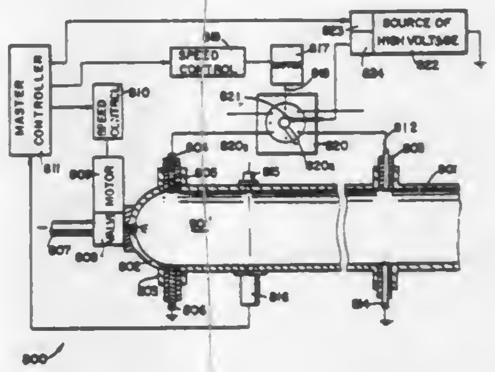
4,367,130
CHEMICAL REACTION

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 93,779, Nov. 30, 1970, Pat. No. 4,207,154, which is a continuation-in-part of Ser. No. 668,561, Jun. 27, 1957, abandoned. This application Nov. 27, 1979, Ser. No. 97,651

Int. Cl.³ B01J *3/08, 19/08*

U.S. Cl. 204—157.1 S **16 Claims**



1. A method for creating a chemical reaction comprising:

subjecting a quantity of a chemical to the heat and pressure of a plurality of shock waves, each of which shock waves define a transient, narrow band of intense radiation and directing each of said shock waves and the intense radiation thereof through a shock wave conducting medium to a reaction zone containing said chemical whereby said shock waves serve to temporarily raise the temperature of the chemical in the reaction zone a sufficient degree to effect a predetermined change in the composition of said chemical, and when said predetermined change occurs, removing the products of reaction from said reaction zone.

4,367,131
PHOTOLYTIC PRODUCTION OF HYDROGEN FROM WATER

Michael Gratzel, Vaud; Pierre-Alain Brugger, Les Thioleyres, and Pierre Cuendet, Apples, all of Switzerland, assignors to Engelhard Corporation, Iselin, N.J.

Filed Jul. 2, 1981, Ser. No. 279,909

Claims priority, application United Kingdom, Jul. 8, 1980, 8022339

Int. Cl.³ C01B *1/03;* **B01J** *31/02*

U.S. Cl. 204—157.1 R **30 Claims**

1. A catalyst capable of forming a stable dispersion in an aqueous medium for mediating the evolution of hydrogen from water by photolysis, said catalyst comprising an intimate admixture of one or more Noble metals in finely divided form and a water permeable protective agent adsorptive to said metal consisting of one or more alkylene glycol polymers derived from monomer units of the formula:

$$-O-(CH_2)_n-O-$$

wherein n is an integer greater than 1 and in which at least a portion of said polymer is comprised of monomer units having n equal to or greater than 3.

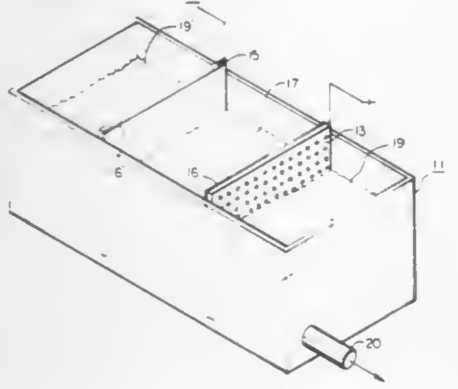
4,367,132
METHOD FOR REMOVING LIQUID FROM CHEMICALLY-PRECIPITATED SLUDGE

Christy W. Bell; John K. Wittle, both of Berwyn, and Charles H. Titus, Newtown Square, all of Pa., assignors to Electro-Petroleum, Inc., Wayne, Pa.

Filed Aug. 27, 1980, Ser. No. 181,725

Int. Cl.^{3} B01D *13/02*

U.S. Cl. 204—180 R **34 Claims**



1. A method for removing liquid from a chemically-precipitated industrial wastewater sludge comprising the steps of:

a. introducing the sludge into a treatment vessel containing a pair of spaced apart perforated electrodes, comprising an anode and a cathode, said electrodes defining a treatment zone within said vessel between said electrodes and a liquid collection zone associated with each electrode on the side opposite said treatment zone, said sludge at least partially filling said treatment zone and contacting said electrodes;

b. applying a direct electric potential between said anode and cathode thereby causing the liquid phase of the sludge to flow toward said cathode and sludge solids to move toward said anode, said liquid flowing through said cathode into the collection zone associated therewith, and effecting a flow of liquid through said anode into the collection zone associated therewith; and

c. removing the liquid from said collection zones.

4,367,133
ELECTROCHEMICAL GAS ANALYZER

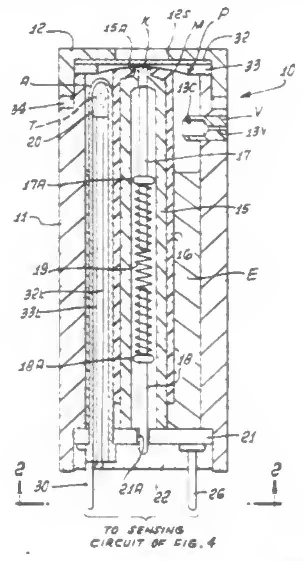
Jay M. Lauer, Hacienda Height, Calif., assignor to Comsip, Inc., South El Monte, Calif.

Continuation-in-part of Ser. No. 164,567, Jul. 2, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 234,705

Int. Cl.^{3} G01N *27/30*

U.S. Cl. 204—195 P **41 Claims**

1. An electrochemical cell comprising an insulative container having an open end, means for defining a cathode electrode supported within the container adjacent the open end, means for defining an anode electrode supported within the container adjacent the open end and spaced adjacent the cathode electrode means, means including a liquid impermeable, gas permeable membrane secured to the open end of the container with the membrane being positioned in intimate contact with the cathode electrode means, said means including an aperture for exposing the cathode electrode means to the environmental gases through said membrane, means mounted in close association with the cathode electrode means for conveying a fluid electrolyte to the cathode electrode means for continuously providing a thin electrolyte film extending between the cathode and the membrane for sensing oxygen or the like diffused through the membrane, a fluid electrolyte releasably held captive by a material stored within said container in contact with said latter mentioned means but spaced from the electrode means and the membrane for functioning as a reservoir of electrolyte, said electrolyte being continuously drawn from said electrolyte holding material by said conveying means in response to the evaporation of water from the electrolyte at said cathode membrane interface to continuously keep wet the electrode means and membrane, said electrolyte holding material being further characterized as holding the electrolyte captive to prevent it from flowing away from its storage position independently therefrom except by said conveying means, and means for venting the space between the membrane and the electrolyte holding means to prevent pressure variations therein for maintaining a substantially uniform film of electrolyte between the membrane and the electrode means without loss of electrolyte to the environment.



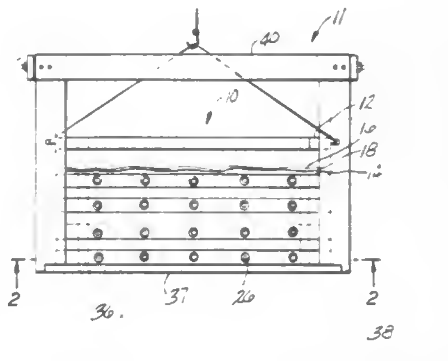
4,367,134
METHOD FOR ASSEMBLING MEMBRANE ELECTROLYTIC CELLS

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 142,204, Apr. 21, 1980, Pat. No. 4,311,577, which is a continuation-in-part of Ser. No. 128,684, Mar. 10, 1980, abandoned. This application Feb. 2, 1981, Ser. No. 230,230

Int. Cl.^{3} C25B *9/00;* **B01D** *25/26*

U.S. Cl. 204—253 **19 Claims**



1. A method of assembling a monopolar filter press-type electrolytic cell having a plurality of generally planar electrodes appropriately mounted to electrode frames with ion-selective permeable membrane sheets interposed between each adjacent pair of electrodes, the assembly being accomplished at a single work area, which comprises the steps of:

(a) placing a first end frame on a generally horizontal supporting structure;

(b) treating the membrane sheets with a hydrolyzing fluid;

(c) placing a first cathode frame on top of said said first end frame, said first cathode frame being oriented generally horizontally;

(d) placing a first of said membrane sheets on top of said generally horizontally oriented cathode frame, said first membrane sheet being oriented generally horizontally thereacross;

(e) placing a first anode frame on top of said said first membrane sheet, said first anode frame being oriented generally horizontally;

(f) placing a second membrane sheet on top of said first anode frame, said second membrane sheet being oriented generally horizontally thereacross;

(g) placing a second cathode frame on top of said second membrane sheet, said second cathode frame being oriented generally horizontally thereon;

(h) repeating steps d-g a predetermined number of times until the desired number of anode and cathode frames are stacked in a generally vertical stack on top of the generally horizontal supporting structure;

(i) placing a second end frame on top of said generally vertical stack of frames;

(j) vertically compressing said generally vertical stack of frames by the application of uniform pressure to the first and second end frames so that substantially no horizontal movement of the electrode frames results as the frames are compressed together into a compressed state;

(k) securing retainers to said generally vertical stack of frames to retain said generally vertical stack of frames in said compressed state; and

(l) rotating said generally vertical compressed stack of generally horizontal frames and membranes to an operating position wherein the frames and membranes are oriented generally vertically.

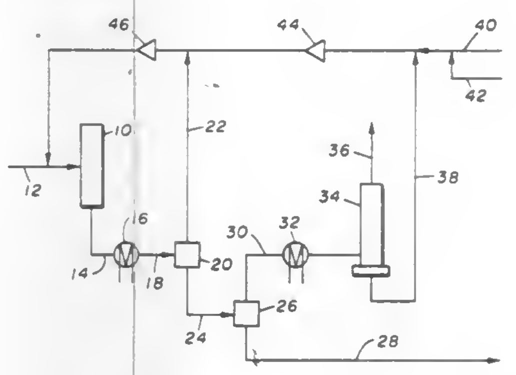
4,367,135
PROCESSES

Lloyd G. Posey, Jr., Houston, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 12, 1981, Ser. No. 243,220

Int. Cl.^{3} C10G *47/00, 49/22*

U.S. Cl. 208—108 **1 Claim**



1. A process for catalytically hydrocracking a hydro-carbonaceous feed comprising:

a. cracking in a hydrocracking zone the hydro-carbonaceous feed in the presence of hydrogen and a hydrocracking catalyst under hydro-cracking conditions comprising a temperature of at least about 250° C. and a pressure of at least about 75 atmospheres absolute to produce a hydrocrackate wherein the hydrogen is provided in a hydrogen feed gas, said hydrogen feed gas being provided in an amount sufficient to promote hydrocracking and having a concentration of hydrogen sufficient to prevent unduly rapid deactivation of the hydrocracking catalyst;

b. passing the hydrocrackate to a first gas-liquid separation zone, said first gas-liquid separation zone being at a pressure of at least about 75 percent of the pressure in the hydrocracking zone;

c. separating the hydrocrackate in the first gas-liquid separation zone into a first separated vapor phase and a first separated liquid phase;

d. passing the first separated liquid phase to a second gas-liquid separation zone, the pressure of said first separated liquid phase in said second zone being between about 35 atmospheres absolute and the pressure of said first zone;

e. separating the first separated liquid phase in the second gas-liquid separation zone into a second separated liquid phase and a second separated vapor phase, said second gas-liquid separation zone being maintained at a pressure and temperature sufficient such that the second separated vapor phase has a concentration of hydrogen of at least about 50 volume percent and a hydrogen partial pressure of at least about 20 atmospheres;

f. contacting at least a portion of the second separated vapor phase with a feed side of a polymeric membrane exhibiting a separation factor of hydrogen over methane of at least about 15;

g. maintaining the opposite side of the membrane at a pressure sufficiently below the pressure of the second separated vapor phase contacting the feed side of the membrane to permeate at least 70 percent of the hydrogen from the vapor phase to the opposite side of the membrane and to provide a hydrogen permeate having a concentration of at least 80 volume percent at a pressure of at least 8 atmospheres absolute, the ratio of the total pressure on the feed side of the membrane to the total pressure on the opposite side of the membrane being at least about 3:1;

h. withdrawing non-permeate from the feed side of the membrane; and removing the hydrogen permeate from the opposite side of the membrane; and

i. recycling at least a portion of the hydrogen permeate to the hydrocracking zone as a portion of the hydrogen feed gas.

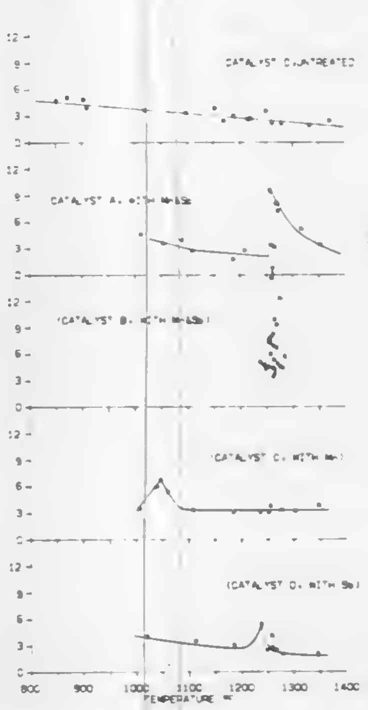
4,367,136
CATALYST REGENERATION

Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 117,927, Feb. 4, 1980, Pat. No. 4,335,021. This application Jun. 18, 1981, Ser. No. 274,981

Int. Cl.^{3} C10G *11/18*

U.S. Cl. 208—120 **4 Claims**



1. A process comprising

(a) contacting a hydrocarbon feedstock with a silica or silica/alumina based cracking catalyst in a cracking zone and under cracking conditions to produce a cracked hydrocarbon product, said cracking catalyst containing both manganese and antimony in a quantity to at least mitigate the detrimental effects of metals such as nickel, vanadium, and iron in the feedstock, and in a ratio of antimony to manganese in the range of 10:1 to 1:10,

(b) removing said cracked hydrocarbon product from said cracking catalyst,

(c) contacting said cracking catalyst with free oxygen at a temperature in the range of 1260° to 1280° F. such as to burn off at least a portion of the carbonaceous material accumulated on said cracking catalyst during the cracking step and converting it to CO_2 and CO in a high ratio of CO_2/CO.

(d) repeating these steps a plurality of times.

4,367,137
HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, and Tai-Hsiang Chao, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation of Ser. No. 212,780, Dec. 4, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 324,302

Int. Cl.³ C10G *35/085*

U.S. Cl. 208—139 **18 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions which an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tin, about 0.01 to about 5 wt. % phosphorus, and about 0.1 to about 3.5 wt. % halogen.

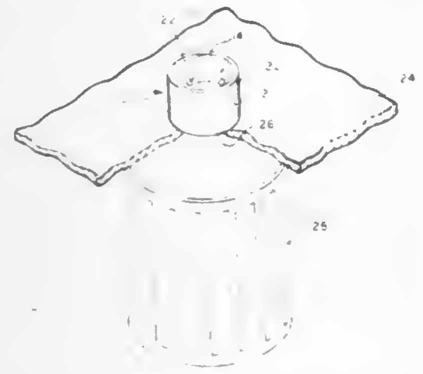
4,367,138
FLATWARE RECOVERY FOOD SCRAPER

John Kustas, 785 W. Sherman Ave., Vineland, N.J. 08360

Filed Jun. 8, 1981, Ser. No. 271,397

Int. Cl.³ B03C *1/26*

U.S. Cl. 209—224 **5 Claims**



1. A food scraper for preventing the loss of flatware in a restaurant comprising:
- a tubular member of circular cross section having concentric openings at each end thereof and being constructed essentially of a polymeric material;
- the interior wall of said member being substantially smooth and continuous;
- the exterior wall of said member being substantially cylindrical;
- a reduced diameter portion within the interior of said tubular member and intermediate the ends thereof, and
- magnet means embedded within the interior wall of said tubular member adjacent said reduced diameter portion.

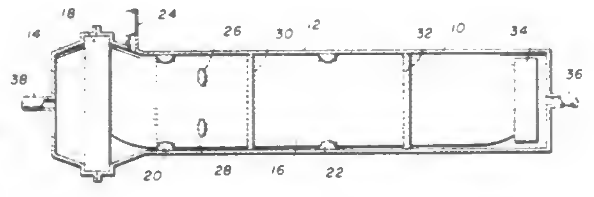
4,367,139
HOLLOW FIBER PERMEATOR

Tommy E. Graham, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 16, 1978, Ser. No. 961,342

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **22 Claims**



1. A permeator for separating by the selective permeation of at least one fluid from a fluid mixture containing at least one other component comprising an elongated, essentially fluid impermeable tubular shell having at least one end adapted to receive a tube sheet; a plurality of selectively permeable hollow fibers, said hollow fibers having an exterior surface and a bore and said hollow fibers being generally parallely positioned within the shell in the form of an elongated bundle wherein the bundle substantially completely fills the cross-section of the tubular shell; at least one tube sheet, said tube sheet being in fluid tight relationship with said shell wherein at least one end of each of said hollow fibers is embedded in a fluid tight relationship in said at least one tube sheet and wherein said bores of said hollow fibers communicate through said tube sheet; at least one fluid ingress port communicating through said shell and at least one longitudinally distant fluid egress port communicating through said shell, said ingress and egress ports being in communication with the exterior surface of the hollow fibers and adapted to provide axial flow of fluid in said shell; and at least one fluid flow diverter in said bundle, said fluid flow diverter comprising a region of a plurality of hollow fibers embedded in an essentially fluid tight relationship in a solid wherein the cross-section of said fluid flow diverter which is transverse to the orientation of the hollow fibers is a minor portion of the transverse cross-section of said bundle sufficient to divert and enhance dispersion of fluid flow within the bundle.

4,367,140
REVERSE OSMOSIS LIQUID PURIFICATION APPARATUS

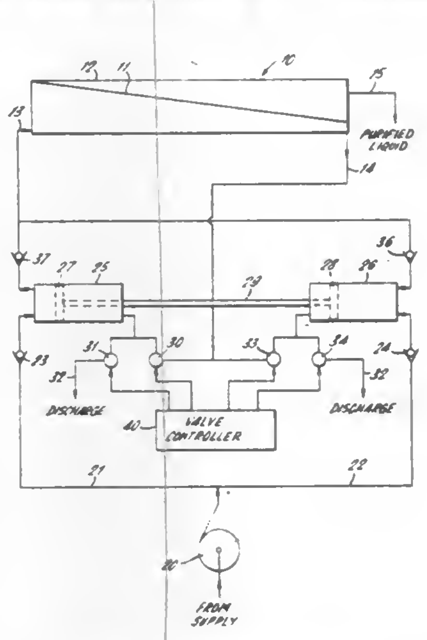
Leslie P. S. Wilson, Nassau, The Bahamas, assignor to Sykes Ocean Water Ltd., Turks and Caicos Isls.

Filed Oct. 30, 1980, Ser. No. 202,197

Claims priority, application United Kingdom, Nov. 5, 1979, 7938244

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—110 **9 Claims**



1. Apparatus for the reverse osmosis purification of water or other fluid comprising a fluid supply, a module including a reverse osmotic membrane, a fluid inlet and fluid outlet for the passage of fluid over one surface of the membrane and an outlet for the passage of purified fluid out of the module from the opposite surface of the membrane together with a plurality of similar cylinders each having a piston or diaphragm means dividing the cylinder into a front end and a rear end, the front end of each cylinder having a larger swept volume than the rear end, fluid connections connecting the front end of each cylinder to the fluid inlet of the module, a separate non-return valve in each fluid connection from the front end of each cylinder, each said cylinder having its piston or diaphragm means for forcing fluid at a pressure in excess of, at least, the normal osmotic pressure of water from the front face of the piston or diaphragm means through said separate valve to the fluid inlet of the module, operating rod means mechanically interconnecting said piston or diaphragm means, which operating rod means extend from the rear faces of said piston or diaphragm means, said piston or diaphragm means mechanically operating in a cyclic sequence, separate fluid connections have a separate non-return or controlled distribution valve for the front end of each cylinder means arranged for supplying fluid, under a relatively low pressure, compared with the normal osmotic pressure of water, from said fluid supply to the front end of each cylinder through said separate fluid connections with the separate non-return valve or controlled distribution valve therein, and controlled valve means being operative to connect the fluid outlet of the module to the rear ends of said cylinders in synchronism with said cyclic sequence so that all the fluid leaving said fluid outlet flows back to said cylinders into the rear ends thereof in cyclic sequence to drive the piston or diaphragm means towards the front ends, said controlled valve means furthermore being operative to connect said rear ends of each of the cylinders to a discharge in sequence when the respective piston or diaphragm means are moving back towards those ends.

4,367,141
APPARATUS FOR THE CONCENTRATION OF SLUDGES AND SUSPENSIONS

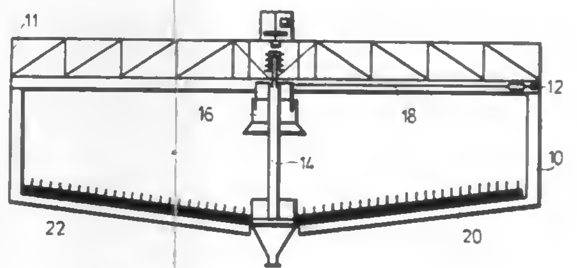
Béla Dörömbözi, 37, Kilián körut, Tatabánya V; Csaba Égetö, 21c, Irhás árok, 1121, Budapest; György Kálmán, 15, Ságvári ut, Tatabánya I.; Károly Solymos, 11, Ságvári ut, Tatabánya I., and Zoltán Szalay, 50, Mártirok u., Tatabánya V., all of Hungary

Filed Aug. 21, 1980, Ser. No. 180,162

Claims priority, application Hungary, Sep. 25, 1979, TA 1526

Int. Cl.³ B01D *21/06*

U.S. Cl. 210—145 **8 Claims**



1. An apparatus for concentrating sludges and suspensions comprising
- a tank having a circular cross-section and a rim;
- a central rotatable vertical shaft in the tank;
- means for supporting the shaft;
- a scraper in the tank and mounted from the shaft;
- a feeding bell mounted from the shaft;
- and means for rotating the scraper about the shaft, wherein the improvement comprises the means for rotating the scraper is a rim drive mounted on and moveable along the rim, the rim drive comprises a driven roller moveable along the rim and a drive arm communicating at one end with the driven roller and at another end with the shaft;
- means are provided for moving the scraper along its vertical axis;
- means are also provided for sensing relative rotary momentum between the scraper and the rim drive and activating the means for moving when such difference reaches a predetermined value, the means for sensing relative rotary momentum comprises a spring balance arm communicating at one end with the drive arm and at another end with the shaft;
- means are further provided for activating the means for moving, said means for activating communicating with the spring balance arm;
- whereby when rotation of the scraper is hindered relative rotary momentum between the scraper and the drive arm is translated to the spring balance arm which at a predetermined point activates the means for activating the means for moving the scraper along its vertical axis.

4,367,142
GRATE FOR DRAINAGE DUCTS

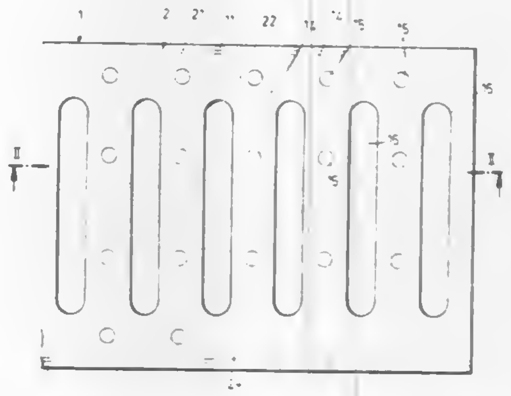
Peter Blecher, Hagen, Fed. Rep. of Germany, assignor to TWB-Pressteile GmbH, Hagen, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,889

Claims priority, application European Pat. Off., Mar. 19, 1981, 81/102060.0

Int. Cl.³ E03F *5/14;* **B44D** *5/08;* **E01F** *5/00*

U.S. Cl. 210—163 **5 Claims**



1. In a ladder-like grate made of sheet steel for use in drainage ducts, which grate includes a main surface portion and opposed, upright longitudinal edges extending along respective longitudinal sides of the main surface portion, each edge including a part which is angled toward the other longitudinal edge, the grate further including supporting bars extending between the longitudinal edges and formed to define inlet slits each extending between the longitudinal edges and each located between two adjacent supporting bars, the grate further being formed to present, around each slit, a folded-down edge establishing an inlet surface oriented obliquely to the main surface portion, the improvement wherein said grate comprises sheet steel inner and outer components one of which is provided with said slits and each of which is provided with said supporting bars, and wherein said inner component includes longitudinal bars extending along opposite sides thereof, said outer component includes angled longitudinal edge parts extending along opposite sides thereof, and said components are assembled together with said inner component within said outer component, said longitudinal bars held in said longitudinal edge parts, and said supporting bars of said inner component resting against those of said outer component.

4,367,143

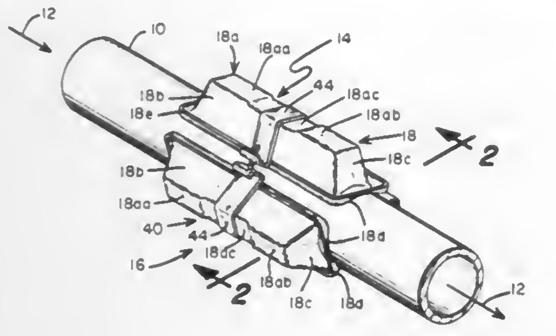
APPARATUS FOR MAGNETICALLY TREATING LIQUID FLOWING THROUGH A PIPE AND CLAMPING MEANS THEREFOR

Roland K. Carpenter, Roseville, Minn., assignor to Aqua Magnetics, Inc., Minneapolis, Minn.

Filed Jun. 3, 1981, Ser. No. 270,109

Int. Cl.^{3} B01D *35/06*

U.S. Cl. 210—222 **10 Claims**



1. Apparatus for magnetically treating a liquid flowing through a pipe comprising a casing having a closed side and an opposite open side, first and second longitudinally spaced permanent magnet means in said casing, each magnet means having oppositely directed first and second rectangular surfaces providing first and second flat pole faces, said first rectangular surfaces residing in one plane and second second rectangular surfaces residing in a second plane parallel to said first plane, a ferromagnetic strip member having a length equal to the combined length of said first rectangular surfaces, and the distance therebetween, said strip member confronting said first rectangular surfaces and extending between said first and second permanent magnet means, a first ferromagnetic shoe member having a flat side confronting the second rectangular surfaces of said first permanent magnet means, and a second ferromagnetic shoe member having a flat side confronting the second rectangular surfaces of said second permanent magnet means, said shoe members each having an angled side opposite the flat side thereof bearing against the outside of the pipe having the liquid to be treated flowing therethrough, potting compound in said casing, said angled sides extending beyond said open side of the casing and also projecting beyond said potting compound, and means for clamping said casing to cause said angled sides to bear against the outside of the pipe.

4,367,144

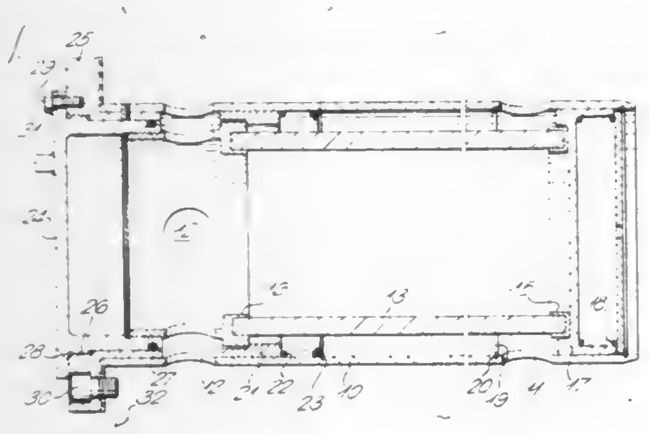
FLUID STRAINER OR FILTER

Alex R. Peters, and Stephen O. Blaydes, both of Worksop, England, assignors to Dosco Overseas Engineering Limited, Newark, England

Filed Oct. 16, 1980, Ser. No. 197,708

Int. Cl.^{3} B01D *35/14*

U.S. Cl. 210—234 **4 Claims**



1. A strainer or filter comprising a casing, a strainer or filter element removably located in the casing, inlet and outlet apertures in the wall of the casing, a first spring-biased shutter located in the casing to open and close the inlet aperture in the wall of the casing, a second spring-biased shutter adapted to open and close the outlet aperture in the wall of the casing, each shutter being operable independently of the other and each shutter having a respective compressive spring-bias means for separately urging each shutter in the same direction to a normally closed position, each shutter being held in the open position against compressive spring bias of the respective spring-bias means by the strainer or filter element when positioned in the casing, the shutters being automatically moved to their normally closed positions by the spring bias on removal of the element, whereby flow of fluid through the casing is prevented during removal of the filter element, said casing having an open end closed by a removable closure member, and said closure member in its casing closing position moving said element and both of said spring bias means to simultaneously move said shutters to open positions.

4,367,145

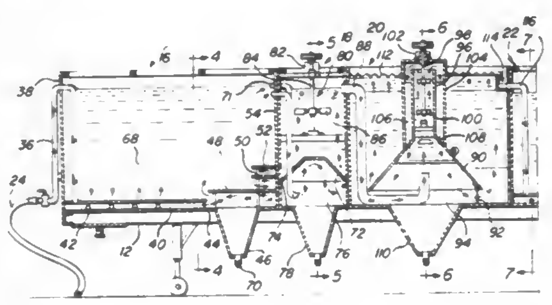
PORTABLE WATER CLARIFIER

Ellis O. Simpson, 4001 Redwood Dr., Groves, Tex. 77619; Scott O. Simpson, 509 King George Land, Port Neches, Tex. 77651; Garland E. Simpson, 2026 Ray, and Tracy T. Simpson, 4001 Redwood Dr., both of Groves, Tex. 77619

Filed Jan. 26, 1981, Ser. No. 228,078

Int. Cl.^{3} B01D *21/02*

U.S. Cl. 210—241 **9 Claims**



7. A portable water clarifier for removing sediment from water, said clarifier mounted on an easily transportable vehicle, said clarifier comprising a plurality of at least three successive sediment settling stages and at least one clarified water return stage communicating with a latter stage of said at least three stages, each of said at least three stages comprising a sediment bed positioned on the bottom of said tank and a filtered water storage portion positioned above said sediment bed, each of said at least three stages including means to provide flow of water from adjacent the bottom of said stages through said sediment bed, means positioned adjacent the top of said stage and said water storage portion to direct water into the next stage, sump means positioned below each sediment bed to collect sediment and means connected to said sump for removal of sediment from each stage, an inlet means communicating with a source of contaminated water for allowing passage of said contaminated water to the first of said at least three stages and an outlet means associated with said source for returning clarified water from the last of said stages, each of said at least three stages including means to change the direction of water flow through said sediment bed, said return stage containing an inlet placed on the bottom thereof communicating with the water storage portion adjacent the top of said latter stage, said latter stage further including means to change the direction of flow of water in said water storage portion, said latter stage including an inlet means directing water from a previous stage into a conduit positioned in said water storage portion, said conduit being enclosed by a large diameter pipe to form an annular space between the outer surface of said conduit and the inner surface of said pipe, each pipe being associated with said means to change the direction of flow of water in said sediment bed whereby water from said inlet means is capable of passing through said conduit means into said annular space and in contact with said means to change the direction of flow, said conduit means including means to force the flow of water from said inlet means into said annular space, said means to change the direction of flow of water in said sediment bed contained in said latter stage comprising an inverted cone placed over said inlet and being positioned within said sediment bed and extending into said water storage portion, said conduit being positioned at the top of said cone and communicating with the interior thereof, said cone including openings therethrough adjacent the top for communicating with said annular space, the base of said cone containing openings in said sediment bed allowing water passing into said cone from said annular space to pass through said sediment bed and around said cone into said water storage portion, said first of said at least three stages comprising a trough placed at the bottom thereof communicating with said sediment inlet, said trough including openings therein to allow sediment to flow from said trough into said sediment bed, said first stage comprising a rear wall separating said first stage and the second stage, said rear wall containing a plurality of spaced plates extending into said sediment bed whereby the flow of sediment from said trough is capable of passing in, out and around each of said plates within said sediment bed.

4,367,146

LONG VERTICAL SHAFT BIOREACTOR WITH MODIFIED WASTE LIQUOR INJECTION

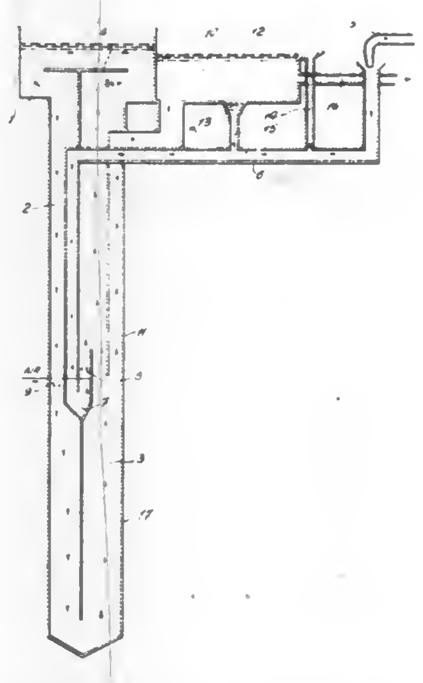
David C. I. Pollock, Richmond Hill, and Malcolm A. Wilson, Vegreville, both of Canada, assignors to C-I-L Inc., North York, Canada

Continuation of Ser. No. 159,348, Jun. 13, 1980, abandoned. This application Sep. 10, 1981, Ser. No. 300,997

Claims priority, application Canada, Oct. 26, 1979, 338534

Int. Cl.^{3} C02F *3/12*

U.S. Cl. 210—608 **6 Claims**



4. A modified activated sludge process for the aerobic biological treatment of waste liquor in a long vertical shaft apparatus, said apparatus comprising a surface basin, a long vertical downcomer chamber, a separate long vertical riser chamber operatively communicating with the downcomer chamber through the basin and at the lower end of the downcomer to form a circulation loop, means to continuously circulate waste liquor around the said circulation loop, a second separate vertical downcomer chamber within the shaft for the introduction of untreated waste liquor influent into the circulation loop and a second separate vertical riser chamber within the shaft for the withdrawal of treated waste liquor effluent from the circulation loop, which comprises introducing waste liquor influent into the circulating waste in the direction of flow of the waste rising within the riser chamber, the point of introduction of said influent being at a position of from 50 to 250 feet below the said surface basin, injecting oxygen-containing gas into the said waste liquor influent at a position preceding the point of waste influent introduction into the said rising, circulating waste and withdrawing waste liquor effluent from the said circulating loop at a position within the shaft lower than the position where the said aerated waste influent is introduced into the said rising circulating waste.

4,367,147

METHOD OF RECOVERING CHARACTERISTICS OF DETERIORATED CATION EXCHANGE MEMBRANE

Shunichi Asami; Toru Seita, and Akihiko Shimizu, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Mar. 21, 1979, Ser. No. 22,619

Claims priority, application Japan, May 31, 1978, 53/64320; May 31, 1978, 53/64321

Int. Cl.^{3} B01D *11/00*

U.S. Cl. 210—636 **9 Claims**

1. A method of recovering the characteristics of a cation exchange perfluorocarbon membrane used for the electrolysis of an alkali metal chloride which sequentially comprises:

immersing the perfluorocarbon type cation exchange membrane in a solvent which consists essentially of a water-miscible organic solvent having a boiling point higher than 120° C. at 760 mmHg;

holding the immersed whole membrane between a pair of smooth plates while heating at 40° C. to 180° C.;

treating the heat-treated membrane in hydrochloric acid and subsequently immersing the membrane in an aqueous solution of sodium hydroxide.

4,367,148

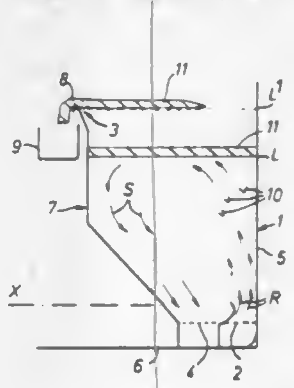
METHOD OF AND APPARATUS FOR SEPARATING LIQUID FROM SOLIDS ENTRAINED THEREIN

Robert Fulton, Maidenhead, and George Walker, Staines, both of England, assignors to Flakt Aktiebolag, Nacka, Sweden

Filed Mar. 24, 1981, Ser. No. 247,139

Int. Cl.^{3} C02F *1/24*

U.S. Cl. 210—703 **13 Claims**



1. A method of separating liquid from solids entrained therein, the solids being capable of floating on the surface of the liquid, comprising the steps of:

(a) providing opposed upstanding walls closed at the base and open at the top to define a collector which is open to atmosphere at all times and has an inlet for the liquid and entrained solids;

(b) an outlet for the solids at the open top of said collector; and

(c) an outlet for the liquid;

(d) creating a body of liquid in said collector having an upper surface open to atmosphere adjacent the open top thereof below the outlet for solids, flowing the liquid and entrained solids through the collector from the inlet in a flow which is upwardly adjacent one of said upstanding walls along said upper surface and downwardly adjacent the opposed upstanding wall so that the solids separate from the liquid and float on its surface; and

(e) regulating the flow of liquid through the liquid outlet so that when the flow therethrough is decreased the level of said upper surface rises and the floating solids flow from the collector via the solids outlet.

4,367,149

WATER PURIFICATION PROCESS

Riley N. Kinman, Erlanger, Ky., assignor to R.N.K. Environmental, Inc., Covington, Ky.

Continuation of Ser. No. 169,859, Jul. 17, 1980, abandoned. This application Apr. 8, 1981, Ser. No. 281,490
Int. Cl.^{3} C02F *1/76*
U.S. Cl. 210—753 **3 Claims**

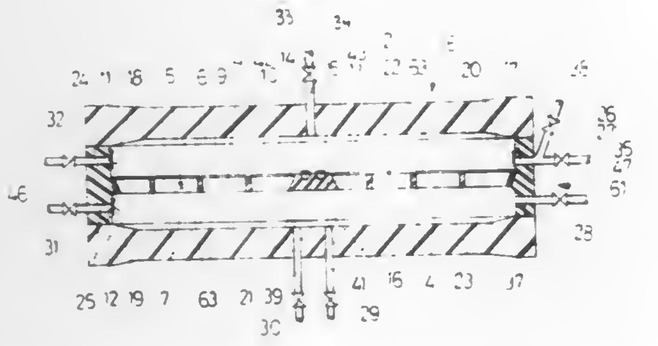
1. A process for purifying water which improves its potability over usual halogen purified water comprising adding to said water an amount of iodine which will kill pathogens therein, allowing sufficient time for pathogenicidal activity, and then reacting the iodine with a stoichiometric amount of sodium or potassium thiosulfate to convert the iodine to sodium or potassium iodide thereby eliminating elemental iodine from the water rendering the water more potable.

4,367,150

FILTERING METHOD AND APPARATUS

Edwin Hiesinger, Jenbach; Klaus Keplinger, and Hermann Nessler, both of Innsbruck, all of Austria, assignors to Inkomag, Basel, Switzerland

Division of Ser. No. 62,747, Aug. 1, 1979, Pat. No. 4,285,821, which is a division of Ser. No. 907,628, May 19, 1978, abandoned. This application Apr. 1, 1981, Ser. No. 249,708
Claims priority, application Austria, May 20, 1977, 3609/77
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.^{3} B01D *37/02*
U.S. Cl. 210—777 **14 Claims**



1. A method of filtering which comprises:
(a) partitioning a filter chamber with a fluid-permeable planar support fabric into a single upstream compartment and a single downstream compartment, said planar support fabric forming a horizontal partition;
(b) entraining onto said support fabric in said upstream compartment a particulate filter-aid layer by suspending particles of a filter-aid material in a carrier medium, introducing said carrier medium into said upstream compartment, and passing said carrier medium through said fabric whereby said particles form said layer;
(c) discharging the carrier medium of step (b) from said chamber downstream of said support fabric, and removing any residues of the carrier medium completely from said chamber by pressing said support fabric between a pair of movable walls thereby minimizing the volumes of said compartments so that removal of carrier medium from said upstream compartment is completed prior to complete removal of carrier medium from said downstream compartment;
(d) introducing a filterable medium into said upstream compartment, and passing said filterable medium through said layer and said support fabric from said upstream compartment to said downstream compartment, thereby depositing impurities contained in said filterable medium on said layer and enabling pure filtrate to enter said downstream compartment;
(e) discharging the filterable medium of step (d) from said upstream compartment and discharging the pure filtrate downstream from said downstream compartment, and then drawing any residues of said filterable medium completely from said chamber so that removal of such residues from said upstream compartment is completed prior to complete removal of the residues from the downstream compartment;
(f) thereafter introducing a washing medium into said chamber and to the downstream side of said fabric and thereby backwashing said layer from said fabric and entraining material of said layer backwashed from said fabric out of said upstream compartment with the washing medium;
(g) discharging the washing medium used in step (f) from said chamber and removing any residues of said washing medium completely from said chamber; and
(h) thereafter repeating steps (b) through (g).

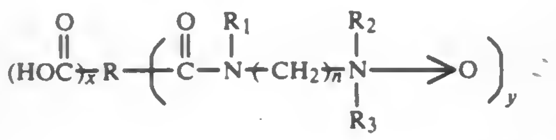
4,367,151

METHOD OF TREATING TEXTILES WITH AMIDOAMINE OXIDES OF POLYMERIC FATTY ACIDS

Donald V. Kinsman, Fort Thomas, Ky., and Clement H. Luken, Jr., Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 232,101, Feb. 16, 1981. This application Aug. 24, 1981, Ser. No. 295,392
Int. Cl.^{3} D06M *13/40*
U.S. Cl. 252—8.8 **6 Claims**

1. A method of softening and lubricating filaments, fibers, yarns and fabrics which comprises applying thereto an effective amount of an amidoamine oxide of the formula



$$\left(HO\overset{O}{\overset{\|}{C}}\right)_{x}R\left(\overset{O}{\overset{\|}{C}}-\overset{R_1}{\overset{|}{N}}\left(CH_2\right)_{n}\overset{R_2}{\underset{R_3}{N}}\longrightarrow O\right)_{y}$$

where R represents the hydrocarbon radical residue of a polymeric fatty acid obtained from the polymerization of C_{16-18} unsaturated monocarboxylic acids, R_1 is hydrogen or an alkyl group having 1 to 4 carbon atoms, R_2 and R_3 are alkyl groups having 1 to 4 carbon atoms, n is an integer from 2 to 5, y is 1, 2 or 3 and x is an integer so that $x+y$ is equal to 2 or 3.

3. The method of claim 1 wherein the amidoamine oxide is applied from a detergent formulation.

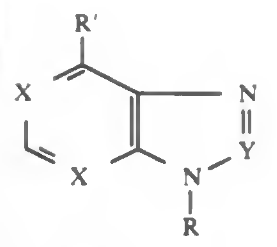
4,367,152

SELECTED HETEROAROMATIC NITROGEN COMPOUNDS AS ANTIOXIDANT/METAL DEACTIVATORS/ELECTRICAL INSULATORS IN LUBRICATING OILS AND PETROLEUM LIQUID FUELS

Peter G. Wright; John M. MacDonald, and Gerald A. MacAlpine, all of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 2, 1981, Ser. No. 280,073
Int. Cl.^{3} C10L *1/18, 1/22;* **C10M** *1/20, 1/32*
U.S. Cl. 252—47.5 **11 Claims**

1. A hydrocarbon composition comprising a basestock of hydrocarbon oil of lubricating viscosity or a petroleum liquid fuel and effective inhibitor amount of an antioxidant/metal deactivator/electrical insulator of the formula:



wherein each X is C or N with at least one X being N; Y is C or N; R is H or $CH_2NR''_2$ where each R'' is H or alkyl of 1 to 20 carbons; R' is H, SR''', OR''' or NR'''_2 with each R''' being H or alkyl of 1 to 20 carbons.

4,367,153

COMPOSITION FOR USE IN A MAGNETICALLY FLUIDIZED BED

Robert L. Seiver, and Martin O. Gernand, both of Baton Rouge, La., assignors to Exxon Research And Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 943,553, Sep. 18, 1978, abandoned. This application Dec. 19, 1980, Ser. No. 218,086
Int. Cl.^{3} B01J *21/04, 35/02*
U.S. Cl. 252—62.55 **6 Claims**

1. As a composition of matter, particulate material which can be formed into a magnetically stabilized fluidized bed to provide high magnetization at a low applied field which comprises particles of average size ranging from about 10 μm to about 4000 μm containing a nonferromagnetic refractory, porous inorganic oxide component composited with a plurality of elongate ferromagnetic components, each ferromagnetic component being multi-domain, having dimensions of at least 1 μm in all directions, elongated in one direction, and having a length:diameter (L/D) ratio of at least 2 but not more than 19.5, said ferromagnetic components being present in the composite particles as inclusions within said nonferromagnetic refractory, porous inorganic oxide component, and randomly oriented and constituting at least 0.5%, but not more than $2\pi/3(L/D+1)^2$ of the total volume of each particle, where L/D is the average ratio of the longest dimension of the ferromagnetic components relative to the shortest dimension, wherein a catalytically effective amount of a catalytically active metal is dispersed on the surface of the composite particles, and the composite particles are catalytically active.

4,367,154

GLYCOL COMPOSITIONS CONTAINING A PHOSPHOROUS-MODIFIED SILANE

Robert T. Jernigan, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 29, 1981, Ser. No. 288,090
Int. Cl.^{3} C09K *5/00*
U.S. Cl. 252—78.3 **33 Claims**

1. A gellation resistant glycol composition comprising
(A) 85 to 98 percent by weight of an alkylene glycol, an alkylene glycol ether, or mixtures thereof,
(B) an effective amount to reduce corrosion of an alkali metal silicate,
(C) an effective amount of one of the following:
(I) $(RO)_{3-m}(R')_mSi—R^2—O—P(O)(OR^3)(OR^3)(R^4)$,
(II) $[(RO)_{3-m}(R')_mSi—R^2—O—]_2P(O)(R4)$
(III) mixtures of I and II,
wherein m is 0–2
R, R^3, R^4 are alkyl groups of 1–4 carbons,
R' is an alkyl group of 1–4 carbons, phenyl. and aralkyl group of 7–10 carbons, and
R^2 is an alkylene group of 1–4 carbons.

4,367,155

LOW-RESIDUE BRIGHTENING COMPOSITIONS AND METHODS FOR USING THEM

Einar P. Birkelo, Bloomington, Minn., assignor to Coustic-Glo International, Inc., Minneapolis, Minn.

Filed May 7, 1981, Ser. No. 261,538
Int. Cl.^{3} C11D *7/02, 7/14, 7/18*
U.S. Cl. 252—99 **12 Claims**

5. A sprayable liquid brightening composition comprising the following comonents:
(a) an aqueous solution of a hypochlorite salt, which solution contains about 1–15% by weight titratable chlorine;
(b) dissolved in said aqueous solution, a water-soluble, liquid mono-lower alkyl ether of ethylene glycol;
(c) dissolved in said mono-lower alkyl ether, a nonionic surface active agent which has a hydroxy-terminated oxyethylene chain of 3–40 oxyethylene units; another end of said chain being terminated with a hydrophobic organic radical having at least 6 carbon atoms; and
(d) up to about 3% by weight of a silicone defoaming agent;
said brightening composition releasing titratable chlorine on a surface substantially immediately after being sprayed onto the surface, but leaving the surface substantially free of titratable chlorine under normal ambient conditions within 60 hours after the spraying takes place.

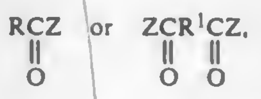
4,367,156

BLEACHING PROCESS AND COMPOSITIONS

Francis L. Diehl, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 165,461, Jul. 2, 1980, Pat. No. 4,283,301. This application Aug. 10, 1981, Ser. No. 291,864
Int. Cl.^{3} C11D *7/54*
U.S. Cl. 252—102 **13 Claims**

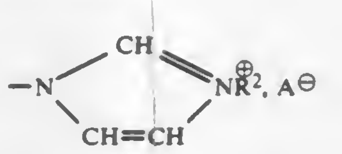
1. A bleaching composition consisting essentially of:
(a) from about 1% to about 70% by weight of a peroxygen bleaching compound selected from the group consisting of hydrogen peroxide, urea peroxide, and alkali metal peroxides, perborates, percarbonates, and perphosphates, and mixtures thereof; and
(b) from about 1% to about 90% by weight of a bleach activator compound of the formula



$$R\underset{\underset{O}{\|}}{C}Z \quad \text{or} \quad Z\underset{\underset{O}{\|}}{C}R^1\underset{\underset{O}{\|}}{C}Z,$$

wherein R is a hydrocarbyl group containing from about 5 to about 13 carbon atoms and additionally containing from 0 to about 10 ethylene oxide groups, provided that when R contains greater than about 9 carbon atoms it must contain at least 2 ethylene oxide groups, R^1 is a hydrocarbyl group containing from about 4 to about 24 carbon atoms and additionally containing from 0 to about 10 ethylene oxide groups, provided that when R^1 contains greater than about 12 carbon atoms it must contain at least 2 ethylene oxide groups, and each Z is a leaving group, having a pKa of from about 5 to about 20 and a molecular weight of less than about 175, selected from the group consisting of:

imidazoles of the formula



wherein R^2 is a C_1–C_4 alkyl group and A is an anion selected from the group consisting of hydroxide, halide, sulfate, methylsulfate and phosphate.

4,367,157

SOFT CONTACT LENS AMBIENT TEMPERATURE DISINFECTANT SOLUTION CONTAINING ASCORBIC ACID OR SALT THEREOF

Guy J. Sherman, Mandeville, La., assignor to Sherman Laboratories, Inc., Abita Springs, La.

Continuation-in-part of Ser. No. 37,645, May 10, 1979. This application Jan. 26, 1981, Ser. No. 228,562

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.^{3} C11D *3/48, 1/04*

U.S. Cl. 252—106 **10 Claims**

1. An aqueous composition which disinfects soft and semihard contact lenses at ambient temperature consisting essentially of:

water, a first compound selected from the group consisting of ascorbic acid, sodium ascorbate, calcium ascorbate and mixtures thereof, said first component present in an amount of between about 0.1% and 20% by weight of said total aqueous composition calculated as ascorbic acid, and a second compound selected from the group consisting of trimethoprim and thimerosal, said second compound present in an amount of between about 0.0001% and 5.0% by weight of said total aqueous composition, said aqueous composition being compatible with soft contact lenses to allow storage of soft contact lenses therein.

4,367,158

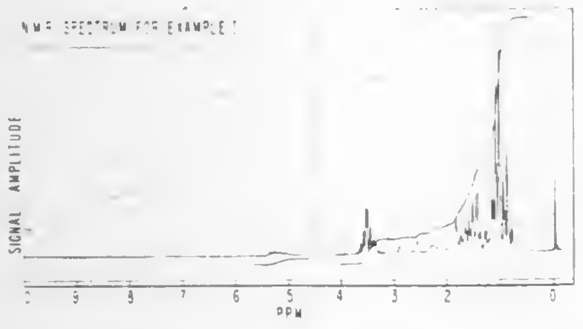
USE OF NORBORNYL ETHERS IN AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

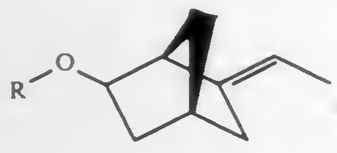
Continuation-in-part of Ser. No. 280,848, Jul. 6, 1981, abandoned, which is a division of Ser. No. 200,012, Oct. 23, 1980, Pat. No. 4,311,861. This application Dec. 29, 1981, Ser. No. 335,540

Int. Cl.^{3} C11D *17/00*

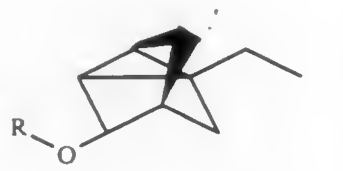
U.S. Cl. 252—174.11 **3 Claims**



1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid carrier, cationic, nonionic or zwitterionic detergent base an organoleptic property modifying quantity of at least one compound having a structure selected from the group consisting of:



and



wherein "R" represents C_3-C_6 alkyl; phenethyl; allyl; hydroxy alkyl; alkoxy alkyl pr cyclohexyl and in each of the molecules the group "R" is the same.

4,367,159

METHOD FOR UNIFORMLY DISTRIBUTING CARBON FLAKES IN A POSITIVE ELECTRODE, THE ELECTRODE MADE THEREBY AND COMPOSITIONS

Franklin C. Mrazek, Hickory Hills; John A. Smaga, Lemont, and James E. Battles, Oak Forest, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 19, 1981, Ser. No. 206,234

Int. Cl.^{3} H01M *4/52, 6/18*

U.S. Cl. 252—182.1 **40 Claims**

1. A discharged positive electrode comprising an electrically conductive current collector in electrical contact with a particulate mixture of gray cast iron and an alkali metal sulfide and an electrolyte including alkali metal halides or alkaline earth metal halides.

4,367,160

OXIDANTS FOR GASIFYING CARBON-CONTAINING MATERIALS

Charles W. Rooks, Houston, Tex.; George D. Davis, Creve Coeur, Mo.; James C. Hill, St. Louis, Mo., and Talmage D. McMinn, Jr., Des Peres, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 213,983, Dec. 8, 1980, abandoned, which is a continuation of Ser. No. 77,692, Sep. 21, 1979, abandoned. This application Oct. 7, 1981, Ser. No. 309,318

Int. Cl.^{3} C07C *1/02*

U.S. Cl. 252—373 **10 Claims**

1. In the process of oxidatively gasifying carbon-containing material wherein a metal oxide-containing material is employed as heat transfer agent and oxygen carrier gas the gasification reaction, the improvement wherein said metal oxide-containing material having a releasable oxygen capacity of at least 0.015 pounds of oxygen per pound of oxidant and an oxygen removal rate of at least 3.125×10^{-4} grams-atoms of oxygen per gram of oxidant per minute is selected from the group of (1) natural occurring iron-containing materials having an iron content of from 14 to 30 weight percent selected from bauxites, ilmenite and chromite ores, and (2) synthetic metal oxide-containing materials containing from 14 up to 25 weight percent of the metals selected from the iron and copper.

8. In the process of oxidatively gasifying carbon-containing material wherein a metal oxide-containing material is employed as heat transfer agent and oxygen carrier for the gasification reaction, the improvement wherein said metal oxide-containing material having a releasable oxygen capacity of at least 0.015 pounds of oxygen per pound of oxidant and an oxygen removal rate of at least 3.125×10^{-4} grams-atoms of oxygen per gram of oxidant per minute is a synthetic metal oxide-containing material selected from cerium and uranium.

4,367,161

NOVEL POLYMERIZATION CATALYST AND PROCESS FOR USING SAME TO POLYMERIZE OLEFINS

Harold E. Swift, Gibsonia, and Richard W. Lunden, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 23, 1981, Ser. No. 227,733

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 252—429 B **36 Claims**

1. A solid, particulate, catalytic complex for the stereospecific polymerization of olefins prepared by a process comprising reducing $TiCl_4$ to a solid product based on $TiCl_3$, contacting the resultant reduced solid with a complexing agent to obtain a treated solid and contacting the treated solid with $TiCl_4$ in the presence of silica which has been treated with an aromatic ester.

4,367,162

CATALYST FOR PURIFYING EXHAUST GASES AND A METHOD FOR PRODUCING THE CATALYST

Yoshiyasu Fujitani; Hideaki Muraki, both of Nagoya; Shiroh Kondoh, Aichi; Makoto Tomita, Obu; Tamotsu Nakamura, Nagoya; Kouji Yokota, Nagoya, and Hideo Sobukawa, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Mar. 4, 1981, Ser. No. 240,326

Claims priority, application Japan, Mar. 6, 1980, 55-28953

Int. Cl.^{3} B01J *21/04, 21/06, 23/10, 23/42*

U.S. Cl. 252—443 **19 Claims**

1. A catalyst for reducing nitrogen oxides, carbon monoxide and hydrocarbons, the noxious components in exhaust gases which comprises:

a carrier having a substructure of refractory material and a porous layer of a powder formed on the surface thereof of zirconium oxide powder with at least one powder selected from the group consisting of alumina and alumina-magnesia spinel; and

a catalyst ingredient supported thereon consisting essentially of cerium oxide and a metal selected from the group consisting of platinum, palladium and mixtures thereof.

4,367,163

SILICA-CLAY COMPLEXES

Thomas J. Pinnavaia, and Max M. Mortland, Tadashi Endo, all of East Lansing, Mich., assignors to Research Corporation, New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,213

Int. Cl.^{3} B01J *21/16, 29/06*

U.S. Cl. 252—455 R **28 Claims**

1. A clay composition, comprising:

silica intercalated between the interlayers of said clay.

11. A method for preparing clay intercalated with silica, comprising:

exchanging at least a portion of the native metal ions of a swelling clay with complex silicon ions; and

hydrolyzing said complex silicon ions.

23. A hydrocarbon conversion catalyst comprising the silica intercalated clay product of claim 1 admixed with a crystalline aluminosilicate zeolite.

4,367,164

CATALYSTS FOR HYDROTREATING HEAVY HYDROCARBON OILS AND A METHOD OF PREPARING SUCH CATALYSTS

Yoshimi Shiroto; Takehito Higashi, both of Yokohama, and Takeo Ono, Kawasaki, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Nov. 24, 1980, Ser. No. 210,048

Claims priority, application Japan, Nov. 27, 1979, 54-153131

Int. Cl.^{3} B01J *21/16, 21/00*

U.S. Cl. 252—457 **14 Claims**

1. A catalyst for hydrotreating heavy hydrocarbon oils, comprising:

a carrier which is a calcined composite of a mixture of a clay mineral consisting mainly of magnesium silicate having a double-chain structure and at least one oxide-forming substance selected from the group consisting of compounds of magnesium, boron, silicon, titanium and zirconium and capable of forming an oxide upon calcination; and

at least one catalytic metal component composited with said carrier, the metal of said catalytic metal component being selected from the group consisting of the metals belonging to Group VB, VIB, VIII and IB of the periodic Table;

said catalyst containing between about 5 and about 80% by weight of the oxide formed from said oxide-forming substance and between about 0.1 and about 20% by weight of said catalytic metal component in terms of elemental metal;

said catalyst having a pore volume of between about 0.5 and about 2.0 cc/g, an average pore diameter of between about 100 and about 500 A, and a surface area of between about 40 and about 400 m^2/g.

4. A method of preparing a catalyst, comprising the steps of:

(a) commingling a clay mineral consisting mainly of magnesium silicate having a double-chain structure with at least one oxide-forming substance selected from the group consisting of compounds of the elements belonging to Group IIA, IIIA, IVA and magnesium, boron, silicon, titanium and zirconium IVB of the Periodic Table and capable of forming an oxide upon calcination, in the presence of water to form a mixture having a water content of between about 40 and about 80% by weight;

(b) molding the mixture;

(c) supporting at least one catalytic metal component on the mixture, the metal of said metal component being selected from the group consisting of metals belonging to Groups VB, VIB, VIII and IB of the Periodic Table, such that said catalyst may contain between about 0.1 and about 20% by weight of said catalytic metal component calculated on elemental metal; and

(d) calcining the mixture.

4,367,165

CATALYST FOR HYDROTREATING HEAVY HYDROCARBON OILS AND METHOD OF PREPARING SAME

Sachio Asaoka, Yokohama; Takeo Ono, Kawasaki, and Yoshimi Shiroto, Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Nov. 24, 1980, Ser. No. 210,049

Claims priority, application Japan, Nov. 27, 1979, 54-153132

Int. Cl.^{3} B01J *21/16, 21/00*

U.S. Cl. 252—457 **16 Claims**

1. A catalyst for hydrotreating heavy hydrocarbon oils, comprising:

a carrier which is a calcined composite of a mixture of a clay mineral consisting mainly of magnesium silicate having a double-chain structure and a pseudoboehmite which shows a powder X-ray diffraction spectrum obtained by applying a CuK_α ray such that the half value width of the peak on the (020) plane is between about 0.8° and 4.0° and the intensity of said peak is between 1.2 and 8.0 times as high as that at $2\theta=10°$; and

at least one catalytic metal component composited with said carrier, the metal of said catalytic metal component being selected from the group consisting of the metals belonging to Groups VB, VIB, VIII and IB of the Periodic Table.

8. A method of preparing a catalyst, comprising the steps of:

(a) commingling a clay mineral consisting mainly of magnesium silicate having a double-chain structure with a pseudoboehmite in the presence of water to form a mixture having a water content of between about 40 and about 80% by weight, said pseudoboehmite showing a powder X-ray diffraction spectrum obtained by applying a CuK_α ray such that the half value width of the peak on the (020) plane is between about 0.8° and 4.0° and the intensity of said peak is between 1.2 and 8.0 times as high as that at $2\theta=10°$;

(b) molding the mixture;

(c) supporting at least one catalytic metal component on the mixture, the metal of said catalytic metal component being selected from the group consisting of the metals belonging to Groups VB, VIB, VIII and IB of the Periodic Table; and

(d) calcining the mixture.

4,367,166

STEAM REFORMING CATALYST AND A METHOD OF PREPARING THE SAME

Yoshiyasu Fujitani; Hideaki Muraki, both of Nagoya; Makoto Tomita, Obu; Hideo Sobukawa, Nagoya, and Masayuki Fukui, Toyoake, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 13, 1981, Ser. No. 282,587

Claims priority, application Japan, Jul. 17, 1980, 55-98276

Int. Cl.^{3} B01J *21/04, 21/10, 23/10, 23/46*

U.S. Cl. 252—462 **8 Claims**

1. A catalyst for the steam reforming of hydrocarbons which consists essentially of cerium oxide and rhodium as a catalyst ingredient supported on a carrier, wherein said catalyst contains 0.5 to 50% by weight cerium oxide and 0.01 to 10% by weight rhodium, based on said carrier.

4,367,167

PROCESS FOR PREPARING SUPPORTED METAL CATALYSTS

George A. Lee, Wayland, Mass., and Stuart N. Isaacs, East Meadow, N.Y., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1981, Ser. No. 284,312

Int. Cl.^{3} B01J *23/42, 23/44, 23/50, 23/52*

U.S. Cl. 252—472 **12 Claims**

1. A process for producing a supported metal catalyst which comprises (a) impregnating by contacting a suitable porous inert support material with an aqueous solution of a soluble metal salt, (b) removing excess solution, (c) contacting said impregnated support material with an aliphatic amine as a reducing agent dissolved in a water immiscible organic solvent, (d) heating said impregnated support material for a sufficient time to reduce substantially all said metal salt to the metal, and (e) washing and drying the catalyst prior to use.

4,367,168

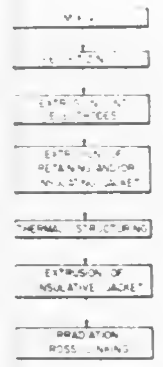
ELECTRICALLY CONDUCTIVE COMPOSITION, PROCESS FOR MAKING AN ARTICLE USING SAME

Cornelius J. N. Kelly, Simsbury, Conn., assignor to E-B Industries, Inc., Simsbury, Conn.

Division of Ser. No. 24,063, Mar. 26, 1979, Pat. No. 4,277,673. This application Dec. 12, 1980, Ser. No. 215,638

Int. Cl.^{3} H01B *1/06*

U.S. Cl. 252—511 **9 Claims**



1. An electrically conductive composition having point-to-point electrical resistance that increases with increasing temperature comprising a mixture of carbon black having high dry electrical resistivity and a crystalline polymer, the carbon black being substantially uniformly dispersed in said polymer, said polymer having at least 20% crystallinity as determined by X-ray diffraction, the percentage by weight of said high electrical resistivity carbon black based upon the total weight of said mixture being at least 6%, said mixture of high dry resistivity carbon black and polymer being substantially non-conductive upon initial mixing and before annealing, the composition having been annealed at a temperature equal to or above the crystalline melting point of the polymer for a period of time sufficient to produce a substantially constant and stable room temperature electrical resistance.

4,367,169

α-OLEFIN SULFONATE-CONTAINING, LIQUID DETERGENT COMPOSITIONS HAVING IMPROVED LOW-TEMPERATURE STABILITY

Takao Matsushita, Koshigaya, and Noriyuki Uchino, Tokyo, both of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Oct. 22, 1981, Ser. No. 313,815

Claims priority, application Japan, Oct. 27, 1980, 55-150293

Int. Cl.^{3} C11D *1/14*

U.S. Cl. 252—542 **3 Claims**

1. A liquid detergent composition containing:

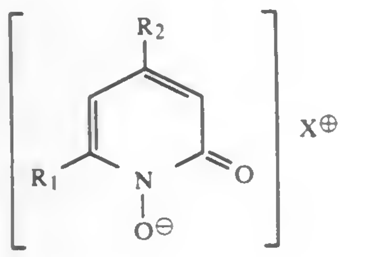
(a) an anionic surface active agent represented by the general formula:

OS—M

(wherein OS is an acid residue of a straight-chained olefin sulfonate having an average carbon number of 10 to 16, and M is an alkali- or alkaline earth metal)

in an amount of 3 to 30% by weight of the composition weight; and

(b) a pyridone salt represented by the general formula:



(wherein R_1 is an alkyl group having a carbon number of 1 to 17, alkenyl group having a carbon number of 2 to 17, cycloalkyl group having a carbon number of 5 to 8, bicycloalkyl group having a carbon number of 7 to 9, cycloalkyl-alkyl group having a carbon number of 1 to 4 in the alkyl portion or cycloalkyl-alkyl wherein said cycloalkyl residue is substituted by at least one alkyl group having a carbon number of 1 to 4; R_2 is hydrogen, alkyl group having a carbon number of 1 to 4, alkenyl group having a carbon number of 2 to 4, alkinyl group having a carbon number of 2 to 4, or halogen; and X is an organic amine residue)

in an amount of 0.1 to 10.0% by weight of the composition weight.

4,367,170

STABILIZED PHOTOCHROMIC MATERIALS

Donald R. Uhlmann, Newton; Elias Snitzer, Wellesley; Richard J. Hovey, Sturbridge, and Nori Y. C. Chu, Southbridge, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 24, 1975, Ser. No. 543,711

Int. Cl.^{3} G02B *5/23*

U.S. Cl. 252—586 **12 Claims**

5. An ophthalmic material having photochromic properties comprising:

a plastic host material having a plurality of photochromic particles incorporated therein, each of said photochromic particles comprising:

an organic photochromic dye imbibed in a resinous material, said imbibed resinous material having a diameter in the range of 30 Angstroms to 1μ; and,

a protective coating on substantially the entire surface of said imbibed resinous material, said coating being effective to render the photochromic particle impervious to the effects of oxygen, moisture, monomers, catalysts, and other chemicals used in the formation of plastic hosts which are deleterious to the photochromic particle.

4,367,171

COATING COMPOSITIONS FOR THE MANUFACTURE OF COATED PAPERS

Klaus D. Leifels, Binningen; Alfred Renner, Münchenstein, and Franz R. Widmer, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 641,587, Dec. 16, 1975, abandoned. This application Jun. 19, 1979, Ser. No. 49,966

Claims priority, application Switzerland, Dec. 16, 1974, 16673/74

Int. Cl.^{3} C08L *61/24, 3/02, 9/06*

U.S. Cl. 524—47 **8 Claims**

1. A coating composition for paper, which composition consists of an aqueous preparation containing at least:

(a) a polymeric binder selected from the group of starch, modified starch, styrene-butadiene copolymers or acrylic polymers in an amount of 5 to 30 percent by weight relative to the total weight of (b) and (c),

(b) an inorganic pigment selected from the group of precipitated calcium carbonate, coating-kaolin and mixtures thereof in an amount of 75 to 98 percent by weight relative to the total weight of constituents (b) and (c), and

(c) a water-insoluble urea-formaldehyde polycondensation product produced in aqueous solution from 1 mole of urea and 1.3 to 2 moles of formaldehyde, which product is in a highly dispersed form and has a mean particle diameter of 3 to 6 microns and a specific BET-surface area of 5 to 8 m^2/g in an amount of 25 to 2 percent by weight relative to the total weight of constituents (b) and (c).

4,367,172

DISAZO DYES CONTAINING AT LEAST ONE SULFO GROUP AND AT LEAST TWO BASIC OR CATIONIC GROUPS

Reinhard Pedrazzi, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

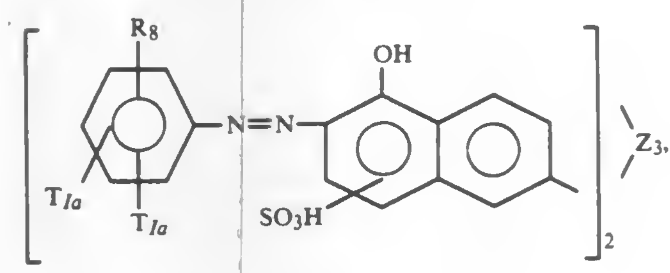
Division of Ser. No. 31,781, Apr. 20, 1979, Pat. No. 4,273,707. This application Dec. 4, 1980, Ser. No. 212,826

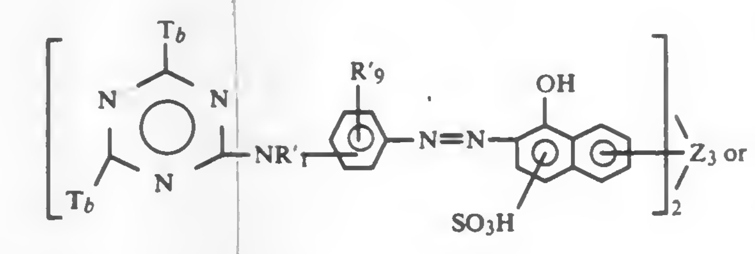
Claims priority, application Switzerland, Apr. 26, 1978, 4500/78; Apr. 26, 1978, 4501/78

Int. Cl.^{3} C09B *35/08, 35/22*

U.S. Cl. 260—153 **32 Claims**

1. A compound of the formula





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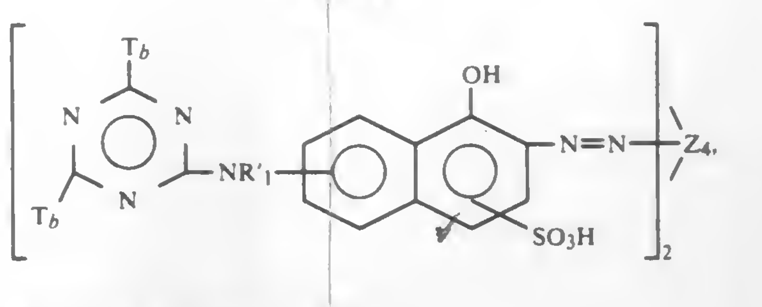


or an external salt thereof, wherein

each R_1' is independently hydrogen or methyl,

each R_8 is independently hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, halo, C_{1-4}alkylamino, di-(C_{1-4}alkyl)amino, $-SO_2NR_1R_1$ or $-CONR_1R_1$,

wherein each R_1 is independently hydrogen or C_{1-4}alkyl,

each R_9' is independently hydrogen, chloro, methyl, methoxy, acetamido, benzamido, sulfamoyl or carbamoyl,

each T_b is independently $-NR_2'-Q-NR_3''R_4''$ or $-NR_2'-Q-N^{\oplus}R_5''R_6''R_7'$,

wherein

R_2' is hydrogen or methyl,

each of R_3'' and R_4'' is independently hydrogen, C_{1-4}alkyl or hydroxyethyl,

each of R_5'' and R_6'' is independently C_{1-4}alkyl or hydroxyethyl or

R_3'' and R_4'' or R_5'' and R_6'' taken together and with the nitrogen atom to which they are joined form a piperidine or morpholine ring,

R_7' is methyl, ethyl or benzyl, and

Q is linear or branched C_{2-6}alkylene,

each T_{Ia} is independently $-CO-T_a$ or $-SO_2-T_a$,

wherein T_a is $-NR_2'-Q-NR_3'R_4'$ or $-NR_2'-Q-N^{\oplus}R_5'R_6'R_7'$,

wherein R_2' is hydrogen or methyl,

each of R_3' and R_4' is independently hydrogen, C_{1-6}alkyl, n-C_{2-3}hydroxyalkyl or benzyl,

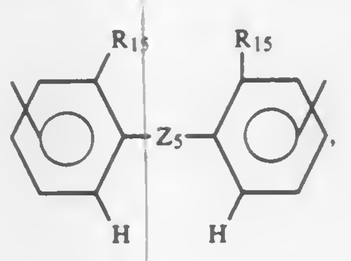
each of R_5' and R_6' is independently C_{1-6}alkyl, n-C_{2-3}hydroxyalkyl or benzyl or R_3' and R_4' or R_5' and R_6' taken together and with the nitrogen atom to which they are joined form a pyrrolidine, piperidine or morpholine ring,

R_7' is methyl, ethyl or benzyl, and

Q is linear or branched C_{2-6}alkylene,

Z_3 is a divalent nitrogen-containing bridging radical, and

Z_4 is 1,3-phenylene, 1,4-phenylene or



wherein

R_{15} is hydrogen, chloro, methyl or methoxy, and

Z_5 is a direct bond, $-(CH_2)_t-$, $-O-$, $-O-(CH_2)_t-O-$, $-SO_2-$, $-NHCO-$, $-NHCONH-$, $-NHCO-(CH_2)_t-CONH-$ or $-CONH-(CH_2)_t-NHCO-$, wherein t is 2 or 3,

with the provisos that (i) the number of basic groups and cationic groups together exceeds the number of sulfo groups, (ii) each basic group is independently in free base, internal salt or acid addition salt form, (iii) the positive charge of each cationic group is independently balanced by the negative charge of a $-SO_3^{\ominus}$ group of the molecule or an external nonchromophoric anion, and (iv) the number of basic groups in internal salt form and cationic groups the positive charge of which is balanced by the negative charge of a $-SO_3^{\ominus}$ group of the molecule does not exceed the number of sulfo groups present in the molecule.

4,367,173

AZO PIGMENTS CONTAINING PYRAZOLOQUINAZOLONE RADICALS

Hartmut Kanter, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

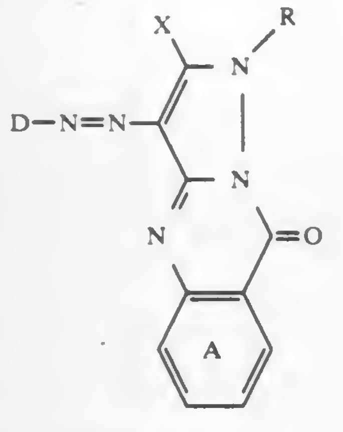
Division of Ser. No. 83,327, Oct. 10, 1979, Pat. No. 4,294,755. This application Oct. 28, 1980, Ser. No. 201,628

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843873

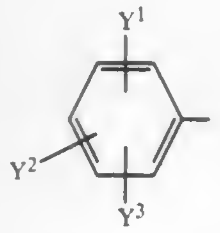
Int. Cl.^{3} C09B *29/01, 29/033, 29/36, 29/38*

U.S. Cl. 260—154 **5 Claims**

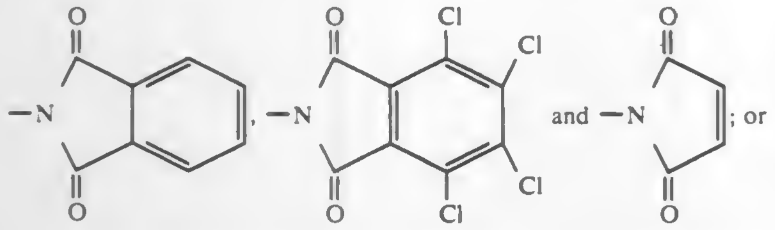
1. An azo compound of the formula



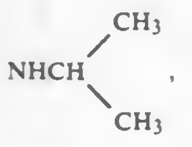
wherein D is a radical of the formula



where Y^1 is acylamino selected from the group consisting of $NHCOCH_3$, $NHCOC_2H_5$, $NHCOC_3H_7$, $NHCOC6H_5$, $NHCOC_6H_4Cl$, $NHCOC_6H_3Cl_2$, $NHCOC_6H_4Br_1$, $NCOC_6H_4OCH_3$, $NHCOC_{10}H_7$, $NHCONHC_6H_5$,



Y^1 is hydrogen; chlorine; bromine, nitro; cyano, a carboxylic acid ester having an ester radical selected from the group consisting of C_1–C_6 alkyl or alkoxy-alkyl, phenyl and benzyl; trifluoromethyl; alkoxy; methylsulfonyl; quinazolonyl; phthalazinonyl; phenylazo; naphthylazo; pyrodiylazo; or unsubstituted or substituted carbamyl or sulfamyl wherein the substituent radicals are selected from the group consisting of NH_2, $NHCH_3$, NHC_2H_5, NHC_3H_7, NHC_4H_9,



$$NHCH\begin{matrix}CH_3\\ CH_3\end{matrix},$$

$NHCH_2C_6H_5$, NHC_6H_4Cl, $NHC_6H_3Cl_2$, $NHC_6H_2Cl_3$, NHC_6H_4Br, $NHC_6H_4OCH_3$, $NHC_6H_4OC_2H_5$, $NHC_6H_3ClOCH_3$, $NHC_6H_4NHCOCH_3$, $NHC_6H_4NHCOC_6H_5$, $NHNHCOC_6H_5$, $NHNHCOC_6H_4Cl$, $NHNHCOC6H_4CH_3$, $NHC_6H_3ClCH_3$, $NHC_6H_2Cl_2OCH_3$ and $NHC_6H_2Cl_2CH_3$;

Y^2 is hydrogen, chlorine, bromine, nitro, cyano, a carboxylic acid ester having an ester radical selected from the group consisting of C_1–C_6 alkyl or alkoxy-alkyl, phenyl and benzyl; or Y^2 is oxdiazolyl,

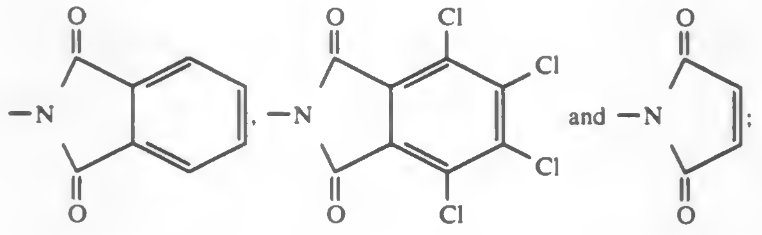
Y^3 is hydrogen, chlorine or bromine;

Y^4 is hydrogen or chlorine;

and wherein D is free from complex-forming hydroxy or carboxy;

R is hydrogen;

X is alkyl, or a carboxylic acid alkyl ester having an alkyl ester radical selected from the group consisting of C_1–C_6 alkyl or alkoxyalkyl, phenyl and benzyl; or X is phenyl, naphthyl or pyridyl which are unsubstituted or substituted by chlorine, bromine, nitro, methyl, methoxy or ethoxy; or X is acylamino selected from the group consisting of $NHCOCH_3$, $NHOCOC_2H_5$, $NHCOC_3H_7$, $NHCOC_6H_5$, $NHCOC_6H_4Cl$, $NHCOC_6H_3Cl_2$, $NHCOC_6H_4Br$, $NHCOC_6H_4OCH_3$, $NHCOC_{10}H_7$, $NHCOHN_2$, $NHCONHC_6H_5$,



and the ring A is substituted or unsubstituted, with the proviso that said ring A is free from SO_3H groups.

4,367,174

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE PYRIDYLAZO(DIALKYLAMINO)PHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

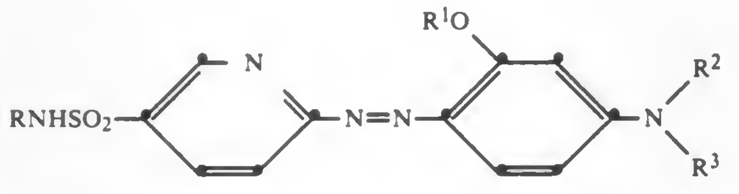
Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,611, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 355,030

Int. Cl.^{3} C09B *45/00, 29/22, 29/36, 31/14*

U.S. Cl. 260—156 **14 Claims**

1. A nondiffusible compound having a releasable magenta dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety, or may be taken together with the $NHSO_2$ group to which it is attached to form CAR;

(b) R^1 represents hydrogen, a hydrolyzable moiety or CAR;

(c) R^2 and R^3 each independently represents hydrogen, CAR, an alkyl group of 1 to about 6 carbon atoms, or they can be taken together with the nitrogen to which they are attached to form a 5- or 6-membered heterocyclic ring, or one of said R^2 and R^3 can be an aryl group having from 6 to about 10 carbon atoms; and

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible magenta dye moiety or precursor thereof under alkaline conditions;

with the proviso that at least one of R, R^1, R^2 and R^3 is CAR.

4,367,175

PURE POTASSIUM SALT OF CLAVULANIC ACID

Ian D. Fleming, Chalfont St. Peter; David Noble; Hazel M. Noble formerly Gillett, both of Marlow, and Wilfred F. Wall, High Wycombe, all of England, assignors to Glaxo Laboratories Limited, Middlesex, England

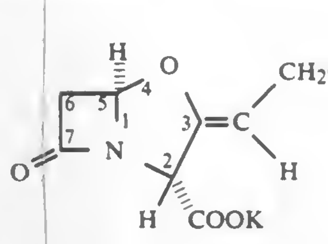
Division of Ser. No. 888,496, Mar. 20, 1978, Continuation of Ser. No. 654,638, Feb. 2, 1976, abandoned. This application May 7, 1980, Ser. No. 147,614

Claims priority, application United Kingdom, Feb. 7, 1975, 5409/75; Mar. 17, 1975, 11076/75

Int. Cl.^{3} C07D *498/04;* **A61K** *31/42*

U.S. Cl. 260—245.3 **1 Claim**

1. Potassium clavulanate of the formula



having a molar extinction coefficient as determined in 0.1 M aqueous potassium hydroxide using ultraviolet light of wavelength 258 nm of about 17000.

4,367,176

ESTERS OF ARYLPROPIONIC ACIDS ENDOWED WITH AN ANTI-INFLAMMATORY ACTIVITY AND RELATED PHARMACEUTICAL COMPOSITIONS

Paolo Ferruti; Ferdinando Danusso, both of Milan; Maria C. Tanzi, Monza, and Giuseppe Quadro, Milan, all of Italy, assignors to Ausonia Farmaceutici s.r.l., Pomezia, Italy

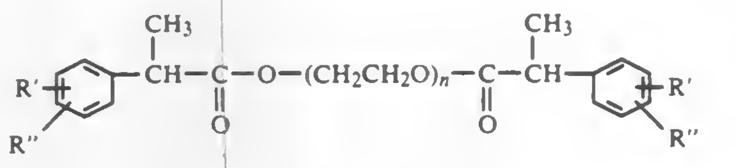
Filed Feb. 11, 1981, Ser. No. 233,658

Claims priority, application Italy, Feb. 13, 1980, 19878 A/80

Int. Cl.^{3} C07C *69/76*

U.S. Cl. 548—482 **14 Claims**

1. Esters of arylpropionic acids characterized by the general formula (I)



(I)

wherein n is a number ranging between 10 approximately and 50 and (a) R′ is hydrogen, R″ is isobutyl, benzoyl, 2-thenoyl or 1-oxo-2-isoindolinyl residue or (b) R′ is a phenyl group, R″ is fluorine or (c) R′ and R″ form together a benzene ring orthocondensated on the first ring, and carrying a methoxyl group as well as their enantiomers.

4,367,177

PROCESS FOR PREPARING 23,25-DIHYDROXYVITAMIN D_3

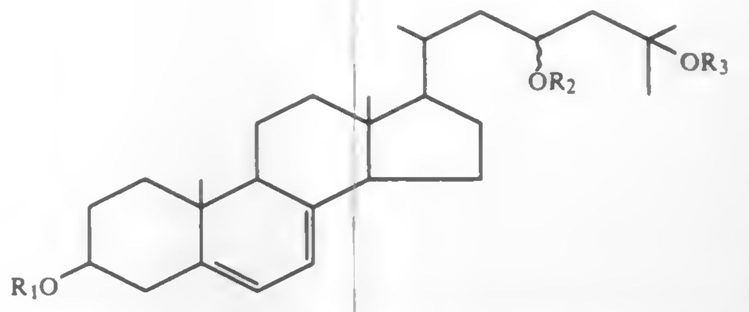
Hector F. DeLuca; Heinrich K. Schnoes, and Joseph K. Wichman, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 15, 1981, Ser. No. 254,570

Int. Cl.^{3} C07J *9/00*

U.S. Cl. 260—397.2 **12 Claims**

1. A compound of the formula



wherein each of R_1, R_2, and R_3 is selected from the group consisting of hydrogen, acyl, and alkylsilyl.

4,367,178

PROCESS FOR THE PRODUCTION OF PURE LECITHIN DIRECTLY USABLE FOR PHYSIOLOGICAL PURPOSES

Walter Heigel, Ludwigshafen, and Rolf Hueschens, Laatzen, both of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,704

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011185

Int. Cl.^{3} C11B *1/10*

U.S. Cl. 260—403 **18 Claims**

1. A process for the production of pure lecithin directly usable for physiological purposes by selective extraction from raw lecithin mixtures with oily substances, said process comprising the steps of:

contacting said raw lecithin mixture with gas as the extraction medium under supercritical conditions with respect to pressure and temperature in extraction stage to produce a gas containing an extract;

passing the gas containing the extract from the extraction stage into a separation stage;

varying at least one of the pressure and the temperature of the gas in the separation stage to separate the extract-containing gas into the gas and the extract;

recycling the gas after the step of varying the pressure and/or temperature; and

removing pure lecithin from the extraction stage.

4,367,179

HYDROCYANATION OF OLEFINIC ALKYL ESTERS

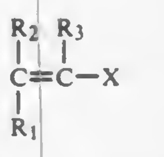
Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 77,696, Sep. 21, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,124

Int. Cl.^{3} C07C *120/20*

U.S. Cl. 260—465.4 **15 Claims**

1. A process for producing cyanoester comprising contacting an olefinic, alkyl carboxylate ester in the vapor phase with gaseous hydrogen cyanide in the presence of a catalyst containing at least one element selected from the group consisting of Li, Na, K, Rb, Cs, Be, Mg, Ca and Sr, wherein said catalyst is prepared by calcining in air, at a temperature of about 100° C. to about 600° C., a compound containing said element, said compound being stable at room temperature and atmospheric pressure, and wherein said reactant ester is represented by the formula:

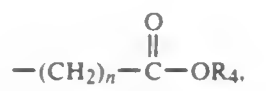


$$\begin{matrix}R_2 & R_3 & \\ | & | & \\ C & = C & -X\\ | & & \\ R_1 & & \end{matrix}$$

wherein R_1, R_2 and R_3 are each independently selected from:

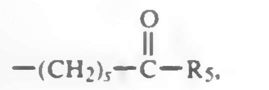
(1) hydrogen;

(2) C_{1-4} alkyl;


(3)

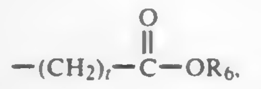
$$-(CH_2)_n-\overset{O}{\overset{\|}{C}}-OR_4,$$

wherein R_4 is hydrogen or a C_{1-4} alkyl and n is 0 to 4; and


(4)

$$-(CH_2)_s-\overset{O}{\overset{\|}{C}}-R_5,$$

wherein R_5 is hydrogen or a C_{1-4} alkyl and s is 0 to 4; and wherein X is represented by the formula



$$-(CH_2)_t-\overset{O}{\overset{\|}{C}}-OR_6,$$

wherein R_6 is a C_{1-12} alkyl and t is 0 to 2.

4,367,180
PROCESS FOR THE PREPARATION OF MALATHION

Noël Rouy, Yerres, and Georges Gros, Bourg la Reine, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Mar. 11, 1981, Ser. No. 242,539
Claims priority, application France, Mar. 21, 1980, 80 07243
Int. Cl.^{3} C07F *9/165*
U.S. Cl. 260—978 **18 Claims**

1. A process for the preparation of malathion, which comprises:
   (a) reacting ethyl maleate with an excess of O,O-dimethyldithiophosphoric acid in the presence of a solvent which forms an azeotrope with the O,O-dimethyldithiophosphoric acid at elevated temperatures and a heterogeneous liquid mixture at ambient temperature,
   (b) distilling off an azeotropic mixture of O,O-dimethyldithiophosphoric acid and the solvent upon completion of the reacting (a),
   (c) cooling collected distillate sufficiently to thereby allow same to dissociate into phases comprising a solvent rich phase and an acid rich phase, and then separating the phase by decantation, then
   (d) recycling the solvent rich phase comprising mainly the solvent and a small amount of O,O-dimethyldithiophosphoric acid to the reaction medium, and
   (e) drawing off the acid rich phase comprising mainly the O,O-dimethyldithiophosphoric acid and a small amount of solvent.

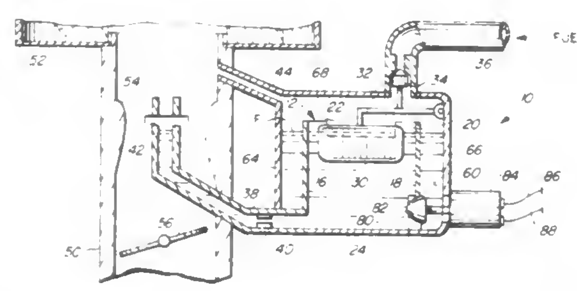
13. A process according to one of claim 1 or 2, wherein, at the end of the reaction, the reaction medium is neutralized and washed with water, and the resulting malathion is subjected to rapid evaporation of the volatile fractions, the residence time in the evaporator being less than 5 minutes.

4,367,181
CARBURETOR FLOAT CHAMBER EMERGENCY FUEL RESERVOIR APPARATUS

J. Roy Hack, Jr., 4363 E. Illinois St., Tucson, Ariz. 85714

Filed Dec. 16, 1980, Ser. No. 216,843
Int. Cl.^{3} F02M *5/14*
U.S. Cl. 261—70 **10 Claims**

1. Reserve fuel apparatus for a carburetor, comprising, in combination:
   a float chamber in the carburetor for receiving a flow of fuel;
   a float in the float chamber for controlling the flow of fuel into the float chamber; and
   reserve fuel chamber means disposed adjacent to the float chamber, including
   a reserve fuel chamber,
   means for filling the reserve fuel chamber from the flow of fuel into the float chamber, and

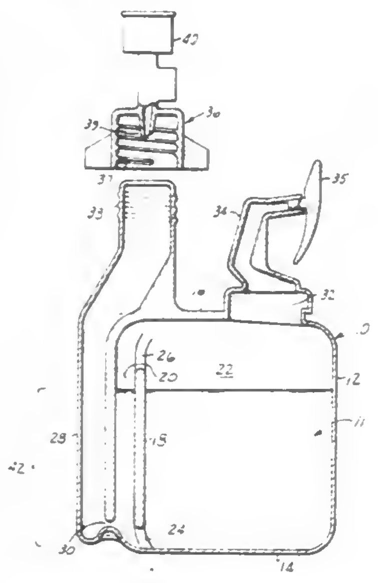


   means for providing a flow of fuel from the reserve fuel chamber to the float chamber.

4,367,182
CONTAINER WITH INCORPORATED AERATOR

Charles M. Kienholz, San Dimas, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 14, 1981, Ser. No. 283,249
Int. Cl.^{3} B01F *3/04*
U.S. Cl. 261—124 **13 Claims**

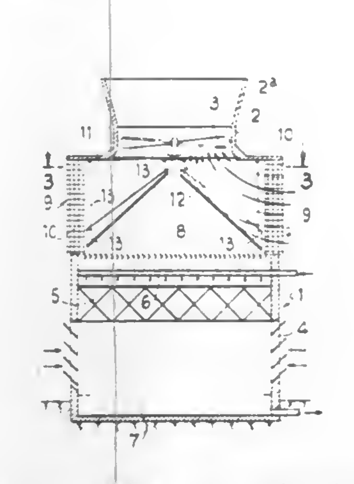


1. A humidifier container comprising:
a side wall, top wall, bottom wall, and interior wall defining a first and second chamber within the container between the interior wall and side wall wherein the first chamber comprises a volume which maintains a substantially constant volume of liquid therein when gas is bubbled through such first chamber, and having at least a first opening adjacent the bottom wall and at least a second opening adjacent the top wall, which openings extend through the interior wall connecting the first and second chambers;
an enclosed conduit closed at one end fastened to the container and including an opening adjacent the closed end extending through the side wall and into the first chamber of the container; and
a tubular projection extending outwardly from the top wall and in communication with the second chamber through an opening extending through the top wall into the second chamber.

4,367,183
AIR CHANNELING DEVICE FOR MIXING DRY AND HUMID AIR STREAMS OF A COMBINED WET AND DRY ATMOSPHERIC COOLER

Mario G. B. Carbonaro, Brussels, Belgium, assignor to Hamon-Sobelco, S.A., Brussels, Belgium

Continuation of Ser. No. 133,669, Apr. 25, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 275,130
Int. Cl.^{3} B01F *3/04*
U.S. Cl. 261—159 **9 Claims**



1. A device for mixing dry and humid air streams of a combined atmospheric cooler employing parallel air streams: comprising a wet heat exchange unit and a dry heat exchange unit disposed in parallel in the air streams, the device for mixing the dry and humid air streams comprising; air inlet means for the wet heat exchange unit, air inlet means for the dry heat exchange unit, common air outlet means for both the wet and dry heat exchange units, air stream deflecting surfaces, said deflecting surfaces formed by a plurality of spaced apart channel forming members which are open in the direction of the air outlet means of the cooler, said spaced channel forming members defining alternate gas passages for the humid and the dry air streams, said channel forming members extending in the space located between the wet heat exchange unit and the dry heat exchange unit, said channel forming members further extending on a converging slope from the region in which the dry air stream exits from the dry exchange unit which is the nearest to said wet heat exchange unit and then toward the centre of the cooler and wherein said channel forming members have V- or u-shapes in cross-section.

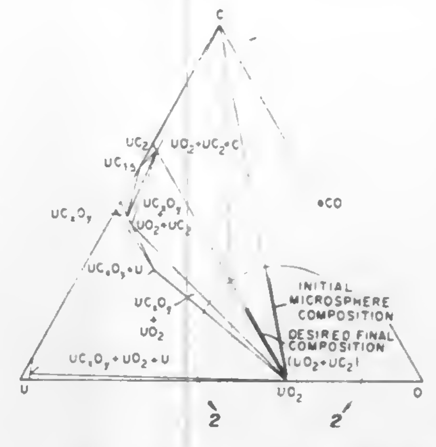
4,367,184
MIXED URANIUM DICARBIDE AND URANIUM DIOXIDE MICROSPHERES AND PROCESS OF MAKING SAME

David P. Stinton, Knoxville, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 17, 1980, Ser. No. 217,356
Int. Cl.^{3} G21C *21/00;* **C09K** *3/00*
U.S. Cl. 264—0.5 **5 Claims**

1. A process for forming nuclear reactor fuel comprising the steps of:
   sintering microspheres containing uranium dioxide and free carbon in an atmosphere consisting essentially of an inert gas and carbon monoxide at such carbon monoxide concentration and at such temperature that high density microspheres consisting essentially of uranium dioxide and uranium oxycarbide are formed; and
   sintering said uranium dioxide/uranium oxycarbide microspheres in an atmosphere consisting essentially of an inert gas and carbon monoxide at such carbon monoxide concentration and at such temperature that microspheres having a density of about 10.2 to 11.0 g/cm^3 and consisting essentially of about 1–30 mole percent uranium dicarbide and 70–99 mole percent uranium dioxide are formed.

5. Nuclear reactor fuel microspheres consisting essentially of about 1–30 mole percent uranium dicarbide and 70–99 mole



percent uranium dioxide and having a density in the range of about 10.2–11.0 g/cm^3.

4,367,185
METHOD OF PRODUCING CROSSLINKED POLYPROPYLENE FOAM

Akio Nojiri, Yokohama; Takashi Sawasaki, and Toshio Koreeda, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,519
Int. Cl.^{3} B29D *27/00*
U.S. Cl. 264—22 **12 Claims**

1. A method of producing a crosslinked polypropylene foam shaped body, comprising the steps of:
   mixing 0.5 to 4 parts by weight of a compound selected from the group consisting of trimethylol propane triacrylate and trimethylol propane trimethacrylate, 0.1 to 5 parts by weight of a phenolic compound having at least 3 hydroxyl groups in the molecule and a blowing agent, with 100 parts by weight of propylene homopolymer or copolymer,
   shaping the mixture under heat,
   irradiating the shaped mass with an ionizing radiation such that the absorbed dose ranges between 0.1 and 5 Mrad, and
   heating the irradiated mass to foam the shaped body.

2. A method of producing a crosslinking polypropylene foam, comprising the steps of:
   mixing 0.5 to 4 parts by weight of a compound selected from the group consisting of trimethylol propane triacrylate and trimethylol propane trimethacrylate, 0.1 to 5 parts by weight of a phenolic compound having at least 3 hydroxyl groups in the molecule with 100 parts by weight of propylene homopolymer or copolymer,
   shaping the mixture under heat,
   irradiating the shaped mass with an ionizing radiation such that the absorbed dose ranges between 0.1 and 5 Mrad,
   impregnating the irradiated mass with a volatile blowing agent, and
   heating the impregnated mass to foam the shaped body.

4,367,186

PROCESS FOR THE PREPARATION OF MODIFIED POLYCARBONATE MOLDING COMPOSITIONS

Siegfried Adelmann; Dieter Margotte; Werner Nouverine, all of Krefeld, and Frank Kleiner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 74,597, Sep. 12, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 319,532

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842004

Int. Cl.^{3} C08J *3/28*

U.S. Cl. 264—22 **12 Claims**

1. A process for the preparation of a modified theremoplastic polycarbonate molding composition, characterized in that a crosslinkable thermoplastic, aromatic polycarbonate is crosslinked on the surface by irradiation with high-energy rays, after being granulated, and is then extruded or injection molded, the proportion of crosslinked polycarbonate being 5–50% by weight, relative to the total weight of non-crosslinked and crosslinked polycarbonate.

4,367,187

PROCESS FOR THE PRODUCTION OF BLOW MOLDED ARTICLES

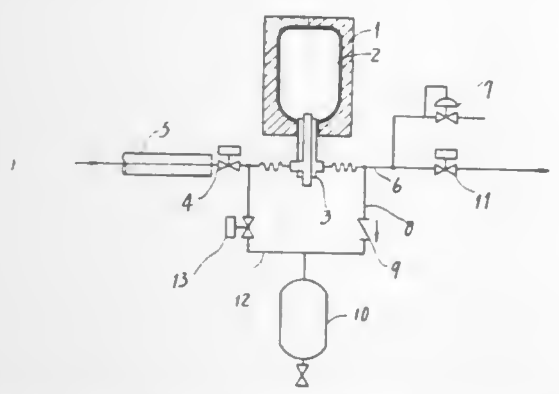
Hatahiko Fukushima, Katano; Tadahiko Handa, Takarazuka, and Kiyoshi Ochiai, Nishinomiya, all of Japan, assignors to Air Products and Chemicals, Inc., Allentown, Pa. and Daido Oxygen Company Ltd., Osaka, Japan

Filed Apr. 30, 1981, Ser. No. 258,963

Claims priority, application Japan, May 9, 1980, 55-062085

Int. Cl.^{3} B29C *17/07, 25/00*

U.S. Cl. 264—37 **1 Claim**



1. In a process for the production of blow molded thermoplastic articles comprising the steps of extruding a thermoplastic in a molten state to form a parison, blowing said parison within a closed mold to conform its walls to the contour of said mold, cooling said resulting blow molded article, and recovering the cooled article, the improvement which comprises:

(a) introducing a liquefied nitrogen gas into said parison as it is being blown with a blowing gas,

(b) vaporizing said liquefied gas from the heat of the molten parison to cause said parison to conform to the contours of said mold and to cool said blow molded article,

(c) recovering a portion of the resulting mixture of said blowing gas and vaporized liquefied gas,

(d) using said recovered portion of said mixture as at least a portion of the blowing gas during a subsequent blowing step, and

(e) releasing the remaining portion of said mixture from said blow molded article.

4,367,188

ELECTRIC STORAGE BATTERIES

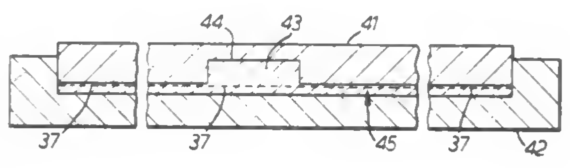
Suzanne Warrell, Chorley, and Roy Shipperbottom, Worsley, both of England, assignors to Chloride Group Public Limited Company, London, England

Filed Jul. 11, 1980, Ser. No. 167,726

Claims priority, application United Kingdom, Jul. 17, 1979, 7924795

Int. Cl.^{3} H01N *4/04*

U.S. Cl. 264—104 **7 Claims**



1. A method of making an electrode for a lead acid battery having an aperture at a desired location, which comprises:

compressing an active material composition into adherent contact with an electrically conducting mesh support characterized in that compression is applied to the active material and electrically conductive mesh support so as to compress the active material to planar form adherent to the mesh support except in the desired location of the aperture through the active material where compression is not applied or is applied to a lesser extent such that the active material can be readily displaced from the non-compressed region by means which do not displace the active material from the remainder of the compressed electrode.

4,367,189

BEARING

Glyndwr J. Davies, Southall, England, assignor to Associated Engineering Public Limited Company, Warwickshire, England

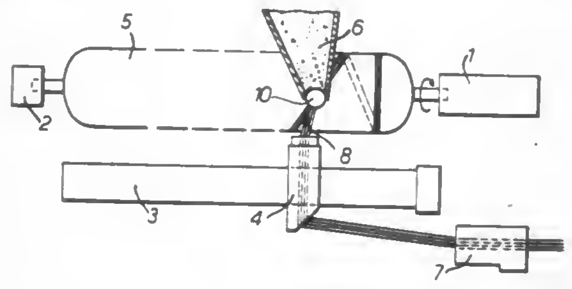
PCT No. PCT/GB79/00046, § 371 Date Nov. 7, 1979, § 102(e) Date Nov. 7, 1979, PCT Pub. No. WO79/00752, PCT Pub. Date Oct. 4, 1979

PCT Filed Mar. 12, 1979, Ser. No. 177,766

Claims priority, application United Kingdom, Mar. 13, 1978, 9845/78

Int. Cl.^{3} B29D *23/12*

U.S. Cl. 264—137 **8 Claims**



1. A method of forming a bearing tube from a plurality of polyacrylonitrile fibres, a sticky resin, and a wear resistant compound and using a forming mandrel, which comprises:

treating said plurality of fibres with said sticky resin;

winding said plurality of resin-treated fibres onto said mandrel so as to form an inner and an outer surface of said bearing tube;

applying said wear resistant compound to said fibres immediately subsequent to said step of winding said fibres; and solidifying said sticky resin.

4,367,190

SCREW EXTRUDER

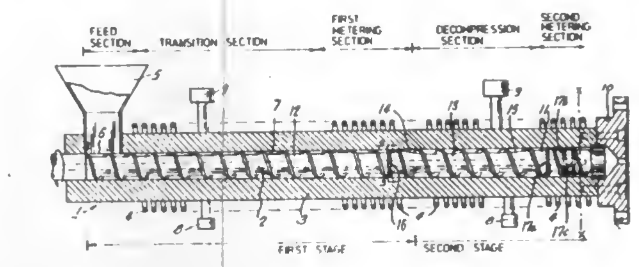
Shirley Beach, North Vancouver, Canada, assignor to Phillips Cables Limited, Brockville, Canada

Filed May 13, 1981, Ser. No. 263,200

Claims priority, application Canada, Dec. 10, 1980, 366508

Int. Cl.^{3} B29F *3/10*

U.S. Cl. 264—174 **10 Claims**



1. A screw extrusion apparatus for working a polymer material, which apparatus comprises a barrel leading from a feed port to a discharge, said barrel having a substantially cylindrical interior wall continuous from the feed port end to the discharge end, the wall defining a surface for flow of molten polymer material thereagainst, electrical resistance heaters in said barrel for heating polymer material during passage through said barrel; a continuous feed screw provided with a core and helical thread rotatable in said barrel, said core having upstream and downstream portions interconnected by an intermediate portion of lesser diameter forming a low pressure decompression zone, said decompression zone being effective to arrest shear degradation in a polymer material being worked in said barrel and to provide a zone for quietly working and advancing polymer material without intensive mixing; intense mixing means in said downstream portion; and a combined valve and mixing means on said upstream portion; said combined valve and mixing means comprising at least two closely spaced apart rows of radially disposed lugs mounted normal to and circumferentially around the screw to form a ring, the lugs of one of said rows being in staggered relationship with the lugs of the other of said rows; and said intense mixing means comprising at least three spaced apart mixing elements disposed radially to said screw, each of said elements comprising at least a pair of adjacent rows of radially disposed lugs, the lugs of one row of a mixing element being in a staggered relationship with the lugs of the other of said rows.

5. A method of continuously producing a conductor wire insulated with an electrically insulating polymer material in extruded form, said method comprising the steps of:

providing a screw extruder of the type including a barrel having mounted therein for rotation a screw effective to advance and shear solid particulate polymer material, said barrel having a substantially cylindrical interior wall continuous from a feed end of the extruder to a discharge end of the extruder, the wall defining a surface for flow of molten polymer material thereagainst,

providing on the screw combined valve and mixing means effective to convert solid particulate polymer material to a polymer melt and to work in the polymer material wherein the combined valve and mixing means includes at least two closely spaced apart rows of radially disposed pins mounted normal to and circumferentially around the screw to form a ring and wherein the pins of one of the rows is in staggered relationship with the pins of the other of the rows;

providing the screw with a decompression zone downstream of the valve means followed by a high pressure zone, said decompression zone being effective to arrest shear degradation in said polymer;

providing on the screw downstream of the high pressure zone intense mixing means effective to intensively work the polymer material wherein the intense mixing means includes at least three spaced apart mixing rings disposed radially to the screw and each mixing ring including at least a pair of adjacent rows of radially disposed pins with the pins of each row of a mixing ring being in a staggered relationship with the pins of the adjacent row;

providing an extrusion head for the extruder;

passing a moving conductor wire through the extrusion head;

introducing an electrically insulating, solid particulate polymer material, into the feed end of the extruder barrel;

passing the material through the barrel, heating and shearing the material in a first upstream portion of the barrel;

advancing the material through the barrel towards the combined valve and mixing means to convert the solid particulate polymer material to a polymer melt;

advancing the polymer melt through said combined valve and mixing means to divide the melt into streams between the staggered pins, allowing said streams to reunite on emerging from the combined means whereby the polymer melt is thoroughly mixed;

advancing the polymer melt into the decompression zone downstream of the combined valve and mixing means while maintaining the shearing in a non-intensive mixing;

quietly working and advancing the polymer melt through the low pressure decompression zone as a flow of essential molten material, against said interior wall surfaces, so as to arrest shear degradation;

forcing the resultant mass out of the low pressure decompression zone and into the zone of higher pressure, passing the mass through the intense mixing means and subjecting it to an intense mixing action;

forcing the mixture through the extrusion head and about the moving conductor wire;

and then collecting the conductor wire insulated with the insulating material.

4,367,191

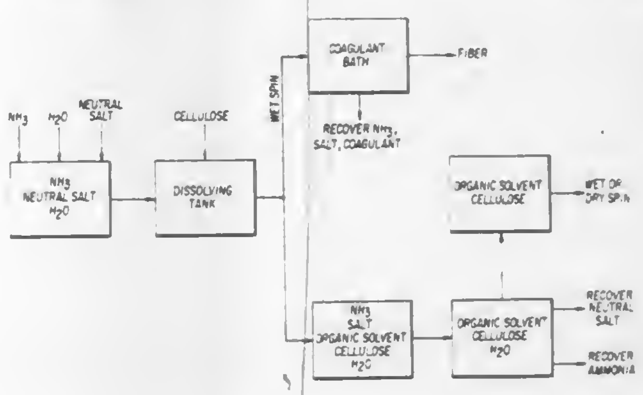
PREPARATION OF CELLULOSE FILMS OR FIBERS FROM CELLULOSE SOLUTIONS

John A. Cuculo, Raleigh, and Samuel M. Hudson, Charlotte, both of N.C., assignors to Research Corporation, New York, N.Y.

Filed Mar. 25, 1981, Ser. No. 247,308

Int. Cl.^{3} D01F *2/00*

U.S. Cl. 264—187 **22 Claims**



1. A method of forming a cellulose fiber which comprises dissolving cellulose in a solvent comprising ammonia and a salt selected from the group consisting of ammonium iodide, ammonium nitrate, ammonium perchlorate, ammonium thiocyanate, sodium iodide, sodium nitrate, sodium perchlorate, and sodium thiocyanate and subsequently forming a fiber by wet spinning said cellulose and coagulating the cellulose.

4,367,192

IN-MOLD COATING OF SHEET MOLDING COMPOUND MOLDINGS

Sigurdur I. Arnason, Fenwick, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 48,304, Jun. 13, 1979, abandoned, which is a continuation of Ser. No. 897,980, Apr. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 814,502, Jul. 11, 1977, abandoned. This application May 4, 1981, Ser. No. 260,233

Int. Cl.^{3} B29D *3/02;* **B29G** *3/00, 5/00*

U.S. Cl. 264—255 **3 Claims**

1. In a method coating, resulting in improved cross hatch adhesion, a rigid part made from sheet molding compound after the part is molded between two hot chrome plated metal mold halves under pressure and cured to a rigid enough state so that the part will not change configuration on separation of the two mold halves while the mold is maintained in a sealed condition, said coating composition comprising styrene, a vinyl ester resin formed by the reaction of an epoxy based resin and an unsaturated monocarboxylic acid, a mold release agent which prevents the coating composition from adhering to the two chrome plated mold halves, and a low shrink additive, the improvement wherein said coating composition comprises: 20% of said vinyl ester resin, 5% vinyl acetate resin, 22% styrene and 52% talc, the above percentages being approximate and by weight and said talc having an average particle size of approximately 0.03 mm.

4,367,193

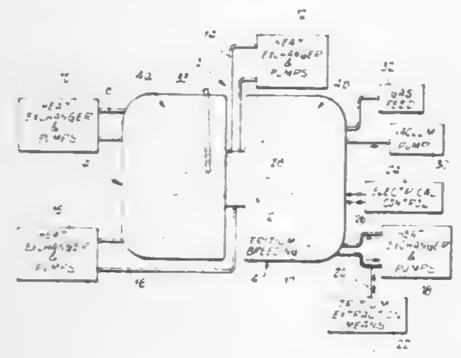
MODULAR FUSION APPARATUS USING DISPOSABLE CORE

Robert W. Bussard, Arlington, Va., assignor to International Nuclear Energy Systems Co., La Jolla, Calif.

Continuation of Ser. No. 841,903, Oct. 13, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,439

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—133 **20 Claims**



1. A toroidal reactor for generating thermal energy from fusion reactions in ionized plasma of fusible fuel comprising:

(a) fusion core unit comprising a plasma containment means having a major radius on the order of 50 cm for containing said fusible fuel, said plasma containment means forming a plasma containment region,

(b) said plasma containment means including a plurality of toroidal field coils adjacent to and surrounding said plasma containment region for generating a toroidal magnetic field,

(c) means for transporting a cooling fluid to said toroidal field coils,

(d) said toroidal field coils having fluid conducting portions for transporting said cooling fluid within regions of said toroidal field coils,

(e) power supply means connected to said toroidal field coils for generating a high toroidal magnetic field within the ionized plasma within said plasma containment region, said toroidal magnetic field being on the order of greater than 100 KG,

(f) said plurality of toroidal field coils comprising high-strength; non-superconducting conductors for sustaining said high field and thermal energies,

(g) ohmic heating means for inducing an ohmic heating plasma current in said plasma fuel within said plasma containment means, said ohmic heating current raising the temperature of said plasma, said ohmic heating means including transformer means and said ohmic heating current generating a poloidal magnetic field within said plasma,

(h) blanket means positioned completely outside of and substantially surrounding said toroidal field coils,

(i) means extending into said plasma containment means for delivering said fusible fuel therein,

(j) said fusion core unit being readily separable from said blanket means for permitting facile access to said fusion core unit to allow for replacement of said fusion core unit as required,

(k) blanket cooling fluid transport means connected to said blanket means for transporting a cooling fluid to said blanket means, and

(l) means connected to at least one of said blanket cooling fluid transport means and said toroidal field cooling transport means for extracting thermal energy therefrom.

4,367,194

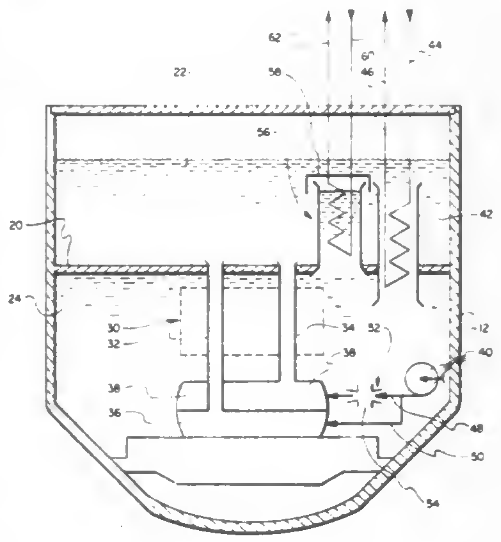
EMERGENCY CORE COOLING SYSTEM

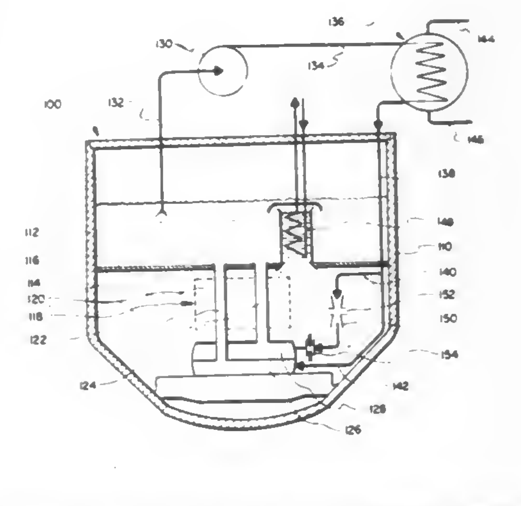
William E. Schenewerk, Sherman Oaks, and Lyle E. Glasgow, Westlake Village, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,534

Int. Cl.^{3} G21C *9/00*

U.S. Cl. 376—281 **16 Claims**





1. A liquid metal cooled nuclear reactor system comprising:

a reactor vessel;

a pool of a primary liquid metal coolant contained within said vessel;

a reactor core located within said vessel and immersed in said coolant, said core comprising an array of nuclear fuel assemblies containing a fissile nuclear material, each of said assemblies being provided with a passageway for the circulation of liquid metal coolant therethrough;

a plenum adjacent a lower end of said core for the distribution of liquid metal coolant to said assemblies;

at least one primary coolant flow system, said system including at least one heat exchanger located above said reactor core for receiving liquid metal coolant from said core and removing heat therefrom, and a pump for circulating said liquid metal coolant from said vessel through said core;

venturi means intermediate said pump and said assemblies, and below said reactor core for receiving said liquid metal coolant from said pump and delivering it to said assemblies, said venturi means comprising a converging-diverging nozzle with an intermediate annular throat section, said throat section being provided with at least one opening in flow communication with the liquid metal coolant in the vessel whereby during normal operation the pump will supply liquid metal coolant through said venturi to the assemblies with very little coolant going through the opening in the throat; and when the pump is not running, the residual heat in the core will cause convection currents which draw the liquid metal coolant into the opening in the throat of the venturi means where it will flow outwardly through the venturi to supply coolant to the assemblies.

4,367,195

TEMPERATURE HOMOGENIZATION APPARATUS

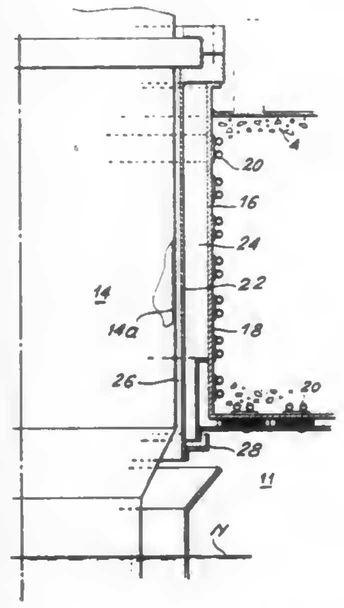
Michel Aubert, Manosque; Antoine Bret, Aix en Provenve; Guy Lemercier, Le Puy Sainte; Jean-Denis Montmayeur, Saint Egreve; Michel Sauvage, Aix en Provence, and Andre Teytu, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 3, 1980, Ser. No. 165,679

Claims priority, application France, Jun. 29, 1979, 79 16915

Int. Cl.^{3} G21C *11/08, 15/24*

U.S. Cl. 376—290 **11 Claims**



1. In a Nuclear Reactor, apparatus for homogenizing the circumferential temperatures of a ferrule of a component having a vertical axis passing through the upper slab of such nuclear reactor, comprising at least one assembly forming a heat pipe circumscribing the entire circumference of said ferrule in order to ensure the homogenization of the temperatures of said ferrule level with the assembly, means for fixing such assembly forming the heat pipe on the inner face of the ferrule and means for ensuring a thermal contact between such assembly forming the heat pipe and the said ferrule.

4,367,196

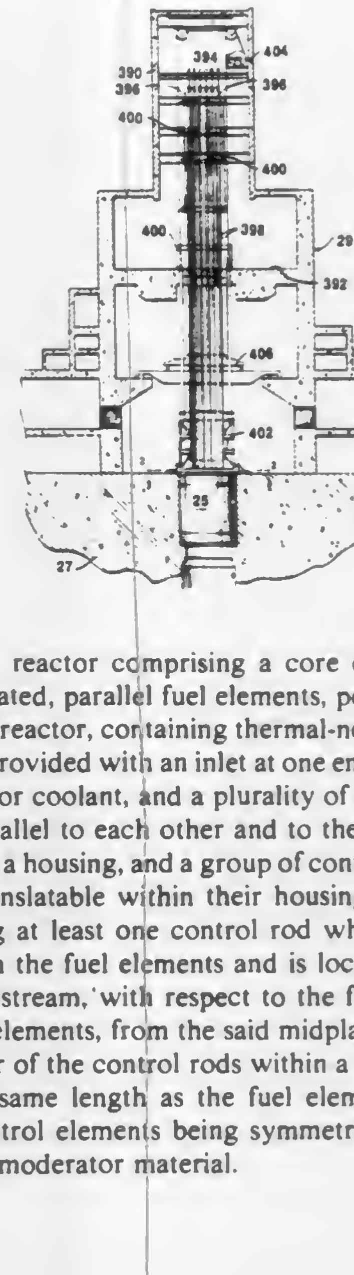
NEUTRONIC REACTOR

Charles W. J. Wende, Augusta, Ga.; Dale F. Babcock, and Robert L. Menegus, both of Wilmington, Del., assignors to U.S. Energy Research & Development Administration, Washington, D.C.

Filed May 1, 1957, Ser. No. 656,468

Int. Cl.^{3} G21C *7/10*

U.S. Cl. 376—333 **7 Claims**



1. A neutronic reactor comprising a core consisting of a plurality of elongated, parallel fuel elements, perpendicular to a midplane of the reactor, containing thermal-neutron-fissionable material and provided with an inlet at one end and an outlet at the other end for coolant, and a plurality of elongated control elements, parallel to each other and to the fuel elements, each consisting of a housing, and a group of control rods which are separately translatable within their housing, each of said groups containing at least one control rod which is substantially shorter than the fuel elements and is located so that its midpoint is downstream, with respect to the flow of coolant through the fuel elements, from the said midplane of the reactor, the remainder of the control rods within a group being of substantially the same length as the fuel elements, said fuel elements and control elements being symmetrically disposed within a body of moderator material.

4,367,197

METHOD FOR THE CONTROL OF EXCESSIVE CORROSION IN PHOSPHORIC ACID CIRCUITS

Gary L. Long, and Roger B. Humberger, both of Pocatello, Id., assignors to J. R. Simplot Company, Boise, Id.

Division of Ser. No. 76,574, Sep. 18, 1979, Pat. No. 4,277,454. This application Mar. 2, 1981, Ser. No. 238,061

Int. Cl.^{3} C01B *25/225, 25/226;* **C23F** *11/04*

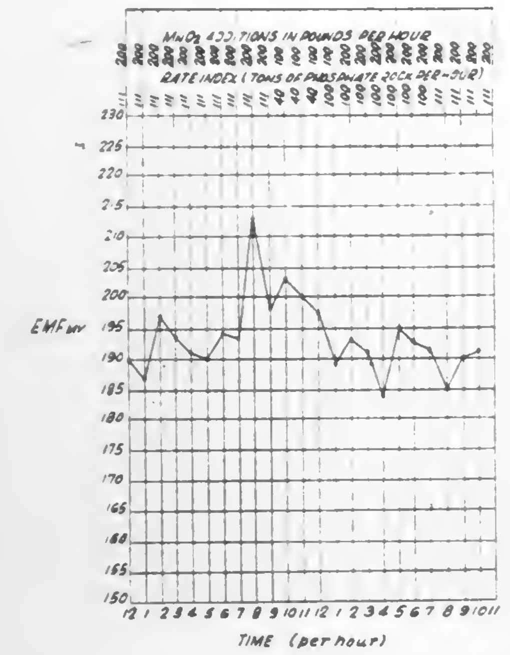
U.S. Cl. 422—3 **6 Claims**

1. A method of controlling excessive corrosion in phosphoric acid circuits by oxidation of reduced ion species in wet process phosphoric acid slurry, comprising the steps of:

measuring the total weight percent concentration of reduced ion species in the acid slurry;

measuring the total weight percent concentration of oxidized ion species in the acid slurry;

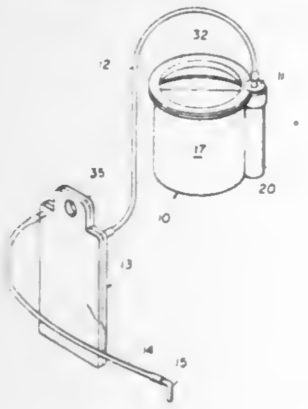
comparing the ratio of the total weight percent concentration of reduced ion species to the total weight percent concentration of oxidized ion species; and oxidizing a portion of the reduced ion species in the acid slurry when the value of said ratio is greater than or equal



to about 4.0 to alter the value of said ratio to less than about 4.0.

4,367,198
REAGENT RESERVOIR SYSTEM FOR USE IN TESTING APPARATUS

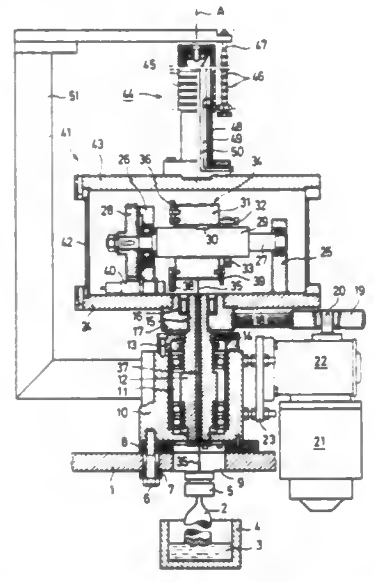
Richard E. Scordato, Scarsdale; Robert J. Varca, Fort Lee, and Robert S. Francis, Mount Vernon, all of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.
Filed Jun. 19, 1981, Ser. No. 275,420
Int. Cl.³ B01L *3/00, 7/00;* **G01N** *35/00*
U.S. Cl. 422—102 **3 Claims**



1. A reagent delivery system for use in a testing apparatus in which the reagent is stored at a relatively low temperature and then a portion thereof raised to a higher temperature prior to being mixed with another liquid, said system comprising: a reagent storage reservoir including a reagent cup adapted to accommodate a rotating magnetic stirrer bar, said cup having a substantially cylindrical sidewall and a bottom wall, said sidewall having a vertical slot extending from the top edge thereof to said bottom wall, and a tubular housing having a bottom wall contiguous with the bottom wall of said reagent cup integrally formed on the outside of said cup so that said slot is common to said cup and said housing, said housing also being formed with a supporting ledge; a dip tube formed at its upper end with an outlet nipple and with an external shoulder for supporting said dip tube on the supporting ledge of said tubular housing, said dip tube when thus supported extending from above the top edge of said reagent cup downwardly to a position adjacent the bottom wall of said housing; a heat exchange unit having a plurality of parallel fluid conduit segments joined at their ends to form a flat enclosed maze-like elongated fluid passageway, said heat exchange unit having an inlet member at one end of said passageway and an outlet member at the opposite end of said passageway; a nozzle means; and flexible tubing means connecting the outlet nipple of said dip tube to the inlet member of said heat exchange unit and the outlet member of said heat exchange unit to said nozzle means.

4,367,199
APPARATUS HAVING COILABLE PULLING ELEMENT FOR DRAWING A MONOCRYSTAL FROM A CRUCIBLE WITH ADJUSTABLE SPEED

Karl Jericho, Hanau, Fed. Rep. of Germany, assignor to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany
Filed Jun. 11, 1981, Ser. No. 272,802
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022412
Int. Cl.³ C30B *15/20*
U.S. Cl. 422—110 **7 Claims**

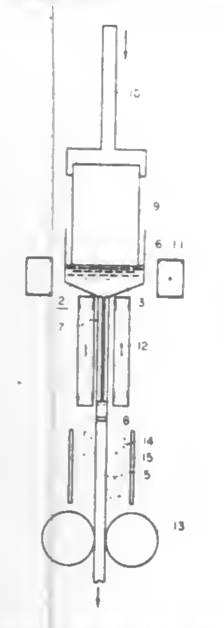


1. In an apparatus for drawing a monocrystal from a crucible by a coilable pulling element having one end disposed above the crucible and secured to a crystal nucleus holder and the other end connected to lifting drive means disposed on a platform rotatable about the pulling element and bearing lifting means including a driven horizontal shaft wheel and being driven by a worm and having a coiling drum which is longitudinally displaceable on the shaft and onto which the pulling element is tangentially coiled, the improvement wherein the lifting drive means comprises two drive motors, the first drive motor for relatively rapid operation with respect to the second and the second drive motor for relatively slow operation with respect to the first, and means for selectively connecting the second motor to the said worm comprising a first shaft connected to the worm and the first motor, a second shaft coaxial with the first shaft and connected to the second motor and clutch means for connecting the first and second shafts for slow operation and alternately disengaging the two shafts for fast operation.

4,367,200
SINGLE CRYSTAL MANUFACTURING DEVICE

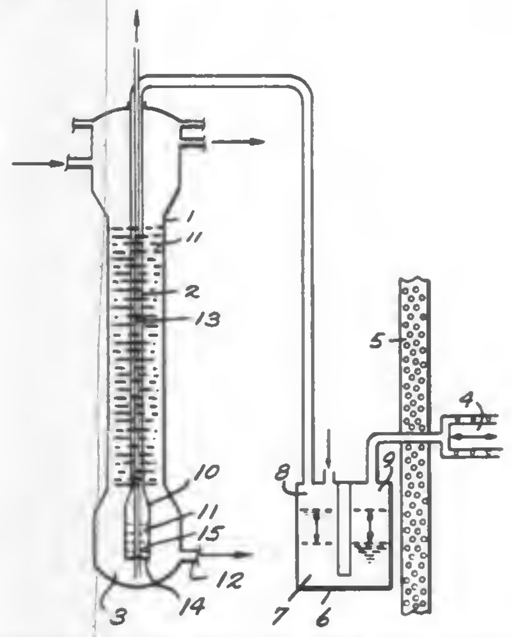
Yoshinori Mimura; Yoshihisa Komazawa, and Yasuyuki Okamura, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan
Filed Jan. 23, 1981, Ser. No. 227,682
Claims priority, application Japan, Jan. 30, 1980, 55-8741
Int. Cl.³ C30B *15/02, 15/08, 35/00*
U.S. Cl. 422—248 **2 Claims**

1. A single crystal manufacturing device comprising: a crucible having a melting part for holding a molten liquid of a raw material and a gravity fed nozzle part for continuously taking out a predetermined amount of the molten liquid by the action of gravity; first heater means for heating the raw material to melt it in the melting part; second heater means for heating the nozzle part to take out the molten liquid of the raw material from the nozzle part and for providing as large a thermal gradient as possible in the solid-liquid boundary between the molten liquid taken out from the nozzle part and a grown single crystal continuous to the molten liquid, the second heater means being effective for producing the solid-liquid boundary outside of the nozzle part; roller means provided at the lower side of the nozzle part for advancing the grown single crystal; and guide means comprised of a pipe section filled with fibrous material and positioned between the nozzle part and the roller means for guiding the grown single crystal as it advances away from the nozzle part.



4,367,201
EXTRACTION COLUMN FOR FISSIONABLE MATERIAL AND/OR FERTILE MATERIAL

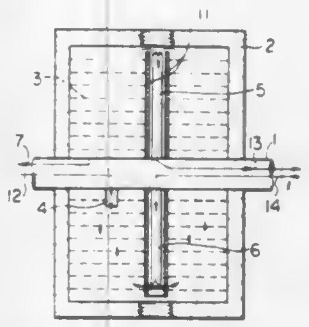
Horst Vietzke; Hans Pirk, both of Maintal, and Elmar Schlich, Gründau, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany
Filed Oct. 14, 1980, Ser. No. 196,561
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941608
Int. Cl.³ B01D *11/04*
U.S. Cl. 422—257 **5 Claims**



1. A combination comprising an extraction column suitable for use with fissionable and/or fertile material, especially for the reprocessing of spent fuel elements, said combination comprising said extraction column, a centrally disposed inlet tube in said column, said column containing at least extraction agent and a material to be extracted, pulsating pump means, sealing liquid container means comprising at least two interconnected hydraulic cylinders connecting said centrally disposed inlet tube and said pump means, said cylinders hydraulically connected by a sealing liquid which separates two other liquids not miscible with said sealing liquid, said inlet tube having a widened portion in the lower portion of said tube and containing a plurality of vertically spaced and perforated plates in said widened portion, and an extraction agent inlet to the hydraulic cylinder connected to said inlet tube.

4,367,202
CENTRIFUGAL COUNTER-FLOW LIQUID CONTACTOR

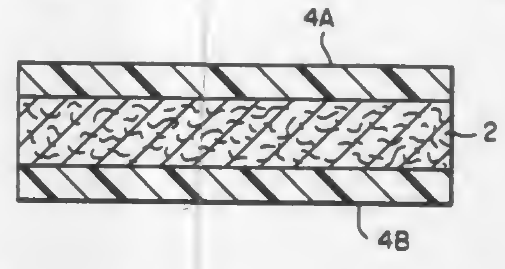
Kiyoshi Fujiwara, Kudamatsu; Masaru Fujimoto, Hofu; Shoji Nomura, Kudamatsu; Hiroshi Kanekiyo, Kudamatsu, and Shoji Yoshinaga, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 10, 1981, Ser. No. 252,785
Claims priority, application Japan, Apr. 11, 1980, 55-46827
Int. Cl.³ B01D *11/04*
U.S. Cl. 422—258 **4 Claims**



1. A centrifugal counter-flow liquid contactor comprising a rotary body fixed to a rotary shaft, inlet means for introducing a light liquid and heavy liquid from the outer peripheral portion of the rotary body and from a passage in the rotary shaft, respectively, so that the light liquid and heavy liquid make counter-flow contact with each other and outlet means for discharging the heavy liquid and light liquid, after contact, from the outer peripheral portion and the central portion of the rotary body, respectively, said inlet means including a light liquid introducing pipe and said outlet means including a heavy liquid discharge pipe, said pipes extending radially from the rotary shaft in a mixing region of light liquid and heavy liquid, and disc-shaped partition plates which are disposed at both sides of said light liquid introducing pipe and heavy liquid discharge pipe to partition these pipes from the mixing region of light liquid and heavy liquid.

4,367,203
THERMAL SENSITIVE DEODORANT WAFER

David Landsberger, 60 Hibernia Rd., Rockaway, Morris County, N.J. 07866
Filed Apr. 20, 1981, Ser. No. 255,363
Int. Cl.³ A61L *9/12*
U.S. Cl. 422—305 **3 Claims**



1. A thermal sensitive deodorant wafer, comprising:

a thermal sensitive thin walled shell;

a pad impregnated with a heat releasable deodorant encapsulted within the shell, with the shell and the pad encapsulated therein providing the thermal sensitive deodorant wafer;

the shell of the wafer being of a material sensitive to elevated temperatures for decomposing and exposing the pad when subjected to said temperatures; and

the deodorant on the exposed pad being of a composition responsive to the elevated temperatures for being released from the pad and thereupon being effective for neutralizing offensive odors.

4,367,204

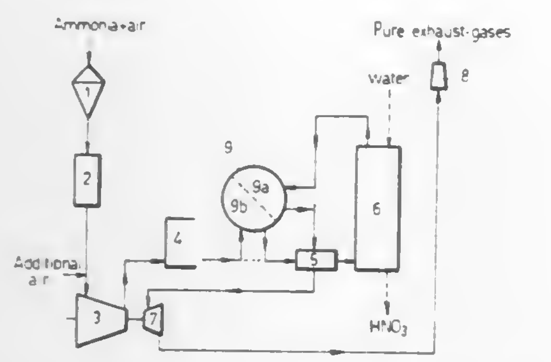
PROCESS FOR THE RECIRCULATION OF NITROGEN OXIDES

Gabor Klopp; Jozsef Süto; Karoly Szasz; Imre Szebenyi; Gabor Winkler; Miklos Machacs, and György Palmai, all of Budapest, Hungary, assignors to Budapesti Müszaki Egyetem, Budapest, Hungary

Continuation of Ser. No. 35,948, May 4, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,776

Int. Cl.³ B01A *53/34*

U.S. Cl. 423—239 2 Claims



1. A process for reduction of the nitrogen oxide content of exhaust gases produced in the manufacture of nitric acid using at least two absorbers containing heat- and acid-resistant adsorbent consisting of a zeolite molecular sieve of the class consisting of mordenite and clinoptilolite in a heat alternating cycle where a first adsorber is in an adsorbing condition and a second adsorber is to be regenerated, wherein a stream of nitrogen monoxide is oxidized in an exothermic reaction with oxygen to form a hot nitrogen dioxide gas stream, consisting of the following sequential steps, (1) leading directly after the above oxidation said hot nitrogen dioxide gas through said second adsorber at a temperature of 300–350 degrees C. to regenerate it, (2) cooling the nitrogen dioxide gas exiting from the said regenerated adsorber, (3) converting some of the contained nitrogen dioxide with water to nitric acid to create an impure exhaust gas, (4) absorbing the nitrogen oxide content of said impure exhaust gas in said first adsorber to form purified exhaust gas at a temperature of 20–40 degrees C., (5) scavenging said second adsorber with a part of said purified exhaust gas, (6) recycling said part of purified exhaust gas into the aforesaid hot nitrogen dioxide gas stream before said cooling, (7) removing exhaust gas and replacing the exhausted first adsorber by the regenerated second adsorber.

4,367,205

PROCESS FOR REMOVING SULFUR DIOXIDE FROM COMBUSTION EXHAUST GAS

Yoshihiko Kudo; Yukio Suzuki, and Mituru Otomo, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,503

Claims priority, application Japan, Aug. 19, 1980, 55-113789

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—243 6 Claims

1. In a process for removing sulfur dioxide from a combustion exhaust gas contaning the sulfur dioxide by contacting the combustion exhaust gas with an aqueous absorbent containing carboxylate salts to absorb the sulfur dioxide, thus formed SO_3^{2-} and HSO_3^- by absorbing the sulfur dioxide are oxidized by an oxygen-containing gas to sulfate and subsequently adding slaked lime or limestone to the resultant absorbent thereby forming gypsum, the improvement which comprises contacting said combustion exhaust gas with said aqueous absorbent containing 2 to 10% by weight of chloride ion while being in coexistence with said carboxylate salts thereby suppressing the decomposition of a carboxylate ion.

4,367,206

METHOD FOR PRODUCING METHANOL AND AMMONIA

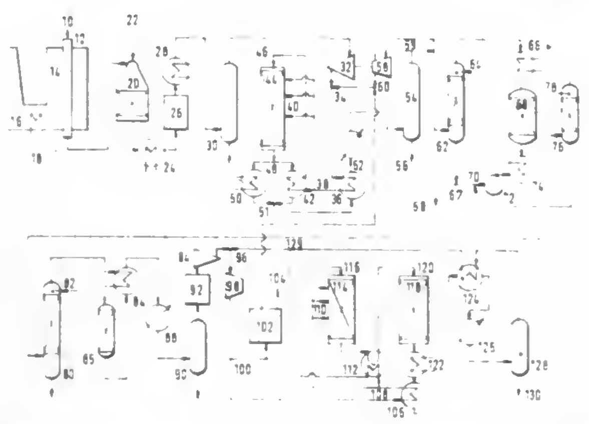
Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 90,916, Nov. 5, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,377

Claims priority, application United Kingdom, Nov. 10, 1978, 43955/78

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 8 Claims



1. A process for producing methanol and ammonia comprising the steps of

(a) generating a synthesis gas containing carbon oxides, nitrogen and hydrogen;

(b) reacting the synthesis gas over a copper-containing methanol synthesis catalyst at a catalyst outlet temperature under 300° C. whereby to convert the carbon oxides and hydrogen incompletely to methanol;

(c) separating the methanol and passing the unreacted gas to a catalytic ammonia synthesis;

and characterised by carrying out step (b) in two stages, the first in the substantial absence of initially present water vapour and the second in the presence of sufficient water vapour to convert to carbon dioxide substantially all the carbon monoxide not converted to methanol in the said first stage, both of said first and second stages being operated at a catalyst outlet temperature under 300° C. and subjecting the unreacted methanol synthesis gas to no other shift stage, further characterised in that the first methanol synthesis stage is operated to produce an unreacted gas containing between 2% and 6% v/v of carbon monoxide, the pressure of the unreacted gas from the first methanol synthesis stage is in the range between 35 to 95 bar absolute, and the steam to dry gas ratio of the gas entering the second methanol synthesis stage is in the range between 0.1 to 0.3 by volume.

4,367,207

PROCESS FOR THE PREPARATION OF FINELY DIVIDED PRECIPITATED CALCIUM CARBONATE

Dennis B. Vanderheiden, Easton, Pa., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 18, 1980, Ser. No. 217,735

Int. Cl.³ C01F *5/24, 11/28*

U.S. Cl. 423—432 8 Claims

1. A process for the preparation of finely divided precipitated calcite having an average particle size not greater than about 0.03 micron, which comprises introducing carbon dioxide into an aqueous slurry of calcium hydroxide containing anionic organopolyphosphonate polyelectrolyte present in the amount of from about 0.02 to 1.0 weight percent based on the calcium carbonate equivalent of said hydroxide, the concentration of said hydroxide in said slurry being greater than about 5 weight percent, starting said introduction at a temperature above about 7° C. and below about 18° C. and continuing said introduction until calcite precipitation is substantially complete.

4,367,208

PROCESS FOR THE MANUFACTURE OF BATTERY CARBON BLACK

Fred E. Glasstetter, Yardley, Pa., and Frank J. Eckert, Monroe, La., assignors to Columbian Chemicals Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 52,365, Jun. 27, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 278,953

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 9 Claims

1. A process for making a carbon black useful as an ingredient in dry cell battery compositions which comprises:

a. heating a carbon black having a DBP ranging from 200 to 250 cc/100 g and a wide aggregate size distribution with a range of measured aggregate volume from about 5×10^4 to about 1×10^9 nm³, a geometric mean aggregate volume, Log Vg, nm³, of about 6.2 to about 7.5, and geometric standard deviation, for Log Vg, nm³, of about 0.7 to about 1.0 to a temperature ranging from 1400° C. to 2400° C. under an inert atmosphere for a time period ranging from about 9 seconds to about 10 minutes.

b. cooling said heated carbon black to a temperature below 324° C. under an inert atmosphere.

4,367,209

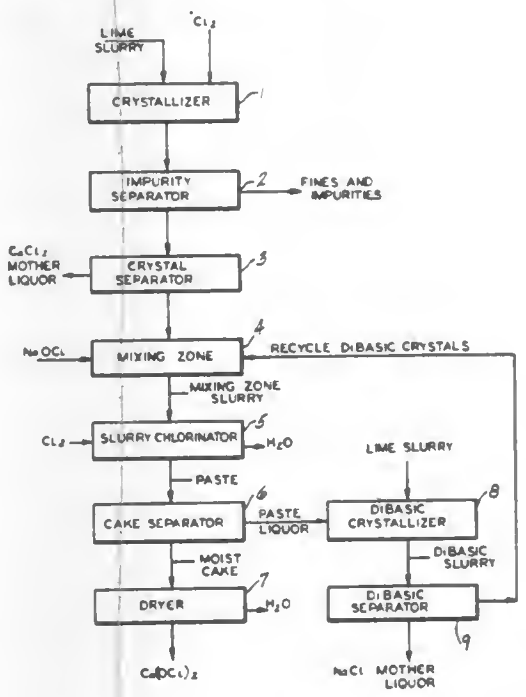
CALCIUM HYPOCHLORITE PRODUCTION FROM ITS DIBASIC SALT

Walter J. Sakowski, Cleveland, and Budd L. Duncan, Athens, both of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 26, 1982, Ser. No. 352,747

Int. Cl.³ C01B *11/06*

U.S. Cl. 423—474 9 Claims



1. A process for producing neutral calcium hypochlorite which comprises:

(a) reacting an aqueous slurry of lime containing insoluble impurities with chlorine to form a first slurry of dibasic calcium hypochlorite crystals and insoluble impurities in a calcium chloride mother liquor;

(b) separating said insoluble impurities from said first slurry of dibasic calcium hypochlorite crystals in said calcium chloride solution;

(c) separating said dibasic calcium hypochlorite crystals from said calcium chloride mother liquor;

(d) admixing said dibasic calcium hypochlorite crystals, an alkali metal hypochlorite and recycle dibasic calcium hypochlorite crystals in a mixing zone to form a mixing zone slurry;

(e) reacting said mixing zone slurry with chlorine to form a paste of neutral calcium hypochlorite;

(f) separating said paste into a cake of neutral calcium hypochlorite and a paste liquor;

(g) reacting said paste liquor with lime to form a second slurry of dibasic calcium hypochlorite crystals in a mother liquor;

(h) separating said dibasic calcium hypochlorite crystals from dibasic mother liquor; and

(i) returning said dibasic calcium hypochlorite crystals to said mixing zone as recycle dibasic calcium hypochlorite.

4,367,210

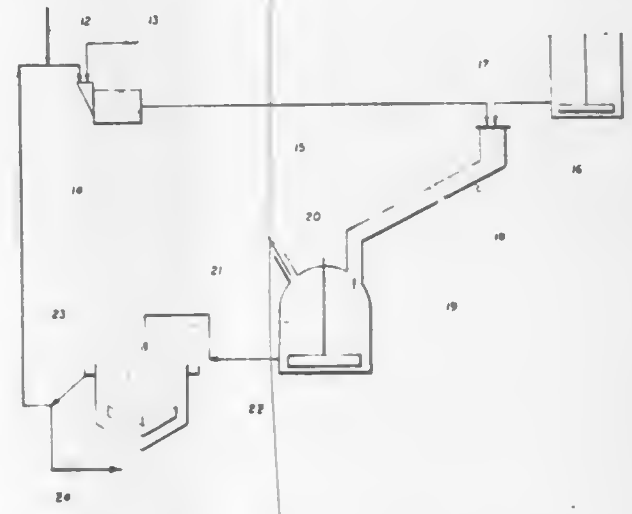
PIPELINE REACTION APPARATUS AND METHOD

Willard W. Dunham, Jr., Westfield, N.J., assignor to Amax Magnesium Corporation, Parsippany, N.J.

Filed May 7, 1979, Ser. No. 36,533

Int. Cl.³ C01F *11/28*

U.S. Cl. 423—497 6 Claims



1. A method for treating aqueous liquid and solid reactants to produce at least one gaseous product, comprising:

a. feeding said aqueous liquid and solid reactants into an inclined elongated reaction vessel at a rate that does not cause said vessel to become filled with said reactants;

b. causing a stream of said reactants to pass through said reaction vessel due to the influence of gravity, said reactants reacting to form at least one gaseous product which is contained within said vessel during passage through said vessel and a slurry comprised of reactants and products; and

c. further passing said slurry and gaseous product into a digestion vessel having free space located above slurry collected in said digestion vessel and withdrawing said gaseous product and collected slurry from said digestion vessel, said gaseous product not forming an appreciable amount of foam in said digestion vessel.

4,367,211

PLASMA ARC PROCESS FOR THE REDUCTION OF SULFUR DIOXIDE TO SULFUR

William G. Ray, Mountain Lakes, N.J., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,858

Int. Cl.³ C01B *17/04*

U.S. Cl. 423—569 6 Claims

1. A continuous process for the reduction of sulfur dioxide to sulfur, which comprises contacting a gas stream containing sulfur dioxide with a carbon source in a plasma arc reaction zone at a temperature of at least about 600° C.

4,367,212
CONTROL OF THIOSULFATE IN WET DESULFURIZATION PROCESS SOLUTIONS

Harry M. Castrantas, Newtown, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Continuation of Ser. No. 35,656, May 3, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 210,697
Int. Cl.^{3} C01B *17/04*
U.S. Cl. 423—573 R **20 Claims**

1. In a cyclic wet desulfurization process for recovering elemental sulfur from hydrogen sulfide-containing gas streams by the steps of

(i) contacting an H_2S-containing gas stream with an aqueous alkaline absorption medium containing a regenerable oxidizing agent;
(ii) absorbing H_2S into the absorption medium and converting it to a hydrosulfide;
(iii) oxidizing the hydrosulfide with the oxidizing agent to form sulfur, which is subsequently recovered from the absorption medium;
(iv) regenerating the absorption medium by contacting it with an oxygen-containing gas; and
(v) recirculating the regenerated absorption medium to repeat the desulfurization cycle;

the improvement for controlling the concentration of dissolved thiosulfate byproduct which forms in the absorption medium, which comprises introducing a peroxide chemical, selected from the group consisting of hydrogen peroxide, sodium carbonate peroxide, and sodium peroxide, into the thiosulfate-containing absorption medium in an amount sufficient to maintain the thiosulfate below its saturation concentration.

4,367,213
USE OF SELECTED CATALYZED HYDRAZINE COMPOSITIONS TO REDUCE HEXAVALENT CHROMIUM [CR(VI)]

Louis C. Fiorucci, and Michael E. Johnson, both of Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.
Filed Apr. 29, 1982, Ser. No. 373,307
Int. Cl.^{3} C01G *37/02*
U.S. Cl. 423—607 **10 Claims**

1. A process for reducing hexavalent chromium [Cr(VI)] in aqueous solutions to trivalent chromium [Cr(III)] which comprises

reacting a catalyzed hydrazine composition with said hexavalent chromium at a pH in the range from about 6.0 to about 8.0 to form an aqueous slurry of trivalent chromium compound [Cr(III)], said catalyzed hydrazine composition comprising
(a) a hydrazine compound, and
(b) at least 0.0005 parts by weight of a quinone compound per one part of said hydrazine compound.

4,367,214
MANUFACTURE OF ACICULAR FERRIMAGNETIC IRON OXIDE

Wilhelm Sarnecki, Limburgerhof; Laszlo Marosi, Ludwigshafen; Horst Autzen, Freinsheim; Manfred Ohlinger, Frankenthal, and Werner Steck, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 174,105
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935444
Int. Cl.^{3} C01G *49/06*
U.S. Cl. 423—634 **2 Claims**

1. A process for the manufacture of acicular ferrimagnetic iron oxide wherein acicular iron (III) oxide or iron (III) oxide hydroxide selected from the group consisting of alpha-iron (III) oxide, gamma-iron (III) oxide, goethite (α-FeOOH), lepidocrocite (γ-FeOOH) and mixtures thereof is heated in a heating zone at a temperature of from 220° to 460° C. under a water vapor partial pressure of from 70 to 1013 mbar for from 0.05 to 8 hours, said water vapor partial pressure being effected in the heating zone by directly introducing water or steam into the heating zone or by passing gas charged with steam through the heating zone, reducing the resulting product in a subsequent step to magnetite at from 300° to 650° C. by means of hydrogen and/or CO and/or an organic compound which can decompose in the presence of iron oxide and oxidizing the magnetite with an oxygen-containing gas at from 150° to 500° C. to give acicular ferrimagnetic iron oxide of the formula FeO_x, where x is from 1.33 to 1.50.

4,367,215
METHOD OF ACID LEACHING OF SILICATES

Norvald Gjelsvik, Oslo, and Jan H. Torgersen, Skjetten, both of Norway, assignors to Elkem a/s, Oslo, Norway
Continuation-in-part of Ser. No. 118,582, Feb. 4, 1980, abandoned. This application Dec. 3, 1980, Ser. No. 212,402
Claims priority, application Norway, Feb. 13, 1979, 790459
Int. Cl.^{3} B01D *11/00;* **B01F** *1/00*
U.S. Cl. 423—658.5 **8 Claims**

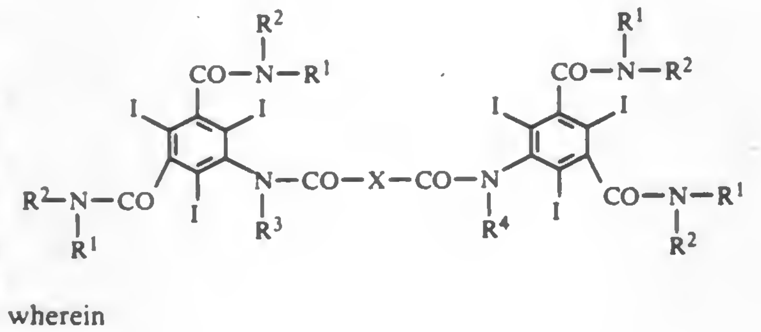
1. A process of leaching metal ions from naturally-occurring mineral silicates which produce slimy silica gel when contacted with mineral acids capable of leaching metal ions from said silicates under normal leaching conditions comprising:

(a) crushing the said silicate to grains wherein at least about 90% of the grains have a minimum diameter of at least 0.1 mm;
(b) contacting said grains with said mineral acid such that the mineral acid penetrates into the crystal lattice structure of the silicate itself and extracts metal ions from the lattice structure of the silicate itself;
(c) controlling agitation throughout the process such that the particles maintain substantially the same particle size throughout the process whereby the silica gel formed due to the attack by hydrogen ions on the surface of the grains precipitates onto the surface of the said grains and forms a film of silica gel around the said grains which is resistant to attack by the hydrogen ions but which allows the hydrogen ions to diffuse through and continue to attack the metal ions in the crystalline lattice structure of the silicate and which allows the metal ions to diffuse into solution but hinders the silicon ions from diffusing into solution, thus substantially arresting the creation of slimy silica gel without deleteriously reducing the leaching speed; and
(d) separating the leach liquid which contains the metal ions from the solid residue.

4,367,216
TRIIODINATED 5-AMINOISOPHTHALIC ACID DERIVATIVES

Wolfgang Mutzel; Hans-Martin Siefert; Ulrich Speck; Heinrich Pfeiffer; Paul-Eberhard Schulze, and Bernhard Acksteiner, all of Berln, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed Jun. 27, 1980, Ser. No. 163,895
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926428; Oct. 26, 1979, 2943777; May 2, 1980, 3017304
Int. Cl.^{3} A61K *49/04*
U.S. Cl. 424—5 **15 Claims**

1. A compound of the formula



wherein

R^1 is hydroxy-C_{2-8}-alkyl containing 1-5 OH groups;
R^2 is hydrogen, C_{1-4}-alkyl, or R^1;
R^3 and R_4 can be identical or different, and each independently is hydrogen or C_{1-4}-alkyl; and
X is straight chain or branched C_{2-12} alkylene interrupted by 1–4 sulfur or selenium atoms, and, optionally, additionally interrupted by 1-3 oxygen atoms, by a di(C_{1-4}-alkyl)silyl group or a tetra (C_{1-4}-alkyl)disiloxane group.

4,367,217
DIPYRICAMOLE SUSTAINED RELEASE FORMS COMPRISING LACQUER-COATED PARTICLES AND THE PREPARATION THEREOF

Peter Gruber, Biberach; Rolf Brickl, Warthausen; Gerhard Bozler, Biberach, and Herbert Stricker, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany
Filed Dec. 31, 1980, Ser. No. 221,834
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3000979
Int. Cl.^{3} A61K *9/22, 9/26, 9/48*
U.S. Cl. 424—19 **39 Claims**

1. A composition for the sustained release of dipyridamole which comprises (i) spheroid particles comprised of (a) dipyridamole or acid addition salts thereof and (b) at least one pharmacologically acceptable acid or acid substance, the total amount of acid from acid addition salts present and the acid or acid substance being in a ratio of at least 1 acid equivalent to 1 mol of dipyridamole, said particles having a diameter of from about 0.1 to 3 mm, and (ii) a coating surrounding said spheroid particles, said coating being comprised of from about 50 to 100 percent by weight of acid-insoluble lacquers soluble in intestinal juices and from about 0 to 50 percent by weight of lacquers insoluble in gastric and intestinal juices and said coating being present in an amount of from about 3 to 30 percent by weight, based on the weight of the spheroid particles.

4,367,218
ANTI-CARIES ORAL RINSE

Jerry I. Jacobson, 1853 Central Ave., Yonkers, N.Y. 10710
Continuation-in-part of Ser. No. 971,930, Sep. 6, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,432
Int. Cl.^{3} A61K *7/16, 33/06, 33/10*
U.S. Cl. 424—49 **11 Claims**

1. An oral rinse composition useful in the treatment and prevention of dental caries which consists in combination of 2000 parts by weight of water; 19.5 parts by weight of an alkali metal carbonate, 15.0 parts by weight of an alkali metal bicarbonate and 20.04 parts by weight of a dihydroxy aluminum alkali metal carbonate.

4,367,219
FLUORIDE CONTAINING DENTIFRICE

Murray L. Schole, 487 Munroe Ave., North Tarrytown, N.Y. 10591
Filed Nov. 25, 1981, Ser. No. 324,875
Int. Cl.^{3} A61K *7/18, 7/24*
U.S. Cl. 424—52 **6 Claims**

1. A water-containing dentifrice consisting essentially of strontium edetate in an amount of about 1.0 wt. percent to about 25 wt. percent, an alkali metal salt of ricinoleic acid in an amount of about 0.1 wt. percent to about 10 wt. percent and a source of fluoride ion providing a fluoride concentration in the dentifrice from about 0.02 wt. percent to about 2.0 wt. percent.

4,367,220
LIPSTICK COMPOSITION AND PROCESS FOR PREPARING SAME

Jean Boulogne, L'Hay les Roses; Michel Guillon, Bourg la Reine, and Christos Papantoniou, Epinay sur Seine, all of France, assignors to L'Oreal, France
Filed Jul. 1, 1977, Ser. No. 812,427
Claims priority, application France, Jul. 2, 1976, 76 20263
Int. Cl.^{3} A61K *7/025*
U.S. Cl. 424—64 **12 Claims**

1. A cosmetic composition for lipsticks, comprising:
(a) at least one liposoluble polymer having vinyl ester units;
(b) at least 10% by weight of 1-docosanoyloxy-3 (2-ethyl)-hexyloxy-2-propanol
(c) at least one fatty body;
(d) at least one non-toxic coloring material.

4,367,221
IMMUNIZATION AGAINST GROUP B STREPTOCOCCI

Dennis L. Kasper, Newton Center, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.
Division of Ser. No. 157,859, Jun. 9, 1980, Pat. No. 4,324,887, which is a continuation-in-part of Ser. No. 934,214, Aug. 16, 1978, Pat. No. 4,207,414. This application Oct. 29, 1981, Ser. No. 316,348
Int. Cl.^{3} A61K *39/40, 39/395*
U.S. Cl. 424—87 **1 Claim**

1. A method of immunizing humans against Group B streptococci which comprises injecting them with a hyperimmune globulin fraction of human antisera having specific to Group B streptococci at a level of at least 2000 μg/ml of specific activity in a physiologically acceptable carrier at a dosage level from 0.3 to 1 ml at a concentration from 5 to 20% by weight.

4,367,222
IMMUNE GLOBULIN SPECIFIC TO GROUP B STREPTOCOCCI

Dennis L. Kasper, Newton Center, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.
Division of Ser. No. 157,859, Jun. 9, 1980, Pat. No. 4,324,887, which is a continuation-in-part of Ser. No. 934,214, Aug. 16, 1978, Pat. No. 4,207,414. This application Oct. 29, 1981, Ser. No. 316,541
Int. Cl.^{3} A61K *39/40, 39/395*
U.S. Cl. 424—87 **6 Claims**

1. A method of making gamma globulin useful for immunization against Group B streptococci which comprises isolating from said streptococci a Group B-specific polysaccharide antigen having a molecular size of at least 5×10^5, injecting said antigen into humans to produce antisera having specific antibody concentrations of at least 200 μg/ml, and fractionating said antisera to provide a hyperimmune globulin fraction.

4,367,223
VACCINE AGAINST GROUP B STREPTOCOCCI

Dennis L. Kasper, Newton Center, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.
Division of Ser. No. 157,859, Jun. 9, 1980, Pat. No. 4,324,887, which is a continuation-in-part of Ser. No. 934,214, Aug. 16, 1978, Pat. No. 4,207,414. This application Oct. 29, 1981, Ser. No. 316,349
Int. Cl.^{3} A61K *39/09, 39/00*
U.S. Cl. 424—92 **7 Claims**

3. A vaccine against Group B streptococcus comprising a physiologically acceptable non-toxic vehicle containing 10 to 1000 μg/ml of a polysaccharide antigen consisting essentially of sialic acid, galactose, glucose, and glucosamine and having a molecular size larger than about 0.2×10^6 d.

4,367,224

STABLE DITHRANOL COMPOSITIONS IN ANHYDROUS VEHICLES

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Filed May 13, 1981, Ser. No. 263,285

Int. Cl.^{3} A61K *31/00, 31/05, 47/00*

U.S. Cl. **424—175** **20 Claims**

1. In an anhydrous composition containing an antiinflammatory effective amount of dithranol in a pharmaceutically acceptable vehicle for topical application, the improvement comprising a stabilizing effective amount of oxalic acid present as a primary stabilizer for dithranol in said composition.

4,367,225

NOVEL ANTAGONISTS OF THE ANTIDIURETIC AND/OR VASOPRESSOR ACTION OF ARGININE VASOPRESSIN

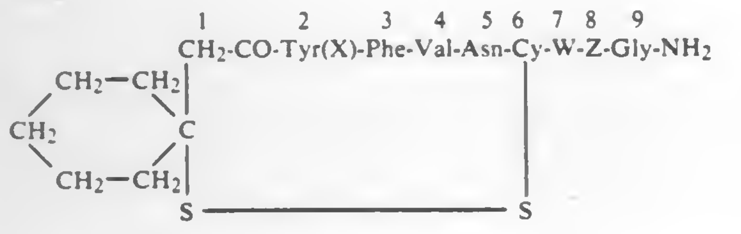
Maurice Manning, Toledo, Ohio, and Wilbur H. Sawyer, Scarsdale, N.Y., assignors to The Medical College of Ohio, Toledo, Ohio and The Trustees of Columbia University, New York, N.Y.

Filed Mar. 24, 1981, Ser. No. 247,008

Int. Cl.^{3} A61K *37/00;* **C07C** *103/52*

U.S. Cl. **424—177** **17 Claims**

1. A compound of the formula



wherein X is methyl, ethyl, n-propyl, isopropyl or butyl; Try is L- or D-; W is Pro or Δ^3-Pro; and Z is L- or D-Arg.

4,367,226

N-SUGAR COMPOUNDS, COMPOSITIONS AND USES THEREOF

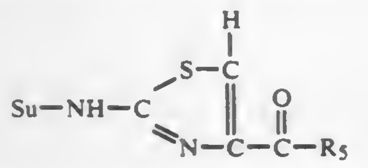
William O. Foye, 7 Winchester Dr., Lexington, Mass. 02173

Filed Dec. 2, 1980, Ser. No. 212,198

Int. Cl.^{3} A61K *31/70;* **C07H** *19/00, 17/00, 5/02*

U.S. Cl. **424—180** **5 Claims**

1. A water-soluble compound of the formula:



wherein Su represents glucopyranosyl or acylated ribofuranosyl, said acylated moiety being selected from the group consisting of C_2 to C_6 alkanoyl, benzoyl and C_1 to C_4 alkyl or alkyoxy benzoyl; and R_5 is selected from the group consisting of oxy (C_1 to C_8) alkyl, and NR_6R_7 wherein R_6 and R_7 are independently selected from the group consisting of hydrogen and C_1 to C_8 alkyl; and the pharmaceutically acceptable salts thereof.

5. A method for preserving aqueous organo cosmetic compositions comprising incorporating therewith an effective amount of from about 0.001% to about 5%, of a compound of claim 1.

4,367,227

METHOD AND COSMETIC COMPOSITION FOR REDUCING SEBUM SECRETION

Keith D. Bingham, Shepperton, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 775,187, Mar. 7, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 973,493

Claims priority, application United Kingdom, Mar. 11, 1976, 9800/76

Int. Cl.^{3} A61K *31/56*

U.S. Cl. **424—243** **13 Claims**

1. A topical cosmetic composition for reducing sebum excretion consisting essentially of:
(a) an amount effect to reduce sebum excretion of cyproterone acetate; and
(b) a C_2 to C_3 aliphatic alcohol or a mixture of a C_2 to C_3 aliphatic alcohol and water.

4,367,228

CEPHEM COMPOUND AND COMPOSITION

Takao Takaya, Kawanishi; Yoshikazu Inoue, Amagasaki; Masayoshi Murata, Mino, and Hisashi Takasugi, Kohamanishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

,Filed Oct. 29, 1980, Ser. No. 201,913

Int. Cl.^{3} C07D *501/38;* **A61K** *31/845*

U.S. Cl. **424—246** **2 Claims**

1. 7-[2-ethoxyimino-2-(2-aminothiazol-4-yl)acetamido]-3-(1-pyridiniomethyl)-3-cephem-4-carboxylate (syn isomer).

4,367,229

3-SUBSTITUTED-TETRAHYDRO-PYRROLO[1,2-a]PYRIMIDINES AND PHARMACEUTICAL COMPOSITIONS

Jozsef Kökosi, Budaörs; Istvan Hermecz, Budapest; Zoltan Meszaros, Budapest; György Szasz, Budapest; Lelle Vasuarl nee Debreczy, Budapest; Agnes Horvath, Budapest, and Tibor Breining, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

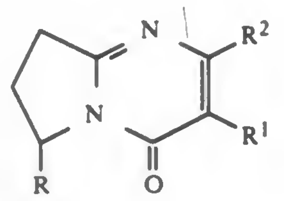
Filed May 9, 1980, Ser. No. 148,239

Claims priority, application Hungary, May 11, 1979, CI 1930

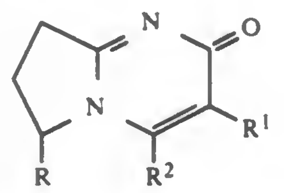
Int. Cl.^{3} C07D *487/04;* **A61K** *31/505*

U.S. Cl. **424—251** **2 Claims**

1. An antianginal method for treatment which comprises administering to an afflicted animal an effective amount of at least one compound of the formula (I) or (II)



(I)



(II)

or a pharmaceutically acceptable acid addition or lower alkyl, phenyl, or lower alkyl-phenyl quaternary ammonium salt thereof, wherein
R is hydrogen or lower alkyl;
R^1 is carboxyl, lower alkoxycarbonyl, or carbohydrazido; and
R^2 is hydrogen or lower alkyl.

4,367,230

NOVEL TRIAZAFLUORANTHENE COMPOUND AND PROCESSES FOR PREPARING THE SAME

Yasuhiko Sato, Urawa; Tomishige Mizoguchi, Wako; Yukitsuka Kudo, Osaka, and Ryuichi Ishida, Suita, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

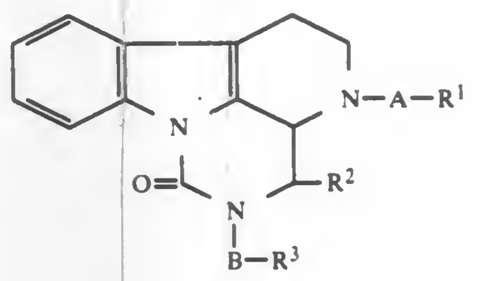
Filed Dec. 10, 1980, Ser. No. 215,107

Claims priority, application United Kingdom, Jan. 4, 1980, 8000233

Int. Cl.^{3} A61K *31/505;* **C07D** *471/16*

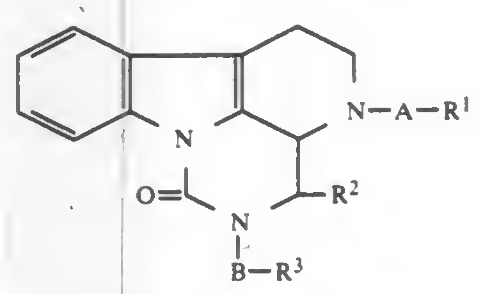
U.S. Cl. **424—251** **15 Claims**

1. A triazafluoranthene compound of the formula:



wherein R^1 is hydrogen, phenyl or cycloalkyl of 3 to 6 carbon atoms, R^2 is hydrogen or lower alkyl, R^3 is hydrogen, lower alkoxy or (lower alkoxy)carbonyl, A is single bond, alkylene of one to five carbon atoms or alkenylene of 2 to 5 carbon atoms and B is single bond or alkylene of one to five carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

15. A pharmaceutical composition which comprises a therapeutically effective amount of a compound of the formula:



wherein R^1 is hydrogen, phenyl or cycloalkyl of 3 to 6 carbon atoms, R^2 is hydrogen or lower alkyl, R^3 is hydrogen, lower alkoxy or (lower alkoxy)carbonyl, A is single bond, alkylene of one to five carbon atoms or alkenylene of 2 to 5 carbon atoms and B is single bond or alkylene of one to five carbon atoms, or a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

4,367,231

METHOD OF USING OCTAHYDRO PYRAZOLO[3,4-G]QUINOLINES

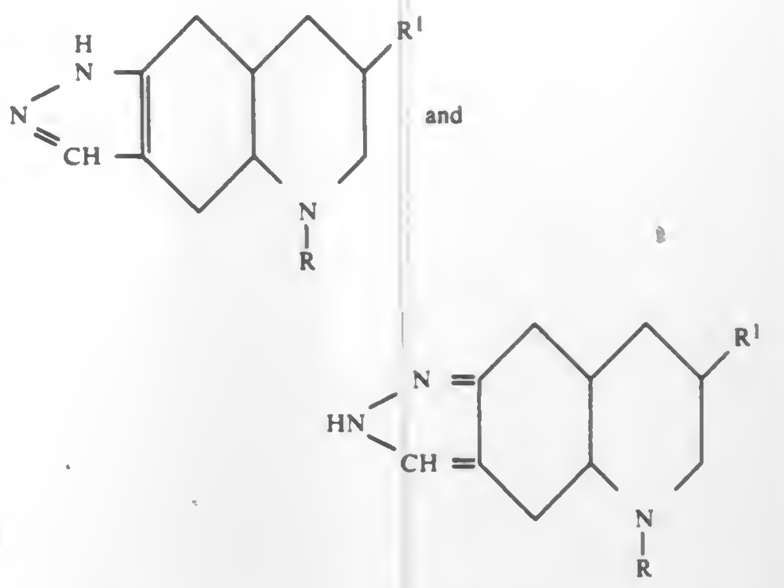
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 75,618, Sep. 14, 1979, Pat. No. 4,230,861, which is a division of Ser. No. 31,641, Apr. 19, 1979, Pat. No. 4,198,415, which is a continuation-in-part of Ser. No. 5,061, Jan. 22, 1979, abandoned. This application Mar. 20, 1980, Ser. No. 132,360

Int. Cl.^{3} A61K *31/415;* **C07D** *471/04*

U.S. Cl. **424—258** **1 Claim**

1. A method of treating Parkinson's Syndrome which consists of administration to a subject suffering from Parkinson's Syndrome and in need of treatment, a dose of a mixture of trans-dl-tautomers of the formula



wherein R is C_1–C_3alkyl or allyl and R^1 is H or CH_2X wherein X is CN, $CONH_2$, OCH_3, SCH_3 or SO_2CH_3; or a pharmaceutically-acceptable salt thereof, effective to alleviate some or all of the manifestations of Parkinson's Syndrome.

4,367,232

PIPERIDINE DERIVATIVES

Jose Boix-Igleasias; Jose P. Soto; Armando Vega-Noverola; Robert G. W. Spickett, and Jacinto M. Mauri, all of Barcelona, Spain, assignors to Fordonal, S.A., Madrid, Spain

Filed Oct. 27, 1977, Ser. No. 845,958

Claims priority, application United Kingdom, Oct. 29, 1976, 45146/76

Int. Cl.^{3} C07D *211/58;* **A61K** *31/445*

U.S. Cl. **424—267** **3 Claims**

1. N-(1-Benzyl-2,6-dimethylpiperid-4-yl)-2-methoxy-4-amino-5-chlorobenzamide.

4,367,233

INHIBITORS OF MAMMALIAN COLLAGENASE

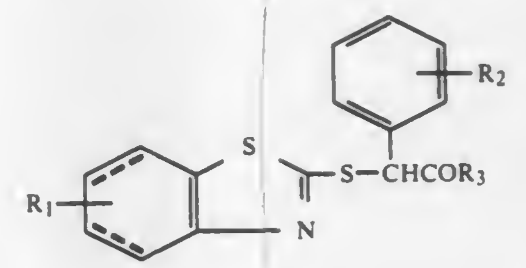
Donald E. Clark, Norristown, and Norman H. Grant, Wynnewood, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,711

Int. Cl.^{3} A61U *31/44, 31/425*

U.S. Cl. **424—270** **13 Claims**

1. A method of inhibiting collagenase in mammals afflicted with a disease state in which collagen is broken down by collagenase, which comprises administering to such an afflicted mammal an amount sufficient to reverse said collagenase-induced collagen break down of a collagenase inhibitor having the formula:



wherein R_1 is hydrogen, halo, nitro, amino, lower alkyl, lower alkoxy, trifluoromethyl or hydroxy; R_2 is fluorine, chlorine, bromine, lower alkyl, lower alkoxy, amino, nitro or trifluoromethyl; R_3 is hydroxy, lower alkoxy, amino, hydroxy(lower)alkylamino, N-(lower)alkanoylamino(lower)alkoxy or N-arylcarbamoyl(lower)alkylthio; and where the dotted lines represent optional double bonds in the 5,6- and 7,8-positions, and the pharmacologically acceptable salts thereof.

4,367,234

HYPOGLYCEMIC 5-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

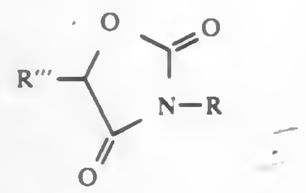
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Jan. 2, 1981, Ser. No. 222,202

Int. Cl.³ C07D ***263/44;*** **A61K** ***31/42***

U.S. Cl. 424—272 **9 Claims**

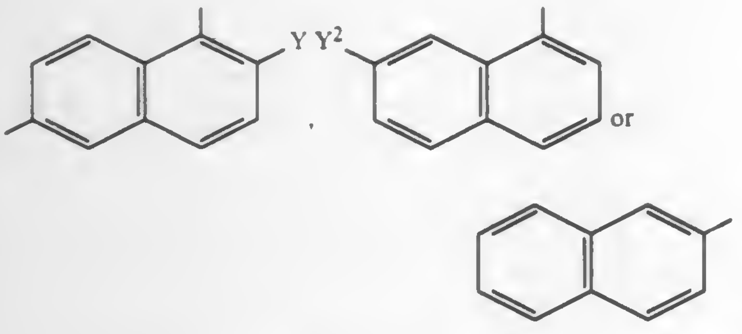
1. A compound of the formula



wherein

R is hydrogen, (C_1-C_4)-alkanoyl, benzoyl, (C_2-C_4)-carbalkoxy, (C_1-C_3)-alkylcarbamoyl, (C_5-C_7)-cycloalkylcarbamoyl or di(C_1-C_3)-alkylcarbamoyl;

R''' is



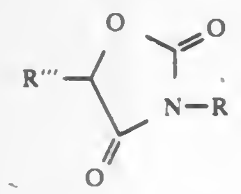
Y is hydrogen, methyl, benzyloxy, (C_1-C_2)-alkoxy, chloro, bromo or fluoro;

Y^1 is hydrogen or methoxy; and

Y^2 is fluoro or chloro;

or a pharmaceutically acceptable cationic salt thereof when R is hydrogen.

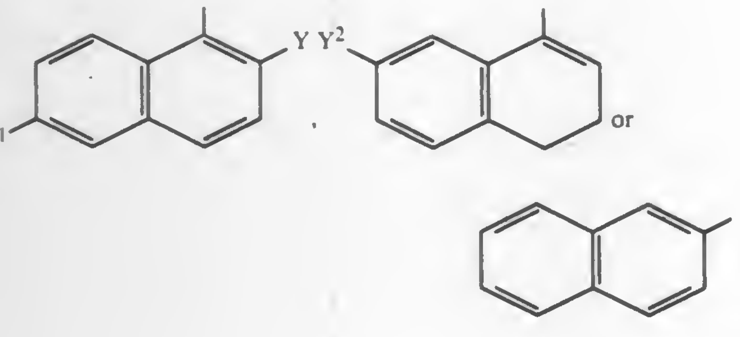
9. A pharmaceutical composition for lowering the blood glucose in a hyperglycemic mammal which comprises a pharmaceutically acceptable carrier and a blood glucose lowering amount of a compound of the formula



wherein

R is hydrogen, (C_1-C_4)-alkanoyl, benzoyl, (C_2-C_4)-carbalkoxy, (C_1-C_3)-alkylcarbamoyl, (C_5-C_7)-cycloalkylcarbamoyl or di(C_1-C_3)alkylcarbamoyl;

R''' is



Y is hydrogen, methyl, benzyloxy, (C_1-C_2)alkoxy, chloro, bromo or fluoro;

Y^1 is hydrogen or methoxy; and

Y^2 is fluoro or chloro;

or a pharmaceutically acceptable cationic salt thereof when R is hydrogen.

4,367,235

2-BENZIMIDAZOLINONE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Carl H. Ross, Viernheim; Walter-Gunar Friebe, Darmstadt; Wolfgang Kampe, Heddesheim; Wolfgang Bartsch, Viernheim, and Egon Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

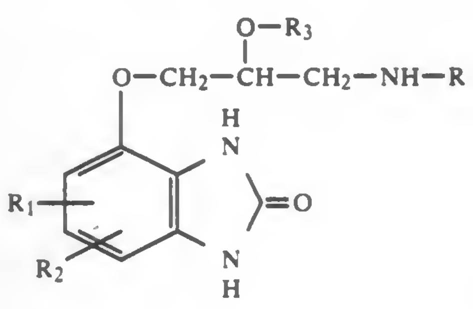
Continuation of Ser. No. 924,475, Jul. 13, 1978, abandoned. This application Jul. 18, 1980, Ser. No. 171,940

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736295; Jan. 18, 1978, 2801953

Int. Cl.³ A61K ***31/415;*** **C07D** ***235/26, 235/02***

U.S. Cl. 424—273 B **12 Claims**

1. 2-Benzimidazolinone compound of the formula



wherein

R is lower alkyl of up to 6 carbon atoms,

R_1 and R_2 together represent alkylene of from 2 to 4 carbon atoms and wherein R_1 and R_2 are in the ortho position with respect to each other, and

R_3 is hydrogen, alkanoyl of up to 6 carbon atoms or benzoyl and the pharmacologically acceptable salts thereof.

8. Method of treating circulatory and cardiac diseases which method comprises administering to an afflicted subject a therapeutically effective amount of a 2-benzimidazolinone compound as claimed in claim 1.

4,367,236

METHOD FOR THE TREATMENT OF CARDIAC FAILURE WITH ALKANOYLIMIDAZOL-2-ONE DERIVATIVES

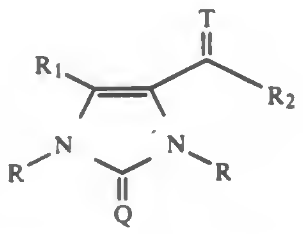
J. Martin Grisar, Strasbourg, France; Richard A. Schnettler, and Richard C. Dage, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Nov. 4, 1981, Ser. No. 317,962

Int. Cl.³ A61K ***31/415, 31/44***

U.S. Cl. 424—273 R **8 Claims**

1. A method for the treatment of cardiac failure in a patent in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of the formula



wherein Q and T are each an oxygen atom or a divalent sulfur atom; R is hydrogen, lower alkyl, lower alkanoyl or benzoyl; R_1 is hydrogen or lower alkyl; R_2 is a saturated straight or branched chain alkyl group of from 2 to 8 carbon atoms, cycloalkyl or cycloalkenyl of from 3 to 7 carbon atoms and cycloalkylalkylene or cycloalkenylalkylene wherein the cycloalkyl or cycloalkenyl moiety has from 3 to 7 carbon atoms; a phenyl alkylene, or furanylalkylene, thienylalkylene, pyridylalkylene, and pyrrylalkylene; and the pharmaceutically acceptable salts thereof.

4,367,237

PROSTACYCLIN ANALOGUES

Hirohisa Wakatsuka; Katsuichi Shimoji, both of Takatsuki; Sadahiko Iguchi, Otsu; Yoshitaka Konishi; Hisashi Suga, both of Takatsuki; Yasuyuki Miyata, Kyoto; Yoichi Iguchi, Kusatsu; Hajimu Miyake, and Masaki Hayashi, both of Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Japan

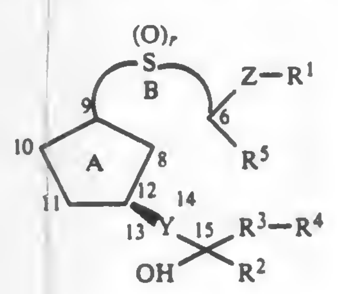
Filed Nov. 27, 1979, Ser. No. 97,675

Claims priority, application Japan, Nov. 26, 1978, 53-159207; Nov. 29, 1978, 53-147637

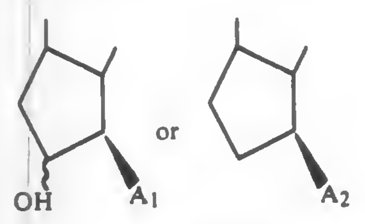
Int. Cl.³ A61K ***31/38;*** **C07D** ***333/78***

U.S. Cl. 424—275 **9 Claims**

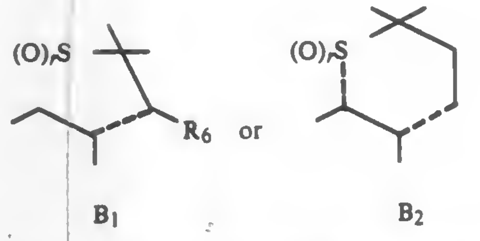
1. Method for the termination of pregnancy and the induction of labour in pregnant human females and for the control of oestrus, contraception or menstrual regulation in human females which comprises administering to the human female an effective amount of a compound of the formula:



wherein the ring A represents a grouping of the formula:



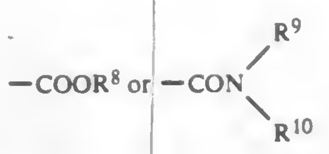
(wherein the wavy line represents α- or β-configuration, or mixtures thereof), the ring B represents a grouping of the formula:



(wherein R^6 represents a hydrogen atom or a methyl or ethyl group, and r is zero, one or two), Y represents an ethylene group, or a cis- or trans-vinylene group, Z represents a grouping of the formula:

$$\underset{Z_1}{-(CH_2)_m-} \quad \text{or} \quad \underset{Z_6}{\text{trans-}(CH_2)_2-CH{=}CH-}$$

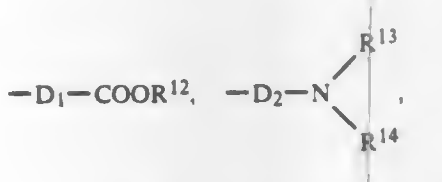
(wherein m is 3, 4 or 5) R^1 represents a grouping of the formula:



$$-COOR^8 \text{ or } -CON\begin{matrix} R^9 \\ R^{10} \end{matrix}$$

(wherein R^8 represents

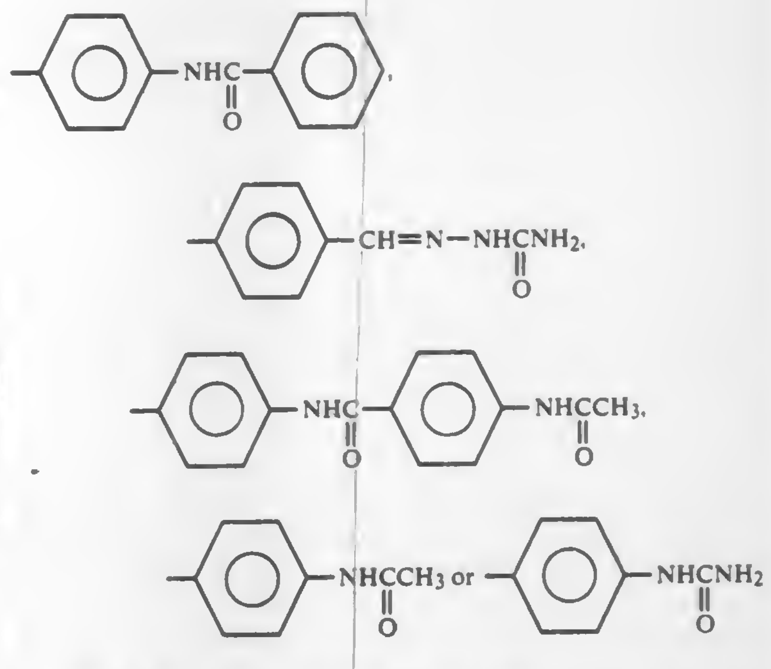
(1) a hydrogen atom,
(2) an alkyl group containing from 1 to 12 carbon atoms,
(3) an aralkyl group containing from 7 to 13 carbon atoms,
(4) a cycloalkyl group containing from 4 to 7 carbon atoms unsubstituted or substituted by at least one alkyl group containing from 1 to 4 carbon atoms,
(5) a phenyl group unsubstituted or substituted by at least one halogen atom, trifluoromethyl group, alkyl, alkoxy or alkylthio group containing from 1 to 4 carbon atoms, or by a phenyl group,
(6) a naphthyl group,
(7) a 2,3- or 1,3-dihydroxypropyl group,
(8) a 2,3- or 1,3-bisalkanoyloxypropyl group,
(9) a grouping of the formula:



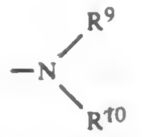
$$-D_1-COOR^{12}, \quad -D_2-N\begin{matrix} R^{13} \\ R^{14} \end{matrix}, \quad -D_2-R^{15}, \quad \text{or } -D_3-R^{16},$$

wherein D_1 represents an alkylene group containing from 1 to 12 carbon atoms, D_2 represents an alkylene group containing from 2 to 12 carbon atoms, D_3 represents a single bond, or an alkylene group containing from 1 to 12 carbon atoms, R^{12}, R^{13} and R^{14}, which may be the same or different, each represent an alkyl group containing from 1 to 4 carbon atoms, R^{15} represents a hydroxy group or an alkoxy or alkylthio group containing from 1 to 4 carbon atoms, and R^{16} represents a furyl, tetrahydrofuryl, 3-phthalidyl, pyridyl or thienyl ring,

or (10) a grouping of the formula:



and R^9 and R^{10}, which may be the same or different, each represent a hydrogen atom, an alkyl group containing from 1 to 12 carbon atoms, an alkylsulphonyl group containing from 1 to 4 carbon atoms, an alkanoyl group containing from 2 to 5 carbon atoms, or



represents a pyrrolidyl, piperidino, morpholino, hexamethyleneiminyl or piperazinyl ring), R^2 represents a hydrogen atom, or a methyl or ethyl group, R^3 represents a single bond or an alkylene group containing from 1 to 5 carbon atoms, R^4 represents a hydrogen atom, an alkyl or alkoxy group containing from 1 to 8 carbon atoms, a cycloalkyl or cycloalkyloxy group containing from 4 to 7 carbon atoms unsubstituted or substituted by at least one alkyl group containing from 1 to 8 carbon atoms, or represents a phenyl or phenoxy group unsubstituted or substituted by at least one halogen atom, trifluoromethyl group, or alkyl group containing from 1 to 4 carbon atoms, with the proviso that, when R^3 represents a single bond, R^4 does not represent an alkoxy, cycloalkyloxy or phenoxy group, R^5 represents a hydrogen atom, or a methyl or ethyl group, the absolute configuration of C_6 and C_{15}, which may be the same or different, is R or S, or mixtures thereof, i.e. RS, and with the proviso that, when one of the groups R^5, R^6 and R^7 represents a methyl or ethyl group the other two groups are hydrogen atoms, or of a cyclodextrin clathrate thereof or, when the compound of general formula V contains a carboxy group, of a non-toxic salt thereof or, when the compound of general formula V contains an amino group, of a non-toxic acid addition salt thereof.

5. (13E)-(6RS,9α,11α,15R)-6,9-Epithio-11,15-dihydroxy-15-(1-butylcyclobutyl)-16,17,18,19,20-pentanorprost-13-enoic acid methyl ester or a cyclodextrin clathrate thereof.

4,367,238

PHENYL-ALKANOIC ACID DERIVATIVE AND PREPARATION THEREOF

Ikuo Ueda, Toyonaka; Yoshihiko Kitaura, Sakurai; Masaaki Matsuo, Toyonaka, and Nobukiyo Konishi, Mukou, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd. Osaka, Japan

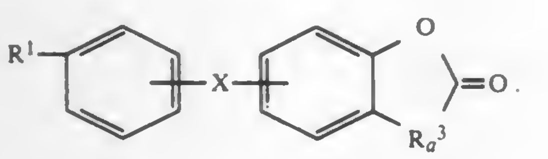
Filed Jan. 21, 1981, Ser. No. 226,908

Claims priority, application United Kingdom, Jan. 28, 1980, 8002790; Dec. 8, 1980, 8039308

Int. Cl.^{3} C07D ***307/83;*** **A61K** ***31/365***

U.S. Cl. 424—279 **8 Claims**

1. A compound of the formula:



wherein

- R^1 is hydrogen, halogen, hydroxy, lower alkyl or lower alkoxy,
- R_a^3 is C_{1-8} alkylene or C_{1-8} alkylene substituted with lower alkyl, cyano, amino or protected amino group where the protective group is ar(lower)alkyl, lower alkanoyl, lower alkoxycarbonyl, ar(lower)alkoxycarbonyl, succinoyl or phthaloyl,
- X is O, S, SO or SO_2, or a pharmaceutically acceptable salt thereof.

4,367,239

NITROSOUREA DERIVATIVES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF PREPARATION

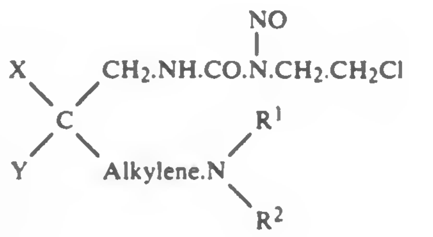
Peter Bregnedal, Allerod, and Jorn Buus, Bj verskov, both of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

Filed Sep. 29, 1980, Ser. No. 191,910

Int. Cl.^{3} C07C ***127/17;*** **A61K** ***31/17***

U.S. Cl. 424—322 **9 Claims**

1. A compound selected from the group consisting of (1) a Aminoalkyl substituted nitrosourea derivative of the formula:



I

wherein

- X and Y are the same or different and are each selected from the group consisting of phenyl and phenyl substituted with halogen,
- "Alkylene" is an alkylene group having one to four carbon atoms inclusive,
- and R^1 and R^2 are the same or different and are each lower alkyl having one to four carbon atoms inclusive, and

(2) a pharmaceutically acceptable acid addition salt thereof.

9. A method for-amelioration of tumors in a living animal body, which comprises administering a compound of claim 1 in a therapeutically effective tumor ameliorating amount.

4,367,240

PROTEIN-CONTAINING FOOD MATERIAL

Mary E. Maclennan, and Martial Lawson, both of Helensburgh, Australia, assignors to Bioenterprises Pty Ltd., Melbourne, Australia

Division of Ser. No. 957,380, Nov. 3, 1978, Pat. No. 4,265,915. This application Sep. 10, 1980, Ser. No. 185,818

Claims priority, application Australia, Nov. 8, 1977, PD2345

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.^{3} A23J ***1/12***

U.S. Cl. 426—28 **9 Claims**

1. A protein containing textured product comprising denatured fungal mycelia inter-woven around and through one or more of starch, starch degradation products, moisture and gas bubbles which product has been prepared by the steps of:

(a) providing a particulate starch-based material which does or does not include a nitrogen source;

(b) partially gelatinizing the starch component of said material in the presence of water to a particulate substrate composed of particles of which a predominant proportion have a particle size wherein the overall dimension is within the range of 0.5 mm to 3 mm, with the proviso that particles of larger dimensions are not present in sufficient quantity to be substantially visible in the fermented product;

(c) adding a nitrogen source if the nitrogen source in step (a) is absent or insufficient, before, during or after step (b) whilst maintaining the physical state of said substrate;

(d) inoculating said substrate with at least one amylolytic fungal strain; and

(e) incubating said inoculated substrate in the presence of oxygen and moisture until substantially all particles of the starch-based material are substantially degraded to a non-particulate form and the spaces containing the starch degradation products are closely bound together by a network of the denatured mycelia and wherein substantially all maximum dimensions of major interhyphal distances do not exceed 3 mm.

4,367,241

DRY BAKED PRODUCT RICH IN PROTEINS AND A PROCESS FOR ITS PRODUCTION

Rene Chablaix, Lausanne, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 96,454, Nov. 21, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,428

Claims priority, application Switzerland, Dec. 1, 1978, 12291/78

Int. Cl.^{3} A21D ***8/00;*** **A23B** ***3/00***

U.S. Cl. 426—128 **11 Claims**

1. A process for producing a dry baked product which is rich in proteins, high in nutritional value, has a thickness of at least 8 mm for a volume of from 20 to 60 cc, is free from cracks, and made from, per 100 parts by weight,

- 5 to 20 parts of a protein of vegetable origin present in a particulate form of such a size so as to pass through a 0.8 mm mesh U.S. sieve and are retained to a level of 98% by a 0.18 mm mesh U.S. sieve;
- 1.5 to 6 parts lactic protein;
- 10 to 15 parts of fat;
- 25 to 50 parts of cereal flour;
- the balance being formed by water, sugar, mineral salts, baking powder and flavorings;
- the total protein content being from 10 to 20% by weight;

comprising:

(a) mixing the vegetable proteins, the lactic proteins and the fat to form a first premix;

(b) separately mixing in a kneader the cereal flour, the sugar, the water, the salt, the mineral salts, the baking powder and the flavorings to form a second premix;

(c) adding the first premix of proteins and fat to the second premix;

(d) kneading the resulting mixture to obtain a paste which is left standing for a period of time sufficient to stabilize the mixture, molding into the desired shape and baking over a period of from 15 to 25 minutes in an oven comprising several temperature zones with temperatures in the zones decreasing from 190° C. to 145° C., thereafter placing the baked product in several layers in boxes and leaving to cool progressively to ambient temperature or post-drying in a high frequency oven;

wherein at least 90% of the lysine contained in the proteins is preserved.

4,367,242

ROAST POULTRY COATING MIX AND PROCESS

Gary W. Jarvis, Hartly, Del.; Stevan A. Angalet, Jackson, N.J., and William J. Horan, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,076

Int. Cl.^{3} A23L ***1/315***

U.S. Cl. 426—293 **7 Claims**

1. A process for producing a baked poultry product having the taste, texture, appearance and juiciness of roasted and basted poultry, including a thin, crisp, non-gritty, golden-brown coating which seals in the juices of the poultry meat, comprising the steps of:

- moistening the surface of the poultry;
- coating the moistened poultry with a dry coating mix consisting essentially of 20 to 30% of gelatin having a bloom of 100 to 300, 10 to 40% of powdered shortening having a melting point in the range of 105° F. to 160° F., 10 to 30% of a dextrin having a DE of 5 to 15, 10 to 20% of a pregelatinized starch, and flavorings, said dry coating mix having a particle size wherein from 0 to 5% is retained on a 20 mesh U.S. standard screen, 40 to 60% passes a 20 mesh U.S. standard screen and is retained on a 60 mesh U.S. standard screen, 30 to 50% passes a 60 mesh U.S. standard screen and is retained on a 100 mesh U.S. standard screen, and 0 to 15% passes a 100 mesh U.S. standard screen, all percents being by weight of the dry coating mix; and
- baking the poultry.

4,367,243

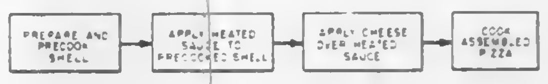
METHOD FOR PREPARING COOKING PIZZA

Barry J. Brummett, and Edward E. O'Neill, both of Wichita, Kans., assignors to Pizza Hut, Inc., Wichita, Kans.

Filed Nov. 3, 1980, Ser. No. 203,703

Int. Cl.^{3} A21D ***8/00***

U.S. Cl. 426—303 **19 Claims**


PREPARE AND PRECOOK SHELL
APPLY HEATED SAUCE TO PRECOOKED SHELL
APPLY CHEESE OVER HEATED SAUCE
COOK ASSEMBLED PIZZA

1. A method for preparing and cooking pizza comprising the following steps:

- providing a pizza shell;
- placing the shell in a cooking pan to provide an assembly;
- pre-heating a tomato sauce having a dissolved solids component greater than about 10% by weight to a temperature greater than about 145° F. in order to retard bacterial growth in said sauce but less than that which causes carmelization;
- applying at least a portion of the pre-heated sauce to the shell; then
- applying at least one additional food component over the portion of pre-heated tomato sauce to complete the assembly of a pizza;
- cooking the assembled pizza in a forced air oven which comprises means for directing heated air against the underside of the cooking pan and means for directing heated air against the upper side of the assembled pizza to accelerate the cooking of the assembled pizza;
- the heat of said pre-heated tomato sauce acting to reduce the cooking time required properly to cook the assembled pizza.

4,367,244

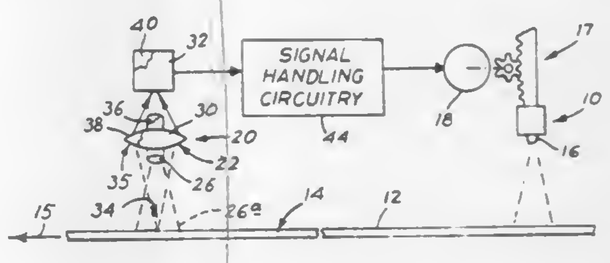
METHOD FOR MONITORING AND CONTROLLING THE DISTRIBUTION OF DROPLETS ON A SURFACE

James F. Holmes, Portland, Oreg., assignor to Oregon Graduate Center for Study and Research, Beaverton, Oreg.

Division of Ser. No. 200,891, Oct. 27, 1980. This application Nov. 9, 1981, Ser. No. 319,115

Int. Cl.^{3} G01J ***1/00;*** **B05D** ***1/02***

U.S. Cl. 427—8 **3 Claims**



1. A method for monitoring, in a defined viewing zone, certain distribution characteristics of droplets distributed over a surface in a workpiece moving relative to the zone, where the light reflectance of the droplets differs in a known way from that of the surface, said method comprising

- directing a beam of light into such zone,
- detecting the level of light reflected from such zone,
- by said detecting, producing a signal which varies according

to the instantaneously detected level of light reflected from the zone,

transforming such signal to a binary data stream composed of one and other data states representing reflected light levels from covered and uncovered regions,, respectively, of the surface, and

computing such characteristics from such stream.

4,367,245

COATING COMPOSITION AND PROCESS FOR PREPARING SYNTHETIC RESIN SHAPED ARTICLES BY USING SAME

Kazuo Kishida; Isao Sasaki; Kenji Kushi, and Misao Tamura, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 24, 1981, Ser. No. 246,942

Claims priority, application Japan, Apr. 3, 1980, 55-43995

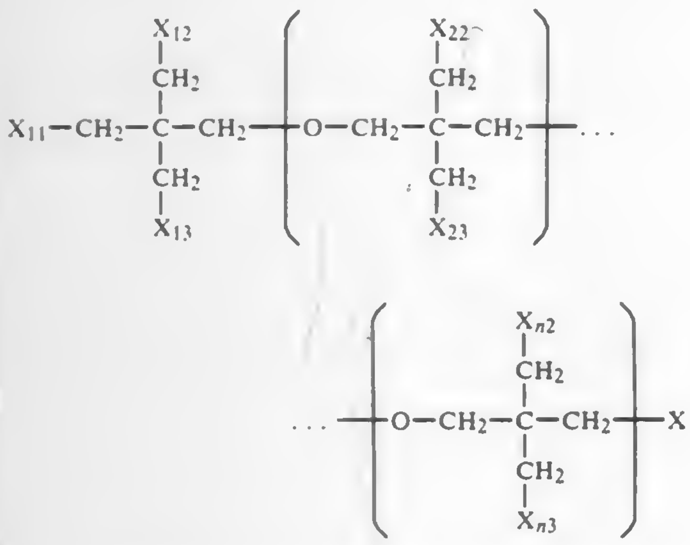
Int. Cl.^{3} B05D *3/06*

U.S. Cl. 427—54.1 **14 Claims**

8. A process for the preparation of synthetic resin shaped articles, which comprises:

coating the surface of a synthetic resin shaped article with a coating composition, and irradiating the coated shaped article with ultraviolet rays in air to form on the surface of the synthetic resin shaped article a crosslinked and cured film having a thickness of 1 to 30 microns, wherein said coating composition comprises:

(a) a polyfunctional monomer mixture comprising (i) 25% to 75% by weight of at least one polyfunctional mono- or poly-pentaerythritol polyacrylate monomer containing at least three acryloyloxy groups in the molecule and represented by formula (I):

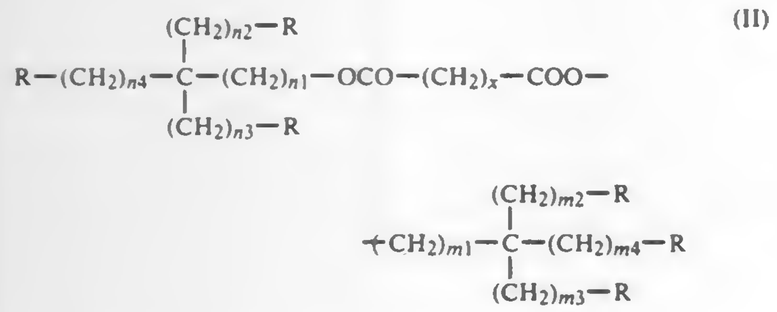


(I)

$$X_{11}-CH_2-\underset{\substack{|\\ CH_2\\ |\\ X_{13}}}{\overset{\substack{X_{12}\\ |\\ CH_2\\ |}}{C}}-CH_2-\left(O-CH_2-\underset{\substack{|\\ CH_2\\ |\\ X_{23}}}{\overset{\substack{X_{22}\\ |\\ CH_2\\ |}}{C}}-CH_2\right)\cdots$$

$$\cdots\left(O-CH_2-\underset{\substack{|\\ CH_2\\ |\\ X_{n3}}}{\overset{\substack{X_{n2}\\ |\\ CH_2\\ |}}{C}}-CH_2\right)-X_{14}$$

wherein at least three of X_{11}, X_{12}, X_{13}, X_{22}, $X_{23} \ldots X_{n2}$, X_{n3} and X_{14} are acryloyloxy groups ($CH_2{=}CH.COO{-}$) and the remaining groups are hydroxyl groups (—OH), and n is an integer of from 1 to 5, (ii) 25% to 75% by weight of at least one polyfunctional monomer represented by formula (II):



(II)

$$R-(CH_2)_{n4}-\underset{\substack{|\\ (CH_2)_{n3}-R}}{\overset{\substack{(CH_2)_{n2}-R\\ |}}{C}}-(CH_2)_{n1}-OCO-(CH_2)_x-COO-$$

$$-(CH_2)_{m1}-\underset{\substack{|\\ (CH_2)_{m3}-R}}{\overset{\substack{(CH_2)_{m2}-R\\ |}}{C}}-(CH_2)_{m4}-R$$

wherein at least three of the R groups are acryloyloxy groups ($CH_2{=}CH.COO{-}$) and each of the remaining is hydrogen or a hydroxyl group; n_1, n_2, n_3, n_4, m_1, m_2, m_3 and m_4 are integers of 0, 1 or 2; and x is an integer of from 1 to 10, and (iii) 0% to 50% by weight of a monomer containing one acryloyloxy group in the molecule and having a boiling point of at least 150° C. at normal pressure and a viscosity of not higher than 20 cps as measured at 20° C., and

(b) 0.01 to 6.0 parts by weight, based on 100 parts by weight of the polyfunctional monomer mixture (a) mentioned above, of at least one photosensitizer.

4,367,246

METHODS OF MANUFACTURING CRUCIBLE FOR FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

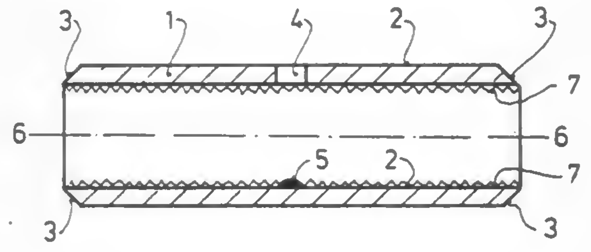
Bernhard Lersmacher, Aachen, Fed. Rep. of Germany, and Wilhelmus F. Knippenberg, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,831

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004812

Int. Cl.^{3} G01N *21/16*

U.S. Cl. 427—228 **4 Claims**



1. A method of making a crucible for flameless atomic absorption spectroscopy comprising the steps of:

forming a carbon preform having a coating of pyrolytic graphite, and

coating said pyrolytic graphite with a layer of carbon having a low degree of orientation, said layer having a crystalline orientation greatly differing from that of an ideal graphite lattice,

said layer being applied by deposition from a gas phase.

4,367,247

PRIMER FOR PORTLAND CEMENT CONCRETE

Denis W. Akerberg, Huntley, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 17, 1981, Ser. No. 234,906

Int. Cl.^{3} B05D *3/10*

U.S. Cl. 427—302 **6 Claims**

1. A method of treating portland cement concrete which comprises first applying to the surface of the concrete a liquid comprising the reaction product of polyphosphoric acid and an alcohol and then applying to the primed surface an acid curable thermosetting resin.

4,367,248

TREATMENT OF GLASS FOR HIGH TEMPERATURE RESISTANCE

George W. Ritter, II, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 14, 1981, Ser. No. 293,025

Int. Cl.^{3} B05D *3/10*

U.S. Cl. 427—307 **8 Claims**

1. A method of treating glass fibers to improve their resistance to high temperatures which comprises:

a. leaching said fibers with trans-1,2-diaminocyclohexane tetraacetic acid to produce leached fibers;

b. contacting said leached fibers with colloidal silica; and,

c. contacting the fibers from step b. with an aqueous solution of the salt of a refractory metal salt to deposit said refractory metal salt thereon.

4,367,249

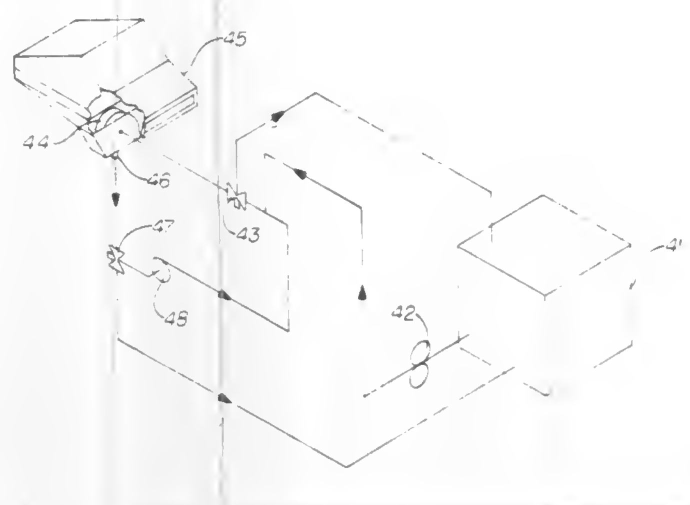
PROCESS AND APPARATUS FOR CONTROLLING DISTRIBUTING AND MONITORING LIQUIDS

Harold T. Bloom, and Richard E. St. Pierre, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 141,016, Apr. 17, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,417

Int. Cl.^{3} B05D *1/02*

U.S. Cl. 427—345 **7 Claims**



1. A process for controlled application of a liquid to filamentary material comprising, feeding said liquid at a constant rate by means of a first positive displacement pump into the center of a rotatable disc applicator device suitable for applying liquid to a running band of filamentary material, and causing any liquid not picked up by said band of filamentary material to be returned into the center of said applicator device by means of a second positive displacement pump without passage of said returned liquid through said first positive displacement pump.

4,367,250

LEAD LIGHTS

Darrell F. Quadling, 25a Moore St., Birkenhead, Auckland, and Ross M. Bailey, 9 Valerie Crescent, Okura, both of New Zealand

Filed Apr. 14, 1981, Ser. No. 253,910

Claims priority, application New Zealand, Apr. 17, 1980, 193459

Int. Cl.^{3} B44F *1/06*

U.S. Cl. 428—38 **8 Claims**

1. A method of forming a simulated lead light in which opaque cames are applied to a surface of a transparent or translucent carrier material, characterised in that: the cames are built up by applying an adhesive material to the carrier surface in lines or strips corresponding to the position of desired cames, applying on opaque particulate material to said adhesive lines or strips, removing unadhered particulate material, and repeating the steps of applying adhesive material and particulate material to build up raised cames on the carrier surface.

4,367,251

UV CURABLE COMPOSITIONS AND SUBSTRATES TREATED THEREWITH

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 142,100, Apr. 21, 1980, Pat. No. 4,319,974. This application Nov. 12, 1981, Ser. No. 320,366

Int. Cl.^{3} C09J *7/02;* **C08G** *65/10;* **B32B** *21/06*

U.S. Cl. 428—40 **6 Claims**

1. A paper substrate having at least a major portion of its surface treated with a cured mixture of 100 to 19% by weight of a $C_{(8-28)}$ α-olefin oxide and correspondingly from 0 to 81% by weight of a polyfunctional epoxy resin based on the use of an effective amount of an arylonium salt of the formula,

$$[Y]^+[MQ_n]^-$$

where Y is a member selected from

$$[(R)_a(R^1)_bI] \text{ and}$$

$$[(R)_c(R^2)_d(R^3)_eS],$$

where R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, R^2 is a monovalent organic aliphatic radical selected from alkyl, cyclo alkyl and substituted alkyl, R^3 is a polyvalent organic radical forming a heterocyclic or fused ring structure, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1, and the sum of a+b is equal to 1 or 2, c is a whole number equal to 0 to 3 inclusive, d is a whole number equal to 0 or 1, e is a whole number equal to 0 to 1, and the sum of c, d and e is equal to 1 to 3 inclusive, and n is an integer equal to 4–6 inclusive.

4. A composite structure of a pressure sensitive adhesive tape or label in contact with a paper substrate treated with a paper release coating comprising a cured mixture of 100 to 19% by weight of a $C_{(8-28)}$ α-olefin oxide and correspondingly from 0 to 81% by weight of a polyfunctional epoxy resin based on the use of an effective amount of an arylonium salt of the formula,

$$[Y]^+[MQ_n]^-$$

where Y is a member selected from

$$[(R)_a(R^1)_bI] \text{ and}$$

$$[(R)_c(R^2)_d(R^3)_eS].$$

where R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, R^2 is a monovalent organic aliphatic radical selected from alkyl, cyclo alkyl and substituted alkyl, R^3 is a polyvalent organic radical forming a heterocyclic or fused ring structure, M is a metal or metalloid, Q is a halogen radical, a is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1, and the sum of a+b is equal to 1 or 2, c is a whole number equal to 0 to 3 inclusive, d is a whole number equal to 0 or 1, e is a whole number equal to 0 or 1, and the sum of c, d and e is equal to 1 to 3 inclusive, and n is an integer equal to 4–6 inclusive.

4,367,252

ARRANGEMENTS FOR THE DRY TRANSFER OF CHARACTERS COMPOSED OF INK

Roger A. Tordjman, La Celle-St-Cloud, France, assignor to Mecanorma S.A., Paris, France

Continuation-in-part of Ser. No. 94,819, Nov. 16, 1979, abandoned, which is a continuation of Ser. No. 896,147, Apr. 13, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,406

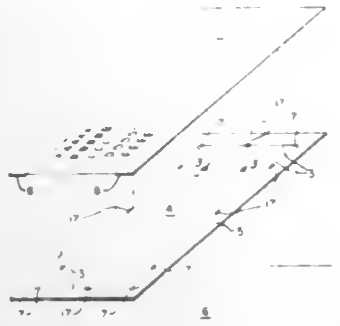
Claims priority, application France, Nov. 30, 1977, 77 36090

Int. Cl.^{3} B65D *65/28;* **B32B** *3/02, 3/10*

U.S. Cl. 428—41 **10 Claims**

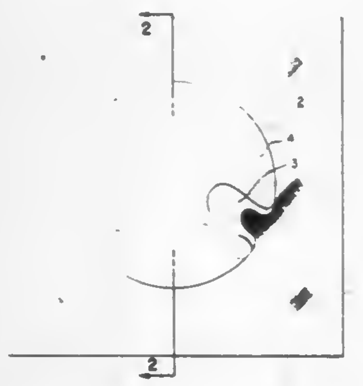
1. In an arrangement for the dry decalcomania of printed characters of the kind comprising a carrier sheet of a transparent or translucent material which may be subjected to being folded or crumpled when by itself, said carrier sheet having a face which is provided with a plurality of printed characters composed of ink and which are transferable from the carrier sheet to a receiving surface by pressure exerted locally on the carrier sheet, said transfer operation leaving the carrier sheet undamaged, the improvement comprising the carrier sheet being in association with a guard sheet having on one hand a peripheral part at least a portion of which is definitively attached to the periphery of said carrier sheet in order to constitute a frame for the carrier sheet when used in a transfer opera-

tion, and on the other hand having a central part detachably connected to the peripheral part by pre-formed cuts, said central part being intended to be removed for putting in transfer use the arrangement, said peripheral and central parts covering the entire area of at least one of the faces of said carrier sheet before the transfer operation.



4,367,253
MOLDABLE ARTICLE HAVING ABRASIVE CHARACTERISTIC FOR USE IN SANDING IRREGULAR SURFACES

Linda D. Hayes, 1459 Princeton Dr., San Jose, Calif. 95118
Continuation of Ser. No. 661,422, Feb. 26, 1976, abandoned. This application Oct. 23, 1979, Ser. No. 87,502
Int. Cl.³ B24D *3/02*
U.S. Cl. 428—75 **9 Claims**



6. An article of commerce for abrading irregularly shaped objects comprising:

(a) a mass of moldable material having the characteristic of plasticity so as to enable said mass to be molded into a desired configuration such that the surfaces of said mass conform to an irregularly shaped surface to be abraded, said moldable mass having the further characteristic of retaining said desired configuration until said mass is again molded into another configuration;

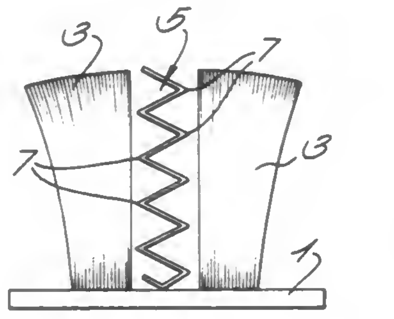
(b) a fluid impervious membrane having said mass of moldable material enclosed therein, said membrane being conformable with said mass to the irregularly shaped surface to be abraded;

(c) sheet of non-resilient flexible material formable about said mass disposed over said membrane; and

(d) a layer of abrasive material adhered to said sheet of non-resilient flexible material.

4,367,254
WEATHERSTRIP WITH BARRIER FILM HAVING PARALLEL FOLD LINES

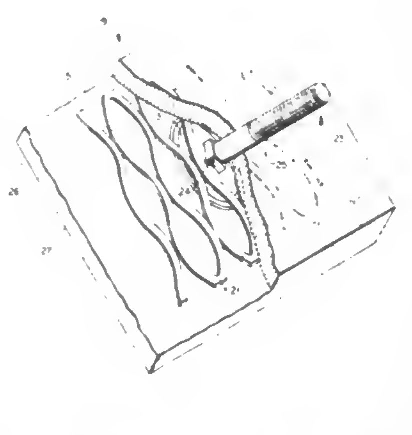
Timothy W. Franklin, Luton, England; Paul G. Declercq, Kortrijk, and Michael M. Henno, Ostend, both of Belgium, assignors to Schlegel (UK) Limited, Seacroft, England
Filed Oct. 14, 1980, Ser. No. 196,674
Claims priority, application United Kingdom, Oct. 16, 1979, 7935956; Dec. 28, 1979, 7944445; Apr. 11, 1980, 8011975
Int. Cl.³ D04H *11/00;* **E06B** *7/22*
U.S. Cl. 428—85 **7 Claims**



1. Weatherstripping comprising a backing strip, sealing material projecting from at least one of the surfaces of said backing strip and at least one barrier film located within said sealing material and extending generally at right angles to the face of said backing strip, and wherein a plurality of generally parallel spaced fold lines run throughout the length of said film and extend substantially parallel to said backing strip and are spaced therefrom to provide a generally concertina-like construction.

4,367,255
LINING SHEET

Donald H. Blohm, South Jordan, Utah, assignor to Baker International Corporation, Salt Lake City, Utah
Filed Apr. 26, 1982, Ser. No. 371,596
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—99 **10 Claims**



1. An improved lining sheet for wear surfaces, comprising:
an elastomeric sheet with opposed exterior surfaces;
a meshwork sheet with individual meshes defined by intersecting strands, internally integral of said elastomeric sheet and located medially with respect to said exterior surfaces; and
a plurality of fastening members, mounted at spaced-apart locations to said meshwork sheet, each member of said plurality having:
a head portion which is fixedly seated within one of said meshes of said meshwork sheet, so that said head portion is encapsulated by the elastomeric material comprising said elastomeric sheet and the strands of said meshwork sheet act against said head to prevent rotation thereof, and

a shank portion which protrudes generally perpendicularly beyond one of the exterior surfaces of said elastomeric sheet to provide means to fasten the elastomeric sheet in lining relationship with a wear surface.

4,367,256
CLING-WRAP POLYETHYLENE FILM

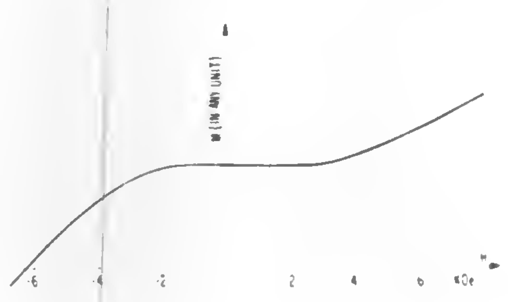
Edward N. Biel, Munster, Ind., assignor to Union Carbide Corporation, Danbury, Conn.
Filed May 15, 1981, Ser. No. 264,092
Int. Cl.³ B32B *27/00, 27/80*
U.S. Cl. 428—218 **21 Claims**

1. A cling wrap plastic film comprising: a mixture of high pressure-low density polyethylene (HPLDPE), low pressure-low density polyethylene (LPLDPE), and a cling agent in amount between about 0.5 and about 2.5 wt.% of said film, wherein said HPLDPE has melt index between about 0.5 and about 7.0 gms/10 minutes and density less than about 0.932 gms/cm^3, said LPLDPE has melt index between between about 0.5 and 4.0 gms/10 minutes and density less than about 0.932 gms/cm^3, said LPLDPE is between about 5 and about 16 wt.% of the LPLDPE plus HPLDPE total weight for single layer films but between about 5 and about 13 wt.% of the LPLDPE plus HPLDPE total weight for multiple layer films, and the film thickness is between about 0.3 and about 1.5 mils.

3. A cling wrap plastic film according to claim 1, in which said film is in the form of multiple layers, and said LPLDPE and said HPLDPE are substantially uniformly distributed through at least one layer of said film.

4,367,257
THIN MAGNETIC RECORDING MEDIUM

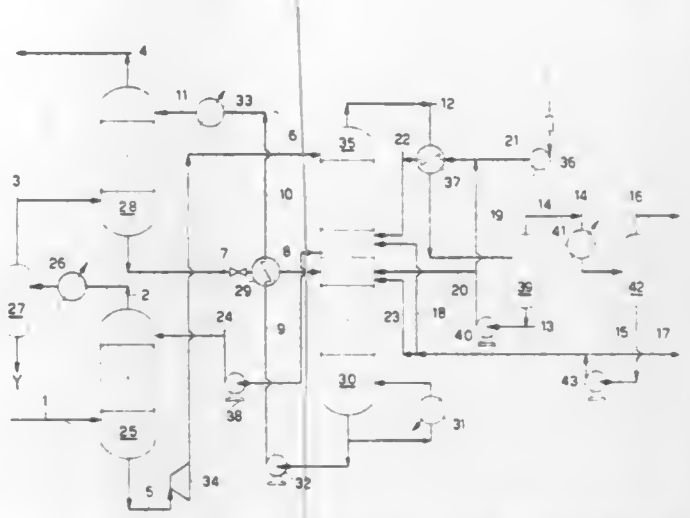
Yoshihiro Arai; Makoto Nagao, and Akira Nahara, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 16, 1981, Ser. No. 254,687
Claims priority, application Japan, Apr. 16, 1980, 55/50201; Apr. 16, 1980, 55/50202
Int. Cl.³ G11B *5/64*
U.S. Cl. 428—220 **6 Claims**



1. A magnetic recording medium having a thin magnetic amorphous rare earth metal-transition metal alloy film that has an axis of easy magnetization in a direction substantially vertical to the film surface and which contains a crystalline phase in the amorphous phase wherein said rare earth metal is selected from the group consisting of Gd, Tb and Dy and said transition metal is selected from the group consisting of Fe, Co and Ni and said crystalline phase is composed of an elemental rare earth metal and/or oxide thereof.

4,367,258
PROCESS FOR THE DECARBONATION OF GASES

Vincenzo Lagana, Milan; Francesco Saviano, Segrate, and Virginio Cavallanti, Vailate, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy
Filed Aug. 18, 1980, Ser. No. 178,826
Claims priority, application Italy, Nov. 8, 1979, 27123 A/79
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **2 Claims**



1. In a process for the decarbonation of gases wherein the gaseous mixture to be treated is passed through a first absorption zone in contact with an absorbent solution to effect a partial decarbonation of the gases thereof, the treated gaseous mixture is thereafter passed through a second absorption zone in contact with another absorbent solution to effect a further decarbonation of the gases and the spent solutions from the two absorption zones are thereafter passed to two regeneration zones to effect a regeneration of such solutions, the improvement comprising using an alkali metal carbonate solution in the first absorption zone and an alkanolamine solution in the second absorption zone and regenerating the two spent solutions by the steps comprising passing the spent alkanolamine solution to a first regeneration zone heated by an external heat means to effect a regeneration thereof, passing the spent alkali metal solution to a second regeneration zone, the heating of said second regeneration zone being achieved by the direct heat of the head vapors of the first regeneration zone and the heat of a water-saturated stream heated by indirect heat exchange with the fluid condensed at the head of the second regeneration zone, and collecting the respective regenerated solutions.

4,367,259
SOUND DEADENING MATERIAL

Glenn E. Fulmer, Clarksville, and Louis L. Wood, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Jul. 27, 1981, Ser. No. 287,353
Int. Cl.³ C08G *18/48;* **C08L** *6/00;* **B32B** *5/16*
U.S. Cl. 428—240 **18 Claims**

1. A sound deadening material comprising
(a) an elastomeric cross-linked polyurethane binder and
(b) substantial amounts of sound deadening particles incorporated therein,
werein the weight ratio of b to a is at least 10 which is made by reacting together an aqueous slurry of sound deadening particles and a water-miscible prepolymer which reacts with the water to form elastomeric cross-linked polyurethane binder.

11. A flexible barrier material capable of reducing sound transmission comprising a sheet structure of woven or nonwoven fibers to which has been applied the sound deadening mateial of claim 1.

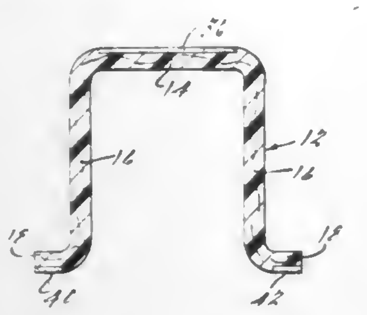
4,367,260
COMPOSITE FIBER REINFORCED MEMBER

Charles J. Krause, Nicholasville, Ky., assignor to Norris Industries, Inc., Novi, Mich.

Division of Ser. No. 124,353, Feb. 25, 1980, Pat. No. 4,305,903. This application Mar. 30, 1981, Ser. No. 249,107

Int. Cl.^{3} B32B *27/36*

U.S. Cl. 428—287 **12 Claims**



1. A composite fiber reinforced article comprising a body comprised of a cured thermosetting resin incorporating glass fibers therein, said body having integrally bonded over at least one localized area thereof, a surface stratum comprised of a cured compatible thermosetting resin having high-strength graphite fibers therein.

4,367,261
MAGNETIC RECORDING MEDIUM

Takahito Miyoshi; Toshimitu Okutu; Masaaki Fujiyama, and Yasuyuki Yamada, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 12, 1981, Ser. No. 224,237

Claims priority, application Japan, Jan. 10, 1980, 55-1686

Int. Cl.^{3} H01F *10/00;* **B32B** *5/16*

U.S. Cl. 428—330 **7 Claims**

1. In a magnetic recording medium comprising a support having a magnetic layer and a backing layer on opposite sides of said support, the backing layer comprising an inorganic filler dispersed in a binder, the improvement wherein the binder consists essentially of one or more cellulosic resins, one or more thermoplastic polyurethane elastomers and one or more polyisocyanates, and wherein said backing layer has a thickness in the range of from about 0.5 to about 1.0 micron, and wherein the surface roughness of said backing layer is less than 0.024 microns expressed as center-line average roughness and the surface roughness of said magnetic layer is less than 0.02 microns expressed as center-line average roughness.

4,367,262
SOLID SUBSTRATE COATED WITH SILICONE RESIN COATING COMPOSITION

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Co., Waterford, N.Y.

Division of Ser. No. 82,163, Oct. 5, 1979, Pat. No. 4,309,319, which is a continuation-in-part of Ser. No. 964,910, Nov. 30, 1978. This application Apr. 20, 1981, Ser. No. 255,826

Int. Cl.^{3} B32B *5/16, 27/36;* **C08J** *3/02;* **C08L** *83/04*

U.S. Cl. 428—331 **12 Claims**

1. A solid substrate having at least one surface coated with an improved aqueous coating composition comprising a dispersion of colloidal silica having a particle size of from 5 to 150 millimicrons in diameter in a lower-aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein the lower-aliphatic alcohol-water solvent contains from about 20 to 75 weight percent of said lower-aliphatic alcohol component and wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, the composition further containing from about 0.1 to about 1 percent by weight of a thickening agent selected from the group consisting of hydroxypropyl guar gum and hydroxypropyl cellulose, said composition having a pH of 7.1 to about 7.8.

4,367,263
MAGNETIC RECORDING MEDIUM

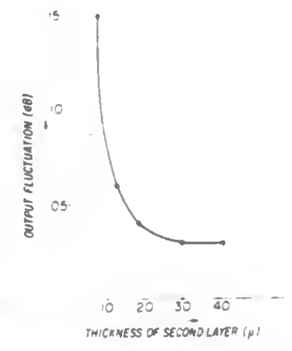
Hiroshi Kawahara; Tadashi Nishimura; Masatsugu Funakoshi, and Masaharu Nishimatsu, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 119,209, Feb. 7, 1980, abandoned. This application Jun. 17, 1981, Ser. No. 274,538

Claims priority, application Japan, Feb. 9, 1979, 54-13934

Int. Cl.^{3} H01F *10/02*

U.S. Cl. 428—336 **1 Claim**



1. A magnetic recording medium which comprises: a first magnetic layer containing magnetite, a cobalt doped γ-Fe_2O_3; γ-Fe_2O_3 or a cobalt doped magnetite, which is coated on a non-magnetic substrate and a second magnetic layer containing a cobalt doped γ-Fe_2O_3, which is coated on said first magnetic layer, wherein said first magnetic layer has a thickness of 3.0 to 6.0 microns and a coercive force of 400–560 Oe, and wherein said second magnetic layer has a thickness of 1.5 to 3.0 microns and a coercive force of 590 to 800 Oe, and wherein the residual magnetic flux density is greater than y, wherein

$$Y=1.60X+556 \text{ (gauss)}$$

and X represents the coercive force of the first magnetic layer.

4,367,264
MAGNETIC RECORDING MEDIUM

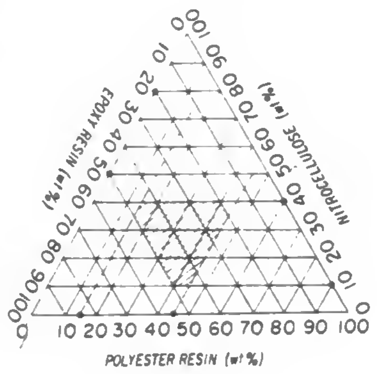
Akihiko Hosaka; Yukihiro Isobe, and Kiyotaka Okuyama, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 283,101

Claims priority, application Japan, Aug. 30, 1980, 55-120558

Int. Cl.^{3} G11B *5/70*

U.S. Cl. 428—413 **5 Claims**



1. In a magnetic recording medium having a substrate coated with a magnetic layer comprising a magnetic powder and a binder, the improvement characterized in that said binder in said magnetic layer consist essentially of 15 to 45 wt. % of a polyester resin, 20 to 50 wt. % of an epoxy resin and 10 to 40 wt. % of nitrocellulose.

4,367,265
INTERGRANULAR INSULATION TYPE SEMICONDUCTIVE CERAMIC AND METHOD OF PRODUCING SAME

Chyang J. Yu, La Canada, and Hem P. Takiar, Glendale, both of Calif., assignors to North American Philips Corporation, New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,593

Int. Cl.^{3} B32B *9/04;* **C04B** *35/00*

U.S. Cl. 428—697 **21 Claims**

1. An intergranular insulation type dielectric body comprising:

a polycrystalline, semiconductive ceramic having grain boundaries, said ceramic comprising an alkaline-earth metal titanate, zirconate, or a combination thereof, said alkaline-earth metal comprising one or more of barium, strontium, and calcium; and

an electrically insulating dielectric layer situated in the grain boundaries of the ceramic;

characterized in that the electrically insulating layer comprises Bi_2O_3 and NiO.

12. A method of manufacturing an intergranular insulation type dielectric body from a polycrystalline, semiconductive ceramic body having grain boundaries, said ceramic comprising an alkaline-earth metal titanate, zirconate, or a combination thereof, said alkaline-earth metal comprising one or more of barium, strontium, and calcium, said method comprising the steps of:

coating at least a part of the surface of the ceramic body with a mixture of Bi_2O_3 and NiO; and

diffusing the coating into the grain boundaries of the ceramic body.

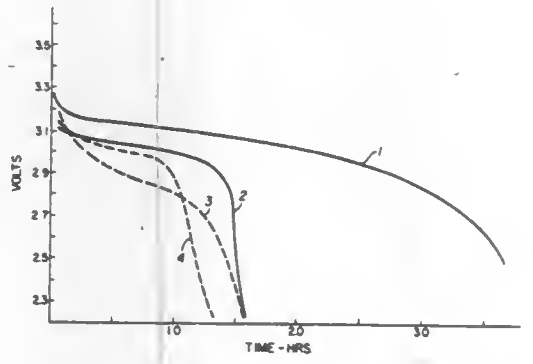
4,367,266
CATHODE COLLECTORS FOR NONAQUEOUS CELL HAVING A METAL OXIDE CATALYST

Tibor Kalnoki-Kis, Westlake, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1979, Ser. No. 52,845

Int. Cl.^{3} H01M *6/14*

U.S. Cl. 429—101 **14 Claims**



1. A nonaqueous cell comprising an active metal anode, an ionically conductive cathode-electrolyte solution containing a solute dissolved in a liquid active cathode, and a porous carbonaceous cathode collector containing at least one metal oxide.

4,367,267
AMORPHOUS LITHIUM FLUOALUMINATE

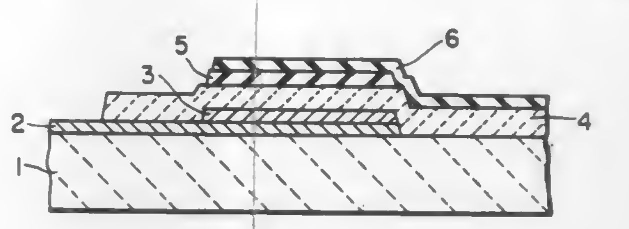
Tetsu Oi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,340

Claims priority, application Japan, Apr. 25, 1980, 55/54159; Nov. 12, 1980, 55/158298

Int. Cl.^{3} H01M *6/18*

U.S. Cl. 429—101 **12 Claims**



1. An amorphous substance represented by the following general formula:

$$aLi_xNa_{1-x}F.bAlF_3$$

wherein a is a mol ratio which is a value in the range of from 0.45 to 0.7, b is a mol ratio which is a value in the range of from 0.3 to 0.55, and x is a value in the range of from 0.1 to 1.0 except the case where a is 0.5 and b is 0.5, or x is a value in the range of from 0 to 1.0 when a is 0.5 and b is 0.5.

4,367,268
HIGH ENERGY ELECTROCHEMICAL POWER CELL

Wishvender K. Behl, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 171,515, Jul. 23, 1980, abandoned. This application May 11, 1981, Ser. No. 262,282

Int. Cl.^{3} H01M *6/14*

U.S. Cl. 429—101 **20 Claims**

1. In a high energy electrochemical power cell employing lithium as the anode, a solution of a highly soluble lithium salt in an oxychloride solvent as the electrolyte and a high surface area carbon black cathode, the improvement of preparing the cathode by adding cupric chloride to the high surface area carbon black so that the initial cathode composition is a mixture of high surface area carbon black and cupric chloride and incorporating said cathode in the lithium-oxychloride solvent system to reduce cathode polarization at high discharge rates.

4,367,269
SOLID ELECTROLYTE

Ryo Nagai, Nara; Hidehito Obayashi, Tokyo; Akira Gotoh, Suita, and Tetsuichi Kudo, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,766

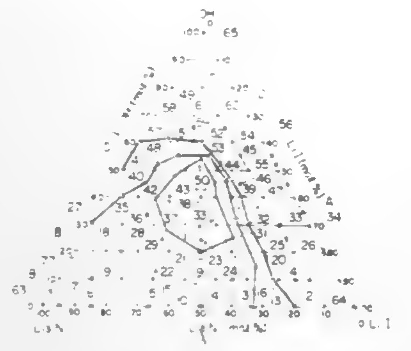
Claims priority, application Japan, Oct. 29, 1979, 54-138794; Mar. 14, 1980, 55-31553

Int. Cl.^{3} H01M *6/18*

U.S. Cl. 429—191 **1 Claim**

1. A lithium-ionic-conductive solid electrolyte comprising lithium nitride and at least one of lithium iodide and lithium hydroxide, wherein the composition of said solid electrolyte falls within an area A surrounded by line segments connecting a point **24** (27, 48, 25) with a point **38** (25, 35, 40), said point **38** with a point **43** (23, 32, 45), said point **43** with a point **51** (23, 23, 54), said point **51** with a point **42** (34, 18, 48), said point **42** with a point **36** (45, 16, 39), said point **46** with a point **29** (47, 25, 28), said point **29** with a point **21** (40, 40, 20) and said point **21** with said point **24** or an area B surrounded by line segments connecting a point **3** (33, 67, 0) with a point **16** (25, 60, 15), said point **16** with a point **31** (23, 45, 32), said point **31** with a point **44** (19, 35, 46), said point **44** with a point **52** (20, 25, 55), said

point **52** with a point **49 (30, 15, 55)**, said point **49** with a point **48 (38, 10, 47)**, said point **48** with a point **40 (45, 10, 45)**, said point **40** with a point **35 (55, 5, 40)**, said point **35** with a point **27 (70, 0, 30)**, said point **27** with a point **17 (82, 0, 18)**, said point



17 with a point **8 (95, 0, 5)**, said point **8** with a point **7 (95, 5, 0)**, said point **7** with a point **6 (85, 15, 0)**, said point **6** with a point **5 (67, 33, 0)**, said point **5** with a point **4 (50, 50, 0)** and said point **4** with said point **3** in the diagram showing the ternary composition of Li_3N-LiI-LiOH of FIG. **3**.

4,367,270
ASBESTOS DIAPHRAGMS FOR ELECTROCHEMICAL CELLS AND THE MANUFACTURE THEREOF

Karl Höhne, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Sep. 9, 1980, Ser. No. 185,432
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938069
Int. Cl.³ H01L *2/16*
U.S. Cl. 429—251 **5 Claims**

5. A gas-tight diaphragm for electrochemical cells consisting essentially of asbestos paper made by extrusion and containing from about 5 to about 15% by weight thereof plastic selected from polyvinylchloride and polysulfone.

4,367,271
STORAGE BATTERY SEPARATOR

Takao Hasegawa, and Wataru Takahashi, both of Gifu, Japan, assignors to Nihon Mukiseni Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 9, 1981, Ser. No. 223,691
Claims priority, application Japan, Jan. 12, 1980, 55-1747
Int. Cl.³ H01M *2/16*
U.S. Cl. 429—252 **4 Claims**

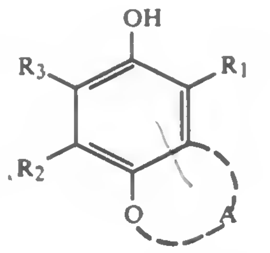
1. A process for producing a storage battery separator comprising:

mixing about 10 parts by weight of glass fiber which is at least 1 m^2/g in specific surface area with about one part, by weight, of fibril-formed synthetic fiber which is 350 c.c. or less in freeness in which the resultant mixture may be formed into a sheetlike element.

4,367,272
PHOTOGRAPHIC PRINTS BY COLOR DIFFUSION TRANSFER PROCESS

Hiroshi Hayashi; Tsutomu Hamaoka, and Masakazu Morigaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd, Kanagawa, Japan
Filed Apr. 28, 1981, Ser. No. 258,491
Claims priority, application Japan, Apr. 28, 1980, 55/56428
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—17 **13 Claims**

1. A photographic print prepared by a color diffusion transfer process comprising a support, a mordant layer containing therein a diffusion transfer dye image, and a white reflection layer constituting a background of the dye image, wherein the white reflection layer contains a compound represented by formula (I):



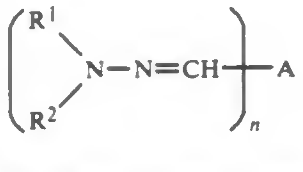
(I)

wherein R_1, R_2 and R_3 may be the same or different and each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group, an aralkyloxy group, an alkenyl group, an alkenyloxy group, an alkylthio group, an arylthio group, an acyl group, an acylamino group, a diacylamino group, an alkylamino group, a sulfonamido group, an acyloxy group, an alkoxycarbonyl group or an aryloxycarbonyl group; and A represents a nonmetallic atom group necessary for forming a 5- or 6-membered ring.

4,367,273
ELECTROPHOTOGRAPHIC PLATE COMPRISING A CONDUCTIVE SUBSTRATE AND A PHOTOSENSITIVE LAYER CONTAINING AN ORGANIC PHOTOCONDUCTOR LAYER COMPOSED OF A HYDRAZONE COMPOUND

Tetsuo Murayama, Machida; Shigenori Otsuka, Tokyo, and Tsunemitsu Tajima, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan
Division of Ser. No. 33,401, Apr. 26, 1979, Pat. No. 4,278,747. This application Feb. 19, 1981, Ser. No. 235,860
Claims priority, application Japan, May 17, 1978, 53-58536
The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—56 **14 Claims**

1. An electrophotographic plate comprising a conductive substrate and a photosensitive layer coated thereon; wherein said photosensitive layer comprises an organic photoconductor layer; and wherein said organic photoconductor layer comprises a hydrazone compound represented by the formula (I):



$$\left(\begin{matrix}R^1\\ \\ R^2\end{matrix}\!\!>N-N=CH\right)_n\!-A$$

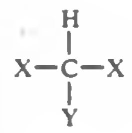
(I)

wherein R^1 and R^2 are independently selected from the group consisting of substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, and substituted or unsubstituted aryl, n is 1 or 2, and A is a substituted or unsubstituted monovalent aromatic polycyclic hydrocarbyl group selected from naphthalene, anthracene, pyrene, acenaphthene, acenaphthylene, azulene or fluorene, when n=1, or a substituted or unsubstituted divalent aromatic hydrocarbyl group selected from benzene, naphthalene, anthracene, pyrene, acenaphthene, acenaphthylene, azulene or fluorene, when n=2, and a binder.

4,367,274
SENSITIZED ORGANIC ELECTRON DONOR BIS-BENZOCARBAZOLE COMPOUNDS

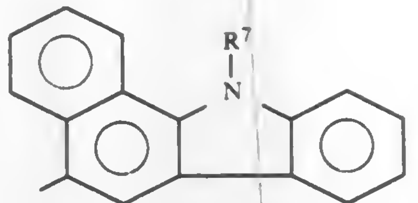
Louis M. Leichter; Terry J. Sonnonstine, and John J. Stofko, Jr., all of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 23, 1981, Ser. No. 236,892
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—58 **11 Claims**

1. A spectrally sensitized electrically active donor compound of the formula

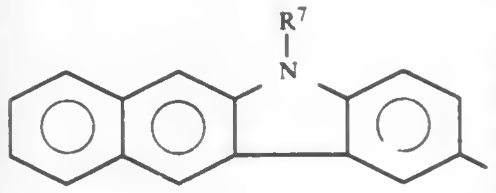


$$\begin{matrix}&H&\\&|&\\X-&C&-X\\&|&\\&Y&\end{matrix}$$

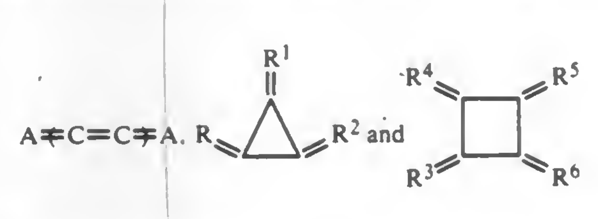
where X is



or



wherein R^7 and Y are independently selected from the group consisting of aliphatic, aromatic, heterocyclic, and mixed aliphatic-aromatic groups, sensitized by an effective amount of a polyquinoid dye selected from the class consisting of:



wherein

A is selected from quinoid and anthraquinoid groups,
R and R^1 are selected from quinoid and anthraquinoid groups,
R^2 is selected from quinoid groups, anthraquinoid groups, and an oxygen atom,
R^3 is a quinoid group, and
R^4, R^5 and R^6 are selected from the class consisting of quinoid groups and oxygen atoms with the proviso that at least

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4,367,275
METHOD OF PREVENTING OFFSET OF ELECTROSTATIC IMAGES AFTER FIXING AND DEVELOPING USING POLYVALENT METAL SALT POLYMER IN TONER

Takayoshi Aoki, Urawa, and Akio Kinoshita, Fujimi, both of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan
Continuation of Ser. No. 158,375, Jun. 11, 1980, abandoned. This application Sep. 9, 1981, Ser. No. 300,642
Claims priority, application Japan, Jun. 15, 1979, 54/74644
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—99 **10 Claims**

1. In a method for fixing, by a hot press roll, powdery toner images obtained by developing latent electrostatic images, the improvement wherein the offset phenomenon is prevented by using, as said powdery toner, a uniformly blended mixture of a coloring agent, a binder resin and a fixing aid, said binder resin comprising a polyvalent metal salt (b) of a carboxyl-containing addition polymer (a) which satisfies the following expressions

$$10^{-2}<(N\cdot Mw)/2<10$$

$$10^{-5}<N<2\times10^{-3}$$

wherein N is the number of moles of metal carboxylate ions contained per gram of the polyvalent metal salt (b), and Mw represents the weight average molecular weight of the addition polymer (b),

and said fixing aid comprising at least one compound selected from the group consisting of waxes, fatty acid amides and metal soaps.

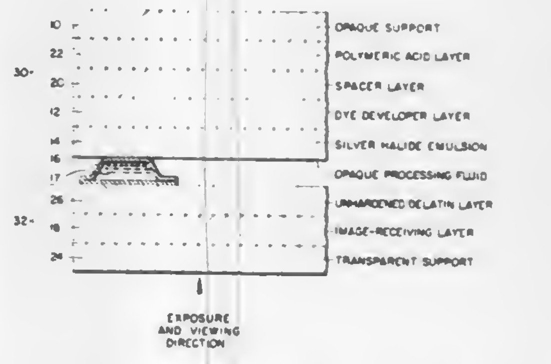
4,367,276
DRY TRANSFER OF ELECTROPHOTOGRAPHIC ADHESIVE TONER IMAGES

Sidney Cooper, Roslyn Harbor, and Ezekiel J. Jacob, Brooklyn, both of N.Y., assignors to Ani-Live Film Service Inc., New York, N.Y.
Division of Ser. No. 799,476, May 23, 1977, Pat. No. 4,216,283. This application Jan. 14, 1980, Ser. No. 112,828
Int. Cl.³ G03G *13/16*
U.S. Cl. 430—126 **5 Claims**

1. Electrophotographic toner-images prepared in the process comprising formation of an electrostatic image by electrophotographic means upon a carrier sheet, corresponding to information to be recorded, depositing an electrophotographic toner on said carrier sheet thereby forming a raised pattern of said electrophotographic toner on said carrier sheet corresponding to said electrostatic image, thereby forming an electrophotographic toner-image, said toner comprising an intumescent electroscopic powder mixture, comprising a thermoadhesive agent containing microspheres carrying or containing adhesive, said electrophotographic toner-image being further characterized by resting releasably upon said carrier sheet, the toner-image comprising upper and lower surfaces, the lower surface being abhesive to said carrier sheet with which it is in contact and wherein said upper surface possesses adhesive characteristics whereby said toner-image may be directly transferred to a receptor surface brought into contact with said upper surface.

4,367,277
DIFFUSION TRANSFER PRODUCT AND PROCESS

Charles K. Chiklis, Lexington, and Neil C. Mattucci, Billerica, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed May 26, 1981, Ser. No. 267,416
Int. Cl.³ G03C *7/00, 5/54, 1/40, 1/48*
U.S. Cl. 430—213 **47 Claims**



19. A diffusion transfer process film unit including a first sheet-like element and a second sheet-like element, said first sheet-like element comprising an opaque support carrying a silver halide emulsion, said second sheet-like element compris-

ing an image-receiving layer carried on a transparent support, said transparent support and the layers between it and said silver halide emulsion being transparent to radiation actinic to said silver halide emulsion; a viscous aqueous alkaline processing composition releasably contained in a rupturable container positioned to release said composition for distribution between said first and second sheet-like elements with said supports outermost, said processing composition including a light-reflecting pigment in a concentration effective to mask said photosensitive layer when said image-receiving layer is viewed through said transparent support; said processing composition also including an optical filter agent, said optical filter agent being a pH-sensitive dye which is light-absorbing at the pH of said processing composition, said optical filter agent being present in a concentration effective in combination with said pigment to provide a transmission density when distributed between said sheet-like elements effective to substantially prevent further exposure of said silver halide emulsion during the performance of the transfer process in an area of light actinic to said silver halide emulsion; said first sheet-like element including an image-providing material adapted to provide an image-forming material diffusible to said image-receiving layer as a function of said development, the layer of said second sheet-like element positioned to be in direct contact with said processing composition following distribution thereof comprising unhardened gelatin, said layer of unhardened gelatin being effective to decolorize optical filter agent immediately adjacent the interface between said processing composition and said decolorizing layer without substantially decreasing said transmission density, whereby the surface of said processing composition layer viewable through said transparent support appears substantially white substantially immediately after said processing composition is distributed.

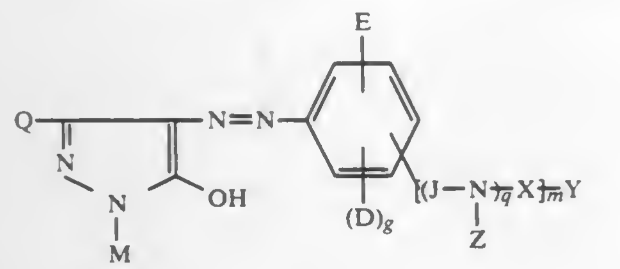
44. A film unit as defined in claim **19** wherein said image-receiving layer includes a quanternary ammonium polymeric mordant.

4,367,278
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH AZOPYRAZOLONE IMAGE DYES

Tooru Harada, and Yasuhiro Noguchi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

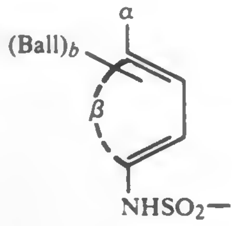
Filed May 6, 1981, Ser. No. 261,079
Claims priority, application Japan, May 6, 1980, 55-59651
Int. Cl.^{3} G03C *1/40, 1/10, 5/54*
U.S. Cl. 430—223 **15 Claims**

1. A color photographic light-sensitive material which comprises a support having thereon at least one light-sensitive silver halide emulsion layer having associated therewith a compound represented by the following general formula (I):



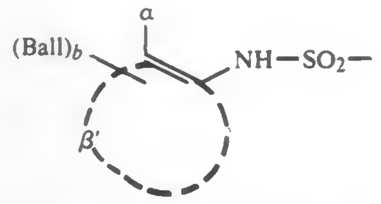
(I)

wherein Q represents a cyano group, M is a straight chain or branched chain alkyl group having 1 to 14 carbon atoms or a substituted alkyl group substituted with a cyano group or a sulfamoyl group, E represents a hydrogen atom, a chlorine atom, a bromine atome, a lower alkyl group or a lower alkoxy group, D represents a substituent as defined for E, an alkylsulfonyl group having 1 to 4 carbon atoms or a sulfamoyl group, g represents 0, 1 or 2, m and q each represents 0 or 1, J represents a divalent group selected from a sulfonyl group and a carbonyl group, Z represents a hydrogen atom, an alkyl group or a substituted alkyl group, X represents a divalent bonding group represented by the formula $—A_1—(L)_n—(A_2)_p—$, wherein A_1 and A_2 are the same or different and each represents an alkylene group or an arylene group, L represents a divalent group selected from an oxy group, a carbonyl group, a carboxyamido group, a carbamoyl group, a sulfonamido group, a sulfamoyl group, a sulfinyl group and a sulfonyl group, and n and p each represents 0 or 1, and Y represents a moiety which provides, as a result of development processing under alkaline conditions, an azo dye compound having a different diffusibility from that of the azo dye image-forming compound of the formula (I), wherein Y is a group represented by one of the following general formulae (A) to (H) and (J):



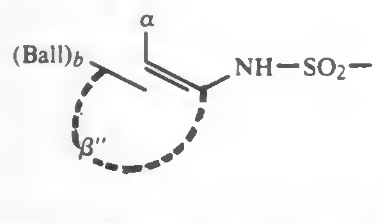
(A)

wherein β represents the non-metallic atoms necessary to complete a benzene ring, to which a carbon ring or a hetero ring may be fused, which may be substituted, α represents an $—OG^1$ or $—NHG^2$ group, wherein G^1 represents a hydrogen atom or a group capable of forming a hydroxyl group by hydrolysis, G^2 represents a hydrogen atom, an alkyl group having 1 to 22 carbon atoms or a hydrolyzable group, b is an integer of 0, 1 or 2 and Ball represents a ballast group;



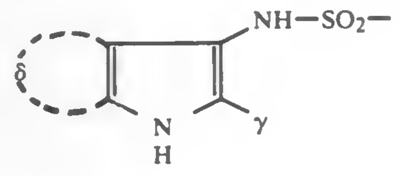
(B)

wherein Ball, α and b are the same as defined in formula (A), and β' represents the atoms necessary to form a carbon ring to which a carbon ring or a hetero ring may further be fused, which may be substituted;



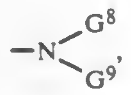
(C)

wherein Ball, α and b are the same as defined in formula (A), and β'' represents the atoms necessary to form a hetero ring to which a carbon ring or a hetero ring may further be fused, which ring(s) may be substituted;



(D)

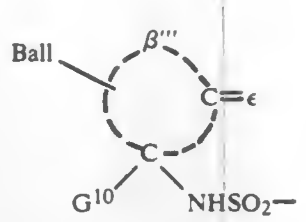
wherein γ represents a hydrogen atom, an alkyl group, an aryl group or a hetero group, which may be unsubstituted or substituted, or $—CO—G^6$ wherein G^6 represents $—OG^7$, $—S—G^7$ or



$—N\langle{}^{G^8}_{G^9}$

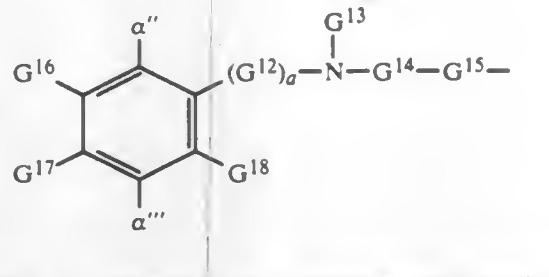
wherein G^7 represents a hydrogen atom, an alkyl group, a cycloalkyl group or an aryl group, which may be substituted, G^8 represents the same group as G^7 or an acyl group derived

from an aliphatic or aromatic carboxylic acid or from sulfonic acid, G^9 represents a hydrogen atom or a substituted or unsubstituted alkyl group, δ represents the atoms necessary to complete a fused benzene ring, which ring may have one or more substituents, and γ and/or the substituents on said fused benzene ring completed by δ is a ballast group or a ballast-containing group;



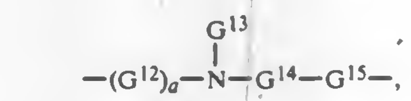
(E)

wherein Ball is the same as defined in formula (A), ε represents an oxygen atom or =NG'', wherein G'' represents a hydroxyl group or an amino group which may be substituted, β''' represents a 5-, 6- or 7-membered saturated or unsaturated non-aromatic hydrocarbon group, and G^{10} represents a hydrogen atom or a halogen atom;



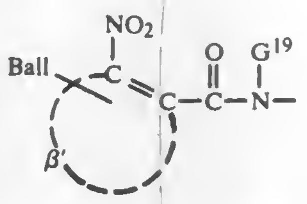
(F)

wherein α'' represents an oxidizable nucleophilic group, α''' represents a dialkylamino group or a group as defined for α'', G^{14} represents an electrophilic group, G^{15} represents an oxygen atom, a sulfur atom, a selenium atom or a nitrogen atom, and when G^{15} represents a nitrogen atom, it may be substituted by a hydrogen atom, an unsubstituted or substituted alkyl group having 1 to 10 carbon atoms, or an aromatic compound residue having 6 to 20 carbon atoms, G^{12} represents an alkylene group having 1 to 3 carbon atoms, a represents 0 or 1, G^{13} represents a substituted or unsubstituted alkyl group containing 1 to 40 carbon atoms or a substituted or unsubstituted aryl group containing 6 to 40 carbon atoms, G^{16}, G^{17} and G^{18} each represents a hydrogen atom, a halogen atom, a carbonyl group, a sulfamyl group, a sulfonamido group, an alkoxy group containing 1 to 40 carbon atoms, or may be the same as defined for G^{13} or, when taken together G^{16} and G^{17} may form a 5- to 7-membered ring, further wherein G^{17} may be



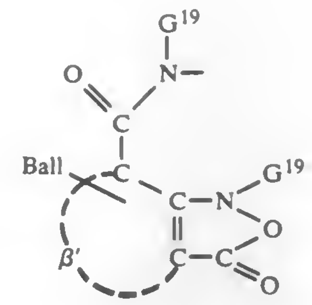
$—(G^{12})_a—\underset{|}{\overset{G^{13}}{N}}—G^{14}—G^{15}—,$

provided that at least one of G^{13}, G^{16}, G^{17} and G^{18} represents a ballast group;



(G)

wherein Ball and β' are the same as defined in formula (B), and G^{19} represents an alkyl group which may be substituted;



(H)

wherein Ball and β' are the same as defined in formula (B), and G^{19} is the same as defined in formula (G);

$(\text{Ball-Coup})_t\text{-Link-}$ (J)

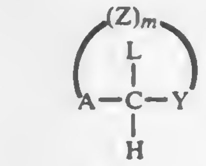
wherein Coup represents a coupler residue capable of coupling with an oxidation product of a color developing agent, Ball represents a ballast group, Link represents a group bonded to an active site of Coup, which bond with Coup will be split upon coupling reaction between the dye image-forming compound represented by formula (I) containing the group represented by formula (J) as Y and an oxidation product of a color developing agent, and t represents 1 or 2 when Link represents an alkylidene group or represents 1 when Link represents another group as described above.

4,367,279
SILVER HALIDE COMPLEXING AGENTS OF SULFONES, NITRILES, AND ONIUM SALTS

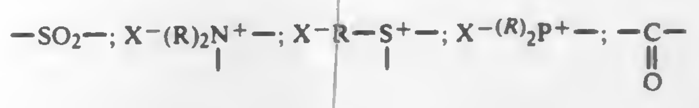
Arthur H. Herz, and Daniel S. Daniel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 6, 1974, Ser. No. 503,889
Int. Cl.^{3} G03C *5/54, 1/48, 5/38*
U.S. Cl. 430—234 **8 Claims**

1. In a photographic silver salt, chemical transfer product comprising (a) a photographic element comprising photographic silver halide, (b) a processing composition, and (c) an image receiving layer comprising development nuclei, said product comprising an organic silver halide complexing agent, the improvement wherein said silver halide complexing agent is a carbon acid of the formula:

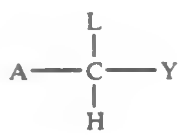


wherein
CH is a carbon acid moiety with a pKa greater than about 8 and less than about 16,
m is 0 or an integer of 1 through 4,
Z taken with A and Y represents atoms completing a 4 to 7-member heterocyclic nucleus, and
(1) when m is 1 through 4,
A and Y each independently represents



$$—SO_2—;\ X^-(R)_2\underset{|}{N}^+—;\ X^-R—\underset{|}{S}^+—;\ X^{-(R)}{}_2P^+—;\ —\underset{\|}{\overset{}{C}}\!\!\!\underset{O}{}—$$

where R is alkyl containing 1–7 carbon atoms, with the proviso that A and Y are not both $—SO_2—$,
L is H, alkyl containing 1 to 7 carbon atoms or aryl containing 4–12 carbon atoms, X^- is an anion;
(2) when m is zero as in the formula:



$A-\underset{\underset{H}{|}}{\overset{\overset{L}{|}}{C}}-Y$

A and Y are independently:

A	Y
RSO_2-	$-NO_2$
$NC-$	$-CN$
F_3C-	$-CF_3$
$X^-(R)_3P^+-$ or	$-N(R)_3X^-$ or
$X^-(R)_2S^+-$ or	$-S^+(R)_2X^-$ or
$X^-(R)_3N-$ or	$-P^+(R)_3X^-$ or
$R^1\underset{\underset{O}{\|}}{C}-$	$-\underset{\underset{O}{\|}}{C}R^1$

where R^1 is R, OR, NH_2 or NR_2, R is alkyl containing 1 through 7 carbon atoms with the proviso that Y is not —CN when A is RSO_2— and wherein L is as defined above.

4,367,280
PHOTOPOLYMERIZABLE COMPOSITION

Syunichi Kondo; Akihiro Matsufuji, and Akira Umehara, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 109,026, Jan. 2, 1980, abandoned, which is a continuation of Ser. No. 870,692, Jan. 19, 1978, abandoned. This application Mar. 11, 1981, Ser. No. 242,731

Claims priority, application Japan, Jan. 20, 1977, 52-5519

Int. Cl.^{3} G03C *1/68*

U.S. Cl. 430—281 **24 Claims**

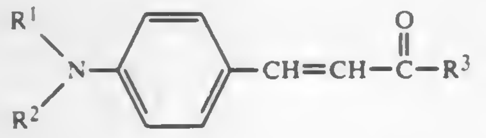
1. A photopolymerizable composition comprising, as essential components,

(1) an addition polymerizable compound having at least one ethylenically unsaturated double bond, and

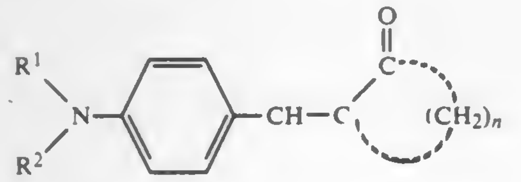
(2) a photopolymerization initiator, said photopolymerization initiator comprising a combination of:

(a) at least one aromatic carbonyl compound selected from the group consisting of benzanthrone, 1,2-benzanthraquinone, fluorenone and mixtures thereof, and

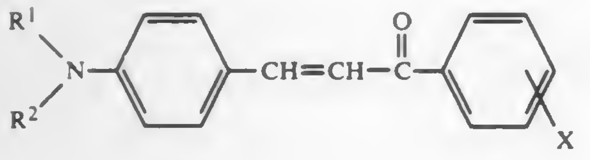
(b) at least one p-dialkylamino aromatic carbonyl compound selected from the group consisting of compounds represented by the general formulae (I) through (V):



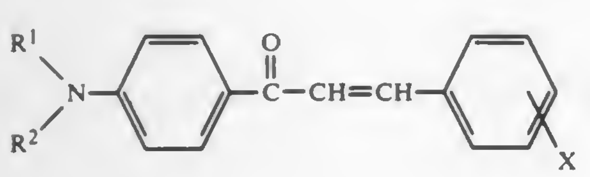
(I)



(II)

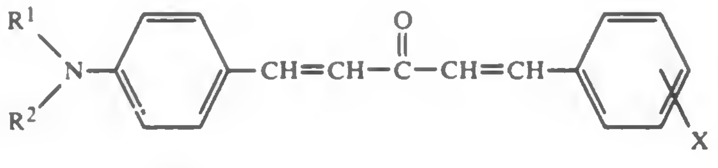


(III)



(IV)

-continued



(V)

wherein R^1 and R^2, which may be the same or different, each represents an alkyl group; R^3 represents an alkyl group, an aryl group selected from the class consisting of a residue of a benzene ring, a residue of a condensed system of a benzene ring and a 5-membered unsaturated ring, and a residue formed by substituting on the ring forming carbon atoms of these residues one or more substituents selected from the class consisting of a halogen atom, a nitro group, an amino group, a substituted amino group, a cyano group, an alkyl group, a haloalkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, and acyloxy group and an alkoxysulfonyl group, an aralkyl group, an alkoxy, group, an aryloxy group, or a monovalent residue of a 5-membered or 6 membered heterocyclic aromatic ring containing one or more of a nitrogen atom, an oxygen atom and a sulfur atom as heteroatoms; n represents a positive integer of 3 to 8; and X represents a substituent having a Hammett sigma constant in the range of −0.9 to +0.7.

4,367,281
FINE FABRICATION PROCESS USING RADIATION SENSITIVE RESIST

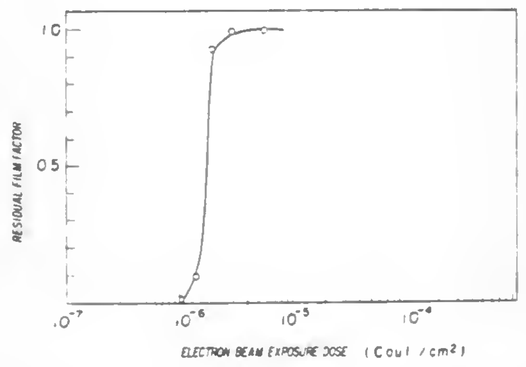
Kimio Shibayama, Sendai; Kingo Itaya, Tagajyo, and Teruo Fujimoto, Nagaoka, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Aug. 3, 1981, Ser. No. 289,281

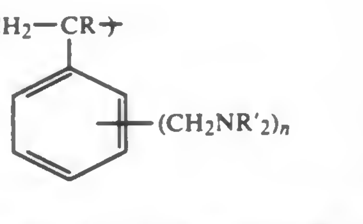
Claims priority, application Japan, Jan. 12, 1981, 56-2849; Apr. 22, 1981, 56-59728

Int. Cl.^{3} G03C *5/00*

U.S. Cl. 430—313 **3 Claims**



1. In a fine fabrication process comprising forming a thin film made of a radiation sensitive polymer on a substrate; imagewise exposing to radiation; developing and etching the product, an improvement characterized in that said radiation sensitive polymer comprises at least 10 wt. % of a polymer having repeat units:



wherein R and R′ respectively represent hydrogen atom or an alkyl group and n is an integer of number of substituent groups.

4,367,282
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano, and Keiji Mihayashi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

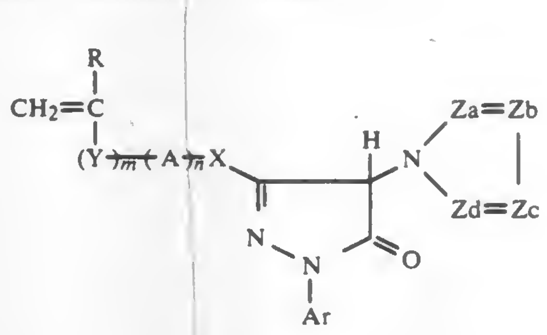
Filed Dec. 7, 1981, Ser. No. 328,151

Claims priority, application Japan, Dec. 5, 1980, 55/171544

Int. Cl.^{3} G03C *7/00, 1/40*

U.S. Cl. 430—381 **15 Claims**

15. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a 2-equivalent magenta color image forming polymer coupler latex which is capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and which is a polymer or copolymer having a repeating unit derived from a monomer represented by formula (I)



(I)

wherein R represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; X represents —CONH—, —NH—, —NHCONH— or —NHCOO—; Y represents —CONH— or —COO—; A represents an unsubstituted or substituted alkylene group which may be a straight chain or a branched chain or an unsubstituted or substituted phenylene group; Ar represents an unsubstituted or substituted phenyl group; Za, Zb, Zc, and Zd can each represent a methine group, a substituted methine group or —N=; m represents 0 or 1; and n represents 0 or 1;

wherein said developing is conducted using an alkaline aqueous solution containing an aromatic primary amine developing agent.

4,367,283
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH THREE SURFACE ACTIVE AGENTS

Yasuhiro Nakayama, Fujinomiya; Masakazu Yoneyama; Yasuo Mukunoki, both of Minami-ashigara; Akira Kitada, Fujinomiya, and Shinzo Kishimoto, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 25, 1981, Ser. No. 277,443

Claims priority, application Japan, Jun. 25, 1980, 55/86200

Int. Cl.^{3} G03C *1/78, 1/96, 1/38*

U.S. Cl. 430—528 **31 Claims**

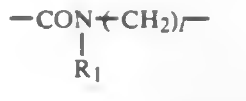
1. A light-sensitive material comprising a support and one or more hydrophilic colloid layers including at least one light-sensitive silver halide emulsion layer, at least one hydrophilic colloid layer containing

(i) a nonionic surface active agent having a polyoxyethylene group,

(ii) an anionic surface active agent represented by the following general formula (I)

$$R-X-SO_3M \qquad (I)$$

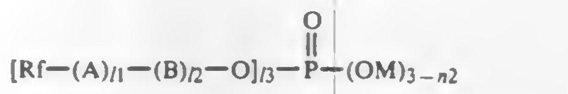
wherein R represents an alkyl group, an aryl group, an alkylaryl group or an alkenyl group; X represents $-O-CH_2CH_2O)_mC_{n1}H_{2n1}+1-$,



$-\underset{\underset{R_1}{|}}{CON}+CH_2)_l-$

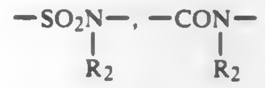
or —O—; M represents a hydrogen atom, an alkali metal atom, an ammonium group or an amino group, m represents 0 or an integer of 1 to 25; n_1 represents an integer of 2 to 5; l represents an integer of 1 to 5; and R_1 represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and

(iii) an anionic surface active agent represented by the following general formula (II)



$$[Rf-(A)_{l1}-(B)_{l2}-O]_{l3}-\overset{\overset{O}{\|}}{P}-(OM)_{3-n2} \qquad (II)$$

wherein Rf represents an alkyl group having 5 to 20 carbon atoms or an alkenyl group having 5 to 20 carbon atoms in which the hydrogen atom(s) are partly or completely substituted with fluorine atom(s); A represents



$-\underset{\underset{R_2}{|}}{SO_2N}-,\ -\underset{\underset{R_2}{|}}{CON}-$

or —O—; R_2 has the same meaning as defined for R_1 in the general formula (I); l1 and l2 each represents 0 or 1; B represents an alkylene group, an arylene group, an aryalkylene group or an ethyleneoxy group; M has the same meaning as defined in the general formula (I); n_2 represents 1 or 2; and l represents 1 or 2.

4,367,284
PHOTOGRAPHIC ELEMENTS WITH IMPROVED SURFACE CHARACTERISTICS

Luigi Cellone, Albisola Mare; Angelo Vallarino, Spotorno, and Roberto Leoncavallo, Carcare, all of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 26, 1981, Ser. No. 267,073

Claims priority, application Italy, May 26, 1980, 48797 A/80

Int. Cl.^{3} G03C *5/26*

U.S. Cl. 430—539 **15 Claims**

1. A photographic element comprising a support and a plurality of gelatin layers which comprise a silver halide emulsion layer and a non-photosensitive external protective gelatin layer, wherein the surface of said gelatin protective layer is modified by rupturing or roughness caused by the presence therein of a first water-soluble organic soft matting agent incompatible with gelatin having a water solubility at 23° C. of at least 0.5% by weight and by protuberances caused by the presence therein of a second water-insoluble organic soft matting agent, both of said soft matting agents having a hardness which does not exceed 4 on the Mohs scale.

4,367,285
ASSAYING LIPID PEROXIDE IN LIPID COMPOSITIONS

Tsutomu Yamaguchi, Yamaguchi, and Hideo Misaki, Shizuoka, both of Japan, assignors to Toyo Jozo Company, Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,668

Claims priority, application Japan, Feb. 21, 1980, 55-021220

Int. Cl.^{3} G01N *33/52, 33/92*

U.S. Cl. 435—28 **5 Claims**

1. A process of assaying the presence of lipid peroxide in lipid compositions comprising the steps of:

A. Contacting a sample of the lipid composition, in the presence of an oxidizable hydrogen donor with a peroxidase enzyme at a temperature of about 37° C. at a pH of from about 5 to 9 to develop a color, fluorescence or luminescence, said oxidizable hydrogen donor being present in a molar concentration at least equal to the molar concentration of the lipid peroxide;

B. Detecting resulting color, fluorescence or luminescence; and

C. Correlating the result of Step B with the presence of lipid peroxide in the lipid composition.

4,367,286
REFERENCE BLOOD FILTER PAPER FOR MEASURING THE CONCENTRATION OF METHIONINE IN THE BLOOD

Yoshitada Sáito, Oomiya; Akira Yano, Tokorozawa, and Yasushi Kasahara, Tama, all of Japan, assignors to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,753

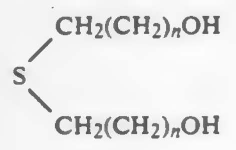
Claims priority, application Japan, Sep. 19, 1980, 55-129149

Int. Cl.³ G01N *33/68;* **C12Q** *1/00*

U.S. Cl. 435—29 **3 Claims**

1. A reference blood filter paper for measuring the concentration of methionine in blood, comprising:

filter paper infiltrated with blood containing a known concentration of methionine and at least one water-soluble, sulfur-containing antioxidant in an effective concentration to preserve said methionine, said antioxidant being represented by general formula:



$$S\begin{cases}CH_2(CH_2)_nOH\\CH_2(CH_2)_nOH\end{cases}$$

were n=1 or 2.

4,367,287
PROCESS OF PRODUCING ANTIBIOTIC AR-5 COMPLEX

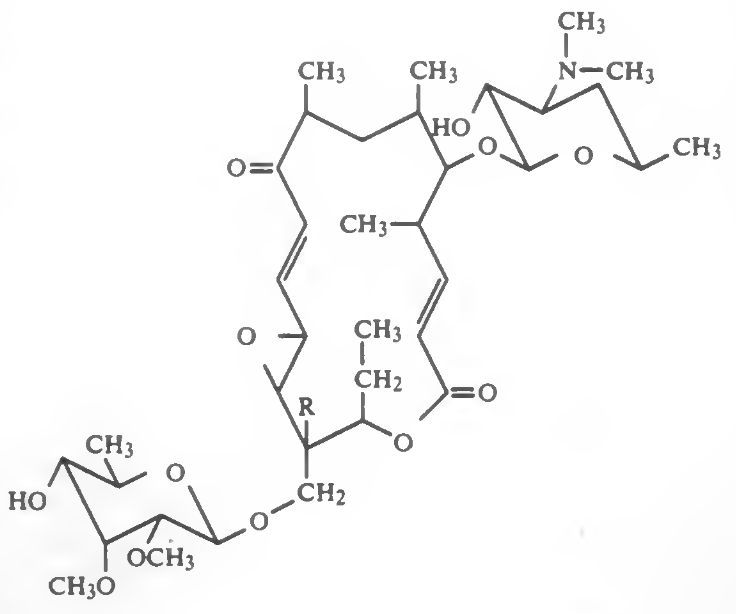
J. Allan Waitz, Far Hills; Walter Reiblein, Verona, and Imbi Truumees, Crestkill, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 93,080, Nov. 9, 1979, Pat. No. 4,307,085. This application Oct. 9, 1981, Ser. No. 310,191

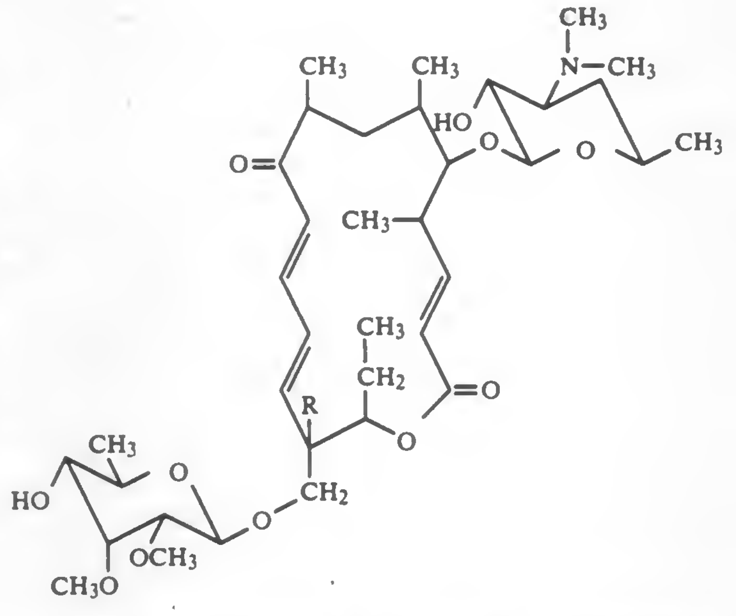
Int. Cl.³ C12P *19/62;* **C12R** *1/29*

U.S. Cl. 435—76 **2 Claims**

1. A process which comprises cultivating an antibiotic AR-5 producing strain of *Micromonospora polytrota* nov. sp. in an aqueous nutrient medium under controlled submerged aerobic conditions until a composition having substantial antibiotic activity is produced and removing an antibiotic selected from the group consisting of antibiotics AR-5 component 1; AR-5 component 2; 12,13-desepoxy AR-5 component 1; 12,13-desepoxy AR-5 component 2 having the following planar structural formulae:



1



2

wherein in formula 1, R is hydrogen in Antibiotic AR-5 component 1 and is hydroxyl in Antibiotic AR-5 component 2 and wherein in formula 2, R is hydrogen in 12,13-desepoxy AR-5 component 1 and is hydroxyl in 12,13-desepoxy AR-5 component 2

from the medium.

4,367,288
METHOD FOR PRODUCING COENZYME Q_{10}

Yasuyuki Kaneko, Nagoya, and Masao Ito, Anjyo, both of Japan, assignors to Nagoya University, Nagoya, Japan

Filed Apr. 28, 1981, Ser. No. 258,502

Claims priority, application Japan, May 16, 1980, 55-65739

Int. Cl.³ C12P *7/66;* **C12R** *1/645*

U.S. Cl. 435—133 **18 Claims**

1. A method for producing coenzyme Q_{10} comprising cultivating a microorganism selected from the group consisting of Aureobasidium sp. No. 14 strain and Trichosporon sp. WY 2-2 strain in a culture medium containing a large quantity of about 250 to 4,000 μg/ml of p-hydroxybenzoic acid to produce coenzyme Q_{10}.

4,367,289
METHOD OF PRODUCING COENZYME Q_{10}

Yasuyuki Kaneko, Nagoya; Masao Itoh, Anjyo; Shinji Takahashi, Nagoya, and Masako Iritani, Chiryu, all of Japan, assignors to Nagoya University, Nagoya, Japan

Filed Sep. 25, 1981, Ser. No. 305,809

Claims priority, application Japan, Oct. 7, 1980, 55/139249

Int. Cl.³ C12P *7/66;* **C12R** *1/645*

U.S. Cl. 435—133 **14 Claims**

1. A method of producing coenzyme Q_{10}, comprising, culturing a microorganism of *Rhodotorula sp.* No. 46*a* strain in a culture medium containing a large quantity of p-hydroxybenzoic acid to produce coenzyme Q_{10}.

4,367,290
METHOD FOR MANUFACTURE OF FOAMED ARTICLE

Katsukiyo Ito, Ichinomiya, and Kazuo Kodaira, Nagoya, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,279

Claims priority, application Japan, Nov. 7, 1980, 55-157406

Int. Cl.³ C08J *9/02*

U.S. Cl. 521—77 **2 Claims**

1. A method for the manufacture of a novel foamed article, characterized by allowing 95 to 100% of n-butyl methacrylate and 0 to 5% of other vinyl monomer to stand at a room temperature in the range of from 10° to 35° C. under a vacuum in the range of from 1 mmHg. to 10^{-4} mmHg. thereby effecting polymerization of said monomers.

4,367,291
REDUCING THE FLAMMABILITY OF FLEXIBLE POLYURETHANE FOAMS

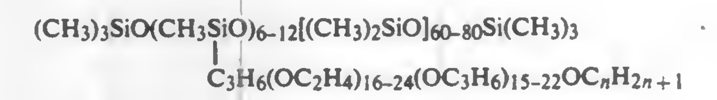
Feyyaz O. Baskent, Mahopac, and Mark L. Bye, South Nyack, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 1, 1981, Ser. No. 279,449

Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—112 **5 Claims**

1. A process for the production of flame retardant flexible polyurethane foams from a reaction mixture comprising aromatic polyisocyanates, polyether polyols, and flame retardant additives, the improvement which comprises utilizing together, in the reaction mixture, from 1 to 2 weight percent of a surfactant of the formula:



$$(CH_3)_3SiO(\underset{\displaystyle C_3H_6(OC_2H_4)_{16-24}(OC_3H_6)_{15-22}OC_nH_{2n+1}}{\underset{|}{CH_3SiO}})_{6-12}[(CH_3)_2SiO]_{60-80}Si(CH_3)_3$$

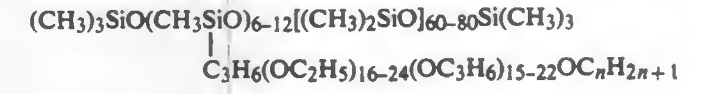
wherein n is an integer of from 1 to 8, and at least from 0.4 to 2.0 weight percent of at least one low molecular weight polyol of one of the formulae:

$(C_aH_{2a}(OH)_2, C_bH_{2b-1}(OH)_3$, and

$HO(C_cH_{2c}O)_dH$

wherein a is an integer of from 2 to 12, b is an integer of from 3 to 11, c is an integer of from 2 to 4, and d is an integer of from 2 to 4.

4. A composition comprising from 1 to 2 parts by weight of a surfactant of the formula:



$$(CH_3)_3SiO(\underset{\displaystyle C_3H_6(OC_2H_5)_{16-24}(OC_3H_6)_{15-22}OC_nH_{2n+1}}{\underset{|}{CH_3SiO}})_{6-12}[(CH_3)_2SiO]_{60-80}Si(CH_3)_3$$

wherein n is an integer of from 1 to 8, and from 0.4 to 2.0 parts by weight of at least one low molecular weight polyol of the formulae

$C_aH_{2a}(OH)_2$, $C_bH_{2b-1}(OH)_3$, and

$HO(C_cH_{2c}O)_dH$,

wherein a is an integer of from 2 to 12, b is an integer of from 3 to 11, c is an integer of from 2 to 4, and d is an integer of from 2 to 4.

4,367,292
METHOD FOR MANUFACTURE OF POWDER COMPOSITION FOR CORDIERITE

Shiro Sano, Nagoya, and Hiroyoshi Takagi, Kasugai, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 288,022

Claims priority, application Japan, Aug. 5, 1980, 55-107444; Aug. 5, 1980, 55-107445

Int. Cl.³ C04B *35/18*

U.S. Cl. 501—119 **4 Claims**

1. A method for the manufacture of a powder composition for cordierite, which comprises preparing water containing a water-soluble magnesium salt, a water-soluble aluminum salt, and at least one silicon source selected from the group consisting of (a) an organic silicon compound and (b) at least one member selected from the group consisting of finely divided silicon oxide, silica gel, and silica sol in amounts calculated to correspond to a cordierite percentage composition as Mg, Al, and Si, mixing this water with a water-soluble organic solvent thereby producing a mixed solution, then adding to said mixed solution an ammonia-alkaline ammonium carbonate solution thereby inducing precipitation, and separating and drying the precipitate.

4,367,293
COMPOSITION FORMING ELASTIC FOAM AT ROOM TEMPERATURE

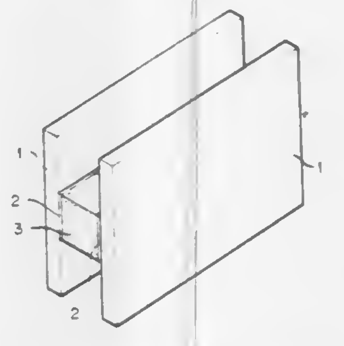
Chiyuki Shimizu, Ota, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1982, Ser. No. 372,684

Claims priority, application Japan, Apr. 30, 1981, 56-66588; Apr. 30, 1981, 56-66589

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—122 **14 Claims**



1. A composition forming an elastic foam at normal temperature essentially comprising

(A) 100 parts by weight of a polydiorganolsiloxane end-blocked by silanol groups and having a viscosity within the range between 500 to 200,000 cSt at 25° C.,

(B) 0.1 to 50 parts by weight of an aminoxy group-containing organosilicon compound having more than two silicon-bonded organoaminoxy groups on the average in one molecule,

(C) 0.1 to 50 parts by weight of a silicon-hydrogen bond-containing polyorganosiloxane having more than two silicon-hydrogen bonds on the average in one molecule, with the proportion of said silicon-hydrogen bonds being 10% or more of the number of silicon atoms,

(D) 1 to 30 parts by weight of fumed silica, and

(E) 0.005 to 10 parts by weight of an isocyanato group-containing organic compound.

4,367,294
PREPARATION OF POLYURETHANE FOAMS MODIFIED WITH MELAMINE-FORMALDEHYDE PRECONDENSATES

Klaus Hahn, Lampertheim; Peter Horn, Heidelberg; Matthias Marx, Bad Duerkheim; Heinz Weber, Gruenstadt; Wolfram Weiss, Mutterstadt, and Rolf Wurmb, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,158

Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020091

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—158 **10 Claims**

1. A process for the preparation of polyurethane foams by reacting organic polyisocyanates, polyols and melamine-formaldehyde precondensates in the presence of catalysts and blowing agents and in the presence or absence of chain extenders or crosslinking agents, auxiliaries and additives, wherein the melamine-formaldehyde precondensates used are aqueous resin solutions which have a melamine-formaldehyde precondensate content of 40–85% by weight, based on total weight, and which are obtained by condensing melamine with formaldehyde, in a molar ratio of 1:1.1–1.75, in aqueous solution, until the water-dilutability of the product, at 20° C., is 1:0.5–4.

4,367,295
INTUMESCENT COMPOSITIONS OBTAINED BY REACTING POLYISOCYANATES WITH PHOSPHORUS-CONTAINING PRODUCTS, POLYESTERS AND CYANURIC ACID AND/OR CYANURIC ACID DERIVATIVES

Wulf von Bonin, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,562

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041731

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—165 **7 Claims**

1. Intumescent compositions, which may be foamed, and which are obtained by reacting:

(1) polyisocyanates with
(2) phosphorus-containing condensation products having at least one hydroxy group obtainable by condensing (i) primary or secondary aliphatic, cycloaliphatic, aromatic, araliphatic or heterocyclic monoamines and/or polyamines, which mono- or polyamines may contain OH-groups; (ii) carbonyl compounds; and, (iii) dialkyl phosphites, and
(3) polyesters containing hydroxyl groups and having OH-numbers of from 140 to 300, obtained by reacting polycarboxylic acids containing from 2 to 10 carbon atoms with at least 2 polyols selected from two different groups of the following three:
  (a) hydroxyl compounds containing more than three OH groups and having molecular weights of up to 200,
  (b) hydroxyl compounds containing three OH groups and having molecular weights of up to 150,
  (c) hydroxyl compounds containing two OH-groups and having molecular weights of up to 80, with the proviso that at least one polyol is selected from group (a), and
(4) cyanuric acid and/or cyanuric acid derivatives and
(5) optionally water and/or other organic compounds containing isocyanate-reactive hydrogen atoms.

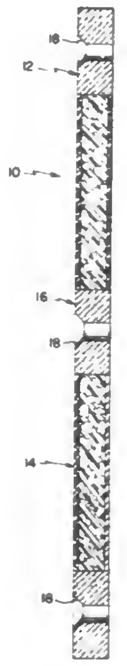
4,367,296
STRUCTURAL MATERIALS AND COMPONENTS

John Gagliani, Schaumburg, and Raymond Lee, Elk Grove Village, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 186,563, Sep. 12, 1980. This application Nov. 24, 1981, Ser. No. 324,632

Int. Cl.^{3} C08J *9/02;* **C08L** *79/08*

U.S. Cl. 521—189 **11 Claims**



1. A structural component comprising an integrated assembly of a reinforced polyimide foam and a blocking material which is a polyimide having uniformly distributed therethroughout glass microballoons of a size and in an amount which is effective to increase the screw withdrawal resistance of the polyimide in which said microballoons are distributed, the polyimide that is foamed and the polyimide in the blocking material both being polymerization products of a 3,3′,4,4′-benzophenonetetracarboxylic acid diester and at least two primary diamines.

4,367,297
WATER-SOLUBLE POLY(METH)ACRYLIC ACID DERIVATIVES GELS AND THEIR MANUFACTURE

Wolfgang Hübner, Kempen, and Werner Fischer, Krefeld, both of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,150

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3005446

Int. Cl.^{3} C08L *33/02*

U.S. Cl. 523—130 **28 Claims**

1. A gel consisting of the reaction product of (A) one or more water-soluble polymers of (i) one or more of acrylic acid, acrylamide and methacrylamide, salts and water soluble esters of acrylic acid and methacrylamide, salts and water soluble esters of acrylic acid and methacrylic acid; (ii) copolymers of the above containing about 0.1 to about 10% by weight of other hydrophobic monomer units; and (iii) said polymers of (i) and (ii) further containing small water solubility restricting amounts of diethylenically unsaturated monomers and (B) one or more polyvalent metal salts characterized in that said reaction product is that of either said water-soluble polymer or polymers with aqueous solutions of said metal salt or salts present as a W/O dispersion, or aqueous solutions of said polymer or polymers with W/O emulsions of said metal salt or salts.

4,367,298
ONE-PACKAGE COREACTIVE AMINO AND OXIRANE POLYMERS

Kirk J. Abbey, Cleveland, and James R. Erickson, Brunswick, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,968

Int. Cl.^{3} C08L *63/10*

U.S. Cl. 523—402 **11 Claims**

1. A low temperature cure, one-package stabilized aqueous dispersed coreactive polymer composition comprising on a weight basis:

between 1% and 80% of an amino functional water insoluble polymer having reactive amine groups containing 0.1 to 1.1 meq. of reactive nitrogen per gram of polymer and between 20% and 99% oxirane functional water insoluble polymer having reactive oxirane groups containing 0.2 to 1.6 meq. of reactive oxirane oxygen per gram of polymer, wherein said amino polymer and said oxirane polymer are stable when dispersed in water and are adapted to coreact upon removal of water.

4,367,299
PROCESS TO MANUFACTURE CROSSLINKED POLYMERS

Alfred Renner, Münchenstein, and Theobald Haug, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,308

Claims priority, application Switzerland, Dec. 21, 1979, 11404/79

Int. Cl.^{3} C08G *59/56*

U.S. Cl. 523—457 **9 Claims**

1. A process for producing crosslinked plastics which comprises reacting

(a) an epoxide resin containing at least one N-glycidyl group in the molecule,
(b) a primary and/or secondary, aromatic, aliphatic or heterocyclic polyamine, and
(c) a quaternising agent selected from the group consisting of aromatic and aliphatic polysulfonic esters, halogen-free organic phosphoric esters, and organic compounds which contain at least 2 chlorine or bromine atoms in the molecule, and which are free from groups of the formula —COOZ in which Z is hydrogen or a metal atom,
(d) optionally in the presence of customary additives for plastics, particularly fillers, and
(e) optionally in the presence of organic solvents,

at a temperature of 50° to 150° C., there being in the starting reaction mixture, to 1 equivalent of glycidyl groups, 0.5 to 1.5 equivalents of hydrogen atoms of the polyamine stated under (b) which are bound to nitrogen, and, to 1 gram atom of N in the reaction mixture, a maximum of 1 gram equivalent of a quaternising agent.

4,367,300
SYNTHETIC RESIN COMPOSITIONS TO BE ADDED TO CEMENT, AN AQUEOUS PAINT COMPOSITION CONTAINING SAID COMPOSITIONS AND A METHOD FOR COATING SAID PAINT COMPOSITION

Akiji Aoki, Itsukaichi, and Terusato Inoue, Tokyo, both of Japan, assignors to Kowa Chemical Industries Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,495

Claims priority, application Japan, Dec. 14, 1979, 54-161578; May 20, 1980, 55-65938

Int. Cl.^{3} C08K *3/34;* **C08F** *212/08, 220/10*

U.S. Cl. 524—2 **7 Claims**

1. Rust preventing synthetic resin compositions to be added to cement or cement mortar comprising 0.05–5 parts by weight of a primary alkanol-amine having 2 to 8 carbon atoms based on 100 parts by weight of resin solid content in a synthetic resin emulsion.

4,367,301
ROVING

Robert C. Brannon, Newark; Leonard J. Adzima, Pickerington, and Timothy W. Ramey, Columbus, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 23, 1981, Ser. No. 286,116

Int. Cl.^{3} C08L *67/02*

U.S. Cl. 524—86 **4 Claims**

1. An aqueous size composition comprising a polyester and a lubricant system comprising cocoa amine acetate and a polyamide condensate comprising polyethyleneimine.

4,367,302
THERMOPLASTIC POLYURETHANE RESIN HAVING ISOCYANATE END GROUPS AND CONTAINING ETHYLENIC SIDE GROUPS

Patrice M. Le Roy, Ballancourt, and Sabine M. Journeau, Arpajon, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Apr. 30, 1981, Ser. No. 258,810

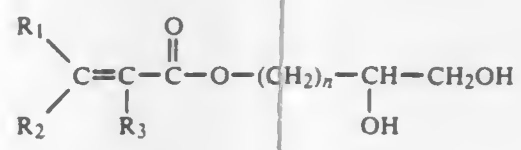
Claims priority, application France, May 14, 1980, 80 10805

Int. Cl.^{3} C08G *18/32*

U.S. Cl. 524—104 **14 Claims**

1. Thermoplastic polyurethane resin having isocyanate end groups and containing internal ethylenic side groups, useful as an adhesive, which comprises the product resulting from the reaction of:

(a) an organic diisocyanate,
(b) a saturated diol having a molecular weight of between 450 and 4,000 and
(c) an unsaturated diol consisting of the acrylic or methacrylic acid ester of a trihydric alcohol, of the formula:



$$(R_1)(R_2)C{=}C(R_3){-}C({=}O){-}O{-}(CH_2)_n{-}CH(OH){-}CH_2OH$$

in which R_1 and R_2, which are identical or different, are hydrogen, a lower alkyl group, an aryl group or a halogen, R_3 is hydrogen, a lower alkyl, aryl or cycloalkyl group or a halogen and n is 1, 2, 3 or 4, the diisocyanate compound (a) being present in a ratio NCO:OH of more than 1.1 and the molar ratio diol (b):unsaturated diol (c) being between 0 and 3.

4,367,303
SOLUTIONS FOR STABILIZING THERMOPLASTIC POLYCARBONATES

Erich Eimers; Rolf Dhein, both of Krefeld; Wolfgang Cohnen, Leverkusen; Engelbert Kühle, and Gerhard Heywang, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,312

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026503

Int. Cl.^{3} C08K *5/15, 5/50*

U.S. Cl. 524—107 **15 Claims**

7. A process for stabilizing a thermoplastic polycarbonate comprising adding thereto a stabilizer solution comprising at least one phosphine of the general formula

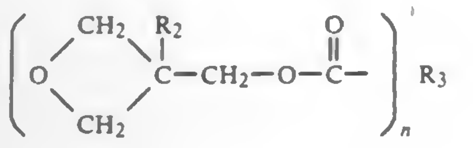
$$(R)_2P{-}R_1 \qquad \text{I}$$

wherein

R and R_1 independently denote an unsubstituted or substituted C_6 to C_{14} aryl radical and

R_1 may additionally denote an unsubstituted or substituted C_1 to C_{18} alkyl radical

in at least one oxetane compound of the general formula



II

wherein

R_2 denotes a C_1 to C_{16} alkyl radical and

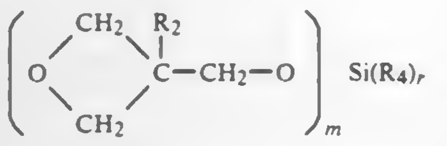
R_3 is either an n-valent radical of a C_2 to C_8 alkane, which may be substituted by at least one OH group and

n is 1, 2, 3, 4, 5, or 6 or

R_3 is a divalent radical of a cycloalkane and

n is 2,

or in at least one oxetane compound of the general formula



III

wherein

R_2 denotes a C_1 to C_{16} alkyl radical,

R_4 denotes a C_1 to C_4 alkyl radical which may be substituted by cyano, carboxyl or acetoxy, an allyl radical, a C_6 to C_{14} aryl radical which may be substituted by alkyl, or a C_7 to C_{14} aralkyl or C_1 to C_4 alkoxy radical which may be substituted by C_1 to C_4 alkoxy or allyloxy,

m is 1, 2, 3, or 4 and

r is 0, 1, 2 or 3 with the proviso that m+r equal 4,

in which the mixing ratio of dissolved phosphine of the formula I to solvent, containing oxetane groups, of the formula II or III is between 3 and 10 oxetane group equivalents of the solvent containing oxetane groups per atom equivalent of phosphorus of the phosphine said solution being added to said polycarbonate either during or after its preparation.

4,367,304

NOVEL ORGANIC ANTIMONY-SULFUR COMPOUNDS AND THEIR USE AS STABILIZERS FOR CHLORINE-CONTAINING THERMOPLASTS

Klaus-Peter Michaelis, Lindenfels; Wolfgang Wehner, Zwingenberg; Holger Andreas, Bensheim/Auerbach, and Horst Müller, Fürth, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 4, 1980, Ser. No. 203,939

Claims priority, application Switzerland, Nov. 8, 1979, 10005/79; Jun. 27, 1980, 4963/80

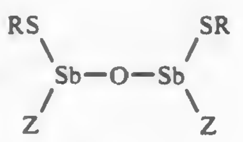
Int. Cl.³ C08K *5/59;* **C07F** *9/90, 9/92*

U.S. Cl. 524—204 **13 Claims**

1. A compound of the formula I, II or III

$RS{-}SbX_2$ I

$(RS)_2SbY$ II



III

wherein

X is Cl, Br, I, OH, $-OR^1$, $-OOCR^2$, $OOC-R^4-COOR^3$, or the two X groups together form a group $-O-R^9-O-$ or $-OCO-R^9-COO-$,

Y has one of the meanings given for X, or it is $-NHR^5$, $-NHNH^2$ or —NHNH-phenyl,

Z has one of the meanings given for X, or it is SR,

R is C_1-C_6-alkyl substituted by one or two of the groups $-OCOR^7$, $-OR^8$, $-SR^8$ or $-COOR^8$,

R^1 is C_1-C_{18}-alkyl, C_1-C_6-alkyl substituted by $-OR_8$, $-SR^8$ or $-OCOR^7$, or R^1 is C_6-C_{10}-aryl, C_7-C_9-phenylalkyl or C_5-C_8-cycloalkyl,

R^2 is C_1-C_{18}-alkyl, C_2-C_{18}-alkenyl, C_5-C_8-cycloalkyl, C_6-C_{10}-aryl, or phenyl or C_7-C_9-phenylalkyl each substituted by C_1-C_4-alkyl, hydroxyl or halogen,

R^3 is C_1-C_{12}-alkyl, allyl, cyclohexyl or phenyl,

R^4 is C_2-C_{12}-alkylene, C_2-C_6-alkenylene, C_5-C_{12}-cycloalkylene or cycloalkenylene, phenylene or halophenylene,

R^5 is C_1 to C_{12} alkyl, benzyl or cyclohexyl;

R^7 is C_1-C_{18}-alkyl, CH_3COCH_2-, cyclohexyl, benzyl, C_6-C_{10}-aryl, or phenyl or C_7-C_9-phenylalkyl each substituted by C_1-C_4-alkyl, hydroxyl or halogen,

R^8 is C_1-C_{18}-alkyl, allyl, cyclohexyl or phenyl, and

R^9 is C_2-C_6-alkylene, C_3-C_6-alkylene interrupted by O, S or $(R^5)N$, or it is propylene substituted by $-OR^8$ or $-OCOR^7$.

6. A chlorine-containing thermoplastic material stabilised by an antimony mercaptide, which thermoplastic contains 0.1 to 5 percent by weight of a compound of claim 1 as stabiliser.

4,367,305

SAPONIFIED ETHYLENE-VINYL ACETATE COPOLYMERS IMPROVED IN BEHAVIOR IN THE MOLTEN STATE

Kenji Satoh; Taichi Negi, and Kenji Matsumoto, all of Okayama, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed May 12, 1981, Ser. No. 262,975

Claims priority, application Japan, May 21, 1980, 55-68281

Int. Cl.³ C08L *29/04*

U.S. Cl. 524—398 **7 Claims**

1. A saponified ethylene-vinyl acetate copolymer composition, improved in behavior in the molten state, which comprises: a saponified ethylene-vinyl acetate copolymer, with an ethylene content of 20–80 mole percent and a saponification degree of at least 85 percent, and 0.00005 to 0.005 percent by weight, based on said copolymer, of manganese, said composition, when extracted with pure water, giving an acidic extract.

4,367,306

POLYOLEFIN COMPOSITION

Masahiko Maeda, Tokyo; Naotochi Watanabe, Kawasaki, and Kenji Fujitani, Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,959

Claims priority, application Japan, Mar. 27, 1981, 56-43925

Int. Cl.³ C08K *3/08, 3/16, 3/10, 3/04*

U.S. Cl. 524—411 **11 Claims**

1. A polyolefin composition comprising:

(A) 90 to 40% by volume of a polyolefin which is modified with an unsaturated carboxylic acid and/or its derivative, wherein the unsaturated carboxylic acid and/or its derivative content of Component (A) is from 0.01 to 1.0% by weight;

(B) 5 to 50% by volume of aluminum or an aluminum alloy;

(C) 5 to 50% by volume of electrically conductive carbon black, the proportions of Components (A), (B), and (C) being based on the total volume of Components (A), (B) and (C);

(D) 5 to 30 parts by weight, per 100 parts by weight of Components (A), (B) and (C), of a halogen-containing organic compound and antimony oxide; and

(E) at least 5 parts by weight, per 100 parts by weight of the carbon black, of a hydrous inorganic substance.

4,367,307

POLYURETHANE COMPOSITION HAVING GOOD LIGHT RESISTANCE

Koji Hirai; Kenji Shirano; Kazuo Hara, all of Kurashiki, and Takayuki Okamura, Okayama, all of Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Apr. 3, 1981, Ser. No. 250,554

Claims priority, application Japan, Apr. 15, 1980, 55-50697

Int. Cl.³ C08L *75/08*

U.S. Cl. 524—590 **7 Claims**

1. A polyurethane composition comprising a polyurethane formed from (a) a polymeric diol having an average molecular weight in the range of 300 to 5,000, (b) an organic alicyclic diisocyanate, (c) hydrazine, (d) an organic alicyclic diamine, and (e) 3% to 70% by weight based on the weight of polyurethane of a dye selected from the group consisting of metal complex dyes, vat dyes, sulfur dyes and acid dyes, wherein said polyurethane satisfies the following requirements:

(I) the polymeric diol is either a diol containing a $(-CH_2CH_2O-)_n$ chain in its molecule or a mixture thereof with a polymeric diol free from $(-CH_2CH_2O-)_n$ chain where n is between 12 and 100 on the average and the amount of $(-CH_2CH_2O-)_n$ in the polymeric diol is in the range of 5 to 50% by weight;

(II) the molar ratio of organic diisocyanate to polymeric diol is in the range of 2.2 to 5.0; and

(III) the molar ratio of hydrazine to the total amount of hydrazine and organic alicyclic diamine is in the range of 0.05 to 0.8.

4,367,308

CROSS-LINKED GRAFT POLYESTERS AND SIZED TEXTILES

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 121,762, Feb. 15, 1980, Pat. No. 4,275,176, which is a continuation of Ser. No. 937,690, Aug. 28, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,536

Int. Cl.³ C08L *67/00*

U.S. Cl. 525—44 **6 Claims**

1. A cross-linked graft polyester comprising the reaction product of

a mixture of a polyunsaturated vinyl monomer with an acidic monovinyl monomer having at least one carboxyl group with and unsaturated polyester which the reaction product of:

(1) at least one dicarboxylic acid reactant selected from the group consisting of dicarboxylic acids, corresponding dicarboxylic anhydrides, dicarboxylic acid esters, and their corresponding acyl halides and

(2) at least one polyhydric alcohol comprising (a) a diol or (b) a mixture of a diol and up to 20 mole percent of a polyhydric alcohol having a functionality greater than 2 based upon 100 mole percent of said polyhydric alcohol

wherein a minor effective proportion of said dicarboxylic acid reactant or said polyhydric alcohol reactant is α,β-ethylenically unsaturated.

4,367,309

GLYCOPROTEIN DERIVATIVE COMPOSITIONS, PROCESS FOR PRODUCING THE SAME AND USES THEREOF AS DIAGNOSTIC REAGENTS OR HYDROLYTIC CATALYSTS

Shigeharu Kondo, Kyoto; Junichiro Kikutake, Neyagawa; Masakazu Sugiura, Nara, and Masaru Yoshida, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jan. 31, 1979, Ser. No. 8,107

Claims priority, application Japan, Feb. 24, 1978, 53-21225

Int. Cl.³ C08L *89/00*

U.S. Cl. 525—54.1 **27 Claims**

1. A process for producing a glyco-protein derivative composition, which comprises reacting an aldehyde group-containing glycoprotein (A) with at least one SH or OH group-containing material (B) forming hemithioacetal, hemiacetal, thioacetal, or acetal linkage when reacted under suitable conditions with said aldehyde group.

4,367,310

BLENDS OF POLYCARBONATE WITH RUBBER AND MONOVINYLIDENE AROMATIC COPOLYMERS

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 35,584, May 3, 1979, Pat. No. 4,218,544. This application May 15, 1980, Ser. No. 149,821

Int. Cl.³ C08L *69/00, 9/00*

U.S. Cl. 525—67 **6 Claims**

1. A heterogeneous blend comprising the following components: (1) a polycarbonate of a dihydric phenol blended with (2) a rubber component, (3) an anhydride copolymer of a monovinylidene aromatic monomer and an α,β-ethylenically unsaturated anhydride and (4) a compatible polymer of a polar monomer other than an anhydride; said rubber component containing a copolymer of a rubber polymer blocked or grafted with a portion of the anhydride copolymer and/or the polymer of the polar monomer wherein said block or graft copolymer is presentt in an amount sufficient to measurably increase the impact resistance of the blend, said polar monomer being a polymerizable ethylenically unsaturated organic compound which bears a polar group having a group moment in the range from about 1.4 to about 4 Debye units determined in accordance with Smyth, C. P., *Dielectric Behavior and Structure,* McGraw-Hill Book Company, Inc., New York (1955), said components being present in proportions such that the blend has (a) a Gardner Dart impact strength of at least about 160 inch-pounds, (b) a notched Izod impact strength of at least about 3 foot-pounds/inch of notch, (c) a heat resistance of at least about 240° F. as determined by ASTM D-648 (unannealed at 66 pounds per square inch) and (d) a processability (injection pressure) less than about 6600 pounds per square inch at a mold fill time of 2.5 seconds as determined by the test procedure for Injection Pressure set forth in footnote (10) of Table I hereof.

4,367,311

THERMOPLASTIC MOLDING MATERIAL

Franz Brandstetter, Neustadt; Graham E. McKee, Weinheim, and Edmund Priebe, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,486

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102254

Int. Cl.³ C08L *61/04*

U.S. Cl. 525—68 **2 Claims**

1. A thermoplastic molding material based on a mixture of

(a) a styrene polymer, of intrinsic viscosity from 40 to 140 ml/g, as the hard component,

(b) a cross-linked rubber grafted to the extent of 10 to 60% by weight with styrene, the rubber, in turn, comprising, as polymerized units, from 30 to 80% by weight of an alkyl acrylate, alkyl being of 2 to 8 carbon atoms, and from 20 to 70% by weight of butadiene, and

(c) a polyphenylene ether having on average not less than 50 benzene units in the chain, wherein the weight ratio of a:b is (95–40):(5–60) and the weight ratio of (a+b):c is (5–90):(95–10).

4,367,312

HEAT-SEALABLE PACKAGING FILM PRODUCING A PEELABLE SEAL

Walter Bontinck, Sint-Martens-Leerne; Marc D'Hondt, Nazareth, and Roland Jacobs, Wetteren, all of Belgium, assignors to UCB, Societe Anonyme, Saint-Gilles-lez-Bruxelles, Belgium

Filed Aug. 7, 1980, Ser. No. 176,245

Claims priority, application United Kingdom, Aug. 8, 1979, 7927646

Int. Cl.^{3} C08L *53/02*

U.S. Cl. 525—93 **9 Claims**

1. A heat sealable packaging film producing a peelable seal comprising polymer constituents consisting essentially of

(a) 55 to 95% by weight of at least one ethylene polymer selected from polyethylene having a density of from 0.91 to 0.93 g/cm^3 and an ethylene-vinyl acetate copolymer containing at most 10% by weight of vinyl acetate,

(b) 5 to 30% by weight of polystyrene, and

(c) 5 to 20% by weight of a thermoplastic, elastomeric styrene-butadiene-styrene or styrene-isoprene-styrene block copolymer,

the face of the film which is intended to form the peelable seal having a surface tension of from 35 to 50 millinewtons per meter.

4,367,313

COATING COMPOSITION AND METHOD

Sidky D. Rizk, Westfield, and Navinchandra B. Shah, Oldbridge, both of N.J., assignors to Essex Chemical Corporation, Clifton, N.J.

Filed Jun. 10, 1981, Ser. No. 272,270

Int. Cl.^{3} C08L *37/00, 39/00, 75/00*

U.S. Cl. 525—102 **9 Claims**

1. A "one-pot" moisture-curable coating composition comprising a first component having at least one isocyanate group and at least one hydrolyzable alkoxysilane group therein, and a second component which is a polymer having a plurality of oxazolidine groups therein, said first component being the reaction product of a polyol having an average of n hydroxy groups per molecule, where n is at least two, with an isocyanato functional alkoxysilane having from 1 to 3 hydrolyzable alkoxy groups therein and with an organic polyisocyanate.

4,367,314

RESIN COMPOSITION

Akira Kageyama; Iwao Maekawa; Isao Uchigasaki, all of Hitachi, and Takeshi Tanno, Chiba, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,689

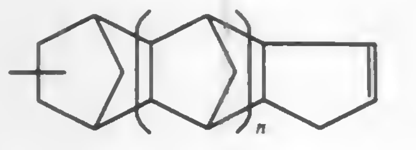
Claims priority, application Japan, Jan. 11, 1980, 55/2318

Int. Cl.^{3} C08F *8/00;* **C08L** *67/06*

U.S. Cl. 525—168 **16 Claims**

1. A setting resin composition, comprising:

(A) an unsaturated polyester having at least 30% of all the terminal groups thereof sealed each with a group represented by the general formula (I):



(I)

wherein, n stands for an integer of 0 to 8, in admixture with

(B) added dicyclopentadiene type resin containing 50 to 100% by weight of polymerized dicyclopentadiene units.

4,367,315

FLAME RETARDANT POLYMER SYSTEMS AND POLYMER COMPOSITIONS

Paul Zwaenepoel; Guido Strzelbicki, both of Brussels, Belgium; Daniel J. Scharf, East Amherst, and George M. Wagner, Lewiston, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,490

Int. Cl.^{3} C08G *63/18, 63/20*

U.S. Cl. 525—169 **13 Claims**

1. A polyester polymer system comprised of an interpolymerizable mixture of

(a) from about 10 to about 65 percent by weight of a reactive adduct of hexahalocyclopentadiene and maleic acid or anhydride,

(b) from about 10 to about 30 percent by weight of a polyhydric alcohol component,

(c) from about 10 to about 60 percent by weight of a polycarboxylic acid or anhydride component containing aliphatic carbon-to-carbon unsaturation,

(d) from about 2 to about 25 percent by weight of a brominated neopentylacrylate, and

(e) from about 25 to about 40 percent by weight of a reactive monomer selected from the group consisting of styrene, alpha-methyl styrene, halogenated styrenes, and mixtures thereof.

4,367,316

VULCANIZED ELASTOMERIC MOLDED ARTICLE

Chiaki Tanaka, Chita; Masanobu Morikawa, Nagoya, and Yoshio Kohno, Okazaki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 745,928, Nov. 29, 1976, abandoned. This application Apr. 27, 1978, Ser. No. 900,806

Claims priority, application Japan, Nov. 27, 1975, 50/141175; Nov. 27, 1975, 50/141176

Int. Cl.^{3} C08L *9/02, 7/00, 9/06, 67/02*

U.S. Cl. 525—173 **9 Claims**

1. A vulcanizable polyblend which comprises an intimate mixture of 5 to 90% by weight of a block copolyether ester, in which the molecular weight of polyether chain is 400 to 6000 and the ratio of the short ester segment to the ether ester segment is from 15/85 to 90/10, and 95 to 10% by weight of vulcanizable rubber selected from the group consisting of chloroprene rubber, nitrile rubber, styrene-butadiene rubber and natural rubber.

4,367,317

COPOLYMERS AND PROCESS FOR THEIR PREPARATION

Daniel W. Fox; Bruce A. Kaduk, and John B. Starr, Jr., all of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 17, 1980, Ser. No. 188,177

Int. Cl.^{3} C08G *63/76;* **C08L** *63/00, 67/00*

U.S. Cl. 525—439 **8 Claims**

1. A process for the preparation of a high molecular weight copolymer which comprises reacting at a temperature of about 260°±20° C. for a period of about 30-60 minutes under a vacuum of less than 1 mm. mercury, a mixture of a high molecular weight polyethylene arylate and a low or high molecular weight bisphenol A polycarbonate in the proportion of 10 percent to 60 percent of the former to 90 percent to 40 percent of the latter, the resulting copolymer being transparent, soluble in chlorinated solvents, and possessng a single glass transition temperature.

4,367,318

EPOXY RESIN COMPOSITION

Hidekazu Ishimura, Fujinomiya; Hiroshi Komoto, Fuji, and Isao Kai, Aichi, all of Japan, assignors to Asahi Yakizai Kogyo Co., Miyazaki and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, both of, Japan

Continuation-in-part of Ser. No. 939,936, Sep. 6, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,896

Claims priority, application Japan, Sep. 8, 1977, 52/108202; France, Sep. 7, 1978, 78 25761; Fed. Rep. of Germany, Sep. 8, 1978, 2839221

Int. Cl.^{3} C08L *63/00, 61/10*

U.S. Cl. 525—481 **22 Claims**

1. A powder paint comprising

(1) about 20 to about 80% by weight of a solid epoxy resin, and

(2) about 80 to about 20% by weight of a solid resole-type phenolic resin having a softening point of about 70° to about 90° C., a gel time at 150° C. of at least about 80 seconds and a methylol index of about 25 to about 45, said phenolic resin being a condensation product of 1 mol of a phenol with 1 to about 4 mols of an aldehyde.

4,367,319

AUTO-CROSSLINKING, CATHODICALLY DEPOSITABLE BINDERS

Georg Pampouchidis, and Helmut Honig, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Dec. 15, 1980, Ser. No. 216,378

Claims priority, application Austria, Dec. 17, 1979, 7909/79

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.^{3} C08G *59/50*

U.S. Cl. 525—504 **27 Claims**

1. Auto-crosslinking, cathodically depositable binders comprising the reaction product of:

(A) 2 moles of a polyepoxy compound with from 2 to 10 epoxy groups per molecule and an epoxy equivalent of from 100 to 1000;

(B) 0.1 to 2.0 moles of an aliphatic and/or cycloaliphatic and/or aromatic diamine, the nitrogen atoms of which are secondary-secondary or primary-tertiary;

(C) from 0 to 10 moles of an alpha,beta-unsaturated monocarboxylic acid, and

(D) from 0.5 to 10 moles of a secondary amine, the weight ratios of said components being chosen whereby the said binders have an amine value sufficient to render said binders water dilutable upon neutralization with an inorganic or organic acid, and said binders being thermally self-crosslinking.

4,367,320

PROCESS FOR SUSPENSION POLYMERIZATION OF STYRENIC MONOMERS

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 221,655, Dec. 31, 1980, abandoned. This application Mar. 27, 1981, Ser. No. 248,660

Int. Cl.^{3} C08F *2/20, 2/00, 12/18, 12/06*

U.S. Cl. 526—75 **29 Claims**

1. A method for the suspension polymerization of one or more styrenic monomers, wherein said styrenic monomer or monomers are present in a suspension of droplets of said monomer or monomers dispersed throughout a continuous water phase, said method comprising the steps of:

(a) forming a suspension containing essentially all of the styrenic monomer or monomers to be polymerized;

(b) partially polymerizing said monomer or monomers in said suspension of step (a) until a conversion of from 50% to about 90% is achieved; and

(c) increasing the amount of substantially water insoluble free radical initiator in the suspension obtained according to the partial polymerization step (b) and substantially completing the suspension polymerization by a free radical initiation technique,

wherein the temperature of the suspension is at least 110° C. during the entire polymerization.

4,367,321
PREPARATION OF HOMOPOLYMERS AND COPOLYMERS OF α-MONO-OLEFINS BY MEANS OF A ZIEGLER CATALYST SYSTEM

Robert Bachl, Worms; Peter Klaerner, Battenberg; Guenther Schweier, Friedelsheim, and Ehler Ehlers, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,680

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015702

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—124 **8 Claims**

1. A process for the preparation of homopolymers and copolymers of C_2-C_6-α-monoolefins by polymerizing the monomer or monomers at from 30° to 200° C., under a pressure of from 0.1 to 200 bar, by means of a Ziegler catalyst system comprising

(1) a titanium-containing catalyst component and

(2) an aluminum compound of the formula

$AlA_{3-n}X_n$

where

A is a C_1-C_{18}-hydrocarbon radical,

X is chlorine, bromine or hydrogen, and

n is from 0 to 2, with the provisos that the atomic ratio of titanium from catalyst component (1) to aluminum from catalyst component (2) is from 1:0.1 to 1:500, and that

(1.1) to prepare the catalyst component (1)

(1.1.1) a titanium compound (I) of the formula

$TiCl_3.z(AlCl_3)$ or $Cl_mTi(OB)_{4-m}$

where z is from 0 to 0.5, m is from 0 to 3, and B is C_1-C_{18}-alkyl, and

(1.1.2) a magnesium alcoholate (II) of the formula

$Mg(OD)_2$

where D is a monovalent C_1-C_{18} saturated-aliphatic and/or aromatic hydrocarbon radical,

(1.1.3) with or without a metal chloride (III) of the formula $AlCl_3$, $ZnCl_2$ or $MnCl_2$,

in the weight ratio of titanium compound (I) to magnesium alcoholate (II) of from 1:200 to 1:0.2, and in the weight ratio of titanium compound (I) to metal chloride (III) of from 1:0 to 1:20, are milled with one another for from 1 to 200 hours, under a milling acceleration of from 30 to 70 m/s², to form a milled product (IV), in which process, when preparing the catalyst component (1)

(1.2) in an additional stage

(1.2.1) the milled product (IV) obtained according to (1.1),

(1.2.2) a C_1-C_{12}-alkanol (V), and

(1.2.3) a C_5-C_{12}-alkane (VI)

are brought together in the weight ratios of milled product (IV):alkanol (V) = from 1:0.01 to 1:1, and milled product (IV):alkane (VI) = from 1:1 to 1:1,000, to form a suspension (VII), and the batch is kept, with continuous mixing, at from 0° to 195° C., for a period of from 0.5 to 60 minutes, after which

(1.3) in a further additional stage

(1.3.1) there is added, to the suspension (VII) obtained according to (1.2),

(1.3.2) a metal compound (VIII) of the general formula

$MtG_{s-t}E_t$

where

Mt is aluminum, silicon or titanium,

G is a C_1-C_{12}-hydrocarbon radical,

E is chlorine, bromine, hydrogen or —OR,

R is a C_1-C_{12}-hydrocarbon radical,

s is the maximum valency of the metal Mt and

t is (a) from 0 to s-1 if Mt is aluminum, (b) from 0 to 4 if Mt is silicon, and (c) 4 if Mt is titanium, whilst maintaining a suspension state, addition being continued until the atomic ratio of magnesium from the solid contained in suspension (VII) to metal from the metal compound (VIII) is from 1:0.1 to 1:20, the product (IX), which results from stage (1.3) and is present as a solid phase in the suspension, constituting the titanium-containing catalyst component (1).

4,367,322
PROCESS FOR PRODUCING PROPYLENE COPOLYMER

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo; Yukio Naito; Akira Nunose, all of Niihama, and Masaharu Nishioka, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 108,092, Dec. 28, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,701

Claims priority, application Japan, Dec. 28, 1978, 53-163010; Jan. 18, 1979, 54-5437

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—137 **11 Claims**

1. In a process for producing propylene copolymer containing about 85 to 97.5 mol % propylene and about 2.5 to 15 mol % ethylene and/or an α-olefin having 4–18 carbon atoms using a Ziegler-Natta catalyst, the improvement which comprises said Ziegler-Natta catalyst comprising:

[A] titanium trichloride prepared by reducing titanium tetrachloride with an organoaluminum compound represented by the formula:

AlR_lX_{3-l}

wherein R represents a straight chain, branched chain or cyclic alkyl group or aryl group having up to 18 carbon atoms and X represents a halogen atom or a hydrogen atom and l is a number $1 \leqq l \leqq 3$, and reacting the reduced solid with an ether and a halogen compound simultaneously or successively, wherein said ether is an ether represented by the formula:

$R^1—O—R^2$

wherein R^1 and R^2 are each a straight chain, branched chain or cyclid alkyl group having 1 to 10 carbon atoms, and said halogen compound is selected from the group consisting of

(i) halogen or interhalogen compounds of the formula:

X^1X^2a

wherein X^1 and X^2 are each a chlorine, bromine or iodine atom and a is a number from 1 to 3;

(ii) titanium halides; and

(iii) organic halogen compounds, and

[B] an organoaluminum compound represented by the formula:

$AlR^4{}_{3-m}X^4{}_m$

wherein R^4 is an alkyl group having 1 to 18 carbon atoms, X^4 is a hydrogen, chlorine, bromine or iodine atom or an alkoxy group having 1 to 8 carbon atoms and m is a number satisfying the relation $0 \leqq m \leqq 3$:

with the molar ratio of [B]/[A] being about 30 to 70.

4,367,323
PRODUCTION OF HYDROGELS

Shuji Kitamura, Ibaraki; Fumio Fujita; Toshihiro Oonishi, both of Takatsuki; Yoshiharu Tatsukami, Niihama; Masato Ogura, Niihama; Masahiro Niwano, Niihama; Masaru Oota, Niihama, and Toshifumi Tamura, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 2, 1981, Ser. No. 326,651

Claims priority, application Japan, Dec. 3, 1980, 55/170457; Dec. 10, 1980, 55/175142

Int. Cl.³ C08K *5/09*

U.S. Cl. 526—201 **4 Claims**

1. A method for producing hydrogels which comprises that, in producing the hydrogel by water-in-oil type inverse phase suspension polymerization of an α,β-unsaturated carboxylic acid monomer and/or its alkali metal salt in the presence or absence of a cross-linking agent, a carboxyl-containing polymer having affinity to the organic solvent is used as the dispersing agent.

4,367,324
PHOTOCROSSLINKABLE POLYMERS WITH THIOXANTHONE AND IMIDYL GROUPINGS IN SIDE CHAINS

Hans Zweifel, Basel; Joseph Berger, Marly; Vratislav Kvita, Reinach, and Martin Roth, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

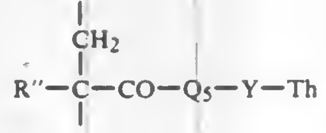
Filed Jan. 26, 1981, Ser. No. 228,817

Claims priority, application Switzerland, Feb. 5, 1980, 918/80

Int. Cl.³ C08F *26/06, 28/06*

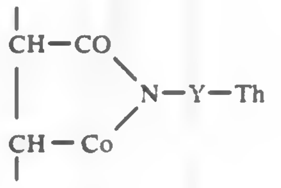
U.S. Cl. 526—256 **12 Claims**

1. A polymer having a mean molecular weight of about 10,000 to 1,000,000 as measured by intrinsic viscosity in chloroform at 20° C. and containing recurring structural elements of at least one of the formulae IIIa to XIa

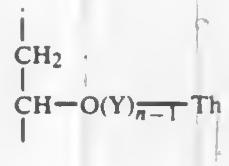


$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-CO-Q_5-Y-Th$$

(IIIa)

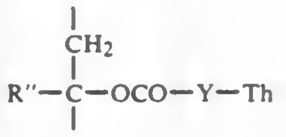


(IVa)



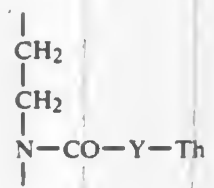
$$\begin{array}{l} | \\ CH_2 \\ | \\ CH-O(Y)_{\overline{n-1}}Th \\ | \end{array}$$

(Va)



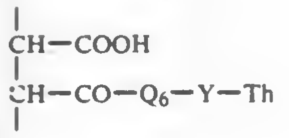
$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-OCO-Y-Th$$

(VIa)



$$\begin{array}{l} | \\ CH_2 \\ | \\ CH_2 \\ | \\ N-CO-Y-Th \\ | \end{array}$$

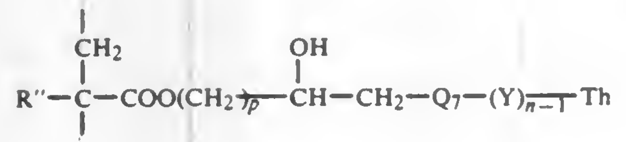
(VIIa)



$$\begin{array}{l} | \\ CH-COOH \\ | \\ CH-CO-Q_6-Y-Th \\ | \end{array}$$

(VIIIa)

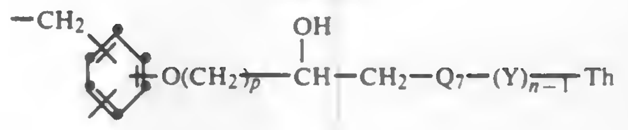
(IXa)



$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-COO(CH_2)_p-\overset{\overset{OH}{|}}{CH}-CH_2-Q_7-(Y)_{\overline{n-1}}Th$$

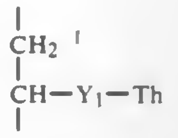
-continued

(Xa)



or

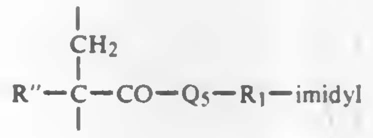
(XIa)



$$\begin{array}{l} | \\ CH_2 \\ | \\ CH-Y_1-Th \\ | \end{array}$$

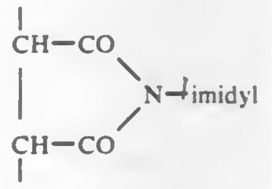
and recurring structural elements of at least one of the formulae IIIb to XIIIb.

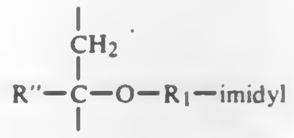
(IIIb)



$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-CO-Q_5-R_1-imidyl$$

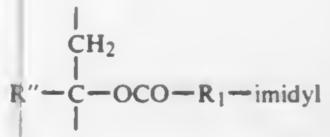
(IVb)





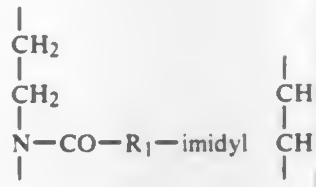
$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-O-R_1-imidyl$$

(Vb)



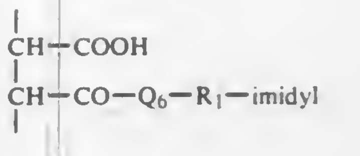
$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-OCO-R_1-imidyl$$

(VIb)



$$\begin{array}{l} | \\ CH_2 \\ | \\ CH_2 \\ | \\ N-CO-R_1-imidyl \\ | \end{array}$$

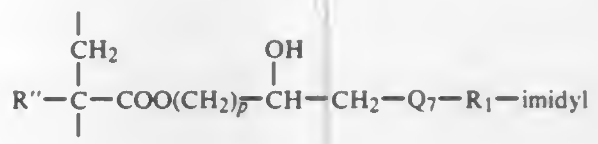
(VIIb)



$$\begin{array}{l} | \\ CH-COOH \\ | \\ CH-CO-Q_6-R_1-imidyl \\ | \end{array}$$

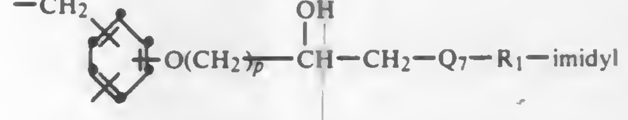
(VIIIb)

(IXb)

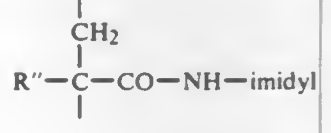


$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-COO(CH_2)_p-\overset{\overset{OH}{|}}{CH}-CH_2-Q_7-R_1-imidyl$$

(Xb)

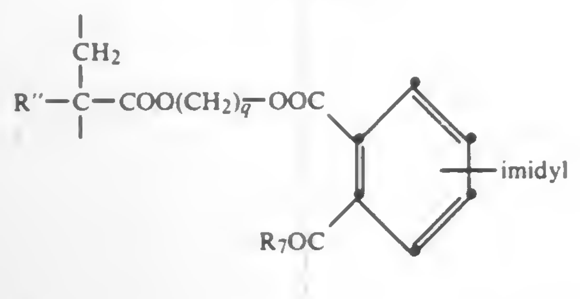


(XIb)

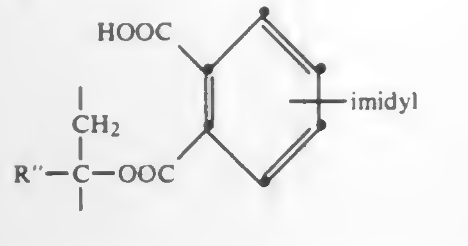


$$R''-\underset{|}{\overset{\overset{|}{CH_2}}{C}}-CO-NH-imidyl$$

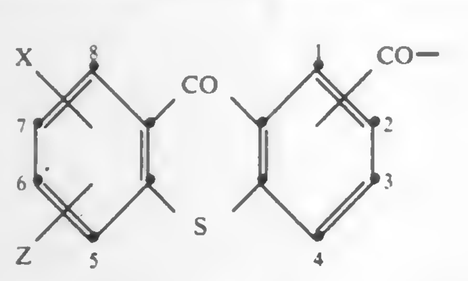
-continued


(XIIb)

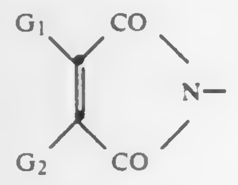
or


(XIIIb)

in which formulae Th is a radical of the formula I'


(I')

and imidyl is a radical of the formula (II)


(II)

in which G$_1$ and G$_2$ independently of one another are alkyl having 1-4 C atoms or together are unsubstituted or methyl-substituted trimethylene or tetramethylene; n is the number 1 or 2; X is hydrogen, halogen, —CN, —NO$_2$, phenylsulfonyl or alkylsulfonyl, alkyl, alkoxy, alkylthio, N,N-dialkylamino or —CO—alkyl having, in each case, 1-4 C atoms in the alkyl moieties; Z is hydrogen, halogen or alkyl, alkoxy, alkylthio or N,N-dialkylamino having, in each case, 1-4 C atoms in the alkyl moieties; Y is —OR$_1$—, —SR$_1$— or —N(R$_2$)R$_1$—, and the hetero-atom of the radical Y is bonded to the —CO— group; R$_1$ is straight-chain or branched alkylene having a total of 2-23 C atoms or 2-13 C atoms in the main chain, cyclopentylene, cyclohexylene, phenylene or

$$—(CH_2CH_2O)_x—CH_2CH_2—;$$

R$_2$ is hydrogen or straight-chain or branched alkyl having a total of 1-23 C atoms and 1-13 C atoms in the main chain; x is an integer from 1 to 5; Q$_5$ is —OCO—, —O—, —NH—; Q$_6$ is —O—, —S—, —NH— or —N(R')—, Q$_7$ is —OCO—, —O—, —S—, —NH— or —N(R')—; R' is alkyl having 1-5 C atoms; R'' is hydrogen or methyl; R$_7$ is —OH or $—O^-M^+$; M^+ is an alkali metal, pyridinium or trialkylammonium cation having 3-24 C atoms; p is the number 1 or 2; q is an integer from 2 to 4; Y$_1$ is —OR$_1$'—, —SR$_1$'— or —NHR$_1$'—, the hetero-atom of the radical Y$_1$ being bonded to the —CO group; and R$_1$' is straight-chain or branched alkylene having a total of 2-23 C atoms and 2-13 C atoms in the main chain, or phenylene; the proportion of groupings of the formula I' being 0.1 to 50 percent and the proportion of groupings of the formula II being 5-99.9 percent, based on the number of recurring structural elements in the polymer.

4,367,325

STYRENE-BUTADIENE RANDOM COPOLYMER AND PROCESS FOR THE PRODUCTION THEREOF

Yasumasa Takeuchi, Yokkaichi; Noboru Ohshima, Suzuka; Mitsuhiko Sakakibara, and Funio Tsutsumi, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,517

Claims priority, application Japan, Apr. 22, 1980, 55-53945

Int. Cl.^{3} C08F *236/10*

U.S. Cl. 526—340 **15 Claims**

1. A styrene-butadiene random copolymer having an average vinyl content of at least 70%, a breadth of the distribution of vinyl contents of at least 20%, a Mooney viscosity (ML$_{1+4}$, 100° C.) of 10 to 150, and a styrene content of 3 to 30% by weight.

4,367,326

PROCESS FOR THE PRODUCTION OF POLYEPOXY SILICATE RESINS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 257,126, Apr. 24, 1981, Pat. No. 4,313,857, which is a continuation-in-part of Ser. No. 203,730, Nov. 3, 1980, Pat. No. 4,281,110, which is a continuation-in-part of Ser. No. 112,290, Jan. 15, 1980, Pat. No. 4,243,757, which is a continuation-in-part of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Sep. 28, 1981, Ser. No. 306,184

The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.

Int. Cl.^{3} C08L *1/00*

U.S. Cl. 527—303 **35 Claims**

1. The process for the production of aldehyde lignin-cellulose silicate polyepoxy resin by mixing and reacting the following components:

A.: Polyfunctional epoxide compound, 10 to 200 parts by weight,

B.: Alkali metal aldehyde broken down lignin-cellulose silicate polymer, 50 parts by weight.

4,367,327

BREATHABLE, NON-POROUS POLYURETHANE FILM PREPARED FROM A LOW MOLECULAR WEIGHT DIFUNCTIONAL COMPOUND, A POLYETHYLENE GLYCOL AND A DIISOCYANATE

James R. Holker, Sale; Roy Jeffries, Cheadle Hulme, and George R. Lomax, Wincham, all of England, assignors to Shirley Institute, Manchester, England

Filed Jul. 21, 1981, Ser. No. 285,685

Claims priority, application United Kingdom, Nov. 22, 1980, 8037510

Int. Cl.^{3} C08G *18/32*

U.S. Cl. 528—61 **24 Claims**

1. A breathable non-porous polyurethane film consisting of a block copolymer consisting of a low molecular weight difunctional compound to provide hard segments in the film, a polyethylene glycol to provide soft segments in the film and a diisocyanate, the polyethylene glycol being present in the amount of from 25 to 45% by weight based on the total weight of the film forming constituents, and said polyethylene glycol having an average molecular weight not exceeding 2000.

4,367,328

EPOXY RESINS FROM HYDROXY BENZAMIDES

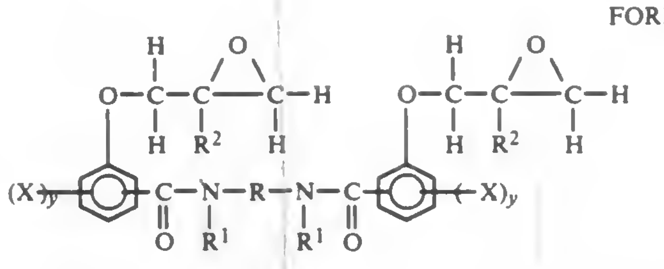
James L. Bertram, Lake Jackson, Tex., and Edmund P. Woo, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

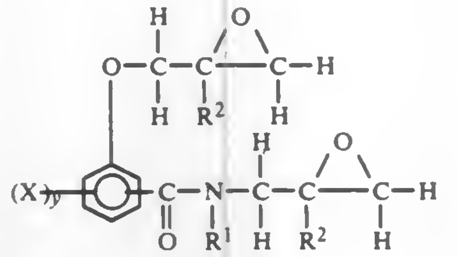
Filed Mar. 5, 1981, Ser. No. 240,742

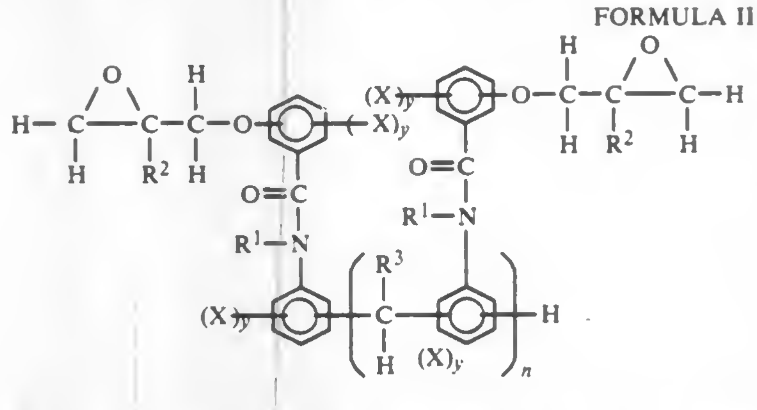
Int. Cl.^{3} C08G *59/28, 59/32*

U.S. Cl. 528—98 **4 Claims**

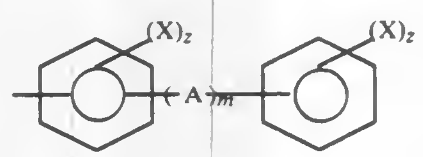
1. An epoxy resin or mixture of epoxy resins represented by the following formulas I, II or III

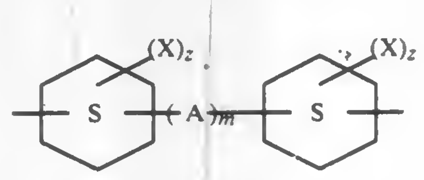

FORMULA I

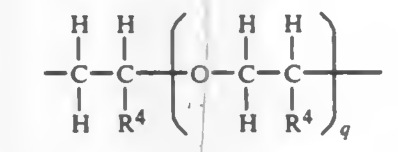

FORMULA II

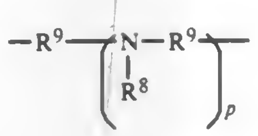

FORMULA III

wherein each R is a divalent hydrocarbyl group having from 1 to about 18 carbon atoms, a group represented by the following formulas IV, V, VI or VII

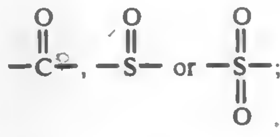

FORMULA IV


FORMULA V


FORMULA VI

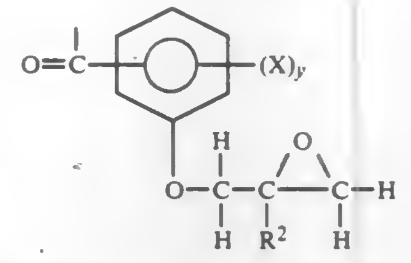

FORMULA VII

or R can combine with R^1 so as to form a stable heterocyclic ring with the nitrogen atoms; each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms, —O—, —S—, —S—S—,



$$-\overset{O}{\overset{\|}{C}}-,\ -\overset{O}{\overset{\|}{S}}-\ \text{or}\ -\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-;$$

each R^1 is independently hydrogen, a 2,3-epoxypropyl group, a 2-alkyl-2,3-epoxypropyl group, a monovalent hydrocarbyl group, or a hydroxyl substituted monovalent hydrocarbyl group, said hydrocarbyl groups having from 1 to about 9 carbon atoms, said alkyl having from 1 to about 4 carbon atoms; each R^2 and R^3 is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; each R^4 is independently hydrogen, a hydrocarbyl group or a halogen substituted hydrocarbyl group having from 1 to about 9 carbon atoms; each R^8 is independently selected from the group represented by the following formula XIV


FORMULA XIV

or the same group as R^1 except that R^8 cannot be hydrogen; each R^9 is a divalent hydrocarbyl group having from two to about 4 carbon atoms; each X is independently hydrogen, chlorine, bromine or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 9 carbon atoms; each m independently has a value of zero or 1; n has an average value of from about 0.01 to about 6; p has an average value of from 1 to about 10; q has an average value of at least 1; and each y and z independently has a value of 1 or 2.

4,367,329

POLYAROMATIC AMIDES HAVING ACETYLENE GROUPINGS CURABLE BY DIELS-ALDER CYCLOADDITION

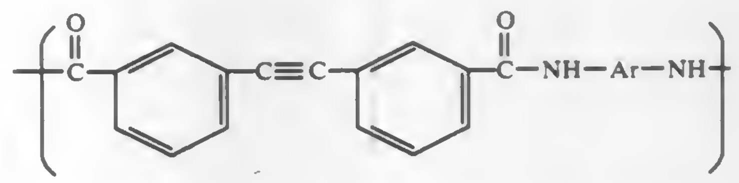
Venkatesa Sankaran, Wilmington, Del., and Carl S. Marvel, Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,720

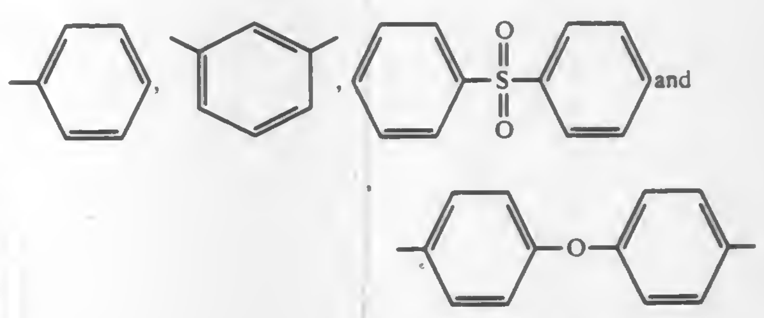
Int. Cl.^{3} C08G *69/26*

U.S. Cl. 528—183 **10 Claims**

1. A resinous polyaromatic amide having acetylene groups as integral units of the polymer chain and consisting essentially of recurring units having the following structural formula:



wherein Ar is a radical selected from the group consisting of



4,367,330
PROCESS FOR THE PREPARATION OF AROMATIC POLYCARBONATES BY THE PHASE BOUNDARY PROCESS

Uwe Hucks, Alpen, and Erhard Tresper, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,666

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938109

Int. Cl.^{3} C08G *63/62*

U.S. Cl. 528—196 **3 Claims**

1. In the process for the preparation of an aromatic, thermoplastic polycarbonate from at least one diphenol reactant, at least one monophenol reactant and phosgene reactant, in the presence of at least one chlorinated aliphatic or aromatic hydrocarbon solvent, at least one catalyst and at least one alkali hydroxide at reaction temperatures between 0° C. and 95° C., the improvement comprising introducing into said reaction a saturated aqueous solution of at least one member selected from the group consisting of NaCl, Na_2CO_3, sodium phenolate and $NaHCO_3$, causing precipitation and recovering of any of the solid alkali metal chloride, alkali metal carbonate and alkali metal bicarbonate formed during the reaction.

4,367,331
METHOD OF DEGASSING OF AQUEOUS PVC DISPERSIONS

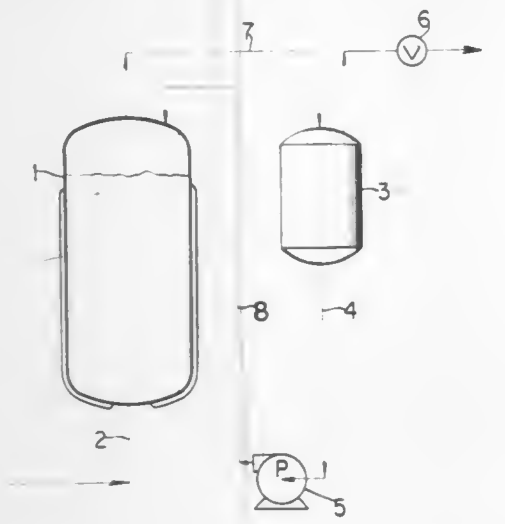
Claus Hager, Julbach, and Rudolf Wiedholz, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,527

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832972

Int. Cl.^{3} C08F *6/16*

U.S. Cl. 528—501 **5 Claims**



1. In the process for reducing the residual vinyl chloride monomer in an aqueous polyvinylchloride dispersion comprising the steps of depressurizing an aqueous polyvinylchloride dispersion of from 20% to 100% of vinyl chloride units containing emulsifiers and/or protective colloids as obtained from pressure polymerization, in a polymerization zone, subjecting the same to a vacuum with heating, passing the gasses and foam of liquid constituents resulting from said depressurizing step and said vacuum treating step to a confined space wherein said gasses are separated from liquid constituents, and recovering an aqueous polyvinylchloride dispersion having a reduced residual vinyl chloride monomer content, the improvement consisting in passing said gasses and foam of liquid constituents through a first passageway to a confined space having a volume of not more than 33⅓% of the volume of said polyvinylchloride dispersion and returning said foam of liquid constituents under pressure to said polyvinyl chloride dispersion in said polymerization zone through an elongated zone of small cross-section below said confined space separate from said first passageway and at such a rate that said confined space is never completely filled with said foam of liquid constituents.

4,367,332
N^4-ALKOXYCARBONYLARABINOFURANOSYLCYTOSINE

Daikichi Nishimura; Toshiaki Sugawara, both of Fuji, and Nobuyoshi Emoto, Numazu, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

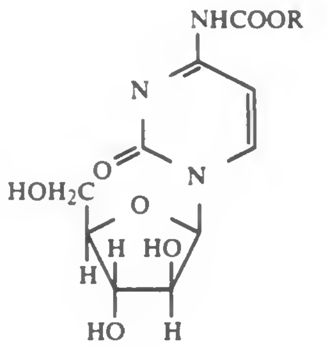
Filed Jul. 10, 1981, Ser. No. 282,227

Claims priority, application Japan, Jul. 16, 1980, 55-97025

Int. Cl.^{3} C07H *19/06*

U.S. Cl. 536—23 **9 Claims**

1. A N^4-alkoxycarbonylarabinofuranosylcytosine represented by the formula:



wherein R is an aliphatic hydrocarbon group having 4 to 22 carbon atoms.

4,367,333
METAL COMPLEXES OF ISOINDOLINAZINES, PROCESS FOR THEIR PREPARATION AND USE

Abul Iqbal, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

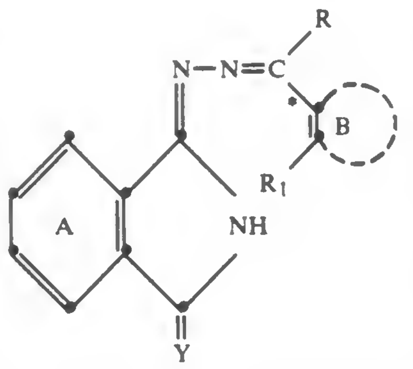
Filed Mar. 9, 1981, Ser. No. 242,003

Claims priority, application Switzerland, Mar. 13, 1980, 1979/80

Int. Cl.^{3} C07D *209/14*

U.S. Cl. 542—417 **4 Claims**

1. A 1:1 metal complex of an isoindolinazine of the formula



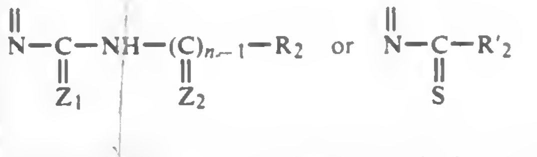
wherein ring A is unsubstituted or is substituted by two to four halogen atoms, by one or two alkyl of 1 to 4 carbon atoms, by one or two alkoxy of 1 to 4 carbon atoms, by phenyl, by phenoxy, by nitro, by benzoylamino or by alkanoylamino having 2 to 6 carbon atoms,

R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or naphthyl,

B is phenylene, naphthylene or a pyrazole, pyridine, pyrimidine, quinoline or coumarin radical,

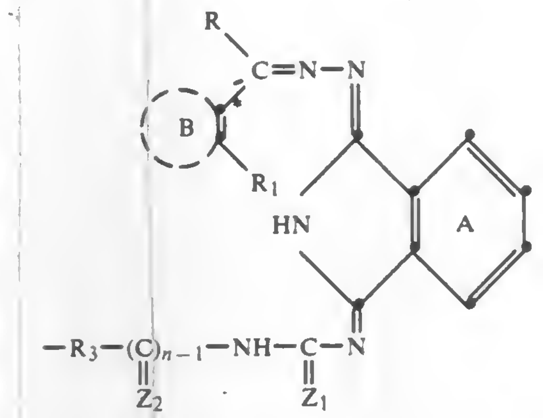
R_1 is OH or SH,

Y is a radical of the formula



$$\overset{\|}{N}-\underset{\underset{Z_1}{\|}}{C}-NH-(\underset{\underset{Z_2}{\|}}{C})_{n-1}-R_2 \quad \text{or} \quad \overset{\|}{N}-\underset{\underset{S}{\|}}{C}-R'_2$$

in which Z_1 and Z_2 are O or S atoms, n is the number 1 or 2, R_2' is an alkyl, aryl or heteroaryl radical and R_2 is an alkyl, cycloalkyl, aralkyl or aryl radical or a radical of the formula



in which R_3 is an alkylene or arylene group, and the metal is selected from the group consisting of zinc, cadmium, manganese, cobalt, iron, copper and nickel.

4,367,334
BORONTETRAFLUORIDE SALTS OF BASIC OXAZINE DYES

Peter Loew, Münchenstein, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

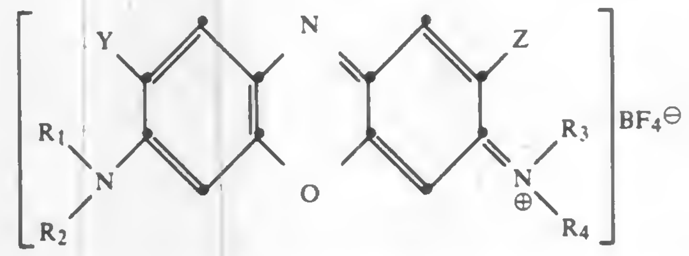
Filed Dec. 14, 1981, Ser. No. 330,747

Claims priority, application Switzerland, Dec. 24, 1980, 9574/80

Int. Cl.^{3} C07D *265/38*

U.S. Cl. 544—103 **5 Claims**

1. A dye salt of the formula



wherein R_1 and R_4 are hydrogen or alkyl, R_2 and R_3 are hydrogen, alkyl, aralkyl or aryl, and Y and Z are hydrogen, halogen, alkyl, alkoxy or aryloxy.

4,367,335
THIAZOLIDINYLALKYLENE PIPERAZINE DERIVATIVES

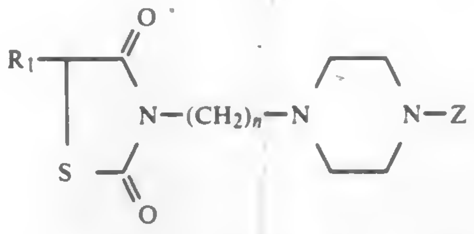
Davis L. Temple, Jr., and Richard E. Yeager, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Aug. 3, 1981, Ser. No. 289,352

Int. Cl.^{3} C07D *417/06*

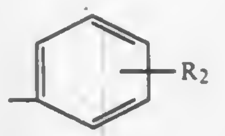
U.S. Cl. 544—295 **14 Claims**

1. A thiazolidinedione having Formula I

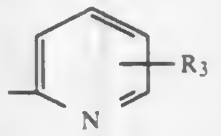


(I)

wherein R_1 is hydrogen or lower alkyl of 1 to 4 carbon atoms, n is the integer 2 through 5, Z is a R_2-substituted phenyl radical having the formula



in which R_2 is hydrogen, halogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms or trifluoromethyl, with the proviso that when n is 3 , 4 or 5, Z is also 2-pyrimidinyl or a R_3-substituted 2-pyridinyl radical having the formula



in which R_3 is hydrogen or cyano or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,367,336
2-SUBSTITUTED-5-TRIFLUOROMETHYLPYRIDINES AND PROCESS FOR PRODUCING THE SAME

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa; Isao Yokomichi, both of Moriyama; Takahiro Haga, Kusatsu, and Toru Koyanagi, Kyoto, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Feb. 23, 1981, Ser. No. 237,056

Claims priority, application Japan, Feb. 21, 1980, 55-21221; Feb. 21, 1980, 55-21222

Int. Cl.^{3} C07D *213/84, 213/55*

U.S. Cl. 546—286 **2 Claims**

1. 3-chloro-5-trifluoromethylpyridine-2-carboxylic acid.

2. 2-cyano-3-chloro-5-trifluoromethylpyridine.

4,367,337
PROCESS FOR CONVERSION OF BENZIMIDAZOLONES TO BENZOTRIAZOLES

Frederick W. Sullivan, Flossmoor, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

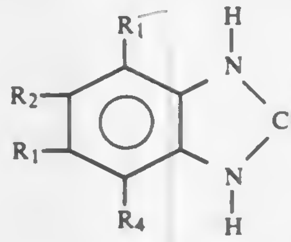
Filed Jan. 5, 1981, Ser. No. 222,446

Int. Cl.^{3} C07D *249/18*

U.S. Cl. 548—257 **10 Claims**

1. A process for producing triazoles consisting essentially of mixing in the presence of water reactive amounts of:

(a) at least one benzimidazolone having the structure:



wherein R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, alkyl, alkoxy, aryl, aroxy, aralkyl, aralkoxy, alkaroxy, and halogen wherein 'aryl' or 'ar-' is defined as phenyl; and

(b) at least one alkali metal nitrite; and heating the aqueous mixture at temperatures ranging from about 100° C. to 350° C. at pressure sufficient to maintain liquid water in the reaction.

4,367,338

URAZOLE ANALOGS OF PROSTAGLANDINS

David R. Adams, Epping, and Alexander C. Goudie, Harlow, both of England, assignors to Beecham Group Limited, England

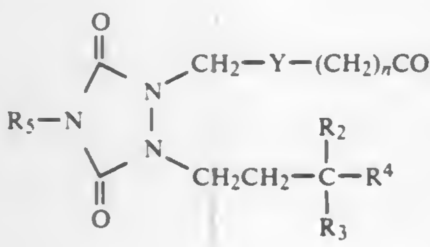
Filed Dec. 8, 1977, Ser. No. 858,554

Claims priority, application United Kingdom, Dec. 18, 1976, 52956/76; Oct. 19, 1977, 43407/77

Int. Cl.^{3} A61K *31/41;* C07D *249/12*

U.S. Cl. 548—264 **24 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein n has a value of from 1 to 5;

Y is —CH_2CH_2— or —CH=CH—;

R_1 is hydrogen; alkyl of 1 to 12 carbon atoms; phenyl; or aralkyl of up to 12 carbon atoms;

R_2 when taken alone is hydrogen; alkyl of 1 to 4 carbon atoms; or phenyl;

R_3 is hydroxy or protected hydroxy;

R_4 when taken alone is hydrogen; alkyl of 1 to 9 carbon atoms; cycloalkyl of 3 to 8 carbon atoms; phenyl; naphthyl; or alkyl of 1 to 6 carbon atoms substituted with phenyl, naphthyl or cycloalkyl of 3 to 8 carbon atoms; any of said phenyl rings and said naphthyl rings being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, phenylalkoxy wherein alkoxy contains from 1 to 6 carbon atoms or nitro; R_2 and R_4 taken together, together with the carbon atom to which they are joined, are cycloalkylidene of 5 to 8 carbon atoms; and R_5 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms; phenyl, alkyl of 1 to 6 carbon atoms substituted with phenyl or cycloalkyl of 3 to 8 carbon atoms substituted with phenyl, said phenyl rings being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro.

4,367,339

SUBSTITUTED N-NITROANILINE COMPOUNDS AND INORGANIC AND ORGANIC SALTS THEREOF USEFUL FOR ENHANCING AUXILIARY BRANCHING, CANOPY FLOWERING AND CROP YIELD OF PLANT AND AS LODGING INHIBITORS THEREFOR

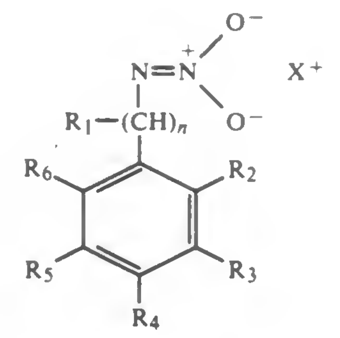
Thomas D. O'Neal, Princeton; Prithvi R. Bhalla, Hightstown, and Barrington Cross, Rocky Hill, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 18, 1980, Ser. No. 179,335

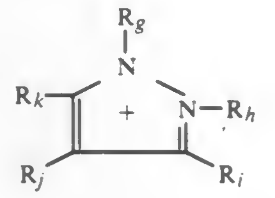
Int. Cl.^{3} C07D *231/10*

U.S. Cl. 548—378 **12 Claims**

1. A salt of a substituted N-nitroaniline represented by the structural formula



wherein n is an integer of 0 or 1; R_1 is hydrogen or methyl; R_2 and R_6 are halogen, C_1–C_2 alkyl, CF_3; SO_2R_8 or SR_8 wherein R_8 is C_1–C_6 alkyl, phenyl, or benzyl and with the proviso that only one of R_2 and R_6 may be F, CF_3, SCH_3, C_2H_5 or $SO_2C_6H_5$; R_3 is hydrogen; R_4 is hydrogen, Br, F, I, CH_3, COC_6H_5, CN or $SO_2N(CH_3)_2$; R_5 is hydrogen; X^+ is organic and represented by structural formula IIIe



(IIIe)

wherein R_g and R_h is each methyl or ethyl; R_i and R_k are phenyl or cyclohexyl; and R_j is hydrogen or OCH_3

4,367,340

4-OXY-CYCLOPENT-2-EN-1-ONE DERIVATIVE, A PROSTAGLANDIN INTERMEDIATE, AND THE PROCESS FOR ITS PREPARATION

Rodney W. Rickards, Weetangerra; Melvyn Gill, Hughes, both of Australia, and Robert M. Christie, Neilston, Scotland, assignors to The Australian National University, Australia

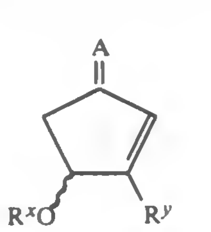
Continuation of Ser. No. 70,920, Aug. 20, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,451

Claims priority, application Australia, Sep. 4, 1978, PD5809

Int. Cl.^{3} C07D *309/06;* C07C *69/74, 61/20, 49/537*

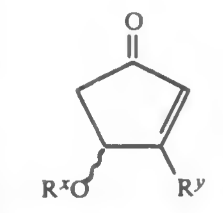
U.S. Cl. 549—214 **27 Claims**

1. Compounds of the general formula I:



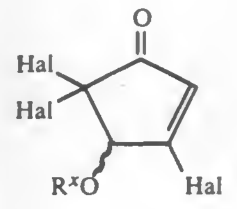
wherein A represents O; R^x represents hydrogen or a removable alcohol protecting group selected from the group consisting of substituted silyl, alkoxyalkyl, tetrahydrofuran-2-yl and tetrahydropyran-2-yl, and R^y represents halogen, an alkyl thio group, a dialkyl amino group, or a group of the formula R^2, and R^2 represents an unsubstituted straight- or branched-chain alkynyl group, or a straight- or branched-chain alkenyl or alkynyl group substituted by one or more carboxyl, carboxylic acid ester, or free or protected hydroxy, thiol, aldehyde or keto groups wherein the protected groups are selected from lower alkyl ethers and thio ethers, hydroxyl groups protected with substituted silyl, alkoxyalkyl, tetrahydrofuran-2-yl or tetrahydropyran-2-yl, non-cyclic or cyclic acetals and ketals and their thio analogues; with the proviso that R^x is not hydrogen when A is O and R^y is R^2.

14. A process for the preparation of compounds of the general formula:



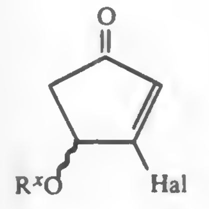
wherein R^x represents hydrogen or a removable alcohol protecting group selected from the group consisting of substituted silyl, alkoxyalkyl, tetrahydrofuran-2-yl and tetrahydropyran-2-yl; and R^y represents halogen. an alkyl thio group, a dialkyl amino group, or a group of the formula R^2, and R^2 represents a straight- or branched-chain alkyl, alkenyl or alkynyl group which may optionally be substituted by one or more carboxyl, carboxylic acid ester, or free or protected hydroxy, thiol, aldehyde or keto groups, wherein the protected groups are selected from lower alkyl ethers and thio ethers, hydroxyl groups protected with substituted silyl, alkoxyalkyl, tetrahydrofuran-2-yl or tetrahydropyran-2-yl, non-cyclic or cyclic acetals and ketals and their thio analogues; with the proviso that R^x is not hydrogen when R^y is R^2, said process comprising:

(a) partial dehalogenation of a compound of the general formula II



II

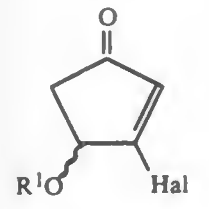
wherein Hal represents halogen, and R^x is as defined above, to produce a compound of the general formula Ia:



Ia

wherein Hal and R^x are as defined above;

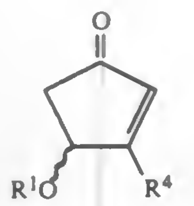
(b) protection of the hydroxyl substituent of a compound of the general formula Ia as defined above, in which R^x represents hydrogen to produce a compound of the general formula Ib;



Ib

wherein Hal is as defined above and R^1 represents a protective group;

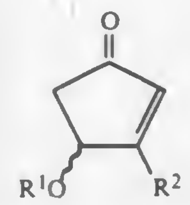
(c) replacement of the halogen substituent of a compound of the general formula Ib as defined above, to produce a compound of the general formula Ic:



Ic

wherein R^4 represents a substituted thio group or a disubstituted amino group and R^1 represents a protecting group; and

(d) reaction of a compound of the general formula Ib as defined above or of a compound of the general formula Ic as defined above in a conjugate addition-elimination reaction to produce a compound of the general formula Id:



wherein R^1 represents a protecting group and R^2 is as defined above.

4,367,341

ANTIATHEROSCLEROTIC 7-SUBSTITUTED METHOXYFUROCHROMONES

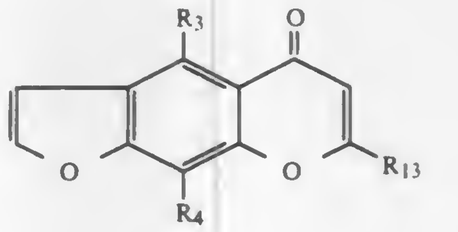
Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 116,322, Jan. 28, 1980, Pat. No. 4,284,569, which is a continuation-in-part of Ser. No. 11,816, Feb. 13, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,932

Int. Cl.^{3} C07D *311/78*

U.S. Cl. 549—387 **9 Claims**

1. A fruochromone of Formula VII



VII

wherein R_{13} is:
(a) trifluoromethyl;
(b) phenoxymethyl;
(c) phenylthiomethyl;
(d) phenoxymethyl or phenylthiomethyl substituted by chloro, fluoro, trifluoromethyl, alkyl of 1 to 3 carbon atoms, or alkoxy of 1 to 3 carbon atoms; or
(e) cycloalkyl of 3 to 10 carbon atoms, inclusive; and
wherein one of R_3 and R_4 is methoxy and the other is methoxy or hydrogen..

4,367,342

OLEFIN EPOXIDATION

Harald P. Wulff, Alameda, Calif., and Freddy Wattimena, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 747,160, Dec. 3, 1976, abandoned, which is a continuation of Ser. No. 173,325, Aug. 19, 1971, abandoned, which is a continuation of Ser. No. 812,920, Apr. 2, 1969, abandoned. This application May 26, 1978, Ser. No. 909,887

The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.

Int. Cl.³ C07D *301/19*

U.S. Cl. 549—529 **19 Claims**

1. A process of epoxidizing propylene by reacting, in liquid phase in inert solvent at a temperature of about 25° C. to 200° C., propylene with a hydrocarbon hydroperoxide selected from tertiary alkyl hydroperoxide of from 4 to 20 carbon atoms and aralkyl hydroperoxide of from 7 to 20 carbon atoms wherein the hydroperoxy group is on a carbon atom attached directly to an aromatic ring in the presence of a heterogeneous essentially insoluble catalyst composition comprising an inorganic oxygen compound of silicon in chemical combination with at least 0.1% by weight, based on total catalyst composition, of an oxide or hydroxide of titanium.

4,367,343

SYNTHESIS OF TETRAALKYLSILANES

Christ Tamborski, Dayton, and Carl E. Snyder, Jr., Trotwood, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 31, 1981, Ser. No. 336,474

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—478 **9 Claims**

1. A process for producing a mixture of tetraalkylsilane compounds of the formula

$R_aSiR_b'R''_{4-a-b}$

wherein a has a value ranging from 0 to 2, b has a value ranging from 0 to 4 and the sum of a plus b has a value ranging from 0 to 4; R, R' and R'' are alkyl radicals containing from 1 to 20 carbon atoms, and R, R' and R'' are different, which comprises reacting a halosilicon compound of the formula

R_aSiX_{4-a}

wherein R and a are as described above, and X is a halogen, with at least two organometallic compounds having the formulas

R'M and R''M

wherein R' and R'' are as described above and M is —Li or —MgX, wherein X is as described above, for a time sufficient to convert substantially all of said halosilicon compounds to the product.

4,367,344

PROCESS FOR THE PREPARATION OF 1-AMINO-CYCLOPROPANE-CARBOXYLIC ACID COMPOUNDS

Bernd Gallenkamp, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

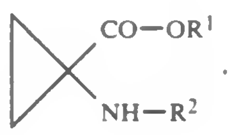
Filed Aug. 22, 1980, Ser. No. 180,557

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936038

Int. Cl.³ C07C *101/18, 125/06, 101/14*

U.S. Cl. 560—115 **10 Claims**

1. Process for the preparation of a 1-amino-cyclopropanecarboxylic acid compound of the formula



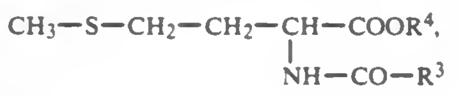
(I)

wherein

R¹ is alkyl;

R² is a radical —CO—R³ wherein

R³ is hydrogen, alkyl, aryl or alkoxy, which process comprises reacting a 2-acylamino-4-methyltiobutanoic acid ester compound of the formula



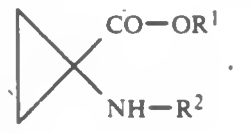
$$CH_3-S-CH_2-CH_2-\underset{\displaystyle NH-CO-R^3}{\underset{|}{CH}}-COOR^4,\qquad (II)$$

in which

R³ is as identified above and

R⁴ is alkyl, successively with dimethylsulfate and an alkali metal alcoholate at a temperature from 80° to 150° C.

10. Process for the preparation of a 1-amino-cyclopropanecarboxylic acid compound of the formula



(I)

wherein

R¹ is hydrogen;

R² is hydrogen

which process comprises reacting D,L-N-acetylmethionine methyl ester successively with dimethylsulfate and sodium methylate; at a temperature from 80° to 150° C. the product obtained is subsequently saponified with aqueous calcium hydroxide, the mixture is then acidified with concentrated hydrochloric acid and the hydrochloride formed is treated, in methanolic solution, with propylene oxide.

4,367,345

PROCESS FOR PRODUCING TOLYLTHIOUREA HAVING HIGH PURITY

Yutaka Ohishi, Shizuoka; Yoshiki Nakayama, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1981, Ser. No. 256,828

Claims priority, application Japan, May 6, 1980, 55-59809

Int. Cl.³ C07C *157/09*

U.S. Cl. 564—26 **9 Claims**

1. A process for producing tolylthiourea having high purity, which comprises: reacting toluidine with a thiocyanate and a mineral acid in the presence of a combined solvent medium of water and an aromatic or aliphatic aprotic solvent, said solvent medium containing water in an amount of greater than 0.024 times the amount of toluidine.

4,367,346

METHOD FOR SYNTHESIS OF LONG-CHAIN ALCOHOLS

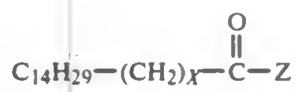
Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 23, 1981, Ser. No. 256,626

Int. Cl.³ C07C *29/136, 51/00*

U.S. Cl. 568—884 **4 Claims**

1. A process for the preparation of long-chain carbon compounds characterized by: (a) reacting cyclododecanone with morpholine in the presence of a catalyst to form 1-morpholino-1-cyclododecene; (b) separating the 1-morpholino-1-cyclododecene and reacting it with an organic acid halide of the structural formula:



$$C_{14}H_{29}-(CH_2)_X-\overset{\displaystyle O}{\overset{\|}{C}}-Z\qquad \begin{matrix}(II)\\ \text{Acid Halide}\end{matrix}$$

wherein Z is a chlorine, bromine, iodine or fluorine radical and X is 0, 1, 2, 3, 4, or 5; in the presence of a tertiary amine in an organic solvent while maintaining the reaction temperature at 0°-10° C. followed by (c) hydrolysis under acidic conditions, thereafter (d) separating the 2-n-alkyl-cyclotetradecanedione and reacting with a solution of alkali metal hydroxide and diethylene glycol at 90°-110° C. followed by (e) addition of hydrazine hydrate and the reaction mixture is refluxed at 125°-135° C. thereafter (f) the distillate is removed until the temperature of the reaction mixture climbs to 190°-210° C. where it is refluxed for 3 to 20 hours with slow stirring, and then (g) cooled to 110°-125° C. followed by addition of hot (80°-95° C.) water with rapid stirring followed by (h) neutralization with aqueous acid to a pH of 2 to yield the carboxylic acid which is separated and purified by recrystallization which is then (i) dissolved in tetrahydrofuran under an inert atmosphere and has added thereto the reducing agent, boranemethyl sulfide complex with stirring and heated to 40°-45° C. for 2 to 3 hours before cooling to ambient temperature followed by the sequential addition of methanol and water to quench excess borane reagent followed by (k) separation and purification of the long-chain alcohol.

4,367,347

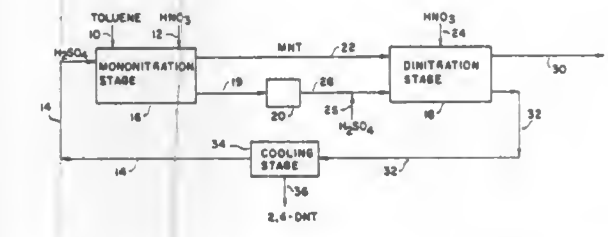
HIGH PURITY 2,4-DINITROTOLUENE FROM TOLUENE NITRATION PROCESS

John E. Sawicki, Breinigsville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 1, 1981, Ser. No. 269,137

Int. Cl.³ C07C *79/10*

U.S. Cl. 568—934 **20 Claims**



1. A method for preparing substantially pure 2,4-dinitrotoluene from its admixture with other dinitrotoluene isomers which comprises:

(a) contacting an organic phase comprising the mixture of dinitrotoluene isomers with aqueous sulfuric acid at an elevated temperature for a time sufficient to form an aqueous sulfuric acid phase containing the dinitrotoluene isomers;

(b) cooling the aqueous sulfuric acid phase to effect precipitation of substantially pure 2,4-dinitrotoluene crystals without precipitation of a significant amount of another dinitrotoluene isomer; and

(c) collecting the crystals of 2,4-dinitrotoluene.

4,367,348

NOVEL TRIFLUOROMETHYL BENZAL CHLORIDES AND PROCESS FOR THE PREPARATION THEREOF

R. Simon-Bierenbaum, Buffalo, and David Y. Tang, Tonawanda, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 10, 1980, Ser. No. 195,736

Int. Cl.³ C07B *9/00;* **C07C** *17/14, 45/00*

U.S. Cl. 570—127 **11 Claims**

1. m-trifluoromethyl benzal chloride.

4,367,349

LIQUID PHASE SYNTHESIS OF HEXAFLUOROISOBUTYLENE

Louis G. Anello, Hamburg, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 18, 1981, Ser. No. 275,010

Int. Cl.³ C07C *17/00*

U.S. Cl. 570—140 **20 Claims**

1. A process for the preparation of hexafluoroisobutylene which comprises reacting, in the liquid phase, hexafluorothioacetone dimer with formaldehyde or a formaldehyde-generating compound in an aprotic solvent containing at least a catalytic amount of an alkali metal fluoride or a sulfonic acid having the formula RSO₃H wherein R is an organic radical selected from the group consisting of straight and branched chain alkyl groups having one to fourteen carbon atoms, aryl groups having six to ten carbon atoms, monoalkylaryl groups wherein alkyl is a straight or branched chain carbon group having one to fourteen carbon atoms and wherein aryl is an aromatic group containing six to ten carbon atoms, and dialkylaryl wherein each alkyl group is independently a straight or branched chain organic group having one to fourteen carbon atoms and wherein aryl is an aromatic group containing six to ten carbon atoms.

4,367,350

PROCESS FOR PREPARING PERFLUORO(LOWER)ALKYL-BENZENES AND THEIR DERIVATIVES

Uji Hiramatsu, Takatsuki; Toshihide Honda, Toyonaka, and Yohnosuke Ohsaka, Takasuki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 27, 1977, Ser. No. 864,804

Claims priority, application Japan, Dec. 27, 1976, 51-159034

Int. Cl.³ C07C *17/14*

U.S. Cl. 570—144 **9 Claims**

1. A process for preparing perfluoro(lower)alkylbenzenes which comprises contacting a lower alkylbenzene with hydrogen fluoride in the absence of any catalyst in the gaseous phase and in the presence of chlorine at an elevated temperature to give the corresponding perfluoro(lower)alkylbenzene.

4,367,351

HIGH DENSITY FUEL COMPOSITIONS

Dennis H. Fisher, Westerville, Ohio; Steven C. Howe, Big Spring, Tex., and Richard L. Linard, Dublin, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jul. 1, 1981, Ser. No. 279,412

Int. Cl.³ C10L *1/04*

U.S. Cl. 585—14 **4 Claims**

1. A high density fuel composition consisting essentially of (a) from 70-95 weight percent of exo-tetrahydrodicyclopentadiene; (b) from 4-20 weight percent of the hydrogenated dimers of norbornadiene; and (c) from 1-7 weight percent of an isomeric mixture of C_5-C_7 hydrocarbons.

4,367,352

OLIGOMERIZED OLEFINS FOR LUBRICANT STOCK

Lewis W. Watts, Jr., and Edward T. Marquis, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,119

Int. Cl.³ C07C *2/74*

U.S. Cl. 585—254 **8 Claims**

1. A process for the production of high quality synthetic lubricants which comprises

a. transforming ethylene into a mixture of alpha olefins,

b. separating from the mixture of (a) the alpha olefins in the range from about 14 to 20 carbon atoms,

c. oligomerizing the alpha olefins of from about 14 to 20 carbon atoms from (b) with a perfluorosulfonic acid resin catalyst at a temperature sufficient to effect oligomerization,

d. combining the olefins from step (b) which are outside the range of from about 14 to 20 carbon atoms,
e. subjecting the olefins from (d) to an isomerization/disproportionation process to provide a mixture of olfins,
f. separating from the mixture the olefins made in (c) those olefins in the range of from about 14 to 20 carbon atoms,
g. oligomerizing the olefins of from about 14 to 20 carbon atoms from (f) with a perfluorosulfonic acid resin catalyst at a temperature sufficient to effect oligomerization,
h. combining the olefins from (f) which are outside the range of from about 14 to 20 carbon atoms,
i. subjecting the olfins from (h) to an isomerization/disproporationation process to provide a mixture of olefins,
j. repeating steps (f) through (i) and,
k. hydrogenating the oligomers from steps (c) and (g)

4,367,353
CATALYTIC HYDROGENATION AND PURIFICATION

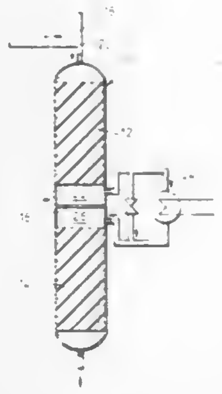
Hugh S. Inglis, Norton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 11, 1978, Ser. No. 968,168

Claims priority, application United Kingdom, Dec. 21, 1977, 53187/77

Int. Cl.^{3} C07C *7/163, 7/167*

U.S. Cl. 585—258 **9 Claims**



1. In a process of purifying a starting gaseous unsaturated hydrocarbon stream substantially devoid of hydrogen by selectively hydrogenating more highly unsaturated hydrocarbon impurity contained therein

the improvement resulting in decreased by-product carbon and polymer formation and thereby lengthened catalyst life which comprises
(a) dividing the said hydrocarbon stream to provide a first and second stream;
(b) mixing said first hydrocarbon-containing stream with hydrogen in an amount in excess of the stoichiometric requirement to hydrogenate the impurities;
(c) reacting the mixture of step (b) over a first bed of catalyst to give a stream of greater purity and containing unreacted hydrogen;
(d) mixing said second hydrocarbon-containing stream with the product of step (c), the proportions being such that the hydrogen content is at least sufficient to hydrogenate the impurities; and
(e) reacting the resulting mixture of step (d) over a second bed of catalyst to give a product stream that is further purified of more highly unsaturated hydrocarbons.

4,367,354
TEMPERATURE CONTROL OF A SELECTIVE HYDROGENATION PROCESS

Robert J. Dibiano, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 30, 1981, Ser. No. 279,123

Int. Cl.^{3} C07C *5/03;* **C07B** *1/00*

U.S. Cl. 585—259 **8 Claims**

1. Apparatus comprising:
a first catalyst bed;
means for supplying an olefin-rich first feed stream containing acetylene and carbon monoxide to said first catalyst bed, a portion of said acetylene in said first feed stream being removed from said first feed stream in said first catalyst bed;
a second catalyst bed;
means for withdrawing the reaction effluent from said first catalyst bed as a first product stream and for supplying said first product stream as a second feed stream to said second catalyst bed, a portion of said acetylene in said second feed stream being removed from said second feed stream in said second catalyst bed;
means for withdrawing the reaction effluent, containing a substantially reduced concentration of said acetylene, from said second catalyst bed as a second product stream;
means for establishing a first signal representative of the concentration of carbon monoxide in said first feed stream at a time t_1;
means for establishing a second signal representative of the concentration of carbon monoxide in said first feed stream at a time t_2 which is later in time than said time t_1;
means for establishing a first feed forward control signal in response to said first and second signals, wherein said first feed forward control signal is a function of the concentration of carbon monoxide in said first feed stream at said time t_2 and a function of the change in the concentration of carbon monoxide in said first feed stream between said time t_1 and said time t_2 and wherein said first feed forward control signal is scaled so as to be representative of a change in the temperature of said first feed stream and said second feed stream required to maintain the actual acetylene concentration in said second product stream substantially equal to a desired acetylene concentration in said second product stream when the concentration of carbon monoxide changes between said time t_1 and said time t_2;
means for establishing a third signal representative of the actual acetylene concentration in said second product stream at said time t_2;
means for establishing a fourth signal representative of the desired acetylene concentration in said second product stream;
means for comparing said third signal and said fourth signal and for establishing a feed back control signal which is responsive to the difference between said third signal and said fourth signal, wherein said feed back control signal is scaled so as to be representative of a temperature change required to maintain said third signal substantially equal to said fourth signal;
means for summing said first feed forward control signal and said feed back control signal to establish a temperature control signal; and
means for manipulating the temperature of said first feed stream and the temperature of said second feed stream in response to said temperature control signal.

5. A method for controlling a selective hydrogenation process wherein acetylene is removed from an olefin-rich first feed stream which contains acetylene and carbon monoxide and wherein said first feed stream is supplied to the first of two reaction zones in series, said method comprising the steps of:
establishing a first signal representative of the concentration of carbon monoxide in said first feed stream at a time t_1;
establishing a second signal representative of the concentration of carbon monoxide in said first feed stream at a time t_2 which is later in time than said time t_1;
establishing a first feed forward control signal in response to said first and second signals, wherein said first feed forward control signal is a function of the concentration of carbon monoxide in said first feed stream at said time t_2 and a function of the change in the concentration of carbon monoxide in said first feed stream between said time t_1 and said time t_2 and wherein said first feed forward control signal is scaled so as to be representative of a change in the temperature of said first feed stream and the

product stream from said first reaction zone, which is provided as a second feed stream to said second reaction zone, required to maintain the actual acetylene concentration in a second product stream from said second reaction zone substantially equal to a desired acetylene concentration in said second product stream when the concentration of carbon monoxide changes between said time t_1 and said time t_2;
establishing a third signal representative of the actual acetylene concentration in said second product stream at said time t_2;
establishing a fourth signal representative of the desired acetylene concentration in said second product stream;
comparing said third signal and said fourth signal and establishing a feed back control signal which is responsive to the difference between said third signal and said fourth signal, wherein said feed back control signal is scaled so as to be representative of a temperature change required to maintain said third signal substantially equal to said fourth signal;
summing said first feed forward control signal and said feed back control signal to establish a temperature control signal; and
manipulating the temperature of said first feed stream and the temperature of said second feed stream in response to said temperature control signal.

4,367,355
HYDROGENATION USING CHITIN AND CHITOSAN BASED IMMOBILIZED METAL CATALYSTS

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 83,926, Oct. 11, 1979, Pat. No. 4,274,980. This application Feb. 23, 1981, Ser. No. 237,030

Int. Cl.^{3} C07C *5/02, 5/03, 5/08*

U.S. Cl. 585—269 **5 Claims**

1. A process for the hydrogenation of unsaturated organic materials consisting of unsaturated hydrocarbons comprising contacting an effective amount of a catalyst, said catalyst containing a zerovalent Group VIII metal immobilized in a highly dispersed state on an aminated polysaccharide as a support, with a feedstock containing said unsaturated organic material in the presence of hydrogen so as to effect the hydrogenation of said unsaturated organic material.

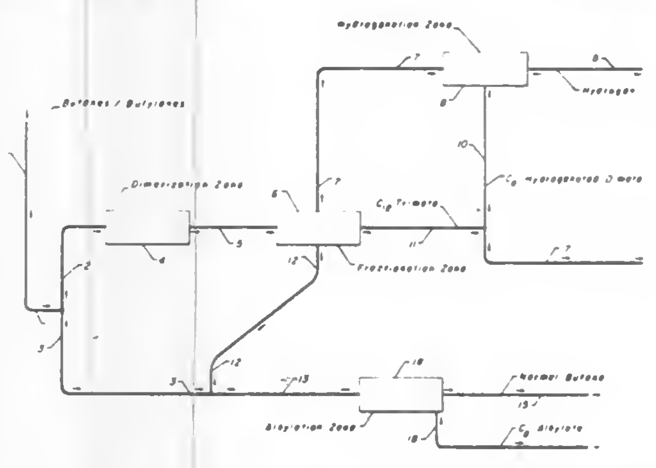
4,367,356
PROCESS FOR THE PRODUCTION OF GASOLINE FROM C_4 HYDROCARBONS

Dennis J. Ward, South Barrington, Ill., assignor to UOP, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 122,154, Feb. 19, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,594

Int. Cl.^{3} C07C *2/58*

U.S. Cl. 585—315 **10 Claims**



1. In a hydrocarbon conversion process in which a feed stream comprising isobutane, isobutylene and normal butylenes is passed into an HF alkylation zone and C_8 hydrocarbons suitable for use as motor fuel blending components are produced therein, the improvement which comprises increasing the butene-2 content of the feed stream by the series of steps which comprises:
(a) dividing the feed stream into a first process stream and a second process stream of equal composition;
(b) passing the first process stream into a dimerization zone in which butylenes are reacted with isobutylene, and thereby producing a dimerization zone effluent stream which comprises isobutane, isobutylene, normal butylenes and C_8 hydrocarbons;
(c) separating the dimerization zone effluent stream into a dimate stream which is rich in C_8 hydrocarbons and a third process stream which comprises isobutane, isobutylene and normal butylenes, with the mole ratio of butene-2 to butene-1 in the third process stream being greater than the mole ratio of butene-2 to butene-1 in the feed stream; and,
(d) passing the second process stream and the third process stream into an alkylation zone in which butylenes are reacted with isobutane as the alkylation zone feed.

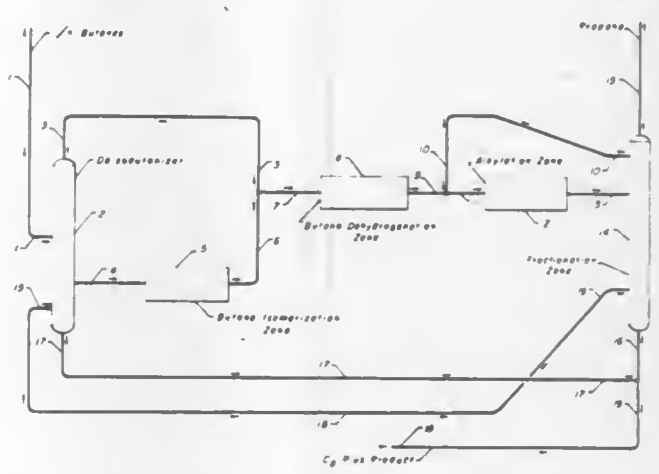
4,367,357
PROCESS FOR THE CONVERSION OF BUTANES INTO GASOLINE

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 101,329, Dec. 6, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,404

Int. Cl.^{3} C07C *3/54*

U.S. Cl. 585—332 **11 Claims**



1. A hydrocarbon conversion process which comprises the steps of:
(a) separating a feed stream which comprises a mixture of isobutane and normal butane into a first process stream which is rich in normal butane and a second process stream which is rich in isobutane in a first fractionation zone, with the first process stream being withdrawn from the first fractionation zone at a first intermediate point;
(b) passing the first process stream through an isomerization zone operated at butane isomerization conditions and thereby producing an isomerization zone effluent stream which comprises a mixture of isobutane and normal butane having at least 50 mole percent isobutane;
(c) passing the isomerization zone effluent stream and the second process stream, which if combined would contain less than 40 mole percent normal butane and more than 70 mole percent isobutane, through a dehydrogenation zone operated at butane dehydrogenation conditions and thereby producing a dehydrogenation zone effluent stream which comprises normal butane, isobutane, normal butenes and isobutylene;
(d) passing the dehydrogenation zone effluent stream, wherein all of said hydrocarbons have passed through said dehydrogenation zone at least once, into an alkylation zone operated at alkylation-promoting conditions and

thereby producing an alkylation zone effluent stream which comprises normal butane, isobutane and C_8 branched-chain hydrocarbons;

(e) separating the alkylation zone effluent stream in a second fractionation zone and thereby producing a first bottoms stream which is rich in C_8 branched-chain hydrocarbons and a lower sidecut stream which is rich in normal butane and comprises C_8 branched-chain hydrocarbons;

(f) passing the lower sidecut stream into the first fractionation zone at a lower second intermediate point;

(g) withdrawing a second bottoms stream comprising C_8 branched-chain hydrocarbons from the first fractionation zone; and,

(h) combining the first and the second bottoms streams and producing a product stream which is rich in C_8 branched-chain hydrocarbons.

4,367,358
METHOD FOR THE PRODUCTION OF ETHYLBENZENE

Lawson G. Wideman, Tallmadge; Lynn A. Bente, Dover, and Joseph A. Kuczkowski, Munroe Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 14, 1981, Ser. No. 330,059

Int. Cl.^{3} C07C *4/02*

U.S. Cl. 585—440 **15 Claims**

1. A method for the production of ethylbenzene by catalytic dehydrogeneration of cycloolefins having 8 carbon atoms and 2 double bonds which are present in a styrene stream comprising passing said stream at a temperature from about 160° to about 400° C. over an alkali metal complex catalyst.

4,367,359
PARA-SELECTIVE ZEOLITE CATALYSTS TREATED WITH CARBON DIOXIDE

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,484

Int. Cl.^{3} C07C *2/68*

U.S. Cl. 585—467 **12 Claims**

1. A process for converting aromatic compounds to a dialkyl benzene compound mixture highly enriched in the para-dialkylbenzene isomer, said process comprising contacting said aromatic compounds under conversion conditions with a modified zeolite based catalyst comprising a crystalline zeolite material characterized by a silica to alumina ratio of at least 12 and a constraint index of from about 1 to 12, said catalyst having been contacted with a carbon dioxide treating agent under para-selectivity enhancing conditions.

4,367,360
METHOD FOR PRODUCT ISOLATION AND CATALYST RECOVERY IN ALUMINUM CHLORIDE CATALYZED ISOMERIZATION OF SYM-OCTAHYDROPHENANTHRENE TO SYM-OCTAHYDROANTHRACENE

William T. Gormley, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 18, 1981, Ser. No. 303,543

Int. Cl.^{3} C07C *5/22*

U.S. Cl. 585—477 **14 Claims**

14. A process for isomerization of sym-octahydrophenanthrene to sym-octahydroanthracene, comprising the steps:

(a) contacting a sym-octahydrophenanthrene isomer with a catalyst provided by $AlCl_3$, or $AlBr_3$, or a mixture thereof, for a period of time and at a temperature sufficient to isomerize a major amount of the sym-octahydrophenanthrene isomer to the sym-octahydroanthracene isomer and form a semi-solid mass containing both the sym-octahydrophenanthrene and sym-octahydroanthracene isomer and the catalyst; then

(b) contacting said semi-solid mass with a saturated aliphatic or cycloaliphatic liquid hydrocarbon having a boiling point in a range from about 30° C. to 160° C. to provide a hydrocarbon liquid phase containing sym-octahydrophenanthrene and sym-octahydroanthracene isomers and a semi-solid phase containing used catalyst,

(c) Separating the liquid hydrocarbon phase from the semi-solid phase; and thereafter

(d) contacting additional sym-octahydrophenanthrene with said semi-solid phase to isomerize a major amount of the additional sym-octahydrophenanthrene isomer to the sym-octahydroanthracene isomer,

whereby steps (b), (c) and (d) may be repeated.

4,367,361
ALKENE OLIGOMERIZATION PROCESS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,015

Int. Cl.^{3} C07C *2/02*

U.S. Cl. 585—521 **11 Claims**

1. A process for oligomerizing alkenes which comprises contacting at about 0° to about 300° C. the alkene with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,367,362
PROCESS FOR THE ISOMERIZATION OF N-ALKENES

Gerhard Franz; Friedrich Heinrich, and Hans-Josef Ratajczak, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,235

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000650; Oct. 29, 1980, 3040698

Int. Cl.^{3} C07C *5/27*

U.S. Cl. 585—671 **13 Claims**

1. A process for the catalytic skeleton isomerization of an n-alkene to an isoalkene comprising contacting the n-alkene with a fluorinated aluminum oxide catalyst at a temperature of 250°-550° C., in the presence of 0.5-150% by weight of water, based on the amount of alkene employed.

4,367,363
PRODUCTION OF ACETYLENE

Michael Katz, New City, N.Y.; Frank Carluccio, Towaco, N.J.; Gil Mallari, Jersey City, N.J.; Kevin FitzPatrick, Irvington, N.J.; Ashok Desai, Wayne, N.J.; Robert Casciano, Hewitt, N.J., and Jane Tsai, Upper Montclair, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,756

Int. Cl.^{3} C07C *7/10*

U.S. Cl. 585—809 **8 Claims**

1. The process for recovering essentially pure acetylene from the gaseous out-put stream from a coal to acetylene conversion process, comprising the steps of:

(a) processing said gaseous out-put stream in an acid gas removal first stage by absorbing HCN and H_2S in an organic solvent, and scrubbing with a caustic agent to remove CO_2;

(b) scrubbing said gaseous out-put stream with organic solvent in a sweet gas treatment second stage and removing essentially pure acetylene as a product; and

(c) in a third stage, first hydrogenating, then desulfurizing and then methanating the remaining gases from said

second stage and recycling out-put from said third stage to said coal to acetylene conversion process.

4,367,364
PROCESS FOR SEPARATING NORMAL PARAFFINS USING SILICALITE ADSORBENT

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 30, 1981, Ser. No. 288,570

Int. Cl.^{3} C07C *7/12*

U.S. Cl. 585—826 **11 Claims**

7. A process for separating a normal paraffin from a mixture of the same with another structural class of hydrocarbon selected from the cyclic hydrocarbons having greater than six carbon atoms per molecule and the branched chain hydrocarbons, which process employs an adsorbent consisting essentially of silicalite, which process comprises the steps of:

(a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed input stream at an upstream boundary of said zone and a raffinate output stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract output stream at an upstream boundary of said purification zone and said feed input stream at a downstream boundary of said purification zone;

(d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent input stream at an upstream boundary of said zone and said extract output stream at a downstream boundary of said zone;

(e) passing said feed mixture into said adsorption zone at adsorption conditions to effect the selective adsorption of said normal paraffin by said adsorbent in said adsorption zone and withdrawing a raffinate output stream from said adsorption zone;

(f) passing a desorbent material into said desorption zone at desorption conditions to effect the displacement of said normal paraffin from the adsorbent in said desorption zone;

(g) withdrawing an extract output stream comprising said normal paraffin and desorbent material from said desorption zone;

(h) withdrawing a raffinate output stream comprising said branched chain and cyclic hydrocarbons from said desorption zone; and

(i) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone the feed input stream, raffinate output stream, desorbent input stream, and extract output stream to effect the shifting of zones through said adsorbent and the production of extract output and raffinate output streams.

4,367,365

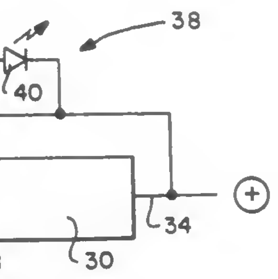
SOLAR ENERGY CONVERSION ARRANGEMENT UTILIZING PHOTOVOLTAIC MEMBERS

Robert M. Spencer, Cupertino, Calif., assignor to Acurex Solar Corporation, Mountain View, Calif.

Filed Jul. 13, 1981, Ser. No. 282,915

Int. Cl.^{3} H01L *31/04*

U.S. Cl. 136—244 **6 Claims**



1. A solar energy conversion arrangement comprising a group of photovoltaic or like type members, each of which is designed to convert solar energy directly into electrical energy by developing a voltage across opposite terminals thereof in response to and dependent on the amount of solar energy it collects, means for electrically interconnecting said members together in a specific way which combines their voltages in order to drive a given load, and individual means associated with each photovoltaic or like type member for producing a visual signal in the event that the electrical resistance of the latter between its terminal means increases above a certain level.

4,367,366

SOLAR CELL ARRANGEMENT

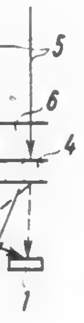
Werner H. Bloss, Lindenstrasse 45, D-7065 Winterbach, Fed. Rep. of Germany; Gert H. Hewig, Steinenbronn, Fed. Rep. of Germany; Gerhard Laub, and Erich Reinhardt, both of Stuttgart, Fed. Rep. of Germany, assignors to Werner H. Bloss, Winterbach, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,626

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005914

Int. Cl.^{3} H01L *31/04*

U.S. Cl. 136—246 **17 Claims**



1. A solar arrangement which includes at least one solar cell and an optical collecting lens means associated therewith for focusing a light impingement area image onto the solar cell to intensify incident radiation, characterized in that the collecting lens means includes an optically active layer provided between the light impingement area and the at least one solar cell, said optically active layer being of a layer of gelatinous material treated by incident light in the manner of forming a hologram, said optically active layer imaging the incident light such that the light is focused on the at least one solar cell surface so as to intensify incident radiation and the light transmitted to the at least one solar cell is tailored to the light absorption characteristics of the at least one solar cell.

4,367,367

COLLECTOR FOR SOLAR ENERGY

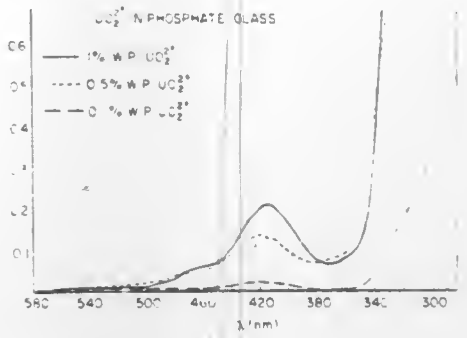
Renata Reisfeld, 10a Strauss St., Jerusalem, and Samuel Neuman, 19 Wingate St., Haifa, both of Israel

Continuation-in-part of Ser. No. 54,603, Jul. 3, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,468

Claims priority, application Israel, Jul. 4, 1978, 55079; Feb. 26, 1979, 56742

Int. Cl.^{3} H01L *31/04*

U.S. Cl. 136—247 **8 Claims**



1. A collector for high efficiency conversion of solar energy to electrical energy wherein solar energy is converted by suitably doped glasses to fluorescent radiation at longer wavelengths at which photovoltaic cells have a better efficiency comprising in combination three superpositioned plane sheets of doped glass wherein:

a first sheet is doped with ions so as to absorb a substantial part of the solar radiation in the ultra-violet and blue regions of the spectrum and to emit fluorescence in the green region of the spectrum, said first plate being uppermost and is a suitable glass plate doped with dopants selected from uranyl ions and uranyl ions plus terbium ions;

a second glass lower plate is doped with ions absorbing a substantial part of the solar energy in the yellow and green regions and emitting a fluorescence in the red region; and

a third glass plate is doped with ions so as to absorb a substantial part of solar energy in the red region and to fluoresce in the infra-red region, each of the plates being provided with a photovoltaic cell at one of its lateral edges, the other lateral edges being provided with a reflective coating, each of said photovoltaic cells having a high efficiency in the region of the spectrum of the respective fluorescent radiation, the lowermost surface of the last glass plate being provided with a reflective coating.

4,367,368

SOLAR CELL

Martin Wolf, Princeton, N.J., assignor to University Patents Inc., Norwalk, Conn.

Filed May 15, 1981, Ser. No. 264,158

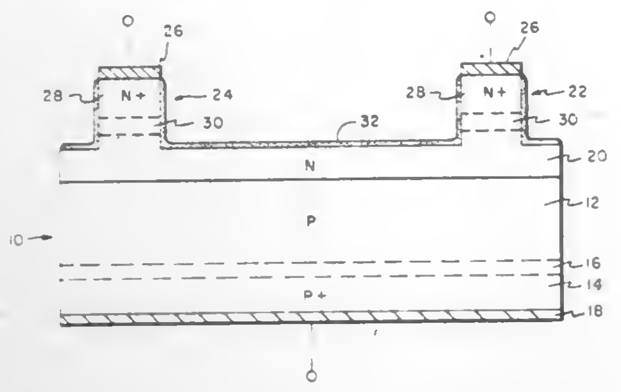
Int. Cl.^{3} H01L *31/06*

U.S. Cl. 136—255 **5 Claims**

1. A solar cell having base and front regions of opposite conductivity type forming a photovoltaic junction therebetween, the improvement wherein said front region comprises:

a first semiconductor layer extending over the upper surface of said front region, said first layer being doped to one type of conductivity and having a thickness substantially less than the minority carrier diffusion length in said layer;

a plurality of raised structures covering a small percentage of said first semiconductive layer, each of said structures including a second semiconductive layer of said one type which is more heavily doped than said first semiconductive layer, the thickness of each said second semiconductive layer being of the order of the diffusion length of minority carriers in said second layer, each of said second semiconductive layers joined to said first semiconductive layer by a junction region whose doping level varies from that of said first layer to that of said second layer, and

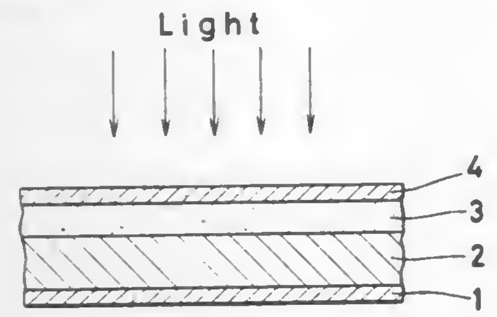


conductive means disposed on the uppermost surface of said raised structures.

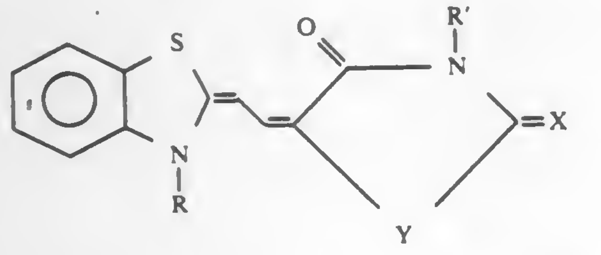
4,367,369
SOLAR BATTERY

Fumio Mizutani, Ibaragi; Masahiko Yoshiura, Tokyo; Keiji Iriyama, Ibaragi; Kanji Sasaki, Ibaragi, and Keishiro Tsuda, Ibaragi, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo and Ministry of International Trade & Industry, both of, Japan

Filed Mar. 18, 1981, Ser. No. 244,908
Claims priority, application Japan, Mar. 29, 1980, 55-40956
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—263 **6 Claims**



1. A solar battery, comprising in combination an n-type semiconductor substrate, an overlying film of a merocyanine dye forming a p-n photoactive junction therewith, said dye being represented by the general formula:

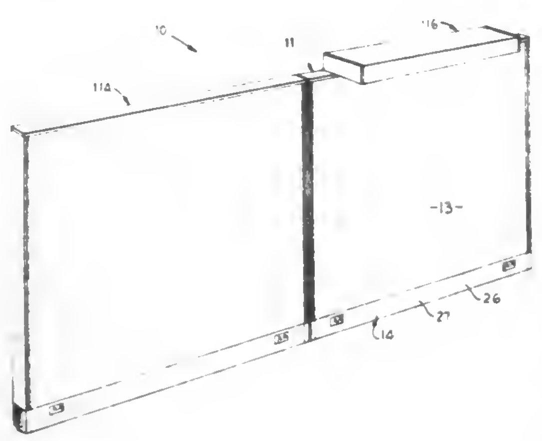


wherein, R denotes a linear alkyl group having 1 to 20 carbon atoms, R′ a linear alkyl group having 1 to 20 carbon atoms or a group of the formula, $—(CH_2)_n.COOH.Z$ (where, n is an integer having the value of 1 to 4 and Z is an amine), and X and Y each denote an oxygen atom or sulfur atom, a first electrode electrically connected to said n-type semiconductor, and a second electrode electrically connected to said merocyanine dye film.

4,367,370
POWER PANEL SYSTEM WITH SELECTIVE MULTIPLE CIRCUITS

Harold R. Wilson, and Ditmar K. Tillmann, both of Holland, Mich., assignors to Haworth Mfg., Inc., Holland, Mich.

Filed Jun. 1, 1979, Ser. No. 44,514
Int. Cl.³ H02G *3/28*
U.S. Cl. 174—48 **19 Claims**



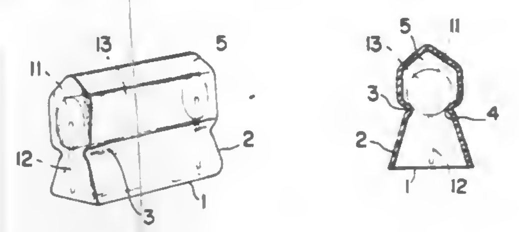
1. In a space-dividing wall structure formed from a plurality of prefabricated upright panels which are serially connected together, said wall structure including a prewired electrical system associated therewith and extending longitudinally therealong, said electrical system including a pair of power blocks mounted on each panel adjacent the opposite vertical edges thereof and multiple-conductor electrical cable means extending interiorly of each panel and connected between said pair of power blocks for defining at least two electrical circuits, said electrical system also including electrical connector means releasably connected between the opposed power blocks of adjacent panels for electrically connecting the adjacent panels together so that said two electrical circuits extend longitudinally throughout the plurality of serially-connected panels, each said power block having a connector portion associated therewith, and an electrical power-tap releasably joined to said connector portion of at least one power block, said power-tap having an inlet portion for electrical connection to said power block and an outlet portion adapted for supply of electrical energy to a circuit or device disposed externally of the wall structure, the improvement comprising circuit-selecting switch means associated with said power-tap for permitting the outlet portion thereof to be selectively electrically joined to either one of said two circuits as associated with said electrical system but not to both at the same time, said switch means including a manually movable switch member movably supported on said power-tap, said manually movable switch member being movable solely when the power-tap is disconnected from the power block, and said power-tap creating a plug-like releasable connection with the power block.

4,367,371
ELECTRONIC PART WITH AN INSULATING COVER

Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 139,201, Apr. 11, 1980, abandoned. This application Apr. 17, 1981, Ser. No. 255,044
Int. Cl.³ H05K *5/03;* H01G *1/035*
U.S. Cl. 174—52 R **1 Claim**

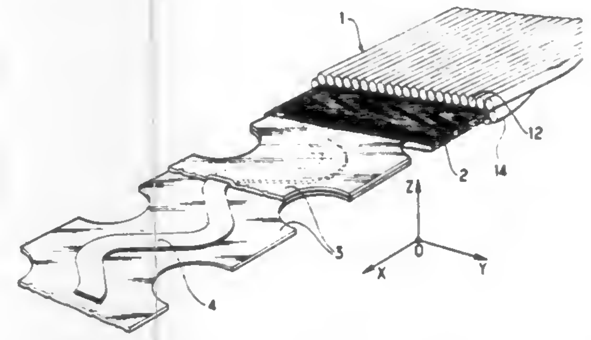
1. An electronic module for mounting on a circuit board, said module comprising an electronic part and an insulating cover, said electronic part having a body portion and lead wires and being adapted to be mounted on and spaced from a circuit board by means of said lead wires; said cover molded of a resilient insulating material and having an open base with terminal edges defining a plane and having upstanding side walls terminating in a closed top to form a chamber of size and shape accommodating therein the body portion of said electronic part; a circumferentially continuous ledge formed as an integral inner portion of said side walls, said ledge forming a constricted neck dimensioned so as to allow constrained passage of the body portion of said electronic part and to grippingly support a lower edge of said body portion, said side walls dimensioned such that said plane defined by the terminal edges of said open base is adapted to sealingly seat on a circuit board to totally enclose and insulate the lead wires of said electronic part; said side walls having substantially uniform wall thickness and at least a portion thereof flared outwardly from said constricted neck to said terminal edges, said outwardly flared portion imparting sufficient structural strength to said resilient material cover to support said body portion in a spaced relation from said circuit board by said ledge.



4,367,372
FLAT MULTI-STRAND SUPERCONDUCTING CONDUCTOR WITH A SEPARATOR

Michel Kiblaire; Henri Nithart, both of Belfort; Alain Fevrier, Maurepas, and Jacques Maldy, Saint Cheron, all of France, assignors to Alsthom-Atlantique and Electricite de France Service National, both of Paris, France

Filed Apr. 6, 1981, Ser. No. 251,444
Claims priority, application France, Apr. 4, 1980, 80 07682
Int. Cl.³ H01B *5/08*
U.S. Cl. 174—128 S **5 Claims**



1. A flat multi-strand, superconducting conductor, said conductor including:

an insulating separator in the form of a tape with its length along an axis OX, its width along an axis OY and its thickness along an axis OZ;

superconductor strands inclined relative to the axis OX and surrounding the separator so as to constitute a multi-strand conducting assembly which in the aggregate leads the current along the axis OX in two layers disposed on opposite side surfaces of the separator and separated by said insulating separator, the total voltage at the terminals of this assembly being the sum of the voltage induced by the variable magnetic fields and of the resistive voltage which results from possible transitions of strands from the superconducting state to the normal state; and

a detector line which extends along the whole conductor, thus collecting between its terminals the same said induced voltage, so as to allow said transistions to be detected by subtracting this induced voltage from said total voltage;

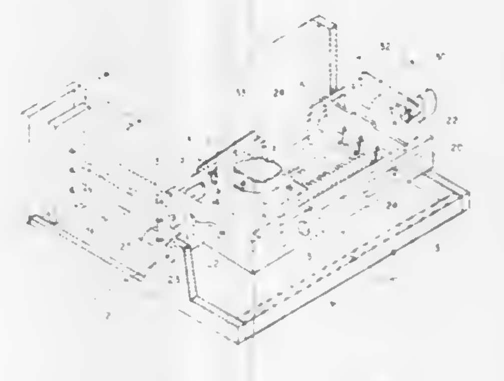
wherein said detector line is constituted by a core which is at least partially made of metal and surrounded by an insulating layer, which core, with said insulating layer, constitutes said separator;

and wherein the metal components of said core is disposed so as to make said core easily deformable by bending in the plane OX, OZ, and in the plane OX, OY, to avoid disintegration of the conductor when it is curved in several planes.

4,367,373
TWO-AXIS ELECTROMECHANICAL CONTROLLER

Joe W. McDaniel, Dayton, and Nilss M. Aume, Springfield, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 7, 1981, Ser. No. 251,832
Int. Cl.³ G08C *21/00;* G05G *9/00*
U.S. Cl. 178—18 **3 Claims**



1. A two-axis controller which comprises:

a. a gimbal mechanism including a first rotatable element intercoupled with a second rotatable element, with the axes of rotation of said first and second rotatable elements being mutually perpendicular;

b. a structure for rotatably supporting said first rotatable element, said first rotatable element rotatably supporting said second rotatable element;

c. a control member connected to said second rotatable element;

d. a first spring means, interconnecting said structure and said first rotatable element at a point eccentric to the axis of rotation thereof, for biasing said first rotatable element to a predetermined reference position;

e. a second spring means, interconnecting said first rotatable element and said second rotatable element at a point eccentric to the axis of rotation thereof, for biasing said second rotatable element to a predetermined reference position; and

f. means for adjustably tensioning said first spring means and said second spring means.

4,367,374
MODEM TELEPHONE INTERFACE CIRCUIT

Arthur L. Serrano, Canoga Park, Calif., assignor to Novation, Inc., Tarzana, Calif.

Filed Feb. 17, 1981, Ser. No. 234,699
Int. Cl.³ H04L *5/00*
U.S. Cl. 179—2 C **9 Claims**

1. A telephone handset-modem interface apparatus, said telephone handset having a speaker, a microphone, a receive wire and a transmit wire, said modem having a receive terminal and a transmit terminal, said apparatus comprising:

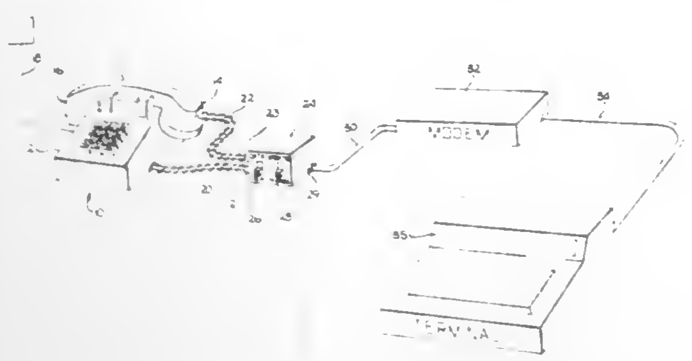
(a) first connector means for coupling said apparatus to said handset;

(b) second connector means for coupling said apparatus to said modem;

(c) a first switch means having a first position for coupling said receive wire to said receive terminal, and a second position for coupling said receive wire to said speaker;

(d) a second switch means having a first position for coupling said transmit wire to said transmit terminal, and a

second position for coupling said transmit wire to a connection terminal;
(e) a third switch means for coupling said receive wire to said speaker;

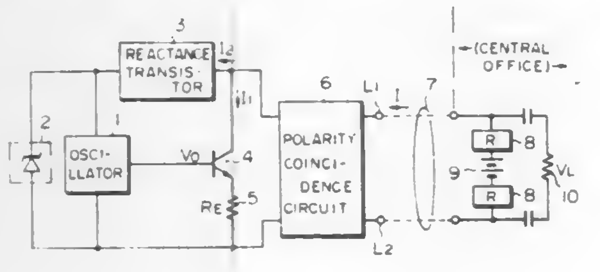


(f) a fourth switch means for coupling said connection terminal to said microphone;
whereby the positioning of said switches determines the selection of one of a plurality of operating modes.

4,367,375
PUSH-BUTTON DIAL CIRCUIT

Yuuji Tsuruga, Mitaka; Akihiro Kobayashi, Yokohama; Makoto Yoshitoshi, and Yutaka Nishino, both of Yokosuka, all of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha and Nippon Telegraph and Telephone Public Corporation, both of, Japan

Filed Sep. 12, 1980, Ser. No. 186,579
Claims priority, application Japan, Sep. 14, 1979, 54-117340
Int. Cl.^{3} H04M *1/00*
U.S. Cl. 179—81 R **1 Claim**

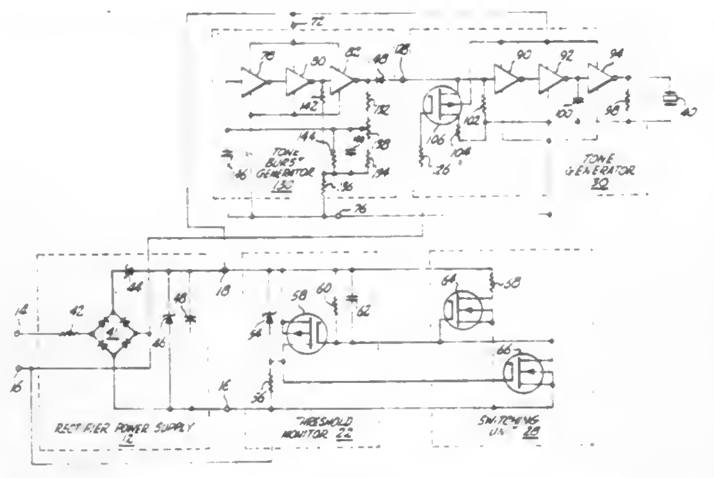


1. A push-button dial circuit comprising:
terminal means for supplying a DC power source current to the dial circuit and for coupling a multi-tone dial signal to a subscriber's line;
an oscillator for generating the multi-tone dial signal;
a constant-voltage circuit connected to the oscillator to stabilize the DC current supplied from the terminal means to the oscillator;
a buffer transistor circuit having its collector-emitter path connected across the terminal means and having its base connected to the output of the oscillator for amplifying the multi-tone dial signal and for coupling the amplified multi-tone dial signal to the terminal means; and
a reactance transistor circuit including at least one reactance transistor and having a capacitor and a resistor respectively connected across the base-emitter path and across the base-collector path of the reactance transistor, the emitter-collector path of the reactance transistor being connected between the terminal means and the oscillator for defining a DC supply path from the terminal means through the reactance transistor circuit to the oscillator.

4,367,376
ELECTRONIC TELEPHONE RINGER INCLUDING ANTI-BELL TAP PROVISIONS

D. Frederic Proctor, Redmond, Wash., and Darrell D. Cole, Newberg, Oreg., assignors to Proctor & Associates Co., Redmond, Wash.

Filed Sep. 17, 1980, Ser. No. 188,064
Int. Cl.^{3} H04M *1/00*
U.S. Cl. 179—84 T **22 Claims**

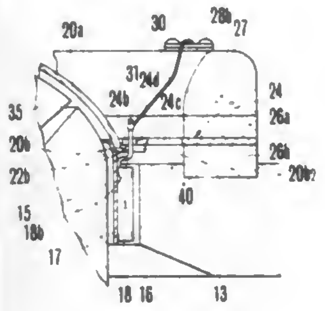


18. An electronic ringer circuit responsive to a ringing signal supplied to first and second conductors of a communication system, said electronic ringer comprising:
a rectifier-power supply unit including a filter capacitor, first and second zener diodes, and a full-wave rectifier circuit having first and second input terminals and first and second output terminals, said first and second terminals of said full-wave rectifier circuit being respectively coupled to said first and second conductors for receiving said ringing signal, said first and second zener diodes being connected in series with one another between said first and second output terminals of said full-wave rectifier circuit, said filter capacitor being connected in parallel with said first zener diode;
a signal monitoring unit responsive to the signal developed across said filter capacitor, said signal monitoring unit including a serially connected third zener diode and first resistor that are connected in parallel with said filter capacitor;
a switching unit for providing a circuit path to a first electrode of said filter capacitor and for alternatively interconnecting a predetermined load impedance in parallel with said filter capacitor, said switching unit including first and second N-channel enhancement mode field-effect transistors and a second resistor, said second resistor being connected between the drain electrode capacitor, the source electrodes of both said first and second field-effect transistors being connected to said first electrode of said filter capacitor, the gate electrode of said first field-effect transistor being connected to the drain electrode of said second field-effect transistor and being coupled to said second electrode of said filter capacitor, said drain electrode of said second field-effect transistor being connected for providing said circuit path to said first electrode of said filter capacitor; and,
tone generating means for supplying an audible signal, said tone generating means including a first and second terminal for applying an operating potential, said tone generating means emitting said audible signal when a signal of predetermined magnitude is applied between said first and second terminals for receiving an operating potential, said first terminal for receiving an operating potential being connected to said second electrode of said filter capacitor and said second terminal for receiving an operating potential being connected to said drain electrode of said second field-effect transistor.

4,367,377
HORN LOUDSPEAKER WITH PARTICULAR SUSPENSION AND LEAD WIRE PASSAGE

Mitsuhiko Yamaguchi, and Masayuki Uchiyama, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo K.K., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,414
Claims priority, application Japan, Jul. 16, 1979, 54-89264; Jul. 17, 1979, 54-97588[U]
Int. Cl.^{3} H04R *9/04, 9/06*
U.S. Cl. 179—115.5 H **3 Claims**

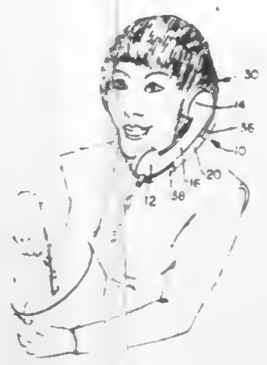


1. A horn type loudspeaker comprising:
a diaphragm having a hemispherical top portion and a horizontal flange provided at the edge of said hemispherical top portion;
an annular light metal suspension plate, formed with a multiplicity of openings etched along a circle immediately proximate to the inner circumference of the annulus of said suspension plate, thereby dividing said suspension plate to define an inner and an outer suspension ring integrally connected by a multiplicity of resilient suspension support fingers so as to provide improved axial compliance of said diaphragm, and whereby said etched openings eliminate the internal cold working strains in said suspension plate;
a converting device for converting an audio frequency electrical signal into axial displacement of said diaphragm, said converting device comprising:
  a coil bobbin disposed about the periphery of said diaphragm;
  a coil wound thereupon; and
  a magnetic circuit including a magnetic air gap in which said coil is disposed, said coil and said bobbin being movable within said gap, whereby said audio frequency electrical signal supplied to said coil imparts axial vibration of said diaphragm;
passage means for passing electrical lead wires of said coil to terminals across the boundary defined by the suspension plate and diaphragm whereby interference between said wires and the yolk plate defining the outer boundary of said air gap is eliminated during large axial vibration and small radial deflections of said diaphragm, allowing a reduction of the cross-sectional width of said air gap for upgrading the conversion efficiency of said loudspeaker, wherein said passage means for passing lead wires comprises overlapping, etched, U-shaped cutout portions formed along the periphery of said diaphragm flange and said inner edge of said suspension plate, said cutout portions aligned to form a passage for said lead wires;
a horn; and
an equalizer confronting said diaphragm at a small selected distance therefrom, thereby reducing undesirable phase interference at high frequencies resulting from variance between sound waves eminating from the central portion and peripheral portion of said diaphragm.

4,367,378
TELEPHONE AND HOLDING BAND THEREFOR

Arthur A. Jordan, Rockledge, 20 Shore Rd., Magnolia, Mass. 01930

Filed Aug. 5, 1980, Ser. No. 175,550
Int. Cl.^{3} H04M *1/05*
U.S. Cl. 179—156 R **3 Claims**

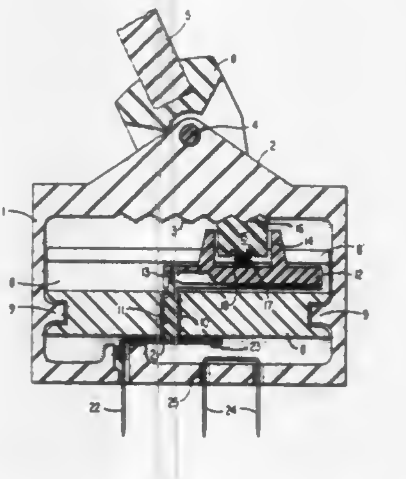


1. A rigid one-piece telephone handset unit in combination with an elastic band attached thereto and forming an endless assembly which may be placed around a person's head so that the telephone handset unit need not be held by hand wherein said telephone handset unit comprises a transmitter, a receiver, and an intermediate body portion integrally with and interconnecting said transmitter and said receiver and wherein said telephone handset unit includes first fastening means in the form of a plurality of plastic hook or eye elements on the back side of said handset behind said transmitter and said receiver and said elastic band includes second fastening means in the form of a plurality of plastic eye or hook elements cooperating with said first fastening means to detachably secure said elastic band to said telephone unit and form said endless assembly with which one may hold a phone receiver against one's ear and the transmitter adjacent one's chin and mouth.

4,367,379
MULTIPLE SELECTIVE SWITCH

Eduardo S. Tome, Madrid, Spain, assignor to Disyuntor-Regulador A.S.D.,S.A., Madrid, Spain

Filed Jun. 27, 1980, Ser. No. 163,526
Claims priority, application Spain, Jun. 28, 1979, 244237
Int. Cl.^{3} H01H *15/02, 3/00, 9/26*
U.S. Cl. 200—5 R **5 Claims**



1. A selective multiple switch comprising:
a substantially parallelpiped shaped support, hollowed out inside, which on its upper face has a lengthwise bridge having a lower surface which has a dentate configuration formed by recesses and protrusions;
an operating lever ending in a fork shape capable of pivoting on an axis located in a hole provided in the aforementioned bridge at a mid-point on the side opposite the dentate configuration;

a pin-bearing part that is housed and held in place inside the support toward its lower middle zone, and which has, approximately in its middle and transversely aligned, a plurality of bushing holes for receiving an equal plurality of pins;

a cam-bearing part capable of being held in place in said pin-bearing part and sliding longitudinally with respect to said pin-bearing part, said cam-bearing part having a lower face which has a plurality of parallel rib-like cams arranged lengthwise and with distinct predetermined dimensions, and having an upper face having spaced vertical projections;

a crown-shaped portion, having in cross-section a crown-like shape, housed between the vertical projections provided on the upper face of the aforementioned cam-bearing part, and having a dentate face adjacent to the dentate configuration of said lower surface of said lengthwise bridge of said support, said crown-shaped portion having, on a face opposite the dentate face, a collar hole for receiving a spring to maintain the dentate face of said crown-shaped port in contact with the dentate configuration of the lower surface of the lengthwise bridge of the support;

a plurality of flexible contact plates having respective ends provided with contact points and set on a lower face of the support, each of the contact plates being located facing a corresponding one of the pins provided in the bushing holes of the pin-bearing part; and

a plurality of terminals connected to distinct electrical circuits, and also located on the lower face of the support, each terminal facing a corresponding one of the contact points provided on the flexible contact plates.

4,367,380

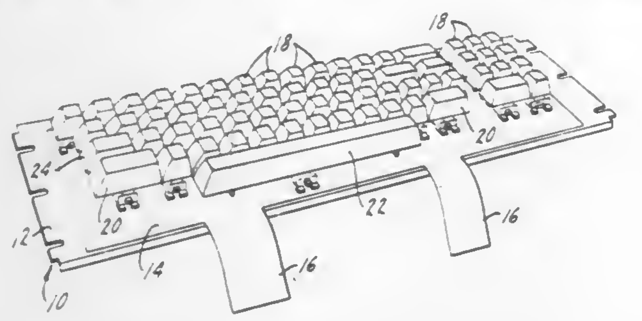
KEYBOARD ASSEMBLY AND COMPONENTS THEREFOR

Willis A. Larson, Crystal Lake, and Herbert C. Naylor, West Dundee, both of Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Aug. 27, 1980, Ser. No. 181,708

Int. Cl.^{3} H01H *13/70*

U.S. Cl. 200—5 R **19 Claims**



1. In a keyboard assembly, a baseplate, a plurality of keys each have a housing attached to the baseplate, and an associated set of electrical contacts, a plunger movable within the housing to actuate said contacts when depressed, a keytop fixedly attached to the plunger, a cam surface formed on the plunger and a cam follower adapted to engage the cam surface to provide alternate action, the improvement comprising means formed on the housing for receiving and retaining a cam follower, said means being accessible from above the baseplate such that a cam follower can be inserted into said means after a fully-assembled key has been mounted on the baseplate.

4,367,381

SWITCH FOR HIGH VOLTAGES

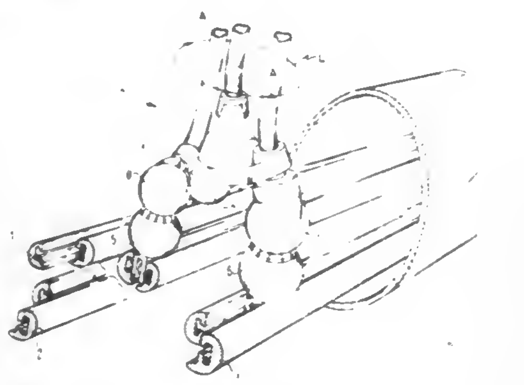
Pieter Mariën, De Meeren; Gijsberg W. Irik, Bilthoven, and Rintje Boersma, Harmelen, all of Netherlands, assignors to Cog B.V., Utrecht, Netherlands

Filed Mar. 14, 1978, Ser. No. 886,461

Claims priority, application Netherlands, Apr. 19, 1977, 04277

Int. Cl.^{3} H01H *31/24*

U.S. Cl. 200—48 A **7 Claims**



1. A switch for high-voltages comprising at least one stationary contact having a spherical envelope and a spherical movable contact co-operating therewith, said stationary contact having a recess and the movable contact being movable between an on-position registering with said recess and an off-position out of registry with said recess, said recess being covered in the off-condition of the switch by an electrically conductive potential screen complementing the spherical envelope of said stationary contact and occupying a position inside such envelope in the on-condition of the switch, the contact surface of the stationary contact intended to conduct the main current being formed by the potential screen, the contact surface being formed by one or more elongate and independently movable contact fingers.

4,367,382

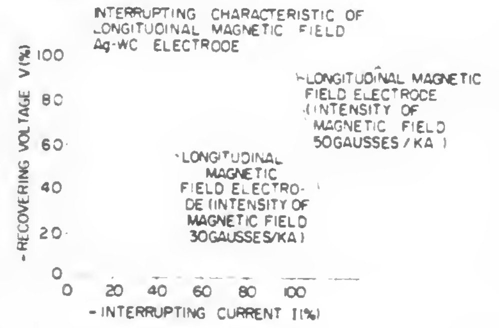
VACUUM CIRCUIT BREAKER

Hideo Suzuki, Yokohama; Nobuo Kawashima, Tokyo; Satoru Yanabu, Machida, and Eiichi Takayanagi, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed May 24, 1979, Ser. No. 41,929

Int. Cl.^{3} H01H *33/66*

U.S. Cl. 200—144 B **5 Claims**



1. In a vacuum circuit interrupter comprising a pair of relatively movable electrodes, at least one of the electrodes being a coil electrode for producing a longitudinal magnetic flux in parallel with the electric arc struck between the electrodes, and contacts mounted on the electrodes and made of an Ag-WC sintered alloy, the improvement wherein the intensity of said magnetic field generated by said coil electrode is made to be higher than 50 gausses/I_B, where I_B represents the crest value of a rated interrupting circuit of said vacuum circuit breaker.

4,367,383

PUSH BUTTON MECHANISM WITH LOCKING DEVICE FOR TWO STABLE POSITIONS

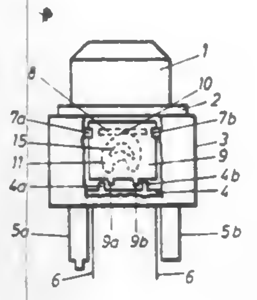
Peter S. E. Sommansson, Tyresö, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 29, 1981, Ser. No. 229,647

Claims priority, application Sweden, Feb. 15, 1980, 8001211

Int. Cl.^{3} H01N *9/20*

U.S. Cl. 200—153 J **8 Claims**



1. A pushbutton mechanism comprising a body part, a pushbutton slidably mounted in said body part for rectilinear travel in opposite directions, and a locking means for locking the pushbutton in alternation in stable raised and lowered positions upon successive depressions of the pushbutton, said locking means comprising a plate having a planar surface provided with a heart shaped cavity forming a cam and an elevated part in said cavity with concave and convex surfaces, said cavity and elevated part forming a track facing said pushbutton, said pushbutton being provided with a groove extending perpendicular to the direction of travel of said pushbutton, a ball mounted in said groove for travel therealong and engaged in said track to assume said stable raised and lowered positions as said pushbutton is successively depressed, said body part and pushbutton respectively including first and second stop means engaging and limiting movement of said plate in directions parallel and perpendicular to the direction of travel of said pushbutton to provide a loosely, floating support of said plate between two end positions in relation to the direction of travel of said pushbutton.

4,367,384

PUSH-BUTTON SWITCH

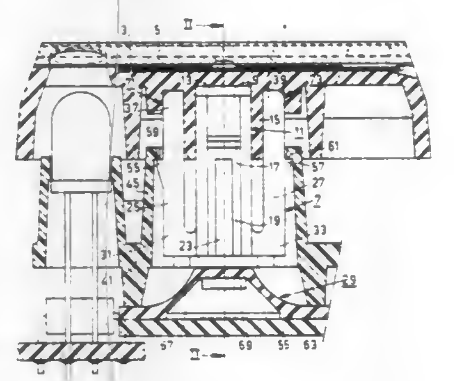
Godfried H. Waarle, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,873

Claims priority, application Netherlands, Sep. 18, 1979, 7906931

Int. Cl.^{3} H01H *13/00, 3/12*

U.S. Cl. 200—159 B **2 Claims**



1. A push-button switch comprising:

(a) a contact device including electrical contacts which are movable relative to each other;

(b) a body attached to the contact device, said body including two pairs of elongate channels centered on respective planes which intersect at a longitudinal axis of the body;

(c) a slidable member having a head on one end and including a pair of rigid guide members and a pair of flexible guide members for engaging the respective pairs of elongate channels to slidably support the member for movement relative to the contact device, said body and said flexible guide members having cooperating abutments and projections for retaining the flexible guide members in their respective channels; and

(d) a control member having a socket for engaging the head of the slidable member, said control member and said rigid guide members having cooperating projections and recesses for securing the control member to the slidable member, said control member serving as a means for displacing the slidable member and thereby actuating the electrical contacts in the contact device.

4,367,385

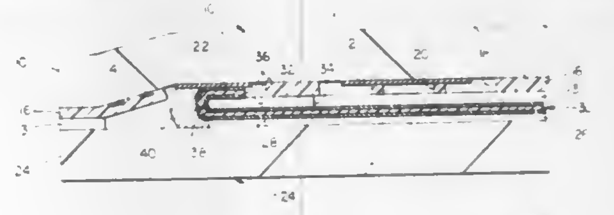
CAPACITANCE SWITCH

Norman J. Frame, Whitefish, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Jan. 26, 1981, Ser. No. 228,118

Int. Cl.^{3} H01H *9/00, 13/02*

U.S. Cl. 200—159 B **15 Claims**



1. A membrane capacitance switch wherein switch activation produces a change in capacitance detectable by external circuitry, comprising:

- a substrate sheet,
- a flexible sheet extending over said substrate sheet,
- a conductive contact carried by one of said substrate sheet and said flexible sheet,
- a capacitance element located between said substrate sheet and said flexible sheet and aligned with said contact,
  - said capacitance element comprising
    - an inner insulating layer and
    - first and second outer conductive portions on opposite surfaces of said inner insulating layer,
  - said capacitance element forming a first capacitor,
- spacing means for spacing said capacitance element from said contact so as to provide an insulating zone between said contact and said first conductive portion,
  - said contact, insulating zone, and first conductive portion being adapted to form a second capacitor electrically in series with said first capacitor,
  - said flexible sheet, spacing means, contact, and first conductive portion all being adapted and located to cause the spacing between said contact and first conductive portion to vary when said flexible sheet is flexed during switch activation and to thereby cause the net capacitance of said first and second capacitors to change to an extent detectable by external circuitry, and
  - said spacing means including one or more spacer layers occupying the space between said flexible layer and said capacitance element.

4,367,386

SNAP-ON ACTUATOR FOR MINIATURE TOGGLE SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

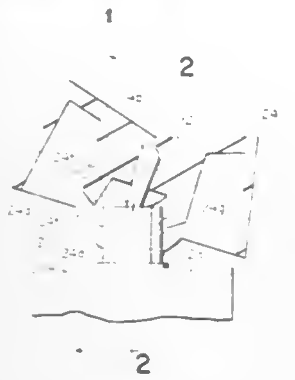
Filed Jan. 12, 1981, Ser. No. 224,649

Int. Cl.^{3} H01H *3/20*

U.S. Cl. 200—333 **8 Claims**

1. In combination with an electrical switch of the type hav-

ing an upstanding bushing with diametrically opposed flats and a movable toggle having a portion projecting upwardly from a top opening defined by the upper end of said bushing, the improvements comprising a one-piece plastic actuator for said switch toggle, said actuator having a downwardly open toggle recess for snugly receiving the projecting portion of said toggle, said actuator defined toggle recess having its open end more particularly defined by an inner wall of a larger downwardly open recess for movably receiving said bushing and said inner wall defining guide surfaces engaging the upper end of said bushing during movement of said toggle and said actuator defined larger recess having depending skirts spaced laterally from said toggle recess and slidably engaging said flats on said bushing during movement of said toggle and said actuator.



4,367,387
ELECTRONIC CONTROLLED HEAT COOKING APPARATUS

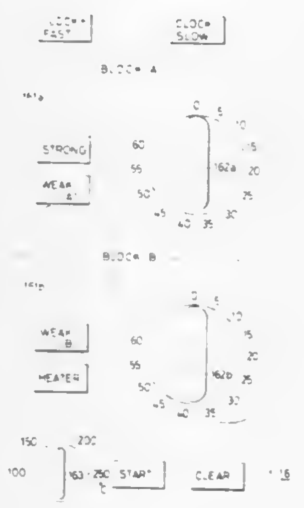
Jin Tachihara, Oumihachiman, and Hideaki Koyama, Otsu, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 6, 1980, Ser. No. 147,111

Claims priority, application Japan, May 15, 1979, 54-60055; May 17, 1979, 54-61153; Jun. 13, 1979, 54-75025; Jun. 13, 1979, 54-75027

Int. Cl.^{3} H05B *9/06*

U.S. Cl. 219—10.55 B **35 Claims**



1. An electronic controlled heat cooking apparatus, comprising:

heat energy generating means for providing heating energy to a material being cooked,

timer time period entry means for entering information concerning a timer time period and for defining a cooking time period by said heating energy provided by said heating energy generating means,

said timer time period entry means comprising:

a single timer setting means continuously displaceable over a predetermined range from its origin position to a selected point within said range operable for setting said timer time period to a selected time, said predetermined range being divided into a plurality of sections of minor unit displacement, said sections of said unit displacement corresponding to a predetermined multiple of a unit time period defined as a time period amount, and

absolute code signal generating means cooperating with said setting means for providing an absolute code signal associated with the selected displaced amount from said origin position of said setting means, said absolute code signal generating means including means for generating a different absolute code signal for each of said unit displacement sections,

timer time period storing means responsive to said absolute code signal from said absolute code signal generating means for storing said set timer time period,

left time evaluating means responsive to said timer time period stored in said timer time period storing means and to an operation time period of said heating energy generating means for evaluating a left time period,

control means responsive to said left time evaluated by said left time evaluating means for controlling said heating energy generating means, and

display means for displaying said left time period evaluated by said left time period evaluating means.

4,367,388
COOKING HEATING APPARATUS

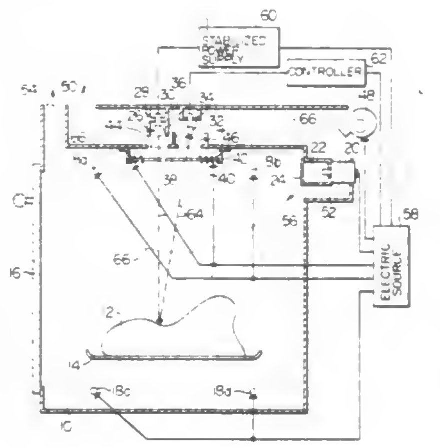
Masahiro Ishihara; Hajime Tachikawa, and Kazuo Kaneko, all of Yokohama, Japan, assignors to Hitachi Heating Appliances Co., Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,938

Claims priority, application Japan, Jun. 6, 1979, 54-70730; Jun. 19, 1979, 54-77127; Jun. 19, 1979, 54-77128; Jun. 19, 1979, 54-77129

Int. Cl.^{3} H05B *6/68*

U.S. Cl. 219—10.55 B **12 Claims**



1. A cooking heating apparatus comprising:

a heating chamber;

means for generating thermal energy for heating and for charring an object to be heated within said heating chamber;

means for supplying electric energy;

light source means connected to said electric energy supply means and for irradiating said object by means of visible rays;

means for detecting the intensity of reflected visible rays from said object;

means connected to said detecting means for controlling said thermal energy generating means to change the operation thereof when the reflection intensity detected by said detecting means reaches a predetermined value;

transparent glass means disposed across a first light path extending from said light source means to said object and a second light path extending from said object to said detecting means and for preventing said light source means and said detecting means from being contaminated with foreign materials created upon heating the object; and

means for burning and removing the foreign materials deposited on said transparent glass means.

4,367,389
EDM SYSTEM WITH ABRASIVE FINISHER

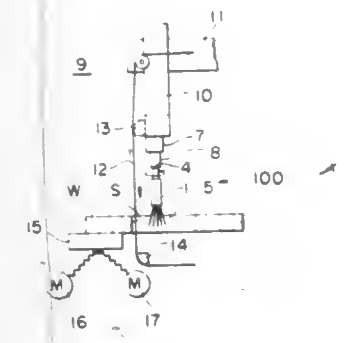
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Sep. 17, 1979, Ser. No. 76,502

Claims priority, application Japan, Oct. 12, 1978, 53-125451; Oct. 18, 1978, 53-128847; Oct. 21, 1978, 53-130195

Int. Cl.^{3} B23P *1/02*

U.S. Cl. 219—69 M **28 Claims**



22. A method of finishing an electrical-discharge-machined workpiece surface, comprising the steps of:

(a) electrical-discharge-machining a workpiece carried on a workpiece support with an electrical-discharge-machining electrode carried by a tool head;

(b) forming an abrading tool with a rotary shank and a plurality of angularly spaced elongate abrasive pieces attached at one end to said shank and projecting therefrom to collectively form a forwardly converging body of revolution about the axis of said shank in a rest position;

(c) mounting said tool on said tool head;

(d) rotating said tool about said axis so as to spread the pieces of said body forwardly from said shank;

(e) bringing said rotating tool in engagement with the electrical-discharge-machined surface of said workpiece on said support; and

relatively displacing said tool head and said workpiece support to abrasively sweep said workpiece surface with the generatrices of said body serving as abrading means slapping against and finishing said surface while said tool is rotated.

4,367,390
DEVICE FOR PASSING AN ELECTRIC CURRENT BETWEEN AN ELECTRODE WORKPIECE AND AN ELECTRODE TOOL

Francois Balleys, and Roger Delpretti, both of Vernier, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

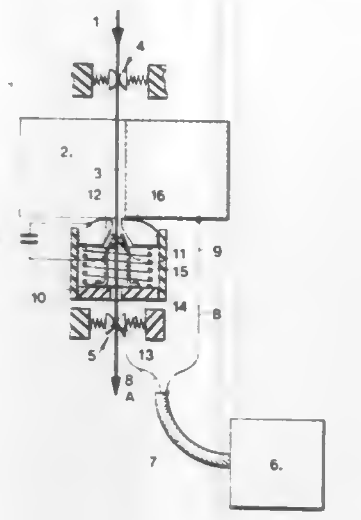
Continuation of Ser. No. 884,255, Mar. 7, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 109,127

Claims priority, application Switzerland, Mar. 11, 1977, 3088/77

Int. Cl.^{3} B23P *1/02*

U.S. Cl. 219—69 W **2 Claims**

1. In a device for passing an electric current in a machining zone between an electrode workpiece and an electrode tool in a spark erosion machine, wherein said electrode tool is in the form of a travelling wire or ribbon supported by a pair of spaced apart guide members and wherein a pulse generator is connected across said electrodes, the improvement comprising an auxiliary capacitor separate from said pulse generator and carried by a support displaceable with one of the guide members located in the immediate vicinity of the machining zone, said support being provided with two sliding electrically conductive contact members electrically insulated from each other, wherein one of said sliding contact members is in engagement with said electrode tool in the form of a wire or ribbon and the other is in engagement with said electrode workpiece, said contact members are in close proximity to each other and disposed one within the other substantially coaxially, and the capacitor is connected across said contact members by substantially short leads such as to be connected directly across the electrode tool and the electrode workpiece by substantially short electrical connections.



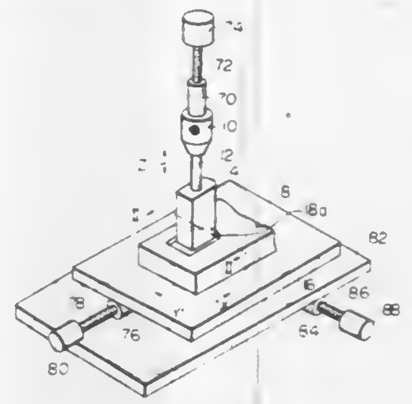
4,367,391
METHOD FOR PATTERN CONTROLLED ELECTRODE MOVEMENT FOR E.D.M.

Toshihiko Furukawa, 10-15, Tsukimino 1-chome, Yamato-shi, Kanagawa 242, Japan

Filed Aug. 14, 1980, Ser. No. 178,235

Int. Cl.^{3} B23P *1/12*

U.S. Cl. 219—69 M **2 Claims**



1. An electro-discharge machining method for progressively conducting precise machining through relative approach movements between an electro-discharge machining electrode and a workpiece in the horizontal direction substantially perpendicular to a direction in which said electrode is opposed to said workpiece, which method is characterized by generating basic movement patterns for said relative approach movements, dividing a movement region of said relative approach movements within the horizontal plane into respective sections, designating desired patterns in said basic movement patterns to the respective sections, designating step amounts for actual relative approach movements in the respective sections, computing actual trajectories for said actual relative approach movements based on designated patterns and designated step amounts and storing data of said actual trajectories, and carrying out relative approach movements in accordance with stored data, wherein said carrying out comprises generating a voltage-controlled pulse signal having a frequency corresponding to a voltage across a machining gap, and controlling

a reading-out speed of stored data according to said voltage across said machining gap.

4,367,392
AUTOMATIC ELECTRODE WIRE RETHREADING DEVICE FOR TRAVELLING WIRE EDM APPARATUS

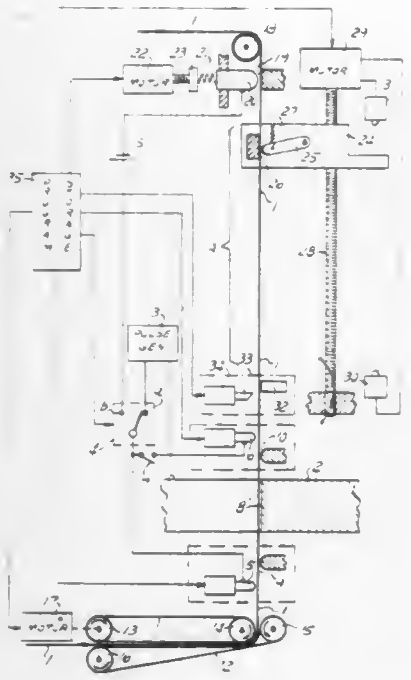
Roger Girardin, Vernier, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Nov. 21, 1980, Ser. No. 208,923

Claims priority, application Switzerland, Jan. 8, 1980, 101/80

Int. Cl.^{3} B23P *1/12*

U.S. Cl. 219—69 W **4 Claims**



1. In a travelling wire EDM apparatus wherein an electrode workpiece is cut by an electrode tool consisting of a wire travelling sequentially through a wire straightening zone and a machining zone, said straightening zone being disposed in alignment with said machining zone, and a wire conveying mechanism disposed beyond said machining zone, the improvement for automatic wire rethreading means which comprises means in said straightening zone for heating said wire and means for exerting a pull on said wire while being heated, said means for exerting a pull on said wire being said wire conveying mechanism, means for cutting off said wire at the bottom of said straightening zone, means for grasping said wire at the top of said straightening zone and for pushing a straightened end portion of said wire through said machining zone for engaging the end of said wire in said wire conveyor mechanism for feeding said wire through said machining zone while simultaneously exerting said pull on said wire.

4,367,393
GAS SHIELDED PLASMA ARC TORCH WITH IMPROVED COLLET

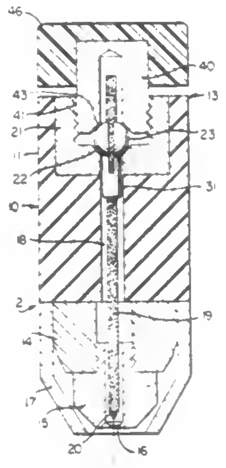
Yosef Yerushalmy, and Larry W. Stokes, both of Florence, S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 24, 1980, Ser. No. 219,874

Int. Cl.^{3} B23K *9/16*

U.S. Cl. 219—121 PM **3 Claims**

1. An arc torch comprising; a body with a longitudinal bore for receiving a nonconsumable electrode, a gas nozzle connected to one end of said body, a collet disposed within said torch for holding said electrode in said bore with the tip of the electrode recessed within said nozzle and collet support means for supporting said collet at the end of said body opposite said nozzle, said collet support means including a first and a second member each having complimentary inclined surfaces spaced apart in an opposing arrangement which adjustably grip said collet with said collet comprising a first portion comprising a single spherical configuration seated between said first and second members contiguous to and in contact with each of said inclined surfaces and an elongated stem integral with said first portion and surrounding said electrode whereby the spherical first portion of said collet functions as a universal ball joint for adjusting the position of the tip of the electrode relative to the central axis of the gas nozzle.



4,367,394
COATED ELECTRODE FOR ARC WELDING

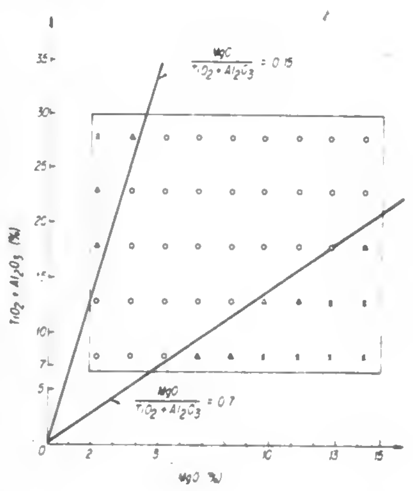
Yoshiya Sakai, Fujisawa; Shigeo Nagaoka, Kamakura; Yohji Nakai, and Takatoshi Tomoyasu, both of Fujisawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 5, 1981, Ser. No. 240,973

Claims priority, application Japan, Mar. 5, 1980, 55-28435

Int. Cl.^{3} B23K *35/30, 35/362*

U.S. Cl. 219—146.24 **4 Claims**



1. A coated electrode for arc welding, comprising a steel wire core and a flux coating thereon, said flux consisting essentially of 6–24% of TiO_2, 2–15% of MgO, 10–30% of SiO_2, 5–15% of Mn, 1–6% of Al_2O_3, 20–60% of iron powder, less than 2.5% of iron oxide and 0.5–2.5% of organic component and having a weight ratio of $MgO/(TiO_2+Al_2O_3)$ in the range of 0.15–0.7, and a binder for said flux.

4,367,395
THERMAL PEN TIP

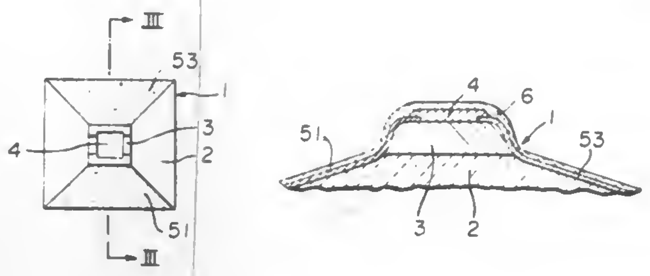
Yukio Asakawa; Katsuto Nagano, and Syozo Sasa, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,123

Claims priority, application Japan, Jun. 22, 1979, 54-78147

Int. Cl.^{3} H05B *1/00*

U.S. Cl. 219—216 **3 Claims**



1. A thermal pen tip comprising:

an insulating substrate having a flat surface and side surfaces slanting away from said flat surface;

a heat reserve layer having one surface formed on said flat surface of said substrate, side surfaces and a second convex surface opposite said one surface, said second surface including a flat center portion having a predetermined width and end portions curving to merge with said side surfaces of said heat reserve layer, said side surfaces being slanted relative to said second surface whereby no sharp edge is formed therebetween;

a resistance layer having a first thickness formed only on said flat portion of said second surface and including electrical terminal means; and

a thermally conductive and electrically nonconductive layer having a second thickness formed on said resistance layer, said protective layer including a flat center portion having a predetermined width and end portions curving to conform to said heat reserve and resistance layers, the radius of curvature of said end portions of said protective layer being at least twice the sum of said first and second thickness,

whereby a line drawn by said thermal pen tip will have a width corresponding to said predetermined width of said flat center portion of said protective layer.

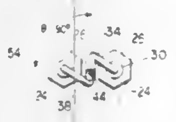
4,367,396
THERMAL TOOL INCLUDING TWISTED TIP FOR THE TOOL AND METHOD OF MAKING TIP

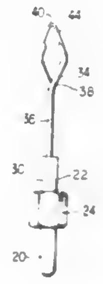
John Ravinsky, Rockville, Md., assignor to Pace Incorporated, Laurel, Md.

Filed Jul. 21, 1980, Ser. No. 170,926

Int. Cl.^{3} H05B *3/00*

U.S. Cl. 219—233 **25 Claims**





1. A tip member for a thermal tool comprising:

(a) leg means adapted to connect a tip member to a thermal tool, said leg means lying in a common plane, and

(b) loop means having two end portions and intermediate portions terminating at a heatable tip section, said end portions being connected to said leg means and said intermediate portions and tip section being at a twisted position with respect to said two end portions such that respective intermediate portions do not contact each other and a plane through said intermediate portions is at an angle relative to said common plane and wherein said twisted position of said intermediate portions is such that said plane through said intermediate portions is at an angle equal to or less than 90° relative to said common plane.

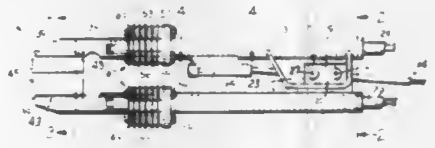
4,367,397
ELECTRIC WORK-IN-CIRCUIT METAL-BONDING TONGS

Harry J. Henderson, 1914 N. Tenth St., Fargo, N. Dak. 58102

Filed Oct. 14, 1980, Ser. No. 196,166

Int. Cl.^{3} B23K *3/04, 9/28;* **H05B** *3/02*

U.S. Cl. 219—234 **2 Claims**



1. A low-voltage high-amperage tong-type portable work-in-circuit metal-bonding device, comprising: a pair of elongated electrically-insulated arms each having a front end and a rear end, said arms being hingedly connected adjacent their rear ends, an electric power supply conductor extending through and beyond the front end of each arm, an elongated metallic body detachably fixed at one end to the extended end of each conductor, a metallic electrode-holder detachably fixed to the other end of each metallic body, an elongated transversely tapered carbon electrode block attached to each electrode holder by sliding engagement in a dove-tail groove in each electrode holder, and an open-work heat-dissipating unit surrounding and spaced from the rear portion of said metallic body and rigidly connected at one end to the mid-portion of the conductor body and at its other end to the front end of each arm, the front end of each metallic body having a reduced-diameter portion and said metallic electrode holders having a longitudinal and a transverse bore to selectively receive said reduced-diameter portion, whereby said electrode block can be oriented either longitudinally or transversely of the front end of said arm.

4,367,398

CONTACT ELEMENT AND PROCESS FOR THE MANUFACTURE THEREOF

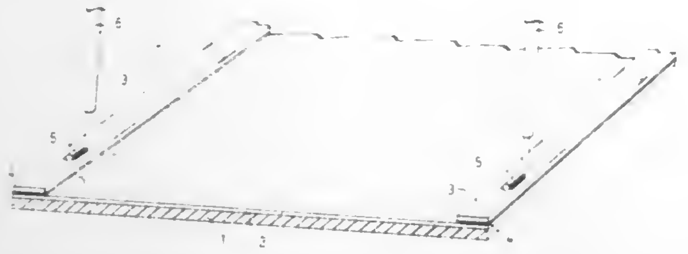
Harald Strube, Mainz, and Karl-Edüard Helf, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 604,049, Aug. 12, 1975, abandoned. This application Feb. 26, 1979, Ser. No. 15,262

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1974, 2438984

Int. Cl.³ H05B ***3/08***

U.S. Cl. 219—541 **4 Claims**



1. An electrical resistance tape having two contacts comprising a flat body of electrically insulating plastic material,

a layer consisting exclusively of carbon black particles, said layer being firmly adhered to the surface of said plastic material without the aid of additional adhesive means,

a dielectric adhesive on at least a portion of the surface of said layer of electrically conductive, non-metallic particles,

and spaced metal strips secured to said adhesive, whereby electric current may be conducted in said layer for heating.

4,367,399

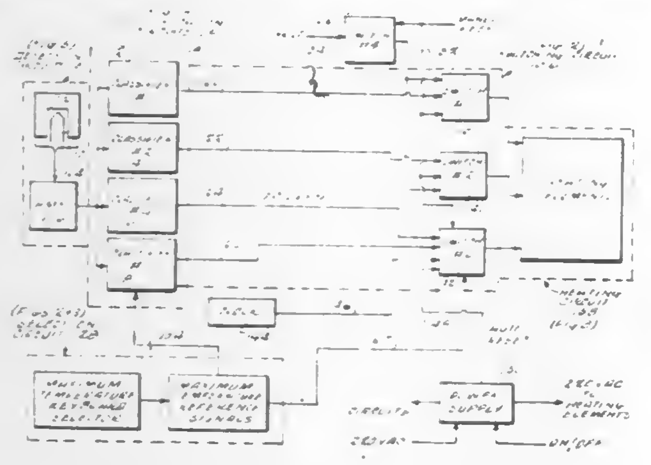
KILN TEMPERATURE CONTROL DEVICE

Frank H. Anthony, 1709 N. Hullen, Metarie, La. 70001, and Vernon W. Coy, Metarie, La., assignors to Frank H. Anthony, Metarie, La.

Filed Aug. 13, 1979, Ser. No. 66,296

Int. Cl.³ H05B ***1/02***

U.S. Cl. 219—497 **23 Claims**



1. A programmable temperature control device for a kiln comprising:

detection means for providing an electrical signal representative of the internal temperature of a ceramic workpiece within said kiln, said detection means including a thermocouple encased within ceramic material,

first signal classification means connected to receive said electrical signal for detecting when at least one of a plurality of predetermined workpiece temperatures have been attained and for producing a corresponding output signal,

second signal classification means connected to receive said electrical signal for detecting when one of a plurality of discrete predetermined temperatures representative of standard pyrometric cone temperatures has been attained in the ceramic workpiece and for producing a corresponding output signal in response thereto for use in controlling the maximum internal temperature of said ceramic workpiece and

selection means connected to said second signal classification means for selecting said one of a plurality of discrete predetermined temperatures as the maximum internal temperature of said ceramic workpiece to be attained.

4,367,400

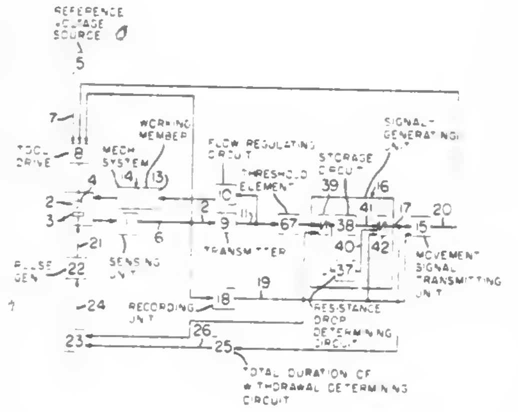
DEVICE FOR AUTOMATIC CONTROL OF ELECTRO-EROSION MACHINE

Mark S. Otto, Kirovogradskaya ulitsa, 10, korpus 1, kv. 277; Viktor K. Nastasy, ulitsa Volgina, 23, korpus 1, kv. 48, and Abram L. Livshits, Leninsky prospekt, 11, kv. 62, all of Moscow, U.S.S.R.

Filed Jun. 25, 1980, Ser. No. 162,747

Int. Cl.³ B23P ***1/08***

U.S. Cl. 219—69 G **32 Claims**



1. In an electro-erosion machining comprising a pulse generator for developing pulses for electro-erosion machining; a tool electrode defining together with a workpiece an interelectrode gap and receiving pulses from said pulse generator; a drive feeding said tool electrode; a mechanical system for regulating flow of working fluid through said interelectrode gap, said system having a working member for changing the flow of the working fluid, and a device for automatic control of an electro-erosion machine, comprising:

a sensing unit for sensing the impedance of the interelectrode gap and developing a signal proportional to resistance of the interelectrode gap, said unit having an input and an output;

a source of a reference voltage proportional to the resistance of said interelectrode gap required to ensure an electro-erosion machining process;

said sensing unit and said reference voltage source coactive with said drive feeding said tool electrode so that the feeding of said tool electrode occurs to enable electro-erosion machining when the signal proportional to the resistance of said interelectrode gap deviates from the reference voltage;

a transmitter for determining an a-c component of the resistance of said interelectrode gap, said transmitter having an input and an output; said input of said transmitter connected to said output of said sensing unit;

a working fluid regulation circuit for regulating the flow of working fluid through said interelectrode gap, the last-mentioned circuit having an input and an output; said input of said working fluid regulation circuit connected to said output of said transmitter for determining the a-c component; said output of said working fluid regulation circuit being coupled to said working member of said mechanical system for regulating the flow of working fluid through said interelectrode gap, whereby the flow of the working fluid is maintained at a value at which wear of said tool electrode is a minimum, and said transmitter for

determining the a-c component of the resistance of said interelectrode gap includes series-connected components comprising a differentiating section, a diode, and an integrating section.

4,367,401

DEVICE FOR INDICATING INADMISSIBLE LENGTH DEVIATIONS OF A PERFORATED WEB

Sven A. R. Strömberg, Hjortgatan 5, 533 00 Gotene, and Karl-Axel Gullstrand, Hjalmarsvag 3, 260 34 Morarp, both of Sweden

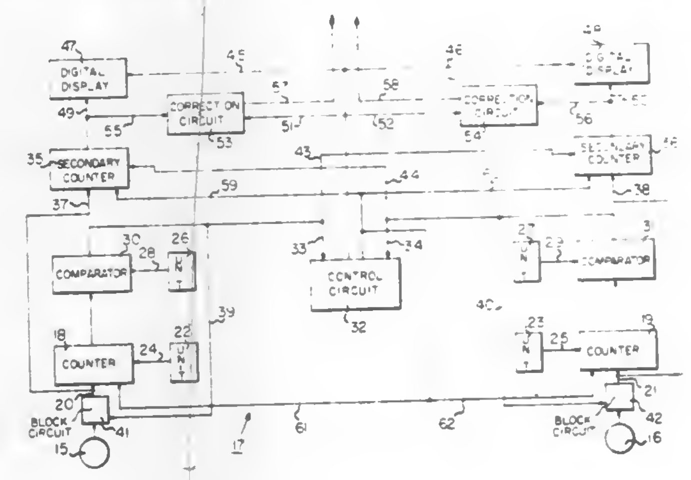
PCT No. PCT/SE79/00001, § 371 Date Aug. 31, 1979, § 102(e) Date Aug. 31, 1979, PCT Pub. No. WO79/00477, PCT Pub. Date Jul. 26, 1979

PCT Filed Jan. 4, 1979, Ser. No. 154,414

Claims priority, application Sweden, Jan. 4, 1978, 7800097

Int. Cl.³ G06M ***3/08***

U.S. Cl. 235—92 DN **10 Claims**



1. A device for determining length variations of a perforated web on a printing press having at least one rotating work means, wherein the web travels generally through the press comprising:

a first transmitter means, associated with said rotating work means for producing pulses proportional to the speed of rotation of said rotating work means;

a second transmitter means for producing pulses proportional to a velocity of said web in said press;

a first counter means associated with said first transmitter, for receiving said pulses therefrom;

a second counter means associated with said second transmitter means for receiving said pulses therefrom;

said first and second counter means having associated means for delaying evaluation of length variations in said web based on said pulses received by said counter means from said transmitters and means for evaluating said length variations.

4,367,402

SYSTEM FOR KEEPING ACCOUNT OF PREDETERMINED HOMOGENEOUS UNITS

Georges Giraud, Le Vesinet, and Jean Mollier, Bougival, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, France

Continuation of Ser. No. 889,517, Mar. 23, 1978, Pat. No. 4,256,955. This application Apr. 25, 1980, Ser. No. 143,863

Claims priority, application France, Mar. 31, 1977, 77 09822

Int. Cl.³ G06F ***7/02***

U.S. Cl. 235—385 **3 Claims**

1. A credit card for keeping a record of predetermined homogeneous credit units, said credit card being adapted to be used with external means for imprinting and/or operating on information stored on the credit card, the credit card comprising:

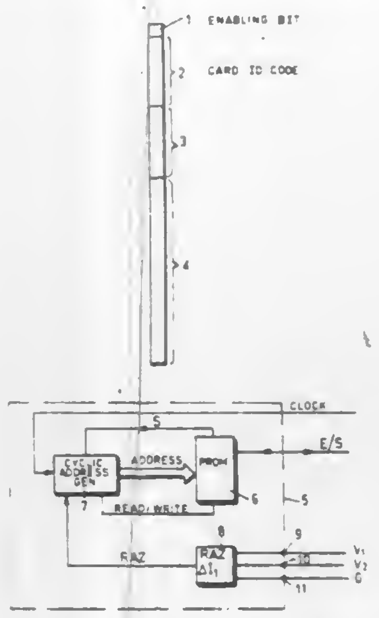
a memory circuit for storing coded information, said memory including:

(a) a first unalterable multi-bit field indicative of an identification of the external means with which the card can be used,

(b) a second unalterable multi-bit field indicative of operations that can be performed with the card on the external means with which the card can be used, and

(c) an alterable multi-bit field indicative of the number of credit units available to the holder of the card;

circuits for reading bits from the alterable multi-bit field and from the first and second unalterable multi-bit fields and for writing bits into the alterable multi-bit field; and



means for temporarily and selectively coupling the memory and circuits to the imprinting and operating means, each of the first and second unalterable bit fields including n bits, a change from one bit state to the other bit state of bits in the unalterable fields being in an irreversible state after imprinting of bits therein, the number, m, of bits in the irreversible state in each field being less than n, the number m being pre-established.

4,367,403

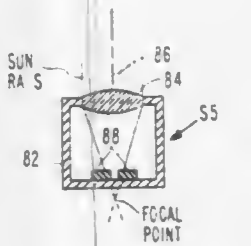
ARRAY POSITIONING SYSTEM WITH OUT-OF-FOCUS SOLAR CELLS

Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 113,506, Jan. 21, 1980, Pat. No. 4,314,546. This application Aug. 11, 1981, Ser. No. 292,017

Int. Cl.³ G01J ***1/20***

U.S. Cl. 250—203 R **3 Claims**



1. In a solar tracking system including means responsive to a first signal applied as an input thereto for moving the system about a polar oriented axis and means responsive to a second signal applied as an input thereto for moving the system about a second axis orthogonal to said polar oriented axis,

means for producing said first and second signals, said means for producing said first and second signals including lens means for concentrating solar energy in a given area and a plurality of solar sensor means responsive to the concentrated energy in said given area for producing said first and second signals, said lens means comprising a lens which when partially obscured tends to produce asymmetrically eclipsed concentrated energy in said area to thereby produce an error in said first and second signals, said lens means having a given focal length, the improvement therewith comprising:

said plurality of solar sensor means being spaced at a plane other than at said given focal length, said plane being located between said lens and its focal point so as to receive an image from said lens which compensates for said eclipsed energy to effectively symmetrically concentrate the energy in said given area.

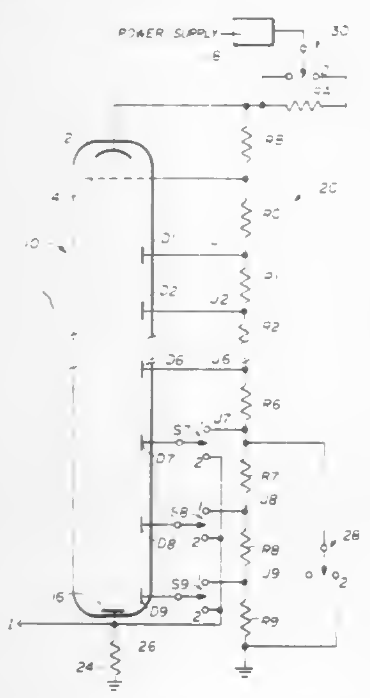
4,367,404
REDUCTION OF HYSTERESIS IN PHOTOMULTIPLIER DETECTORS

Wilbur I. Kaye, Corona Del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 3, 1980, Ser. No. 165,530

Int. Cl.^{3} H01J *40/14*

U.S. Cl. 250—207 **6 Claims**



1. In a photomultiplier detector which generates an output current in response to incident light flux and includes (1) a photoemissive cathode emitting electrons in response to the incident light, (2) an electron multiplier section having a plurality and predetermined number of dynodes and means for applying dynode voltage between respective dynodes for effecting multiplication of the emitted electrons by secondary electron emission, and (3) an anode for collecting the multiplied electrons and at which the output current is derived, wherein the detector gain or ratio of output current to incident light flux depends at least in part on the number of dynodes and the value of dynode voltage within a range of dynode voltage and wherein for at least a portion of the range of dynode voltage the photomultiplier detector exhibits a time dependent change in gain or hysteresis introducing a nonlinearity in the output current, the improvement comprising:

means for inactivating at least one of the dynodes by shorting such dynode(s) to the anode enabling the inactive dynode(s) to function as an electron collector while retaining the anode as the output current supply terminal whereby the photomultiplier exhibits a reduced degree of hysteresis operating with the remaining number of active dynodes.

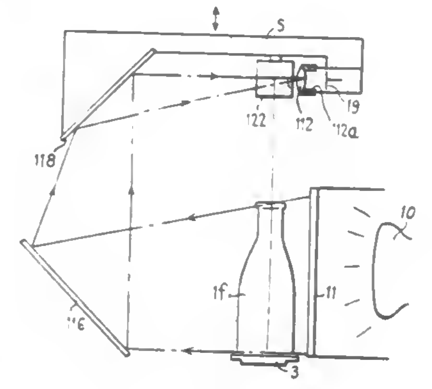
4,367,405
BOTTLE INSPECTION APPARATUS

Geoffrey E. Ford, Bedford, England, assignor to TI Fords Limited, Kempston, England

Filed Apr. 8, 1981, Ser. No. 252,187

Int. Cl.^{3} G01N *21/32*

U.S. Cl. 250—223 B **3 Claims**



1. Apparatus for inspecting the side walls of transparent or translucent bottles for the detection of dirt or foreign bodies, comprising means for diffusely illuminating the side walls of a bottle to be inspected while it is moving through an inspection station, means for projecting, while the bottle is so illuminated, a plurality of images of the side walls of the bottle, as viewed from at least two different horizontal directions, on to at least one device whereby to generate signal pulses representative of dirt or foreign bodies in the bottle, means for folding the optical paths along which the rays illuminating the bottle pass between the bottle and lens means which forms the images on to said at least one device, so that each optical path extends vertically and substantially parallel to the other over a part of its length, and a common adjustment to change the lengths of said parts of the optical paths to a desired object distance, said lens being of fixed focal length and provided with focussing adjustment means.

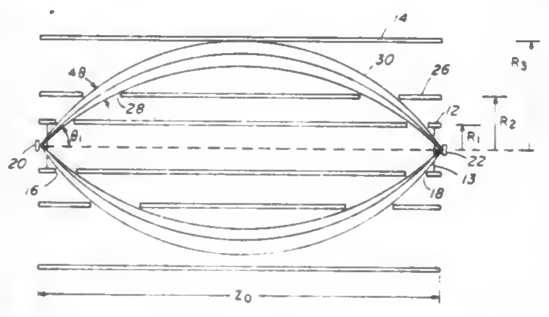
4,367,406
CYLINDRICAL MIRROR ELECTROSTATIC ENERGY ANALYZER FREE OF THIRD-ORDER ANGULAR ABERRATIONS

Wolfgang Franzen, Harvard, and James Taaffe, Arlington, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Jan. 13, 1981, Ser. No. 224,666

Int. Cl.^{3} H01J *40/00*

U.S. Cl. 250—305 **9 Claims**



1. A charged particle energy analyzer comprised of three concentric cylindrical electrodes, with a field-free region inside the inner cylinder, an electric field between the inner and the middle cylinders, and a different electric field between the middle and outer cylinder, as well as a source of charged particles on the axis of symmetry of the three cylinders, and a detector at a distance from the source on the same axis, wherein the analyzer is dimensioned such that the charged particles pass through the inner and the middle cylinders and the first, second and third order terms of the Taylor expansion of the focal length z_0 of the analyzer, as a function of the angle of emission, are approximately zero.

4,367,407
METHOD FOR CONVERTING LUMINOSITY VALUES INTO ISOCHROMATES

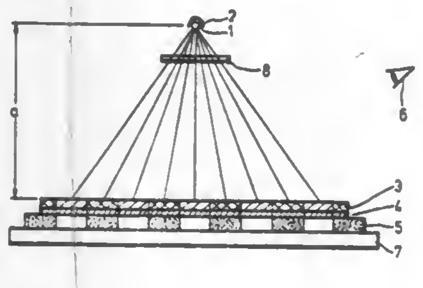
Hans W. Göttert, Lage, and Rainer Schiffer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 848,797, Nov. 4, 1977, abandoned. This application May 3, 1979, Ser. No. 35,757

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653419

Int. Cl.^{3} G03B *21/00*

U.S. Cl. 250—329 **9 Claims**



1. A method of converting optical density values of graded scale information on a transparency into different isochromates corresponding to the different density values comprising: providing a transparency having graded scale information thereon; producing a multicolor image in a liquid crystal layer corresponding to the information of the transparency by directing a radiation beam from an external radiation source onto the transparency to produce a thermogram in the transparency with a given temperature value corresponding to each optical density value of the graded scale and imparting the thermogram to the liquid crystal layer to produce a multi-color image therein corresponding to the thermogram and thereby the information of the transparency; and displaying the resulting multi-color image of the liquid crystal layer for observation.

4,367,408
PYROELECTRIC TYPE INFRARED RADIATION DETECTING DEVICE

Terutoyo Imai, Hirakata, and Shoichi Nakano, Yawata, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jan. 3, 1980, Ser. No. 109,351

Claims priority, application Japan, Jan. 17, 1979, 54/4048[U]; Dec. 12, 1979, 54/169674

Int. Cl.^{3} G01J *1/00*

U.S. Cl. 250—338 **60 Claims**

1. A pyroelectric type infrared radiation detecting device, comprising:

a pyroelectric pellet polarized to generate an electric charge as a function of a variation of an incidental infrared radiation,

an electrically conductive base supporting said pyroelectric pellet, said electrically conductive base constituting means for withdrawing said electric charge, and

an adhesive agent layer interposed between said pyroelectric pellet and said electrically conductive base for fastening them together,

said adhesive agent layer comprising a heat insulating portion for preventing thermal conduction from said pyroelectric pellet to said electrically conductive base and an electrically conductive adhesive agent portion in a mixed manner.

4,367,409
IONIZATION GAS DETECTOR AND TOMO-SCANNER USING SUCH A DETECTOR

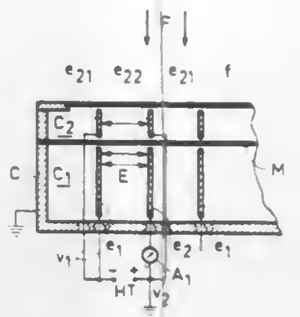
Remy Klausz, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 14, 1980, Ser. No. 206,829

Claims priority, application France, Nov. 14, 1979, 79 28041

Int. Cl.^{3} G01T *1/18*

U.S. Cl. 250—385 **11 Claims**



1. An ionization gas detector for detecting a beam of ionizing radiation, comprising a tight enclosure forming an ionization chamber containing a gas, said enclosure containing at least two measuring electrodes and, in the extension of the measuring electrodes, two guard electrodes, the measuring electrodes being respectively raised to a first potential and to a second potential and the guard electrodes being respectively raised to the potential of the measuring electrodes which they extend, the enclosure being subdivided in tightly sealed manner into at least one upstream compartment and one downstream compartment by means of a dielectric material partition permeable to the ionizing radiation beam and substantially perpendicular to said beam, said compartments being arranged in succession along the path of the beam, the measuring electrodes being arranged in the downstream compartment and the guard electrodes in the upstream compartment.

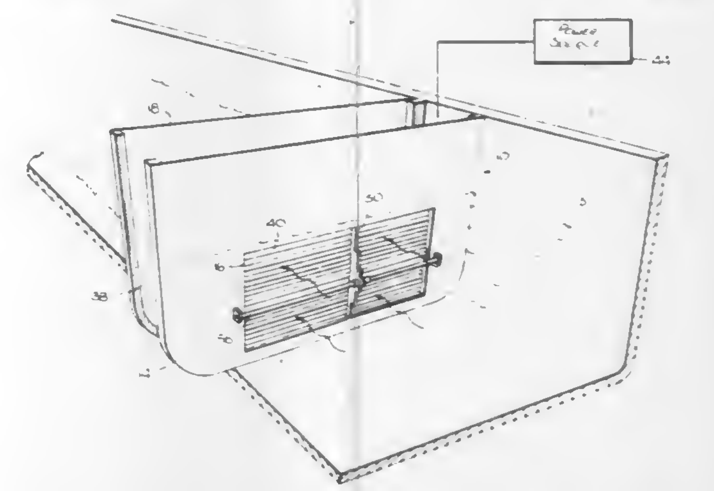
4,367,410
WASTE PURIFICATION APPARATUS AND METHOD

Myron D. Wood, Hasbrouck Heights, N.J., assignor to Pure Water Systems, Inc., Fairfield, N.J.

Continuation of Ser. No. 55,593, Jul. 9, 1979, abandoned. This application May 26, 1981, Ser. No. 267,039

Int. Cl.^{3} A61L *2/10*

U.S. Cl. 250—431 **12 Claims**



1. Apparatus for treating secondary waste water effluent with ultraviolet light comprising: a housing shaped to define a fluid passageway therethrough between an inlet and an outlet formed at opposite ends thereof; a plurality of elongated cylindrical, light emitting jackets mounted in parallel within said housing to extend transversely across said fluid passageway; a plurality of elongated ultraviolet lamps removably and concentrically mounted within said jackets; means for supplying electrical power to operate said ultraviolet lamps; a plate

mounted within said housing perpendicularly to the longitudinal axes of said jackets, said plate having apertures through which said jackets extend; wiper glands positioned within each aperture between said plate and the associated jacket; a fluid driven piston mounted exteriorally to said housing; at least one cable connecting said piston to the opposite faces of said plate whereby said plate may be reciprocated lengthwise of said jackets to clean said jackets; and guide means associated with said plate to prevent cocking thereof when reciprocated.

2. Apparatus for treating secondary waste water effluent with ultraviolet light comprising a housing shaped to define a fluid passageway therethrough between an inlet and an outlet formed at opposite ends thereof, a plurality of elongated, cylindrical, light emitting jackets mounted in parallel within said housing to extend transversely across the fluid passageway, adjacent jackets being spaced less than about one half inch apart so that none of the waste water is more than about one quarter inch away from a jacket as it flows through the housing, a plurality of elongated ultraviolet lamps of equal usable arc length removably and concentrically mounted within said jackets, wherein the number of lamps and associated jackets satisfies the equation:

$$3 \leqq X(l)/V \leqq 5$$

where X is the number of lamps, l is the usable arc length of each lamp in inches and V is the volume flow rate of the waste water in gallons per minute; means for supplying electrical power to operate said ultraviolet lamps; a wiper plate mounted within said housing perpendicular to the longitudinal axes of said jackets, said wiper plate having apertures through which said jackets extend, and annular wiper glands positioned within each aperture between said plate and the associated jacket; a motor mounted exteriorly of said housing; and cable means arranged between said motor and said wiper plate to reciprocate said wiper plate lengthwise of said jackets.

4,367,411

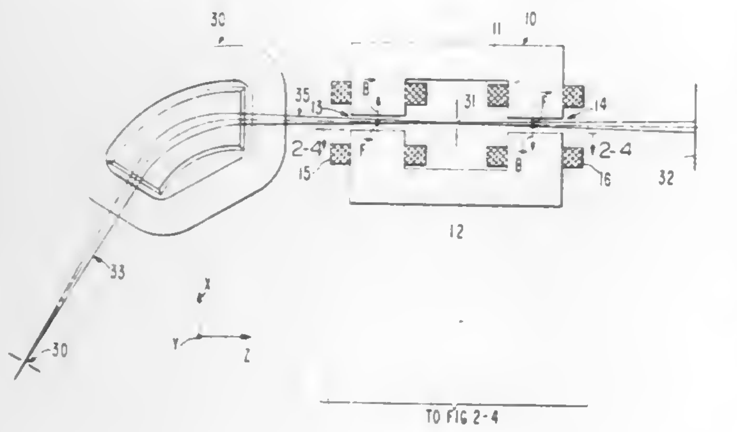
UNITARY ELECTROMAGNET FOR DOUBLE DEFLECTION SCANNING OF CHARGED PARTICLE BEAM

Peter R. Hanley, Rowley, and Norman L. Turner, Gloucester, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 45,035, Jun. 4, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,415

Int. Cl.^{3} H01J *37/00*

U.S. Cl. 250—492.2 **9 Claims**



1. A unitary apparatus for double deflection scanning of a charged particle beam, comprising:

an electromagnet containing a pair of gaps, wherein said gaps are configured in said electromagnet so as to define a common plane to thereby permit an in-the-plane traverse by said charged particle beam through said gaps, the windings associated with the poles of each of said gaps being driven by an energizing waveform so that the magnetic field through said plane in one gap is of opposite polarity to the magnetic field through said plane in the other gap;

a source of a charged particle beam positioned adjacent said one gap so as to introduce said beam in said plane in said one gap; and

a waveform generating means for energizing said windings of said electromagnet to produce a scan of said beam in said plane which ranges between the edges of the pole faces associated with said other gap.

4,367,412

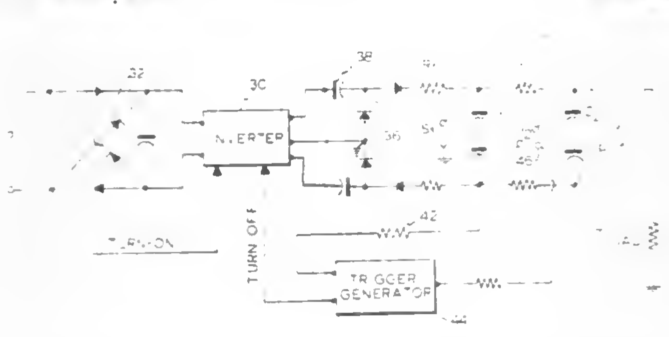
PROCESS OF AND APPARATUS FOR COLD-CATHODE ELECTRON-BEAM GENERATION FOR STERILIZATION OF SURFACES AND SIMILAR APPLICATIONS

Richard N. Cheever, Acton, Mass., assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Division of Ser. No. 957,483, Nov. 3, 1978, Pat. No. 4,305,000. This application Sep. 16, 1980, Ser. No. 187,736

Int. Cl.^{3} H01J *37/00*

U.S. Cl. 250—492.3 **10 Claims**



1. Apparatus for electron-beam-irradiating surfaces passed along a predetermined region, having, in combination, electric-discharge repetitive pulse-generating means comprising Marx-type generation means having a stacked array of discharge gaps connected with a corresponding staggered co-extensive array of capacitors and means for initially triggering other than the first of said discharge gaps to effect the pulse generation; longitudinally extending electron gun means provided with longitudinally extending electron-pervious window means; and means for electrically connecting the pulse-generating means to the electron gun means to draw therefrom longitudinal strip-type electron-beams exiting the window means in response to the pulses generated by the pulse-generating means.

4,367,413

COMBINED TURBINE AND GENERATOR

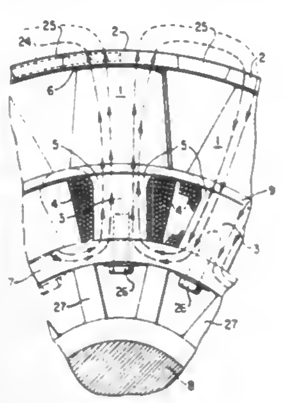
Ramon Nair, 267 Castle Rd., Beaconsfield, Quebec, Canada (H9W 2W4)

Continuation-in-part of Ser. No. 155,222, Jun. 2, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 246,094

Int. Cl.^{3} F01D *15/10;* **F03B** *13/10;* **H02K** *7/18*

U.S. Cl. 290—52 **52 Claims**

1. An axial flow rotor for an electrical a.c. salient pole synchronous machine, the rotor having a plurality of circumferentially spaced thick, axial flow propellor turbine blades for transferring mechanical energy to or from a liquid, the blades being formed of a ferromagnetic material and being mutually interconnected at their radially inner ends by portions of the rotor also made of ferromagnetic material, direct current field windings associated with respective blades and located proximate radially inward portions of the blades so as to generate magnetic flux in the blades and pole tips of ferromagnetic material carried at the radial extremities of the blades so as to shape and distribute the magnetic flux carried by the blades.



4,367,414

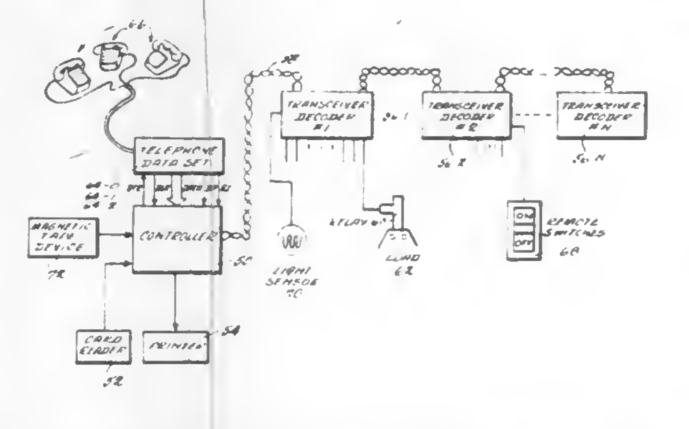
METHOD AND APPARATUS FOR CONTROLLING DISTRIBUTED ELECTRICAL LOADS

Edward B. Miller, West Warwick, R.I., and Charles W. Eichelberger, Schenectady, N.Y., assignors to General Electric Company, New York, N.Y.

Continuation of Ser. No. 89,478, Oct. 30, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,578

Int. Cl.^{3} H02J *3/10*

U.S. Cl. 307—38 **12 Claims**



1. In a programmable system for controlling plural distributed electrical loads including plural control circuits, each connected to control a respectively corresponding one of said plural distributed electrical loads; plural remotely located data transceiver circuits connected to control a predetermined subset of said control circuits in response to received data signals; and a programmable central controller connected to provide said data signals via a dedicated common data line to each of said transceiver circuits; the improvement comprising:

a fusible link connecting each of said transceiver circuits to said dedicated common data line whereby the fusible link will open and disconnect its corresponding circuit from the data line if more than a predetermined current passes therethrough, and

said central controller including means to periodically examine said dedicated data line for a low impedance condition which exists longer than a predetermined time period indicating an abnormal low impedance condition not normally encountered in data transmissions and, in response thereto, to cause a current greater than said predetermined current to pass over said data line thus automatically disconnecting any transceiver circuit which has caused such abnormally extended low impedance condition to exist.

4,367,415

PULSE GENERATOR CIRCUIT

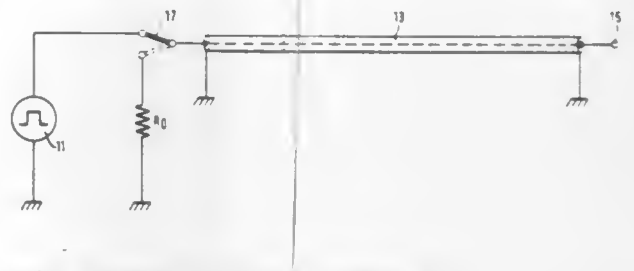
Peter Brünner, Weil der Stadt, Fed. Rep. of Germany, assignor to Hewlett-Packard GmbH, Boeblingen, Fed. Rep. of Germany

Continuation of Ser. No. 115,583, Jan. 25, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,650

Claims priority, application Fed Rep of Germany, Feb. 24, 1979, 2907307

Int. Cl.^{3} H03K *3/64*

U.S. Cl. 307—106 **2 Claims**



1. A pulse generator circuit comprising:

a pulse source;

an output line having a specific characteristic impedance and having an input end and an output end, the output end being connectable to a high impedance external load and the input end being connectable directly to and disconnectable from said pulse source;

said output line having a minimum length, $l_{min} = t_w/2\rho$ and a maximum length, $l_{max} = T - t_w/2\rho$, where tw is the pulse width, T is the pulse period and ρ is the pulse traveling time per unit of length of pulses produced by said pulse source;

an internal impedance being substantially equal to said characteristic impedance and being connectable to and disconnectable from said input end of the output line;

switching means for alternatively connecting said input end of the output line either directly to said pulse source or to said internal impedance; and

control means for controlling said switching means to connect said pulse source to said input end of the output line during selected time intervals and to connect said input end to said internal impedance during the time between said intervals.

4,367,416

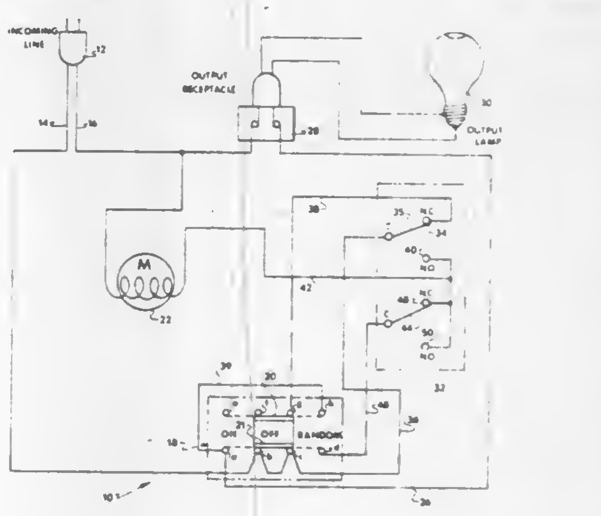
RANDOM ELECTRIC TIMER HAVING A REVERSIBLE MOTOR

Lee L. Von Gunten, 1515 E. Crabtree, Arlington Heights, Ill. 60004

Continuation-in-part of Ser. No. 10,501, Feb. 8, 1979, abandoned. This application Apr. 16, 1982, Ser. No. 369,154

Int. Cl.^{3} H01H *43/18, 43/30*

U.S. Cl. 307—132 R **10 Claims**



1. A timer device comprising a bi-directional rotation AC electric drive motor, an output means, a control switch con-

nectable to an AC power source, and a power circuit connecting said control switch, drive motor, and said output means; two dissimilar timing elements operably connected to and driven by said drive motor, said power circuit including a multi-contact switch having a member movable from a normally closed terminal first position to a second position, power being supplied to said output means by said switch first position, and characterized by

a control member operably connected to said multi-contact switch to move same from its normally closed first position to an actuated second position,

a connector and control means engageable individually with said timing elements to actuate said control member to move said multi-contact switch to its actuated second position to interrupt power flow to said output means on an irregular basis, and

a switch means in a power circuit for said motor operably connected to said control member to be moved from a circuit closing position through a circuit opening position and to a circuit closing position with each movement of said member from its first to its second position.

4,367,417

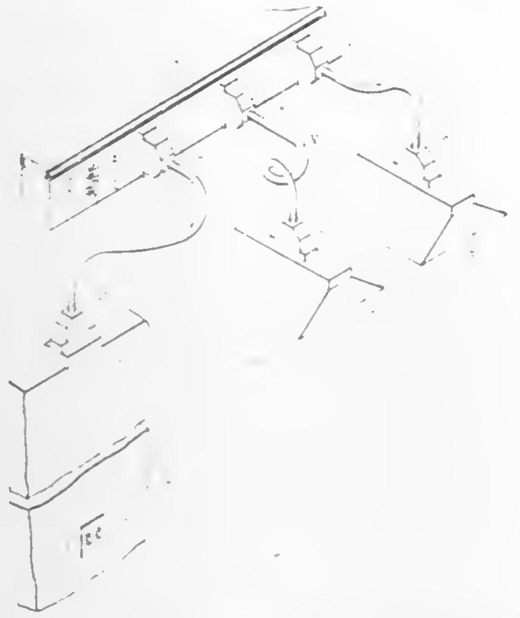
OVERHEAD LIGHTING ELECTRICAL DISTRIBUTION SYSTEM

Salvatore J. Casasanta, Farmington, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Filed Jul. 31, 1980, Ser. No. 173,958

Int. Cl.^{3} H05B *37/00*

U.S. Cl. 307—147 **4 Claims**



1. In an overhead power distribution system for distributing electrical power to a plurality of overhead lamp fixtures for lighting a floor area and including: at least one branch circuit connected to a power bus, the lamp fixtures being energized from the branch circuit, the branch circuit including a hollow raceway extending over the floor area and enclosing a plurality of raceway conductors; and wall switch means for controlling the supply of power to at least one of the lamp fixtures; the improvement wherein:

the plurality of conductors comprises at least a first hot conductor and a neutral conductor, both connected to the power bus, and at least a first floating switch conductor; and comprising:

a plurality of identical multiple-socket raceway connector receptacles spaced along the length of the raceway, the sockets of each receptacle being wired to a different one of said raceway conductors, and the corresponding sockets of said receptacles being wired to the same raceway conductor;

a multiple-socket switch connector receptacle, identical to said raceway receptacles, having its sockets wired to the wall switch means;

a multiple-socket fixture connector receptacle, identical to said raceway receptacles, on each lamp fixture and wired to the lamp circuits thereof; and

a plurality of interchangeable pre-wired control cable means having identical connector plugs on their opposite ends, said plugs being matable with all of said connector receptacles;

said control cable means comprising:

an unswitched fixture cable means for directly interconnecting a first raceway receptacle and the fixture receptacle on a first lamp fixture for connecting said first fixture in circuit with said hot and neutral raceway conductors so that electrical power is continuously supplied from the branch circuit to said first fixture;

a switch cable means for directly interconnecting a second raceway receptacle and said switch receptacle for connecting said wall switch means in circuit with said raceway hot conductor and raceway switch conductor; and

a switched fixture cable means for directly interconnecting a third raceway receptacle and the fixture receptacle on a second lamp fixture for connecting said second fixture in circuit with said raceway neutral conductor and said raceway switch conductor so that current from said hot conductor flows through said switch means and said raceway switch conductor to said second fixture.

4,367,418

COMBINING THYRISTOR CIRCUITS OF VARIOUS CIRCUIT CONFIGURATIONS

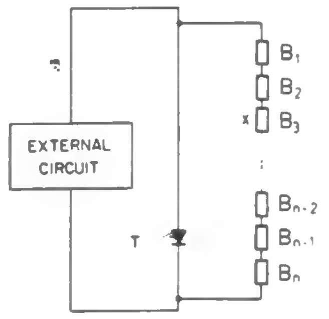
Werner Faust, Wettingen, and Peter Etter, Oberehrendinger, both of Switzerland, assignors to BBC Brown Boveri & Company, Limited, Baden, Switzerland

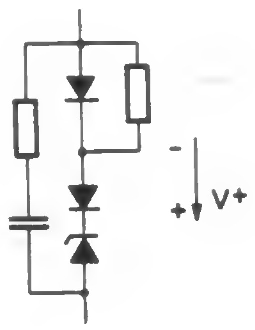
Division of Ser. No. 867,945, Jan. 9, 1978, Pat. No. 4,232,235, which is a continuation of Ser. No. 700,560, Jun. 28, 1976, abandoned. This application May 19, 1980, Ser. No. 150,882

Claims priority, application Sweden, Jul. 2, 1975, 857575

Int. Cl.^{3} H03K *17/72*

U.S. Cl. 307—252 R **8 Claims**





1. A circuit, comprising:

(A) first and second nodes;

(B) an input and an output lead connected to said first and second nodes, respectively, each of said input and output leads coupled to an external circuit; and

(C) a thyristor circuit including first and second parallel branches each coupled between said first and second nodes;

(1) said first branch consisting of a thyristor, the anode of said thyristor being directly coupled to one of said first and second nodes, the cathode of said thyristor being directly coupled to the other of said first and second nodes; and

(2) said second branch including a plurality of series connected sub-circuits, each of said sub-circuits including at least one electrical element, at least two of said sub-circuits having different voltage-current characteristic curves, at least one of said sub-circuits including first and second sub-branches connected together in parallel, said first sub-branch containing first and second series connected diodes connected in opposed polarity fashion, said first diode being a standard diode, said second diode exhibiting controlled avalanche behavior and said second sub-branch including a resistor.

4,367,419

ANALOG SWITCH

Nobuharu Yazawa, and Masao Yoshitomi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 142,161

Claims priority, application Japan, May 30, 1979, 54-69139

Int. Cl.^{3} H03K *17/00, 17/60*

U.S. Cl. 307—254 **2 Claims**

1. An analog switch having first and second amplifiers, each of said amplifiers comprising:

a pair of transistors connected in a common emitter differential amplifier configuration;

an active load for said differential amplifier, said active load formed of a diode and a transistor connected to the collectors of said differential transistor pair;

an impedance matching transistor connected to said differential transistor pair for impedance matching an output of said differential pair;

a current source comprising a diode and a transistor operatively connected to the common emitters of said differential transistor pair, the base of said current source transistor serving as a control input of its respective amplifier to control the operation thereof;

said analog switch further including an inverter amplifier connected to said control input of one of said first and second amplifiers and having a control input signal applied thereto, said control input signal also applied to the control input of the other of said first and second amplifier control inputs;

wherein one of said first and second amplifiers has a signal consisting of a combination of an input signal superimposed on a bias voltage applied to an input of its respective differential amplifier and said other of said first and second amplifiers having an input of its respective differential amplifier connected only to said bias voltage;

an output from each of said impedance transforming transistors are connected together to form a combined output, wherein said control signal enables one of said first and second amplifiers to be operative when said other of said first and second amplifiers is inoperative and enables said other of said first and second amplifiers to be operative when said one of said first and second amplifiers is inoperative.

4,367,420

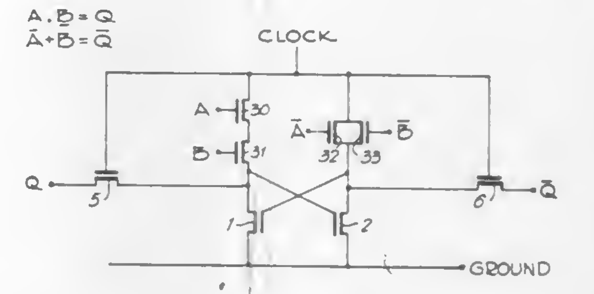
DYNAMIC LOGIC CIRCUITS OPERATING IN A DIFFERENTIAL MODE FOR ARRAY PROCESSING

Richard C. Foss, and Philip M. Thompson, both of Ottawa, Canada, assignors to Thompson Foss Incorporated, Ottawa, Canada

Filed Jun. 2, 1980, Ser. No. 155,594

Int. Cl.^{3} H03K *19/096, 19/21, 19/017;* **G06F** *7/52*

U.S. Cl. 307—453 **11 Claims**



1. A logic circuit formed from input-controlled active devices having inherent reactive storage, comprising:

a first pair of devices, each having an input reactance, connected as a cross-connection regenerative circuit, one of said first pair of devices having a first array of devices performing a first logic function connected between said one of said first pair of devices and a source of clock pulses, and the other of said first pair of devices having a corresponding second array of devices performing a second logic function complementary to the first logic function and connected between said other of said first pair of devices and the source of clock pulses, each of said arrays of devices having inputs for receiving input signals from a set of differential logic signals; and

a second pair of devices connected to the source of clock pulses for selectively isolating or coupling the voltage levels across the input reactances of said first pair of devices to subsequent logic stages.

4,367,421

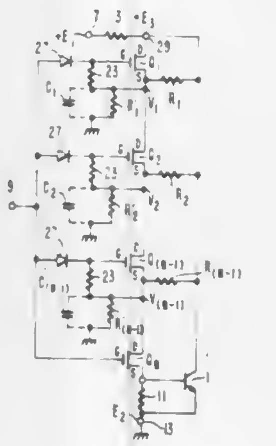
BIASING METHODS AND CIRCUITS FOR SERIES CONNECTED TRANSISTOR SWITCHES

Richard H. Baker, Bedford, Mass., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Apr. 21, 1980, Ser. No. 142,168

Int. Cl.^{3} H03K *17/60*

U.S. Cl. 307—570 **37 Claims**



1. In a switching circuit including first and second output terminals for connecting a load therebetween, said first termi-

nal also receiving an operating voltage of E_1 volts, a bipolar output transistor having a base electrode, and a main current path connected between said second output terminal and a reference voltage terminal receiving a source of reference voltage, a plurality of first through N control transistors (N = 2, 3, 4 . . .), each having a main current path and a control electrode, each having substantially shorter turn-on and turn-off times than said output transistor, their main current paths connected in series between said second output terminal and the base electrode of said output transistor, the first control transistor having one end of its main current path connected to said second terminal, a method for biasing and operating said N control transistors for turning on and off said output transistor, and for permitting the inverse voltage rating of the main current paths of said N control transistors when turned off to be each be substantially less than E_1 volts, comprising the steps of:

dividing down the voltage V_1 at said second terminal into a plurality of bias voltages $V_{(N-1)}$;

applying said bias voltages $V_{(N-1)}$ to the common connections between the main current paths of said first through N control transistors, respectively, said bias voltages having predetermined levels, respectively, for ensuring that the inverse voltage rating of said first through N control transistors are not exceeded, when these transistors and said bipolar transistor are non-conductive;

and

applying a control signal individually to the control electrodes of said first through N control transistors, for initially turning on said N^{th} one of these transistors, causing a substantial reduction in the impedance of the main current path of this transistor, thereby permitting base current to flow in said output transistor, which turns on, causing a substantial reduction in the level of impedance of its main current path, in turn causing a substantial reduction in the level of voltage at said second output terminal, and a corresponding reduction in the level of said plurality of bias voltages to levels permitting said first through $(N-1)^{th}$ control transistors to turn on, when the difference in between said control and bias voltages increases to predetermined differences, thereby completing the turn-on cycle for said output transistor.

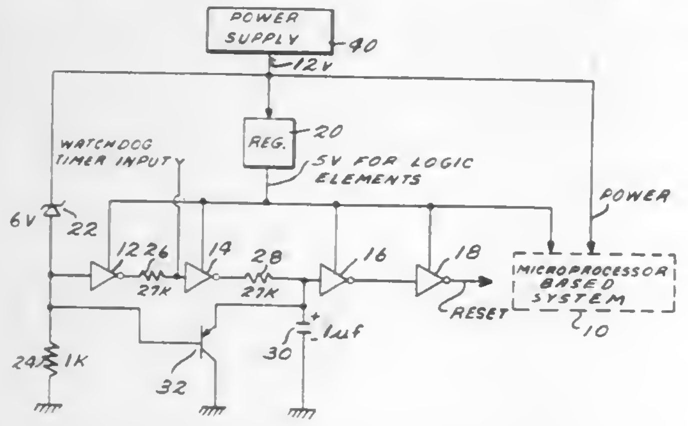
4,367,422
POWER ON RESTART CIRCUIT

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Oct. 1, 1980, Ser. No. 192,936

Int. Cl.^{3} H03K *17/22, 17/28, 5/153*

U.S. Cl. 307—597 **11 Claims**



1. A circuit for protecting a microprocessor-based system from low voltage transients of a power supply and for initializing it, upon power on, by providing a reset signal, having a predetermined minimum duration, to the microprocessor-based system comprising:

means for providing a threshold voltage related to said power supply voltage;

a first inverter having an input coupled to said threshold voltage means for providing a logic level "low" signal at an output thereof whenever the threshold voltage rises above a predetermined level;

a second inverter having an input coupled to the output of the first inverter for inverting the logic signal provided by the first inverter;

a third inverter coupled to the output of said second inverter through a first resistor;

a capacitor, coupled from the input of said third inverter to circuit ground;

transistor circuit means having an input coupled in circuit so as to receive said threshold voltage and having an output coupled to said input of said third inverter, for discharging said capacitor when said threshold voltage falls below the voltage on said capacitor by a predetermined amount; and

a fourth inverter, having an input coupled to the output of said third inverter, and having an output for providing said reset signal which has a duration that is at least in part a function of the time constant of the RC circuit including said first resistor and said capacitor.

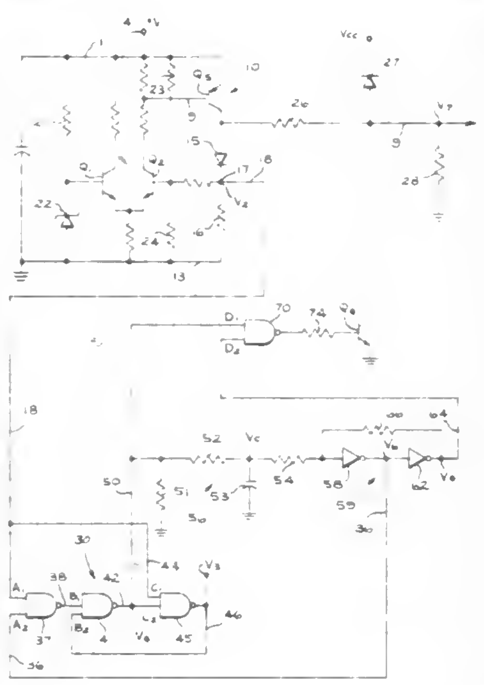
4,367,423
RESET SIGNAL GENERATOR

Richard E. Hornung, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 6, 1981, Ser. No. 222,824

Int. Cl.^{3} H03K *17/22;* **G01R** *19/165, 19/175*

U.S. Cl. 307—597 **8 Claims**



1. A reset signal generator circuit adapted for coupling to a power supply comprising:

a capacitor having a characteristic charge-discharge time representative of the time required to charge said capacitor from a discharged voltage level to a voltage level above a preselected level or to discharge said capacitor from a voltage level above said preselected level to its discharged voltage level;

circuit means for generating a capacitor charged signal indicating a voltage above said preselected level across said capacitor and a capacitor discharged signal indicating a voltage level across said capacitor below said preselected level;

a power monitor circuit responsive to changes in the voltage level of the supply to provide a first signal when the supply is above a preselected threshold and a second signal when the supply is below said threshold;

logic means responsive to the concurrent receipt of said first signal and said capacitor discharged signal to immediately generate a first control signal, responsive to said second signal and said capacitor charged signal to generate a second control signal, and responsive to the concurrent receipt of said first signal and said capacitor charged signal to delay the generation of said first control signal until said capacitor discharged signal is received, said capacitor coupled to said logic means to charge in response to said first control signal; and

reset gate means responsive to the concurrent receipt of (a) said first control signal and said capacitor discharged signal, and (b) said second control signal and said capacitor charged signal to control the initiation of a reset signal and responsive to the concurrent receipt of said first control signal and said capacitor charged signal to control the termination of said reset signal, whereby said reset signal persists for a minimum time determined by the charge-discharge time of said capacitor.

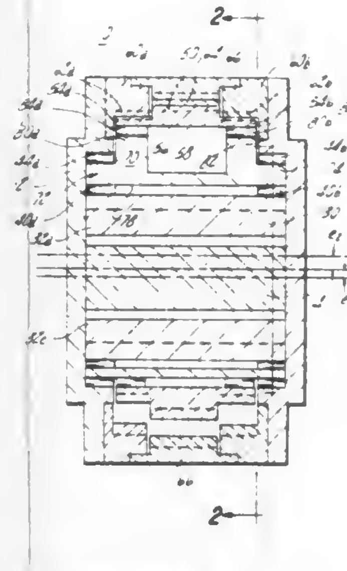
4,367,424
ECCENTRICITY MODIFIER FOR EPICYCLIC GEAR ACTUATORS

Rex W. Presley, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 29, 1981, Ser. No. 258,718

Int. Cl.^{3} H02K *7/10*

U.S. Cl. 310—82 **7 Claims**



1. An actuator (10) comprising:

a housing (12);

stator means (14) fixed to said housing (12) having a plurality of poles (16) positioned about a central axis (22), each of said poles having associated therewith at least one coil (20), for developing a magnetic force;

rotor means (30), mounted within said housing and having an axis (38) eccentrically positioned relative to the central axis (22), said rotor means including means (32, 34, 36) for responding to said magnetic force to cause said rotor to orbitally move in response to said magnetic force;

stationary gear means (60) fixed to said housing (12), in coaxial relationship relative to said central axis;

a rotatably mounted output gear (66) positioned coaxially relative to said stationary gear means;

a ring gear (50) eccentrically positioned from said central axis and positioned to engage said stationary gear means and to drivingly engage said output gear, said ring gear having an axis (52) positioned eccentrically at a distance e_2 from the axis of said stationary gear means;

double eccentric means (70), rotably driven by said rotor means (30) including first means (78) for constraining said rotor means to move with eccentric motion about its axis and second means (82) for constraining said ring gear to move with eccentric motion about its respective axis;

first drive bearing means (40), concentrically positioned relative to the axis of said rotor means interposing said rotor means and said first constraining means (78) for transmitting the motion of said rotor means to said double eccentric means; and

second drive bearing means (84) concentrically positioned relative to the axis of said stationary gear means, interposing said second constraining means (82) and said ring gear for driving said ring gear.

4,367,425
IMPREGNATED HIGH VOLTAGE SPACERS FOR USE WITH RESIN FILLED HOSE BRACING SYSTEMS

Morris A. Mendelsohn, Wilkins Township, Allegheny County, and Francis W. Navish, Jr., East Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1981, Ser. No. 269,133

Int. Cl.^{3} H02K *3/46*

U.S. Cl. 310—260 **5 Claims**

1. A fluid, gellable resin system impregnated into a porous substrate, said substrate being disposed between stator conductor coils in the end winding area of an electrical apparatus, wherein said resin system consists essentially of:

(A) a liquid diallyl isophthalate mixture comprising the admixture of liquid diallyl isophthalate monomer and solid diallyl isophthalate prepolymer, where the ratio of monomer:prepolymer is between about 1.5:1 and about 3.0:1,

(B) an amount of isocyanate terminated polyurethane prepolymer effective to provide between about 0.010 and about 0.020 equivalent of NCO group per 100 grams of liquid diallyl isophthalate mixture, where the isocyanate component is selected from the group consisting of 2,4-tolylene diisocyanate; 2,6-tolylene diisocyanate; mixtures of 2,4-tolylene diisocyanate and 2,6-tolylene diisocyanate; and 4,4'-diphenyl methane diisocyanate,

(C) a chain extender for the isocyanate terminated polyurethane prepolymer consisting of trimethylene glycol di-p-aminobenzoate when the isocyanate component contains tolylene diisocyanate; and selected from hydroquinone di-(β-hydroxyethyl) ether; ethylene glycol; 1,2-propanediol; 1,3-propanediol; 1,5-pentanediol; 1,4-butanediol; 1,3-butanediol; 1,2-butanediol; 2,2-butanediol; 2,3-butanediol, mixtures thereof, and mixtures with triols when the isocyanate component contains 4,4'-diphenyl methane diisocyanate, and

(D) a peroxide catalyst for the liquid diallyl isophthalate mixture, where the resin system is curable with the application of heat.

4,367,426
CERAMIC TRANSPARENT PIEZOELECTRIC TRANSDUCER

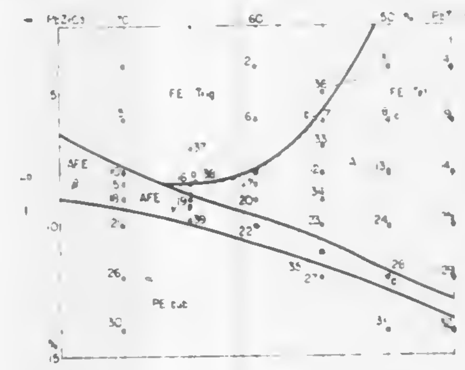
Akio Kumada, Kokubunji; Takahiko Ihochi; Masashi Tanaka, both of Koganei; Kazuma Suzuki, Fuchu; Masaru Yokosuka; Shinsuke Miura, both of Hachioji, and Tsutomu Ochiai, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,433

Claims priority, application Japan, Mar. 19, 1980, 55-33911

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—358 **8 Claims**



1. A transparent piezoelectric transducer comprising, at least, a transparent vibrator and at least one plate of a piezoelectric ceramic sandwiched between a pair of transparent electrodes, said transparent vibrator being disposed so as to be vibrated by the piezoelectric ceramic plate, said piezoelectric

ceramic being a ceramic material which is represented by a formula:

$$Pb_{1-x}La_x(Zr_yTi_z)_{1-x/4}O_3$$

where x and y/z are set within a region which is enclosed with lines successively coupling points a-b-c-d-e-a in a phase diagram shown in FIG. 2 of the accompanying drawings (where x=8.4 and y/z=65/35 at a, x=6 and y/z=55.5/44.5 at b, x=6 and y/z=50/50 at c, x=12 and y/z=50/50 at d, and x=9 and y/z=65/35 at e.).

4,367,427

GLOW DISCHARGE LAMP FOR QUALITATIVE AND QUANTITATIVE SPECTRUM ANALYSIS

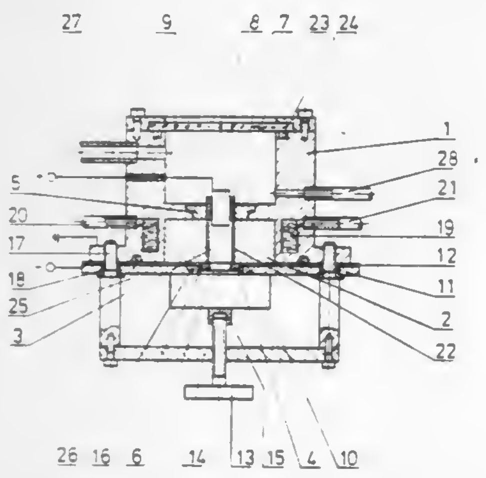
Werner Grimm, Hanau, Fed. Rep. of Germany, assignor to Vacuumschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,716

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2908350

Int. Cl.^{3} G01J *3/12*

U.S. Cl. 313—210 **16 Claims**



1. In a glow discharge lamp for qualitative and quantitative spectrum analysis having an anode body and a cathode and a discharge chamber closeable by an electrically conducting disc at cathode potential, the improvement comprising:

(a) means for producing a magnetic field extending essentially in the axial direction in the discharge chamber; and

(b) a control electrode disposed in said chamber insulated from the anode body, said control electrode generating an additional electric field which, in cooperation with said magnetic field, results in an increased number of collisions of electrons and atoms and increased material decomposition of the substance to be analyzed to provide an increased intensity of cathode glow and permitting operation at lower pressures.

4,367,428

HALOGEN INCANDESCENT LAMP

Victor R. Notelteirs, and Gustaaf F. R. Siaens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

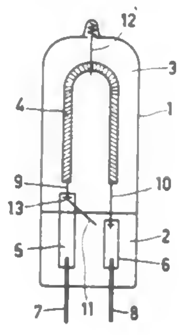
Filed Jan. 23, 1981, Ser. No. 227,891

Claims priority, application Netherlands, Feb. 5, 1980, 8000705

Int. Cl.^{3} H01K *1/18, 1/42*

U.S. Cl. 313—222 **3 Claims**

1. A mains voltage halogen incandescent lamp having a sealed vacuum-tight glass lamp envelope, which lamp envelope comprises a pinch seal in which metal foils connected to respective internal and external current conductors are incorporated as current leadthrough conductors, in the cavity of which lamp envelope a filament is accommodated in a halogen containing gas and is connected to the internal current conductors, at least one of the metal foils extending from the pinch seal into the cavity of the lamp envelope and being there connected to an internal current conductor situated entirely within said cavity, characterized in that the internal current conductor situated entirely in the cavity of the lamp envelope has a non-current-carrying supporting member one end of which is embedded in the pinch seal at a distance from the metal foils.



4,367,429

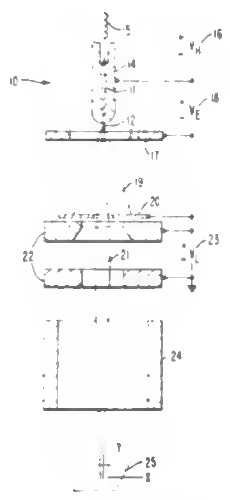
ALLOYS FOR LIQUID METAL ION SOURCES

Victor Wang, Agoura; Joseph A. Wysocki; Gregory L. Tangonan, both of Oxnard, and Robert L. Seliger, Agoura, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 3, 1980, Ser. No. 203,294

Int. Cl.^{3} H01J *1/05, 27/26*

U.S. Cl. 313—362.1 **16 Claims**



1. A liquid metal ion source comprising:

(a) an anode electrode for supporting an ion emitter comprising an alloy in the liquid state and having a termination such that at least one cusp of liquid metal will form under the influence of an electric field;

(b) means for generating an ionizing electric field; and

(c) a reservoir for said liquid metal, ions of which are to be emitted by said source, characterized in that said alloy is one selected from the group consisting of (a) metal-metalloid alloys comprising about 10 to 30 atom percent of at least one metalloid element the balance at least one transition element, (b) early transition-late transition alloys comprising about 30 to 85 atom percent of at least one early transition element, the balance at least one late transition element, and (c) Group II alloys comprising about 35 to 80 atom percent of at least one Group II element, the balance at least one metal element.

4,367,430

SHADOW MASK TYPE COLOR CATHODE-RAY TUBE

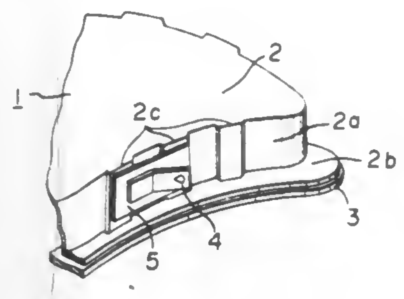
Mitsuru Matsushita, and Koji Nakamura, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,399

Claims priority, application Japan, Jan. 25, 1979, 54-8343[U]; May 17, 1979, 54-61050

Int. Cl.^{3} H01J *29/80*

U.S. Cl. 313—405 **8 Claims**



1. A shadow mask color cathode-ray tube comprising:

a shadow mask having an aperture and supported by support springs, said shadow mask comprising;

a spherical part having plural electron beam through holes;

a skirt part integrally connected to said spherical part substantially perpendicular thereto;

a flange part integrally connected to said skirt part and extending therefrom substantially parallel to said spherical part;

wherein said skirt part has a corrugation at each of the corners of said mask, said corrugation having a trough to crest distance at least two times the thickness of said skirt part and wherein said corrugation extends substantially the entire extent of said skirt part at each of said corners;

wherein said spherical part has a thickness from 0.10 to 0.18 mm and said skirt part and said flange part have a thickness from 0.2 to 0.3 mm.

4,367,431

MULTISTAGE SPARK GAP WITH DELAY CABLES

John D. Parks, 10700 Greene Dr., Lorton, Va. 22079

Filed Jul. 15, 1980, Ser. No. 169,003

Int. Cl.^{3} H01J *7/44, 17/34, 23/16, 29/96;* **H01K** *1/62*

U.S. Cl. 315—38 **3 Claims**

1. A spark gap means comprising:

an insulating enclosure having first and second ends;

an electrode in said one end of said enclosure;

a coaxial electrode set in said second end of said enclosure, wherein said set includes two concentric electrodes, one within the other, and insulation therebetween;

a delay line connected between said two electrodes of said set.

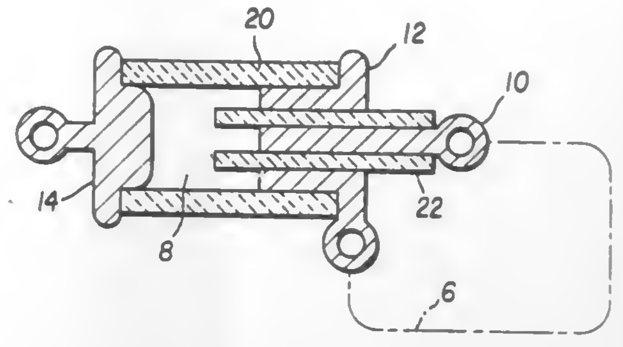
2. A spark gap means for a coaxial cable having several portions and having an inner and an outer conductor in each portion, said means including:

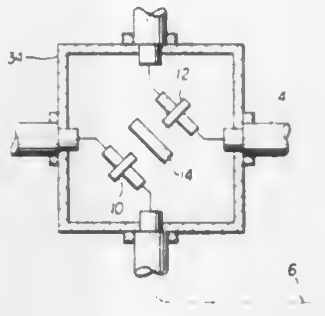
a metallic enclosure with the outer conductors of first and second coaxial cable portions respectively connected to first and second positions on said enclosure, and a delay line coaxial cable portion having two ends, with the outer conductor of said ends connected to third and fourth positions on said enclosure;

a first electrode in said enclosure connected thereto;

second and third electrodes in said enclosure, with the inner conductor of said first coaxial cable portion and the inner conductor of one end of said delay line coaxial cable portion connected to said second electrode and with the inner conductor of said coaxial cable second portion and with the inner conductor of the other end of said coaxial cable delay line portion connected to said third electrode; and

a readily ionizible gaseous medium in said enclosure.





4,367,432

BLENDED LAMP

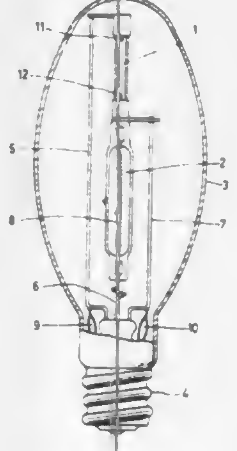
Alfred E. T. Glenny, and Johannes A. J. M. Van Vliet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1980, Ser. No. 125,009

Claims priority, application Netherlands, Apr. 3, 1979, 7902573

Int. Cl.^{3} H01J *7/44, 17/34, 19/78, 29/96*

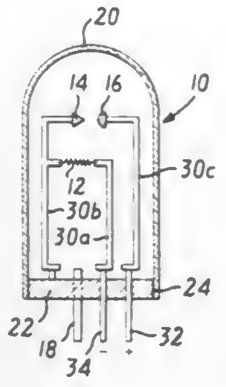
U.S. Cl. 315—49 **2 Claims**



1. A blended lamp having an incandescent filament in a halogen atmosphere which is electrically arranged in series with a high-pressure sodium vapor discharge tube, the discharge tube containing mercury and a starting gas in addition to sodium, the percentage by weight "G" of the mercury in the discharge tube being between 91 and 98% of the combined weight of the mercury and the sodium in the discharge tube.

4,367,433
SELF BALLASTED LAMP FOR AUTOMOTIVE, AIRCRAFT RUNWAY, ETC. LIGHTING

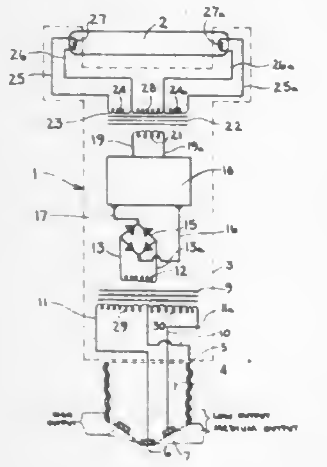
Salvatore F. Cortorillo, Parsippany, N.J., assignor to Edison International, Inc., Rolling Meadows, Ill.
Filed Aug. 25, 1980, Ser. No. 180,696
Int. Cl.^{3} H01J *7/44*
U.S. Cl. 315—49 **3 Claims**



1. A self ballasted, tungsten filament, electrode arc lamp, including in combination:
a hermetically sealed, gas filled lamp envelope;
a filament mounted within said envelope;
first and second predeterminedly spaced electrodes mounted within said envelope;
means for electrically connecting one end of said filament to the first of said first and second spaced electrodes;
means for connecting an electric potential of a first polarity to the second end of said filament and an electric potential of the opposite polarity to the second one of said first and second space electrodes;
said filament being predeterminedly positioned within said envelope in sufficiently close proximity to said second one of said first and second spaced electrodes to induce ionization of said gas in said envelope in response to the application of said first and opposite polarity electric potential to said second end of said filament and to said second one of said electrodes, respectively, for striking an arc between said first and second electrodes, thereby to complete an electrical series circuit through said filament and arc.

4,367,434
LAMPHOLDER FITTING WITH THREE-WAY BRIGHTNESS SOLID-STATE FLUORESCENT LAMP BALLAST

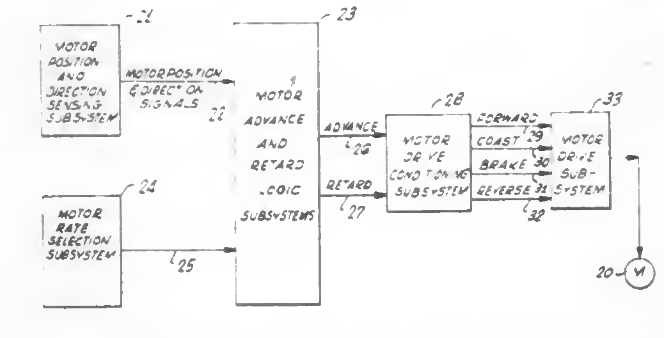
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed Jun. 26, 1980, Ser. No. 163,391
Int. Cl.^{3} H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—51 **5 Claims**



1. A fluorescent lampholder fitting comprising: at least one fluorescent lamp of the preheat or rapid-start type having a first end provided with a starting filament including a first and second terminal wire, and a second end provided with a starting filament including a first and second terminal wire;
a male screw base electrical connector adapted to fit a three-way socket lampholder having an integral switch, said screw base extending from a generally hollow housing which supports the lamp in at least two places and said screw base being provided with three electrical input connections; a screw shell connection, a center connection and an intermediate ring connection;
a center-tapped step-down transformer having three terminals on its primary winding attached to the three respective connections of the three-way male screw base, and having a secondary winding with a low voltage output;
a full-wave bridge rectifier with its input connected to the output of the secondary winding of the step-down transformer;
a high-frequency oscillator with its input connected to the output of the full-wave rectifier and having a low voltage output;
a step-up transformer having its primary winding input connected to the output of the high-frequency oscillator, and having a tapped secondary winding including a first segment applying voltage across and current through at least one of the pairs of filament terminal wires, and a second winding segment applying voltage across and current through one of the leads of each respective lamp filaments.

4,367,435
MOTOR CONTROL SYSTEM

Wilber H. Bailey, Leucadia; Stephen J. Kreinick, San Diego, and Bradley J. Denny, San Marcos, all of Calif., assignors to Ivac Corporation, San Diego, Calif.
Filed Dec. 15, 1980, Ser. No. 216,762
Int. Cl.^{3} H02K *27/20*
U.S. Cl. 318—313 **14 Claims**


21
MOTOR POSITION AND DIRECTION SENSING SUBSYSTEM
MOTOR POSITION & DIRECTION SIGNALS
22
23
MOTOR ADVANCE AND RETARD LOGIC SUBSYSTEMS
24
MOTOR RATE SELECTION SUBSYSTEM
25
ADVANCE
26
RETARD
27
28
MOTOR DRIVE CONDITIONING SUBSYSTEM
FORWARD
29
COAST
30
BRAKE
31
REVERSE
32
33
MOTOR DRIVE SUB-SYSTEM
20
M

1. In a motor control system, the combination comprising:
a d.c. motor;
first means for sensing motor position and direction, said first means including a disc rotating synchronously with rotation of the motor, said disc having alternating light and dark sectors, and a pair of photosensors monitoring said disc as it rotates;
second means for selectively establishing a desired motor rate;
third means, responsive to both said first means and said second means, to generate motor "advance" and motor "retard" information regarding the status of motor performance, said third means including an advance and retard logic means in accordance with the Boolean equations:

ADVANCE
$LOGIC = C(B\downarrow) + C(B\uparrow) + B(C\downarrow) + B(C\uparrow) + A\uparrow$

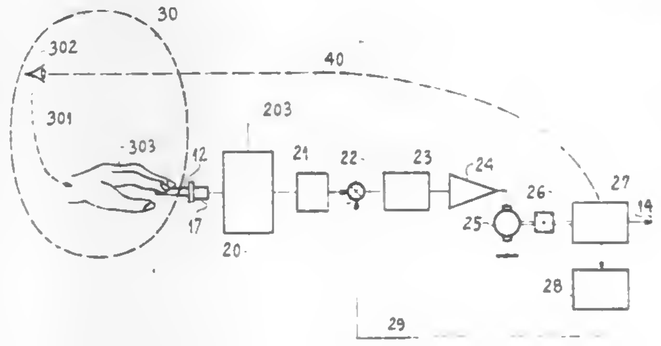
RETARD
$LOGIC = C(B\downarrow) + C(B\uparrow) + B(C\uparrow) + B(C\downarrow)$

where:

B = response to a light sector in one of said pair of photosensors,
B = response to a dark sector in said one of said pair of photosensors,
C = response to a light sector in the other of said pair of photosensors,
C = response to a dark sector in said other of said pair of photosensors,
B ↑ = sensor change from light to dark in said one of said pair of photosensors,
B ↓ = sensor change form dark to light in said one of said pair of photosensors,
C ↑ = sensor change from light to dark in said other of said pair of photosensors,
C ↓ = sensor change from dark to light in said other of said pair of photosensors,
A ↑ = occurrence of an advance motor signal; and
fourth means, responsive to said third means, for selectively driving said motor at any one time in a selected mode from a hierarchy of four different modes of operation including forward movement, coasting movement, braking of movement, and reverse movement, whereby said motor movement can be accurately controlled over a wider speed control range.

4,367,436
ASSISTED MANUAL DESIGNATION SYSTEM FOR AN OPTICAL OR OPTRONIC RADAR DIRECTOR THEODOLITE DEVICE

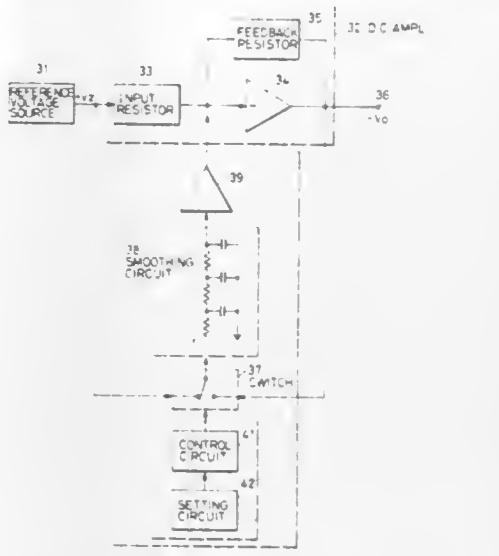
Roger Arnichand; Jacques Coeuillet; Jean Darnet, and Pierre Sbalchiero, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Oct. 19, 1979, Ser. No. 86,427
Claims priority, application France, Oct. 28, 1978, 78 30202
Int. Cl.^{3} G05B *11/01*
U.S. Cl. 318—628 **8 Claims**



1. A system for the assisted manual designation of a target for a director theodolite operated by an operator, mobile about two perpendicular rotation axes and having for each of said two rotations an ergonomic position loop and an electromechanical velocity loop, said ergonomic loop comprising direct sighting means for the target and holding means for the operator, said holding means comprising at least one control member which is rigid in both directions and is integral with the aiming axis and parallel with the latter in such a way as to permit a reflex aiming and supplies polarized electrical signals which are the nominal values for the electromechanical velocity loops.

4,367,437
REFERENCE VOLTAGE GENERATOR

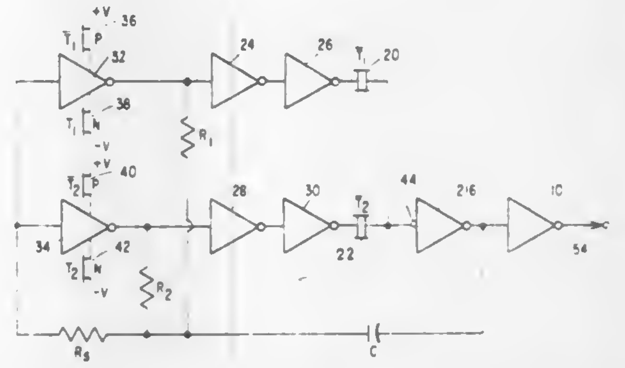
Tsukasa Mikami, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan
Filed Feb. 4, 1980, Ser. No. 118,226
Claims priority, application Japan, Feb. 13, 1979, 54-15266
Int. Cl.^{3} G05F *1/46*
U.S. Cl. 323—349 **32 Claims**



1. A reference voltage generator comprising:
a reference voltage source for generating a first reference voltage;
a DC amplifier, comprising an inverting input, connected to the output of the reference voltage source for amplifying the output voltage therefrom to provide a second reference voltage at the output terminal of said DC amplifier;
a switch connected to the output of each of the DC amplifier and the reference voltage source for alternately switching between these outputs and for alternately outputting each one of them;
a smoothing circuit connected to the output of the switch for smoothing said alternating output into a DC voltage and for feeding this DC voltage to the input inverting of the DC amplifier;
a control circuit for controlling the ratio of the periods of said alternating switching, the ratio of the periods being selectively determined by a set value; and
setting means for applying the selected set value to the control circuit in such a manner that said ratio results in a corresponding selected value for said second reference voltage.

4,367,438
ELECTRONIC MEASURING APPARATUS

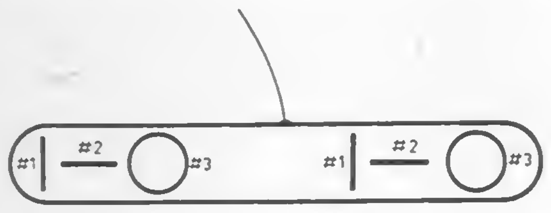
Albert H. Medwin, 65 Castle Howard Ct., Princeton, N.J. 08540
Filed Dec. 22, 1980, Ser. No. 218,869
Int. Cl.^{3} G01R *27/00*
U.S. Cl. 324—57 R **22 Claims**



1. A measurement device comprising electronic oscillator means for producing a plurality of output pulses, said oscillat-

ing means including a first frequency varying means for varying the frequency of said output pulses, said first frequency varying means including a first impedance element, said oscillator means including a first inverter, said first impedance element coupled to said first inverter, said first inverter having an input terminal coupled thereto, said oscillator means including a second frequency varying means for varying said frequency of said output pulses, at least second and third impedance elements, at least second and third inverters, said second impedance element coupled to said second inverter, said third impedance element coupled to said third inverter, coupling means for exclusively alternately coupling the combination of said second impedance element and said second inverter and the combination of said third impedance element and said third inverter to said input terminal during at least two sequential separate time periods, whereby a first sub-plurality of said plurality of output pulses is generated by said oscillator means during the first of said two time periods and whereby a second sub-plurality of said plurality of pulses is generated by said oscillator means during the second of said two time periods.

4,367,439
AIRBORNE GEOPHYSICAL SURVEYING SYSTEM USING MULTIPLE COIL PAIRS
Douglas C. Fraser, Ste. 4900, Toronto-Dominion Centre, Toronto, Canada (M5K 1E8)
Filed Mar. 11, 1980, Ser. No. 129,347
Claims priority, application Canada, Mar. 13, 1979, 323304
Int. Cl.^{3} G01V *3/165, 3/10*
U.S. Cl. 324—330 4 Claims

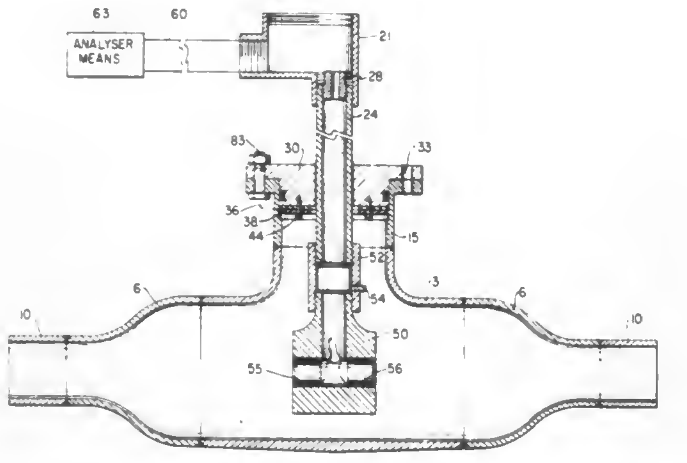


COIL	NOMENCLATURE
# 1	STANDARD
# 2	WHALE TAIL
# 3	FISH TAIL

4. A method of geophysical surveying comprising flying over terrain to be surveyed at least two rigidly spaced transmitter-receiver coil-pairs including a standard configuration coil-pair and a fishtail configuration coil-pair, energizing the transmitter coils of said pair at frequencies which are different but sufficiently closely spaced that differences in responses induced in the receiver coils due to the difference of said frequencies are negligible, isolating at least one of the inphase and the quadrature components of the secondary signals from the terrain induced in said receiver coils by their associated transmitter coils, subtracting said signals one from the other to obtain a signal proportional to the difference between corresponding components of the responses from the receiver coils of the two coil pairs whereby to obtain a signal in which responses due to conductive overburden or distributed magnetite are substantially cancelled.

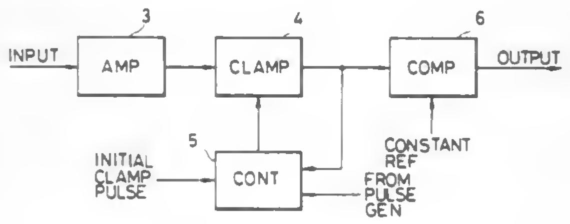
4,367,440
HIGH PERCENTAGE WATER CONTENT MONITOR
Roy P. Mazzagatti, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Oct. 17, 1980, Ser. No. 197,880
Int. Cl.^{3} G01N *27/42*
U.S. Cl. 324—445 7 Claims

1. An oil-in-brine mixture comprising
housing means connected to a pipe having an oil and brine mixture flowing through the pipe in a manner so that the oil and brine mixture flows through a portion of the housing means;
sensor means mounted within said housing means in a manner so that the sensor means will be suspended in the flowing mixture, said sensor means includes water sensing means for detecting the water content of oil and brine mixtures having a water content of 80% or more by volume and providing a sensed water signal representative thereof, and temperature sensing means for sensing the temperature of the oil and brine mixture and provides a representative temperature signal;



means electrically connected to said sensor means for providing an excitation voltage to said sensor means; and
means for providing an indication of the percent by volume of the water in the oil and brine mixture in accordance with the sensed water signal and the temperature signal from the sensor means.

4,367,441
METHOD AND CIRCUIT ARRANGEMENT FOR SHAPING A SIGNAL WAVEFORM
Katsuyuki Niyada, Sagamihara; Shoji Hiraoka, Kawasaki, and Shuji Morii, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan
Filed Nov. 14, 1980, Ser. No. 206,826
Claims priority, application Japan, Nov. 16, 1979, 54-149387
Int. Cl.^{3} H03K *5/08*
U.S. Cl. 328—162 9 Claims

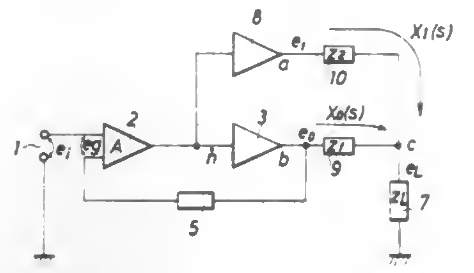


1. A method of shaping a signal waveform by means of a clamping circuit, comprising the steps of:
(a) detecting the level of the output signal of said clamping circuit, to which said signal waveform is applied, to see whether said level is within a predetermined range or not;
(b) clamping the level of said signal for a predetermined period of time when said level of said output signal is within said predetermined range; and
(c) repeating said step of clamping at an interval which is longer than said predetermined period of time.

4,367,442
DISTORTION CORRECTION CIRCUIT FOR A POWER AMPLIFIER
Susumu Tanaka, and Susumu Takahashi, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1980, Ser. No. 168,188
Int. Cl.^{3} H03F *1/26*
U.S. Cl. 330—149 18 Claims

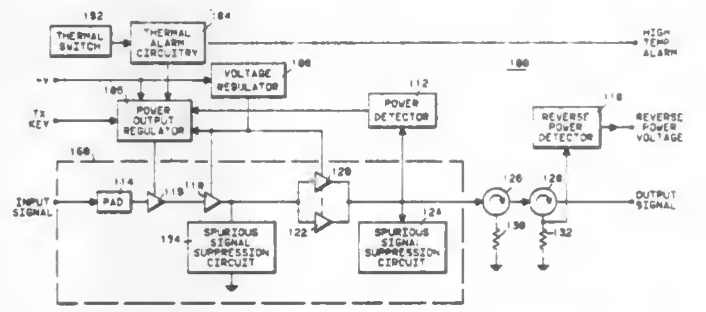
1. An amplifying device comprising a pre-amplifier, a first

amplifier coupled to the output terminal of the pre-amplifier, a first impedance element coupled between the output terminal of the first amplifier and a load, a negative feedback circuit for feeding back the outputs of the first amplifier to the input of the pre-amplifier, a second amplifier coupled to the input terminal



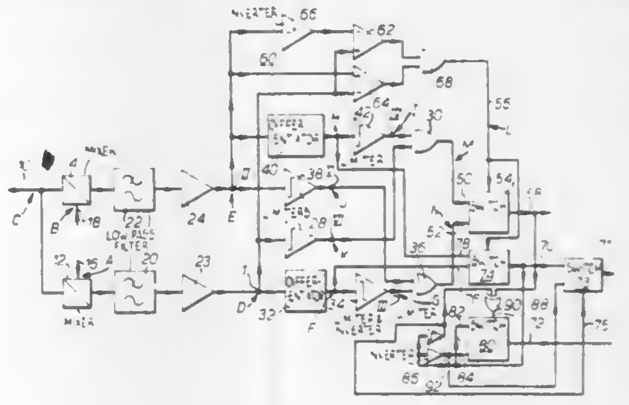
of the first amplifier, and a second impedance element coupled between the output terminal of the second amplifier and the load wherein the first and second impedance elements are selected so as to cancel the distortion caused in the first amplifier by the outputs of the second amplifier.

4,367,443
RADIO FREQUENCY SIGNAL POWER AMPLIFIER
Thomas W. Hull, Hillside, and Antonio Pagnamenta, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 17, 1980, Ser. No. 112,771
Int. Cl.^{3} H03F *21/00, 1/26*
U.S. Cl. 330—207 P 16 Claims



1. Circuitry for amplifying a radio frequency (RF) signal having a predetermined frequency and being provided by a signal source, comprising:
first amplifying means including input and output microstrip coupling circuitry, said first amplifying means being coupled to the RF signal by its input microstrip coupling circuitry for amplifying the RF signal substantially in proportion to the magnitude of a drive signal, the amplified RF signal being coupled from the first amplifying means by its output microstrip coupling circuitry;
second amplifying means including input and output microstrip coupling circuitry, said second amplifying means being coupled by its input microstrip coupling circuitry to the amplified RF signal from the first amplifying means for further amplifying the RF signal, the further amplified RF signal being coupled from the second amplifying means by its output microstrip coupling circuitry;
spurious signal suppression means including resistor means series coupled to microstrip transmission line means, said spurious signal suppression means being coupled to the amplified RF signal from the second amplifying means for suppressing the generation of spurious signals having frequencies in a predetermined range of frequencies centered about one-half of the predetermined RF signal frequency, the microstrip transmission line means of the spurious signal suppression means having a length substantially equal to one-half wavelength of the RF signal;
forward power sensing means coupled to the amplified RF signal from the second amplifying means for providing a forward power signal having a magnitude that is substantially proportional to the magnitude of the amplified RF signal from the second amplifying means; and
regulating means for providing the drive signal to the first amplifying means, said regulating means being responsive to the magnitude of the forward power signal from the forward power sensing means for regulating the magnitude of the drive signal to the first amplifying means to maintain the magnitude of the amplifier signal from the second amplifying means at a predetermined magnitude.

4,367,444
FREQUENCY DISCRIMINATOR AND FREQUENCY MODULATOR INCORPORATING SUCH DISCRIMINATOR
Brian R. Gardner, Bracknell, and Peter J. Munday, Reading, both of England, assignors to Racal Research Limited, Reading, England
Filed Oct. 20, 1980, Ser. No. 199,021
Claims priority, application United Kingdom, Oct. 20, 1979, 7936482
Int. Cl.^{3} H03D *3/02, 13/00;* H03L *7/08*
U.S. Cl. 332—19 25 Claims



2. An electrical circuit arrangement for producing an output signal having a value dependent on any frequency difference between an input signal and a reference signal, comprising
input means connected to receive the input signal and the reference signal and producing a plurality of waveforms each of a first or a second type, one type of which has a value dependent on the sign and magnitude of the phase difference between the input signal and the reference signal and the other type of which has a value dependent on the sign and magnitude of the phase difference between the input signal and a signal 90° phase-displaced from the reference signal,
slope means responsive to the waveforms of the first and second types to produce first and second slope signals lying on opposite sides of a datum and whose magnitudes relative thereto are respectively dependent on the slopes of the said waveforms of the first and second types,
selecting means responsive to the first and second slope signals and operative to select one or other of the slope signals in dependence on a control signal, and
control means for producing the control signal in dependence on the relative magnitudes of said waveforms of the first and second types respectively (but independent of their respective signs), whereby the slope signals are selected by the selecting means for respective periods of time which do not include transitions in the selected one of them and each selected one of them constitutes the said output signals.
22. A frequency modulating arrangement, comprising
an adjustable oscillator producing a variable frequency signal,
means producing a reference signal,
input means connected to receive the variable frequency signal and the reference signal and producing a plurality of waveforms each of a first or a second type, one type of which has a value dependent on the sign and magnitude of

the phase difference between the variable frequency signal and the reference signal and the other type of which has a value dependent on the sign and magnitude of the phase difference between the variable frequency signal and a signal 90° phase-displaced from the reference signal,

sign means responsive to waveforms of the first and second types to produce a first sign signal dependent on the sign of a said waveform of the first type and a second sign signal dependent on the sign of a said waveform of the second type,

slope means responsive to waveforms of the first and second types to produce a first slope signal dependent on the slope of a said waveform of the first type and a second slope signal dependent on the slope of a said waveform of the second type,

first comparing means connected to compare the first sign signal with the second slope signal whereby to produce a first intermediate signal having a value dependent on the said frequency difference,

second comparing means connected to compare the second sign signal with the first slope signal whereby to produce a second intermediate signal nominally the same as the first intermediate signal,

selecting means responsive to a control signal for selecting one or other of the intermediate signals,

control means for producing the control signal in dependence on the relative magnitudes of said waveforms of the first and second types respectively (but independent of their respective signs), whereby the intermediate signals are selected by the selecting means for respective periods of time which do not include transitions in the signals from which the respective comparing means produce them,

a differential amplifier connected to receive each selected intermediate signal and a modulating signal and to produce a difference output dependent on their difference, and

means connecting the said difference output to the oscillator to control the frequency of the variable frequency signal in a sense such as to reduce the said difference output towards zero, whereby the variable frequency signal of the oscillator constitutes a modulated output frequency.

4,367,445

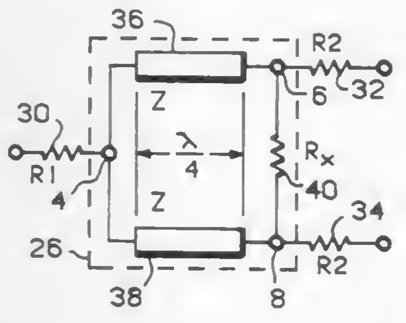
IMPEDANCE TRANSFORMING THREE PORT POWER DIVIDER

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola Inc., Schaumberg, Ill.

Filed Mar. 30, 1981, Ser. No. 248,921

Int. Cl.^{3} H01P *5/12*

U.S. Cl. 333—127 **2 Claims**



1. An improvement on a three port Wilkinson power splitter/combiner wherein a first port is matched to a first external impedance, R_1, and each of a second and third port are matched to a second external impedance, R_2, the first and second impedance being different each from the other, the first port being connected in common to one end of each of a pair of transmission media, another end of each of said transmission media pair being connected each to the other through an impedance, R_X, the connection at the end of R_X being the second port and the connection at another end of R_X being the third port, each of the transmission media pair having a length equal to an odd multiple of one-quarter wavelengths at a desired nominal frequency of operation and each of transmission media pair having a characteristic impedance equal to Z where:

$$Z = \sqrt{2R_1R_2}\text{, and}$$

$$R_X = 2R_2.$$

4,367,446

MODE COUPLERS

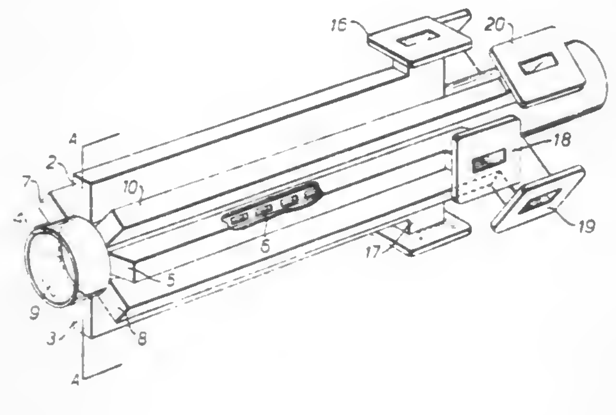
William J. Hall, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Continuation of Ser. No. 787,712, Apr. 14, 1977, abandoned. This application May 23, 1979, Ser. No. 41,826

Claims priority, application United Kingdom, Apr. 20, 1976, 15810/76

Int. Cl.^{3} H01P *1/61*

U.S. Cl. 333—135 **20 Claims**



1. A mode coupler arrangement comprising a main waveguide and at least two subsidiary waveguides coupled to said main waveguide over a common length thereof, one of said subsidiary waveguides being such as to support and couple signals of one mode of propagation and the other of said subsidiary waveguides being such as to support and couple another mode of propagation, the coupling between said subsidiary waveguides and said main waveguide being effected by arrays of apertures, the apertures in the array for said one subsidiary waveguide being staggered by the order of one quarter of a guided wavelength relative to the apertures in the array for said other subsidiary waveguide.

4,367,447

ELECTROMAGNETIC RELAY HAVING A PIVOTED ARMATURE FITTED WITH A PERMANENT MAGNET

Gerard Koehler, Ville-D'Avray, France, assignor to Ets Bernier & Cie, Paris, France

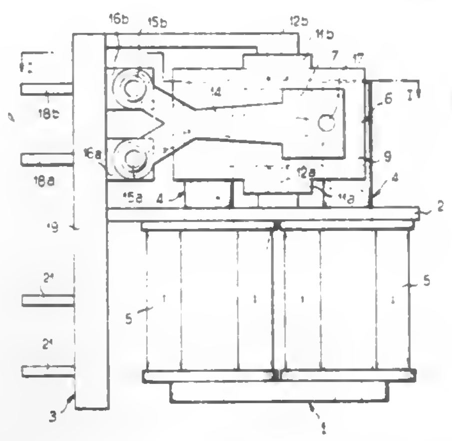
Filed Mar. 10, 1981, Ser. No. 242,390

Claims priority, application France, Mar. 21, 1980, 80 06302

Int. Cl.^{3} H01H *51/22*

U.S. Cl. 335—80 **10 Claims**

1. An electromagnetic relay with a pivoted armature, comprising a U-shaped yoke fixed on a base and provided with at least one coil for cooperating with an H-shaped armature rotatably mounted on said base so as to rotate about the axis of the yoke, the armature comprising a permanent magnet which forms the crossbar of the H and projecting plates secured to said magnet and forming pole-pieces, the end portions of the yoke being positioned between said pole-pieces on each side of the magnet, at least one contact-carrying flexible strip being fixed at one end thereof and externally on the pole-pieces by means of an interposed insulating covering so as to extend in a direction parallel to the arms of the H and in such a manner as to cooperate with stationary contacts rigidly fixed to one face of the base, wherein the free end of each flexible strip carries two electrically coupled movable contacts adapted to cooperate with two respective stationary contacts for connecting said two stationary contacts to each other.



4,367,448

DIRECT CURRENT ELECTROMAGNETIC CONTACTOR

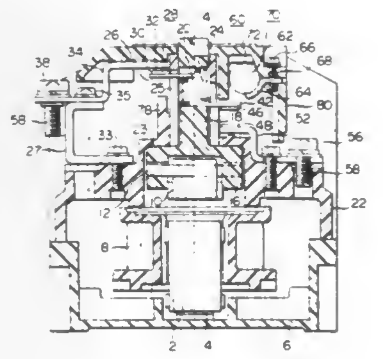
Shizutaka Nishizako, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

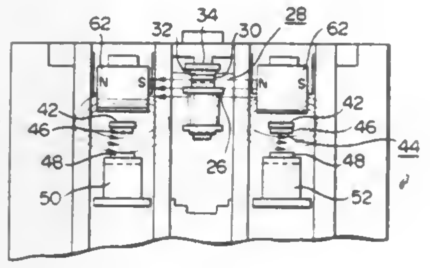
Filed Jun. 26, 1981, Ser. No. 277,644

Claims priority, application Japan, Jun. 27, 1980, 55/87319

Int. Cl.^{3} H01H *33/18*

U.S. Cl. 335—201 **17 Claims**





1. A direct current electromagnetic contactor comprising in an insulating housing:

a set of three pairs of separable contacts each pair including stationary and movable contacts and being connectable to an external circuit;

supporting means for movably supporting said movable contacts between closed and open positions relative to said stationary contacts;

operating means including an electromagnetic device operatively coupled to said supporting means for moving, together with said supporting means, said movable contacts between the closed and open positions; and

magnetic arc blowout means including at least one pair of permanent magnets each having opposing magnetic pole faces and disposed in the proximity of said separable contact pairs, said permanent magnets being supported by said housing with their pole faces having different magnetic polarities facing each other with an air gap therebetween;

one of said separable contact pairs being positioned within said air gap between said facing pole faces of said permanent magnets with the direction of the movement of said movable contact thereof substantially perpendicular to the magnetic flux lines extending between the facing pole faces of said permanent magnets;

two others of said separable contact pairs each being positioned within a space defined between planes including each magnetic pole face of each permanent magnet with the direction of movement of said movable contacts thereof substantially perpendicular to the magnetic flux lines extending between the opposing pole faces of the respective permanent magnets.

4,367,449

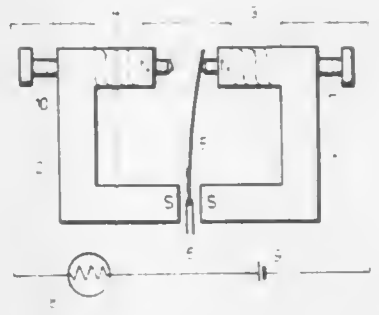
MAGNETOMECHANICAL CONVERTER

György Veisz, Radayu u.34., and Peter Köszegi, Damjanich u.25/a, both of, Budapest, Hungary

Filed Dec. 17, 1980, Ser. No. 217,255

Int. Cl.^{3} H01F *7/08*

U.S. Cl. 335—229 **26 Claims**



1. A magnetomechanical converter, comprising an armature, a unit containing a plurality of magnets for generating a magnetic field, means for varying the intensity of the generated magnetic field, said armature and said generating unit being movable relatively to one another, at least two of said magnets of said generating unit being situated for building up magnetic circuits operating against one another and being closed outside of said magnets, said armature being situated between said magnets, and being formed of a soft magnetic material of higher than 1.2 relative magnetic permeability whereby variably to adjust an outer circuit with high accuracy, said armature being coupled to a magnetic shunt.

4,367,450

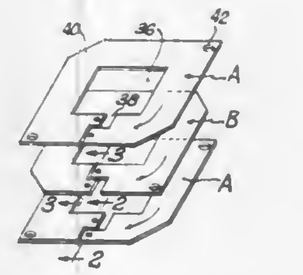
ELECTRICAL REACTOR CONSTRUCTION

Ernie Carillo, 1619 Whitestone, Spring Valley, Calif. 92077

Filed Jan. 26, 1981, Ser. No. 228,316

Int. Cl.^{3} H01F *5/00, 27/30*

U.S. Cl. 336—200 **1 Claim**



1. A superimposed wafer electrical element comprising:

(a) a series of wafers each having an insulative sheet and a conductor layer bonded to said insulative sheet;

(b) portions of said insulative sheet being removed to define at least one pass-through aperture and having a contact electrically connected to said conductor layer and passing through said aperture;

(c) said wafers being arranged in a stack such that by virtue of the electrical integrity established by the contact of each wafer contacting the subsequent wafer in said stack, an electrical element having pre-determined properties is created;

(d) said wafers may be flipped about a rotational axis for stacking, and said wafers fall into two types arranged relative to the rotation axis as follows:

(e) a type (a) wafer having receiving and pass-through contacts in a row parallel to and on one side of said axis and a void positioned at the virtual image of said receiving contact on the opposite side of said axis; and

(f) a type (b) wafer having pass-through and receiving contacts positioned to align with the receiving and pass-through contacts of said type (a) wafers respectively, and defining a void positioned at the virtual image of said receiving contact on the opposite side of said axis, and including two insulator sheets, type (a) insulators having a void coincident with the receiving contact and the void of said type (a) wafers, and type (b) insulators having a void coinciding with the receiving contact and void of said type (b) wafers, whereby said wafers may be alternatively stacked to create a coil, or alternatively stacked in the following order to create a capacitor: Type (a) wafer, type (b) wafer upside down, type (b) insulator, type (b) wafer, type (a) wafer upside down, type (a) insulator, with this pattern repeating as desired.

4,367,451

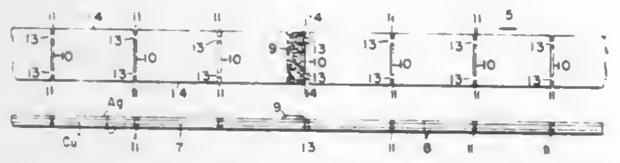
FUSIBLE ELEMENT FOR ELECTRIC FUSES AND ELECTRIC FUSE INCLUDING THE ELEMENT

Robert J. Panaro, Byfield, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 39,466, May 16, 1979. This application Aug. 12, 1980, Ser. No. 177,330

Int. Cl.^{3} H01H *85/12*

U.S. Cl. 337—160 **4 Claims**



1. A fusible element including

(a) a layer of copper;

(b) a layer of silver affixed to said layer of copper;

(c) said layer of copper and said layer of silver having a point of reduced cross-section where the temperature of said fusible element is relatively high when carrying current;

(d) an overlay of an M-effect metal having a lower fusing point than silver arranged on said layer of silver in axially spaced relation from said point of reduced cross-section;

(e) said layer of copper and said layer of silver having a rectangular relatively long perforation that extends in a direction transversely to the direction of said fusible element;

(f) said layer of copper and said layer of silver having a pair of relatively short perforations that extend in the same direction as said relatively long perforation, each of said pair of relatively short perforations being aligned with and arranged to opposite sides of said relatively long perforation and each of said pair of relatively short perforations being open along the edges of said fusible element;

(g) said relatively long perforation and said pair of relatively short perforations define a pair of parallel current paths therebetween; and

(h) the width of said overlay of an M-effect metal extends across the entire width of said fusible element, is bounded on one side thereof by a straight line coextensive with one of the longer sides of said relatively long perforation and substantially exposes as long as in the solid state said pair of parallel current paths.

4,367,452

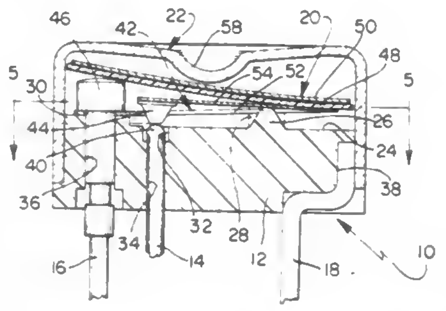
THERMOSTATIC SWITCH CONSTRUCTION

Richard H. Carlson, Cumberland, R.I., assignor to Elmwood Sensors, Inc., Cranston, R.I.

Filed Feb. 11, 1982, Ser. No. 347,842

Int. Cl.^{3} H01H *37/52*

U.S. Cl. 337—362 **21 Claims**



1. A thermostatic switch comprising a housing having a base portion, a fulcrum on said base, a resiliently deformable, electrically conductive member having an integral arm blanked therein, said member overlying said fulcrum, said arm having a first movable contact adjacent its free extremity, said fulcrum maintaining said member in generally spaced relation to said base, means securing said member to said base in such a way that the portion of said member adjacent the connected end of said arm is free to deform, a first fixed contact mounted in said housing adjacent said movable contact, said arm being movable between a first position wherein said contacts are in engagement with each other to effect electrical continuity and a second position wherein said contacts are separated to interrupt said continuity, and bimetallic means in said housing automatically actuated in response to a predetermined temperature change and cooperating with said deformable member when actuated to deform the latter at a point adjacent the connected end of said arm, thereby causing said arm to pivot on said fulcrum to either open or close said contacts.

4,367,453

AUTOMOTIVE DRIVING DIRECTION AND POSITION INDICATOR APPARATUS

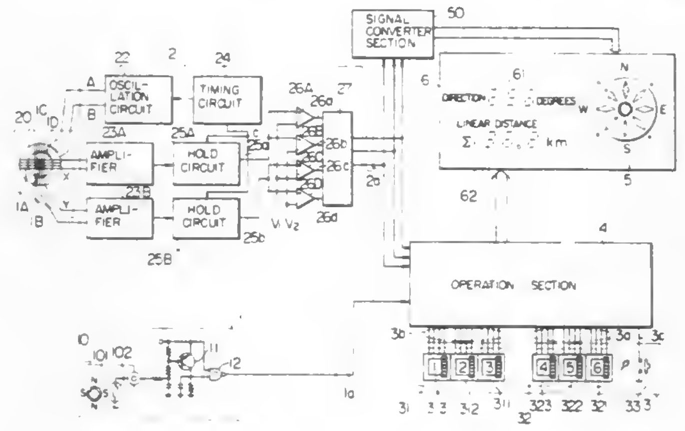
Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki; Koji Numata, Toyokawa, and Susumu Urano, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Apr. 10, 1981, Ser. No. 252,804

Claims priority, application Japan, Apr. 14, 1980, 55-49390

Int. Cl.^{3} G06F *15/50;* G09B *29/10*

U.S. Cl. 340—23 **9 Claims**



1. A motor vehicle guidance system, comprising:

direction detector means for generating a current direction signal corresponding to a current driving direction of the motor vehicle;

means for generating a signal indicative of actual distance traveled by the motor vehicle;

destination setting means for generating set signals corresponding to the direction and distance from a starting point to a destination point, said set signals being set at the starting point;

computer means for processing the current direction signal from said direction detector means, the actual distance traveled signal and the set signals from said destination setting means for producing data representing the direction from a present point of the vehicle to the destination point defined by said set signals and generating a present point to destination (PPD) vector signal representing said data; and

display means including a first display section for indicating the current driving direction of the motor vehicle as defined by said current direction signal and a second display section for indicating the direction and distance from the present point to the destination point in accordance with the PPD signal from said computer means, said display means being adpated to indicate the data of said first and second display sections on the same display panel.

4,367,454

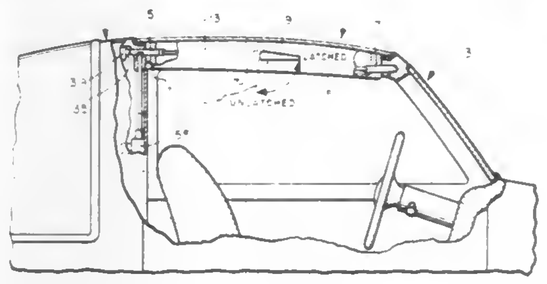
THEFT DETERRING APPARATUS

Frank Modica, 1123 W. Webster Ave., Chicago, Ill. 60614

Filed Feb. 19, 1982, Ser. No. 350,320

Int. Cl.^{3} B60J *7/10*

U.S. Cl. 340—63 **5 Claims**



1. In a vehicle having a rooftop removable from a vehicle body, an improved theft deterring apparatus, comprising:

latching means for retaining the rooftop on the automobile body;

alarm means for signaling an alarm condition in response to movement of a particular distance of the latching means;

locking means for selectively locking the latching means in a latched position while allowing movement of the latching means said particular distance, the locking means allowing the latching means to move to the unlatched position when the locking means is in a unlocked position.

4,367,455

POWERSAVING ROOM SECURITY SYSTEM

Morton Fried, 706 Bolton Rd., Far Rockaway, N.Y. 11691

Filed Feb. 12, 1981, Ser. No. 233,830

Int. Cl.^{3} H04B *3/54*

U.S. Cl. 340—310 A **19 Claims**

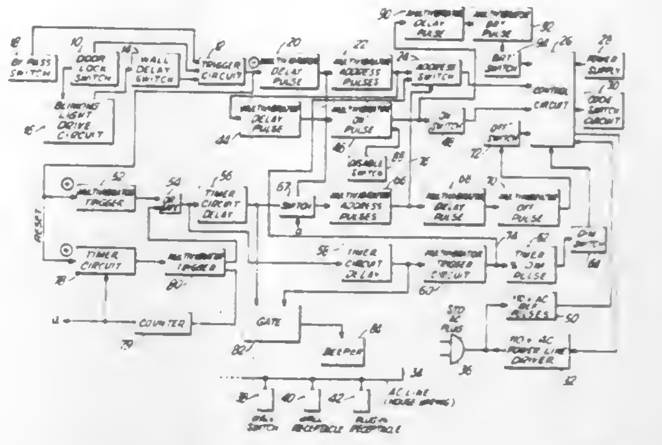
1. A Powersaving Room Security System, comprising:

switch means for coupling to a door locking system for generating a lock signal congruous to proper locking of the door;

a central control unit for producing control signals capable of transmission through the room AC lines,

module units for respective connection to various electrical receptacles and wall switches in the room and responsive to said control signals for correspondingly controlling the respective receptacles and wall switches,

circuit means coupled to said central control unit for limiting permanent energization of lights and appliances coupled to respective module units in the room to the occurrence of said lock signal and for permitting only temporary energization of at least selected ones of the lights and appliances coupled to respective module units in the room in the absence of said lock signal, and



means for promoting proper locking of the door.

4,367,456

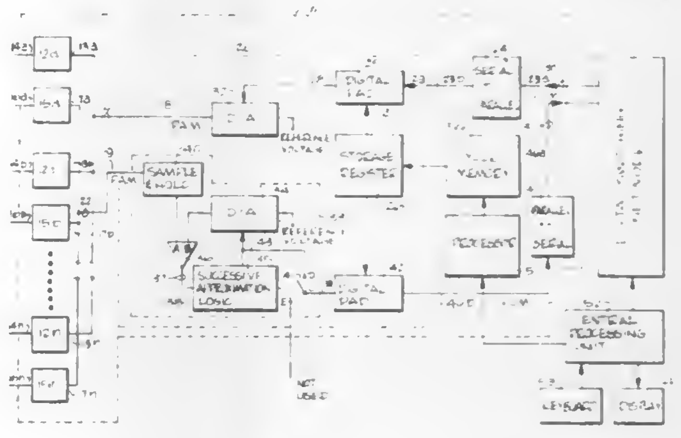
PCM AND PAM CONVERSION CIRCUIT INCLUDING SIGNAL LEVEL VARIATION ON THE PCM PORTION OF THE CIRCUIT

Ernst A. Munter, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 9, 1979, Ser. No. 19,258

Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 C **4 Claims**



1. A conversion circuit for use with a digital telephone switching network, both for converting transmitted pulse amplitude modulation (PAM) signals into transmitted pulse code modulation (PCM) signals and for converting received PCM signals into received PAM signals, said conversion circuit characterized by:

a receive circuit for converting received PCM signals into received PAM signals, said receive circuit comprising a first controllable code-converter means connected in series with the digital input of a digital-to-analogue converter, wherein the input of said first code-converter means is responsive to said received PCM signal, and the output of said first code-converter means is a PCM signal applied to the input of said digital-to-analogue converter, the output of which is said received PAM signal;

a transmit circuit for converting transmitted PAM signals into transmitted PCM signals, said transmit circuit comprising an analogue-to-digital converter connected in series with a second controllable code-converter means, wherein the input of said analogue-to-digital converter is responsive to said transmitted PAM signal, and the output of said analogue-to-digital converter is a PCM signal applied to the input of said second code-converter means, the output of which is said transmitted PCM signal; and

a first storage means for controlling the operation of both the first and the second code-converter means to thereby control the amount of variation of the digital signal passing through said code-converter means and to thereby control the magnitude of any resultant analogue signal derived therefrom,

wherein said first storage means is accessed twice every voice channel in order to store the appropriate digital code, in said first storage means, for controlling the amount of variation caused by said first and second code-converter means.

4,367,457

SIGNAL PROCESSING APPARATUS

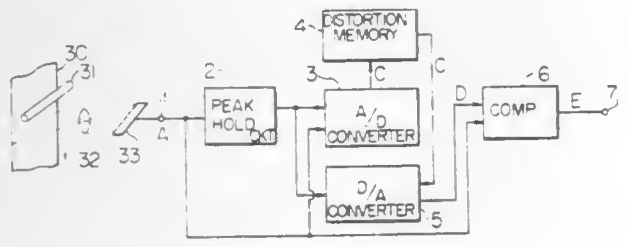
Masaharu Tadauchi, and Kenji Kumasaka, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1981, Ser. No. 260,122

Claims priority, application Japan, May 9, 1980, 55-60571

Int. Cl.³ H03R *13/02*

U.S. Cl. 340—347 AD **3 Claims**



1. A signal processing apparatus for encoding analog video signals produced for every photoelectric conversion effected through scanning an image of an original into a binary signal by comparing said analog video signal with a reference signal voltage, wherein reference signal voltage generating means for producing said reference signal voltage comprises a peak hold circuit adapted to convert a maximum value of a repeatedly incoming analog video signal into a digital signal, store said digital signal as a digital peak signal and convert said digital peak signal into an analog peak signal, a distortion storing circuit for storing previously a distortion characteristic signal, a reference voltage generating circuit adapted for producing an analog reference signal voltage on the basis of an analog peak signal voltage produced from said peak hold circuit and said distortion signal read out from said distortion storing circuit, and a correcting circuit for subtracting periodically a predetermined quantity from said digital peak signal stored in said peak hold circuit.

4,367,458

SUPERVISED WIRELESS SECURITY SYSTEM

Kenneth R. Hackett, Boulder, Colo., assignor to Ultrak Inc., Broomfield, Colo.

Filed Aug. 29, 1980, Ser. No. 182,497

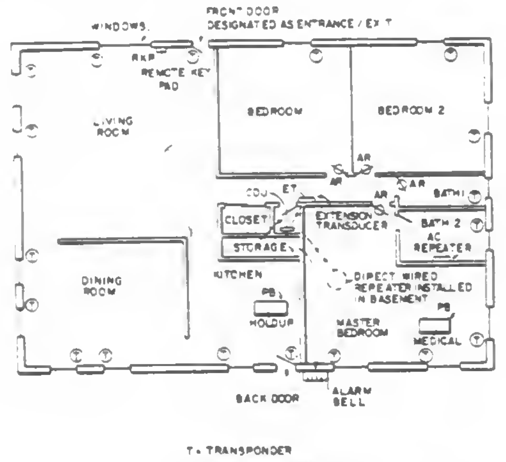
Int. Cl.³ G08B *1/08, 26/00*

U.S. Cl. 340—539 **22 Claims**

1. A wireless data communication system operable to transmit information as ultrasonic frequency signals which are subject to loss caused by nulls due to multipath signal cancellation at a receiving station comprising:

a plurality of spaced stations capable of transmission and reception at a plurality of different ultrasonic frequencies sufficiently separated in frequency to spatially separate the respective locations of nulls of said different frequencies due to multipath propagation between communicating stations;

means for transmitting said information by modulating each of said ultrasonic frequencies with the same data bits and transmitting each said data bit at said different ultrasonic frequencies; and



T = TRANSPONDER
AR = ACOUSTICAL REPEATER
PB = EMERGENCY REPORTING UNIT (PANIC BUTTON)

TYPICAL RESIDENTIAL INSTALLATION

ultrasonic receiving means at each receiving station for recovering said data bits by detection of any one or all of said ultrasonic frequencies.

4,367,459

TAUT WIRE INTRUSION DETECTION SYSTEM AND DETECTORS USEFUL THEREIN

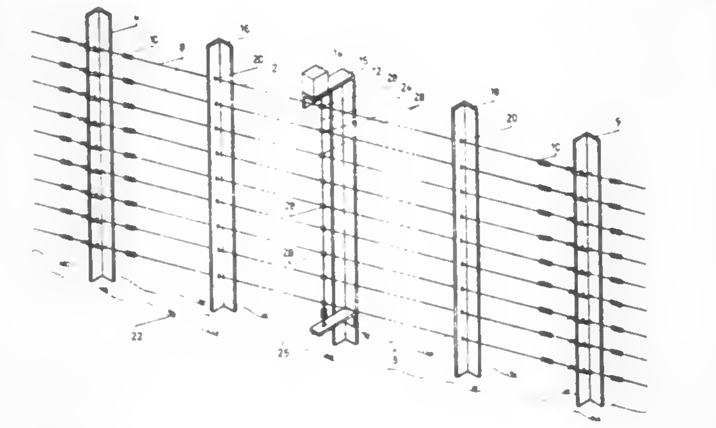
Yoel Amir, 71 Eshel, Moshav Omer; Omri Talmon, 34 Rambam St., and Chaim Porat, 21 Mivza-Horev St., both of Beersheva, all of Israel

Filed Feb. 12, 1981, Ser. No. 233,953

Claims priority, application Israel, Jun. 5, 1980, 60240

Int. Cl.³ G08B *13/12*

U.S. Cl. 340—541 **23 Claims**



1. An intrusion detection system comprising: a fence including a group of wires tensioned between a pair of wire-supporting poles anchored in the ground; a detector-carrier member supported intermediate said pair of wire-supporting poles; an intrusion detector fixed to said detector-carrier member; and a common actuator attached to a plurality of said wires and coupling same to said detector for actuating the detector in response to a disturbance in any of said plurality of wires.

4,367,460

INTRUSION SENSOR USING OPTIC FIBER

Henri Hodara, 2113 Minoru Dr., Altadena, Calif. 91001

Filed Oct. 17, 1979, Ser. No. 85,671

Int. Cl.³ G08B *13/04, 13/18*

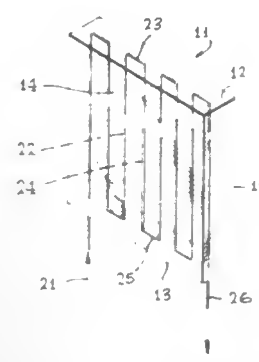
U.S. Cl. 340—550 **22 Claims**

1. An intrusion sensor for use with an optical source and detector, and comprising:

a substantially transparent and solid panel; and

a unitary optic fiber at least partly embedded in the panel and having each of its two ends near a surface of the panel;

wherein the panel and the portion of the fiber in contact therewith each have respective refractive indices, and the difference between the said respective refractive indices is sufficiently small to render the fiber substantially invisible to the eye; and



the two ends are adapted, located and oriented for optical coupling of such optical source to such optical detector.

4,367,461

COFFIN ALARM SYSTEM

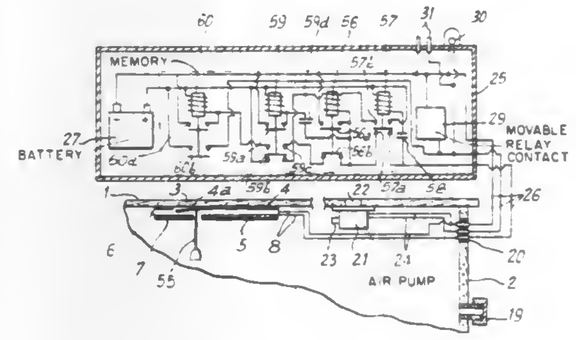
Fernand Gauchard, Parc du Beau, Santeny (Val de Marne), France

Filed Oct. 30, 1980, Ser. No. 202,368

Claims priority, application France, Oct. 31, 1979, 79 26991

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—573 **2 Claims**



1. An alarm system for coffins, comprising an alarm circuit having means actuated by a movement of the body in the coffin, an electrical supply source, and at least one alarm device actuated by said supply source, said actuated means comprising at least two conductive elements which are mounted facing each other on the inside wall of the cover of the coffin directly above the hands of the human body in such a manner that they are brought into contact with each other when a hand is raised.

4,367,462

LIQUID LEVEL SENSING CIRCUITRY

Daryl D. Dressler, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 5, 1981, Ser. No. 222,616

Int. Cl.³ G08B *21/00*

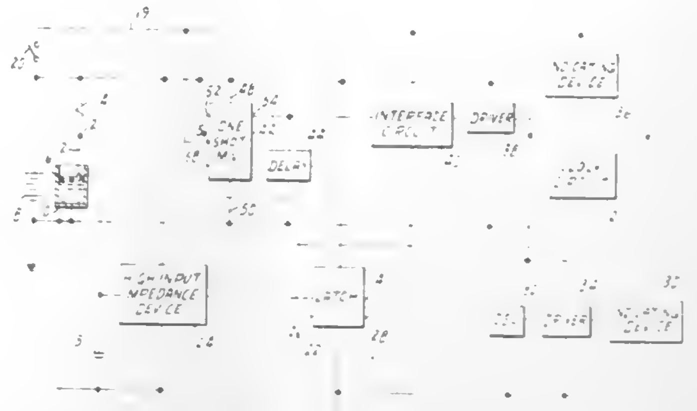
U.S. Cl. 340—620 **7 Claims**

1. Liquid level sensing circuitry adapted for energization from a source of electrical power including:

first means, including a conductive probe, for providing a first signal when the liquid sensed is not in contact with said conductive probe;

second means operatively connected to said first means, said second means including a switched electrical power conductor adapted for energization from the source of electrical power via a switch, said second means storing said first signal if said first signal is present at the completion of a time period following termination of electrical power to said switched electrical power conductor; and

third means operatively connected to said second means for providing a discernible indication in response to the storing of said first signal plus subsequent supply of electrical power to said switched electrical power conductor.



4,367,463

INFORMATION MARK DISPLAY DEVICE

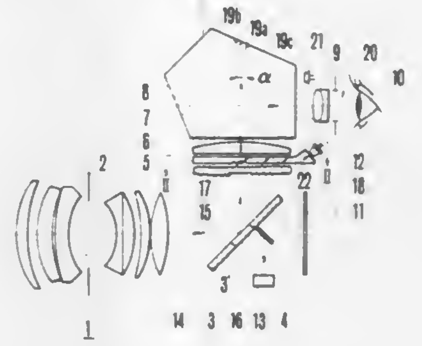
Takashi Suzuki, Yokohama, and Nozomu Kitagishi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,210

Claims priority, application Japan, Jan. 10, 1980, 55-1569

Int. Cl.³ G03B *17/20*

U.S. Cl. 340—700 **12 Claims**



1. An information mark display device provided with an information mark display presenting portion formed in a portion of at least one surface of a flat plane-like transparent substrate to a shape representing an information to be displayed, whereby when said display presenting portion is illuminated, the display of said information is presented, said device comprising:

an information mark display portion formed by an array of microprisms, each of the microprisms forming said display portion having at least one inclined surface as the information display control surface; and

an illumination light source for illuminating the above-described information mark display portion, an illumination light beam from said illumination light source being caused by the above-described inclined surfaces of the microprisms to exit in a direction of an observation axis.

4,367,464

LARGE SCALE DISPLAY PANEL APPARATUS

Koichiro Kurahashi, Hyogo, and Noriyuki Tomimatsu, Nagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,262

Claims priority, application Japan, May 29, 1979, 54-68642

Int. Cl.³ G09G *3/00*

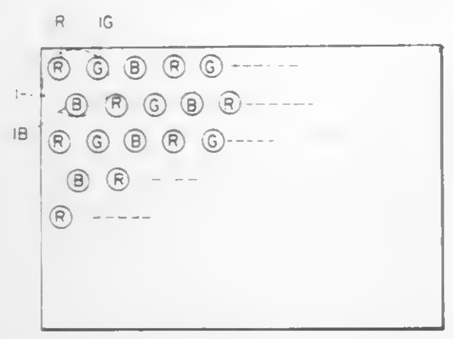
U.S. Cl. 340—701 **5 Claims**

1. A large scale color display panel capable of displaying an

image containing half tones and of varying intensity, comprising:

a plurality of light emitting elements, each of said light emitting elements being capable of emitting light in a selected combination of three primary colors, each of said light emitting elements comprising three cathode-ray tubes, each cathode-ray tube comprising at least one fluorescent screen for emitting light of one of said primary colors from substantially an entire front surface thereof and an electron gun for producing an unfocused flood of electrons directed toward said fluorescent screen;

a plurality of drive circuits, one of said drive circuits being provided for each said electron gun for turning on and off said electron gun with an on-to-off time ratio determined in accordance with an intensity of light to be emitted by the cathode-ray tube of which said electron gun forms a part, and hence a hue of light to be emitted from the light emitting element of which said cathode-ray tube forms a part;



a plurality of memory means, one of said memory means being provided for each said drive circuit for storing a binary control signal representing and on/off state of a corresponding one of said electron guns; and

brightness adjusting means coupled to each of said drive circuits for setting a brightness level of light to be emitted by controlling a magnitude of drive of said electron guns.

4,367,465

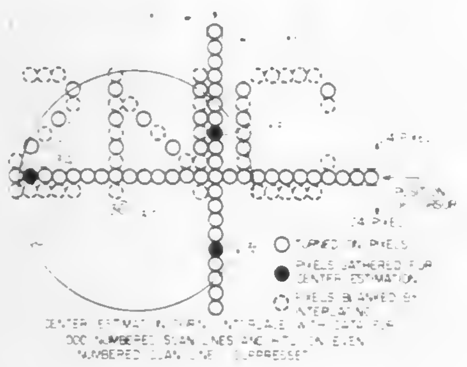
GRAPHICS LIGHT PEN AND METHOD FOR RASTER SCAN CRT

Nicholas P. Mati; Frederick J. Porter, both of Loveland, and Robert W. Fredrickson, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 4, 1980, Ser. No. 137,103

Int. Cl.^{3} G09G *1/16*

U.S. Cl. 340—707 24 Claims


TURNED ON PIXELS
PIXELS GATHERED FOR CENTER ESTIMATION
PIXELS BLANKED BY INTERLACING

1. A light pen system comprising:

CRT display means for displaying frames of luminous information upon a screen, portions of which luminous information are to be detected by a light pen;

photoelectric detection means positionable proximate the screen and responsive to light therefrom for providing an electrical output signal whose amplitude is indicative of the amount of light reaching the photoelectric detection means; and

variable threshold means responsive to the electric output signal for producing a detection signal at first times during a frame whenever the electrical output signal corresponding to a first portion of the luminous information exceeds a first amplitude and for selectedly producing the detection signal at second times during the same frame whenever the electrical output signal corresponding to a second portion of the luminous information exceeds a second amplitude.

4,367,466

DISPLAY CONTROL APPARATUS OF SCANNING TYPE DISPLAY

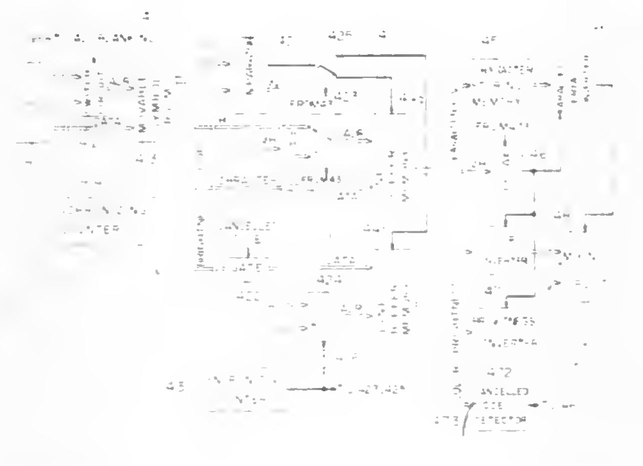
Genyo Takeda, Nagaokakyo, and Masato Hatakeyama, Uji, both of Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Jun. 22, 1981, Ser. No. 276,194

Claims priority, application Japan, Jun. 24, 1980, 55-86968

Int. Cl.^{3} G09G *1/16*

U.S. Cl. 340—725 9 Claims



1. A display control apparatus of a scanning type display for displaying an image on a screen through repetition of a horizontal scanning operation and a vertical scanning operation,

said scanning type display comprising an arrangement of a relatively large plurality (m×n) of dots on the screen arranged in the horizontal and vertical directions by the numbers m and n, respectively, an image symbol as a unit being displayed comprising an arrangement of a relatively small plurality (x×y) of dots arranged in the horizontal and vertical directions by the dot numbers x and y, respectively, one or more of image symbols being displayed on the screen arranged in columns of the number (m/x) obtained by dividing the dot number (m) in the horizontal direction of the relatively large plurality (m×n) of numbers by the dot number (x) in the horizontal direction of the relatively small plurality (x×y) of numbers, said apparatus comprising:

a character pattern storing memory for storing a plurality of kinds of pattern information concerning characters each being displayed as said unit image symbol and having its own predetermined character identifying information for each kind thereof,

display control information generating means for generating display control information during one horizontal scanning period,

said display control information including abscissa information for designating the column in the horizontal direction of said image symbol being displayed on said screen, reference ordinate information of said image symbol, and said character identifying information of said image symbol,

additional ordinate information generating means for providing additional ordinate information (ΔV) based on a difference between ordinate information preceding by a predetermined number of lines the actual ordinate position of the horizontal scanning line of said scanning type display and ordinate information of said image symbol,

a first line buffer memory including storing regions for storing at least said character identifying information and said additional ordinate information (ΔV) for each column of said horizontal scanning lines,

a second line buffer memory including storing regions for storing at least said character identifying information and said additional ordinate information (ΔV) for each column of the horizontal scanning lines spaced apart by a predetermined number of lines from said horizontal scanning lines stored in said first line buffer memory,

synchronizing signal generating means for generating a synchronizing signal associated with the abscissa and ordinate of the actual scanning position of said horizontal scanning line,

write/read control means for placing one of said first and second line buffer memories in an information write mode and for placing the other of said first and second line buffer memories in an information read mode alternately at every predetermined number of lines of said horizontal scanning lines, and

pattern information withdrawal control means responsive to the read output from said other line buffer memory for reading the pattern information of the kind corresponding to the character identifying information from said character pattern storing memory for providing the same to said scanning type display.

4,367,467

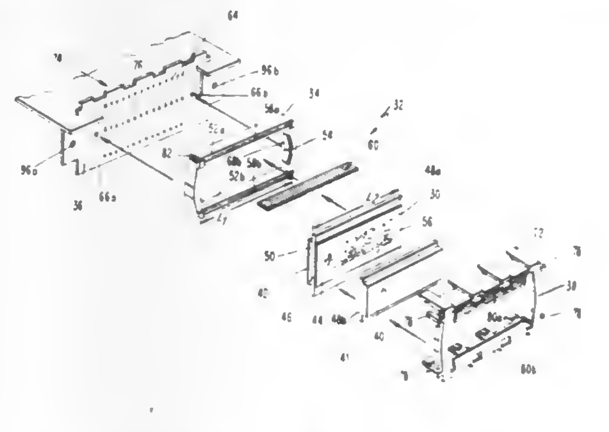
LCD DISPLAY MOUNT WINDOW

Philip Emile, Jr., Roseland, N.J., assignor to Sangamo Weston, Inc., Atlanta, Ga.

Filed Jan. 30, 1981, Ser. No. 230,408

Int. Cl.^{3} G08B *5/36*

U.S. Cl. 340—765 8 Claims



1. A device for mounting a liquid crystal display (LCD) to a circuit board having a conductive pattern for applying electrical signals to corresponding electrical conductors on a surface of said LCD, said device comprising:

a holder positioned between said LCD and said circuit board, said holder including means for maintaining said LCD in registration with said conductive pattern on said circuit board,

means for establishing electrical connections between said conductive pattern on said circuit board and the corresponding conductors on said LCD,

a cover member positioned around said LCD and said holder, a portion of said LCD being exposed through an opening formed in said cover member, said LCD being recessed within said cover member;

an optically clear lens located between said cover member and said LCD, said lens having a lower surface adjacent said LCD, said lens extending outwardly through the opening formed in said cover member, said lens providing a raised image of characters developed on said LCD to compensate for the recess of said LCD within said cover member; and

means for retaining said cover member to said circuit board.

4,367,468

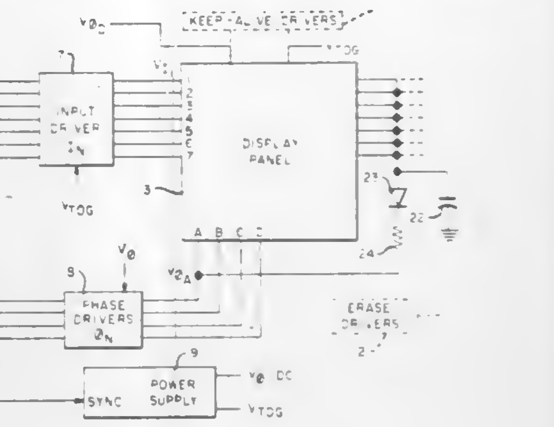
D.C. INPUT SHIFT PANEL DRIVER CIRCUITS-BIASED INPUTS

John L. Curry, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 22, 1980, Ser. No. 219,044

Int. Cl.^{3} G09G *3/28*

U.S. Cl. 340—768 8 Claims



1. A driver circuit for creating and sequentially shifting trapped wall charge between cells in a plasma charge transfer display panel, comprising:

means for providing a first voltage of a first polarity and a second voltage of a second polarity;

a multiplicity of input driver circuits, electrically connected between said means for providing a first and second voltage and a group of input driver lines in said display panel, each of said input driver circuits being continuously conductive to first polarity voltage and selectively conductive to second polarity voltage;

means for providing a third voltage of said second polarity;

a multiplicity of phase driver circuits, each electrically connected between said means for providing a third voltage and a group of phase driver lines in said display panel, each of said circuits being selectively conductive; and

control means, operatively connected to said input and phase driver circuits, for providing said first voltage at selected input driver lines at the time the first of said phase driver lines is provided with said third voltage, switching the voltage on the first of said phase driver lines to substantially zero coincident with switching the voltage on said selected input driver lines to the second voltage, and switching the voltage on the first of said phase driver lines from the substantially zero to said third voltage before said selected input driver lines are switched from said second voltage.

4,367,469

UNIFORM COLORATION CONTROL IN AN ELECTROCHROMIC DISPLAY OF THE SEGMENTED TYPE

Sadakatsu Hashimoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 8, 1980, Ser. No. 166,914

Claims priority, application Japan, Jul. 11, 1979, 54-88454

Int. Cl.^{3} G09G *3/16*

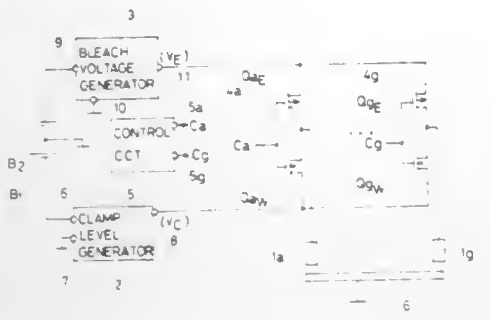
U.S. Cl. 340—785 1 Claim

1. In a drive system for driving an electrochromic display cell including an electrochromic material and a predetermined number of display electrodes, different combinations of said display electrodes defining different desired display patterns, said drive system comprising:

coloration means connected to said display electrodes for conducting coloration operations on selected ones of said display electrodes by applying a coloration voltage to the selected display electrodes:

bleaching means connected to said display electrodes for bleaching selected ones of said display electrodes by applying a bleaching voltage thereto: and

clamping means connected to said display electrodes for clamping said selected display electrodes in a stable colored condition following the coloration thereof by said coloration means by applying a direct current clamping voltage thereto, the magnitude of which is smaller than that of said coloration voltage;



said clamping means comprising compensating means for changing the magnitude of the clamping voltage supplied by the clamping means according to variations in temperature to maintain said selected ones of said display electrodes clamped in said stable colored condition regardless of the variation in temperature.

4,367,470

DOOR OPERATION CONTROL APPARATUS

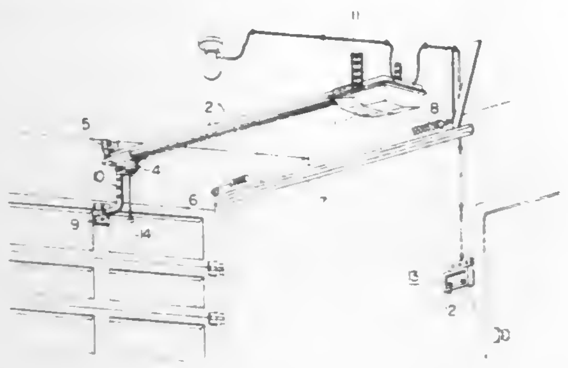
Hiroyuki Tadokoro; Shigeru Matsuoka, and Koji Yamauchi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,597

Claims priority, application Japan, Jul. 2, 1980, 55-89158

Int. Cl.^{3} H04Q *9/00*

U.S. Cl. 340—825.77 **8 Claims**



1. A door operation control apparatus including control circuit means for controlling controlled objects including door operating means driving a door for opening and closing movement, and commanding means for generating operation command signals to be applied to said control circuit means, said apparatus comprising two signal conductors electrically connecting between said commanding means and said control circuit means, signal generating means provided in said commanding means for generating a plurality of operation command signals of different voltage levels and selectively transmitting said operation command signals by way of said signal conductors, and discriminating means provided in said control circuit means for discriminating the voltage level of one of said operation command signals transmitted by ways of said signal conductors thereby generating a control signal for controlling the controlled object corresponding to a said discriminated voltage level.

4,367,471

ARRANGEMENT FOR ACTUATING CONTROLLABLE DIODE ELEMENTS

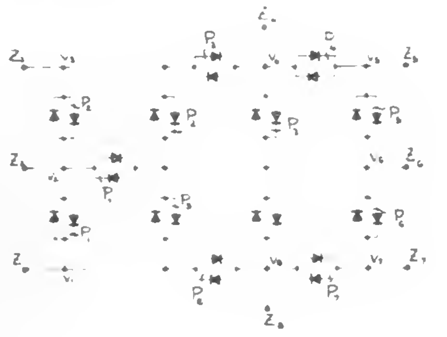
Klaus Gillessen, Untergruppenbach, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,546

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008565

Int. Cl.^{3} G01D *7/00;* **H04Q** *9/00*

U.S. Cl. 340—825.82 **9 Claims**



1. An arrangement comprising a plurality of light-emitting diodes, said diodes being arranged in 2n–3 pairs, where n is an integer greater than 2, the diodes of each pair being mutually connected in antiparallel, n supply conductors, said supply conductors being arranged to control said 2n–3 pairs of diodes, further conductors, said pairs of diodes being interconnected by said further conductors, wherein none of said conductors cross.

4,367,472

CIRCUIT ARRANGEMENT FOR SIDE LOBE SUPPRESSION IN RADAR APPARATUSES

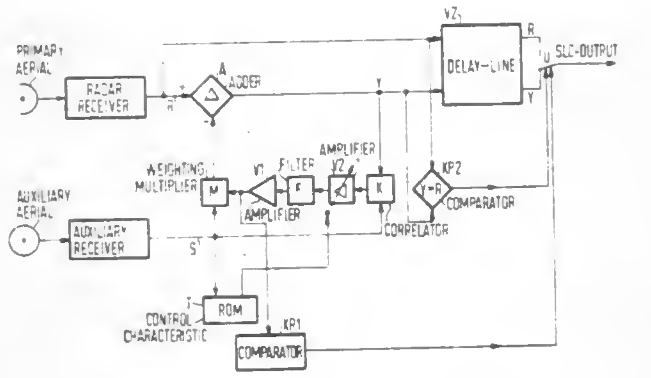
Rudolf Hauptmann, Munich, and Gerhard Foeller, Soecking, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,760

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939511; Sep. 28, 1979, 2939512; Oct. 23, 1979, 2942778

Int. Cl.^{3} H04B *1/10;* **G01S** *7/02*

U.S. Cl. 343—7 A **5 Claims**



1. A circuit arrangement for side lobe suppression in radar devices comprising a primary directive radar antenna, a primary radar receiver connected to said primary radar antenna, an auxiliary omnidirectional antenna, an auxiliary receiver connected to said auxiliary antenna, a weighting multiplier receiving the output of said auxiliary receiver, an adder receiving the outputs of said weighting multiplier and said primary radar receiver, a change-over switch receiving the outputs of said adder and said primary radar receiver, a return loop connected to said weighting multiplier to vary its weighting factor and said return loop receiving the output of said adder and said auxiliary receiver, a first comparator (KP1) receiving an output of said return loop and connected to said change-over switch to supply either the output of said adder or said primary radar receiver to an output terminal, a second comparator (KP2) receiving the outputs of said adder and said primary radar receiver and connected to said change-over switch to supply either the output of said adder or said primary radar receiver to said output terminal, and a control characteristic device receiving the output of said auxiliary receiver, a gain control means with a gain control in said return loop and said control characteristic device connected to said gain control means whereby the weighting factor (V) is proportional to the square of the inverse noise signal (S^2) at the output of said auxiliary receiver according to the equation $V=(a/S^2)$ where a is a constant.

4,367,473

DISTANCE MEASURING EQUIPMENT UTILIZING FREQUENCY MODULATION

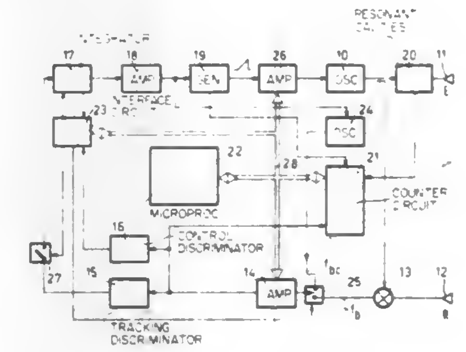
Guy F. M. Marin, Boulogne; Dominique J. Podvin, Bures sur Yvette, and Jean-Pierre Susset, Buc, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,565

Claims priority, application France, Jul. 13, 1979, 79 18258

Int. Cl.^{3} G01S *13/26, 13/34, 7/40*

U.S. Cl. 343—14 **4 Claims**



1. An apparatus for measuring the distance to an object, comprising:

- (a) a carrier wave source for producing a frequency-modulated carrier wave having a periodic frequency deviation ΔF and a mean frequency F_o;
- (b) means coupled to the carrier wave source for detecting the occurrence of predetermined first and second frequencies when they are produced by the source;
- (c) means coupled to the carrier wave source for emitting the carrier wave toward the object;
- (d) means for receiving a portion of the carrier wave reflected by the object;
- (e) means coupled to the receiving means and the carrier wave source for mixing received carrier wave energy with emitted carrier wave energy and forming a beat signal having a beat frequency f_b;
- (f) a calibration signal source for producing a calibration beat signal having a frequency f_{bc}; and
- (g) control means coupled to the carrier wave source, the detecting means, the mixing means and the calibration signal source,

said control means periodically interrupting operation of the measuring apparatus to effect calibration of the apparatus,

during operation said control means maintaining the beat frequency constant by effecting variation of the period of the frequency modulation, said variation representing the distance to the object,

and during calibration said control means calibrating the frequency deviation with respect to the predetermined first and second frequencies.

4,367,474

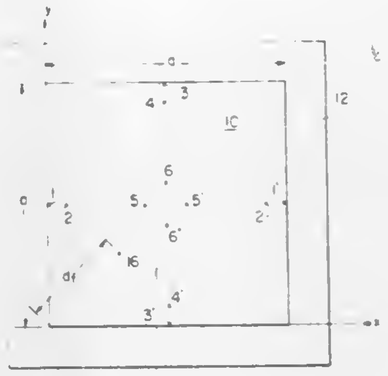
FREQUENCY-AGILE, POLARIZATION DIVERSE MICROSTRIP ANTENNAS AND FREQUENCY SCANNED ARRAYS

Daniel H. Schaubert; Frederick G. Farrar, both of Silver Spring, Md.; Scott T. Hayes, Raleigh, N.C., and Arthur R. Sindoris, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 5, 1980, Ser. No. 175,543

Int. Cl.^{3} H01Q *1/38*

U.S. Cl. 343—700 MS **10 Claims**



1. A frequency agile microstrip antenna comprising:

a dielectric substrate;

a square conductive patch forming an energy radiator with an active radiating region defined by the sides of the square;

a conductive layer forming a ground plane on an opposed surface of said substrate;

input means for providing selectable frequency radio-frequency energy inputs to said conductive patch; and

means for instantaneously changing the frequency characteristics of said active radiating region including means on the perimeter of and within the perimeter of said square patch selectively energizible to provide short circuits between said patch and said conductive layer.

4,367,475

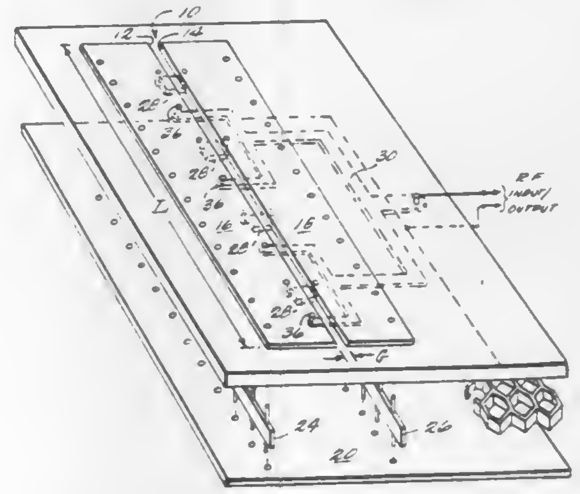
LINEARLY POLARIZED R.F. RADIATING SLOT

Frank J. Schiavone, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Oct. 30, 1979, Ser. No. 89,292

Int. Cl.^{3} H01Q *13/18*

U.S. Cl. 343—767 **24 Claims**



1. A linearly polarized r.f. radiating slot antenna structure comprising:

two separate electrically conducting coplanar generally rectangular plates formed as respective islands of metal etched from a common metal sheet and disposed on a dielectric sheet in a spaced apart relationship, said plates having respective first edges juxtaposed substantially within one plane and thereby defining said radiating slot,

an electrically conducting ground plane disposed beneath said two plates and electrically connected to respective second edges of said plates by a plurality of separately formed metallic connections extending from said ground plane to said second edges of said plates, each said second edge being opposite its corresponding first edge in said one plane, thus defining an electrical cavity between said plates and said ground plane, and

r.f. feed means connected to at least a first one of said two plates.

4,367,476

INK JET PRINTING APPARATUS

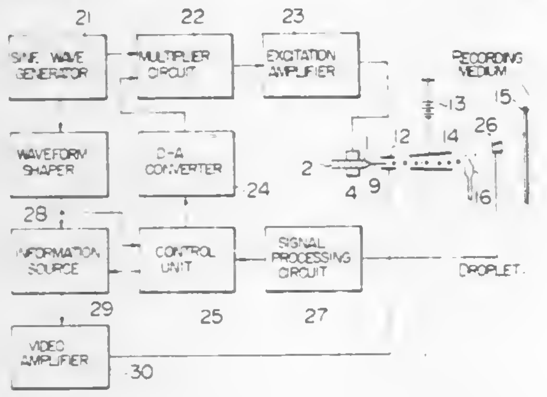
Syoji Sagae, Hitachiota, Japan, assignor to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,186

Claims priority, application Japan, Mar. 10, 1980, 55-29178

Int. Cl.^{3} G01D *18/00*

U.S. Cl. 346—1.1 **6 Claims**



6. In an ink jet printing apparatus comprising ink jet nozzle means provided with high frequency excitation means and adapted to eject ink droplets of generally small or large size depending on the magnitude of excitation of high frequency by said excitation means; electrifying means for producing an electrifying signal which is capable of selectively charging said ejected ink droplets with electric charges; deflecting means for deflecting the ink droplets depending on the amount of the electric charges thereof; detecting means provided at an area where said deflected ink droplets should pass when suitable charged with electric charges and providing an output indicative thereof, a method of determining an optimum value of the magnitude of excitation of said excitation means comprising the steps of:

setting the electrifying signal to have a first pulse-like waveform with an intensity so as to cause only those ink droplets of the small size to pass said area and with a first pulse-width larger than the period of said high frequency excitation,

operating the apparatus to eject the ink droplets, while varying progressively the magnitude of said excitation within a predetermined range,

determining a first value of the magnitude of said excitation within a range in the variation of the magnitude of said excitation where the output of said detecting means appears continuously;

resetting the electifying signal to have a second pulse-like waveform with an intensity adapted to cause at least the ink droplets of small size to deflect and pass said area and with a second pulse-width smailer than the period of said high frequency excitations,

progressively varying the magnitude of said excitation from said first value, and

determining a second optimum value of the magnitude of said excitation within a range in the variation of the magnitude of said excitation where the output of said detecting means again appears after once disappearing during the progressive variation of the magnitude of said excitation.

4,367,477

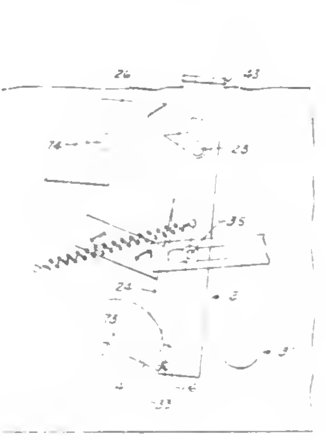
RATE OF PENETRATION RECORDER

Ethell J. Dower, Comfort, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Filed May 6, 1981, Ser. No. 260,585

Int. Cl.^{3} G01D *9/00;* E21B *45/00*

U.S. Cl. 346—33 WL **10 Claims**



9. An apparatus for mechanically measuring and recording the penetration of a drill bit connected to a drill string during oil well drilling operations comprising:

a housing frame;

means connected to the drill string for imparting rotary motion functionally related to the vertical movement of the drill string with respect to a stationary point;

a first cam positioned adjacent the housing and rotated by said motion imparting means, each rotation of said first cam representative of the vertical movement of the drill string a predetermined distance;

a link arm pivotally mounted to said housing;

a pen arm pivotally mounted to said link arm, said pen arm having a first cam engaging means for engaging the first cam, said pen arm being positioned in response to the rotational movement of said first cam;

means connected to said frame for recording the movement of said pen arm; and

means connected to said second arm for selectively disengaging the second arm from the first cam and maintaining the second arm in a fixed position while said second arm is disengaged.

4,367,478

PRESSURE PULSE DROP EJECTOR APPARATUS

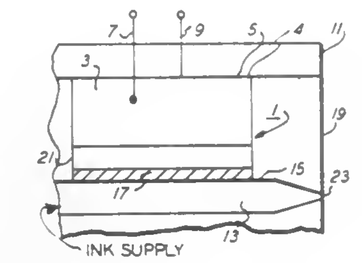
Stig-Göran Larsson, Carrollton, Tex., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 33,090, Apr. 25, 1979, abandoned. This application Oct. 3, 1980, Ser. No. 193,681

Int. Cl.^{3} G01D *15/16*

U.S. Cl. 346—140 R **5 Claims**

1. A pulsed liquid droplet ejecting apparatus wherein a piezoelectric transducer is utilized in the in-plane extensional mode, comprising a piezoelectric transducer having conductive sidewalls connectable to a source of electrical voltage through electrical leads, a channel positioned to be compressed by a first edge of said piezoelectric transducer upon application of electrical voltage to said sidewalls to expel liquid droplets from an orifice characterized in that said piezoelectric transducer is substantially rectangular and is aligned abaxially to said channel, and said first edge of said piezoelectric transducer and said channel are substantially linear, and said liquid droplets are ejected in a direction parallel to the axis of said substantially linear channel.



4,367,479

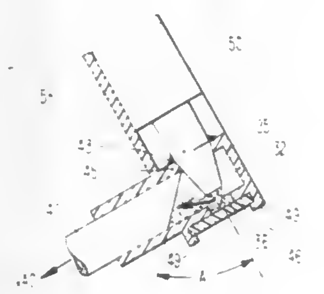
METHOD AND APPARATUS FOR PURGING AND/OR PRIMING AN INK JET

Kenneth W. Bower, New Milford, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1980, Ser. No. 203,582

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R **21 Claims**



1. Ink jet apparatus comprising an ink reservoir, an ink jet nozzle terminating in an orifice, supply means coupling said reservoir to said orifice, and means for forcing the ink from said reservoir to said orifice during priming and/or purging, the improvement comprising an ink catcher chamber located immediately adjacent and fixedly mounted with respect to said nozzle and means for withdrawing ink from said chamber during priming and/or purging, said nozzle extending into said chamber.

4,367,480

HEAD DEVICE FOR INK JET PRINTER

Haruhiko Kotoh, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan

Continuation-in-part of Ser. No. 106,316, Dec. 21, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,592

Claims priority, application Japan, Dec. 23, 1978, 53/163629

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R **4 Claims**

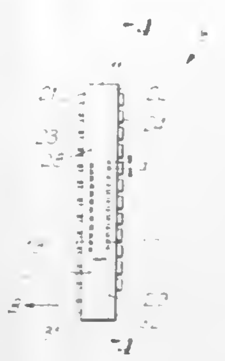
1. A printing head for an ink-on-demand ink jet printer comprising:

an intermediate plate, said intermediate plate having formed in opposed surfaces thereof a plurality of individual pressure chambers for holding ink and a duct associated with each said pressure chamber, said ducts leading to an edge of said intermediate plate;

a pair of vibration plates attached to said intermediate plate with one vibration plate on each of said opposed surfaces of said intermediate plate, a common surface on each said vibration plate spanning all of said plurality of pressure chambers on the associated surface of each intermediate plate;

a plurality of electromechanical transducing means attached to said vibration plates for deflecting said vibration plates locally when said transducing means are driven, each one of said plurality of transducing means being in registry with an individual one of said pressure chambers; and

means for feeding ink to said pressure chambers including an inlet feed reservoir for providing ink to said pressure chambers, said reservoir comprising a spacer position between said vibration plates, said vibration plates extending beyond said intermediate plate, said spacer being spaced away from said intermediate plate whereby said reservoir is formed between said spacer, said intermediate plate and said vibration plates,



said combination of plates forming substantially closed pressure chambers and ducts leading to nozzles at said edge, and driving and transducing means reducing the capacity of said registered chamber, causing at least a portion of the ink contents of said registered chamber to be expelled through said associated nozzle.

4,367,481

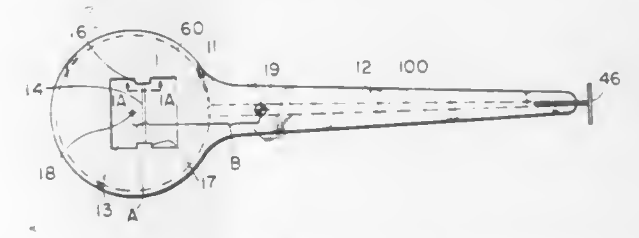
DISPOSABLE PEN-RESERVOIR

John G. Bunning, Mission Viejo, Calif., assignor to Esterline Angus Instrument Corporation, Indianapolis, Ind.

Filed Mar. 30, 1981, Ser. No. 249,167

Int. Cl.^{3} G01D *15/16*

U.S. Cl. 346—140 A **14 Claims**



1. A disposable pen-reservoir device for a direct writing recording instrument comprising:

a reservoir portion for ink storage;

an arm portion having a proximal end at said reservoir portion, said arm portion projecting from said reservoir portion to a distal end for positioning a writing tip;

an aperture extending up through said reservoir portion on a rotational axis of the pen-reservoir; and

a pivot bar extending transversely of said aperture.

4,367,482

METHOD AND APPARATUS FOR REPRESENTING POLYCHROMATIC HALF-TONE IMAGES

Joachim Heinzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,235

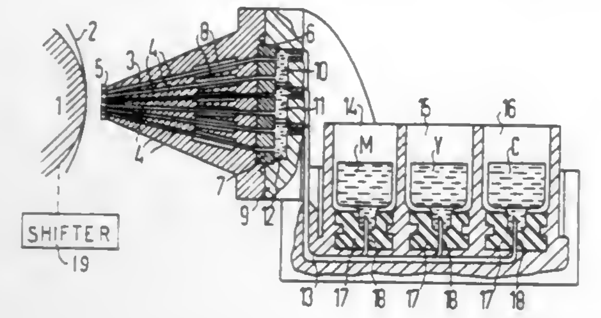
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037774

Int. Cl.^{3} G01D *15/18;* H04N *1/22*

U.S. Cl. 346—140 R **8 Claims**

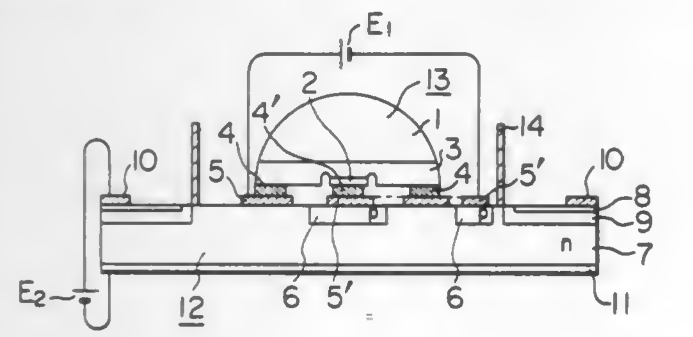
1. A method for representing polychromatic half-tone images in a mosaic printing device comprising:

printing a plurality of image points of equal size of different primary colors at prescribed raster positions on a recording medium,
image points at selected raster positions being combined to form an image spot, the number of said image points of each primary color in said image spot determining the degree of coverage of a primary color in said image spot, and
said raster positions being occupied by said image points in a sequence of increasing degree of coverage, said sequence in each image spot being the same for each primary color and being different for different primary colors.



4,367,483
OPTICAL SEMICONDUCTOR DEVICE
Takeo Takahashi, Takasaki; Kazuhiro Kurata, Hachioji; Yuichi Ono, Tokyo; Kazuhiro Ito, Tokyo; Makoto Morioka, Tokyo; Mitsuhiro Mori, Kokubunji; Ginro Takemura, Okegawa; Makoto Sakamoto, Maebashi; Masahiro Ichiki, Tamamuramachi; Youichi Yasuda, Takasaki, and Hirobumi Ouchi, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,991
Claims priority, application Japan, Oct. 3, 1979, 54-126842
Int. Cl.^{3} H01L *31/12*
U.S. Cl. 357—19 7 Claims

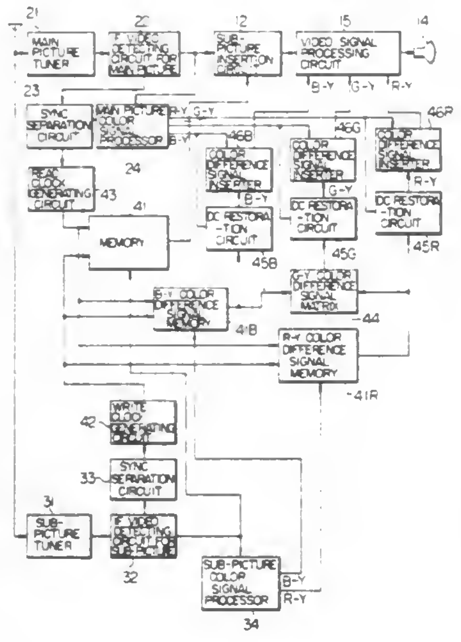


1. An optical semiconductor device comprising an optical transmitting element which is disposed on a sub-mount of silicon having a light receiving element formed in a surface region, and means for preventing light produced by said optical transmitting elements from impinging on said light receiving element.

4,367,484
PICTURE-IN-PICTURE COLOR TELEVISION RECEIVER
Tomomitsu Kuroyanagi, Yokohama, and Hitoshi Miyagawa, Shiga, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,812
Claims priority, application Japan, Nov. 28, 1979, 54-152885
Int. Cl.^{3} H04N *9/535, 5/22*
U.S. Cl. 358—22 2 Claims

1. A picture-in-picture color television receiver comprising:
(a) a first input terminal for receiving a first television signal for a first picture;
(b) a second input terminal for receiving a second television signal for a second picture;
(c) first separation means for separating the first television signal from said first input terminal into a first luminance component signal, a first color signal component and a first synchronizing component signal to produce them;
(d) second separation means for separating the second television signal from said second input terminal into a second video signal component and a second synchronizing signal component to produce them;
(e) a memory device for storing said second video signal component;
(f) memory write control means which is driven by said second synchronizing signal component to write said video signal into said memory device;
(g) memory read control means which is driven by said first synchronizing signal component to read out said video signal into the output terminal of said memory device;
(h) a first luminance signal demodulation circuit for processing said first luminance signal component received to produce a first luminance signal;
(i) a first color signal demodulating circuit for processing said first color signal component to produce a first color signal, said first color signal demodulating circuit having a specific DC reference level previously set;

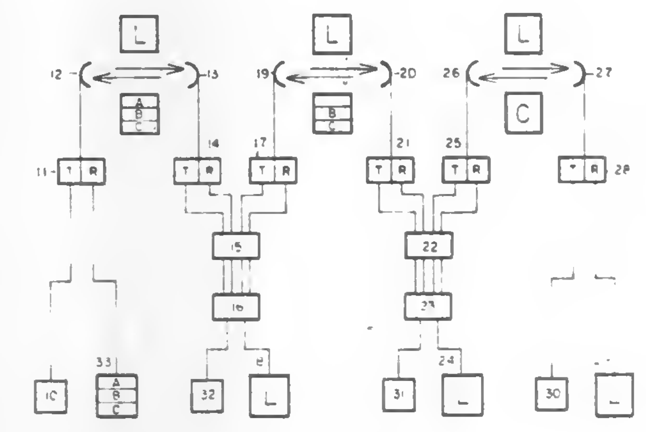

21
MAIN PICTURE TUNER
22
IF VIDEO DETECTING CIRCUIT FOR MAIN PICTURE
12
SUB-PICTURE INSERTION CIRCUIT
15
VIDEO SIGNAL PROCESSING CIRCUIT
14
B-Y
G-Y
R-Y
23
SYNC SEPARATION CIRCUIT
MAIN PICTURE COLOR SIGNAL PROCESSOR
46B
46G
46R
43
24
41
MEMORY
45B
45G
45R
44
41B
41R
42
33
SYNC SEPARATION CIRCUIT
31
SUB-PICTURE TUNER
32
SUB-PICTURE COLOR SIGNAL PROCESSOR
B-Y
R-Y
34

(j) third separation means for separating said second picture video signal component derived from the output terminal of said memory device into a luminance signal component and a color signal component to produce a second luminance signal component and a second color signal component;
(k) a second luminance signal demodulating circuit for processing said second luminance signal component received to produce a second luminance signal;
(l) a luminance signal composing circuit for receiving said first and second luminance signals to produce a composite luminance signal in which said second luminance signal is inserted into said first luminance signal;
(m) a second color signal demodulating circuit for processing said second color signal component received to produce a second color signal, said second color demodulating circuit including a DC restoration circuit for restoring a DC component of said second color signal which further includes means for setting said DC reference signal;
(n) a color signal composing circuit for receiving said first and second color signals to produce a composite color signal in which said second color signal is inserted into said first color signal;
(o) means for holding the DC reference level of said first color signal;
(p) first switch means for supplying the DC reference level of said first color signal demodulating circuit to said means for holding the DC reference level of said first color signal during the horizontal flyback period for said first television signal, said first switch being driven by a control signal derived from said memory read control means;

(q) second switch means for supplying the DC reference level derived from said means for holding the DC level of said first color signal into said means for setting said DC reference level, said second switch means being driven by a control signal derived from said memory read control means during a specific period of the flyback period of said first picture and a scanning period of said first picture;
(r) a display device for receiving said composite luminance signal and said composite color signal to simultaneously display said first and second pictures on a screen.

4,367,485
TWO-WAY MICROWAVE TELEVISION SYSTEM
Dale L. Hemmie, Ft. Madison, Iowa, assignor to Telecom Engineering, Inc., Ft. Madison, Iowa

Filed Mar. 10, 1981, Ser. No. 242,169
Int. Cl.^{3} H04N *1/00*
U.S. Cl. 358—86 5 Claims

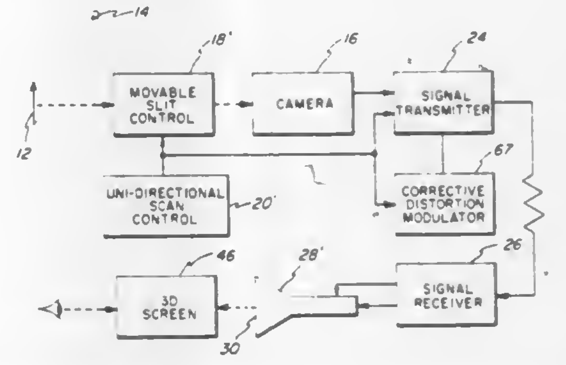


1. A two-way television system, comprising:
a master station, including, a video camera means for generating a first video signal, means for transmitting said first video signal, means for receiving a composite video signal, and a video display means for displaying said composite video signal;
a relay station including, a first receiver means for receiving said first video signal, a first transmitter means for transmitting said received first video signal, a second receiver means for receiving a second video signal, a video camera means for generating a third video signal, a special effects generator means for creating said composite video signal by combining said second and third video signals, a second transmitter means for transmitting said composite video signal, and a video display means for displaying said first video signal; and
a remote station, including means for receiving said first video signal transmitted by said first transmitter means, a video display means for displaying said first video signal, a video camera means for generating said second video signal, and means for transmitting said second video signal.

4,367,486
THREE DIMENSIONAL IMAGING SYSTEM
Jesse B. Eichenlaub, 100 9th St., Troy, N.Y. 12180, assignor to Jesse B. Eichenlaub and Roberta H. Wessendorf, both of Troy, N.Y.

Filed Mar. 18, 1980, Ser. No. 131,415
Int. Cl.^{3} H04N *9/54*
U.S. Cl. 358—88 10 Claims

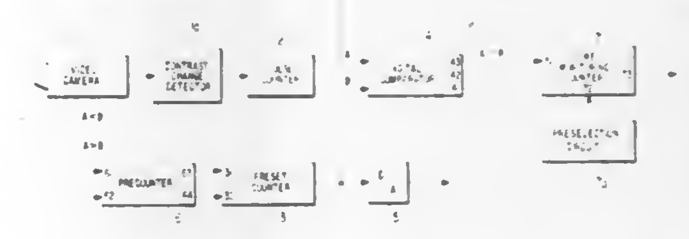
1. A method of reproducing three-dimensional images of an object illuminated by or emitting any of the types of radiation known as x-rays, ultraviolet, visible light, infared, microwaves, particle radiation, inluding the steps of:
exposing a radiation blocking element to said radiation;
establishing a pinhole window in said element through which the radiation is restrictively transmitted onto an imaging surface in a non-focused manner to form a complete image having an intensity pattern dependent on window position;
imparting scanning movement to said window to produce a series of complete images of said object on the imaging surface of different intensity patterns;
converting the image-forming radiation impinging on the imaging surface into signal energy;



converting said signal energy into a transparent image on a viewing screen that is locally variable in transmissivity;
emitting radiation from a movable emission location on a display surface spaced behind said viewing screen;
directing said radiation from said movable emission location to said viewing screen; and
imparting movement to the emission location on said display surface in synchronism with said predetermined scanning movement of the window in said radiation blocking element to reproduce an image of said object on said viewing screen that is observed with parallax.

4,367,487
APPARATUS FOR TAKING MEASUREMENTS FOR THE EVALUATION OF VIDEO CAMERA IMAGES FOR TAPE EDGE REGULATION
Herrmann Klein, Reichshof; Peter Pelweckyj, Heusenstamm, and Ludwig Menzel, Olpe-Biggesee, all of Fed. Rep. of Germany, assignors to Elektro-Mechanik GmbH, Olpe, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 298,182
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032950
Int. Cl.^{3} H04N *7/18*
U.S. Cl. 358—107 5 Claims



1. In an apparatus for evaluating optoelectronically generated picture rasters wherein, for the purpose of regulating the movement of a tape-shaped material (tape), the tape position is detected, with the aid of a video camera, by means of continuously reproducing an edge of the tape or a marking line on the tape as a sudden change in contrast, said apparatus including means for scanning each picture raster line-by-line to provide a sequence of pulses corresponding to the number of picture elements and for detecting a sudden change in contrast in the line, picture element counter means for counting the picture

elements in each line occurring up to the selected sudden change in contrast (A), a digital/analog converter, and first circuit means connecting the output of said picture element counter means to the input of said digital/analog converter, whereby said converter provides an analog output signal which forms a setting instruction to mechanically adjust the tape position to the desired position; the improvement wherein said circuit means comprises: second counter means, having its output connected to the input of said digital/analog converter, for providing a counting content (B) of picture elements corresponding to the previously detected tape position, said second counter means having first and second inputs for causing the count stored therein to be increased or decreased, respectively; digital comparator means, having first and second inputs connected to said outputs of said picture element counter means and said second counter means, for comparing the count outputs of said picture element counter means and said second counter means to provide an output pulse at a first output whenever the number (A) of picture elements counted in one line of the picture raster until the occurrence of a sudden change in contrast is greater than the number (B) of picture elements stored in said second counter means (A > B), and to provide an output pulse on a second output whenever the number (A) of picture elements counted in one line of the picture raster until the occurrence of a sudden change in contrast is less than the number (B) of picture elements stored in said second counter means (A < B); and second circuit means for connecting said first and second outputs of said digital comparator means to said first and second inputs of said second counter means.

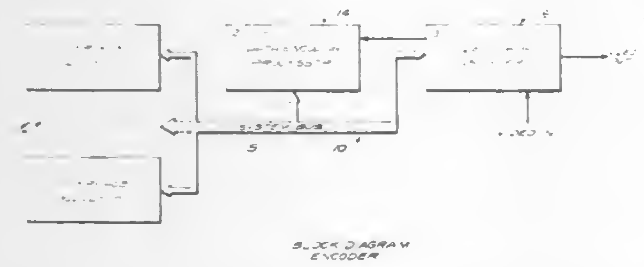
4,367,488
DATA ENCODING FOR TELEVISION

William Leventer, Long Island, and Lawrence M. Shulman, East Patchogue, both of N.Y., assignors to Sterling Television Presentations Inc. Video Data Systems Division, Hauppauge, N.Y.

Continuation-in-part of Ser. No. 213,915, Dec. 8, 1980. This application May 1, 1981, Ser. No. 259,494

Int. Cl.³ H04N ***7/08***

U.S. Cl. 358—147 **11 Claims**



1. A transparent data transmission system for encoding data to be transmitted along with an incoming television video signal of a given field rate, wherein a predetermined number of scan lines compose each field, comprising:

- input interface means for receiving data from a number of input devices each of which provides data at a particular information rate;
- encoding processing means coupled to said input interface means for accessing the data received by said input interface means from the input devices and for arranging the data into separately identifiable data groups, each of said data groups corresponding to the input device which originated the data in that group; and
- inserting means coupled to said encoding processing means and to the incoming video signal for accessing said data groups from said encoding processing means and for inserting said data groups into a selected scan line of the video signal, said inserting means including timing means for providing timing signals to define a number of data channels over a portion of said selected scan line, said inserting means operating to insert each of said data groups into an associated data channel wherein any selected one of said data channels on said selected scan line includes data which originates from a particular input device;
- said timing signals provided by said timing means being operative to define a data channel bit map over a portion of said selected scan line, said inserting means being operative to insert input identifying data into said data channel bit map for identifying each one of the input devices which is providing data to said input interface means.

4,367,489
TELEVISION GHOST DETECTION AND CANCELLATION SYSTEM CONTROLLED OVER SEVERAL LINES OF A VERTICAL RETRACE INTERVAL

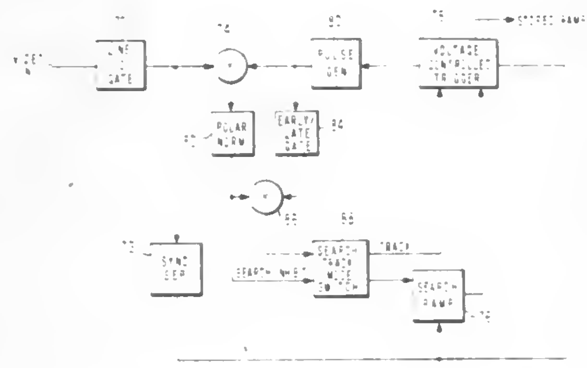
David D. Holmes, Chesterfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,309

Claims priority, application United Kingdom, Aug. 14, 1980, 8026515

Int. Cl.³ H04N ***5/21***

U.S. Cl. 358—167 8 Claims



1. In a television receiver, including a source of video signals which are modulated at a field rate, wherein each field comprises a vertical scanning interval and a vertical retrace interval, and said vertical retrace interval includes a succession of line intervals, each of which contains a horizontal sync signal, said video signals being subject to contamination by a ghost signal; a television ghost detection and cancellation system comprising:

- first means having an input coupled to said source of video signals and an output for passing a first number of line intervals of said succession of line intervals to said output;
- a ghost detector circuit having an input coupled to the output of said line interval passing means, and responsive to a first one of said first number of line intervals for producing an output signal indicative of the delay of a ghost of said horizontal sync signal of said first line interval with respect to said horizontal sync signal of said first line interval when a ghost signal is present, said ghost detector circuit being responsive to a second one of said first number of line intervals which succeeds said first one, when said ghost detector circuit has produced said output signal in response to said first line interval, for adjusting the value of said output signal as required to indicate the delay of a ghost of said horizontal sync signal of said second line interval with respect to said horizontal sync signal of said second line interval when a ghost signal is present;
- second means, having an input coupled to said source of video signals, and an output for producing video signals delayed as a function of the value of said output signal of said ghost detector circuit;
- third means having an input coupled to said source of video signals and an output for passing a line interval of said succession of line intervals which succeeds said first number of line intervals;
- a ghost cancellation system having a first input coupled to the output of said second means and a second input coupled to the output of said third means, and responsive to said delayed video signals and said line interval succeeding said first number of line intervals for producing a pseudo-ghost signal which is substantially equal in amplitude and opposite in phase to said ghost signal when said ghost signal is present; and
- means for combining said video signals and said pseudo-ghost signal to develop a deghosted video signal when said ghost signal is present.

4,367,490
NOISE REDUCTION IN DIGITAL FLUOROSCOPY SYSTEMS

Stephen J. Riederer, Wauwatosa, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,447

Int. Cl.³ H04N ***5/21***

U.S. Cl. 358—167 10 Claims

1. In a system including means for converting picture elements (pixels) comprising an image to analog video signals, means for converting the analog video signals to live digital video pixel signals, and improved apparatus for reducing the effect of noise in a television display of the image, comprising:

- a full image frame memory having locations for storing digitized video pixel signals that compose an image frame, said memory having input and output means for pixel signals,
- motion detector means comprising means for comparing the stored video pixel signals that are output from the memory in succession with corresponding live digital pixel signals that are destined for the frame memory locations from which the respective stored video signals were obtained, said means for comparing having output means for difference signals representative of the difference between said stored and live video signals,
- means for generating a controllable fraction, K, based on the value of said difference signals and on the value of the live video pixel signal,
- said fraction, K, being smaller for a low intensity live video pixel signal, thereby making said fraction, K, dependent on said live video pixel signal intensity,
- means for summing a controllable fraction (1 − K) of the stored pixel value with a corresponding controllable fraction K of the live pixel value, and
- means for coupling the result of the summing of said fractions to the input of the frame memory for being stored in the location from which the aforesaid stored video pixel signal was obtained.

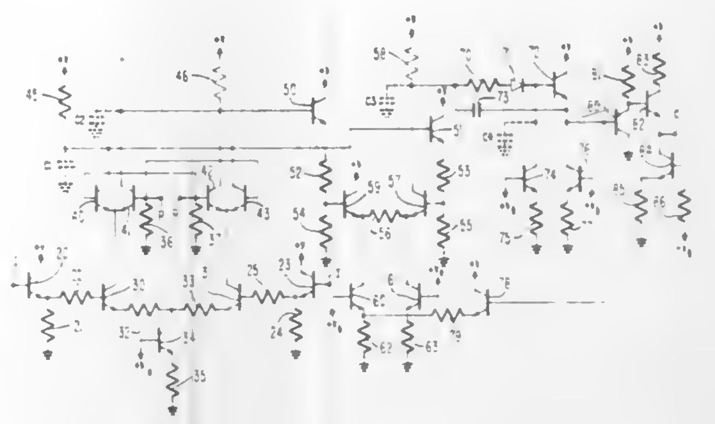
4,367,491
VIDEO SIGNAL RECOVERY SYSTEM

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 3, 1981, Ser. No. 270,019

Int. Cl.³ H04N ***5/44***

U.S. Cl. 358—188 8 Claims



1. In a television receiver, provided with a source of energizing potential having positive and negative terminals, and including a synchronous video detector for recovering composite video signals occupying a given pass band from a modulated IF carrier wave input, said detector including a signal multiplier, responsive to said modulated IF carrier wave input and to reference signals derived from said modulated IF carrier wave input, and formed by an array of NPN transistors realized in integrated circuit form on a common substrate; apparatus comprising the combination of:

- a load resistor for said signal multiplier connected between the interconnected collector electrodes of a pair of said NPN signal multiplier transistors and said positive source terminal;
- a voltage divider including a pair of divider resistors serially connected between said interconnected collector electrodes and said negative source terminal;
- a differential amplifier including a load resistor, and first and second NPN amplifier transistors, each having base, emitter and collector electrodes; said first amplifier transistor having its base electrode connected to the junction of said divider resistors, having its collector electrode connected to said positive source terminal, and having its emitter electrode direct current conductively connected to the emitter electrode of said second amplifier transistor; said load resistor for said differential amplifier being connected between the collector electrode of said second amplifier transistor and said positive source terminal;
- a level shifting circuit including a level shifting resistor connected in series with the collector-emitter path of a normally conductive NPN transistor between the collector electrode of said second amplifier transistor and said negative source terminal; and
- an active low pass filter including a capacitor, and an NPN emitter-follower transistor having its base electrode connected via said level shifting resistor to the collector electrode of said second amplifier transistor, having its collector electrode connected to said positive source terminal, and having its emitter electrode connected to a video signal output terminal, and via said capacitor to the collector electrode of said second amplifier transistor.

4,367,492

SOLID STATE IMAGE SENSOR

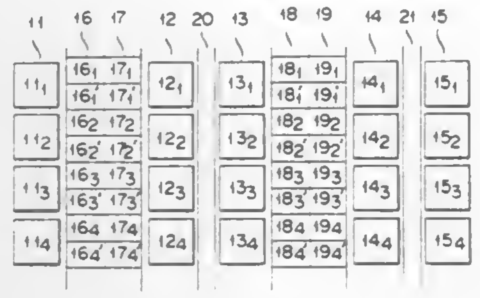
Nozomu Harada, Yokohama; Akihiko Furukawa, Tokyo; Yukio Endo, and Okio Yoshida, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 3, 1980, Ser. No. 212,434

Claims priority, application Japan, Dec. 7, 1979, 54-157980

Int. Cl.³ H04N *9/07, 3/14*

U.S. Cl. 358—213 9 Claims



1. A solid state image sensor comprising:

a plurality of photosensitive sections each having two photosensitive rows formed of a plurality of photosensitive elements for generating picture element signals;

a plurality of readout sections alternately arranged with said photosensitive sections, and each having two readout rows formed of a plurality of readout elements for reading out picture element signals;

overflow drains interposed between said two photosensitive rows of said photosensitive sections; and

a signal processing circuit for processing picture element signals obtained from said photosensitive elements of said photosensitive rows each adjacent to one of said two readout rows of said readout sections so as to produce pseudo-picture element signals, and for processing said pseudo-picture element signals as image signals corresponding to said readout sections.

4,367,493

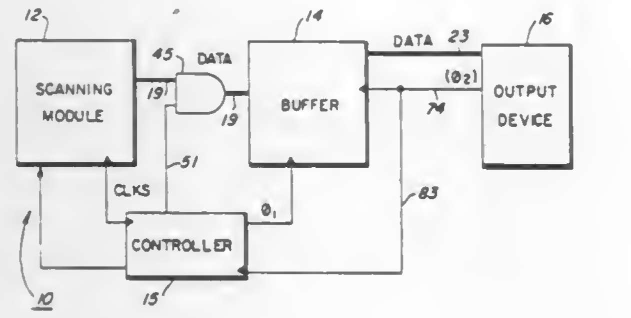
RASTER SCANNER APPARATUS AND METHOD

Ronald G. Matteson, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1981, Ser. No. 250,457

Int. Cl.³ H04N *1/10*

U.S. Cl. 358—293 9 Claims



1. In a raster scanner, the combination of:

(a) a platen for supporting documents to be scanned;

(b) a document scanning slit in said platen;

(c) document transport means for transporting documents to be scanned along said platen and across said scanning slit at a controlled scanning speed;

(d) at least one array of scanning elements for scanning documents line by line through said scanning slit, said array producing image pixel lines representative of the document image scanned;

(e) clock means for operating said array at a preset scanning rate;

(f) buffer means for receiving pixel lines output by said array;

(g) means for starting and stopping said document transport means in response to demand for pixel lines by said buffer means; and

(h) control means for discarding redundant pixel lines output by said array when said document transport means is stopped or accelerating or decelerating to or from said controlled scanning speed to thereby accommodate continued operation of said array at said preset scanning rate while said document transport means is stopped, or accelerating or decelerating while avoiding output of redundant pixel lines to said buffer means.

4,367,494

VIDEO RECORDER-PLAYER AND HORIZONTAL SYNC SEPARATOR THEREFORE

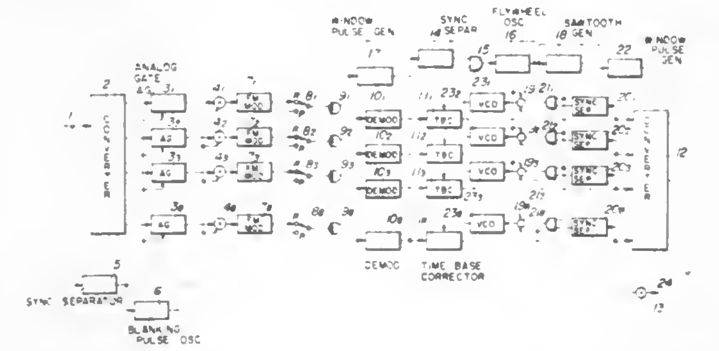
Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,101

Claims priority, application Japan, May 21, 1979, 54-62404

Int. Cl.³ H04N *5/79, 5/795*

U.S. Cl. 360—22 2 Claims



1. A system for separating a synchronizing signal for use in a recording and reproducing apparatus comprising: means for converting an image signal to conversion signals along a plurality of channels, means for recording and reproducing the converted signals, synchronizing separator means for separating a synchronizing signal mixed in the converted signal to correct a time base of the converted signal, a time base corrector in each channel, a flywheel oscillator responsive to the synchronizing separator means, means in each channel for obtaining a synchronizing signal for correcting the time base from a coincident output of a synchronizing signal obtained from the output of the time base corrector in that channel and a window pulse obtained from an output of the flywheel oscillator operated by the synchronizing signal in the converted signal.

4,367,495

METHOD AND APPARATUS FOR MAGNETIC RECORDING AND REPRODUCTION OF DIGITAL SIGNAL

Seiichi Mita; Yasuhiro Hirano, both of Hachioji, and Yoshizumi Eto, Sagamihara, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,572

Claims priority, application Japan, Oct. 17, 1979, 54-132943

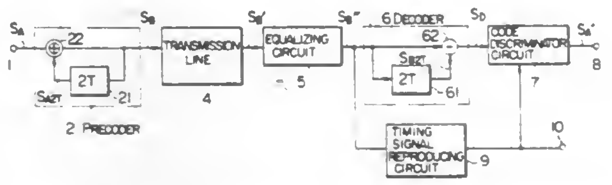
Int. Cl.³ G11B *5/09*

U.S. Cl. 360—39 6 Claims

1. A magnetic recording method for digital signals, comprising:

a first step of producing a series of intermediate binary digital signals by sequentially subjecting to a modulo-2 summation each of input binary digital signals which are received in accordance with a predetermined time slot format and an intermediate binary digital signal which is produced through the previous modulo-2 summation made to one of said input binary digital signals preceding by two time slots to the input binary digital signal to be presently subjected to the modulo-2 summation;

a second step of converting said series of intermediate binary digital signals into a series of ternary digital signals by sequentially subtracting from each of said intermediate binary digital signals the intermediate binary digital signal which is preceding thereto by one time slot; and



a third step of transmitting said series of ternary digital signals to a magnetic head with a transformer for recording on a magnetic recording medium.

4,367,496

METHOD AND ARRANGEMENT FOR MAGNETIC DIGITAL RECORDING WITH HIGH FREQUENCY BIASING

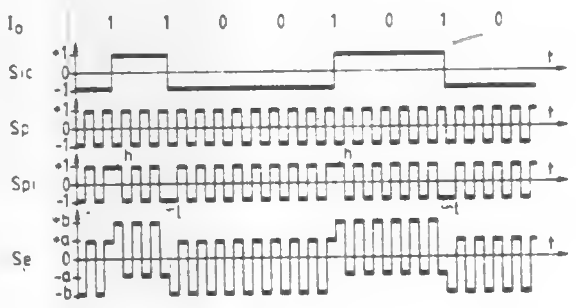
Jean-Paul Lesieur, Massy, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Jun. 4, 1980, Ser. No. 156,368

Claims priority, application France, Jun. 18, 1979, 79 15584

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—45 4 Claims



1. A circuit arrangement for magnetic recording of a digital data signal composed of a set of transitions comprising magnetic biasing means for delivering a high frequency, constant amplitude, original biasing signal, said biasing means comprising a source of clock signals having a first version used for the formation of the said original biasing signal and a second version used for the formation of the said data signal, and means for combining the said digital data signal with the said magnetic biasing signal so as to provide a recording signal, said combining means comprising a current switch device connected to receive complementary formats of the data signal, a recording winding connected to said switch device to produce the recording signal, and a current source supplying the said current switch and controlled by strong or weak currents, and means for phase modulating the original biasing signal relative to the data signal transitions, said phase modulation means comprising an exclusive OR gate receiving the said original biasing signal and the said data signal.

4,367,497

DIGITAL DATA FORMATTING SYSTEM FOR HIGH DENSITY MAGNETIC RECORDING

Vaughn J. Jenkins, Bountiful, Utah, assignor to Sperry Corporation, New York, N.Y.

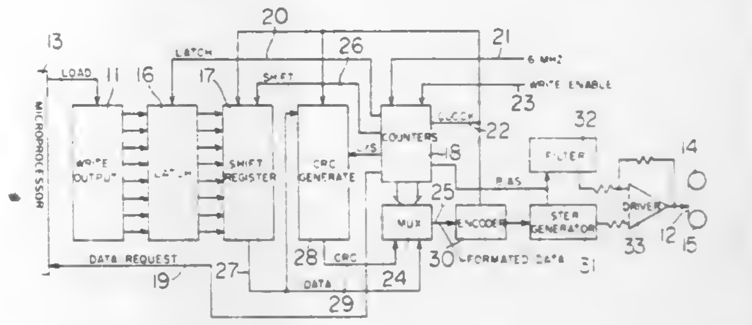
Filed Jan. 2, 1981, Ser. No. 222,095

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—48 8 Claims

1. In a system for arranging digital data into records for high density recording on a movable magnetic medium, including; a source of data; generating means for generating a preamble, a postamble and other characters; means for formatting data from said source between said preamble and said postamble and for formatting certain of said other characters with said preamble, said postamble and said data to form each of said records for encoding and recording on said magnetic medium; wherein said preamble and postamble are each comprised of a predetermined number of predetermined characters and said data is comprised of a variable number of characters, said characters each comprised of nine cell positions in which each cell position is adapted to accommodate a flux change signal, the improvement comprising:

first means for conditioning said formatting means to insert an unique one of said other characters at the end of said preamble and at the beginning of said postamble, said unique one of said other characters consisting of a cell position containing no flux change signal followed by seven cell positions containing a symmetrical group of flux change signals in turn followed by a cell position containing no flux change signal;



second means for conditioning said formatting means to insert a flux change signal in the ninth position of every character in said record, except in the ninth position of said unique one of said other characters, whereby a clocking signal may be derived from at least every tenth cell position in said record and whereby the end of the data contained in a record may be immediately recognized upon reading said unique one of said other characters.

4,367,498

INTERVAL DETECTION FOR AUTOMATIC CUEING CONTROL SYSTEMS

Masatsugu Kitamura, and Hideo Onoye, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 30, 1980, Ser. No. 164,162

Claims priority, application Japan, Jun. 28, 1979, 54-81642

Int. Cl.³ G11B *15/16, 15/52, 27/22*

U.S. Cl. 360—72.1 6 Claims

1. In a tape reproducing system for selectively reproducing programs recorded on a recording tape wound on supply and takeup reels and for driving said reels at selected fast forward and rewind speeds so that the rotation speed of said reels varies nonlinearly as a function of tape diameter wound on one of said reels, an apparatus for detecting inter-program pauses between programs to replay the recorded programs, said apparatus comprising:

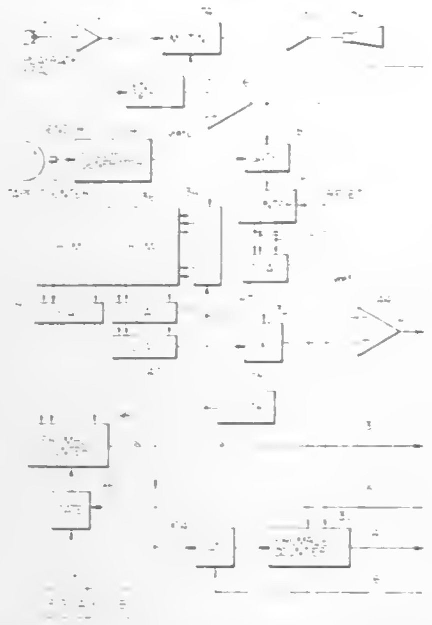
first sensor means for sensing the programs and the pauses on the recording tape and for detecting the duration of each sensed pulse;

a memory storing therein a set of data, each datum of the set representing the speed of said tape as a function of the varying speed of one of said reels;

second sensor means for detecting the rotational speed of said one reel;

reading means for reading said stored data out of said memory in response to said detected rotational speed;

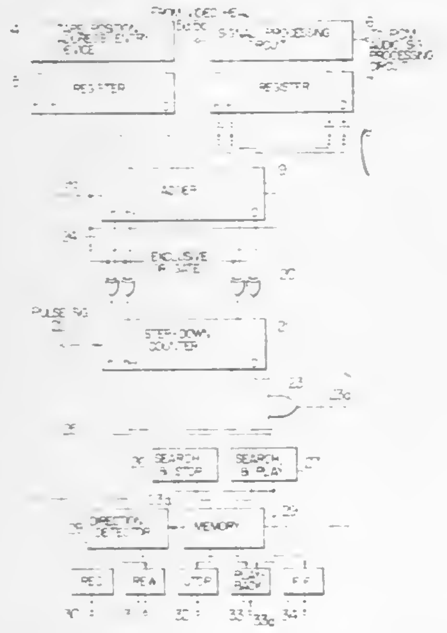
means for correcting said detected duration in response to the data readout of said memory; and



means for comparing said corrected duration with a reference value to generate a control signal for replaying the recorded programs at a playback speed.

4,367,499
TAPE SEARCHING DEVICE IN PCM RECORDING AND REPRODUCING APPARATUS

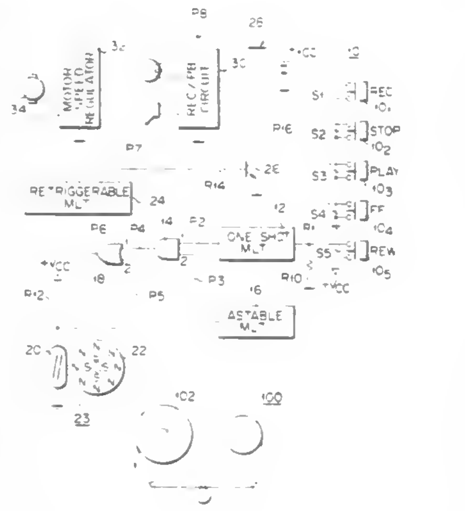
Takashi Hoshino, Fujisawa, and Takao Arai, Yokohama, both of Japan; assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 143,121, Apr. 23, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,133
Claims priority, application Japan, Apr. 27, 1979, 54-51518
Int. Cl.^{3} G11B *15/18, 19/02, 5/06*
U.S. Cl. 360—72.2 **9 Claims**



1. A tape searching device in a PCM recording and reproducing apparatus comprising:
(a) first addressing means for designating any desired tape address and producing an electrical signal indicative of the designated address;
(b) first actuation means for putting a video head in a playback condition in stopping a tape after the tape address has been designated by said first addressing means;
(c) second addressing means for detecting an electrical signal indicative of a tape address representative from the tape of a stop position, said tape containing tape addresses unique to respective tape positions to be read by the video head and control signal at a fixed pitch to be read by an audio head;
(d) first arithmetic operation means for calculating a difference between said designated address and said tape address based on said electrical signals from said first and second addressing means to produce a signal indicating the direction of fast tape movement and a signal determining the tape length to be fast moved, said tape length being represented by the number of pitches of said control signals indicative of said difference between said addresses;
(e) second actuation means responsive to said signal indicating the direction of fast tape movement derived from said first arithmetic operation means to bring the tape in fast rewind or fast forward condition, and stop the tape in response to a tape stop signal;
(f) third addressing means for producing said control signals from the tape in the fast tape movement condition brought about by said second actuation means; and
(g) second arithmetic operation means for determining the coincidence between the signal indicative of the tape length to be fast moved derived from said first arithmetic operation means and the number of pitches of said control signals derived from said third addressing means to supply the stop signal to said second actuation means when the coincidence is detected.

4,367,500
TAPE END DETECTION APPARATUS

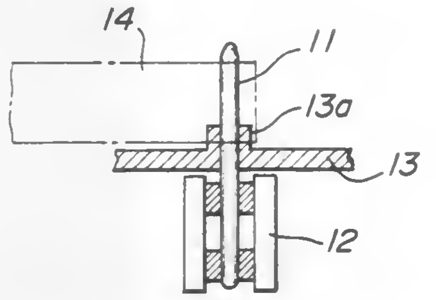
Kenzi Furuta, and Katsumi Kanayama, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1980, Ser. No. 142,242
Claims priority, application Japan, May 2, 1979, 54-54598
Int. Cl.^{3} G11B *15/18, 19/20*
U.S. Cl. 360—74.2 **15 Claims**



1. A tape end detection apparatus comprising:
a tape transport means for transporting tape;
a tape transport detection means coupled to said tape transport means for generating a first pulse in response to the tape transport by the tape transport means; and
a timer circuit means coupled to said tape transport means which includes means for preventing detection of a terminal end of said tape during a period beginning from the start of a tape transport to the lapse of a first specified period of time, and for enabling detection of a terminal end of said tape, after the passage of said first specified period of time, in accordance with the existence of said first pulse, said timer circuit means including:
a first timer circuit which is triggered at the time of the commencement of said tape transport to generate a gate signal only during said first specified period of time,
a pulse generating circuit which generates a second pulse having a cyclic period shorter than said first specified period of time,
a gate circuit coupled to said pulse generating circuit and allowing said second pulse to pass therethrough as a third pulse only during a period of time during which said gate signal is generated,
logical OR circuit means coupled to receive said first and third pulses and for generating a logical OR signal responsive thereto, and
a second timer circuit coupled to said logical OR circuit means and which is triggered by said logical OR signal of said first pulse and said third pulse and which is kept triggered while the cyclic period of the pulse of said logical OR signal falls within a second specified period of time,
whereby the terminal end of said tape, at the time when after the lapse of said first specified period of time the trigger of said second timer circuit has passed away, is detected in accordance with the extinguishment of the trigger of said second timer circuit.

4,367,501
BEARING DEVICE FOR CAPSTAN SHAFT

Mitsuo Nasu, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Aug. 18, 1980, Ser. No. 178,824
Claims priority, application Japan, Aug. 20, 1979, 54-114335[U]
Int. Cl.^{3} G11B *15/00;* **F16C** *17/04;* **B65H** *17/02*
U.S. Cl. 360—96.3 **1 Claim**

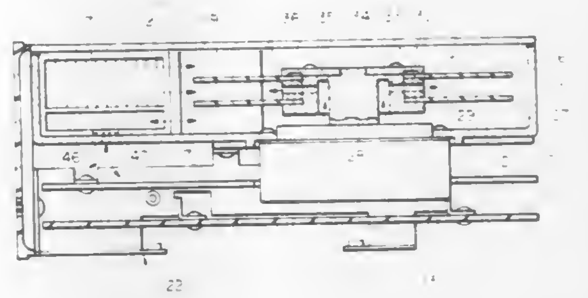


1. A capstan shaft assembly for a tape recorder comprising:
a capstan shaft having an engagement end portion operative to be received within and engage a tape cassette which is placed in operative position within said tape recorder;
a bearing member supportively engaging said capstan shaft along a portion thereof other than said engagement end portion; and
a flywheel including a securing portion securing said flywheel to said capstan shaft;
said flywheel being secured on said capstan shaft to be located between said engagement end portion of said capstan shaft and said bearing member with said securing portion being configured to extend to within a tape cassette placed within said tape recorder in engagement with said engagement end portion of said capstan shaft:
said flywheel being thereby arranged to be located between said tape cassette and said bearing member when said tape cassette is placed in operative position within said tape recorder.

4,367,502
FIXED HARD DISC DRIVE ASSEMBLY AND CLEAN AIR SYSTEM

Syed H. Iftikar, Fremont, and David L. Reeck, San Jose, both of Calif., assignors to Shugart Technology, Scotts Valley, Calif.
Filed Apr. 11, 1980, Ser. No. 139,200
Int. Cl.^{3} G11B *17/26, 23/02*
U.S. Cl. 360—98 **4 Claims**

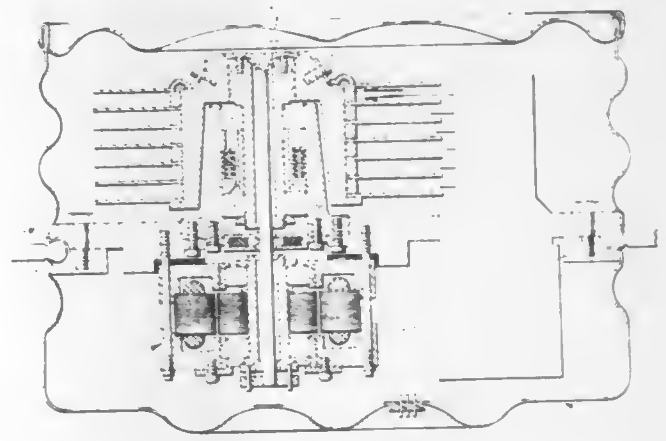
1. A disc drive assembly comprising
a housing having a, planar base, and upwardly extending sides and an enclosing cover, said housing including a cylindrical portion and a rectangular portion,
an external disc drive motor secured to said base outside said housing and having a drive shaft extending into the cylindrical portion of said housing,
a drive spindle secured to and supported from said shaft within the cylindrical portion of said housing, said spindle serving to receive and support a plurality of discs in spaced relationship to one another whereby they are driven by the disc drive motor for rotation in the cylindrical portion of said housing,
an air filter assembly disposed at one end of said rectangular portion of said housing on said base and having an input side disposed to receive air centrifugally pumped by said rotating discs and provide clean air to the center of the discs at the drive spindle, said air defining a circulation path being substantially confined to the generally planar area within said housing,



a head support and drive assembly disposed in the other end of said rectangular housing portion,
a plurality of magnetic head supported by said head support to cooperate with the surfaces of said discs,
a head drive motor mounted on the side of said housing and having its shaft extending into the other end of said rectangular portion of said housing for cooperating with the drive assembly to drive the heads, and
said spindle including a cylindrical slot and a plurality of radially extending holes for providing circulation of the air upwardly along said cylindrical slot and outwardly through said holes toward said discs, thereby providing thermal balance.

4,367,503
FERMETICALLY SEALED DISK FILE

Robert C. Treseder, Aptos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1980, Ser. No. 219,794
Int. Cl.^{3} G11B *23/02*
U.S. Cl. 360—98 **9 Claims**



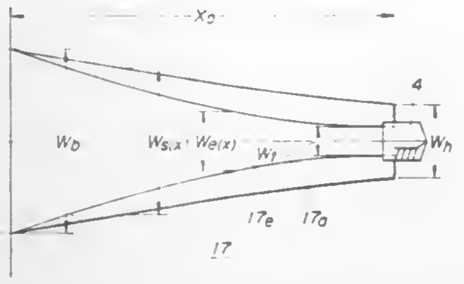
1. A hermetically sealed disk file comprising:
(a) a baseplate for mounting the major components of said disk file in fixed relationship to each other;
(b) a two-part thin walled container for completely enclosing said baseplate and said components of said disk file, said parts being hermetically sealed by a double-seamed viscoelastic seal; and
(b) means for mounting said baseplate to a frame while simultaneously mounting said thin walled container to

said baseplate and in generally floating relationship to both said baseplate and said frame.

4,367,504

PIEZO-ELECTRIC BIMORPH TYPE TRANSDUCER

Takeo Seki, Kokubunji; Yukio Shinoda, Kodaira, and Akio Kumada, Kokubunji, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo and Hitachi, Ltd., botb of, Japan
Filed Apr. 2, 1981, Ser. No. 250,432
Claims priority, application Japan, Apr. 12, 1980, 55-47504
Int. Cl.^{3} G11B *21/10, 21/18*
U.S. Cl. 360—109 **5 Claims**



1. A piezo-electric bimorph type transducer of a cantilever type for shifting a magnetic head for a magnetic recording and reproduction apparatus, which transducer comprises a piezo-electric bimorph element including:

a pair of piezo-electric thin plates, with the width thereof, Ws, changing gradually in the direction from a fixed end of a cantilever towards a movable end thereof, in accordance with a predetermined function f(x), where x is the distance from said fixed end toward said movable end; and

a plurality of electrodes, with the width thereof, We, gradually decreasing in the direction from said fixed end toward said movable end, in accordance with a function G(x), where x is the distance from said fixed end toward said movable end, and said function G(x) is determined in such a manner that said width We of said electrodes is smaller than said width Ws of said piezo-electric thin plates in the direction from said fixed end towards said movable end, whereby, in a comparatively broad frequency range of a control signal applied to said electrodes, the displacement of each portion of said bimorph element in the range from said fixed end toward said movable end is obtained so as to be proportional to the magnitude of said control signal with a constant of proportion, which constant of proportion is the product of a first value determined only by the position of each portion of said bimorph element and a second value determined only by the frequency of said control signal, and with the phase difference which is determined only by the frequency of said control signal.

4,367,505

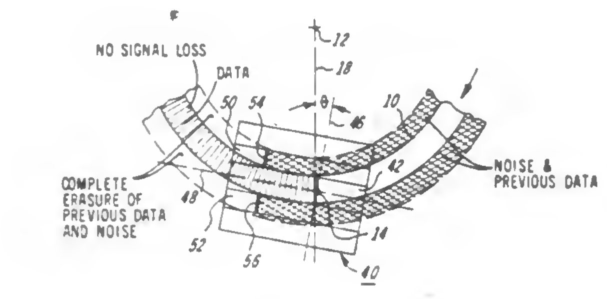
MAGNETIC HEAD ASSEMBLY WITH SKEWED READ/WRITE GAP

Roger R. Stromsta, Palo Alto; John H. Miller, III, San Jose, and Harry J. Carlson, Jr., Morgan Hill, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 29, 1980, Ser. No. 191,961
Int. Cl.^{3} G11B *5/27, 21/00*
U.S. Cl. 360—121 **9 Claims**

1. A magnetic head assembly for a disk drive, said head assembly comprising

a read/write transducer having a read/write gap extending lengthwise along an azimuth alignment axis for said head assembly, said alignment axis being skewed at a predetermined angle with respect to a second axis, said second axis perpendicularly intersecting a principal axis of said head assembly within said read/write gap; and

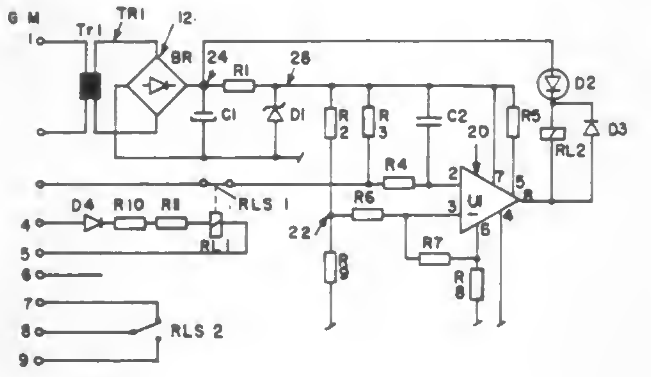
a pair of erase transducers disposed on opposite sides of said read/write transducer, said erase transducers having respective erase gaps extending lengthwise in substantially equidistantly displaced parallel relationship with respect to said second axis, said skew angle being selected to compensate for the displacement of said erase gaps from said second axis, whereby said erase transducers are oriented to create substantially constant radius guard bands on either side of any data track written by said read/write transducer.



4,367,506

PROTECTIVE SYSTEM FOR ELECTRIC MOTORS

Arie Lapsker, Rehov Leah 19, Haifa, Israel
Continuation-in-part of Ser. No. 125,026, Feb. 27, 1980, Pat. No. 4,319,297. This application May 29, 1980, Ser. No. 154,240
Claims priority, application United Kingdom, Jun. 5, 1979, 791519
The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.
Int. Cl.^{3} H02H *7/08*
U.S. Cl. 361—31 **15 Claims**



1. A low winding resistance protective system for electrical motors comprising:

sensing means for coupling to at least one motor winding and for comparing the winding resistance of a motor when at rest to a predetermined threshold and for providing an output indication in response to exceedance of that threshold;

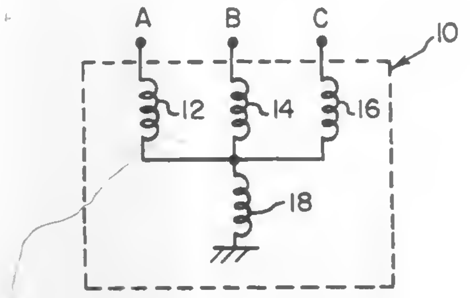
means for decoupling the at least one motor winding from the sensing means such that high voltages applied to the at least one motor winding during operation of the motor are prevented from reaching the sensing means; and

high capacity resistor means connected between said sensing means and said at least one motor winding.

4,367,507

APPARATUS FOR CLEARING FAULTS ON UNTRANSPOSED TRANSMISSION LINES USING SINGLE PHASE SWITCHING

Betsalel R. Shperling, 135 Third Ave., Mineola, N.Y. 11501; Albert J. Fakheri, 4594 Crompton Dr., Columbus, Ohio 43220, and Brendan J. Ware, 2478 Bryden Rd., Columbus, Ohio 43209
Filed Jul. 10, 1981, Ser. No. 282,085
Int. Cl.^{3} H02H *9/08*
U.S. Cl. 361—43 **8 Claims**



1. An apparatus for extinguishing faults on an untransposed alternating current transmission line having two outer phase conductors and an inner phase conductor used to transfer power from a power source system to a power receiving system, including means for sensing a fault condition on each phase of said transmission line, and line breaker means responsive to each of said fault sensing means for temporarily disconnecting the single phase with said fault condition from said power source system and said power receiving system until said fault is extinguished, said apparatus comprising:

(a) a switch connected from each of said outer phase conductors and a switch connected from said inner phase conductor of said untransposed transmission line to a shunt reactor associated with each of said phases;

(b) a neutral reactor connected from the ground to the side of each of said shunt reactors opposite said switch;

(c) means responsive to said fault sensing means for configuring said apparatus so that said three switches are closed to extinguish faults on said inner phase conductor; and

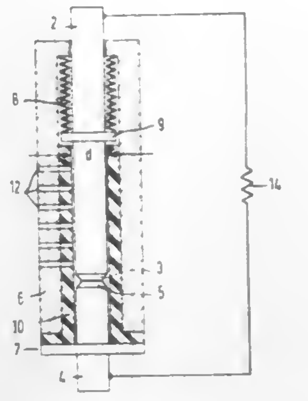
(d) means responsive to said fault sensing means for configuring said apparatus so that said inner phase conductor switch and the switch connected to a faulted outer phase conductor are closed and said switch of said phase opposite said faulted outer phase is open to extinguish a fault on said faulted outer phase.

4,367,508

CURRENT LIMITER

Wilfried Haas, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 5, 1980, Ser. No. 184,391
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 2937490
Int. Cl.^{3} H02H *9/02*
U.S. Cl. 361—58 **4 Claims**

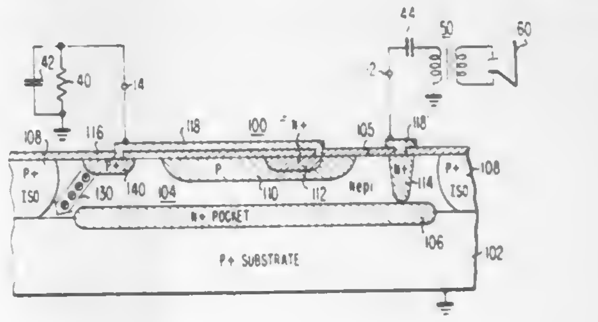
1. A current limiter having at least two contacts which are axially movable with respect to one another, the contacts being disposed within a housing formed of a material which emits gas, so as to provide an arcing chamber as the contacts are moved axially apart, the current limiter further comprising a spring having a nonlinear characterstic for producing a force in a direction opposite to the direction of axial opening motion of the contacts said spring urging the contacts toward one another with a relatively small force when the contacts are in a closed position, said force increasing nonlinearly as the contacts move axially apart from one another.



4,367,509

ANTI-LATCH CIRCUIT FOR POWER OUTPUT DEVICES USING INDUCTIVE LOADS

Donald J. Snyder, and Fletcher A. Bozarth, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 35,347, May 2, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,285
Int. Cl.^{3} H02H *3/20*
U.S. Cl. 361—91 **11 Claims**



1. A power output circuit which is prevented from latching due to voltage pulses developed by an inductive load comprising:

a monolithic integrated circuit chip including a semiconductor substrate of one type conductivity and an epitaxial layer of opposite type conductivity with an interface therebetween, said epitaxial layer having a substantially planar surface, a first localized region of opposite type conductivity located in said substrate adjacent to said interface and containing opposite type conductivity modifiers, a second localized region of said one type conductivity located in said epitaxial layer adjacent to said surface, a third localized region of said opposite type conductivity located in said second localized region adjacent to said surface and containing opposite type conductivity modifiers, and a fourth localized region of said one type conductivity located in said epitaxial layer adjacent to said surface and containing one type conductivity modifiers,

wherein said epitaxial layer and said first localized region comprise the collector of a transistor and said second and third regions comprise the base and emitter of said transistor, and

wherein said fourth localized region comprises means for conductively coupling said emitter of said transistor to other elements of said power output circuit located on said monolithic integrated circuit chip during normal operating conditions;

an inductive load, located external to said integrated circuit chip, and coupled between said collector and said substrate; and

means for offsetting the potential of said fourth region relative to the potential of said substrate in such a direction that a protection diode formed between said collector and said fourth region becomes conductive in response to voltage pulses developed by said load prior to conduction by a diode formed by said collector and said substrate, said voltage pulses having a polarity tending to forward bias both of said diodes, wherein said offsetting means comprises the parallel combination of a capacitor and a resistive impedance, located external to said integrated circuit chip, and coupled between said fourth localized region and said substrate.

4,367,510
REMOTE CONTROL SWITCH DEVICE

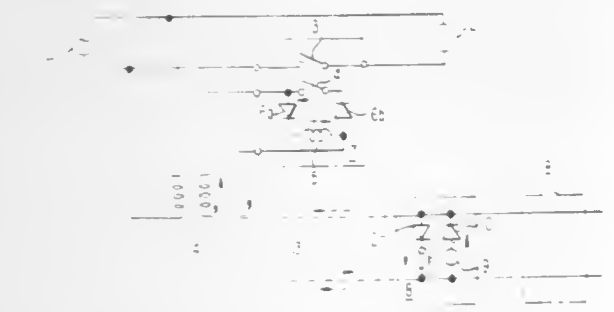
Katumi Watanabe, Otawara, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 14, 1981, Ser. No. 263,802

Claims priority, application Japan, May 16, 1980, 55/64997; Jun. 6, 1980, 55/76293; May 16, 1980, 55/67275

Int. Cl.^{3} H01H *47/22*

U.S. Cl. 361—160 **9 Claims**



1. A remote control switch device comprising:

a main switch connected in a closed loop circuit including an a-c power supply and a load;

control circuit means comprising a series circuit of auxiliary contacts interlocking with said main switch and a first diode connected to said auxiliary contacts, a second diode connected across said series circuit in a direction opposite that of said first diode, and an electromagnetic coil connected in series with said second diode for opening or closing said main switch by mechanically retaining said main switch alternately at open and closed positions for each operation of said coil;

an isolating transformer having a primary winding connected to said power supply of said closed loop circuit; and

indication circuit means comprising a push-button switch remotely connected to a secondary winding of said isolating transformer remotely connected in series with said control circuit means and an indicator lamp and third diode connected in parallel with said push-button switch of said indication circuit means, said third diode and said first being connected so as to pass an electric current in the same direction.

4,367,511
ROUGH ELECTRICAL INSULATING FILM OF POLYPROPYLENE AND PROCESS FOR THE MANUFACTURE THEREOF

Günther Crass, Taunusstein, and Hartmut Hensel, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

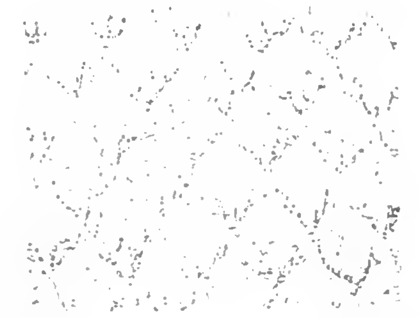
Filed Oct. 10, 1980, Ser. No. 196,028

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942298

Int. Cl.^{3} H01G *4/18*

U.S. Cl. 361—313 **19 Claims**

1. A film for use in the field of electrical insulation comprising a biaxially stretched rough polypropylene film comprising a plurality of first zones of high roughness, said first zones having a relatively high number of α-crystallites; and a plurality of second zones of substantially lesser roughness, said second zones having a substantially lesser number of α-crystallites than said first zones, said first zones being adjacent to said second zones and said adjacent first and second zones forming fine channels between each other.



4,367,512
TRANSPORTABLE POWER SUPPLY SUBSTATION

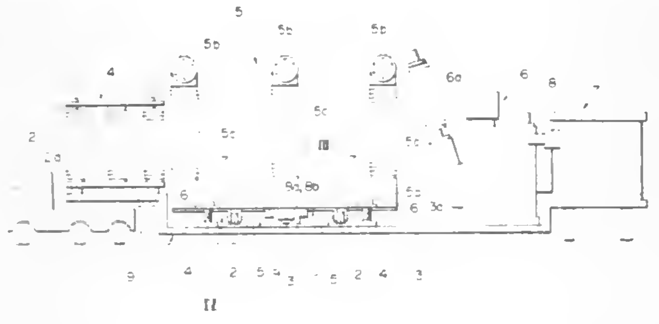
Hideo Fujita, Atami, Japan, assignor to Kabushiki Kaisha Meidensha, Japan

Continuation of Ser. No. 95,993, Nov. 26, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 323,996

Claims priority, application Japan, Nov. 24, 1978, 53-162561

Int. Cl.^{3} H02B *1/04, 5/00*

U.S. Cl. 361—334 **8 Claims**



1. A transportable power supply substation comprising transporting means for transporting a distributing equipment for use in power supplying, said transporting means comprising a truck and a trailer truck interconnected to said truck, distributing means for distributing electric power to a load, said distributing means including a disconnecting switch unit mounted and secured on said trailer truck for disconnecting said electrical load from a power supply line, a current interrupting unit for interrupting the current to be supplied to said electrical load from the power supply line, a transformer mounted and secured on said trailer truck for transforming the voltage to be applied to the load, a power board mounted and secured on said trailer truck for distributing the electric power to the load, supporting means rotatably supporting said current interrupting unit for movement in a horizontal direction on said trailer truck, and securing means securing said current interrupting unit on said trailer truck,

said supporting means includes at least one pair of rollers provided on the lower surface of said current interrupting unit symmetrically with respect to a center portion of said lower surface, and a pair of side bearer elements including a pair of arm plates fastened to the lower side walls of said current interrupting unit and a second pair of rollers, each roller of said second pair of rollers being provided in lower surface of one of said arm plates.

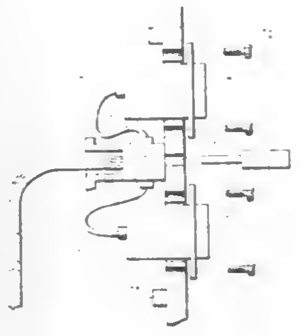
4,367,513
QUICK ATTACH/DETACH INSTRUMENT PANEL AND METHOD

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Dec. 26, 1979, Ser. No. 107,414

Int. Cl.^{3} H02B *1/04*

U.S. Cl. 361—428 **7 Claims**



1. A quick attach/detach instrument panel assembly comprising:

a plurality of electrical instruments;

an instrument panel having front and back surfaces and a plurality of individual apertures receiving said instruments such that said instruments are readable on said panel front surface;

a ZIF connector loaded at said back surface including first and second portions, said first portion including a plurality of cables emanating therefrom, each of said plurality of cables being electrically secured to a back portion of each of said instruments, and said second portion terminating the conductors of a wire harness such that said individual harness conductors are electrically connected to appropriate ones of said instruments; and

mechanical means removably securing each of said plurality of instruments to said instrument panel front.

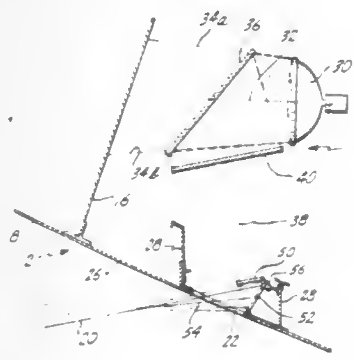
4,367,514
RECESSED LIGHTING SYSTEM

David T. Large, Everett, and Gary E. King, Snohomish, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1980, Ser. No. 192,338

Int. Cl.^{3} B64D *47/04;* F21V *13/08, 29/00, 7/02*

U.S. Cl. 362—62 **14 Claims**



1. In an airplane including an exterior skin, an improved recessed lighting system comprising:

lamp means for producing a light beam, said lamp means being located internally of and spaced from said skin,

means operatively associated with said lamp means for causing said light beam to converge at a location adjacent said skin, said means being located internally of said skin,

lens means transparent to said light beam being mounted in said skin, said lens means being positioned so as to intersect the path of said light beam and allow said beam to travel externally of said skin as an exit beam.

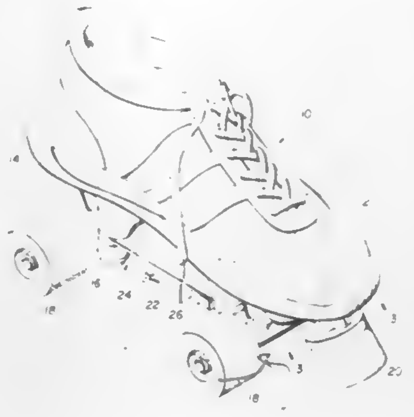
4,367,515
ROLLER SKATE LIGHT ATTACHMENT

Steven F. Beard, 885 Linn-Hipsher Rd., Marion, Ohio 43302

Filed Oct. 29, 1980, Ser. No. 201,776

Int. Cl.^{3} F21L *5/00, 11/00, 15/08*

U.S. Cl. 362—103 **6 Claims**



1. A roller skate attachment operable to be fitted onto a roller skate having a shoe upper, a shoe sole, a running gear connected to the shoe sole and a toe stop releasably connected to a generally forward portion of the running gear, said roller skate attachment comprising:

toroidal shaped disc means releasably connected to a toe stop of the roller skate;

a plurality of light emitting diodes embedded within said toroidal shaped disc and being radially directed outwardly from the center of said disc said toroidal disc means being fabricated from a material which will permit said plurality of light emitting diodes to be visually detected through the disc material;

battery means operable to be connected to said roller skate; and

circuit means interconnecting said battery means and said plurality of light emitting diodes for selectively transmitting current to actuate said light emitting diodes.

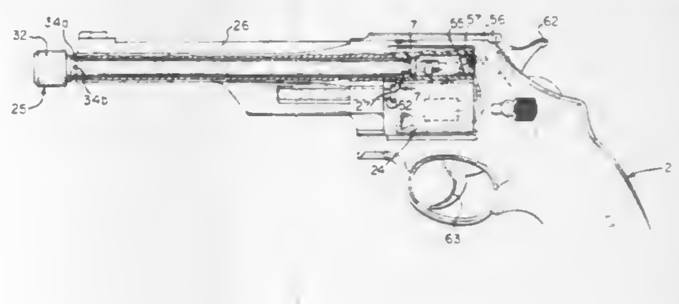
4,367,516
MARKSMANSHIP TRAINING DEVICE AND METHOD

Lionel C. Jacob, 3805 Warren Ct., Mobile, Ala. 36608

Filed Nov. 3, 1980, Ser. No. 203,326

Int. Cl.^{3} F41G *1/34*

U.S. Cl. 362—111 **19 Claims**



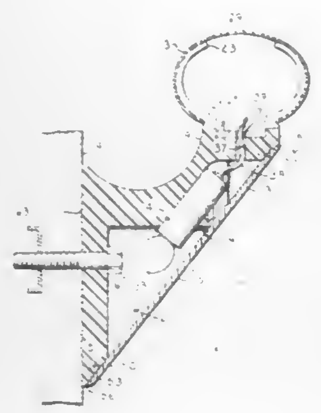
1. An apparatus for converting a firearm having a barrel and a removable cartridge chamber to a marksmanship training device, comprising: a lens tube structured and sized for secure insertion into a barrel of a firearm; a cylinder structured and sized for a general replacement fit for a cartridge chamber of the firearm; said lens tube having a lens, a registry means at its breach end, and a biased chamfered member at its muzzle end, said chamfered member including beam travel adjustment means for independently adjusting the vertical and horizontal positioning of said chamfered member with respect to the muzzle end of said barrel; an indexing and locking means on said cylinder complementary with the registry means of the lens tube; a radiant energy source for projecting radiant energy

into and through the lens tube; and, a switch means for activating the energy source in response to the firing mechanism of the firearm.

4,367,517
ILLUMINATED HANDRAIL ARRANGEMENT

Claude P. Balzer, Wichita, Kans., assignor to Balco, Inc., Wichita, Kans.

Filed Aug. 25, 1980, Ser. No. 181,231
Int. Cl.^{3} F21S *1/14*
U.S. Cl. 362—146 **14 Claims**



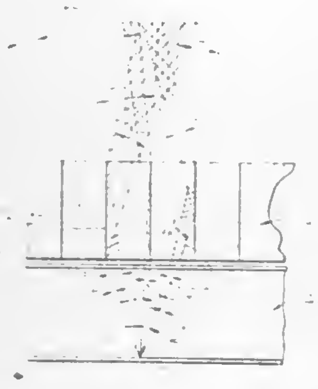
1. In a light emitting handrail system including a substantially elongate handrail supported on an associated wall by mounting brackets, the improvement comprising:

(a) at least one of said brackets having a body portion with an internal light source and a slot communicating between said light source and the external environment of said handrail; said body portion having an external surface, said slot exhibiting a size and shape to accomodate a lens;
(b) a resilient light transmitting lens having a shape commensurate with said slot shape and having a size slightly larger than said slot size, aid lens being wedgedly and resiliently received in said slot; said lens having an external surface cooperating with said body portion external surface so as to be flush therewith, thereby producing a substantially clean outer profile on the mounting bracket.

4,367,518
LENS SYSTEM FOR MICROFICHE DUPLICATORS

William E. Roberts, Palos Verdes Penn., Calif., assignor to AM International, Inc., Los Angeles, Calif.

Division of Ser. No. 652,635, Jan. 26, 1976, abandoned. This application Apr. 6, 1978, Ser. No. 894,208
Int. Cl.^{3} F21S *3/00;* F21V *5/04;* G02B *27/30*
U.S. Cl. 362—224 **3 Claims**



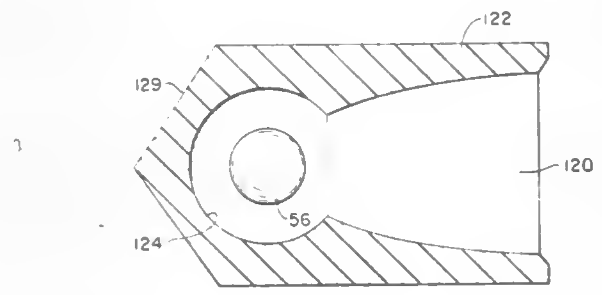
1. In combination with an elongated aperture lamp, a lens comprising:

an elongated member of predetermined length formed of substantially transparent material, the member being segmented along its length; and
a plurality of substantially opaque barriers disposed between and in intimate contact with the segments;
each barrier having an index of refraction which is greater than that of air but lower than the index of refraction of the lens segments, whereby to substantially reflect largely collimated light rays.

4,367,519
VESSEL NAVIGATION LIGHTS

Alexander J. Houghton, Annandale, and Thomas M. Knasel, McLean, both of Va., assignors to Science Applications, Inc., La Jolla, Calif.

Filed May 15, 1980, Ser. No. 149,962
Int. Cl.^{3} F21V *5/04*
U.S. Cl. 362—268 **5 Claims**

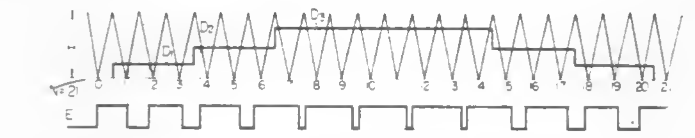


1. A navigational light comprising a housing, a lamp receiving space within said housing, a lamp in said space, and a light diverging device in said housing having a light entry plane facing into said lamp receiving space, said light entry plane and the surfaces of the housing defining the interior surfaces of said space including means for diffusing the light from said lamp and transmitting diffuse light into said diverging device, said diverging device including a light exit plane and curved light deflecting wall means joining said entry and exit planes for diverging the diffuse light from said entry plane into a virtual line of luminous energy and for transmitting the diverged light through said exit plane over a precise arc of visibility, said housing having an aperture therein complementary to and aligned with said exit plane whereby said light provides substantially uniform navigational illumination throughout said precise arc.

4,367,520
METHOD AND APPARATUS FOR CONTROLLING PULSE WIDTH MODULATION INVERTER CIRCUIT

Nobuyoshi Muto; Yasuo Matsuda; Shigeki Morinaga, all of Hitachi, and Yasuyuki Sugiura, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,320
Claims priority, application Japan, Jan. 11, 1980, 55/1308
Int. Cl.^{3} H02M *1/12*
U.S. Cl. 363—41 **2 Claims**

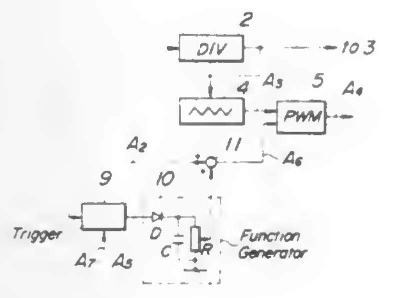


1. A method of controlling a pulse width modulation inverter circuit in which firing of individual switching elements constituting said inverter circuit is controlled on the basis of a control signal derived through comparisons of a carrier wave signal with a plurality of different signal levels to produce a modulating wave signal having a staircase waveform, wherein a number M of the stair steps of said staircase waveform is selected at a given integer in a range defined by $2 \leq M \leq (N-3)/2$ where N represents the number of said carrier waves appearing during a half period of said staircase waveform and is an odd integer not smaller than 7.

4,367,521
PWM INVERTER DEVICE

Masakazu Kohata, Kamakura; Takashi Sano, Yokohama, and Ichiro Miyashita, Yamato, all of Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 167,234
Claims priority, application Japan, Jul. 13, 1979, 54-88163
Int. Cl.^{3} H02P *7/36*
U.S. Cl. 363—136 **5 Claims**



1. A PWM inverter device for energizing ac motor with variable voltage and variable frequency output obtained from a dc current source by pulse width adjustment, characterized in that the device comprises an oscllator for generating a series of output pulses synchronized with output frequency of the inverter and having frequency integral multiple of the output frequency, a function waveform generator for generating level signal having frequency of 2 m times (m being an integer representing the number of phases of the inverter device) of the inverter output frequency in response to the output of said oscillator, a triangle waveform oscillator for generating triangle wave shaped carrier signal having frequency of integral multiple of the level signal, a modulator for comparing and mixing said level signal with said carrier signal, wherein said level signal is generated in a functional form in order that the pulse width of the inverter output voltage decreases monotonically and to form repeated waveforms by a chopping instruction of the modulator output.

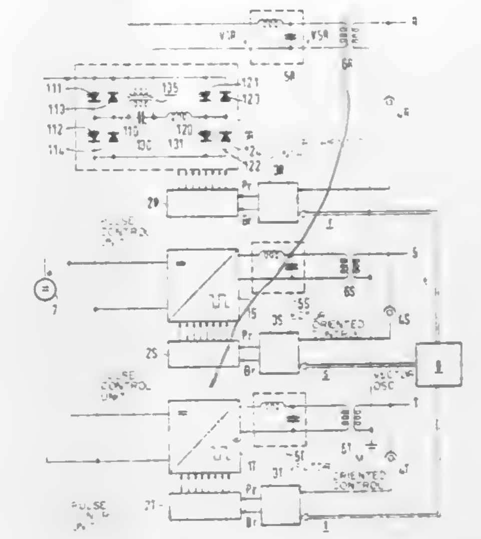
4,367,522
THREE-PHASE INVERTER ARRANGEMENT

Wilhelm Forstbauer, Erlangen; Hans-Peter Kroworsch, Heroldsbach; Herbert Küller, Baiersdorf, and Jürgen Strop, Langensendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,592
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012232; Aug. 1, 1980, 3029278
Int. Cl.^{3} H02M *7/515*
U.S. Cl. 363—137 **4 Claims**

1. An inverter arrangement for generating a three-phase AC output voltage of the type having three single-phase inverters, each single-phase inverter being connected at an input to a DC voltage source, and at an output to a transformer arrangement by at least one low-pass filter, the arrangement further comprising:

first, second, and third single-phase transformers in the transformer arrangement, each of said single-phase transformers having a converter-side winding connected to the low-pass filter, and a network-side winding, said network-side windings of said first, second, and third single-phase transformers being connected to one another in a Y-circuit configuration having a neutral terminal, said neutral terminal being connected to a reference potential;
first, second, and third phase control means for controlling respective ones of the single-phase inverters, each of said first, second, and third phase control means having a vector-oriented control device coupled to an associated pulse control unit, said pulse control unit having at least one output for providing control pulses;
vector oscillator means for generating a plurality of reference signals corresponding to a symmetrical three-phase system of reference vectors; and

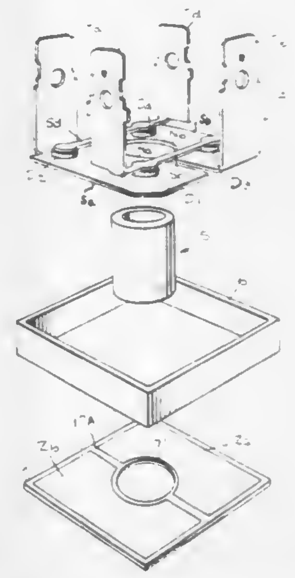


first and second input means in each of said vector-oriented control devices, said first input means being adapted to receive a corresponding one of said reference signals of said vector oscillator means, and said second input means being adapted for receiving a measurement signal corresponding in phase to a predetermined one of the three-phase AC output voltages.

4,367,523
RECTIFIER BRIDGE UNIT

Richard J. Urba, Wayne, N.J., assignor to Electronic Devices, Inc., Yonkers, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,744
Int. Cl.^{3} H05K *7/20*
U.S. Cl. 363—141 **14 Claims**



1. A highly compact rectifier unit comprising:

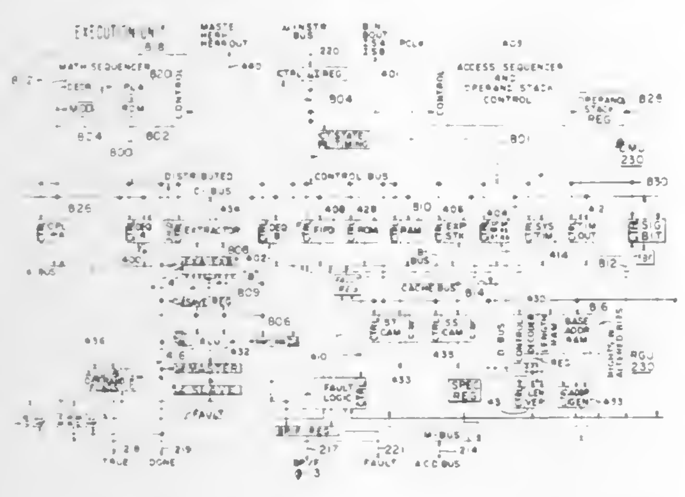
(A) a sub-assembly constituted by rectifying elements interconnected in a rectifying circuit arrangement by means including planar base straps and upwardly projecting terminals; and
(B) an insulating frame formed of a material capable of withstanding the operating temperatures of the unit to accommodate the sub-assembly which is encapsulated therein by a potting compound with the terminals being adjacent the wall of the frame, said frame being provided with a metal base plate of high thermal conductivity which functions as a heat sink and in combination with the frame forms an open-top case, the inner face of the plate having a porcelain film fused thereon whose thickness is

no greater than about 8 mils to define a thin dielectric electrically isolating the plate from the sub-assembly whose planar base straps rest on the film to create a thermal bridge between the sub-assembly and the base plate. said film in the zones in which said base straps rest thereon being metallized to form metallic zones electrically isolated from each other to which said base straps are soldered to hold said base straps in intimate physical and thermal contact with the film.

4,367,524
MICROINSTRUCTION EXECUTION UNIT FOR USE IN A MICROPROCESSOR

David L. Budde, Portland; Stephen R. Colley, Aloha; Stephen L. Domenik, Portland; Allan L. Goodman, Hillsboro, and James D. Howard, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 7, 1980, Ser. No. 119,432
Int. Cl.^{3} G06F *9/00, 9/22, 7/00*
U.S. Cl. 364—200 **10 Claims**



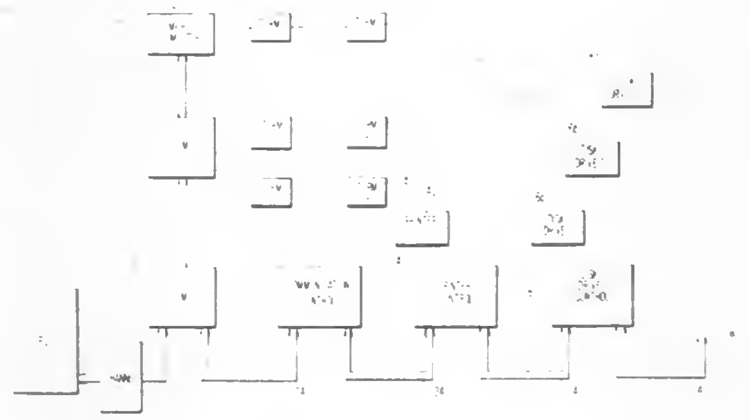
1. For use with an Instruction Unit of the type which receives macroinstructions over a memory bus from a main memory, interprets said macroinstructions, and issues memory-access types of microinstructions and arithmetic types of microinstructions; and for use with said main memory by transmitting and receiving data and addresses over said memory bus, an Execution Unit comprising:

A. an access sequencer for sequencing a state machine through operations necessary to execute said memory-access types of microinstructions;
   a reference-generation unit connected to and controlled by said access sequencer, said reference-generation unit containing an arithmetic unit capable of generating and checking addresses in a main-memory address space for developing physical-memory addresses from logical-memory addresses contained in a memory-access microinstruction, for use in accessing said main memory over said memory bus, and for transfer to said instruction unit;
   a first state machine;
   means in said access sequencer for decoding a memory access microinstruction issued by said instruction unit;
   means in said access sequencer connected to said first state machine and to said means for decoding a memory access microinstruction for sequencing said first state machine through the cycles necessary for said reference generation unit to execute a function specified by said memory access microinstruction;
B. a math sequencer for decoding an arithmetic type of microinstruction including means for sequencing a state machine through operations necessary to execute said microinstruction;
   a data-manipulation unit connected to and controlled by said math sequencer for performing arithmetic operations called for by said arithmetic-type of microinstruction issued by said instruction unit;
   said data manipulation unit containing registers and an arithmetic unit capable of performing arithmetic operations;
   a second state machine;
   means in said math sequencer for decoding an arithmetic microinstruction issued by said instruction unit;
   means connected to said second state machine and to said means for decoding an arithmetic microinstruction for sequencing said second state machine through the cycles necessary for said data-manipulation unit to execute a function specified by said arithmetic microinstruction;
   means in said math sequencer for signaling the instruction unit when the execution is complete; and,
C. means connected to said access sequencer and to said math sequencer for distributing said microinstructions issued by said instruction unit to said means in said access sequencer for decoding a memory access microinstruction and to said means in said math sequencer for decoding an arithmetic microinstruction, to thereby enable an arithmetic microinstruction executable by said math sequencer to be separately decoded by said decoding means in said math sequencer to thereby provide for the commencing of immediate execution by said data manipulation unit, and to enable a memory-access microinstruction executable by said access sequencer to be separately decoded by said decoding means in said access sequencer to thereby provide for the commencing of immediate execution by said reference-generation unit.

4,367,525
CPU CHANNEL MONITORING SYSTEM

Glen A. Brown, Sunnyvale, and Steven D. Berliner, San Jose, both of Calif., assignors to Tesdata Systems Corporation, McLean, Va.

Filed Jun. 6, 1980, Ser. No. 156,950
Int. Cl.^{3} G06F *11/34*
U.S. Cl. 364—200 **22 Claims**



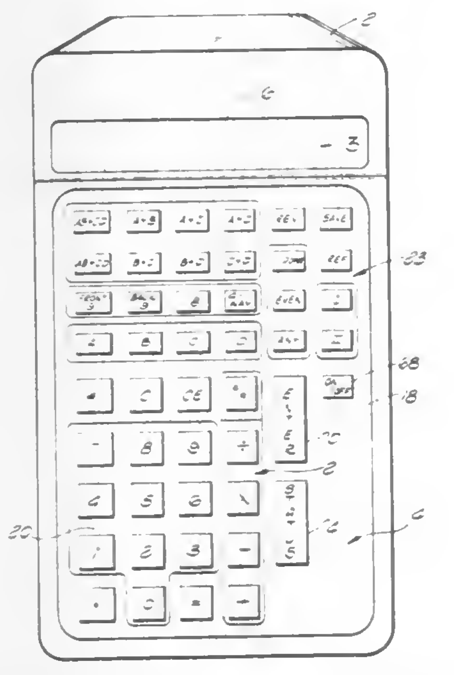
1. A system for monitoring the performance of peripheral devices connected to and accessed by a central processing unit via a CPU channel of the type which carries data, addresses, commands, status information and a plurality of condition flags, comprising:

- a channel interface module connected as a peripheral device to said channel, said channel interface module comprising data selector means for receiving all said data, address, command and status information on said channel and providing same on a bus line output thereof, a signal level circuit connected to receive at an input thereof certain ones of said condition flags from said channel and for providing condition strobes at an output thereof in response to said certain ones of said condition flags, and event means connected to receive certain ones of said condition flags from said channel and for providing input event codes representing selected sequences and combinations of said condition flags and an event code strobe in response to said condition flags received thereby;
- a data collection module connected to said channel interface module and comprising a packet memory, said data collection module being responsive to the information on said bus line output, said condition strobes and said input event codes for selectively collecting and generating and storing in said packet memory information about peripheral devices when said peripheral devices are accessed on said channel, and
- said data collection module comprising device utilization means responsive to address and status information from said channel interface module for generating, for each of selected peripheral devices connected to the channel, information representing the time period said peripheral device is operating, said device utilization means comprising,
- a first device utilization storage means having a plurality of storage locations therein, assigned to and corresponding to a plurality of peripheral devices, respectively.
- means for storing enable indicators in those of said storage locations of said first device utilization storage means corresponding to those of said peripheral devices, selected for utilization monitoring,
- status and address responsive means responsive to status information and address information for storing busy indicators in the said storage locations of said first device utilization storage means corresponding to said peripheral devices only during the period said devices, respectively, are operating.
- scanning means for periodically scanning all said storage locations of said first device utilization storage means corresponding to said peripheral devices;
- and second device utilization storage means, having plural accumulating locations assigned to and corresponding to said plurality of peripheral devices, for incrementing once per scanning period each said accumulating location for which said corresponding location in said first device utilization storage means contains an enable indication and a busy indication.

4,367,526
GOLF CALCULATOR

Thomas C. McGeary, 2412 Palos Verdes Dr. W., Palos Verdes Estates, Calif. 90274, and David J. McCarty, 4608 Cavendish Rd., Indianapolis, Ind. 46220

Filed Sep. 8, 1980, Ser. No. 184,821
Int. Cl.^{3} G06F *15/44;* **G08B** *5/36*
U.S. Cl. 364—411 **5 Claims**



1. An electronic calculator for use by a plurality of individual players in the game of golf, comprising a relatively small housing, sized to be hand held:

- keyboard input means in said housing, including switches representative of digits and instructions for selectively inputting numerical golf course data and player scoring data for the plurality of individual players, and further including a plurality of switches for designating various competitive relationships to be scored between specific ones of said plurality of individual players;
- processing and memory means responsive to the keyboard input means for receiving said data, and for performing predetermined automatic operations on said data as specified by said commands to provide computed data representative of specific combinations and variations of said data and including scores computed for said various competitive relationships as selected on said keyboard input means; and
- output means responsive to the processing and memory means for visually representing selective computed data under control of said keyboard.

4,367,527
POCKET CALCULATOR FOR THE FORECASTING OF TEMPORAL CYCLES

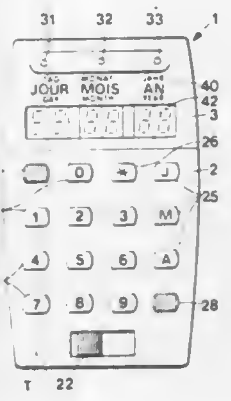
Edmond Desjacques, Thonex, Switzerland, assignor to Bioself International Inc., Nassau, The Bahamas

PCT No. PCT/CH79/00108, § 371 Date Apr. 9, 1980, § 102(e) Date Mar. 17, 1980, PCT Pub. No. WO80/00384, PCT Pub. Date Mar. 6, 1980

PCT Filed Aug. 9, 1979, Ser. No. 196,048

Claims priority, application Switzerland, Aug. 7, 1979, 8455/78

Int. Cl.^{3} A61B *5/00;* **G06F** *15/02*
U.S. Cl. 364—413 **13 Claims**

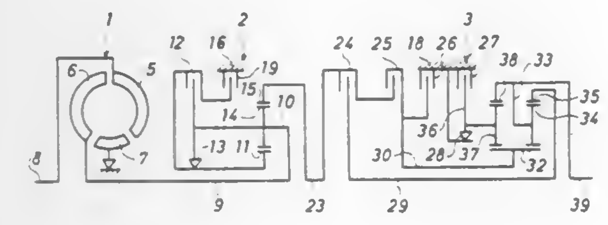


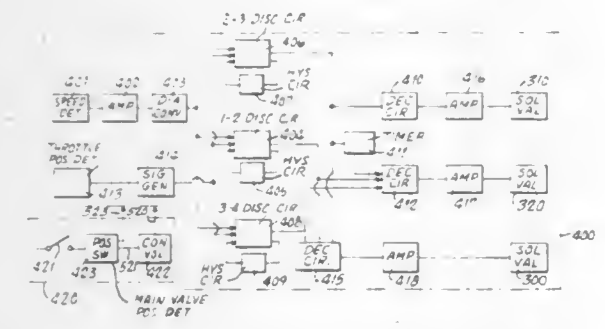
1. A pocket calculator for the forecasting of temporal cycles, comprising: an electrical power supply, input means for inputting data corresponding to dates and calculation instructions to said calculator, electronic calculation means including means for receiving said data from said input means and means for carrying out temporal cycle forecasting calculations in response to the instruction data and for producing output signals corresponding to the results of said calculations, display means controlled by said output signals, an electromechanical memory for retaining variable data and including a plurality of electromechanical memory units, each electromechanical memory unit comprising a bistable electromechanical miniature relay having at least one control solenoid and means for maintaining the mechanical position of said relay even in the absence of power from said electrical power supply, so as to retain the variable data even if the electrical power supply is cut off, each said relay including a plurality of relay contacts for reading the position of the relay and hence the variable data stored therein, said electromechanical memory further comprising writing means selectively actuatable for transmitting a writing pulse to each said relay and reading circuit means selectively actuatable for reading the position of each relay at the respective relay contacts thereof, the actuation of said reading means and said writing means being controlled by said

electronic calculation means, and wherein said electromechanical memory is coupled in circuit to be read only by the electronic calculation means and for having date information written thereinto by successive introduction of data by manual actuating of the input means and wherein said calculator further includes a write control key and a safety key, said electronic calculation means being responsive to said write control key and said safety key for actuating said writing means only when said write control key and said safety key are simultaneously actuated.

4,367,528
SHIFT CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION

Mutsumi Kawamoto, and Nobuaki Miki, both of Nagoya, Japan, assignors to Aisin-Warner, Anjo, Japan
Filed Sep. 6, 1979, Ser. No. 72,935
Claims priority, application Japan, Sep. 30, 1978, 53/121102
Int. Cl.^{3} B60K *41/08, 41/22;* **G06F** *15/20*
U.S. Cl. 364—424.1 **7 Claims**

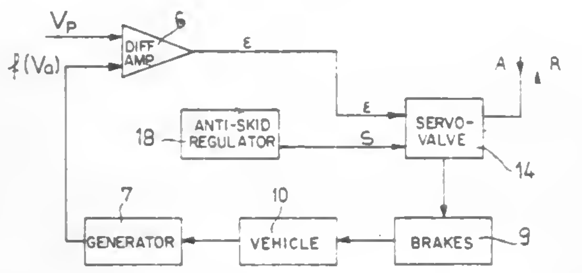




1. A shift control device for a vehicle with an automatic transmission having a gear system provided with a plurality of friction engaging means for selecting a plurality of forward drive gear ratios and a reverse drive gear ratio in accordance with vehicle running conditions, comprising:
- an electric control circuit comprising signal generating means for generating an electric signal in accordance with the vehicle running condition and a logic circuit for receiving said electric signal and generating an electric output signal corresponding to one of the gear ratios; and
- a hydraulic pressure control system comprising:
  - a source of line pressure;
  - hydraulic servo means to operate said plurality of friction engaging means;
  - a shift transition control valve operable between first and second end positions and all positions therebetween, said shift transition control valve having an oil chamber to receive line pressure and to transmit an adjusted hydraulic pressure through a fluid passage to operate said hydraulic servo means, said adjusted hydraulic pressure depending on the position of said shift transition control valve; and
  - a solenoid valve to control the position of said shift transition control valve by supplying and exhausting hydraulic pressure in a second fluid passage connected to said shift transition control valve in response to the electric output signal of said electric control circuit.

4,367,529
AUTOMATIC BRAKING METHOD AND APPARATUS

Jean Masclet, Paris, and Claude Marcheron, Montrouge, both of France, assignors to Messier-Hispano-Bugatti, Montrouge, France
Continuation of Ser. No. 850,824, Nov. 11, 1977, abandoned. This application Dec. 7, 1979, Ser. No. 101,139
Claims priority, application France, Nov. 29, 1976, 76 35970
Int. Cl.^{3} G06F *15/50;* **B60T** *8/02*
U.S. Cl. 364—426 **8 Claims**

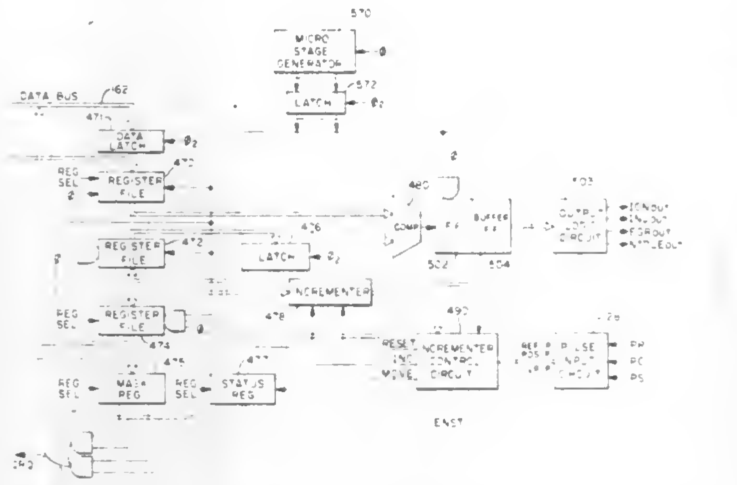


1. A system for automatically controlling the braking of a vehicle having a braking means, comprising:
- (a) means for generating a program speed signal Vp which varies according to a given plan of deceleration γ, comprising an integrator receiving a voltage representing the plan of deceleration γ and a voltage representing initial speed Vo;
- (b) sensing means for generating a signal Va which is a function of the true speed of the vehicle;
- (c) brake regulator means for comparing said signal Va which is a function of the true speed of the vehicle with said signal Vp of said program speed and for producing a difference signal ϵ representative of the comparison;
- (d) means, responsive to said difference signal ϵ, for controlling the braking means of the vehicle to cause braking according to said plan of deceleration;
- (e) means, operative when braking is not effective to cause the true speed Va to be controlled in accordance with the program speed Vp, for controlling the braking means with an antiskidding function other than the difference signal ϵ, including an antiskidding regulator means for generating an antiskidding braking command signal S to control the braking means of the vehicle.

4,367,530
CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

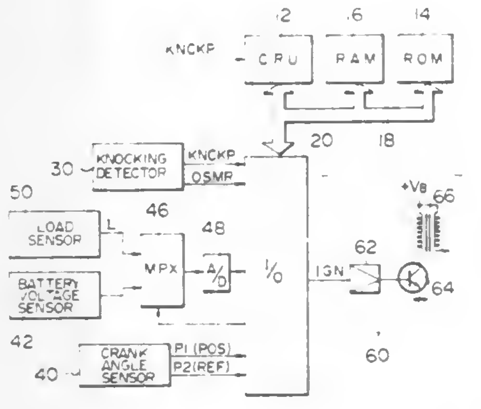
Shigeki Morinaga; Sanshiro Obara, both of Hitachi; Hiroastu Tokuda, Katsuta, and Hideo Nakamura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 951,509, Oct. 16, 1978, abandoned. This application Jan. 19, 1981, Ser. No. 226,042
Claims priority, application Japan, Oct. 19, 1977, 52-125986
Int. Cl.^{3} F02D *5/00;* **F02P** *5/04;* **G05B** *15/02*
U.S. Cl. 364—431.06 **72 Claims**

1. In a processor-controlled apparatus for controlling the operation of an internal combustion engine for which sensor means produce signals representative of operating conditions of the engine, and being coupled to actuator means for controlling respective energy conversion functions of said engine in response to control signals applied thereto, a control apparatus comprising, in combination:
- first means for generating an engine control timing signal pattern through which operational events of said engine are controlled;
- second means for storing predetermined engine control codes;
- third means, coupled to said first means, for generating respective engine timing codes the values of which are selectively modified by said engine control timing pattern;
- fourth means, coupled to said second and third means, for comparing respective ones of said engine control codes with respective ones of said engine timing codes and producing respective output signals when said respective engine control codes define a prescribed relationship with respect to said engine timing codes;
- fifth means, coupled to said fourth means, for producing control signals to be coupled to said actuator means in response to the output signals produced by said fourth means; and
- sixth means, coupled to said third and fourth means, for causing said fourth means to compare a respective engine timing code with a preselected engine control code in response to said fourth means producing an output signal associated with said respective engine timing code.



4,367,531
METHOD AND APPARATUS FOR CONTROLLING IGNITION TIMING OF INTERNAL COMBUSTION ENGINE

Toshio Furuhashi, Mito, and Noboru Sugiura, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 21, 1980, Ser. No. 151,987
Claims priority, application Japan, May 25, 1979, 54-63871; Aug. 20, 1979, 54-105038
Int. Cl.^{3} F02P *5/14*
U.S. Cl. 364—431.08 **25 Claims**

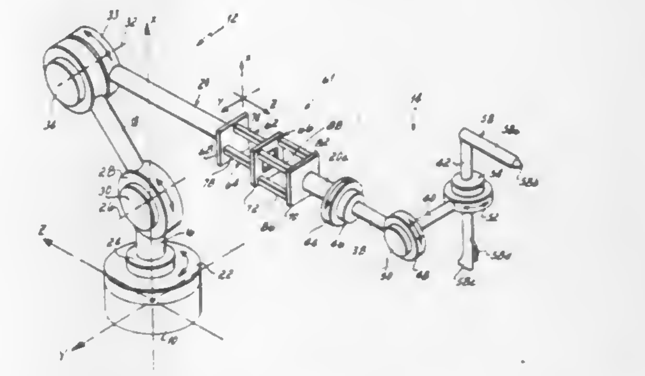


1. Method for controlling ignition timing for an internal combustion engine comprising the steps of:
- a first step for reading in rotation speed information and load information of the engine to calculate engine ignition timing data,
- a second step for detecting knocking of the engine by generating a knocking magnitude signal representative of the magnitude of knocking by counting pulses for a predetermined period of time from the start of a knocking condition,
- a third step for producing a retardation angle correction amount to be used to correct the ignition timing in the direction of retardation in response to said knocking magnitude signal,
- a fourth step for correcting said ignition timing data in the direction of retardation based on said correction amount,
- a fifth step for correcting said ignition timing data in the direction of advancement periodically by a desired advance angle correction amount at a time, and
- a sixth step for establishing the ignition timing based on said ignition timing data.

7. A method of controlling ignition timing for an internal combustion engine comprising the steps of:
- (a) generating base ignition timing data in accordance with prescribed operational conditions of the engine in response to which ignition timing of the engine is controlled;
- (b) in response to the occurrence of a knocking condition, causing said base ignition timing data to be retarded by an amount dependent upon the magnitude of the knocking condition, said magnitude of the knocking condition being established by counting pulses for a predetermined period of time from the start of said knocking condition, so as to obtain retarded ignition timing data in response to which the ignition timing of the engine is controlled, so as to terminate the knocking condition; and
- (c) successively advancing said retarded ignition timing data so as to establish the ignition timing at a timing immediately prior to the timing at which the knocking condition of the engine occurs.

4,367,532
MANUALLY PROGRAMMABLE ROBOT WITH POWER-ASSISTED MOTION DURING PROGRAMMING

Gerald W. Crum, Elyria, and Brian M. Rooney, Amherst, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Continuation of Ser. No. 84,359, Oct. 12, 1979, Pat. No. 4,283,764. This application Dec. 24, 1980, Ser. No. 219,703
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.^{3} G05B *19/42;* **G06F** *15/46*
U.S. Cl. 364—513 **9 Claims**



1. A robot which can be manually programmed to repetitively execute a series of programmed motions, comprising:
- a base engageable with a supporting structure for supporting the robot,
- a first relatively massive elongated link having first and second extremities,
- first means interconnecting said base and said first extremity of said first link for facilitating selective movement of said first link in a first direction relative to said base to provide a first degree of freedom for said robot,
- a second relatively lightweight elongated link having an outer end to which a device is connectable for programmed movement in a path having at least two degrees of freedom, said second link also having an inner end,
- second means interconnecting said inner end of said second link to said second extremity of said first link for facilitating selective movement of said second link in a second direction relative to said first link to provide said robot with a second degree of freedom,

a first actuator associated with said first link for moving, when actuated, said first link in said first direction relative to said base,

a second actuator associated with said second link for moving, when actuated, said second link in said second direction,

a first position transducer associated with said first link for providing a signal corrlated to the position of said first link,

a second position transducer associated with said second link for providing a signal corrleated to the position of said second link,

a force transducer mounted in series with said first and second links for sensing the force to which said first link is subjected in said first direction by the application of a manual programming force to said outer end of said second link during manual programming of said robot, said manual programming force being applied in an arbitrary direction and having force components simultaneously in both said first and second directions to induce movement of said first and second links simultaneously in both said first and second directions, respectively, said force transducer providing an output signal having a component correlated to the manual force component applied to said outer end of said lightweight link in said first direction,

said lightweight second link being movable relative to said massive link in said second direction without power assistance when a manual force is applied to said outer end of said lightweight link during manual programming of said robot, said massive link being relatively immovable in said first direction without power assistance in response to application of manual force to said outer end of said lightweight link during manual programming,

means to apply said force transducer output signal to said first actuator during manual programming to produce power-assisted movement of said first link in said first direction while said second link moves without power assistance in said second direction, said power-assisted motion of said first link and unpowered motion of said second link combining to move said outer end of said second link in said arbitrary direction in which said manual force is applied,

means to record the output of said position transducers during manual programming. and

means to reproduce said recorded position transducer outputs and apply them to their respectively associated actuators to execute said programmed motions without manual assistance.

4,367,533

IMAGE BIT STRUCTURING APPARATUS AND METHOD

Patricia P. Wiener, La Honda, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1980, Ser. No. 181,332

Int. Cl.^{3} G06F *3/14;* **G06K** *15/02*

U.S. Cl. 364—519 **4 Claims**

1. Apparatus for controllably structuring the image bit patterns representing alpha-numeric characters to permit the size of the characters to be varied selectively, the combination comprising:

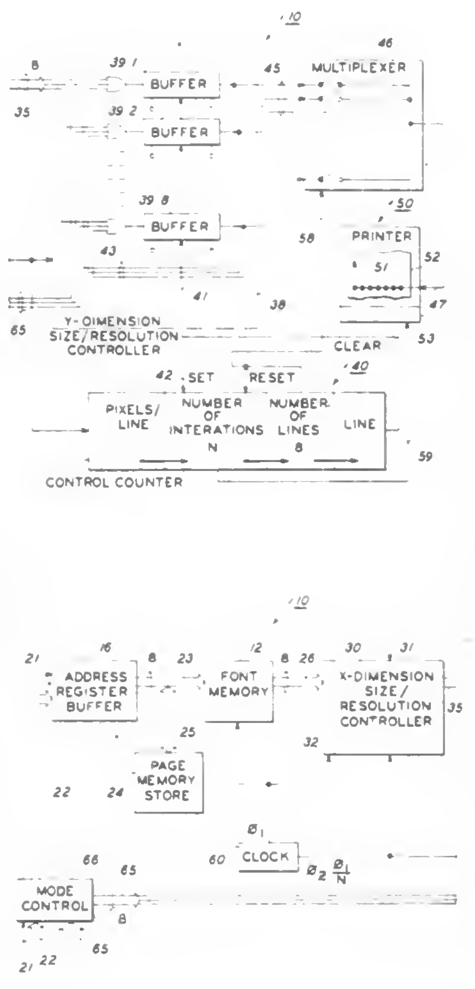
(a) a font memory for storing imaging bit patterns representative of discrete alpha-numeric characters;

(b) address means for addressing selected ones of said characters in said font memory whereby said font memory outputs a stream of character bits;

(c) bit expanding means for expanding said stream of character bits output by said font memory along a first axis to magnify the characters addressed in one dimension;

(d) line iterating means for iterating said stream of character bits output by said font memory along a second axis perpendicular to said first axis to magnify the characters addressed along a second dimension perpendicular to said first dimension, said line iterating means including plural line buffers for buffering said stream of character bits pending discharge to a remote output;

(e) bit recirculating means tapped into the output of said line buffers for recirculating bits output by said line buffers to the input of said buffers as said stream of bits are being output by said line buffers to said remote output; and



(f) programmable counter means for controlling the number of times said stream of character bits is repeatedly discharged by said line buffers to said remote output, said bit recirculating means recirculating said bits back to the input of said buffers each time said stream of bits is discharged by said line buffers whereby to expand said stream of character bits along said second axis.

4,367,534

CIRCUIT FOR SENSOR-CONTROLLED TELEMETRY

Heiner Herbst, Munich; Hans-Joerg Pfleiderer, Zorneding, and Hans-Peter Grassl, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 172,075

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936520

Int. Cl.^{3} G01C *3/32, 3/08;* **G06F** *15/336*

U.S. Cl. 364—561 **10 Claims**

1. A circuit for sensor-controlled telemetry for use with a post-connected output device for converting signals from said circuit into signals operational for range indication or range adjustment, said circuit comprising:

two linear image sensors each having a plurality of opto-electronic sensor elements for generating charge carriers and a corresponding potential in an amount proportional to radiation incident on said sensor elements,

corresponding lines of two separately obtained imagings of an object being respectively projected onto said image sensors;

a group of evaluators associated with each image sensor, each evaluator having a first input connected to a respective sensor element and a second input connected to a reference potential,

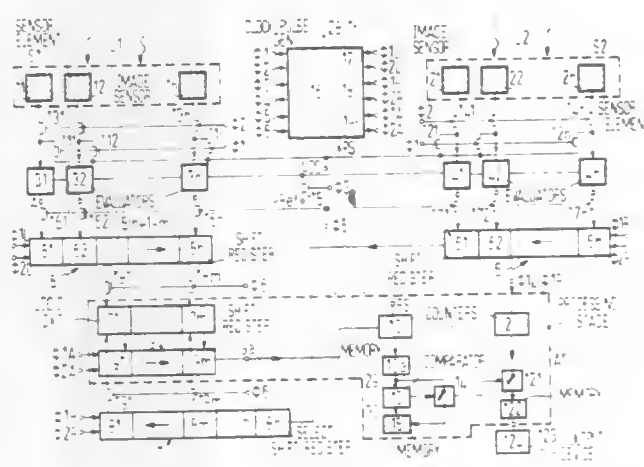
each said evaluator being a comparator switchable at an output between two digital logic states as a function of a comparison of the amount of charge carriers generated by the sensor element connected thereto with said reference potential;

a plurality of gate-controlled switching transistors interconnected between said sensors and said evaluators for controlling an integration time during which charge carriers are collected in said sensor elements;

a first shift register having a plurality of stages respectively connected to the outputs of the group of evaluators associated with one of said image sensors, said first shift register having a final group of stages which is less than the total number of stages each having an output;

a second shift register having a plurality of stages respectively connected through respective switching transistors to the outputs of the group of evaluators associated with the other of said two linear image sensors for serial output of the contents of said stages;

a select shift register having an input connected to the output of said second shift register for serially receiving the contents of said second shift register, said select shift register having a group of stages which is less than the total number of stages each having an output, said group of stages in said select shift register being equal to said group of stages in said first shift register,



said first shift register, said second shift register and said select shift register each shifting the information contained therein a pre-determined number of times during a readout cycle of said circuit;

a processing stage post-connected to said select shift register and said first shift register and having an output connected to said output device, said processing stage including:

a group of logic analyzers each having a pair of inputs respectively connected to one output from said first shift register and one output from said select shift register, each said logic analyzer generating at an output thereof a logic signal representing coincidence of the inputs supplied thereto,

a third shift register having a plurality of stages respectively connected to the outputs of said logic analyzers for serial output of said signals representing coincidence, and

a first counter for counting the number of coincident digital signals from said third shift register after each shift of information in said first shift register, said second shift and said select shift register and determining therefrom a maximum position correlation of said signals from said image sensors, said maximum position correlation appearing at the output of said processing stage for use by said output device and;

a clock pulse generator for supplying respective clock pulses to said gate controlled switching transistors for permitting transfer of charge carriers from said sensors to said evaluators at the end of said integration time, and to said first, second, third and select shift registers for shifting the contents of the stages thereof.

4,367,535

CALCULATOR FOR CROSS SUMMING A PLURALITY OF OPERANDS

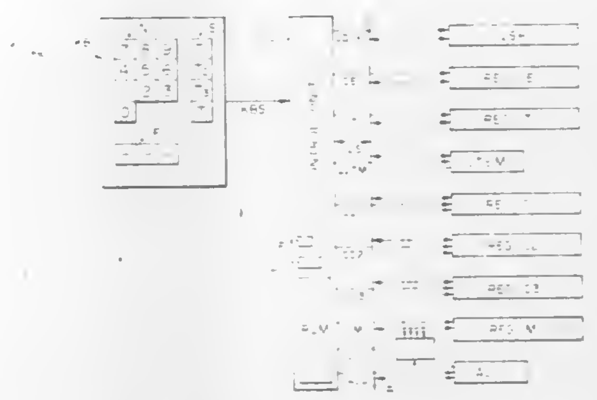
Shigeru Matsuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,867

Claims priority, application Japan, Jun. 11, 1979, 54-73642

Int. Cl.^{3} G06F *7/50, 15/20*

U.S. Cl. 364—736 **6 Claims**



1. A calculator comprising:

input means for entering expressions and operands of said expressions, the results of which are to be calculated;

counter means connected to said input means for counting and storing the number of entries, in each said expression, of operands from said input means;

address means connected to said counter means for generating a memory address signal in response to each count of said counter means;

a plurality of first memories connected to said address means, one of said plurality of first memories being selected by each memory address signal;

a second memory for storing the results calculated from said operands by said expressions entered by said input means; and

processing means connected to said input means, to said plurality of first memories, and to said second memory, for adding each one of said operands, entered by said input means, to the content of said one of said plurality of first memories then selected by the memory address signal generated by said address means in accordance with the count by said counter means and storing the added result in said one of said plurality of first memories; and for executing each said expression on said operands and storing the result of said execution in said second memory.

4,367,536

ARRANGEMENT FOR DETERMINING NUMBER OF EXACT SIGNIFICANT FIGURES IN CALCULATED RESULT

Jean P. Vignes, Rueil-Malmaison, and Vincent Ung, La Varenne, both of France, assignors to Agence Nationale de Valorisation de la Recherche (A.N.V.A.R.), France

Filed Jan. 23, 1980, Ser. No. 114,586

Claims priority, application France, Feb. 2, 1979, 79 02784

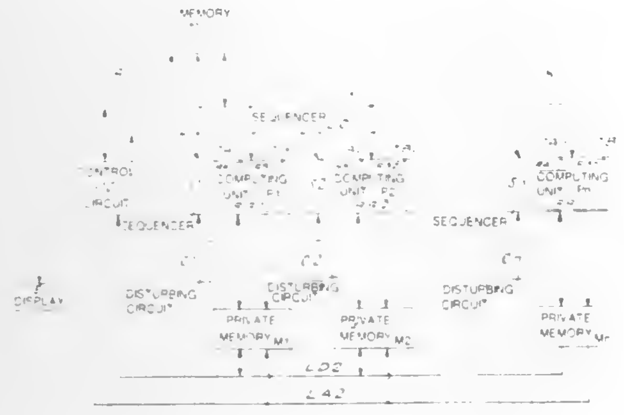
Int. Cl.^{3} G06F *7/38*

U.S. Cl. 364—745 **10 Claims**

1. A method of determining the number of exact significant figures in a result of a calculation including elementary arithmetical operations performed in a digital computer using a floating point representation to represent digital data, the floating point representation having for each piece of digital data a mantissa and an exponent, the method comprising the steps of:

associating with each piece of digital data an item of truncation information having a value of "true" or "false" depending upon whether the piece of digital data is truncated or is not truncated, respectively, in the representation employed in calculating;

carrying out a plurality of independent calculations of said result, while disturbing each of such calculations independently of the other ones, an item of truncation operation being associated with each result of elementary arithmetical operation, and said disturbing of a calculation consisting of adding a random bit of lowest significance to the mantissa of each piece of digital data to be arithmetically operated upon when the item of truncation information associated therewith has a value of "true";



calculating the mean value and standard deviation of the plurality of independent results of calculations arrived at in said step of carrying out a plurality of independent calculations; and

determining, from said mean value and said standard deviation, the number of exact significant figures in one of said results of calculations.

4,367,537

ADDRESS RETRIEVAL IN AN ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER

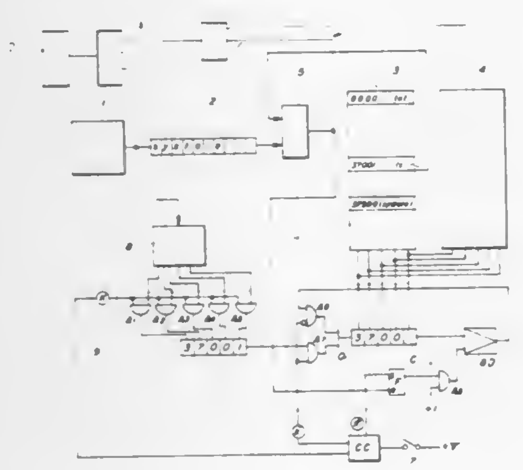
Kunio Yoshida, Tsuge, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,957

Claims priority, application Japan, Dec. 19, 1978, 53/165456

Int. Cl.^{3} G06F ***15/38***

U.S. Cl. 364—900 **9 Claims**



1. A word translation or dictionary device comprising:

input means actuated to enter character information representative of a desired word in a first language;

decoder means responsive to the input means for developing an initial address code corresponding to character information designating at least a leading character of the word entered by the input means;

first memory means containing a plurality of words in said language stored in a plurality of separate groups, the words in each of said groups having the leading same character and being stored in coded locations correlated to said address code of said leading character;

second memory means containing address code information representing the location of a translated word in a second language equivalent to the desired word stored in the first memory means;

address means provided for synchronously addressing the first memory means and the second memory means so that the desired word is retrieved from the first memory means together with the retrieval of the translated word generated from the second memory means;

comparison means responsive to the input means and words retrieved by said address means from the first memory means for determining equivalency between the word entered by the input means and the word retrieved from the first memory means;

said address means being responsive to the decoder means for directly accessing a selected one of said separate groups stored in the first memory means defined by the leading character address code thereof and responsive to comparison results determined by the comparison means for causing further access of code information related to the specific location of said desired word in said group until said equivalency is obtained; and

display means responsive to said equivalency determined by the comparision means for indicating the translated word designated by the code information generated from the second memory means.

4,367,538

SEMICONDUCTOR MEMORY DEVICE

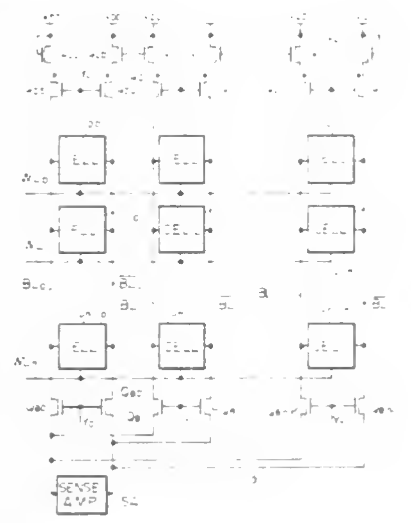
Hiroshi Shimada, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 20, 1981, Ser. No. 236,619

Claims priority, application Japan, Feb. 22, 1980, 55/21427

Int. Cl.^{3} G11C ***11/40***

U.S. Cl. 365—109 **5 Claims**



1. A semiconductor memory device comprising:

a first power supply;

a plurality of word lines;

a plurality of pairs of bit lines forming columns and being connected to said first power supply;

a plurality of pairs of load means, each load means pair being connected between said first power supply and corresponding pairs of bit lines;

a plurality of pairs of column selecting gates, for receiving column selection signals, each gate pair connected to a corresponding one of said pairs of bit lines and controlled by a column selection signal;

a plurality of memory cells of a static memory type, each memory cell connected to a corresponding one of said

word lines and to a corresponding one of said pairs of bit lines; and

current switching means, connected between said first power supply and each of said pairs of bit lines and controlled according to said column selection signals, for supplying a larger current to a selected one of said pairs of bit lines than other pairs of bit lines which are not selected.

4,367,539

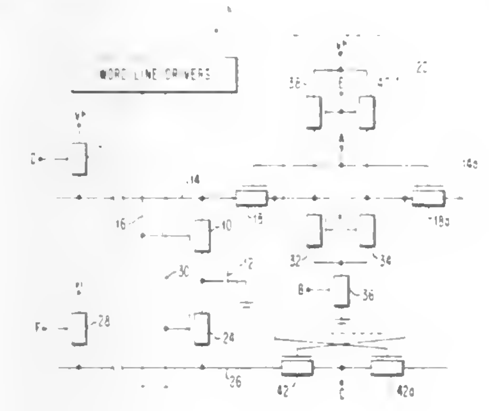
DYNAMIC MEMORY CELL

Endre P. Thoma, Colchester, Vt., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 24, 1980, Ser. No. 219,697

Int. Cl.^{3} G11C ***11/24, 11/40, 7/00***

U.S. Cl. 365—189 **8 Claims**



1. In a memory system comprising a plurality of dynamic memory cells, and wherein each cell comprises a switchable cell device and a capacitive node, and wherein said switchable cell device is connected to a bit line to read the charge stored at said node and to a first word line to selectively switch said cell device responsive to a first signal in said word line, and

wherein the system includes a sense amplifier to sense the read charge on said bit line, the improvement which comprises,

a cell write device, said cell write device being connected to a write line and to said storage node and also connected to a second word line to selectively switch said cell write device responsive to a second signal in said second word line,

and means to selectively connect said write line to a low voltage value responsive to a sensed low charge at said capacitive node,

whereby a sensed low charge in said cell is rewritten independently of said bit line and a high charge in said cell is rewritten by said bit line upon reading.

4,367,540

DYNAMIC MEMORY WITH AN INTERCHANGEABLE PAIR OF DATA LINES AND SENSE AMPLIFIERS

Katsuhiro Shimohigashi, Musashimurayama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,726

Claims priority, application Japan, Dec. 21, 1979, 54/165574

Int. Cl.^{3} G11C ***13/00***

U.S. Cl. 365—207 **14 Claims**

1. A memory comprising:

first and second data lines,

third and fourth data lines which are respectively arranged in proximity to and in parallel with said first and second data lines,

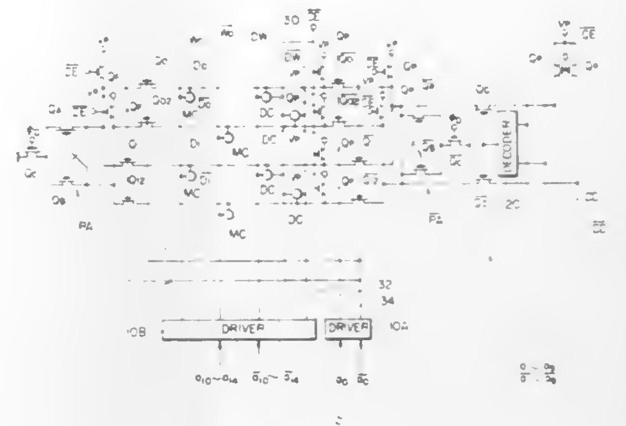
a plurality of word lines which are disposed in a manner to intersect said first to fourth data lines,

a plurality of memory cells which are respectively disposed at points of intersection between said first to fourth data lines and said plurality of word lines,

first and second differential amplifiers which are disposed in proximity to end parts of said first to fourth data lines,

first switching means for interchangeably connecting the pair of said first and second data lines to said first and second differential amplifiers in order to differentially amplify voltages of said first and second data lines,

second switching means for connecting the pair of said third and fourth lines to that one of said first and second differential amplifiers which is opposite to said differential amplifier having said pair of said first and second data lines connected thereto, in order to differentially amplify voltages of said third and fourth data lines, and



means for delivering an amplified output of said first differential amplifier as a memory cell read-out information.

4,367,541

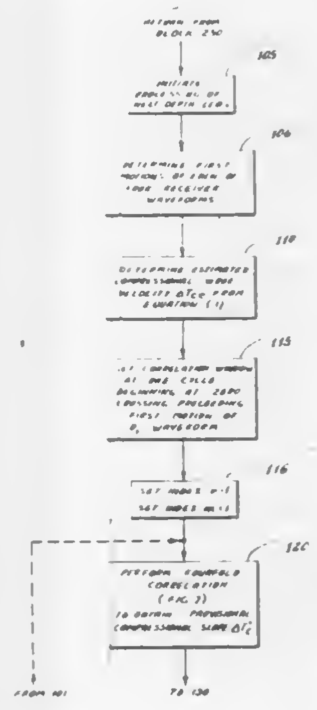
APPARATUS AND METHOD FOR DETERMINING VELOCITY OF ACOUSTIC WAVES IN EARTH FORMATIONS

Bronislaw Seeman, Meudon, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 869,193, Jan. 13, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,767

Int. Cl.^{3} G01V ***1/40, 1/28***

U.S. Cl. 367—34 **98 Claims**

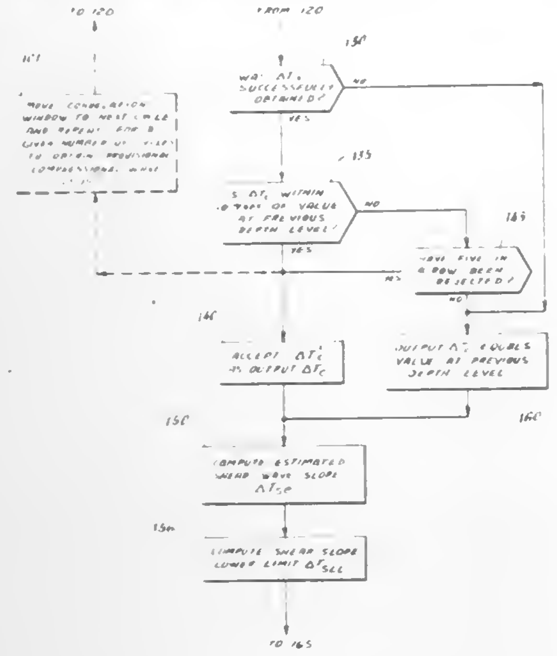


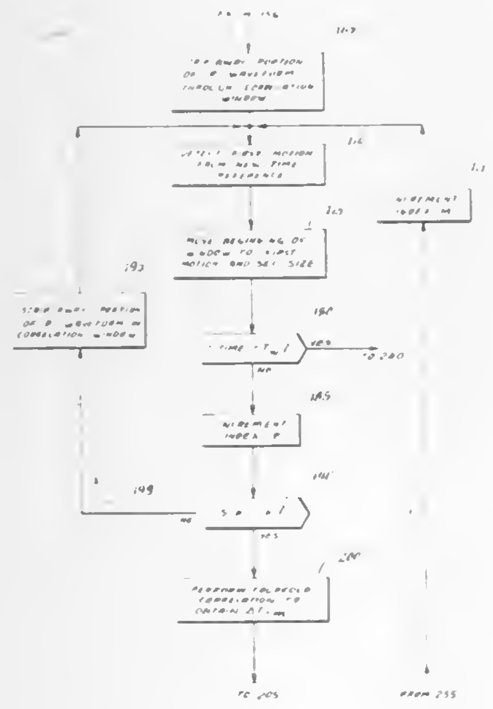
1. Apparatus for determining the velocity of acoustic wave energy propagating in formations surrounding a borehole, comprising:

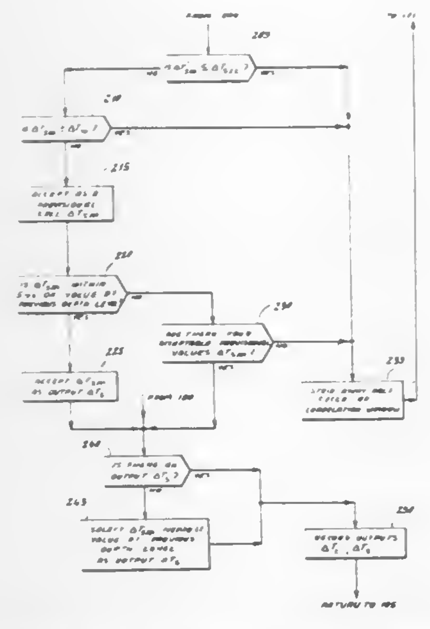
means positioned in said borehole for establishing acoustic wave energy in said formations;

means for receiving the acoustic wave energy at a plurality of spaced locations in the borehole;

means for deriving a plurality for signals respectively representative of the wave energy received at said plurality of spaced locations in the borehole;







means for correlating a first portion of the signal from one of said locations with first portions of signals from the other locations, the first portions of the signals from the other locations being determined from an assumed velocity, said correlating being performed for a number of different assumed velocities to obtain a resultant first provisional velocity;

means for correlating a second portion of the signal from said one of said locations with second portions of signals from the other locations, the second portions of the signals from the other locations being determined from an assumed velocity, said correlating of second portions being performed for a number of different assumed velocities to obtain a resultant second provisional velocity; and

means for generating an output velocity as a function of said first and second provisional velocities.

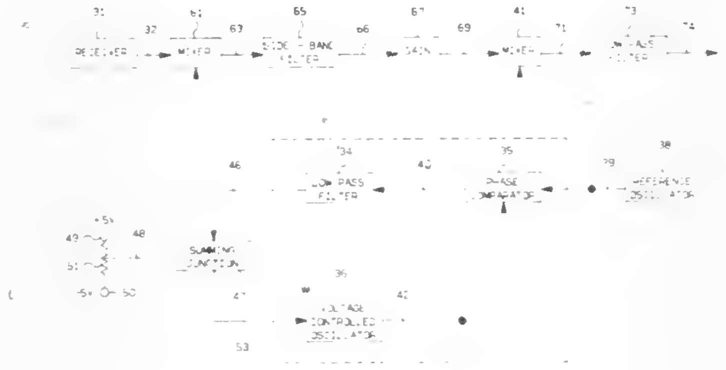
4,367,542
PHASE SHIFTING OF WAVEFORMS

Richard E. DuBroff, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1981, Ser. No. 246,542

Int. Cl.^{3} G01V *1/00*

U.S. Cl. 367—48 **4 Claims**



1. Apparatus comprising:
- a first phase comparator having first and second inputs and an output;
- means for providing a reference signal having the form cos ωt to the first input of said phase comparator, wherein ω is the frequency of said reference signal;
- a first voltage controlled oscillator having an input and an output;
- means for providing an output signal from the output of said first voltage controlled oscillator to the second input of said first phase comparator, wherein said first phase comparator establishes a first signal which is proportional to the phase difference between said reference signal and said output signal from said first voltage controlled oscillator;
- means for combining a DC voltage with said first signal to produce a first combined signal;
- means for providing said first combined signal to the input of said first voltage controlled oscillator, wherein the output signal from said first voltage controlled oscillator has the form cos $(\omega t+\phi_2)$ and ϕ_2 is a phase angle which is determined by said DC voltage;
- a first mixer having first and second inputs and an output;
- means for providing a second signal having the form cos $(\Omega t+\phi_1)$ wherein Ω is the frequency of said first signal, ϕ_1 is a phase angle and Ω is less than ω, to the first input of said first mixer;
- means for providing the output signal from said first voltage controlled oscillator to the second input of said first mixer, wherein said first mixer establishes a third signal which is representative of the result of mixing said second signal with said output signal from said first voltage controlled oscillator;
- a first side band filter;
- a second mixer having first and second inputs and an output;
- means for providing said third signal from the output of said first mixer through said first side band filter to the first input of said second mixer, wherein a side band of said third signal is removed by said first side band filter;

- means for providing said reference signal to the second input of said second mixer, wherein said second mixer establishes a fourth signal representative of the result of mixing the side band filtered third signal and said reference signal;
- a first low pass filter; and
- means for passing said fourth signal through said first low pass filter means to establish a fifth signal which has the form of a phase shifted said second signal.

4,367,543
OPTICAL DISC PLAYER SIGNAL READING DEVICE WITH IMPROVED DRIVE STRUCTURE FOR MOVING OPTICAL PICKUP IN ORTHOGONAL DIRECTIONS

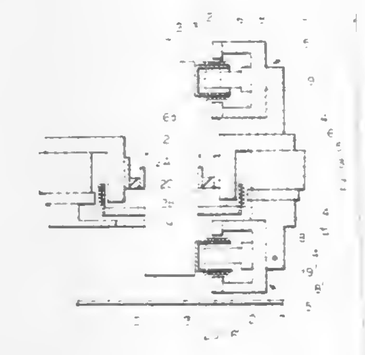
Yositsuga Araki, and Toshihikom Kurihara, both of Tokorozawa, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,071

Claims priority, application Japan, Jul. 24, 1979, 54-93161; Aug. 31, 1979, 54-110243; Aug. 17, 1979, 54-113095[U]; Dec. 21, 1979, 54-176205[U]; Dec. 21, 1979, 54-176206[U]

Int. Cl.^{3} G01J *1/20;* G11B *7/12*

U.S. Cl. 369—45 **13 Claims**



1. An optical disc player signal reading device comprising: an optical pickup; first drive means coupled to move said optical pickup in a first direction perpendicular to a plane of an optical disc being played; second drive means provided on said optical pickup to move said optical pickup in a second direction perpendicular to the first direction; and a supporting member of supporting said pickup, said supporting member comprising first and second cylindrical members at least partially concentric with one another, said supporting member being disposed in a guide hole of said first drive means, one of said first and second cylindrical members comprising elastic material, said optical pickup being pivotable by said second drive means through said one of said cylindrical members.

4,367,544
ELECTROMAGNETIC TRANSDUCERS FOR CONVERTING MECHANICALLY ACOUSTIC EVENTS INTO ALTERNATING VOLTAGES

Werner Fidi, Baden, and Richard Pribyl, Vienna, both of Austria, assignors to AKG Akustische u Kino-Geräte Gesellschaft mbH, Austria

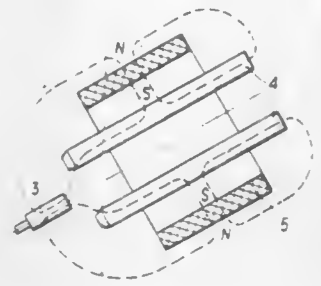
Filed May 12, 1980, Ser. No. 148,671

Claims priority, application Austria, May 14, 1979, 3541/79; Feb. 21, 1980, 969/80

Int. Cl.^{3} H04R *11/12*

U.S. Cl. 369—136 **9 Claims**

1. An electromagnetic transducer for converting mechanically acoustic events into alternating voltages, particularly for tracing stereo signals produced on plate shaped supports, comprising:
- four pole rods each having a coil winding therearound and having axes arranged substantially parallel and at corner points of a square lying in a plane perpendicular to said axes;
- means defining a substantially cylindrical radially magnetized permanent magnet disposed around said four pole rods and elongated in the direction of said axes to extend over a substantial portion of said pole rods in the direction of said axes;
- a pick-up stylus having a soft iron element driven by said pick-up stylus disposed adjacent one common end of said pole rods;
- said permanent magnet means and said pole rods with said coil winding defining a transducer system having a central transducer system axis centrally of the axes of said pole rods;
- mounting means mounting said pick-up stylus with soft iron element for universal pivotal movement about a center point located on said transducer system central axis;



- said permanent magnet means having a first magnetic polarity adjacent an inner cylindrical surface thereof facing said pole rods and an opposite magnetic polarity adjacent an outer cylindrical surface thereof facing away from said pole rods, said magnetic means forming a transducer system magnetic circuit of magnetic flux lines through each of said pole rods from a vicinity of centers of each of said pole rods along said axes and outwardly of each of said pole rod centers;
- said soft iron element being positioned so as to be directly included in said transducer system magnetic circuit at one end of said permanent magnet.

4,367,545
VIDEO DISC PLAYER

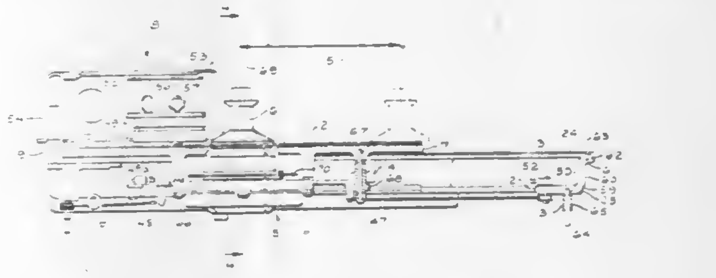
James E. Elliott, San Pedro, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 12,626, Feb. 16, 1979, Pat. No. 4,252,327, which is a division of Ser. No. 890,770, Mar. 27, 1978, abandoned. This application Oct. 6, 1980, Ser. No. 194,637

The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.

Int. Cl.^{3} G11B *3/36*

U.S. Cl. 369—213 **4 Claims**



1. A videodisc player for retrieving information stored upon a rigid videodisc record, said player comprising:
- a housing including fixed support means;
- a carriage mounted on said fixed support means for generally linear, reciprocal movement with respect to said support means;
- a stabilization plate mounted on said carriage and movable therewith, said plate being formed with an aperture and a flat upper surface;
- means for controlling movement of said carriage with respect to said support means;
- a motor and spindle assembly mounted on said stabilization

plate for movement therewith, at least a portion of said assembly extending through said aperture in said stabilization plate;

said spindle having a central axis and said assembly including means for mounting a videodisc about said spindle in a plane generally perpendicular to the axis of said spindle and parallel to said stabilization plate, said mounting means including a videodisc support ring having a generally flat surface disposed in a plane generally perpendicular to said spindle axis and arranged to abut a first side of said disc, said generally flat surface of said support ring being disposed above and parallel to a surface of said stabilization plate;

said support ring being positioned within said aperture in said stabilization plate and spaced from said stabilization plate for forming an air channel:

means for centering said disc about said spindle; and

releasable clamping means arranged to rigidly engage said spindle and resiliently engage a second side of said disc for holding the disc against said support ring and parallel to said plate.

4,367,546

VACUUM TURNTABLE SYSTEM FOR A RECORD PLAYER

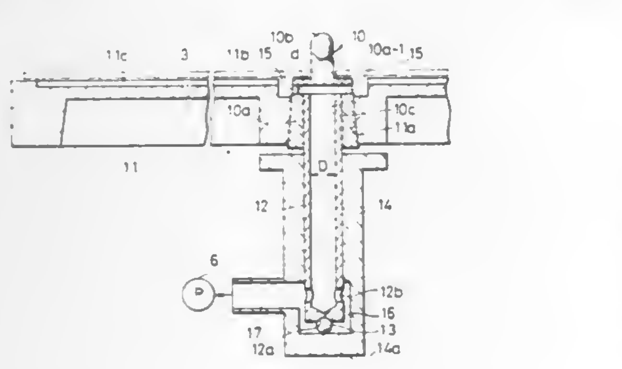
Norio Shibata, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 27, 1981, Ser. No. 228,924

Claims priority, application Japan, Jan. 29, 1980, 55-9345[U]; Jan. 31, 1980, 55-11040[U]; **Jan. 31, 1980, 55-11041[U]; Jan. 31, 1980, 55-11042[U]; Mar. 13, 1980, 55-32665[U]; Mar. 13, 1980, 55-32666[U]**

Int. Cl.³ G11B *3/60*

U.S. Cl. 369—271 **51 Claims**



1. A turntable system for a record player of the type arranged to attract a phonograph record by a vacuum force, comprising:

(a) a turntable body rotatably mounted and arranged to be driven;

(b) a multiple-part spindle rotatably mounted on a stationary member for supporting said turntable, said spindle having

(i) a generally cylindrical spindle body, and

(ii) a top member having a projection at the top thereof and a turntable mount integrally formed with said projection,

(iii) said projection being provided to be fitted in a center hole of a phonograph record when the phonograph record is placed on said turntable,

(iv) said turntable mount having a hollow bore therein for receiving a top portion of said cylindrical spindle body, said turntable mount having an outer diameter which is greater than that of said projection,

(v) a plurality of passageways being made in said turntable mount in substantially radial directions,

(vi) said cylindrical spindle body having an open end at its one end, and

(vii) a longitudinal passageway communicating, at said open end, with said plurality of radial passageways of said top member;

(c) a hollow cylindrical bearing for partially receiving said spindle body,

(i) said bearing having a chamber which is communicable with said longitudinal passageway of said spindle body via openings made in the vicinity of the other end of said spindle body,

(ii) said turntable body having a recess around its center hole which is telescopically engaged with the outer surface of said turntable mount, said recess having a predetermined depth so that the space defined by said recess communicates with said plurality of radial passageways of said turntable mount; and

(d) means for producing vacuum, said means communicating via said chamber, said openings of said spindle body, said longitudinal passageway and said radial passageways with said recess of said turntable body so that said phonograph record and/or a turntable sheet placed on said turntable body can be attracted toward said turntable body when said means is operated.

4,367,547

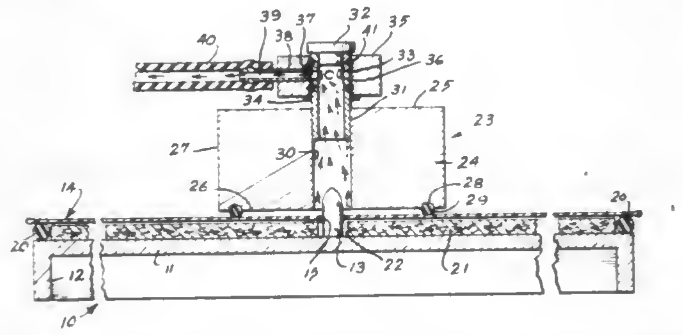
APPARATUS FOR HOLDING RECORD DISKS BY VACUUM

Bruce Thigpen, Tallahassee, Fla., assignor to Wayne H. Coloney Co., Inc., Tallahassee, Fla.

Filed May 4, 1981, Ser. No. 260,453

Int. Cl.³ G11B *3/60*

U.S. Cl. 369—271 **5 Claims**



1. Apparatus for holding a disk having an opening in substantially fixed position on a platen comprising air seal means mounted on the platen, a foraminous pad carried by the platen and being located within the confines of said air seal means, the outer limits of said air seal means being less than the outer limits of a record disk that is placed thereon, a vacuum chuck means adapted to be placed on the disk, said chuck means including a body having a bore which communicates with the opening in the disk, and means for evacuating air from the bore of said vacuum chuck means, whereby atmospheric air from below the disk is evacuated through the opening in the disk and through said chuck means so that air under atmospheric pressure on one side of the disk forces the disk into intimate engagement with said air seal and said pad and substantially prevents relative movement between the disk and the platen.

4,367,548

SUBSCRIBER STATION FOR PROVIDING MULTIPLE SERVICES TO A SUBSCRIBER

Whitworth W. Cotten, Jr., Germantown, Md., and John Tambert, Satellite Beach, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 10, 1980, Ser. No. 138,991

Int. Cl.³ H04N *7/10*

U.S. Cl. 370—3 **12 Claims**

1. A subscriber station for multiplexed communication with a telephone central office which provides one or more television channels unrelated to the telephone signals in addition to telephone service, comprising:

a single fiber optic receiving cable coupled between said subscriber station and said telephone central office;

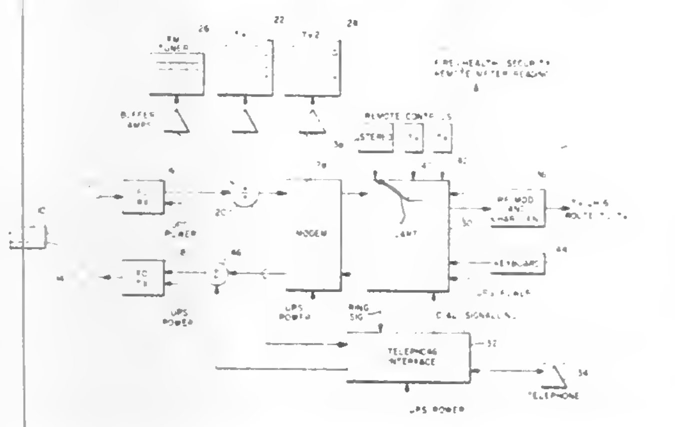
a single fiber optic transmitting cable coupled between said subscriber station and said telephone central office;

a fiber optic receiver for receiving light television signals from said telephone central office for at least one selected television channel and light telephone signals frequency division multiplexed on said receiving cable, wherein the fiber optic receiver converts the received light signals into radio frequency electrical signals;

a radio frequency splitter coupled to the output of said fiber optic receiver for separating the television signals from the telephone signals;

a modem coupled to the radio frequency splitter to receive telephone signals from the radio frequency splitter;

a universal asynchronous receive-transmit circuit coupled to the modem to transmit and receive signals between said modem and said universal asynchronous receive-transmit device;



a telephone interface circuit coupled to said universal asynchronous receive-transmit device and to the output of said radio frequency splitter for receiving telephone signals from both the universal asynchronous receive-transmit device and said radio frequency splitter and providing the signals to a telephone coupled to the output of the telephone interface circuit;

a radio frequency summer coupled to the output of the telephone interface circuit and the output of the modem; and

a fiber optic transmitter coupled to the output of said radio frequency summer for converting the radio frequency signals to light telephone signals for transmission to the telephone central office.

4,367,549

METHOD AND APPARATUS FOR MULTIPLEXING A DATA SIGNAL AND SECONDARY SIGNALS

Pierre Vachee, LaGaude, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,805

Claims priority, application France, Feb. 27, 1980, 8004748

Int. Cl.³ H04J *3/00*

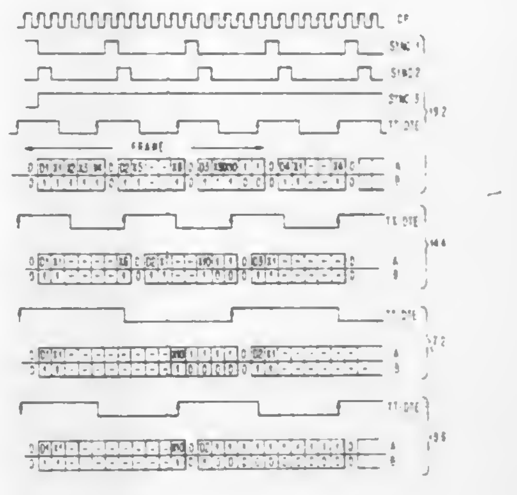
U.S. Cl. 370—91 **15 Claims**

1. A time-division multiplexing method for combining a data signal transmitted at a bit rate DR which may take on a given number of different values and N secondary signals into one train of pulses for transmission at a fixed bit rate LR over a transmission path, characterized in that it includes the steps of:

multiplexing the data signal together with the N secondary signals by means of a recurrent frame called an asynchronous frame which includes a frame-alignment bit having a predetermined value, a data bit, and N bits pertaining respectively to the N secondary signals, whenever the data signal is to be transmitted in asynchronous mode,

multiplexing the data signal together with the N secondary signals by means of a recurrent frame called a synchronous frame whenever the data signal is to be transmitted in synchronous mode, said synchronous frame being divided up into n subframes l_1 bits in length, where n is an interger equal to or immediately larger than the quantity $N/(l_1-2)$ with $l_1 = LR/DR$, and each subframe including a synchronization bit whose value is complementary to that of the frame-alignment bit, a data bit, and bits pertaining to the secondary signals, with the last subframe in the frame additionally including a frame-alignment bit,

generating control bits each of which is associated with one bit in said frames, said control bits having a first predetermined value when they are associated with a frame-alignment bit or with a synchronization bit, and the complementary value to said first predetermined value when they are associated with the data bits or with the bits pertaining to the secondary signals, and



encoding each of the bits in the frame and the control bit associated therewith for simultaneous transmission over the transmission path.

4,367,550

METHOD FOR MONITORING THE BIT ERROR RATE OF A DIGITAL TRANSMISSION SYSTEM

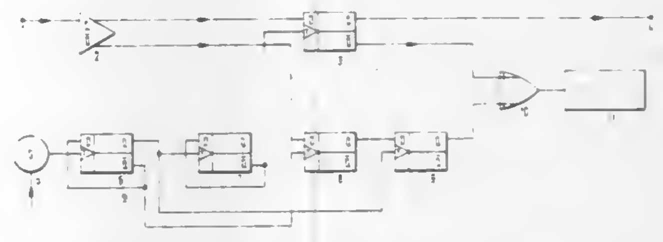
Egon Douverne, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,238

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012400

Int. Cl.³ G06F *11/00;* **H03K** *13/32*

U.S. Cl. 371—5 **2 Claims**



1. In a method for monitoring the bit error rate of digital signals according to the pseudo error rate technique which includes effecting an optimal regeneration of the signal elements in a main signal path by sampling each signal element in that path, and effecting a degraded regeneration of the signal elements in a secondary signal path, the improvement wherein said step of effecting regeneration in the secondary signal path comprises: sampling each signal element twice to determine its value, once a fraction of half the element period before the midpoint of the element period and once the same fraction of half the element period after the midpoint of the element period, the two sampling moments being rigidly coupled together in time; comparing the result of each of the two samplings of one element in the secondary signal path with the result of the sampling of the same element in the main signal path; and utilizing the number of disagreements occurring during said

step of comparing over a given time interval as a measure for the bit error rate in the main signal path.

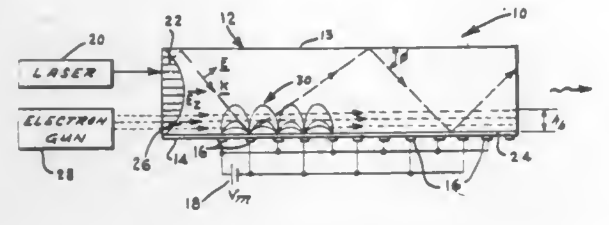
4,367,551
ELECTROSTATIC FREE ELECTRON LASER

Avraham Gover, Tel Aviv, Israel, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 15, 1980, Ser. No. 169,056

Int. Cl.^{3} H01S *3/09*

U.S. Cl. 372—2 **17 Claims**



1. An electrostatic free electron laser comprising: a housing, said housing extending in a longitudinal direction, means located adjacent one end of said housing for producing an electron beam and directing said electron beam through said housing in said longitudinal direction, means located adjacent said one end of said housing for producing an electromagnetic wave of radiation and directing said electromagnetic wave through said housing in said longitudinal direction, and means extending in a direction transverse to said longitudinal direction along at least a portion of said housing for producing a periodic longitudinal electrostatic field within said housing whereby energy generated by said free electron laser is the result of the kinetic energy lost by said electron beam as it is decelerated during its interaction with said electromagnetic wave and said electrostatic field within said housing.

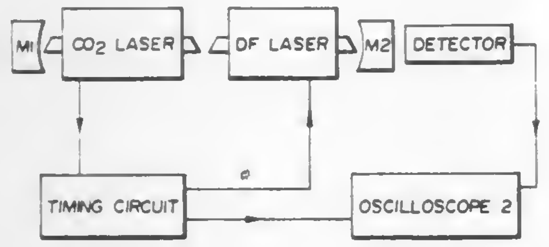
4,367,552
DUAL WAVELENGTH INFRARED LASER

Thor V. Jacobson, Ste. Foy, Canada, assignor to Her Majesty the Queen in right of Canada, Canada

Filed Aug. 11, 1980, Ser. No. 176,805

Int. Cl.^{3} H01S *3/23*

U.S. Cl. 372—23 **6 Claims**



1. A dual wavelength output laser, comprising

an optical resonant cavity including a totally reflecting mirror at one end of said cavity and a partially transmitting output mirror at an opposite end of said cavity, said totally reflecting mirror and said partially transmitting mirror being spaced apart and defining an axis of reflection between them;

first and second laser cavities disposed in tandem in said optical resonant cavity and aligned along said axis of reflection to reflect laser radiation between said totally reflecting mirror and said partially transmitting output mirror along said axis of reflection through said first and second laser cavities;

first and second laser active media disposed in said first and second laser cavities, respectively, said first laser active media producing a laser discharge at a first wavelength, said second laser active media producing a laser discharge at a second wavelength; and

timing circuit means for causing simultaneous laser discharges from said first and second active media, such that a co-linear dual wavelength laser output is provided through said partially transmitting output mirror.

4,367,553
PULSE LASER WITH AN ELECTRICALLY EXCITED GASEOUS ACTIVE MEDIUM

Arnold Neracher, Chancy, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

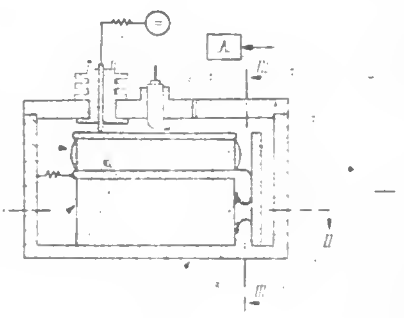
PCT No. PCT/CH78/00055, § 371 Date Aug. 23, 1979, § 102(e) Date Aug. 23, 1979, PCT Pub. No. WO79/00432, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 22, 1978, Ser. No. 130,163

Claims priority, application Switzerland, Dec. 23, 1977, 15975/77

Int. Cl.^{3} H01S *3/09*

U.S. Cl. 372—55 **20 Claims**



1. A laser comprising:

a first and a second nonconductive block of solid material having a high dielectric constant, said blocks forming a stack and having each two flat opposite end faces parallel to and substantially coextensive with those of the other of said block;

a first metallic member inserted between and in contact with two juxtaposed end faces of said blocks;

a second metallic member overlying the other end face of said first block and defining therewith and with said first member a first capacitor;

a third metallic member overlying the other end face of said second block and defining therewith and with said first member a second capacitor in cascade with said first capacitor, said first and third members being provided with respective extensions forming a pair of confronting, spaced-apart electrodes;

a housing surrounding said blocks and enclosing an elongate resonant cavity filled with a radiation-emissive gaseous medium, said cavity being bounded in part by said confronting electrodes;

impedance means for galvanically interconnecting said first and third members;

terminal means for connecting a source of direct current between said second and third members to develop a voltage difference across the cascaded first and second capacitors, said impedance means keeping said second capacitor substantially discharged while enabling said first capacitor to be charged; and

discharge-initiating means inserted between said second and third members for temporarily interconnecting same with establishment of a virtual short circuit across said cascaded capacitors whereby said first capacitor is enabled to discharge into said second capacitor and to set up a potential difference across said impedance means and said confronting electrodes in parallel therewith, said potential difference stimulating said gaseous medium in said cavity into an emission of luminous coherent radiation, said housing being provided with a window transparent to the emitted radiation adjacent one end of said cavity.

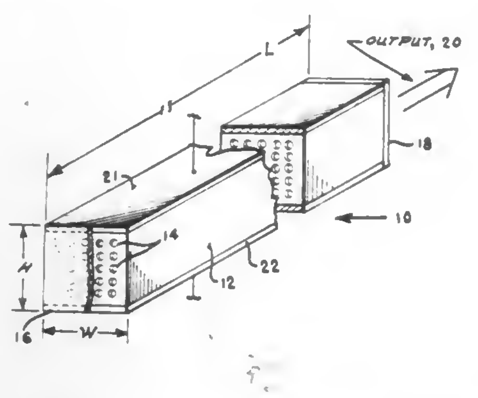
4,367,554
HIGH PRESSURE, HIGH POWER, COMPACT LASER

Howard R. Schlossberg, 4811 Hercules Ct., Annandale, Va. 22003

Filed Oct. 8, 1980, Ser. No. 195,148

Int. Cl.^{3} H01S *3/03*

U.S. Cl. 372—61 **7 Claims**



1. A high pressure, high power, compact laser comprising at least two elongated channels formed along the longitudinal axes of a body of material highly transparent at the wavelength of operation. wherein each of said channels is incapable of independently sustaining a lasing action within each channel in a waveguide mode of operation, each of said channels being of a predetermined cross-section, means located at each end of said body for forming a resonant cavity therebetween, a gas lasing medium contained within each of said channels, and a means for initiating sufficient gain for a laser mode in the combination of said channels and said highly transparent body such that a high power, coherent output of electromagnetic radiation at said operating wavelength through one of said means at an end of said body.

4,367,555
DIGITAL EQUALIZER FOR A CROSS-POLARIZATION RECEIVER

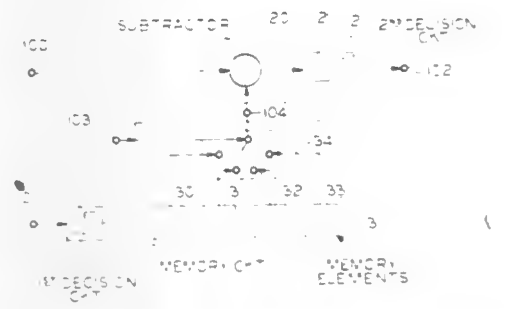
Junji Namiki, and Yukitsuna Furuya, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 21, 1980, Ser. No. 170,640

Claims priority, application Japan, Jul. 24, 1979, 54-94042; Jul. 24, 1979, 54-94043; Jul. 24, 1979, 54-94044; Jul. 24, 1979, 54-94045; Dec. 12, 1979, 54-161330; Dec. 12, 1979, 54-161331

Int. Cl.^{3} H04B *1/12*

U.S. Cl. 375—11 **5 Claims**



1. An equalizer for reducing cross-polarization distortion in digital radio transmission wherein first and second mutually independent sequences of digital data are transmitted via first and second mutually orthogonal cross-polarized waves, said equalizer comprising: first decision circuit means responsive to the second sequence of data means for generating a zero signal as a possible error output signal in a region which is close to signal discrimination boundaries and for generating decision value signals elsewhere than said region; memory circuit means operated responsive to said possible error output signal and having a plurality of memory elements, each of said elements supplying either a signal representing a constant value corresponding to and selected by the output of the decision circuit means, subtractor means for subtracting the output of the memory circuit means from said first sequence of data; and second decision circuit means for distinguishing said first sequence of data from the output of the subtractor means.

4,367,556
ROTARY-ANODE X-RAY TUBE

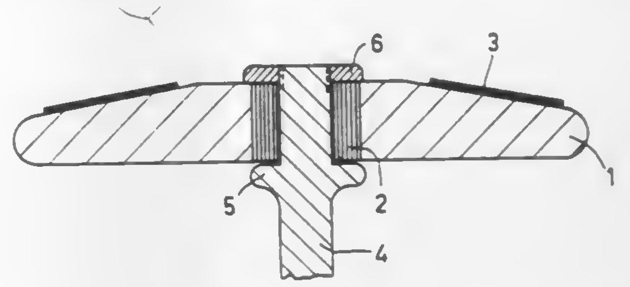
Horst Hübner, and Bernhard Lersmacher, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,487

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941396

Int. Cl.^{3} H01J *35/10*

U.S. Cl. 378—125 **7 Claims**



1. A rotary anode X-ray tube including an anode comprising a graphite disc having a central opening, and a bushing in the opening affixed to the disc to facilitate mounting of the anode on a shaft, said bushing comprising pyrolytic graphite having a radial growth direction with respect to the center of the opening.

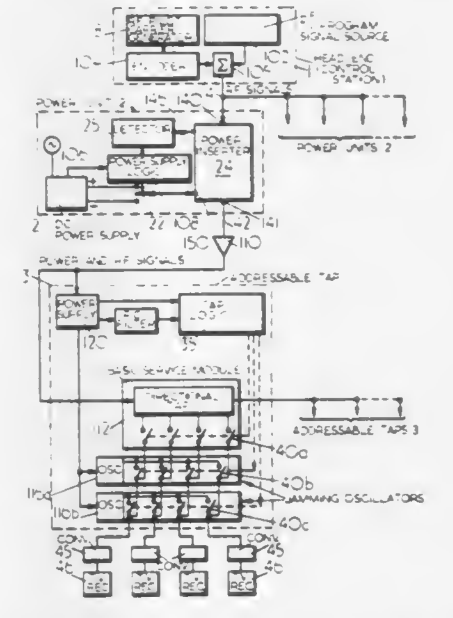
4,367,557
WIRED BROADCASTING SYSTEMS

Joseph L. Stern, 45 Windsor Rd., Great Neck, N.Y. 11021, and Joseph Garodnick, 1 Wall St., Fort Lee, N.J. 07024

Continuation of Ser. No. 709,002, Jul. 26, 1976, abandoned. This application May 25, 1979, Ser. No. 42,524

Int. Cl.^{3} H04B *3/54*

U.S. Cl. 455—4 **28 Claims**



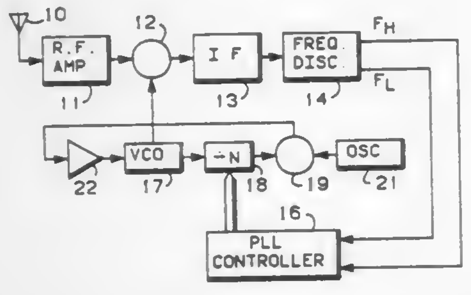
1. In apparatus for selectively addressing and controlling from a central station one or more power-consuming control devices associated with each of a plurality of power-consuming terminals remote from said central station to achieve one or more desired control functions at each of the remote terminals, wherein said power-consuming terminals are supplied with power from a common power unit, and a transmitter arrangement is adapted to transmit controlling signals from said central station to said power unit, each controlling signal being representative of a desired control function to be effected at

one particular remote terminal coupled to said power unit, the combination comprising:
an encoder associated with said power unit for encoding in accordance with said controlling signals the power supplied from said power unit to said remote terminals,
a decoder at each remote terminal adapted to receive said encoded power and to derive therefrom power for energizing said decoder and said remote terminal control devices,
said decoder also being adapted to derive from said encoded power the particular signal representative of the desired control function for the respective terminal,
at least one of said control devices at said terminal being responsive only to said derived signal for performing said desired control function,
wherein said central station is a program source for a wired broadcast system having a cable system and said power-consuming devices are supplied by said power unit over said cable system, and
said terminals are included in tap devices for supplying one or more subscriber stations with said programs, and
said transmitter arrangement also transmits program signals from said central station to said subscriber stations via said power unit and under the control of said control devices.

4,367,558

METHOD FOR AUTOMATICALLY SEARCHING FOR AN RF STATION

Anil Gercekci, Geneva, Switzerland, and Heinz B. Maeder, Täby, Sweden, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 22, 1980, Ser. No. 218,872
Int. Cl.^{3} H03J *7/28;* H03L *7/18;* H04B *1/26*
U.S. Cl. 455—164 **2 Claims**



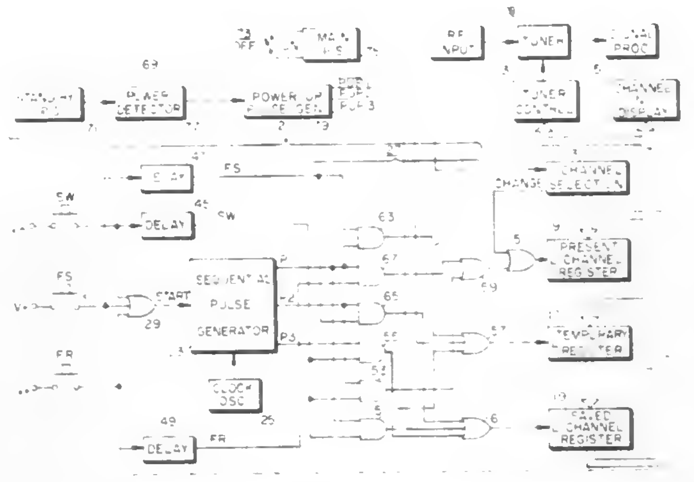
2. A method of performing a search for a carrier frequency using a receiver having a phase locked loop, comprising: stepping a voltage controlled oscillator located within the phase locked loop in predetermined frequency steps; detecting when the carrier frequency is passed up; decrementing the voltage controlled oscillator in frequency steps smaller than the predetermined frequency steps until the carrier frequency is once again encountered; and stopping the stepping of the voltage controlled oscillator.

4,367,559

ARRANGEMENT FOR BOTH CHANNEL SWAPPING AND FAVORITE CHANNEL FEATURES

Juri Tults, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 6, 1981, Ser. No. 232,213
Int. Cl.^{3} H04B *1/16*
U.S. Cl. 455—186 **5 Claims**

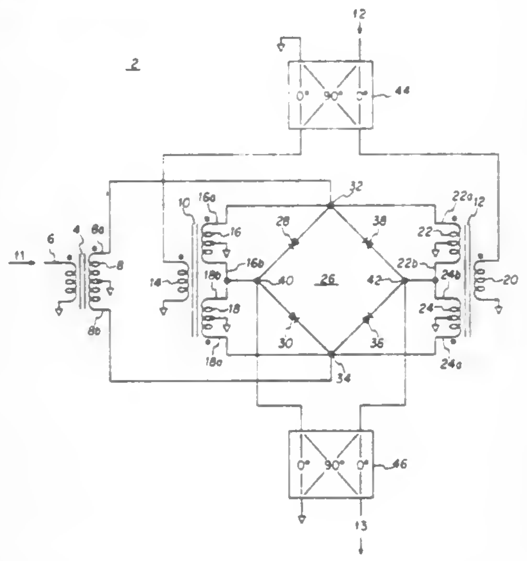
1. In a tuning system apparatus comprising:
present channel register means for storing, in binary form, the channel number of a presently selected channel;
saved channel register means for storing, in binary form, the channel number of a previously stored channel;
favorite channel store means for generating a favorite channel store signal;
favorite channel recall means for generating a favorite channel recall signal independently of said favorite channel store signal;
swap means for generating a channel swap signal independently of said favorite channel store and favorite channel recall signals; and
controls means for entering the contents of said present channel register means in said saved channel register means without disturbing the contents of said present channel register in response to said favorite channel store signal, for entering the contents of said saved channel register means in said present channel register means without disturbing the contents of said saved channel register in response to said favorite channel recall signal and for exchanging the contents of said present channel register means and said saved channel register means in response to said channel swap signal.



4,367,560

LOW FREQUENCY CONVERTER WITH DIODE QUAD MIXER

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Mar. 13, 1981, Ser. No. 243,663
Int. Cl.^{3} H04B *1/26*
U.S. Cl. 455—330 **8 Claims**



1. A frequency converter comprising, in combination:
a first transformer having a primary winding and a secondary winding means;
a pair of dual transformers, each having a primary winding and a pair of series connected secondary winding means; and
a diode mixer bridge having a diode quad, comprising only four diodes, interconnecting said secondary winding means of said first and said pair of transformers for heterodyne modulation product signal generation.

DESIGN PATENTS

GRANTED JAN. 4, 1983

ERRATA

For CLASS	See PATENT NO.
D23-138	267,464
D23-138	267,465
D23-138	267,466

DESIGNS

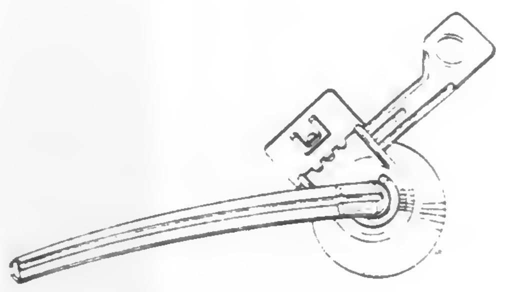
JANUARY 4, 1983

267,440

EAR MUFF ATTACHMENT FOR A SAFETY HELMET

Bo G. Lönnstedt, Kvarnbergsvagen 23, S-141 45 Huddinge, Sweden
Filed Nov. 13, 1980, Ser. No. 206,464
Claims priority, application Sweden, May 14, 1980, 80-0976
Term of patent 14 years
Int. Cl. D02—*03*

U.S. Cl. D2—233

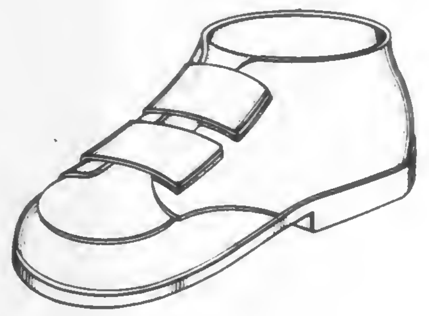


267,441

BABY SHOE

Richard N. Clarvit, 7785 SW. 86th St., Miami, Fla. 33413
Continuation-in-part of Ser. No. 99,602, Dec. 3, 1979, which is a continuation-in-part of Ser. No. 810,584, Jun. 27, 1977. This application Jan. 17, 1980, Ser. No. 113,083
Term of patent 14 years
Int. Cl. D2—*04*

U.S. Cl. D2—278

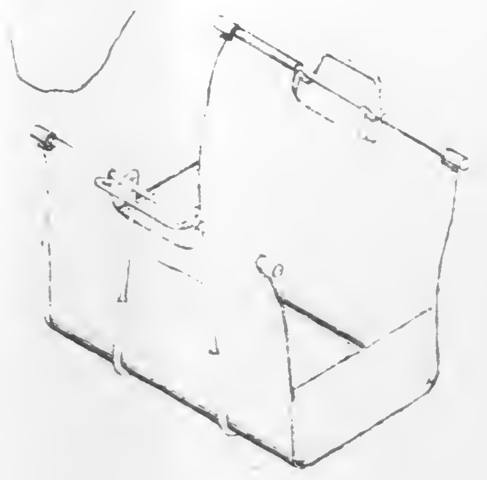


267,442

ARTICLE CARRIER

Robert F. Anderson, 4718 - 10th St., Menominee, Mich. 49858
Filed Oct. 10, 1979, Ser. No. 83,410
Term of patent 14 years
Int. Cl. D3—*02*

U.S. Cl. D3—30.1

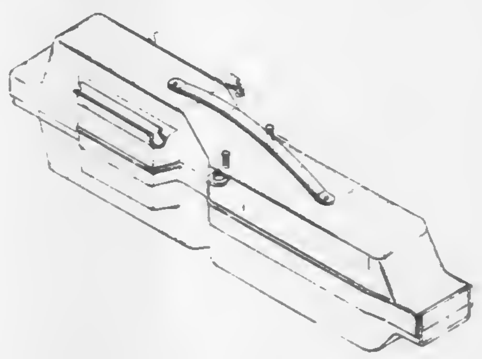


267,443

COMBINED SKI CARRIER AND BINDING PROTECTOR

Anthony Salas, 2 Wesleyan Rd., Commack, N.Y. 11725
Filed Dec. 29, 1980, Ser. No. 220,800
Term of patent 14 years
Int. Cl. D3—*02*

U.S. Cl. D3—36

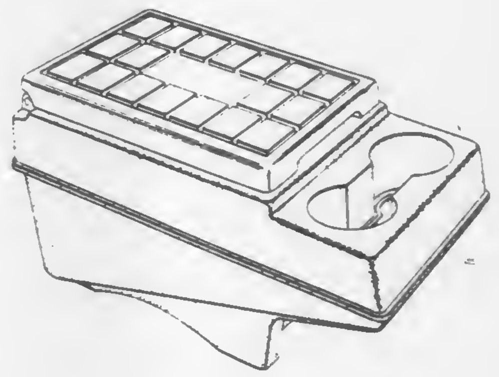


267,444

PORTABLE COOLER, CADDY AND ARMREST

Craig Ruxton, Katy, Tex., assignor to Fulbright & Jaworski, Houston, Tex.
Filed Dec. 8, 1980, Ser. No. 214,151
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D3—40



267,445

ARTICLE SUPPORT STAND

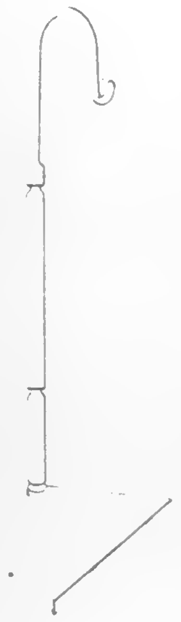
William Watson, P.O. Box 1177, Boyes Hot Springs, Calif. 95416

Filed Dec. 15, 1980, Ser. No. 216,260

Term of patent 14 years

Int. Cl. D6—*99*

U.S. Cl. D6—28



267,446

CHAISE LOUNGE

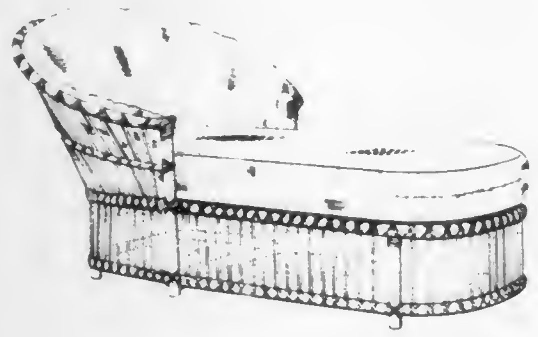
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11650

Filed Oct. 23, 1980, Ser. No. 199,855

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—57



267,447

SEAT

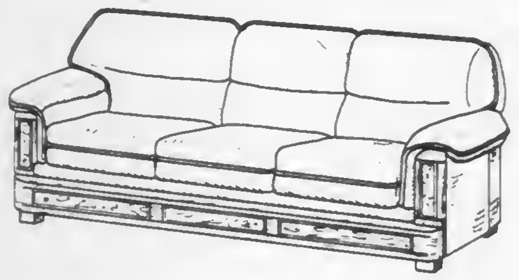
Alan H. Friedman, Millburn, N.J., assignor to The Bean Station Furniture Factory, Bean Station, Tenn.

Filed Jan. 14, 1981, Ser. No. 225,117

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—62



267,448

SEAT

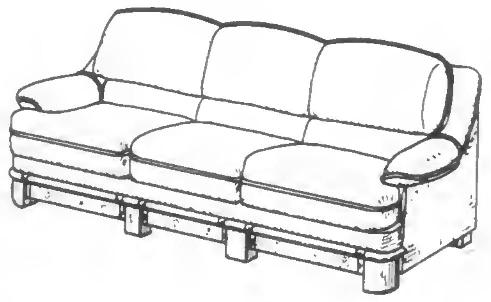
Alan H. Friedman, Millburn, N.J., assignor to The Bean Station Furniture Factory, Bean Station, Tenn.

Filed Jan. 14, 1981, Ser. No. 225,118

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—63



267,449

ARMCHAIR

Jerry W. Staton, Rte. 2, Box 195, Holly Pond, Ala. 35083

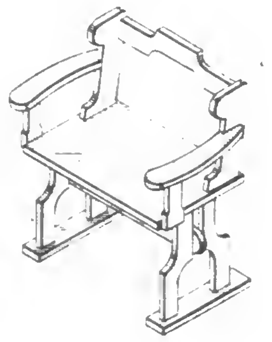
Filed Dec. 26, 1979, Ser. No. 106,551

The portion of the term of this patent subsequent to Nov. 2, 1996, has been disclaimed.

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—69



267,450

SEAT

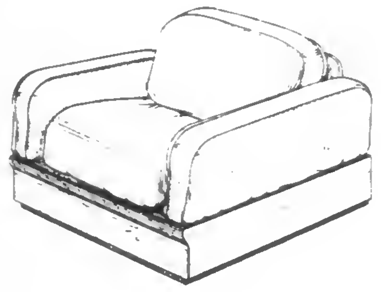
Nicholas A. Ungaro, Louisville, Ky., assignor to Schweiger Industries, Inc., Jefferson, Wis.

Filed Sep. 5, 1979, Ser. No. 72,764

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—71



267,451

CHAIR

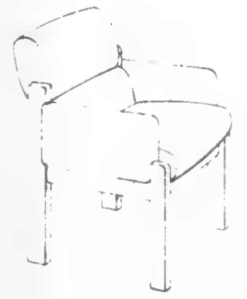
Carlos L. Lopez-Benitez, Jamestown, N.C., assignor to Monarch Furniture Corp., High Point, N.C.

Filed Jun. 2, 1980, Ser. No. 155,854

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—71



267,452

TWIN HEADBOARD

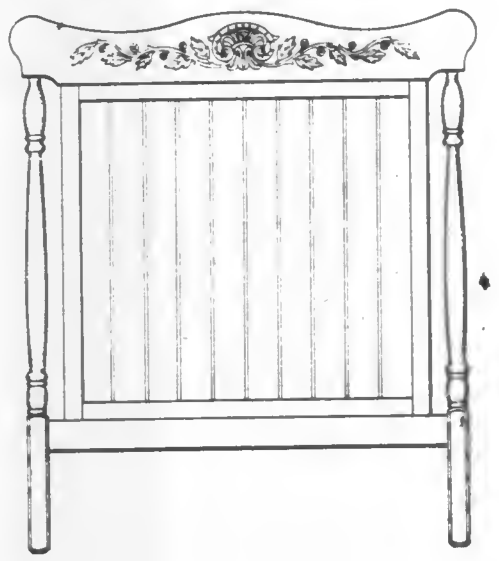
Henry W. Mower, Stevens Point, Wis.; Allen Seymour, Clayton, Ohio; Jerome P. Koziatek, Hinckley, Ohio, and Joseph G. Lendvay, Ravenna, Ohio, assignors to Questor Corporation, Toledo, Ohio

Filed Oct. 16, 1980, Ser. No. 197,490

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—79



267,453

HOLDER FOR A SHAVING INSTRUMENT

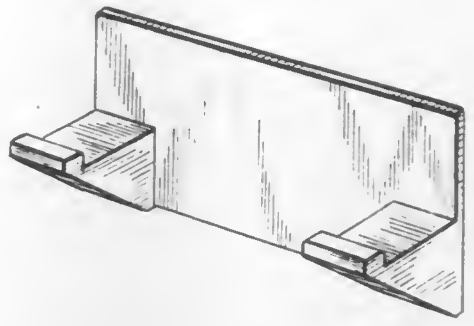
Michael Kipperman, 142 W. Lake Blvd., Lake Mahopac, N.Y. 10541

Filed Sep. 15, 1980, Ser. No. 187,189

Term of patent 14 years

Int. Cl. D23—*02;* D6—*06;* D8—*08*

U.S. Cl. D6—88



267,454

LIQUID SOAP DISPENSER

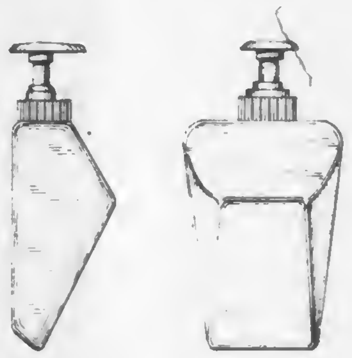
Lewis Fine, 2701 NE. 42nd St., Lighthouse Point, Fla. 33064

Filed Nov. 24, 1980, Ser. No. 209,859

Term of patent 14 years

Int. Cl. D23—*02;* D9—*01*

U.S. Cl. D6—95



267,455

CLOTHES HOOK

Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal

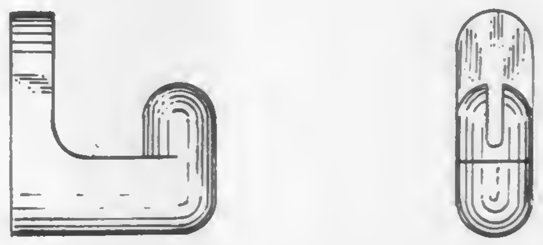
Filed Nov. 4, 1980, Ser. No. 204,043

Claims priority, application Portugal, May 9, 1980, 15.093

Term of patent 14 years

Int. Cl. D6—*06;* D8—*08*

U.S. Cl. D6—120

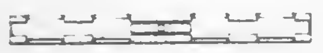


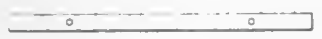
267,456

SKI RACK

James W. Marshall, Rte. 2, Box 236, Charlevoix, Mich. 49720
Filed Aug. 29, 1980, Ser. No. 182,483
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—125



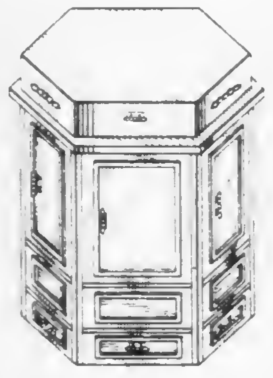


267,457

WET BAR

Robert R. Robins, 721 N. Woodland, Minneapolis, Kans. 67467
Filed Nov. 8, 1979, Ser. No. 92,773
Term of patent 14 years
Int. Cl. D06—*04*

U.S. Cl. D6—144

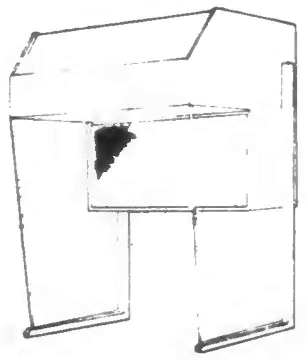


267,458

CABINET

Bryan McKinnon, St. Laurent, Canada, assignor to Robert A. Elder, Chateauguay Centre, Canada
Division of Ser. No. 616,896, Sep. 25, 1975, Pat. No. Des. 247,274. This application Apr. 20, 1977, Ser. No. 789,273
Term of patent 14 years
Int. Cl. D6—*04*

U.S. Cl. D6—172

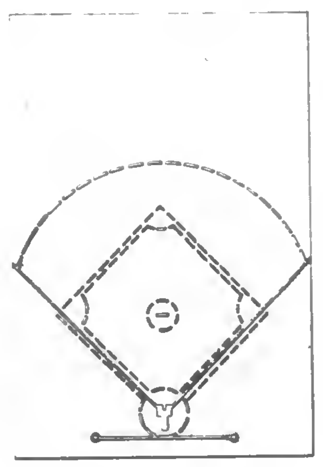


267,459

DOOR MAT OR SIMILAR ARTICLE

Victor T. Burt, 900 W. Georgia St., Vancouver, B. C., Canada (V6C 2W9)
Filed Jul. 16, 1980, Ser. No. 169,269
Term of patent 14 years
Int. Cl. D6—*11*

U.S. Cl. D6—210

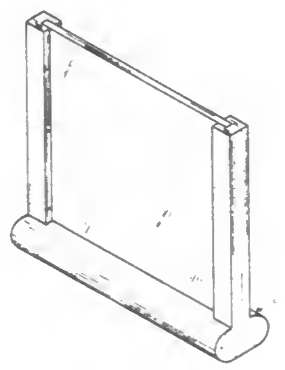


267,460

FRAME FOR GRAPHICS OR THE LIKE

Gary R. Heintz, P.O. Box 15974, Salt Lake City, Utah 84115
Filed Oct. 23, 1980, Ser. No. 200,260
Term of patent 14 years
Int. Cl. D6—*07*

U.S. Cl. D6—235

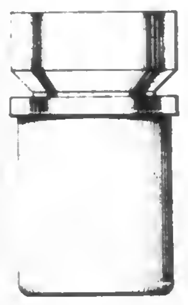


267,461

COMBINED DRINKING CUP AND HOLDER

Thomas L. Crisman; Harry R. Weaver, and Stanley R. Moore, all of Dallas, Tex., assignors to Freezesleeves of America, Dallas, Tex.
Filed Sep. 17, 1980, Ser. No. 188,054
Term of patent 14 years
Int. Cl. D07—*01*

U.S. Cl. D7—3

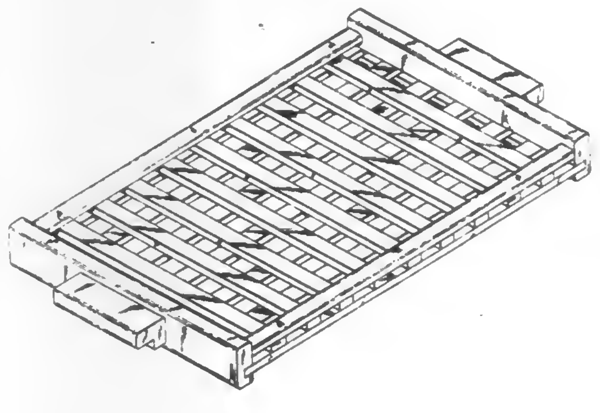


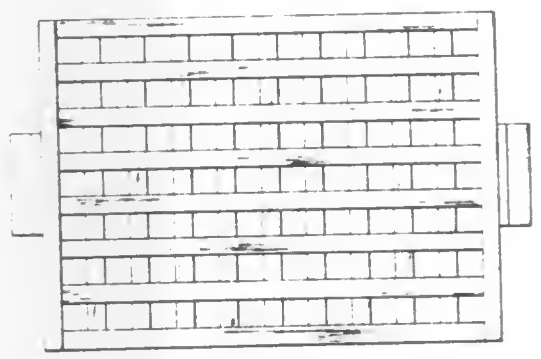
267,462

TRAY

Edward H. Kneale, III, 335 Pleasant Pines Ave., Centerville, Mass. 02632, assignor to Edward H. Kneale, III, Hyannis, Mass.
Filed Feb. 5, 1981, Ser. No. 232,292
Term of patent 14 years
Int. Cl. D07—*99*

U.S. Cl. D7—21



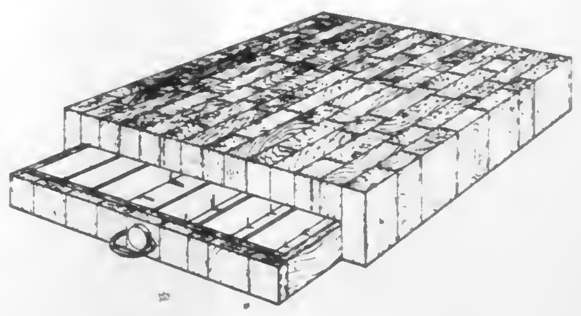


267,463

COMBINED BUTCHER BLOCK AND CUTLERY CABINET

Wayne Thompson, Echo Trail, Bethania, County of Forsyth, N.C. 27010
Filed Jun. 9, 1980, Ser. No. 157,949
Term of patent 14 years
Int. Cl. D07—*04*

U.S. Cl. D7—46

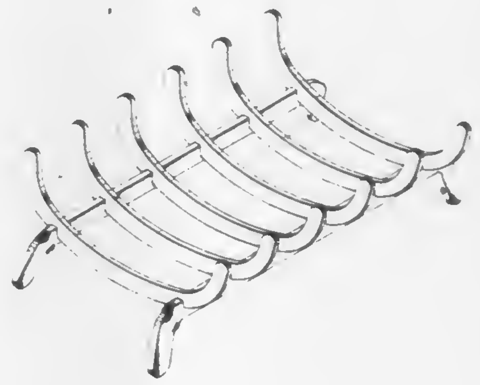


267,464

FIREPLACE GRATE

Robert D. Hassett, Prospect, Ky.; Robert C. Dew, New Albany, Ind., and Clifford E. Wieting, Louisville, Ky., assignors to S & T Industries, Inc., Louisville, Ky.
Filed Dec. 15, 1980, Ser. No. 216,548
Term of patent 14 years
Int. Cl. D7—*08*

U.S. Cl. D23—138.5

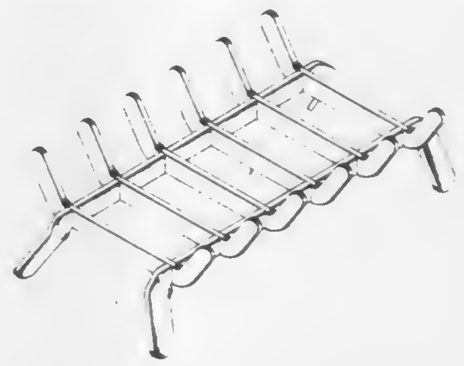


267,465

FIREPLACE GRATE

Robert D. Hassett, Prospect, Ky.; Robert C. Dew, New Albany, Ind., and Clifford E. Wieting, Louisville, Ky., assignors to S & T Industries, Inc., Louisville, Ky.
Filed Dec. 15, 1980, Ser. No. 216,549
Term of patent 14 years
Int. Cl. D7—*08*

U.S. Cl. D23—138.5



267,466

FIREPLACE GRATE

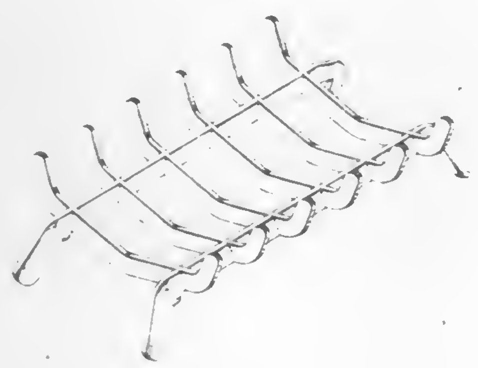
Robert D. Hassett, Prospect, Ky.; Robert C. Dew, New Albany, Ind., and Clifford E. Wieting, Louisville, Ky., assignors to S & T Industries, Inc., Louisville, Ky.

Filed Dec. 15, 1980, Ser. No. 216,550

Term of patent 14 years

Int. Cl. D7—*08*

U.S. Cl. D23—138.5



267,467

GARDEN TOOL HANDLE

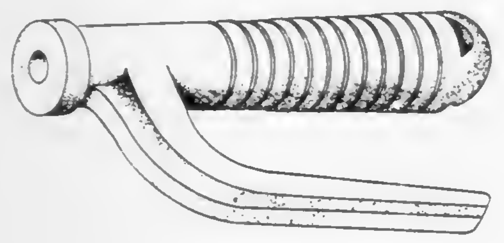
Mike Vosbikian, 3 Pinecrest Dr., Medford, N.J. 08055

Filed Sep. 2, 1980, Ser. No. 183,046

Term of patent 14 years

Int. Cl. D8—*01*

U.S. Cl. D8—01



267,468

EXTENDIBLE SNOW SHOVEL

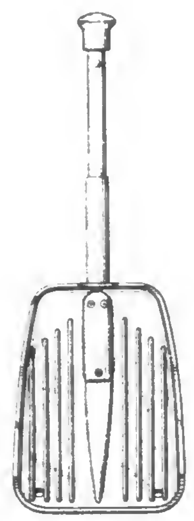
John Simms, Wilson, Wyo., assignor to Life Link International, Jackson, Wyo.

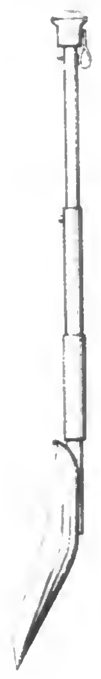
Filed Dec. 18, 1980, Ser. No. 217,667

Term of patent 14 years

Int. Cl. D8—*01*

U.S. Cl. D8—10





267,469

HAMMER

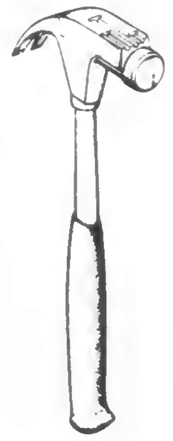
Thomas E. Crowder, 4558 Roswell Rd., #B-1, Atlanta, Ga. 30342

Filed Aug. 10, 1979, Ser. No. 65,585

Term of patent 14 years

Int. Cl. D8—*02*

U.S. Cl. D8—75



267,470

COMBINED BICYCLE LOCK AND BRACKET

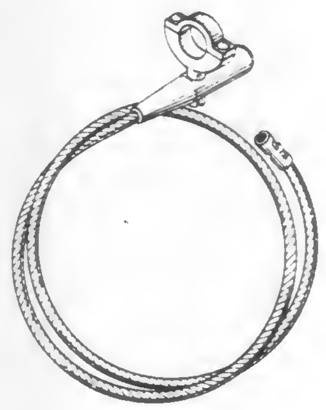
Frank J. Scherbing, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Filed Sep. 17, 1980, Ser. No. 188,137

Term of patent 14 years

Int. Cl. D8—*07*

U.S. Cl. D8—333



267,471

AUTOMOBILE ENGINE MOUNTING BRACKET

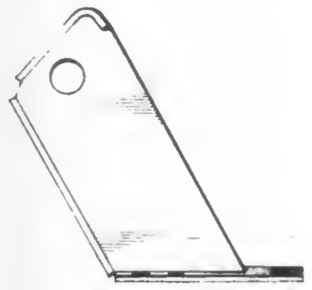
Gary W. Mundorf, 2020 Lomita Blvd., No. 1, Lomita, Calif. 90717

Filed Sep. 8, 1980, Ser. No. 185,120

Term of patent 14 years

Int. Cl. D8—*08*

U.S. Cl. D8—354



267,472

POLY-V PULLEY

Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-sho, Japan

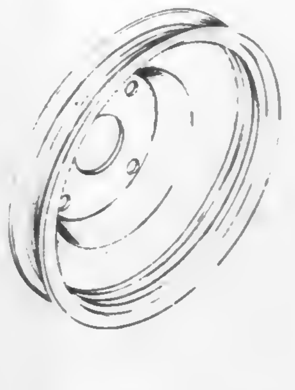
Filed Jun. 11, 1981, Ser. No. 272,805

Claims priority, application Japan, Mar. 23, 1981, 56-12164

Term of patent 14 years

Int. Cl. D12—*05*

U.S. Cl. D8—360



267,473

BOTTLE OR THE LIKE

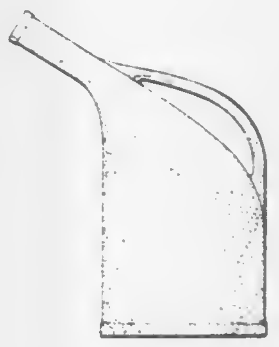
James L. Telzrow, R.R. 2, White Hall, Ill. 62092

Filed Oct. 15, 1980, Ser. No. 197,174

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—374



267,474

ARTICLE CARRIER

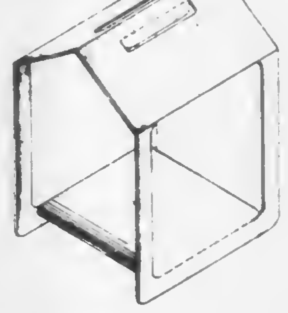
Raymond V. Maroszek, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 19, 1979, Ser. No. 105,402

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—418



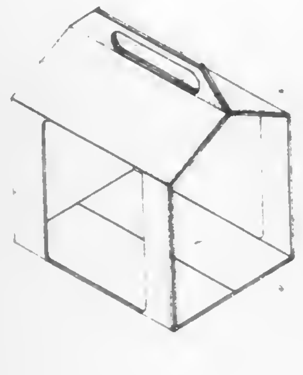
267,475

ARTICLE CARRIER

Raymond V. Maroszek, Neenah; Clifford G. Peters, Appleton, and Jeffrey J. Tellock, Neenah, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Nov. 14, 1979, Ser. No. 94,399
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—418



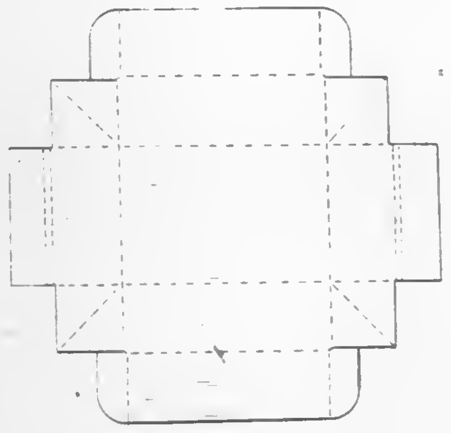
267,476

PACKAGING BLANK

Michael J. Boedeker, Alton, Ill., and Dennis A. Bardon, Hazelwood, Mo., assignors to Alton Packaging Corporation, Alton, Ill.

Filed Mar. 31, 1980, Ser. No. 136,064
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—433



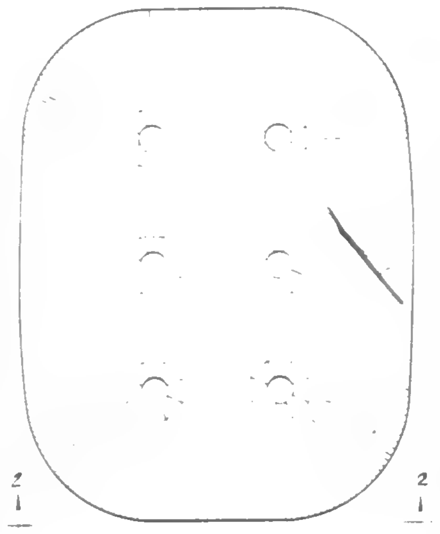
267,477

ARTICLE CARRIER BLANK

Earl J. Graser, Monroe, La., assignor to Manville Service Corporation, Denver, Colo.

Filed Aug. 20, 1980, Ser. No. 180,055
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—433



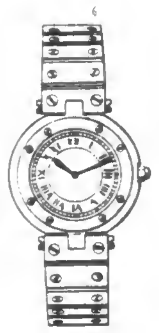
267,478

WATCH

Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland

Filed Oct. 17, 1980, Ser. No. 198,065
Claims priority, application Hague, Apr. 21, 1980, 70,203
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D10—32



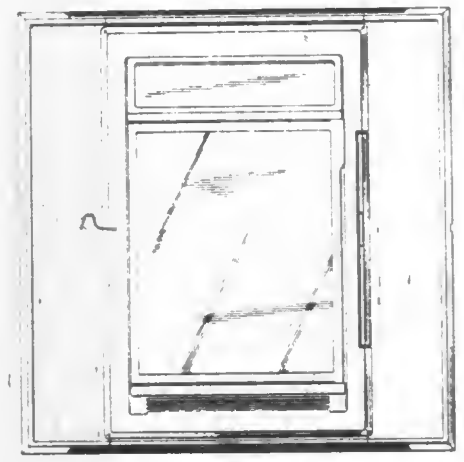
267,479

THERMOSTAT HOUSING

Scott J. Collins, Milwaukee, Wis., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 2, 1980, Ser. No. 193,336
Term of patent 14 years
Int. Cl. D10—*07*

U.S. Cl. D10—60



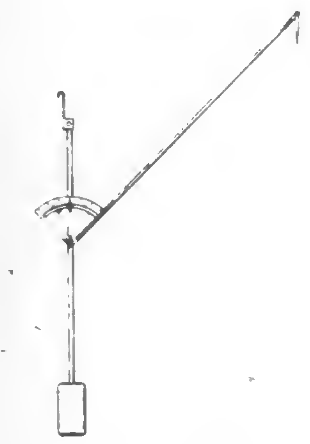
267,480

PORTABLE FILLING INDICATOR FOR TANKS AND STORAGE CONTAINERS

Donald D. Hinson, P.O. Box 132, Palestine, Tex. 75801

Filed Aug. 8, 1980, Ser. No. 176,408
Term of patent 14 years
Int. Cl. D10—*04*

U.S. Cl. D10—101



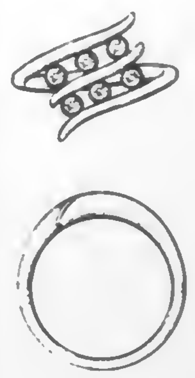
267,481

SPIRAL RING

Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480

Filed Nov. 7, 1980, Ser. No. 204,870
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—27



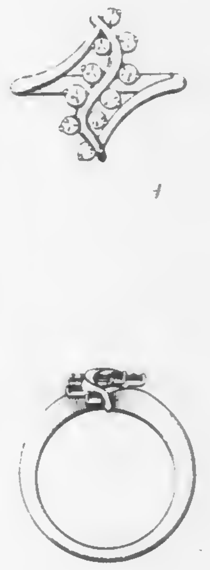
267,482

FINGER RING OR SIMILAR ARTICLE

Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480

Filed Nov. 24, 1980, Ser. No. 209,722
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—28



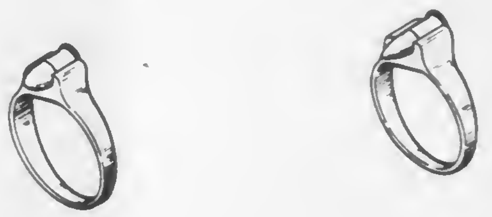
267,483

RING

Michael W. Wefler, P.O. Box 524, Hobart, Ind. 46342

Filed Dec. 5, 1980, Ser. No. 213,304
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—30



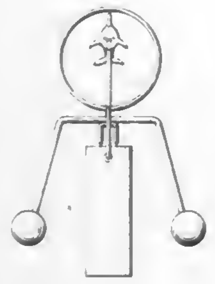
267,484

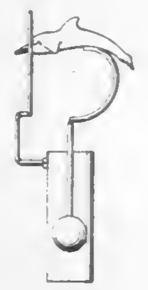
KINETIC SCULPTURE

Hidetoshi Matsui, 6 Imazunaka 3-chome, Tsurumi-ku, Osaka 538, Japan

Filed Apr. 11, 1979, Ser. No. 29,690
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—141





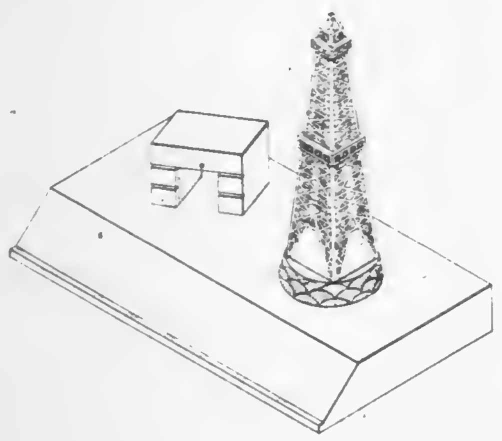
267,485

DESK ORNAMENT OR SIMILAR ARTICLE

Helen M. Robinson, 1519 S. Atlanta St., Tulsa, Okla. 74104

Filed Apr. 22, 1980, Ser. No. 142,770
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—157



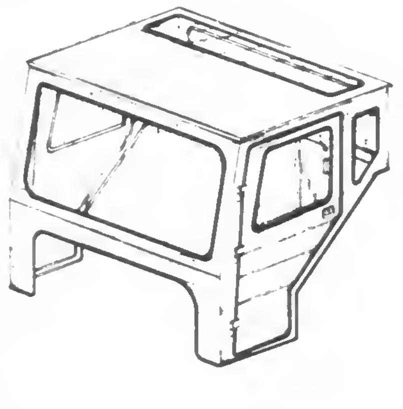
267,486

TRUCK CAB

Robert P. Martin, Jr., c/o Martin Sheet Metal, Inc., 7108 Madison Ave., Cleveland, Ohio 41402

Filed Aug. 22, 1980, Ser. No. 180,515
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—96



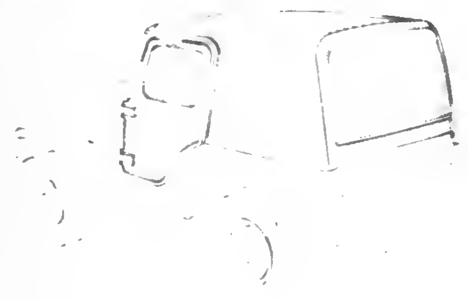
267,487

VEHICLE TOP UNIT

Robert A. Ragsdale, 18076 County Rd., 112, Bristol, Ind. 46507

Filed Sep. 2, 1980, Ser. No. 183,236
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—156



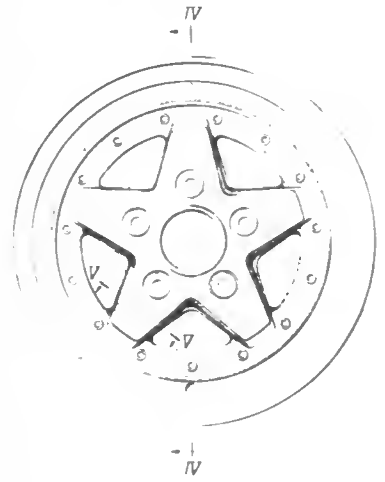
267,488

VEHICLE WHEEL

Masakazu Hayashi, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Hayashi Racing, Osaka, Japan

Filed Aug. 22, 1980, Ser. No. 180,504
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—211



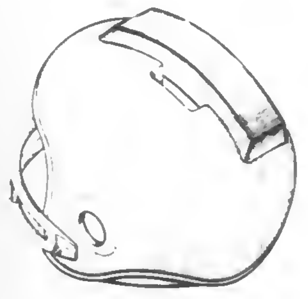
267,489

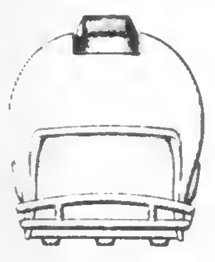
TELEPHONE

Lonnie Daharsh, Dallas, and George W. Eggers, Garland, both of Tex., assignors to Tel-Com Manufacturing, Inc., Dallas, Tex.

Filed May 7, 1981, Ser. No. 261,604
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—53





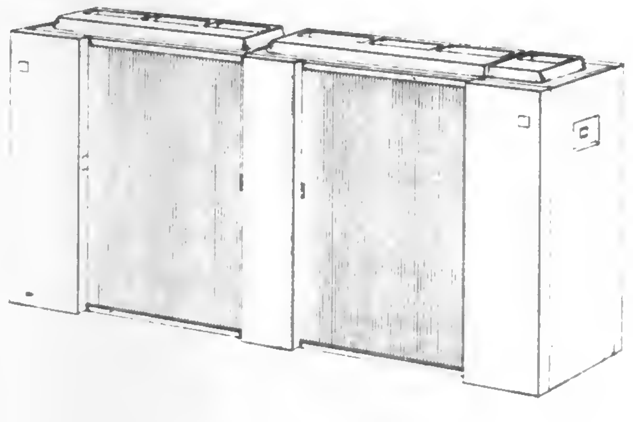
267,490

DATA PROCESSING SYSTEM

James J. LaDue, Wappingers Falls, and Clifford I. Shelkofsky, Poughkeepsie, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 15, 1980, Ser. No. 178,263
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—102



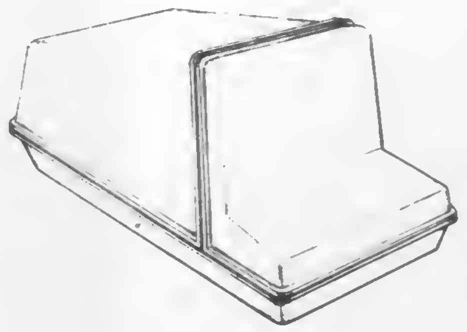
267,491

MODULAR COMPUTER SYSTEM CRT

George E. Chadima, Jr., Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Nov. 5, 1979, Ser. No. 91,185
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—113



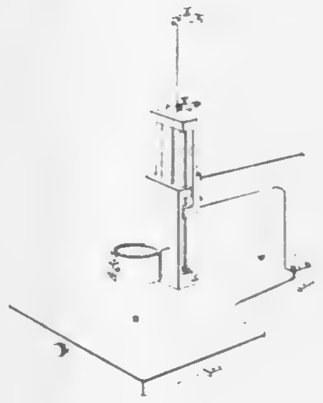
267,492

ROUTER HOLDER

August F. Schieber, 18941 Kimbrance St., Northridge, Calif. 91326

Filed Aug. 22, 1980, Ser. No. 181,643
Term of patent 14 years
Int. Cl. D15—*09*

U.S. Cl. D15—141



267,493

FILM PROJECTOR

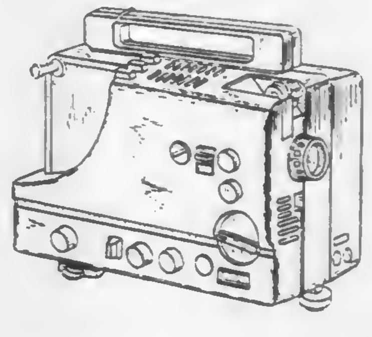
Hans-Ulrich Schade, Pfuhl, Fed. Rep. of Germany, assignor to Foto-Quelle GmbH, Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 817,320, Jul. 20, 1977. This application Sep. 12, 1979, Ser. No. 75,304

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, MRIV190

Term of patent 14 years
Int. Cl. D16—*02*

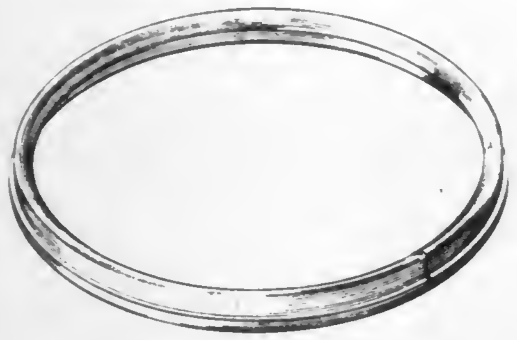
U.S. Cl. D16—23



267,494
DRUM SHELL AND RIM SPACER

Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.
Filed Jun. 23, 1980, Ser. No. 162,018
Term of patent 14 years
Int. Cl. D17—*04*

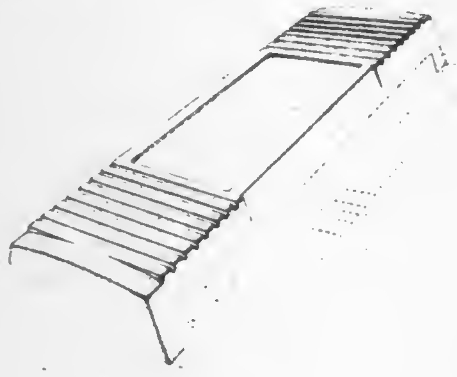
U.S. Cl. D17—22



267,495
HARP COVER

Harold B. Rhodes, La Habra, Calif., assignor to CBS Inc., New York, N.Y.
Filed Oct. 7, 1980, Ser. No. 194,770
Term of patent 14 years
Int. Cl. D17—*01*

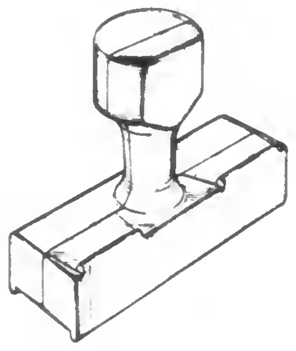
U.S. Cl. D17—9



267,496
PLASTIC MOUNT FOR STAMPING DIE

Edwin W. Goldstein, Scarsdale, N.Y., assignor to Crown Marking Equipment Co., Philadelphia, Pa.
Filed Dec. 23, 1980, Ser. No. 219,585
Term of patent 14 years
Int. Cl. D19—*02*

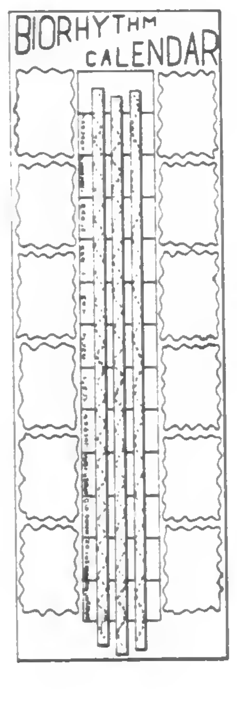
U.S. Cl. D18—15



267,497
BIORHYTHM CALENDAR

Edward W. Gennetten, 5882 Stadium St., San Diego, Calif. 92122
Filed Jun. 19, 1979, Ser. No. 49,911
Term of patent 14 years
Int. Cl. D19—*03*

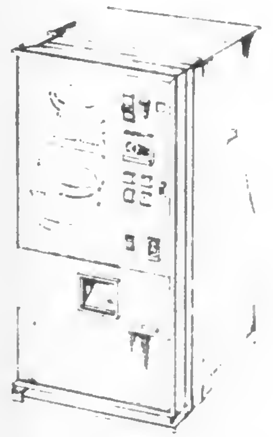
U.S. Cl. D19—20



267,498
VENDING MACHINE

G. Merle Bachman, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 20, 1981, Ser. No. 236,184
Term of patent 14 years
Int. Cl. D20—*01*

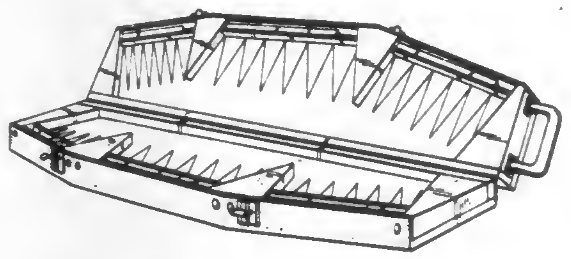
U.S. Cl. D20—5



267,499
GAME BOARD

Kenneth D. Cooper, Calgary, Canada, assignor to Lor-Ken Holdings Ltd., Calgary, Canada
Filed Sep. 30, 1980, Ser. No. 192,621
Claims priority, application Australia, Apr. 9, 1980, 09-04-80-6
Term of patent 14 years
Int. Cl. D21—*01*

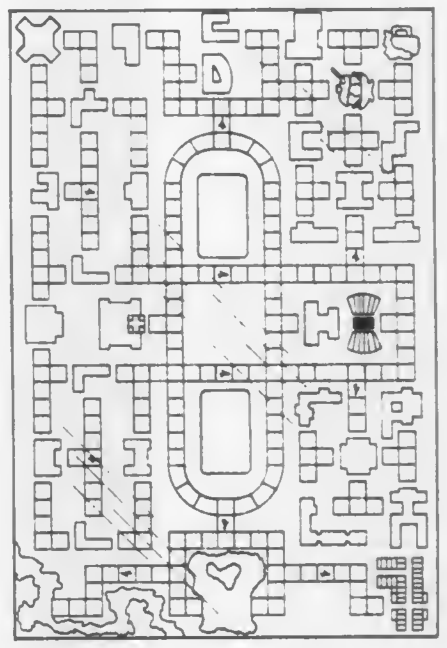
U.S. Cl. D21—15



267,500
GAMEBOARD

William E. Lynch, III, 1433 Heather La., West Chester, Pa. 19380
Filed Apr. 29, 1980, Ser. No. 144,955
Term of patent 14 years
Int. Cl. D21—*01*

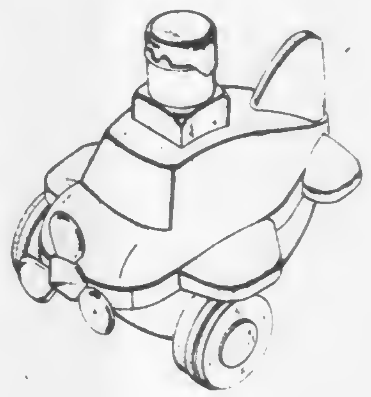
U.S. Cl. D21—31



267,501
TOY AIRPLANE

Toshinori Tabata, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Sep. 15, 1980, Ser. No. 187,178
Claims priority, application Japan, Jul. 20, 1979, 54-30505
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—90



267,502

COMBINED TOY BOAT AND FIGURES THEREFOR

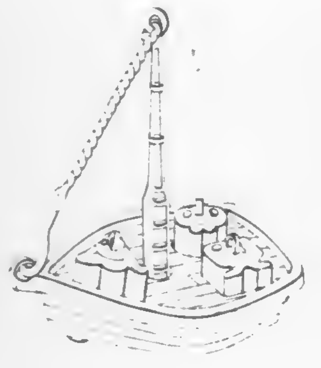
James R. Becker, New York, N.Y.; Fred D. Eddins, Mapleville, R.I.; Maureen Patterson, Brighton, Mass.; David V. O'Connell, East Providence, and Richard M. Rossi, Greenville, both of R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Feb. 2, 1981, Ser. No. 231,580

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—130



267,503

INDIAN DOLL

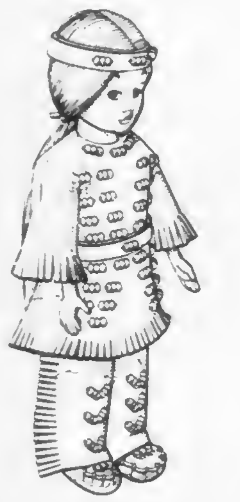
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358

Filed Dec. 4, 1980, Ser. No. 212,878

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—182



267,504

FISHING ROD HOLDER

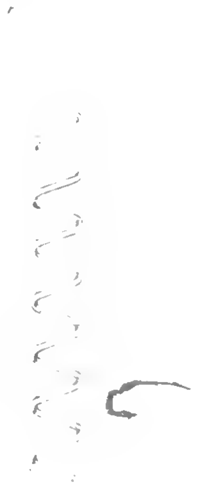
Billy A. Hamlin, P.O. Box 206, Mayesville, S.C. 29104

Filed Mar. 5, 1981, Ser. No. 240,648

Term of patent 7 years

Int. Cl. D22—*05*

U.S. Cl. D22—13



267,505

WELDING OUTLET

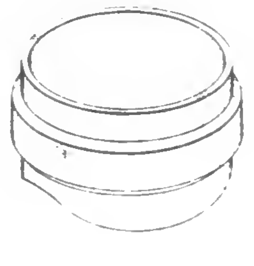
Bobby W. Ryan, Houston, Tex., assignor to WFI International, Inc., Houston, Tex.

Filed Sep. 15, 1980, Ser. No. 187,342

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—40



267,506

QUICK CONNECT COUPLING

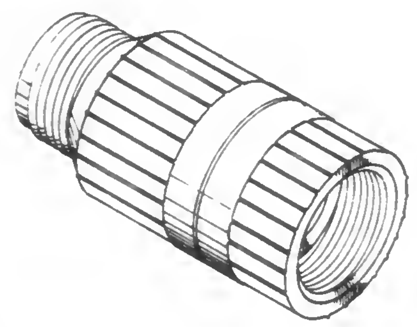
Charles D. Evans, 11758 Weld County Rd. 19, Ft. Lupton, Colo. 80621

Filed Sep. 22, 1980, Ser. No. 189,651

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—44



267,507

SHIELD FOR CEILING FANS AND THE LIKE

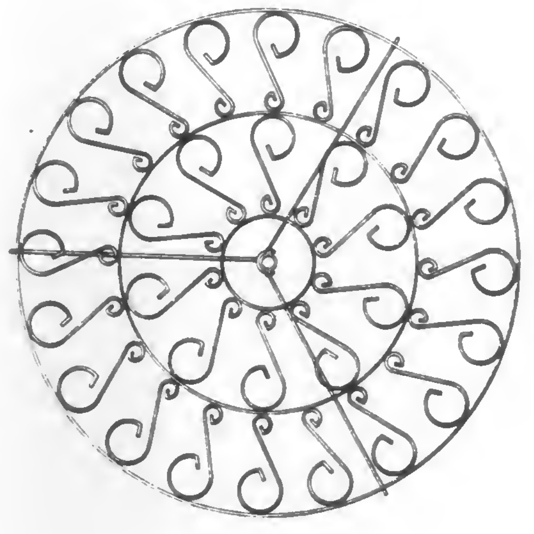
Kenneth P. Woods, 1609 Mistletoe La., Arlington, Tex. 76013, and Alfred L. Wood, 907 Highland Dr., Arlington, Tex. 76010

Filed Feb. 6, 1981, Ser. No. 232,148

Term of patent 14 years

Int. Cl. D23—*04*

U.S. Cl. D23—164



267,508

TONGUE CLEANER

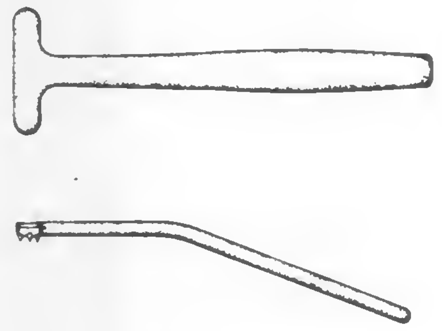
Subhash R. Gupta, Worcester, Mass., assignor to Denteco Inc., Worcester, Mass.

Filed Jul. 21, 1980, Ser. No. 170,786

Term of patent 14 years

Int. Cl. D24—*02, 99*

U.S. Cl. D24—23



267,509

FORCEP

Arne T. Wannag, Saltsjobaden, Sweden, assignor to Fogless AB, Sweden

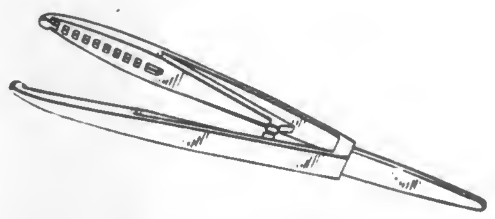
Filed Aug. 2, 1979, Ser. No. 63,326

Claims priority, application Sweden, Feb. 2, 1979, 79 0282

Term of patent 14 years

Int. Cl. D24—*99*

U.S. Cl. D24—27



267,510

BANDAGE

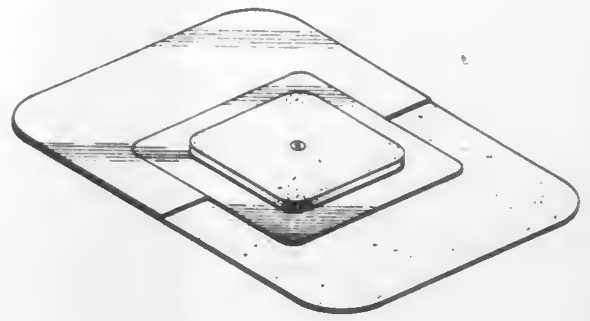
Allyn L. Golub, Coral Gables, Fla., assignor to Key Pharmaceuticals, Incorporated, Miami, Fla.

Filed Jun. 3, 1980, Ser. No. 156,175

Term of patent 14 years

Int. Cl. D24—*04*

U.S. Cl. D24—49



267,511

HINGE SPLINT

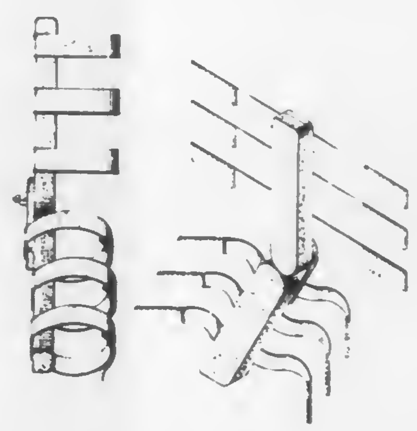
Richard O. Morgan, 10435 NW. Cornell Rd., Portland, Oreg. 97229

Filed Aug. 14, 1980, Ser. No. 178,375

Term of patent 7 years

Int. Cl. D24—*04*

U.S. Cl. D24—64



267,512

BLADDER STIMULATOR

Per-Olov A. V. Carlsson, Sosdala, and Bo H. Hakansson, Lund, both of Sweden, assignors to Crafon Medical AB, Sweden

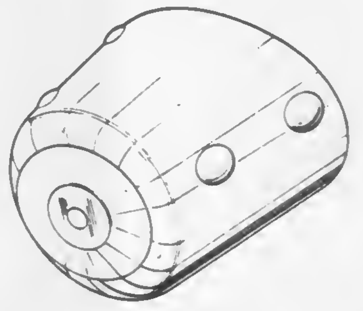
Filed May 21, 1979, Ser. No. 41,231

Claims priority, application Sweden, Nov. 27, 1978, 78-2756

Term of patent 14 years

Int. Cl. D24—*99*

U.S. Cl. D24—99



267,513
INVALID TURNTABLE

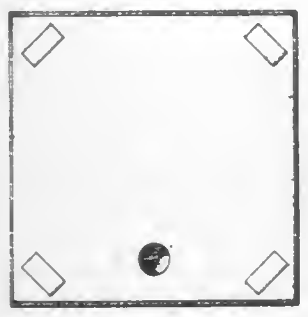
Leslie J. Weigel; Geraldine A. Weigel, and Mary L. Foertmeyer, all c/o The Manual Arts Furniture Co. 3472-86 Beekman St., Cincinnati, Ohio 45223

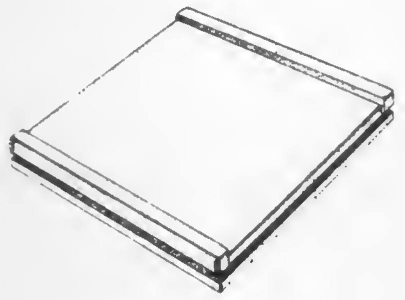
Filed Jun. 23, 1980, Ser. No. 161,671

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—99





267,514
PORTABLE LANTERN

Chung S. Leung, Kowloon, Hong Kong, assignor to Foster Industries Co., Limited, Kowloon, Hong Kong

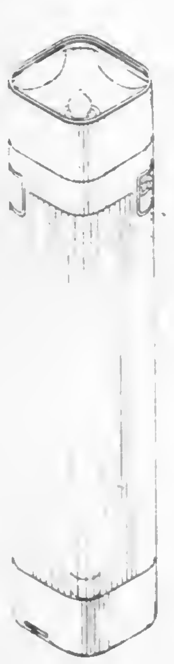
Filed Mar. 24, 1980, Ser. No. 133,552

Claims priority, application United Kingdom, Feb. 1, 1980, 80993416

Term of patent 14 years

Int. Cl. D26—*02*

U.S. Cl. D26—37



267,515
COMBINED LAMP BASE AND CABINET

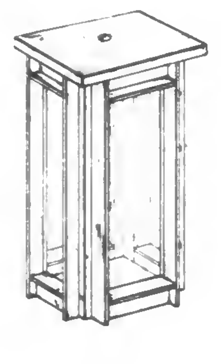
James Knaeble, 16511 Fernando Way, Rosemount, Minn. 55068

Filed Jan. 10, 1980, Ser. No. 110,916

Term of patent 14 years

Int. Cl. D26—*05*

U.S. Cl. D26—58



267,516
FLOOD LIGHT HOUSING

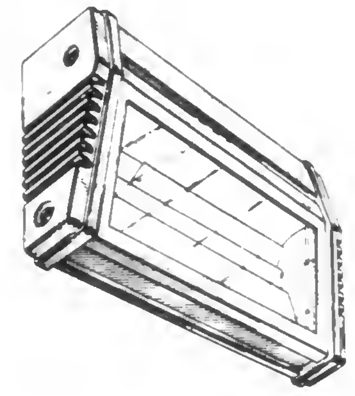
Viggo B. Rambusch, New York, N.Y., and Peter B. White, Montclair, N.J., assignors to Rambusch Decorating Company, New York, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,488

Term of patent 14 years

Int. Cl. D26—*03*

U.S. Cl. D26—72



267,517
DISH AND GLASS-RACK

Kurt Krusche, Nansenring 22, 6000 Frankfurt, Fed. Rep. of Germany

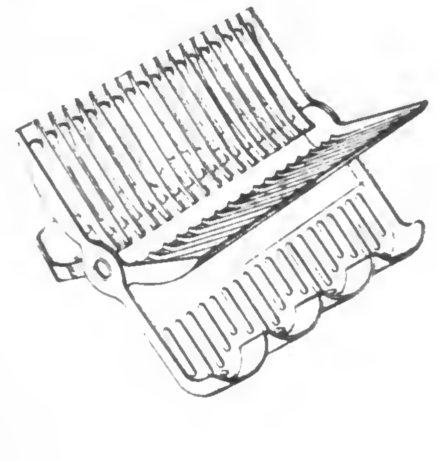
Filed May 5, 1980, Ser. No. 146,437

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 73MR8835

Term of patent 14 years

Int. Cl. D7—*05*

U.S. Cl. D32—55



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  - Lula, Remus A., 4,366,971, Cl. 285-55.000.
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  - Anello, Louis G., 4,367,349, Cl. 570-140.000.
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  - Michaelis, Klaus-Peter; Wehner, Wolfgang; Andreas, Holger; and Muller, Horst, 4,367,304, Cl. 524-204.000.
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  - Carpenter, Roland K., 4,367,143, Cl. 210-222.000.
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  - Panock, Walter C., 4,366,772, Cl. 119-14.010.
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  - Quadling, Darrell F.; and Bailey, Ross M., 4,367,250, Cl. 428-38.000.
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  - Blohm, Donald H., 4,367,255, Cl. 428-99.000.
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  - Balzer, Claude P., 4,367,517, Cl. 362-146.000.
- Baldwin Korthe Web Controls, Inc.: *See—*
  - Glanz, Richard; and Chang, Sun C., 4,366,753, Cl. 101-181.000.
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  - Schiavone, Frank J., 4,367,475, Cl. 343-767.000.
- Ball, Dean M.: *See—*
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  - Lopez, Bernard V.; and Olsen, David T., 4,366,997, Cl. 312-204.000.
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  - Mayer, Gyorgy; and Nemeskeri, Laszlo, 4,366,655, Cl. 52-227.000.
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  - Kanter, Hartmut, 4,367,173, Cl. 260-154.000.
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- Bayard, Michael A.; and Turnbull, James A., to Abbott Laboratories. Combination quick disconnect coupling and fluid cutoff valve. 4,366,816, Cl. 128-213.00A.
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  - Adelmann, Siegfried; Margotte, Dieter; Nouverine, Werner; and Kleiner, Frank, 4,367,186, Cl. 264-22.000.
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  - Gottert, Hans W.; and Schiffer, Rainer, 4,367,407, Cl. 250-329.000.
  - Hucks, Uwe; and Tresper, Erhard, 4,367,330, Cl. 528-196.000.
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- Beach, Shirley, to Phillips Cables Limited. Screw extruder. 4,367,190, Cl. 264-174.000.
- Beard, Steven F. Roller skate light attachment. 4,367,515, Cl. 362-103.000.
- Becelaere, Robert V., to Ruskin Manufacturing Company. Damper assembly. 4,366,830, Cl. 137-75.000.
- Beck, Alexander F., to Olin Corporation. Precision spot plating process and apparatus. 4,367,123, Cl. 204-15.000.
- Beck, Ernst; and Lenard, Peter, to Vollmer Werke Maschinenfabrik GmbH. Machine for repairing hard alloy tipped saw blades. 4,366,728, Cl. 76-25.00R.
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  - Harvey, Robert N., 4,367,081, Cl. 55-503.000.
  - Kaye, Wilbur I., 4,367,404, Cl. 250-207.000.
- Bedford, Michael J., to Molins Limited. Cutting head for filter assembler. 4,366,737, Cl. 83-341.000.
- Bednarz, Joseph F. Method for anodizing aluminum. 4,367,122, Cl. 204-15.000.
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  - Adams, David R.; and Goudie, Alexander C., 4,367,338, Cl. 548-264.000.
- Behl, Wishvender K., to United States of America, Army. High energy electrochemical power cell. 4,367,268, Cl. 429-101.000.
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  - Nickence, John, 4,367,007, Cl. 339-210.00M.
- Bell, Christy W.; Wittle, John K.; and Titus, Charles H., to Electro-Petroleum, Inc. Method for removing liquid from chemically-precipitated sludge. 4,367,132, Cl. 204-180.00R.
- Bell, Gordon D.: *See—*
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- Bell & Howell Company: *See—*
  - Hrastnik, Walter, 4,367,039, Cl. 355-91.000.
- Bell Telephone Laboratories, Incorporated: *See—*
  - McSpadden, John S., 4,366,938, Cl. 248-61.000.
  - Strubing, Eric G., 4,366,729, Cl. 81-3.00R.
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  - Leszczewski, Michael J., 4,366,743, Cl. 91-363.00R.
  - Presley, Rex W., 4,367,424, Cl. 310-82.000.
  - Waghorn, Robert D.; and Brush, Robert W., Jr., 4,367,002, Cl. 339-90.00R.
- Beneke, Wolfgang, to Trutzschler GmbH & Co. KG. Card screen. 4,366,601, Cl. 19-98.000.
- Bennett, Geoffrey R., to Unimax Switch Limited. Mountings for keys. 4,366,688, Cl. 70-395.000.
- Bennett, George R.; and Day, Robert S., to Molins Limited. Handling rod-like articles. 4,366,895, Cl. 198-347.000.
- Benson, Clark K.: *See—*
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- Bente, Alfred, to adidas Sportschuhfabriken Adi Dassler KG. Gripping element for footwear. 4,366,632, Cl. 36-67.00D.
- Bente, Lynn A.: *See—*
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- Benya, Robert J.; and Swinney, Gary D., to Moog Automotive, Inc. Adjustable leveling suspension unit for vehicles. 4,366,969, Cl. 280-668.000.
- Berecz, Imre, to Microdot Inc. Method of making a seal nut. 4,367,060, Cl. 411-303.000.
- Bereiter, Rolf; and Chromy, Franz, to Hilti Aktiengesellschaft. Hammer drill. 4,366,869, Cl. 173-109.000.
- Berger, Bernd; Mucke, Gert; Thies, Helmut; and Neuschutz, Eberhard, to Betriebsforschungsinstitut VDEh Institut fur angewandte Forschung GmbH. Apparatus for measuring stress distribution across the width of flexible strip. 4,366,720, Cl. 73-862.070.
- Berger, Friedrich: *See—*
  - Peise, Helmut; Brausse, Reinhard; Lucas, Klaus; Kuhlbrodt, Klaus-Otto; Berger, Friedrich; Gohler, Peter; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudymov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,367,076, Cl. 48-128.000.
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  - Zweifel, Hans; Berger, Joseph; Kvita, Vratislav; and Roth, Martin, 4,367,324, Cl. 526-256.000.
- Bergman, Gunnar B. System for stabilizing a floating vessel. 4,366,766, Cl. 114-125.000.
- Bergqvist, Elon R. V. Electronic length measuring device comprising a measuring-tape which is rolled up in a gauging station. 4,366,623, Cl. 33-140.000.
- Bergstrom, Hans R., to Aktiebologet Samefa. Arrangement for benches for measuring and straightening vehicles. 4,366,624, Cl. 33-180.0AT
- Berliner, Steven D.: *See—*
  - Brown, Glen A.; and Berliner, Steven D., 4,367,525, Cl. 364-200.000.
- Bernier, Jean Paul. Process and devices for causing a heat carrier fluid to circulate in a closed circuit comprising a hot source and a cold source. 4,366,853, Cl. 165-1.000.
- Bernsau, Peter: *See—*
  - Bohn, Hans; Stein, Wolfgang; Bernsau, Peter; and Staubitzer, Fred, 4,367,115, Cl. 156-358.000.
- Bertram, James L.; and Woo, Edmund P., to Dow Chemical Company, The. Epoxy resins from hydroxy benzamides. 4,367,328, Cl. 528-98.000.
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- Bhalla, Prithvi R.: *See—*
  - O'Neal, Thomas D.; Bhalla, Prithvi R.; and Cross, Barrington, 4,367,339, Cl. 548-378.000.
- Biedermann, Klaus: *See—*
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- Bieganski, Zdzislaw. Cable stripper. 4,366,619, Cl. 30-90.100.
- Biel, Edward N., to Union Carbide Corporation. Cling-wrap polyethylene film. 4,367,256, Cl. 428-218.000.
- Billet, Rene, to Societe Anonyme Francaise du Ferodo. Torsion damping center for the driven disc of a friction clutch for a motor vehicle. 4,366,893, Cl. 192-106.200.
- Bingham, Keith D., to Lever Brothers Company. Method and cosmetic composition for reducing sebum secretion. 4,367,227, Cl. 424-243.000.
- Bioenterprises Pty Ltd.: *See—*
  - Maclennan, Mary E.; and Lawson, Martial, 4,367,240, Cl. 426-28.000.
- Bioself International Inc.: *See—*
  - Desjacques, Edmond, 4,367,527, Cl. 364-413.000.

Birkelo, Einar P., to Coustic-Glo International, Inc. Low-residue brightening compositions and methods for using them. 4,367,155, Cl. 252-99.000.

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Blauenstein, Arnold, to Abnox AG. Hose coupling with double lock. 4,366,945, Cl. 251-149.600.

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Blohm, Donald H., to Baker International Corporation. Lining sheet. 4,367,255, Cl. 428-99.000.

Bloom, Harold T.; and St. Pierre, Richard E., to Celanese Corporation. Process and apparatus for controlling distributing and monitoring liquids. 4,367,249, Cl. 427-345.000.

Bloom, Leslie I., to AECI Limited. Foot wear. 4,366,630, Cl. 36-30.00R.

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Bloss, Werner H.; Hewig, Gert H.; Laub, Gerhard; and Reinhardt, Erich, to Bloss, Werner H. Solar cell arrangement. 4,367,366, Cl. 136-246.000.

Blount, David H. Process for the production of polyepoxy silicate resins. 4,367,326, Cl. 527-303.000.

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Boaz, Virgil L Insect trap. 4,366,643, Cl. 43-113.000.

Bobrysheva, Ljubov V.; Gavrilenko, Boris P.; Markov, Valery V.; and Minenko, Leonid P. Conveyor of a farm machine pickup. 4,366,898, Cl. 198-692.000.

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Bodine, Albert G. Sonic apparatus and method for slurry well bore mining and production. 4,366,988, Cl. 299-14.000.

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Bohn, Hans; Stein, Wolfgang; Bernsau, Peter; and Staubitzer, Fred, to Robert Burkle GmbH & Co. Device for controlling a panel press for the assembly of multilayer printed circuit boards. 4,367,115, Cl. 156-358.000.

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Boix-Igleasias, Jose; Soto, Jose P.; Vega-Noverola, Armando; Spickett, Robert G. W.; and Mauri, Jacinto M., to Fordonal, S.A. Piperidine derivatives. 4,367,232, Cl. 424-267.000.

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Bontinck, Walter; D'Hondt, Marc; and Jacobs, Roland, to UCB, Societe Anonyme. Heat-sealable packaging film producing a peelable seal. 4,367,312, Cl 525-93.000.

Booth, Robert M., Jr.; and Wasik, Chester A., to International Business Machines Corp. Situ rate and depth monitor for silicon etching. 4,367,044, Cl 356-357.000.

Boston University, Trustees of: *See—*
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Bosworth, Warren, to Tennis Machines, Inc. Racket stringing machines. 4,366,958, Cl. 273-73.00A.

Bouck, Gerald. Apparatus for measuring the differential pressure of dissolved gases in a fluid medium. 4,366,700, Cl. 73-19.000.

Boulogne, Jean; Guillon, Michel; and Papantoniou, Christos, to L'Oreal. Lipstick composition and process for preparing same. 4,367,220, Cl. 424-64.000.

Bower, Kenneth W., to Exxon Research and Engineering Co. Method and apparatus for purging and/or priming an ink jet. 4,367,479, Cl. 346-140.00R.

Bowers, John E.; and Schmit, Joseph L., to Honeywell Inc. Mercury containment for liquid phase growth of mercury cadmium telluride from tellurium-rich solution. 4,366,771, Cl. 118-415.000.

Boyer, Daniel R.: *See—*
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Bradshaw, John H., to Gillette Company, The. Pressure testing apparatus. 4,366,715, Cl. 73-714.000.

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Brandell, John T., to Halliburton Company. Downhole pump and testing apparatus. 4,366,862, Cl. 166-106.000.

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Braun, Gert. Crushing device. 4,366,931, Cl. 241-186.00R.

Braun, Gert, to Halbach & Braun. Coal planer control device. 4,366,989, Cl. 299-34.000.

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British-American Tobacco Company Limited: *See—*
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Bromley, Eric; Mecklenburg, Alfred C.; and Rosenfeld, Jon P., to Coleco Industries, Inc. Electronic boxing game. 4,366,960, Cl. 273-85.00G.

Broome, Barry, to Sport-O-Scope, Inc. Erecting telescope. 4,367,010, Cl. 350-563.000.

Broomes, Edward L. C. Anti-snoring apparatus. 4,366,815, Cl. 128-164.000.

Broussard, Kenneth W. Apparatus for fire hose deployment. 4,366,933, Cl. 242-86.100.

Brown, Glen A.; and Berliner, Steven D., to Tesdata Systems Corporation. CPU Channel monitoring system. 4,367,525, Cl. 364-200.000.

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Brown, Roger J.: *See—*
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Brown, William H.: *See—*
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Brummett, Barry J.; and O'Neill, Edward E., to Pizza Hut, Inc. Method for preparing cooking pizza. 4,367,243, Cl. 426-303.000.

Brunner, Peter, to Hewlett-Packard GmbH. Pulse generator circuit. 4,367,415, Cl. 307-106.000.

Brunnschweiler, David; and Sedgely, Barrie. Weighing controlling flow rate with taring between weighings. 4,366,872, Cl. 177-1.000.

Brush, Robert W., Jr.: *See—*
Waghorn, Robert D.; and Brush, Robert W., Jr., 4,367,002, Cl. 339-90.00R.

Buck, Richard: *See—*
Guido, Joseph J.; and Buck, Richard, 4,366,916, Cl. 220-404.000.

Budapesti Muszaki Egyetem: *See—*
Klopp, Gabor; Suto, Jozsef; Szasz, Karoly; Szebenyi, Imre; Winkler, Gabor; Machacs, Miklos; and Palmai, Gyorgy, 4,367,204, Cl. 423-239.000.

Budd Company, The: *See—*
Hulse, David O., 4,366,603, Cl. 24-221.00R.

Budde, David L.; Colley, Stephen R.; Domenik, Stephen L.; Goodman, Allan L.; and Howard, James D., to Intel Corporation. Microinstruction execution unit for use in a microprocessor. 4,367,524, Cl. 364-200.000.

Bunker Ramo Corporation: *See—*
Monaghan, Kevin J., 4,367,011, Cl. 350-96.200.

Bunning, John G., to Esterline Angus Instrument Corporation. Disposable pen-reservoir. 4,367,481, Cl. 346-140.00A.

Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., to Halliburton Company. Well cementing process and gasified cements useful therein. 4,367,093, Cl. 106-87.000.

Burns Bros., Inc.: *See—*
Coutts, James W., 4,366,850, Cl. 152-222.000.
Martinelli, Rene J., 4,366,849, Cl. 152-221.000.

Burron Medical Inc.: *See—*
Thomas, Joseph J., 4,366,817, Cl. 604-174.000.

Bussard, Robert W., to International Nuclear Energy Systems Co. Modular fusion apparatus using disposable core. 4,367,193, Cl. 376-133.000.

Busse, William E. Method and apparatus for constructing pyramid. 4,366,961, Cl. 273-155.000.

Butler Manufacturing Company: *See—*
McClure, Richard R., 4,366,620, Cl. 30-264.000.

Buus, Jorn: *See—*
Bregnedal, Peter; and Buus, Jorn, 4,367,239, Cl. 424-322.000.

Buzink, Hendrik J.: *See—*
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Bychkov, Alexandr V.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.

Bye, Mark L.: *See—*
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C-I-L Inc.: *See—*
Pollock, David C. I.; and Wilson, Malcolm A., 4,367,146, Cl. 210-608.000.

C. van der Lely N.V.: *See—*
van der Lely, Cornelis; and Bom, Cornelis J. G., 4,366,666, Cl. 56-370.000.

Cain, Dallas E.: *See—*
Wagner, Clifford G.; and Cain, Dallas E., 4,366,703, Cl. 73-38.000.

Campbell, Richard L.; and Coffey, Clayton G., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Low drag, light weight towed target. 4,366,962, Cl. 273-360.000.

Canada, Her Majesty the Queen in right of: *See—*
Jacobson, Thor V., 4,367,552, Cl. 372-23.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
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Canon Kabushiki Kaisha: *See—*
Matsuyama, Shigeru, 4,367,535, Cl. 364-736.000.
Sakamaki, Hisashi; Kimura, Yoshimasa; Honma, Toshio; and Souma, Ikuo, 4,367,036, Cl. 355-14.00R.
Suzki, Akiyoshi, 4,367,009, Cl. 350-6.500.
Suzuki, Takashi; and Kitagishi, Nozomu, 4,367,463, Cl. 340-700.000.

Caray, Andre, to Valeo Societe Anonyme. Diaphragm clutch mechanism. 4,366,888, Cl. 192-89.00B.

Carbonaro, Mario G. B., to Hamon-Sobelco, S.A. Air channeling device for mixing dry and humid air streams of a combined wet and dry atmospheric cooler. 4,367,183, Cl. 261-159.000.

Card, Roy T., to Tuftco Corporation. Dual shiftable needle bars for tufting machine. 4,366,761, Cl. 112-79.00A.

Cardenas Franco, Luis; and Figueroa Sanchez, David, to Investigacion Fic Fideicomiso. System for controlling movement of rotary article conveying mechanism in glassware forming machines. 4,367,087, Cl. 65-163.000.

Caridis, Andrew A.; Klein, Lawrence F.; and Benson, Clark K., to Heat and Control, Inc. Apparatus for processing food products. 4,366,749, Cl. 99-339.000.

Carillo, Ernie. Electrical reactor construction. 4,367,450, Cl. 336-200.000.

Carl Schenck AG, Firma: *See—*
Jarschel, Rainer, 4,366,707, Cl. 73-146.000.

Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,367,386, Cl. 200-333.000.

Carlson, Harry J., Jr.: *See—*
Stromsta, Roger R.; Miller, John H., III; and Carlson, Harry J., Jr., 4,367,505, Cl. 360-121.000.

Carlson, Richard H., to Elmwood Sensors, Inc. Thermostatic switch construction. 4,367,452, Cl. 337-362.000.

Carluccio, Frank: *See—*
Katz, Michael; Carluccio, Frank; Mallari, Gil; FitzPatrick, Kevin; Desai, Ashok; Casciano, Robert; and Tsai, Jane, 4,367,363, Cl. 585-809.000.

Carpenter, Roland K., to Aqua Magnetics, Inc. Apparatus for magnetically treating liquid flowing through a pipe and clamping means therefor. 4,367,143, Cl. 210-222.000.

Carter, Willis M., to University of Kentucky Research Foundation, The. Bevolute gear system. 4,367,058, Cl. 409-26.000.

Casadio, Roberto. Wire stripping pliers. 4,366,730, Cl. 81-9.50A.

Casasanta, Salvatore J., to Wiremold Company, The. Overhead lighting electrical distribution system. 4,367,417, Cl. 307-147.000.

Casciano, Robert: *See—*
Katz, Michael; Carluccio, Frank; Mallari, Gil; FitzPatrick, Kevin; Desai, Ashok; Casciano, Robert; and Tsai, Jane, 4,367,363, Cl. 585-809.000.

Cash, Donald R.; and Ellison, Wesley E. Outboard motor support frame. 4,366,954, Cl. 269-289.00R.

Castrantas, Harry M., to FMC Corporation. Control of thiosulfate in wet desulfurization process solutions. 4,367,212, Cl. 423-573.00R.

Castro Convertible Corporation: *See—*
Teague, W. Dorwin, 4,366,586, Cl. 5-28.000.

Catanzarite, Vincent O. Coating for lithium anode, thionyl chloride active cathode electrochemical cell. 4,366,616, Cl. 29-623.500.

Caterpillar Tractor Co.: *See—*
Eakman, Larry A., 4,366,674, Cl. 60-618.000.
Goloff, Alexander; and Staebler, Paul J., 4,366,785, Cl. 123-90.510.
Suckow, David S., 4,366,890, Cl. 192-0.096.

Cavallanti, Virginio: *See—*
Lagana, Vincenzo; Saviano, Francesco; and Cavallanti, Virginio, 4,367,258, Cl. 423-228.000.

Caveney, Jack E.: *See—*
Conlon, Thomas; and Caveney, Jack E., 4,366,602, Cl. 24-25.000.

Celanese Corporation: *See—*
Bloom, Harold T.; and St. Pierre, Richard E., 4,367,249, Cl. 427-345.000.

Cellone, Luigi; Vallarino, Angelo; and Leoncavallo, Roberto, to Minnesota Mining and Manufacturing Company. Photographic elements with improved surface characteristics. 4,367,284, Cl. 430-539.000.

Cesana, Paolo: *See—*
Ponti, Marcello; and Cesana, Paolo, 4,366,585, Cl. 5-18.00R.

Chablaix, Rene, to Societe d'Assistance Technique pour Produits Nestle S.A. Dry baked product rich in proteins and a process for its production. 4,367,241, Cl. 426-128.000.

Chaney, David B.: *See—*
Koncelik, Joseph A.; and Chaney, David B., 4,366,999, Cl. 312-237.000.

Chang, Sun C.: *See—*
Glanz, Richard; and Chang, Sun C., 4,366,753, Cl. 101-181.000.

Chao, Tai-Hsiang: *See—*
Antos, George J.; and Chao, Tai-Hsiang, 4,367,137, Cl. 208-139.000.

Chao, Yau-Shing. Ball chain positive drive stepless transmission. 4,367,067, Cl. 474-154.000.

Charrier, Elie; and Fourno, Rene, to Paquet Thermique, S.A. Gas boiler able to operate in a sealed combustion circuit. 4,366,778, Cl. 122-17.000.

Cheever, Richard N., to Tetra Pak Developpement SA. Process of and apparatus for cold-cathode electron-beam generation for sterilization of surfaces and similar applications. 4,367,412, Cl. 250-492.300.

Chemische Fabrik Stockhausen GmbH: *See—*
Hubner, Wolfgang; and Fischer, Werner, 4,367,297, Cl. 523-130.000.

Chemische Werke Huels, Aktiengesellschaft: *See—*
Franz, Gerhard; Heinrich, Friedrich; and Ratajczak, Hans-Josef, 4,367,362, Cl. 585-671.000.

Chen, Jien C. Hydraulic bellow type scale. 4,366,876, Cl. 177-210.00C.

Chichester, Willard L., to Clark Equipment Company. Hydrostatic transmission. 4,366,671, Cl. 60-444.000.

- Chiklis, Charles K., and Mattucci, Neil C., to Polaroid Corporation. Diffusion transfer product and process. 4,367,277, Cl. 430-213.000.
- Childs, Jerry D.: *See—*
  - Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., 4,367,093, Cl. 106-87.000.
- Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
  - Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasuarl nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,367,229, Cl. 424-251.000.
- Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
  - Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi, 4,367,165, Cl. 252-457.000.
  - Shiroto, Yoshimi; Higashi, Takehito; and Ono, Takeo, 4,367,164, Cl. 252-457.000.
- Chloride Group Public Limited Company: *See—*
  - Warrell, Suzanne; and Shipperbottom, Roy, 4,367,188, Cl. 264-104.000.
- Christie, Robert M.: *See—*
  - Richards, Rodney W.; Gill, Melvyn; and Christie, Robert M., 4,367,340, Cl. 549-214.000.
- Christof Stoll GmbH & Co. KG: *See—*
  - Ziegler, Horst; and Bogle, Dagobert, 4,366,981, Cl. 297-328.000.
- Chromy, Franz: *See—*
  - Bereiter, Rolf; and Chromy, Franz, 4,366,869, Cl. 173-109.000.
- Chu, Nori Y. C.: *See—*
  - Uhlmann, Donald R.; Snitzer, Elias; Hovey, Richard J.; and Chu, Nori Y. C., 4,367,170, Cl. 252-586.000.
- Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A., Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai. Method of producing shaped rolled sections. 4,366,693, Cl. 72-201.000.
- Ciba-Geigy AG: *See—*
  - Ikin, John B., 4,367,047, Cl. 356-431.000.
  - Leifels, Klaus D.; Renner, Alfred; and Widmer, Franz R., 4,367,171, Cl. 524-47.000.
- Ciba-Geigy Corporation: *See—*
  - Iqbal, Abul, 4,367,333, Cl. 542-417.000.
  - Loew, Peter, 4,367,334, Cl. 544-103.000.
  - Michaelis, Klaus-Peter; Wehner, Wolfgang; Andreas, Holger; and Muller, Horst, 4,367,304, Cl. 524-204.000.
  - Renner, Alfred; and Haug, Theobald, 4,367,299, Cl. 523-457.000.
  - Zweifel, Hans; Berger, Joseph; Kvita, Vratislav; and Roth, Martin, 4,367,324, Cl. 526-256.000.
- CISE S.p.A.: *See—*
  - Adorni, Napoleone, 4,366,714, Cl. 73-708.000.
- Claar, Leslie M.; and Russell, John G., to Parker-Hannifin Corporation. Pilot operated hydraulic device. 4,366,672, Cl. 60-452.000.
- Clapp, Guy C. Fishing rod holder. 4,366,640, Cl. 43-21.200.
- Clark, Donald E.; and Grant, Norman H., to American Home Products Corporation. Inhibitors of mammalian collagenase. 4,367,233, Cl. 424-270.000.
- Clark Equipment Company: *See—*
  - Chichester, Willard L., 4,366,671, Cl. 60-444.000.
- Claussen, Robert L.: *See—*
  - Aldcroft, Gary T.; Claussen, Robert L.; Fogarty, A. Edward; Fogarty, Bonnie R.; and Kearney, John P., 4,366,957, Cl. 273-1.0GF.
- Clemenie, Roger. Hydraulically operated fan assembly for a heat exchanger assembly. 4,366,783, Cl. 123-41.120.
- Cnare, Robert F., to Allis-Chalmers Corporation. Method for firing coal in pyro-processes using direct heat recuperation from a cross flow heat exchanger. 4,367,065, Cl. 432-14.000.
- Coaxial Cartridges, Inc.: *See—*
  - Anderson, Steven R., 4,366,919, Cl. 222-137.000.
- Cockerill Sambre: *See—*
  - Rutten, Leon, 4,366,690, Cl. 72-53.000.
- Coeuillet, Jacques: *See—*
  - Arnichand, Roger; Coeuillet, Jacques; Darnet, Jean; and Sbalchiero, Pierre, 4,367,436, Cl. 318-628.000.
- Coffey, Clayton G.: *See—*
  - Campbell, Richard L.; and Coffey, Clayton G., 4,366,962, Cl. 273-360.000.
- Cog B.V.: *See—*
  - Marien, Pieter; Irik, Gijsberg W.; and Boersma, Rintje, 4,367,381, Cl. 200-48.00A.
- Cohnen, Wolfgang: *See—*
  - Eimers, Erich; Dhein, Rolf; Cohnen, Wolfgang; Kuhle, Engelbert; and Heywang, Gerhard, 4,367,303, Cl. 524-107.000.
- Cole, Darrell D.: *See—*
  - Proctor, D. Frederic; and Cole, Darrell D., 4,367,376, Cl. 179-84.00T.
- Coleco Industries, Inc.: *See—*
  - Bromley, Eric; Mecklenburg, Alfred C.; and Rosenfeld, Jon P., 4,366,960, Cl. 273-85.00G.
- Coles, Donald K. Internal combustion engine. 4,366,793, Cl. 123-436.000.
- Colgate-Palmolive Company: *See—*
  - Larsen, John E.; and McGregor, Rob R., 4,366,631, Cl. 36-50.000.
- Colley, Stephen R.: *See—*
  - Budde, David L.; Colley, Stephen R.; Domenik, Stephen L.; Goodman, Allan L.; and Howard, James D., 4,367,524, Cl. 364-200.000.
- Colling, J.; and Heintz, C., to ARBED S.A. Oxygen lance. 4,366,953, Cl. 266-266.000.
- Columbia University, The Trustees of: *See—*
  - Manning, Maurice; and Sawyer, Wilbur H., 4,367,225, Cl. 424-177.000.
- Columbian Chemicals Company: *See—*
  - Glasstetter, Fred E.; and Eckert, Frank J., 4,367,208, Cl. 423-450.000.
- Colvin, David S. Socket including adjustable jaws. 4,366,733, Cl. 81-128.000.
- Commissariat a l'Energie Atomique: *See—*
  - Artaud, Robert; Aubert, Michel; Elbeze, Richard; and Renaux, Charley, 4,366,854, Cl. 165-74.000.
  - Aubert, Michel; Bret, Antoine; Lemercier, Guy; Montmayeur, Jean-Denis; Sauvage, Michel; and Teytu, Andre, 4,367,195, Cl. 376-290.000.
  - Kumurdjian, Pierre, 4,366,614, Cl. 29-580.000.
- Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines"C.G. Doris": *See—*
  - Martin, Jean G. M., 4,366,838, Cl. 137-615.000.
- Compagnie Industrielle Radioelectrique: *See—*
  - Grosvernier, Claude-Arnold, 4,367,045, Cl. 356-394.000.
- Compagnie Internationale pour l'Informatique CII-Honeywell Bull: *See—*
  - Giraud, Georges; and Mollier, Jean, 4,367,402, Cl. 235-385.000.
- Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
  - Fanene, Bernard, 4,366,925, Cl. 228-20.000.
  - Lesieur, Jean-Paul, 4,367,496, Cl. 360-45.000.
- Comsip, Inc.: *See—*
  - Lauer, Jay M., 4,367,133, Cl. 204-195.00P.
- Conlon, Thomas; and Caveney, Jack E., to Panduit Corp. Metal tie. 4,366,602, Cl. 24-25.000.
- Conoco Inc.: *See—*
  - Jackson, Robert G.; and Yoon, Heeyoung, 4,366,782, Cl. 123-3.000.
- Converse Inc.: *See—*
  - Giese, Erik O.; and Brown, Roger J., 4,366,634, Cl. 36-114.000.
- Cooper, Sidney; and Jacob, Ezekiel J., to Ani-Live Film Service Inc. Dry transfer of electrophotographic adhesive toner images. 4,367,276, Cl. 430-126.000.
- Corley, Richard P.: *See—*
  - Heyda, Donald W.; Corley, Richard P.; and Sinclair, Rosalind, 4,366,820, Cl. 128-659.000.
- Corporation of the President of The Church of Jesus Christ of Latter-Day Saints: *See—*
  - Vowles, Jaren P., 4,367,020, Cl. 353-120.000.
- Cortorillo, Salvatore F., to Edison International, Inc. Self ballasted lamp for automotive, aircraft runway, etc. lighting. 4,367,433, Cl. 315-49.000.
- Cotard, Didier A. J. Stop device for securing doors and portals. 4,366,975, Cl. 292-340.000.
- Cotten, Whitworth W., Jr.; and Tambert, John, to Harris Corporation. Subscriber station for providing multiple services to a subscriber. 4,367,548, Cl. 370-3.000.
- Coustic-Glo International, Inc.: *See—*
  - Birkelo, Einar P., 4,367,155, Cl. 252-99.000.
- Coutts, James W., to Burns Bros., Inc. Cable-type tire chains and cross member and traction sleeve therefor. 4,366,850, Cl. 152-222.000.
- Cox, Dan; and Jones, Bernard H., to Owens-Corning Fiberglas Corporation. Threading means for strand pulling and chopping apparatus. 4,367,084, Cl. 65-10.200.
- Coy, Vernon W.: *See—*
  - Anthony, Frank H.; and Coy, Vernon W., 4,367,399, Cl. 219-497.000.
- Crain, Philip W.; and Morse, James E., to Mattel, Inc. Steering mechanism for toy vehicles. 4,366,645, Cl. 46-201.000.
- Crass, Gunther; and Hensel, Hartmut, to Hoechst Aktiengesellschaft. Rough electrical insulating film of polypropylene and process for the manufacture thereof. 4,367,511, Cl. 361-313.000.
- Creusot-Loire Entreprises: *See—*
  - Namy, Gerald, 4,367,095, Cl. 106-100.000.
- Crivello, James V., to General Electric Company. UV Curable compositions and substrates treated therewith. 4,367,251, Cl. 428-40.000.
- Cronin, Michael J., to Lockheed Corporation. Quick attach/detach instrument panel and method. 4,367,513, Cl. 361-428.000.
- Crooks, James W.: *See—*
  - Anthony, James R.; and Crooks, James W., 4,366,604, Cl. 24-230.00A.
- Cross, Barrington: *See—*
  - O'Neal, Thomas D.; Bhalla, Prithvi R.; and Cross, Barrington, 4,367,339, Cl. 548-378.000.
- Crotty, David E.: *See—*
  - Lash, Ronald J.; and Crotty, David E., 4,367,099, Cl. 148-6.200.
- Crum, Gerald W.; and Rooney, Brian M., to Nordson Corporation. Manually programmable robot with power-assisted motion during programming. 4,367,532, Cl. 364-513.000.
- Cuculo, John A.; and Hudson, Samuel M., to Research Corporation. Preparation of cellulose films or fibers from cellulose solutions. 4,367,191, Cl. 264-187.000.
- Cuendet, Pierre: *See—*
  - Gratzel, Michael; Brugger, Pierre-Alain; and Cuendet, Pierre, 4,367,131, Cl. 204-157.10R.
- Cummins Engine Company, Inc.: *See—*
  - Roettgen, Leslie A., 4,366,837, Cl. 137-557.000.
- Curati, Marino, Jr., to True Temper Corporation. Method for collecting and storing liquid from along a railroad track section. 4,366,846, Cl. 141-1.000.

- Currie, William E.; and Korane, Kenneth J., to Parker-Hannifin Corporation. Compensating hose fitting. 4,366,841, Cl. 138-109.000.
- Curry, John L., to NCR Corporation. D.C. Input shift panel driver circuits-biased inputs. 4,367,468, Cl. 340-768.000.
- Dage, Richard C.: *See—*
  - Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., 4,367,236, Cl. 424-273.00R.
- Dai Nippon Insatsu Kabushiki Kaisha: *See—*
  - Mizuno, Shogo; Shimomura, Kyoichi; and Kobayashi, Michiaki, 4,367,071, Cl. 8-471.000.
- Daido Oxygen Company Ltd.: *See—*
  - Fukushima, Hatahiko; Handa, Tadahiko; and Ochiai, Kiyoshi, 4,367,187, Cl. 264-37.000.
- Daikin Kogyo Co., Ltd.: *See—*
  - Hiramatsu, Uji; Honda, Toshihide; and Ohsaka, Yohnosuke, 4,367,350, Cl. 570-144.000.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Enke, Kurt, 4,366,992, Cl. 301-37.00P.
- Dainippon Ink & Chemicals, Inc.: *See—*
  - Aoki, Takayoshi; and Kinoshita, Akio, 4,367,275, Cl. 430-99.000.
- Dainippon Screen Seizo Kabushiki Kaisha: *See—*
  - Mizuta, Masaji, 4,367,029, Cl. 354-298.000.
- Dalle Ave, Jean: *See—*
  - Steinberg, George N.; Reinberg, Alan R.; and Dalle Ave, Jean, 4,367,114, Cl. 156-345.000.
- Daniel, Daniel S.: *See—*
  - Herz, Arthur H.; and Daniel, Daniel S., 4,367,279, Cl. 430-234.000.
- Danusso, Ferdinando: *See—*
  - Ferruti, Paolo; Danusso, Ferdinando; Tanzi, Maria C.; and Quadro, Giuseppe, 4,367,176, Cl. 548-482.000.
- Darnet, Jean: *See—*
  - Arnichand, Roger; Coeuillet, Jacques; Darnet, Jean; and Sbalchiero, Pierre, 4,367,436, Cl. 318-628.000.
- Dauge, Gilbert V.; and Langlais, Jacques F., to Dauge, Gilbert V.; and Langlais, Jacques F. Capacity measuring device using ratios of frequencies. 4,366,875, Cl. 177-210.00C.
- Daun, Arthur T. Expandable tree support collar. 4,366,647, Cl. 47-42.000.
- Davies, Glyndwr J., to Associated Engineering Public Limited Company. Bearing. 4,367,189, Cl. 264-137.000.
- Davis, George D.: *See—*
  - Rooks, Charles W.; Davis, George D.; Hill, James C.; and McMinn, Talmage D., Jr., 4,367,160, Cl. 252-373.000.
- Davis, Philip W.; and Buzink, Hendrik J., to Avon Industrial Polymers (Melksham) Ltd. Partition for a cargo transporter. 4,366,977, Cl. 296-24.00R.
- Davy-Loewy Limited: *See—*
  - Stubbins, Derek, 4,367,059, Cl. 410-44.000.
- Day, Robert S.: *See—*
  - Bennett, George R.; and Day, Robert S., 4,366,895, Cl. 198-347.000.
- Dayco Corporation: *See—*
  - Speer, Billy L., 4,366,609, Cl. 29-159.00R.
- DeBoynton, William L. Carburetor by-pass and fuel control system. 4,366,790, Cl. 123-325.000.
- DEC International, Inc.: *See—*
  - Licary, Frank J., 4,366,943, Cl. 251-30.000.
- Dechamps, Dorian V. Set of advertising components. 4,366,637, Cl. 40-621.000.
- Declercq, Paul G.: *See—*
  - Franklin, Timothy W.; Declercq, Paul G.; and Henno, Michael M., 4,367,254, Cl. 428-85.000.
- Deere & Company: *See—*
  - Nelson, Roger J., 4,366,718, Cl. 73-861.580.
- Degussa Aktiengesellschaft: *See—*
  - Eiermann, Kurt; and Kolb, Franz, deceased, 4,366,709, Cl. 73-204.000.
- Deleris, Robert, to Regie Nationale des Usines Renault. Angle of advance correction signal generator. 4,366,792, Cl. 123-425.000.
- DeLong, Charles E.; and Robinson, John W., to Kimball International, Inc. Pedalboard encoded note pattern generation system. 4,366,739, Cl. 84-1.030.
- Delos, Inc.: *See—*
  - Nuzzo, Roy, 4,366,812, Cl. 128-77.000.
- de los Santos, Federico. Process and apparatus for grinding materials. 4,366,929, Cl. 241-85.000.
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  - Balleys, Francois; and Delpretti, Roger, 4,367,390, Cl. 219-69.00W.
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  - Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Haga, Takahiro; and Koyanagi, Toru, 4,367,336, Cl. 546-286.000.
- Hager, Bror O. Process for the treatment of wood. 4,366,627, Cl. 34-9.500.
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- Halbach & Braun: *See—*
  - Braun, Ernst; and Braun, Gert, 4,366,990, Cl. 299-34.000.
  - Braun, Gert, 4,366,989, Cl. 299-34.000.

- Hall, William J., to Marconi Company Limited, The. Mode couplers. 4,367,446, Cl. 333-135.000.
- Hallford, Ben R., to Rockwell International Corporation. Low frequency converter with diode quad mixer. 4,367,560, Cl. 455-330.000.
- Halliburton Company: *See—*
  - Brandell, John T., 4,366,862, Cl. 166-106.000.
  - Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., 4,367,093, Cl. 106-87.000.
- Hamaker, Ralph A., to Xerox Corporation. Edge guide for belt tracking. 4,367,031, Cl. 355-3.0BE.
- Hamaoka, Tsutomu: *See—*
  - Hayashi, Hiroshi; Hamaoka, Tsutomu; and Morigaki, Masakazu, 4,367,272, Cl. 430-17.000.
- Hamasaki, Masanobu, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method and apparatus for cutting stainless steel. 4,366,950, Cl. 266-49.000.
- Hamatani, Teruo, to Toyo Kogyo Co., Ltd. Locking means for a forwardly foldable seat back. 4,366,978, Cl. 296-68.000.
- Hamon-Sobelco, S.A.: *See—*
  - Carbonaro, Mario G. B., 4,367,183, Cl. 261-159.000.
- Hanawa, Fumiaki: *See—*
  - Suto, Shoichi; Hanawa, Fumiaki; Kawachi, Masao; Edahiro, Takao; and Nakahara, Motohiro, 4,367,085, Cl. 65-18.200.
- Handa, Tadahiko: *See—*
  - Fukushima, Hatahiko; Handa, Tadahiko; and Ochiai, Kiyoshi, 4,367,187, Cl. 264-37.000.
- Hanley, Peter R.; and Turner, Norman L., to Varian Associates, Inc. Unitary electromagnet for double deflection scanning of charged particle beam. 4,367,411, Cl. 250-492.200.
- Hannes Marker: *See—*
  - Klubitschko, Gerd, 4,366,968, Cl. 280-605.000.
- Hanson, David E.; and Frenkel, Martin E., to Sargent-Welch Scientific Company. Back-flow prevention valve. 4,366,834, Cl. 137-489.300.
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  - Hirai, Koji; Shirano, Kenji; Hara, Kazuo; and Okamura, Takayuki, 4,367,307, Cl. 524-590.000.
- Harada, Nozomu; Furukawa, Akihiko; Endo, Yukio; and Yoshida, Okio, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image sensor. 4,367,492, Cl. 358-213.000.
- Harada, Tooru; and Noguchi, Yasuhiro, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material with azopyrazolone image dyes. 4,367,278, Cl. 430-223.000.
- Harasaki, Hayathugu; and Matsuura, Nobuaki, to Toyo Kogyo Co., Ltd. Hinge structure. 4,366,598, Cl. 16-382.000.
- Harford, Jack R., to RCA Corporation. Video signal recovery system. 4,367,491, Cl. 358-188.000.
- Harley-Davidson Motor Co., Inc.: *See—*
  - Miller, Russell F.; Brown, William H.; and Perkins, James M., 4,366,880, Cl. 180-219.000.
- Harris, Carl H. Ice cube tray. 4,366,941, Cl. 249-120.000.
- Harris Corporation: *See—*
  - Cotten, Whitworth W., Jr.; and Tambert, John, 4,367,548, Cl. 370-3.000.
- Hartwig, Walter J., to Allis-Chalmers Corporation. Pressurized rotary kiln with thrust containment. 4,367,075, Cl 48-89.000.
- Harvey, Robert N., to Beckman Instruments, Inc. Particulate filter assembly. 4,367,081, Cl. 55-503.000.
- Hasegawa, Takao; and Takahashi, Wataru, to Nihon Mukiseni Kogyo Kabushiki Kaisha. Storage battery separator. 4,367,271, Cl. 429-252.000.
- Haselkorn, Michael H.; and Evans, James D., to Armco Inc. Method of providing an anti-stick coating on non-oriented, semi-processed electrical steels to be subjected to a quality anneal. 4,367,101, Cl. 148-113.000.
- Hashimoto, Sadakatsu, to Sharp Kabushiki Kaisha. Uniform coloration control in an electrochromic display of the segmented type. 4,367,469, Cl. 340-785.000.
- Hasler, Alfred, to International Memories, Incorporated. Drive connection between linear actuator and rotatable drive shaft of reversible motor. 4,366,722, Cl. 74-99.00R.
- Hatakeyama, Masato: *See—*
  - Takeda, Genyo; and Hatakeyama, Masato, 4,367,466, Cl. 340-725.000.
- Hattori, Tadashi: *See—*
  - Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,366,702, Cl. 73-35.000.
- Haug, Theobald: *See—*
  - Renner, Alfred; and Haug, Theobald, 4,367,299, Cl. 523-457.000.
- Hauptmann, Rudolf; and Foeller, Gerhard, to Siemens Aktiengesellschaft. Circuit arrangement for side lobe suppression in radar apparatuses. 4,367,472, Cl. 343-7.00A.
- Haworth Mfg., Inc.: *See—*
  - Wilson, Harold R.; and Tillmann, Ditmar K., 4,367,370, Cl. 174-48.000.
- Hayashi, Hiroshi; Hamaoka, Tsutomu; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Photographic prints by color diffusion transfer process. 4,367,272, Cl. 430-17.000.
- Hayashi, Kazuya; Shimada, Masato; Nakamura, Teruo; and Fujii, Yoshihiro, to Toray Industries, Inc. Process for treating fibrous structure. 4,367,070, Cl. 8-114.600.
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  - Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
- Hayashi, Takao: *See—*
  - Sakanaka, Yasuhiro; Hayashi, Takao; Koizumi, Tatsuya; and Akashi, Sumio, 4,367,097, Cl. 106-901.000.
- Hayes, Linda D. Moldable article having abrasive characteristic for use in sanding irregular surfaces. 4,367,253, Cl. 428-75.000.
- Hayes, Scott T,: *See—*
  - Schaubert, Daniel H.; Farrar, Frederick G.; Hayes, Scott T.; and Sindoris, Arthur R., 4,367,474, Cl. 343-700.0MS.
- Heard, Robert A. H. Device for mounting an object to a post. 4,366,937, Cl. 248-231.000.
- Hearn, John R.: *See—*
  - Rainer, Norman B.; and Hearn, John R., 4,366,824, Cl. 131-291.000.
- Hearsh, Tilford, to Tension Envelope Corp. Double pocket easel envelope. 4,366,636, Cl. 40-159.000.
- Heat and Control, Inc.: *See—*
  - Caridis, Andrew A.; Klein, Lawrence F.; and Benson, Clark K., 4,366,749, Cl. 99-339.000.
- Heidemeyer, Paulus: *See—*
  - Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, 4,366,887, Cl. 192-48.100.
- Heigel, Walter; and Hueschens, Rolf, to Kali-Chemie Pharma GmbH. Process for the production of pure lecithin directly usable for physiological purposes. 4,367,178, Cl. 260-403.000.
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  - Franz, Gerhard; Heinrich, Friedrich; and Ratajczak, Hans-Josef, 4,367,362, Cl. 585-671.000.
- Heintz, C.: *See—*
  - Colling, J.; and Heintz, C., 4,366,953, Cl. 266-266.000.
- Heinzl, Joachim, to Siemens Aktiengesellschaft. Method and apparatus for representing polychromatic half-tone images. 4,367,482, Cl. 346-140.00R.
- Helf, Karl-Eduard: *See—*
  - Strube, Harald; and Helf, Karl-Eduard, 4,367,398, Cl. 219-541.000.
- Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, to Lincoln Manufacturing Company, Inc. Removable covers for closed loop utensil handles. 4,366,596, Cl. 16-119.000.
- Hemmie, Dale L., to Telecom Engineering, Inc. Two-way microwave television system. 4,367,485, Cl. 358-86.000.
- Henderson, Gordon D.: *See—*
  - Durgin, Ronald A.; Apelin, Florentino Q.; and Henderson, Gordon D., 4,366,696, Cl. 72-339.000.
- Henderson, Harry J. Electric work-in-circuit metal-bonding tongs. 4,367,397, Cl. 219-234.000.
- Hendrikz, John M., to Vickerys Limited. Doctor blade mounting assembly. 4,367,120, Cl. 162-281.000.
- Hendrix, Eugene R., to General Electric Company. Liquid degasser with self-clearing exhaust orifice. 4,367,078, Cl. 55-184.000.
- Henkel Kommanditgesellschaft auf Aktien: *See—*
  - Just, Gunther, 4,367,073, Cl. 23-302.00T.
- Henno, Michael M.: *See—*
  - Franklin, Timothy W.; Declercq, Paul G.; and Henno, Michael M., 4,367,254, Cl. 428-85.000.
- Hensel, Hartmut: *See—*
  - Crass, Gunther; and Hensel, Hartmut, 4,367,511, Cl. 361-313.000.
- Henszey, Richard R., to Sentry Equipment Corporation. Self-cleaning variable pressure reducing element. 4,366,832, Cl. 137-244.000.
- Henton, David E., to Dow Chemical Company, The. Blends of polycarbonate with rubber and monovinylidene aromatic copolymers. 4,367,310, Cl. 525-67.000.
- Herbst, Heiner; Pfleiderer, Hans-Joerg; and Grassl, Hans-Peter, to Siemens Aktiengesellschaft. Circuit for sensor-controlled telemetry. 4,367,534, Cl. 364-561.000.
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  - Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasuarl nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,367,229, Cl. 424-251.000.
- Herruzo, Juan C. Pitch control mechanism for coaxial helicopter steering. 4,367,063, Cl. 416-115.000.
- Herz, Arthur H.; and Daniel, Daniel S., to Eastman Kodak Company. Silver halide complexing agents of sulfones, nitriles, and onium salts. 4,367,279, Cl. 430-234.000.
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  - Dieterle, Herbert; Hettich, Alfred; and Roll, Karl, 4,366,871, Cl. 173-163.000.
- Hewig, Gert H.: *See—*
  - Bloss, Werner H.; Hewig, Gert H.; Laub, Gerhard; and Reinhardt, Erich, 4,367,366, Cl. 136-246.000.
- Hewlett-Packard Company: *See—*
  - Mati, Nicholas P.; Porter, Frederick J.; and Fredrickson, Robert W., 4,367,465, Cl. 340-707.000.
- Hewlett-Packard GmbH: *See—*
  - Brunner, Peter, 4,367,415, Cl. 307-106.000.
- Heyda, Donald W.; Corley, Richard P.; and Sinclair, Rosalind, to Baird Corporation. Composing a reference heart beat signal. 4,366,820, Cl. 128-659.000.
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  - Eimers, Erich; Dhein, Rolf; Cohnen, Wolfgang; Kuhle, Engelbert; and Heywang, Gerhard, 4,367,303, Cl. 524-107.000.
- Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, to Inkomag. Filtering method and apparatus. 4,367,150, Cl. 210-777.000.
- Higashi, Takehito: *See—*
  - Shiroto, Yoshimi; Higashi, Takehito; and Ono, Takeo, 4,367,164, Cl. 252-457.000.

- Hill, James C.: *See—*
  - Rooks, Charles W.; Davis, George D.; Hill, James C.; and McMinn, Talmage D., Jr., 4,367,160, Cl. 252-373.000.
- Hill, Richard C., to University of Maine, Board of Trustees of the. Sector control wood-type fuel burning furnace. 4,366,805, Cl. 126-285.00R.
- Hilshorst, Howard H. Pavement planing device. 4,366,991, Cl. 299-39.000.
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  - Bereiter, Rolf; and Chromy, Franz, 4,366,869, Cl. 173-109.000.
- Hirai, Koji; Shirano, Kenji; Hara, Kazuo; and Okamura, Takayuki, to Kuraray Company, Limited. Polyurethane composition having good light resistance. 4,367,307, Cl. 524-590.000.
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  - Sakamoto, Koji; Hirakura, Koji; Ogata, Yoshihiro; and Takahashi, Harumi, 4,367,032, Cl. 355-3.0TR.
- Hiramatsu, Uji; Honda, Toshihide; and Ohsaka, Yohnosuke, to Daikin Kogyo Co., Ltd. Process for preparing perfluoro(lower)alkyl-benzenes and their derivatives. 4,367,350, Cl. 570-144.000.
- Hirano, Tsumoru: *See—*
  - Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,367,282, Cl. 430-381.000.
- Hirano, Yasuhiro: *See—*
  - Mita, Seiichi; Hirano, Yasuhiro; and Eto, Yoshizumi, 4,367,495, Cl. 360-39.000.
- Hiraoka, Shoji: *See—*
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- Hirose, Tokuzo. Sewing method. 4,367,111, Cl. 156-221.000.
- Hirota, Kazumi: *See—*
  - Katsura, Tadahiko; Ishibashi, Kazuhisa; and Hirota, Kazumi, 4,366,662, Cl. 53-478.000.
- Hisabayoshi, Satoshi; Kogiso, Masahiro; Igarashi, Yousuke; and Horiguchi, Yoshio, to Iwatsu Electric Co., Ltd. Exposure control systems for use in copying machine. 4,367,038, Cl. 355-70.000.
- Hitachi Chemical Company, Ltd.: *See—*
  - Kageyama, Akira; Maekawa, Iwao; Uchigasaki, Isao; and Tanno, Takeshi, 4,367,314, Cl. 525-168.000.
- Hitachi Denshi Kabushiki Kaisha: *See—*
  - Mita, Seiichi; Hirano, Yasuhiro; and Eto, Yoshizumi, 4,367,495, Cl. 360-39.000.
  - Seki, Takeo; Shinoda, Yukio; and Kumada, Akio, 4,367,504, Cl. 360-109.000.
- Hitachi Heating Appliances Co., Ltd.: *See—*
  - Ishihara, Masahiro; Tachikawa, Hajime; and Kaneko, Kazuo, 4,367,388, Cl. 219-10.55B.
- Hitachi Koki Co., Ltd.: *See—*
  - Sagae, Syoji, 4,367,476, Cl. 346-1.100.
- Hitachi, Ltd.: *See—*
  - Fujiwara, Kiyoshi; Fujimoto, Masaru; Nomura, Shoji; Kanekiyo, Hiroshi; and Yoshinaga, Shoji, 4,367,202, Cl. 422-258.000.
  - Furuhashi, Toshio; and Sugiura, Noboru, 4,367,531, Cl. 364-431.080.
  - Hoshino, Takashi; and Arai, Takao, 4,367,499, Cl. 360-72.200.
  - Jimbou, Ryutarou; Umino, Tomio; Shida, Tomohiko; Iizuka, Tomio; and Isobe, Shoji, 4,367,017, Cl. 350-486.000.
  - Kumada, Akio; Ihochi, Takahiko; Tanaka, Masashi; Suzuki, Kazuma; Yokosuka, Masaru; Miura, Shinsuke; and Ochiai, Tsutomu, 4,367,426, Cl. 310-358.000.
  - Kuroyanagi, Tomomitsu; and Miyagawa, Hitoshi, 4,367,484, Cl. 358-22.000.
  - Morinaga, Shigeki; Obara, Sanshiro; Tokuda, Hiroastu; and Nakamura, Hideo, 4,367,530, Cl. 364-431.060.
  - Muto, Nobuyoshi; Matsuda, Yasuo; Morinaga, Shigeki; and Sugiura, Yasuyuki, 4,367,520, Cl. 363-41.000.
  - Nagai, Ryo; Obayashi, Hidehito; Gotoh, Akira; and Kudo, Tetsuichi, 4,367,269, Cl. 429-191.000.
  - Oi, Tetsu, 4,367,267, Cl. 429-101.000.
  - Sagae, Syoji, 4,367,476, Cl. 346-1.100.
  - Sato, Kanemasa; Ueno, Sadayasu; and Miya, Kazuhiko, 4,366,704, Cl. 73-118.000.
  - Seki, Takeo; Shinoda, Yukio; and Kumada, Akio, 4,367,504, Cl. 360-109.000.
  - Shimohigashi, Katsuhiro, 4,367,540, Cl. 365-207.000.
  - Tadauchi, Masaharu; and Kumasaka, Kenji, 4,367,457, Cl. 340-347.0AD.
  - Tadokoro, Hiroyuki; Matsuoka, Shigeru; and Yamauchi, Koji, 4,367,470, Cl. 340-825.770.
  - Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
  - Yamazaki, Susumu; Nagoya, Yosinari; Fujimoto, Ryoichi; Nozaki, Koichi; Shirakata, Terukazu; and Yamaguchi, Kazuyoshi, 4,366,678, Cl. 62-186.000.
  - Yanadori, Michio; Kamejima, Kohji; Tanaka, Hideki; Kano, Minoru; Uchida, Motokazu; and Abe, Yoritsune, 4,366,856, Cl. 165-104.170.
  - Yoshioka, Masahiro, 4,366,994, Cl. 308-26.000.
- Hodara, Henri. Intrusion sensor using optic fiber. 4,367,460, Cl. 340-550.000.
- Hodge, Warren L. Counterrotating circulating hydraulic furnace. 4,366,803, Cl. 126-247.000.
- Hoechst Aktiengesellschaft: *See—*
  - Crass, Gunther; and Hensel, Hartmut, 4,367,511, Cl. 361-313.000.
  - Strube, Harald; and Helf, Karl-Eduard, 4,367,398, Cl. 219-541.000.
- Hoekstra, Joop F., to Reece Corporation, The. Combination single thread chain and lock stitch. 4,366,765, Cl. 112-429.000.
- Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, to Volkswagenwerk Aktiengesellschaft. Vehicle having a main clutch and an auxiliary controllable clutch. 4,366,887, Cl. 192-48.100.
- Hoffman, John M.: *See—*
  - Wislon, Kent D.; and Hoffman, John M., 4,366,748, Cl. 98-40.00D.
- Hoffmann, James E.: *See—*
  - Batzold, John S.; and Hoffmann, James E., 4,367,128, Cl. 204-108.000.
- Hogan, Robert J., Jr. Theft prevention method and apparatus for wellheads. 4,366,970, Cl. 285-45.000.
- Hohne, Karl, to Siemens Aktiengesellschaft. Asbestos diaphragms for electrochemical cells and the manufacture thereof. 4,367,270, Cl. 429-251.000.
- Hokama, Yosh, to Makaja Inc. Manicure apparatus for smoothing and buffing nails. 4,366,828, Cl. 132-75.600.
- Hoke, Donald E.: *See—*
  - Donaldson, A. Burl; and Hoke, Donald E., 4,366,860, Cl. 166-59.000.
- Hokushin Electric Works, Ltd.: *See—*
  - Yoshida, Takeshi, 4,366,716, Cl. 73-718.000.
- Holker, James R.; Jeffries, Roy; and Lomax, George R., to Shirley Institute. Breathable, non-porous polyurethane film prepared from a low molecular weight difunctional compound, a polyethylene glycol and a diisocyanate. 4,367,327, Cl. 528-61.000.
- Holmes, David D., to RCA Corporation. Television ghost detection and cancellation system controlled over several lines of a vertical retrace interval. 4,367,489, Cl. 358-167.000.
- Holmes, James F., to Oregon Graduate Center for Study and Research. Method for monitoring and controlling the distribution of droplets on a surface. 4,367,244, Cl. 427-8.000.
- Holzer, Joseph C., to Joanna Western Mills Company. Cord weight assembly. 4,366,852, Cl. 160-320.000.
- Homocky, John; and Venczel, Joseph, to Meiners Electronic Controls Ltd. Detection of flaws, breakages, discontinuities and the like. 4,366,681, Cl. 66-165.000.
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  - Hiramatsu, Uji; Honda, Toshihide; and Ohsaka, Yohnosuke, 4,367,350, Cl. 570-144.000.
- Honeywell Inc.: *See—*
  - Bowers, John E.; and Schmit, Joseph L., 4,366,771, Cl. 118-415.000.
  - Stauffer, Norman L., 4,367,027, Cl. 354-195.000.
- Honig, Helmut: *See—*
  - Pampouchidis, Georg; and Honig, Helmut, 4,367,319, Cl. 525-504.000.
- Honl, Wolf-Dieter: *See—*
  - Seifert, Helmut; Honl, Wolf-Dieter; Schmid, Johannes; and Frey, Bernhard, 4,366,934, Cl. 242-107.40A.
- Honma, Toshio: *See—*
  - Sakamaki, Hisashi; Kimura, Yoshimasa; Honma, Toshio; and Souma, Ikuo, 4,367,036, Cl. 355-14.00R.
- Hoogovens Ijmuiden B.V.: *See—*
  - Vrijburg, Hans G., 4,366,885, Cl. 188-377.000.
- Hopman, Fred. Method and form for mechanically pouring adobe structures. 4,366,657, Cl. 52-405.000.
- Horan, William J.: *See—*
  - Jarvis, Gary W.; Angalet, Stevan A.; and Horan, William J., 4,367,242, Cl. 426-293.000.
- Horgan, William J., Jr., to Blumcraft of Pittsburgh. Panic handle for doors. 4,366,974, Cl. 292-336.300.
- Hori, Tatsu, to Savin Corporation. Liquid developer electrostatic copier for shipboard use. 4,367,035, Cl. 355-10.000.
- Horiguchi, Yoshio: *See—*
  - Hisabayoshi, Satoshi; Kogiso, Masahiro; Igarashi, Yousuke; and Horiguchi, Yoshio, 4,367,038, Cl. 355-70.000.
- Horii, Yuji: *See—*
  - Tomisaka, Yasushi; and Horii, Yuji, 4,367,082, Cl. 62-13.000.
- Horn, Peter: *See—*
  - Hahn, Klaus; Horn, Peter; Marx, Matthias; Weber, Heinz; Weiss, Wolfram; and Wurmb, Rolf, 4,367,294, Cl. 521-158.000.
- Hornung, Richard E., to General Electric Company. Reset signal generator. 4,367,423, Cl. 307-597.000.
- Horsewell, Henry G., to British-American Tobacco Company Limited. Smoke filtration. 4,366,826, Cl. 131-336.000.
- Horvath, Agnes: *See—*
  - Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasuarl nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,367,229, Cl. 424-251.000.
- Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,367,264, Cl. 428-413.000.
- Hoshino, Takashi; and Arai, Takao, to Hitachi, Ltd. Tape searching device in PCM recording and reproducing apparatus. 4,367,499, Cl. 360-72.200.
- Hosomizu, Hiroshi: *See—*
  - Ishida, Tokuji; and Hosomizu, Hiroshi, 4,367,023, Cl. 354-33.000.
- Houghton, Alexander J.; and Knasel, Thomas M., to Science Applications, Inc. Vessel navigation lights. 4,367,519, Cl. 362-268.000.
- Hovey, Richard J.: *See—*
  - Uhlmann, Donald R.; Snitzer, Elias; Hovey, Richard J.; and Chu, Nori Y. C., 4,367,170, Cl. 252-586.000.
- Howard, James D.: *See—*
  - Budde, David L.; Colley, Stephen R.; Domenik, Stephen L.; Goodman, Allan L.; and Howard, James D., 4,367,524, Cl. 364-200.000.

Howden, Harry, to U.S. Philips Corporation. Polygonal rotary scanners. 4,367,014, Cl. 350-320.000.
Howe, Steven C.: *See—*
Fisher, Dennis H.; Howe, Steven C.; and Linard, Richard L., 4,367,351, Cl. 585-14.000.
Howell, Stephen L., to Kimball International, Inc. Multiplexing system for organ having plural manuals. 4,366,738, Cl. 84-1.010.
Hrastnik, Walter, to Bell & Howell Company. Wet modular film printer. 4,367,039, Cl. 355-91.000.
Huber, Reinhold; and Koster, Waldemar, to Koster, Waldemar. Expansion joint. 4,366,590, Cl. 14-16.500.
Hubner, Horst; and Lersmacher, Bernhard, to U.S. Philips Corporation. Rotary-anode X-ray tube. 4,367,556, Cl. 378-125.000.
Hubner, Wolfgang; and Fischer, Werner, to Chemische Fabrik Stockhausen GmbH. Water-soluble poly(meth)acrylic acid derivatives gels and their manufacture. 4,367,297, Cl. 523-130.000.
Hucks, Uwe; and Tresper, Erhard, to Bayer Aktiengesellschaft. Process for the preparation of aromatic polycarbonates by the phase boundary process. 4,367,330, Cl. 528-196.000.
Hudson, Samuel M.: *See—*
Cuculo, John A.; and Hudson, Samuel M., 4,367,191, Cl. 264-187.000.
Huelster, Richard L., to Pentek Corporation. Side frame assembly for roller conveyor systems. 4,366,894, Cl. 193-35.00R.
Hueschens, Rolf: *See—*
Heigel, Walter; and Hueschens, Rolf, 4,367,178, Cl. 260-403.000.
Hughes Aircraft Company: *See—*
Wang, Victor; Wysocki, Joseph A.; Tangonan, Gregory L.; and Seliger, Robert L., 4,367,429, Cl. 313-362.100.
Hughes, John; and Rasbach, Heinz, to American Colloid Company. Method of forming a foundation with liquid tight joints. 4,367,057, Cl. 405-267.000.
Hughes, John H. Apparatus and method for comminuting solid materials. 4,366,928, Cl. 241-30.000.
Hull, Thomas W.; and Pagnamenta, Antonio, to Motorola, Inc. Radio frequency signal power amplifier. 4,367,443, Cl. 330-207.00P.
Hulse, David O., to Budd Company, The. Fastener for retaining a pair of panels. 4,366,603, Cl. 24-221.00R.
Humberger, Roger B.: *See—*
Long, Gary L.; and Humberger, Roger B., 4,367,197, Cl. 422-3.000.
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Estrade, Robert; and Michaut, Jean, 4,367,109, Cl. 156-113.000.
Hyams, H. B. Leaf master. 4,366,594, Cl. 15-314.000.
Hydro-Plan Engineering, Ltd.: *See—*
Mehoudar, Raphael, 4,366,926, Cl. 239-542.000.
I.E.M.C.A. S.p.A. Industria Elettromeccanica Complessi Automatici: *See—*
Fabbri, Vladimiro, 4,366,610, Cl. 29-234.000.
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Ponti, Marcello; and Cesana, Paolo, 4,366,585, Cl. 5-18.00R.
Ichiki, Masahiro: *See—*
Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
ICI Americas Inc.: *See—*
Akhavein, Ali A.; and Braithwaite, Gavin B., 4,366,777, Cl. 119-156.000.
Iftikar, Syed H.; and Reeck, David L., to Shugart Technology. Fixed hard disc drive assembly and clean air system. 4,367,502, Cl. 360-98.000.
Igarashi, Yousuke: *See—*
Hisabayoshi, Satoshi; Kogiso, Masahiro; Igarashi, Yousuke; and Horiguchi, Yoshio, 4,367,038, Cl. 355-70.000.
Iguchi, Sadahiko: *See—*
Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
Iguchi, Yoichi: *See—*
Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
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Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,367,345, Cl. 564-26.000.
Ihochi, Takahiko: *See—*
Kumada, Akio; Ihochi, Takahiko; Tanaka, Masashi; Suzuki, Kazuma; Yokosuka, Masaru; Miura, Shinsuke; and Ochiai, Tsutomu, 4,367,426, Cl. 310-358.000.
Iizuka, Tomio: *See—*
Jimbou, Ryutarou; Umino, Tomio; Shida, Tomohiko; Iizuka, Tomio; and Isobe, Shoji, 4,367,017, Cl. 350-486.000.
Ikeda, Yoshirou; Kaite, Yoshikazu; and Ikuma, Toshiro, to Nippon Sheet Glass Co., Ltd. Optical glass fiber having cover glass of sodium zinc alumino borosilicate. 4,367,012, Cl. 350-96.340.
Ikin, John B., to Ciba-Geigy AG. Apparatus for the detection of downlines on coated web material. 4,367,047, Cl. 356-431.000.
Ikuma, Toshiro: *See—*
Ikeda, Yoshirou; Kaite, Yoshikazu; and Ikuma, Toshiro, 4,367,012, Cl. 350-96.340.
Imai, Iwao: *See—*
Endo, Hiroshi; Ishikawa, Yasuki; and Imai, Iwao, 4,366,801, Cl. 123-620.000.
Imai, Terutoyo; and Nakano, Shoichi, to Sanyo Electric Co., Ltd. Pyroelectric type infrared radiation detecting device. 4,367,408, Cl. 250-338.000.
Imperial Chemical Industries Limited: *See—*
Enever, James A., 4,367,103, Cl. 149-7.000.
Inglis, Hugh S., 4,367,353, Cl. 585-258.000.
Paton, Hugh S.; and Enever, James A., 4,367,104, Cl. 149-7.000.
Pinto, Alwyn, 4,367,206, Cl. 423-359.000.
Indiana Mills & Mfg., Inc.: *See—*
Anthony, James R.; and Crooks, James W., 4,366,604, Cl. 24-230.00A.
Inglis, Hugh S., to Imperial Chemical Industries Limited. Catalytic hydrogenation and purification. 4,367,353, Cl. 585-258.000.
Ingram, Eleanor P. Drinking container device with adjustable closure. 4,366,914, Cl. 220-287.000.
Inkomag: *See—*
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,367,150, Cl. 210-777.000.
Inoue, Akigoro. Relative time interval measuring instrument. 4,367,051, Cl. 368-111.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,367,129, Cl. 204-129.550.
Inoue, Kiyoshi, 4,367,389, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Wire-electroerosion method and apparatus for forming a tapered contour in a workpiece. 4,367,129, Cl. 204-129.550.
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Inoue, Terusato: *See—*
Aoki, Akiji; and Inoue, Terusato, 4,367,300, Cl. 524-2.000.
Inoue, Yoshikazu: *See—*
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Instrumentation Laboratory Inc.: *See—*
Smith, Stanley B., Jr.; and Shapiro, Carl, 4,367,042, Cl. 356-315.000.
Intel Corporation: *See—*
Budde, David L.; Colley, Stephen R.; Domenik, Stephen L.; Goodman, Allan L.; and Howard, James D., 4,367,524, Cl. 364-200.000.
Intensive-Filter GmbH & Co KG: *See—*
Kordas, Friedel, 4,367,080, Cl. 55-302.000.
Inter Ocean Marketing Corporation: *See—*
Guido, Joseph J.; and Buck, Richard, 4,366,916, Cl. 220-404.000.
International Business Machines Corp.: *See—*
Booth, Robert M., Jr.; and Wasik, Chester A., 4,367,044, Cl. 356-357.000.
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,367,119, Cl. 156-643.000.
Ogura, Seiki; and Tsang, Paul J., 4,366,613, Cl. 29-571.000.
Steger, Donald J., 4,367,052, Cl. 400-208.000.
Treseder, Robert C., 4,367,503, Cl. 360-98.000.
Vachee, Pierre, 4,367,549, Cl. 370-91.000.
International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A., 4,367,158, Cl. 252-174.110.
International Harvester Company: *See—*
Gagliani, John; and Lee, Raymond, 4,367,296, Cl. 521-189.000.
International Memories, Incorporated: *See—*
Hasler, Alfred, 4,366,722, Cl. 74-99.00R.
International Nuclear Energy Systems Co.: *See—*
Bussard, Robert W., 4,367,193, Cl. 376-133.000.
International Plant Research Institute: *See—*
Pratt, Keith W., 4,366,646, Cl. 47-27.000.
Investigacion Fic Fideicomiso: *See—*
Belletti, Alide B., 4,367,088, Cl. 65-234.000.
Cardenas Franco, Luis; and Figueroa Sanchez, David, 4,367,087, Cl. 65-163.000.
IPOS Gesellschaft fur integrierte Prothesen-Entwicklung und orthopadietechnischen Service mbH & Co. KG: *See—*
Prahl, Gertraud, 4,366,583, Cl. 3-36.000.
Iqbal, Abul, to Ciba-Geigy Corporation. Metal complexes of isoindolinazines, process for their preparation and use. 4,367,333, Cl. 542-417.000.
Irik, Gijsberg W.: *See—*
Marien, Pieter; Irik, Gijsberg W.; and Boersma, Rintje, 4,367,381, Cl. 200-48.00A.
Iritani, Masako: *See—*
Kaneko, Yasuyuki; Itoh, Masao; Takahashi, Shinji; and Iritani, Masako, 4,367,289, Cl. 435-133.000.
Iriyama, Keiji: *See—*
Mizutani, Fumio; Yoshiura, Masahiko; Iriyama, Keiji; Sasaki, Kanji; and Tsuda, Keishiro, 4,367,369, Cl. 136-263.000.
Isaacs, Stuart N.: *See—*
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Ishibashi, Kazuhisa: *See—*
Katsura, Tadahiko; Ishibashi, Kazuhisa; and Hirota, Kazumi, 4,366,662, Cl. 53-478.000.
Ishida, Ryuichi: *See—*
Sato, Yasuhiko; Mizoguchi, Tomishige; Kudo, Yukitsuka; and Ishida, Ryuichi, 4,367,230, Cl. 424-251.000.
Ishida, Tokuji; and Hosomizu, Hiroshi, to Minolta Camera Kabushiki Kaisha. Camera flash light control circuitry. 4,367,023, Cl. 354-33.000.
Ishihara, Masahiro; Tachikawa, Hajime; and Kaneko, Kazuo, to Hitachi Heating Appliances Co., Ltd. Cooking heating apparatus. 4,367,388, Cl. 219-10.55B.

Ishihara Sangyo Kaisha, Ltd.: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Haga, Takahiro; and Koyanagi, Toru, 4,367,336, Cl. 546-286.000.
Ishikawa, Yasuki: *See—*
Endo, Hiroshi; Ishikawa, Yasuki; and Imai, Iwao, 4,366,801, Cl. 123-620.000.
Ishimura, Hidekazu; Komoto, Hiroshi; and Kai, Isao, to Asahi Yakizai Kogyo Co.; and Asahi Kasei Kogyo Kabushiki Kaisha. Epoxy resin composition. 4,367,318, Cl. 525-481.000.
Isobe, Shoji: *See—*
Jimbou, Ryutarou; Umino, Tomio; Shida, Tomohiko; Iizuka, Tomio; and Isobe, Shoji, 4,367,017, Cl. 350-486.000.
Isobe, Yukihiro: *See—*
Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,367,264, Cl. 428-413.000.
Itaya, Kingo: *See—*
Shibayama, Kimio; Itaya, Kingo; and Fujimoto, Teruo, 4,367,281, Cl. 430-313.000.
Ito, Katsukiyo; and Kodaira, Kazuo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for manufacture of foamed article. 4,367,290, Cl. 521-77.000.
Ito, Kazuhiro: *See—*
Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
Ito, Masao: *See—*
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Itoh, Masao: *See—*
Kaneko, Yasuyuki; Itoh, Masao; Takahashi, Shinji; and Iritani, Masako, 4,367,289, Cl. 435-133.000.
ITT Industries, Inc.: *See—*
Belart, Juan, 4,366,745, Cl. 91-372.000.
ITW Fastex Italia S.p.A.: *See—*
Bassi, Alberto, 4,366,982, Cl. 297-362.000.
Ivac Corporation: *See—*
Bailey, Wilber H.; Kreinick, Stephen J.; and Denny, Bradley J., 4,367,435, Cl. 318-313.000.
Ivony, Jozsef: *See—*
Ratsko, Istvan; Ivony, Jozsef; Karaszy, Gyorgy; and Madi, Jeno, 4,366,966, Cl. 280-432.000.
Iwamoto, Junjiro: *See—*
Sato, Kimihiko; Sajima, Yasuo; Iwamoto, Junjiro; Nakao, Makoto; Suhara, Manabu; and Noshiro, Makoto, 4,367,126, Cl. 204-98.000.
Iwanaga, Kazuyoshi: *See—*
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,366,724, Cl. 74-467.000.
Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Tsuruga, Yuuji; Kobayashi, Akihiro; Yoshitoshi, Makoto; and Nishino, Yutaka, 4,367,375, Cl. 179-81.00R.
Iwatsu Electric Co., Ltd.: *See—*
Hisabayoshi, Satoshi; Kogiso, Masahiro; Igarashi, Yousuke; and Horiguchi, Yoshio, 4,367,038, Cl. 355-70.000.
Izumi, Yoshitaka, to Kimura Bed Mfg. Company Limited. Vacuum type urinating aid. 4,366,818, Cl. 128-295.000.
J. I. Case Company: *See—*
Falendysz, E. L.; and Brumbaugh, Eldon M., 4,366,747, Cl. 92-72.000.
Frisbee, Claude M., 4,366,881, Cl. 180-271.000.
J. R. Simplot Company: *See—*
Long, Gary L.; and Humberger, Roger B., 4,367,197, Cl. 422-3.000.
Jackson, Gary L.: *See—*
Salani, Chittaranjan; and Jackson, Gary L., 4,367,054, Cl. 404-117.000.
Jackson, Kenneth A.; and Arndt, George I., to V.G.A.S., Inc. Vaporous gasoline aspiration system and fuming tank. 4,366,797, Cl. 123-523.000.
Jackson, Robert G.; and Yoon, Heeyoung, to Conoco Inc. Method of fuel treatment and distribution. 4,366,782, Cl. 123-3.000.
Jacob, Ezekiel J.: *See—*
Cooper, Sidney; and Jacob, Ezekiel J., 4,367,276, Cl. 430-126.000.
Jacob, Lionel C. Marksmanship training device and method. 4,367,516, Cl. 362-111.000.
Jacobs, Roland: *See—*
Bontinck, Walter; D'Hondt, Marc; and Jacobs, Roland, 4,367,312, Cl. 525-93.000.
Jacobson, Jerry I. Anti-caries oral rinse. 4,367,218, Cl. 424-49.000.
Jacobson, Ronald C.: *See—*
Greenfield, Irving E., Jr.; and Jacobson, Ronald C., 4,366,920, Cl. 222-145.000.
Jacobson, Thor V., to Canada, Her Majesty the Queen in right of. Dual wavelength infrared laser. 4,367,552, Cl. 372-23.000.
Jakubaschk, Horst: *See—*
Ketterer, Dieter; Jakubaschk, Horst; and Weisser, Erich, 4,366,638, Cl. 42-50.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Takeuchi, Yasumasa; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsutsumi, Funio, 4,367,325, Cl. 526-340.000.
Jarschel, Rainer, to Carl Schenck AG, Firma. Apparatus for optimizing tire or wheel characteristics. 4,366,707, Cl. 73-146.000.
Jarvis, Gary W.; Angalet, Stevan A.; and Horan, William J., to General Foods Corporation. Roast poultry coating mix and process. 4,367,242, Cl. 426-293.000.
Jaworek, Dieter: *See—*
Vogtle, Friedrich; Dix, Johannes P.; and Jaworek, Dieter, 4,367,072, Cl. 436-501.000.
Jean Walterscheid GmbH: *See—*
Vollmer, Jurgen; and Muller, Norbert, 4,366,967, Cl. 280-504.000.
Jeffries, Roy: *See—*
Holker, James R.; Jeffries, Roy; and Lomax, George R., 4,367,327, Cl. 528-61.000.
Jegorow, Aleksander: *See—*
Peise, Helmut; Brausse, Reinhard; Lucas, Klaus; Kuhlbrodt, Klaus-Otto; Berger, Friedrich; Gohler, Peter; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudymov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,367,076, Cl. 48-128.000.
Jenkins, Donald, to Astoria Fibra-Steel, Inc. Method of making a gasket-sealed molded door and framing member assembly. 4,366,611, Cl. 29-416.000.
Jenkins, Vaughn J., to Sperry Corporation. Digital data formatting system for high density magnetic recording. 4,367,497, Cl. 360-48.000.
Jensen, Keith A., to Smoot, A. Park; and Goodwin, Reese J., a part interest. Construction member and connecting plate structure. 4,366,659, Cl. 52-693.000.
Jericho, Karl, to Leybold Heraeus GmbH. Apparatus having coilable pulling element for drawing a monocrystal from a crucible with adjustable speed. 4,367,199, Cl. 422-110.000.
Jernigan, Robert T., to Dow Chemical Company, The. Glycol compositions containing a phosphorous-modified silane. 4,367,154, Cl. 252-78.300.
Jimbou, Ryutarou; Umino, Tomio; Shida, Tomohiko; Iizuka, Tomio; and Isobe, Shoji, to Hitachi, Ltd. Laser beam reflection system. 4,367,017, Cl. 350-486.000.
Joanna Western Mills Company: *See—*
Holzer, Joseph C., 4,366,852, Cl. 160-320.000.
Johanneck, Richard G. Ventilation and feeding system for animal shelter. 4,366,773, Cl. 119-16.000.
Johansson, Rolf. Multiple belt conveyar with synchronizer. 4,366,900, Cl. 198-855.000.
Johncox, Ronald; and Kingsbury, Robert, to Kingsbury Products Incorporated. Universal bicycle sprocket hub. 4,367,068, Cl. 474-162.000.
Johnson, Michael E.: *See—*
Fiorucci, Louis C.; and Johnson, Michael E., 4,367,213, Cl. 423-607.000.
Jones, Bernard H.: *See—*
Cox, Dan; and Jones, Bernard H., 4,367,084, Cl. 65-10.200.
Jones, David W., to Shaw Aero Devices, Inc. Tank closure apparatus with safety feature. 4,366,669, Cl. 60-39.09R.
Jonsson, Sven, to Vena Mekan Aktiebolag. Planetary-type of gear and procedure and apparatus for its production. 4,366,727, Cl. 74-801.000.
Jordan, Arthur A. Telephone and holding band therefor. 4,367,378, Cl. 179-156.00R.
Journeau, Sabine M.: *See—*
Le Roy, Patrice M.; and Journeau, Sabine M., 4,367,302, Cl. 524-104.000.
Joyce, Hardin, Jr., to Fiat-Allis Construction Machinery, Inc. Pivoting ejector for elevator scraper. 4,366,635, Cl. 37-8.000.
Joyce, Patrick H. Merchandizing holder device. 4,366,906, Cl. 211-59.100.
Judkins Associations, Inc., The: *See—*
Judkins, Thomas E.; and Stanton, Thomas J., 4,366,692, Cl. 72-186.000.
Judkins, Thomas E.; and Stanton, Thomas J., to Judkins Associations, Inc., The. Fastener strip for building wall constructions. 4,366,692, Cl. 72-186.000.
Jundt, Werner: *See—*
Seeger, Karl; Jundt, Werner; Mezger, Manfred; and Kiencke, Uwe, 4,366,800, Cl. 123-609.000.
Just, Gunther, to Henkel Kommanditgesellschaft auf Aktien. Preparation of solid, crystalline, substantially anhydrous sodium metasilicate. 4,367,073, Cl. 23-302.00T.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Sakai, Yoshiya; Nagaoka, Shigeo; Nakai, Yohji; and Tomoyasu, Takatoshi, 4,367,394, Cl. 219-146.240.
Tomisaka, Yasushi; and Horii, Yuji, 4,367,082, Cl. 62-13.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yajima, Toshio, 4,366,689, Cl. 72-7.000.
Kabushiki Kaisha Maruyama Seisakusho: *See—*
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Kabushiki Kaisha Meidensha: *See—*
Fujita, Hideo, 4,367,512, Cl. 361-334.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Kotoh, Haruhiko, 4,367,480, Cl. 346-140.00R.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Nakamura, Tamotsu; Yokota, Kouji; and Sobukawa, Hideo, 4,367,162, Cl. 252-443.000.
Fujitani, Yoshiyasu; Muraki, Hideaki; Tomita, Makoto; Sobukawa, Hideo; and Fukui, Masayuki, 4,367,166, Cl. 252-462.000.
Kaduk, Bruce A.: *See—*
Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,367,317, Cl. 525-439.000.
Kaeding, Warren W., to Mobil Oil Corporation. Para-selective zeolite catalysts treated with carbon dioxide. 4,367,359, Cl. 585-467.000.

- Kageyama, Akira; Maekawa, Iwao; Uchigasaki, Isao; and Tanno, Takeshi, to Hitachi Chemical Company, Ltd. Resin composition. 4,367,314, Cl. 525-168.000.
- Kah, Carl L. C., Jr. Magnetically actuated pilot valve. 4,366,944, Cl. 251-141.000.
- Kai, Isao: *See—*
  - Ishimura, Hidekazu; Komoto, Hiroshi; and Kai, Isao, 4,367,318, Cl. 525-481.000.
- Kaibara, Nobuhiro; and Kobayashi, Masayoshi, to Diesel Kiki Co., Ltd. Distribution type fuel injection pump. 4,366,796, Cl. 123-502.000.
- Kaiser, David A. Tradesman's tool carrier and support stand. 4,366,998, Cl. 312-235.00R.
- Kaite, Yoshikazu: *See—*
  - Ikeda, Yoshirou; Kaite, Yoshikazu; and Ikuma, Toshiro, 4,367,012, Cl. 350-96.340.
- Kakugo, Masahiro: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Nunose, Akira; and Nishioka, Masaharu, 4,367,322, Cl. 526-137.000.
- Kalenda, Norman W.: *See—*
  - Anderson, Richard B.; and Kalenda, Norman W., 4,367,174, Cl. 260-156.000.
- Kali-Chemie Pharma GmbH: *See—*
  - Heigel, Walter; and Hueschens, Rolf, 4,367,178, Cl. 260-403.000.
- Kalman, Gyorgy: *See—*
  - Dorombozisi, Bela; Egeto, Csaba; Kalman, Gyorgy; Solymos, Karoly; and Szalay, Zoltan, 4,367,141, Cl. 210-145.000.
- Kalnoki-Kis, Tibor, to Union Carbide Corporation. Cathode collectors for nonaqueous cell having a metal oxide catalyst. 4,367,266, Cl. 429-101.000.
- Kamejima, Kohji: *See—*
  - Yanadori, Michio; Kamejima, Kohji; Tanaka, Hideki; Kano, Minoru; Uchida, Motokazu; and Abe, Yoritsune, 4,366,856, Cl. 165-104.170.
- Kamiyama, Kiichi: *See—*
  - Kitao, Ikuo; and Kamiyama, Kiichi, 4,367,019, Cl. 351-211.000.
- Kampe, Wolfgang: *See—*
  - Ross, Carl H.; Friebe, Walter-Gunar; Kampe, Wolfgang; Bartsch, Wolfgang; and Roesch, Egön, 4,367,235, Cl. 424-273.00B.
- Kanayama, Katsumi: *See—*
  - Furuta, Kenzi; and Kanayama, Katsumi, 4,367,500, Cl. 360-74.200.
- Kanekiyo, Hiroshi: *See—*
  - Fujiwara, Kiyoshi; Fujimoto, Masaru; Nomura, Shoji; Kanekiyo, Hiroshi; and Yoshinaga, Shoji, 4,367,202, Cl. 422-258.000.
- Kaneko, Kazuo: *See—*
  - Ishihara, Masahiro; Tachikawa, Hajime; and Kaneko, Kazuo, 4,367,388, Cl. 219-10.55B.
- Kaneko, Yasuyuki; and Ito, Masao, to Nagoya University. Method for producing coenzyme Q_{10}. 4,367,288, Cl. 435-133.000.
- Kaneko, Yasuyuki; Itoh, Masao; Takahashi, Shinji; and Iritani, Masako, to Nagoya University. Method of producing coenzyme Q_{10}. 4,367,289, Cl. 435-133.000.
- Kano, Minoru: *See—*
  - Yanadori, Michio; Kamejima, Kohji; Tanaka, Hideki; Kano, Minoru; Uchida, Motokazu; and Abe, Yoritsune, 4,366,856, Cl. 165-104.170.
- Kanter, Hartmut, to BASF Aktiengesellschaft. Azo pigments containing pyrazoloquinazolone radicals. 4,367,173, Cl. 260-154.000.
- Karaszy, Gyorgy: *See—*
  - Ratsko, Istvan; Ivony, Jozsef; Karaszy, Gyorgy; and Madi, Jeno, 4,366,966, Cl. 280-432.000.
- Karim, Khalid A.; Lakshmanan, Pallavoor R.; and Rea, James H., to Gulf Oil Corporation. Multicomponent polymer compositions. 4,367,113, Cl. 156-327.000.
- Karp, Edward C., to Sanitary Scale Co. Label applicator. 4,367,118, Cl. 156-497.000.
- Kasahara, Yasushi: *See—*
  - Saito, Yoshitada; Yano, Akira; and Kasahara, Yasushi, 4,367,286, Cl. 435-29.000.
- Kashaev, Valery M.: *See—*
  - Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.
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  - Klueting, Bernd A.; and Boyer, Daniel R., 4,366,983, Cl. 297-362.000.
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  - Villari, Frank K., 4,366,836, Cl. 137-550.000.
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- Kennedy, William L.: *See—*
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- Kercheval, Marie C.: *See—*
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- Kielmeyer, William H., to Manville Service Corporation. Method of making a loose-fill insulation. 4,366,927, Cl. 241-4.000.
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- Kifferstein, Harry P. Rhythm indicating exercisers. 4,366,956, Cl. 272-70.000.
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  - Howell, Stephen L., 4,366,738, Cl. 84-1.010.
- Kimura Bed Mfg. Company Limited: *See—*
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- Kimura, Kenji, to Olympus Optical Company Limited. Video recorder-player and horizontal sync separator therefore. 4,367,494, Cl. 360-22.000.
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- King, Gary E.: *See—*
  - Large, David T.; and King, Gary E., 4,367,514, Cl. 362-62.000.
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- Kircher, Morton S., to Olin Corporation. Method for assembling membrane electrolytic cells. 4,367,134, Cl. 204-253.000.
- Kirk, Donald C., Jr., to Ethyl Products Company. Child-resistant closure device. 4,366,921, Cl. 222-153.000.
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- Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, to Mitsubishi Rayon Company, Ltd. Coating composition and process for preparing synthetic resin shaped articles by using same. 4,367,245, Cl. 427-54.100.
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  - Nakayama, Yasuhiro; Yoneyama, Masakazu; Mukunoki, Yasuo; Kitada, Akira; and Kishimoto, Shinzo, 4,367,283, Cl. 430-528.000.
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- Kitamura, Masatsugu; and Onoye, Hideo, to Victor Company of Japan, Limited. Interval detection for automatic cueing control systems. 4,367,498, Cl. 360-72.100.
- Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, to Sumitomo Chemical Company, Limited. Production of hydrogels. 4,367,323, Cl. 526-201.000.
- Kitao, Ikuo; and Kamiyama, Kiichi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Image rotating means for eye refractometers. 4,367,019, Cl. 351-211.000.
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- Klein, Lawrence F.: *See—*
  - Caridis, Andrew A.; Klein, Lawrence F.; and Benson, Clark K., 4,366,749, Cl. 99-339.000.
- Kleiner, Frank: *See—*
  - Adelmann, Siegfried; Margotte, Dieter; Nouverine, Werner; and Kleiner, Frank, 4,367,186, Cl. 264-22.000.
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  - Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.
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- Klopp, Gabor; Suto, Jozsef; Szasz, Karoly; Szebenyi, Imre; Winkler, Gabor; Machacs, Miklos; and Palmai, Gyorgy, to Budapesti Muszaki Egyetem. Process for the recirculation of nitrogen oxides. 4,367,204, Cl. 423-239.000.
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  - Houghton, Alexander J.; and Knasel, Thomas M., 4,367,519, Cl. 362-268.000.
- Knecht, John E. Wind driven heating system. 4,366,779, Cl. 122-26.000.
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  - Lersmacher, Bernhard; and Knippenberg, Wilhelmus F., 4,367,246, Cl. 427-228.000.
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  - Tsuruga, Yuuji; Kobayashi, Akihiro; Yoshitoshi, Makoto; and Nishino, Yutaka, 4,367,375, Cl. 179-81.00R.
- Kobayashi, Masayoshi: *See—*
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- Kobe Steel, Ltd.: *See—*
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- Koch, Harold D. Snap-in tire carrier. 4,366,923, Cl. 224-42.240.
- Kocian, Frank A., to Federal-Mogul Corporation. Mower drive with yieldable spindle mount. 4,366,995, Cl. 308-26.000.
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- Koizumi, Tatsuya: *See—*
  - Sakanaka, Yasuhiro; Hayashi, Takao; Koizumi, Tatsuya; and Akashi, Sumio, 4,367,097, Cl. 106-901.000.
- Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasuarl nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. 3-Substituted-tetrahydro-pyrrolo[1,2-a]pyrimidines and pharmaceutical compositions. 4,367,229, Cl. 424-251.000.
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- Kolb, Elisabeth, executrix: *See—*
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- Kolb, Franz, deceased: *See—*
  - Eiermann, Kurt; and Kolb, Franz, deceased, 4,366,709, Cl. 73-204.000.
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- Komoto, Hiroshi: *See—*
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  - Abe, Kuniomi, 4,367,018, Cl. 351-213.000.
- Koncelik, Joseph A.; and Chancy, David B. Fold-down desk. 4,366,999, Cl. 312-237.000.
- Kondo, Hidehiro: *See—*
  - Fuji, Takiji; Takaichi, Toshio; Yokoyama, Shoji; and Kondo, Hidehiro, 4,366,705, Cl. 73-118.000.
- Kondo, Kazuhiko, to Nippon Cable System, Inc. Engagement device for control cable. 4,366,725, Cl. 74-501.00R.
- Kondo, Shigeharu; Kikutake, Junichiro; Sugiura, Masakazu; and Yoshida, Masaru, to Sanyo Chemical Industries, Ltd. Glycoprotein derivative compositions, process for producing the same and uses thereof as diagnostic reagents or hydrolytic catalysts. 4,367,309, Cl. 525-54.100.
- Kondo, Syunichi; Matsufuji, Akihiro; and Umehara, Akira, to Fuji Photo Film Co., Ltd. Photopolymerizable composition. 4,367,280, Cl. 430-281.000.
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- Konishi, Nobukiyo: *See—*
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- Konishi, Yoshitaka: *See—*
  - Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
- Koob, Hubert: *See—*
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- Koppers Company, Inc.: *See—*
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- Korane, Kenneth J.: *See—*
  - Currie, William E.; and Korane, Kenneth J., 4,366,841, Cl. 138-109.000.
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- Koreeda, Toshio: *See—*
  - Nojiri, Akio; Sawasaki, Takashi; and Koreeda, Toshio, 4,367,185, Cl. 264-22.000.
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- Korthaus, Helmut: *See—*
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  - Huber, Reinhold; and Koster, Waldemar, 4,366,590, Cl. 14-16.500.
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  - Aoki, Akiji; and Inoue, Terusato, 4,367,300, Cl. 524-2.000.
- Koyama, Hideaki: *See—*
  - Tachihara, Jin; and Koyama, Hideaki, 4,367,387, Cl. 219-10.55B
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  - Bohm, Nandor; Bohm, Janos; and Bohm, Robert, 4,366,719, Cl. 73-861.760.
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  - Grebe, Reiner, 4,366,663, Cl. 53-559.000.
- Krause, Charles J., to Norris Industries, Inc. Composite fiber reinforced member. 4,367,260, Cl. 428-287.000.
- Kreher, Joachim: *See—*
  - Gunther, Wilhelm; and Kreher, Joachim, 4,366,911, Cl. 213-100.00R
- Kreinick, Stephen J.: *See—*
  - Bailey, Wilber H.; Kreinick, Stephen J.; and Denny, Bradley J., 4,367,435, Cl. 318-313.000.
- Kretschmer, Joseph A.: *See—*
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- Kroworsch, Hans-Peter: *See—*
  - Forstbauer, Wilhelm; Kroworsch, Hans-Peter; Kuller, Herbert; and Strop, Jurgen, 4,367,522, Cl. 363-137.000.
- Kuczkowski, Joseph A.: *See—*
  - Wideman, Lawson G.; Bente, Lynn A.; and Kuczkowski, Joseph A., 4,367,358, Cl. 585-440.000.
- Kudo, Tetsuichi: *See—*
  - Nagai, Ryo; Obayashi, Hidehito; Gotoh, Akira; and Kudo, Tetsuichi, 4,367,269, Cl. 429-191.000.
- Kudo, Yoshihiko; Suzuki, Yukio; and Otomo, Mituru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for removing sulfur dioxide from combustion exhaust gas. 4,367,205, Cl. 423-243.000.
- Kudo, Yukitsuka: *See—*
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- Kuhlbrodt, Klaus-Otto: *See—*
  - Peise, Helmut; Brausse, Reinhard; Lucas, Klaus; Kuhlbrodt, Klaus-Otto; Berger, Friedrich; Gohler, Peter; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudymov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,367,076, Cl. 48-128.000.
- Kuhle, Engelbert: *See—*
  - Eimers, Erich; Dhein, Rolf; Cohnen, Wolfgang; Kuhle, Engelbert; and Heywang, Gerhard, 4,367,303, Cl. 524-107.000.
- Kulischenko, Walter; Bloomfield, Philip E.; and Ferren, Richard A., to Pennwalt Corporation. Power steering direction sensor. 4,366,768, Cl. 114-144.00E.
- Kuller, Herbert: *See—*
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- Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating normal paraffins using silicalite adsorbent. 4,367,364, Cl. 585-826.000.
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  - Seki, Takeo; Shinoda, Yukio; and Kumada, Akio, 4,367,504, Cl. 360-109.000.
- Kumasaka, Kenji: *See—*
  - Tadauchi, Masaharu; and Kumasaka, Kenji, 4,367,457, Cl. 340-347.0AD.
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  - Tanaka, Toshiaki; and Kunii, Kazuya, 4,366,788, Cl. 123-198.00F.
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- Kurahashi, Koichiro; and Tomimatsu, Noriyuki, to Mitsubishi Denki Kabushiki Kaisha. Large scale display panel apparatus. 4,367,464, Cl. 340-701.000.
- Kuraray Company, Limited: *See—*
  - Hirai, Koji; Shirano, Kenji; Hara, Kazuo; and Okamura, Takayuki, 4,367,307, Cl. 524-590.000
  - Satoh, Kenji; Negi, Taichi; and Matsumoto, Kenji, 4,367,305, Cl. 524-398.000.
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  - Kudo, Yoshihiko; Suzuki, Yukio; and Otomo, Mituru, 4,367,205, Cl. 423-243.000.
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- Marconi Company Limited, The: *See—*
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  - Larsen, John E.; and McGregor, Rob R., 4,366,631, Cl. 36-50.000.
- Mchuma, Frank S. Bathroom appliances. 4,366,584, Cl. 4-307.000.
- McKane, Thomas D., Jr. Fluid injector spray device. 4,366,840, Cl. 137-894.000.
- McKay, Dwight L., to Phillips Petroleum Company. Catalyst regeneration. 4,367,136, Cl. 208-120.000.
- McKay, Rick: *See—*
  - Levy, Michael; Porter, William P.; Gandhi, Kiran; and McKay, Rick, 4,366,873, Cl. 177-25.000.
- McKee, Graham E.: *See—*
  - Brandstetter, Franz; McKee, Graham E.; and Priebe, Edmund, 4,367,311, Cl. 525-68.000.
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- McMillan, Ronald R. Wire holder system and method of positioning and maintaining a bundle of wires. 4,366,939, Cl. 248-68.00R.
- McMinn, Talmage D., Jr.: *See—*
  - Rooks, Charles W.; Davis, George D.; Hill, James C.; and McMinn, Talmage D., Jr., 4,367,160, Cl. 252-373.000.
- McSpadden, John S., to Bell Telephone Laboratories, Incorporated. Grip for cable or the like. 4,366,938, Cl. 248-61.000.
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  - Temple, Davis L., Jr.; and Yeager, Richard E., 4,367,335, Cl. 544-295.000.
- Mecanorma S.A.: *See—*
  - Tordjman, Roger A., 4,367,252, Cl. 428-41.000.
- Mecklenburg, Alfred C.: *See—*
  - Bromley, Eric; Mecklenburg, Alfred C.; and Rosenfeld, Jon P., 4,366,960, Cl. 273-85.00G.
- Medical College of Ohio, The: *See—*
  - Manning, Maurice; and Sawyer, Wilbur H., 4,367,225, Cl. 424-177.000.
- Medical Incorporated: *See—*
  - Shah, Suresh T., 4,366,581, Cl. 3-1.500.

- Medical Laboratory Automation, Inc.: *See—*
  - Scordato, Richard E.; Varca, Robert J.; and Francis, Robert S., 4,367,198, Cl. 422-102.000.
- Medtronic, Inc.: *See—*
  - Short, David H., 4,366,901, Cl. 206-210.000.
- Medwin, Albert H. Electronic measuring apparatus. 4,367,438, Cl. 324-57.00R.
- Mehoudar, Raphael, to Hydro-Plan Engineering, Ltd. Irrigation emitter unit. 4,366,926, Cl. 239-542.000.
- Meiners Electronic Controls Ltd.: *See—*
  - Homocky, John; and Venczel, Joseph, 4,366,681, Cl. 66-165.000.
- Mendelsohn, Morris A.; and Navish, Francis W., Jr., to Westinghouse Electric Corp. Impregnated high voltage spacers for use with resin filled hose bracing systems. 4,367,425, Cl. 310-260.000.
- Menegus, Robert L.: *See—*
  - Wende, Charles W. J.; Babcock, Dale F.; and Menegus, Robert L., 4,367,196, Cl. 376-333.000.
- Menzel, Ludwig: *See—*
  - Klein, Herrmann; Pelweckyj, Peter; and Menzel, Ludwig, 4,367,487, Cl. 358-107.000.
- Merrell Dow Pharmaceuticals Inc.: *See—*
  - Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., 4,367,236, Cl. 424-273.00R.
- Merritt, Henry B.: *See—*
  - Utsch, Francis V.; Merritt, Henry B.; and Sykes, Larry M., 4,366,825, Cl. 131-296.000.
- Messier-Hispano-Bugatti: *See—*
  - Masclet, Jean; and Marcheron, Claude, 4,367,529, Cl. 364-426.000.
- Messing, Gilbert S.; Stanford, Thomas R.; Lochet, Jean A.; and Patel, Rajendra B., to Vanguard Research Associates, Inc. Metals recovery cell and electrode assembly for same. 4,367,127, Cl. 204-105.00R.
- Meszaros, Zoltan: *See—*
  - Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasuarl nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,367,229, Cl. 424-251.000.
- Metzger, Lenard M., to Eastman Kodak Company. Battery-power distribution apparatus. 4,367,025, Cl. 354-145.000.
- Mezger, Manfred: *See—*
  - Seeger, Karl; Jundt, Werner; Mezger, Manfred; and Kiencke, Uwe, 4,366,800, Cl. 123-609.000.
- Michaelis, Klaus-Peter; Wehner, Wolfgang; Andreas, Holger; and Muller, Horst, to Ciba-Geigy Corporation. Novel organic antimony-sulfur compounds and their use as stabilizers for chlorine-containing thermoplasts. 4,367,304, Cl. 524-204.000.
- Michaut, Jean: *See—*
  - Estrade, Robert; and Michaut, Jean, 4,367,109, Cl. 156-113.000.
- Michienzi, Giacomo F. Spacer member. 4,366,942, Cl. 249-210.000.
- Microdot Inc.: *See—*
  - Berecz, Imre, 4,367,060, Cl. 411-303.000.
- Micromeritics Instrument Corporation: *See—*
  - Webb, Paul A., Jr.; Small, Alan H.; and Ball, Dean M., 4,367,041, Cl. 356-72.000.
- Mihayashi, Keiji: *See—*
  - Yagihara, Morio; Hirano, Tsumoru; and Mihayashi, Keiji, 4,367,282, Cl. 430-381.000.
- Mijnders, Gijsbert J.: *See—*
  - Vissers, Hermanus H.; and Mijnders, Gijsbert J., 4,366,877, Cl. 180-53.00R.
- Mikami, Tsukasa, to Takeda Riken Kogyo Kabushikikaisha. Reference voltage generator. 4,367,437, Cl. 323-349.000.
- Miki, Nobuaki: *See—*
  - Kawamoto, Mutsumi; and Miki, Nobuaki, 4,367,528, Cl. 364-424.100.
- Milam, Jay K. Downhole gas separator. 4,366,861, Cl. 166-105.500.
- Mile High Equipment Company: *See—*
  - Van Steenburgh, Leon R., Jr., 4,366,679, Cl. 62-347.000.
- Miller, Arthur, to RCA Corporation. Array positioning system with out-of-focus solar cells. 4,367,403, Cl. 250-203.00R.
- Miller, Clarence L., Jr., to Allegheny Ludlum Steel Corporation. Silicon steel and processing therefore. 4,367,100, Cl. 148-113.000.
- Miller, Edward B.; and Eichelberger, Charles W., to General Electric Company. Method and apparatus for controlling distributed electrical loads. 4,367,414, Cl. 307-38.000.
- Miller, Jack V. Lampholder fitting with three-way brightness solid-state fluorescent lamp ballast. 4,367,434, Cl. 315-51.000.
- Miller, John H., III: *See—*
  - Stromsta, Roger R.; Miller, John H., III; and Carlson, Harry J., Jr., 4,367,505, Cl. 360-121.000.
- Miller, Russell F.; Brown, William H.; and Perkins, James M., to Harley-Davidson Motor Co., Inc. Debris deflector for belt drive motorcycles. 4,366,880, Cl. 180-219.000.
- Milpat Corporation: *See—*
  - Spitz, Albert W., 4,366,855, Cl. 165-95.000.
- Mimura, Yoshinori; Komazawa, Yoshihisa; and Okamura, Yasuyuki, to Kokusai Denshin Denwa Kabushiki Kaisha. Single crystal manufacturing device. 4,367,200, Cl. 422-248.000.
- Minenko, Leonid P.: *See—*
  - Bobrysheva, Ljubov V.; Gavrilenko, Boris P.; Markov, Valery V.; and Minenko, Leonid P., 4,366,898, Cl. 198-692.000.
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  - Hamasaki, Masanobu, 4,366,950, Cl. 266-49.000.
  - Ito, Katsukiyo; and Kodaira, Kazuo, 4,367,290, Cl. 521-77.000.
  - Mizutani, Fumio; Yoshiura, Masahiko; Iriyama, Keiji; Sasaki, Kanji; and Tsuda, Keishiro, 4,367,369, Cl. 136-263.000.
  - Sano, Shiro; and Takagi, Hiroyoshi, 4,367,292, Cl. 501-119.000.
- Minnesota Mining and Manufacturing Company: *See—*
  - Cellone, Luigi; Vallarino, Angelo; and Leoncavallo, Roberto, 4,367,284, Cl. 430-539.000.
  - Dressler, Daryl D., 4,367,462, Cl. 340-620.000.
  - Leichter, Louis M.; Sonnonstine, Terry J.; and Stofko, John J., Jr., 4,367,274, Cl. 430-58.000.
  - Riedel, John E., 4,366,814, Cl. 128-156.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Ishida, Tokuji; and Hosomizu, Hiroshi, 4,367,023, Cl. 354-33.000.
  - Watanabe, Yutaka, 4,367,033, Cl. 355-5.000.
- Misaki, Hideo: *See—*
  - Yamaguchi, Tsutomu; and Misaki, Hideo, 4,367,285, Cl. 435-28.000.
- Mita, Seiichi; Hirano, Yasuhiro; and Eto, Yoshizumi, to Hitachi Denshi Kabushiki Kaisha. Method and apparatus for magnetic recording and reproduction of digital signal. 4,367,495, Cl. 360-39.000.
- Mitchell, Albert W., to Emerson Electric Co. Apparatus for cutting vegetation. 4,366,621, Cl. 30-276.000.
- Mitsubishi Chemical Industries, Limited: *See—*
  - Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,367,124, Cl. 204-17.000.
  - Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, 4,367,273, Cl. 430-56.000.
- Mitsubishi Denki Kabushiki Kaisha: *See—*
  - Kurahashi, Koichiro; and Tomimatsu, Noriyuki, 4,367,464, Cl. 340-701.000.
  - Matsushita, Mitsuru; and Nakamura, Koji, 4,367,430, Cl. 313-405.000.
  - Nishizako, Shizutaka, 4,367,448, Cl. 335-201.000.
  - Yazawa, Nobuharu; and Yoshitomi, Masao, 4,367,419, Cl. 307-254.000.
- Mitsubishi Rayon Company, Ltd.: *See—*
  - Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,367,245, Cl. 427-54.100.
- Miura, Shinsuke: *See—*
  - Kumada, Akio; Ihochi, Takahiko; Tanaka, Masashi; Suzuki, Kazuma; Yokosuka, Masaru; Miura, Shinsuke; and Ochiai, Tsutomu, 4,367,426, Cl. 310-358.000.
- Miya, Kazuhiko: *See—*
  - Sato, Kanemasa; Ueno, Sadayasu; and Miya, Kazuhiko, 4,366,704, Cl. 73-118.000.
- Miyagawa, Hitoshi: *See—*
  - Kuroyanagi, Tomomitsu; and Miyagawa, Hitoshi, 4,367,484, Cl. 358-22.000.
- Miyake, Hajimu: *See—*
  - Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
- Miyake, Takashi; and Nomura, Takaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combination of an air cleaner and a deceleration compensating air control valve. 4,366,791, Cl. 123-327.000.
- Miyamura, Takahiko: *See—*
  - Fujiura, Yoshitsugu; Miyamura, Takahiko; and Nishimura, Ryoji, 4,367,004, Cl. 339-97.00R.
- Miyashita, Ichiro: *See—*
  - Kohata, Masakazu; Sano, Takashi; and Miyashita, Ichiro, 4,367,521, Cl. 363-136.000.
- Miyata, Yasuyuki: *See—*
  - Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
- Miyoshi, Takahito; Okutu, Toshimitu; Fujiyama, Masaaki; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,367,261, Cl. 428-330.000.
- Mizoguchi, Tomishige: *See—*
  - Sato, Yasuhiko; Mizoguchi, Tomishige; Kudo, Yukitsuka; and Ishida, Ryuichi, 4,367,230, Cl. 424-251.000.
- Mizuno, Shogo; Shimomura, Kyoichi; and Kobayashi, Michiaki, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer printing. 4,367,071, Cl. 8-471.000.
- Mizuta, Masaji, to Dainippon Screen Seizo Kabushiki Kaisha. Method and apparatus for automatically controlling an activity of a developing liquid for use in a developer. 4,367,029, Cl. 354-298.000.
- Mizutani, Fumio; Yoshiura, Masahiko; Iriyama, Keiji; Sasaki, Kanji; and Tsuda, Keishiro, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Solar battery. 4,367,369, Cl. 136-263.000.
- Mobil Oil Corporation: *See—*
  - Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayan N.; and Yancey, Irvin R., 4,367,055, Cl. 405-169.000.
  - Kaeding, Warren W., 4,367,359, Cl. 585-467.000.
  - Murray, James G., 4,367,320, Cl. 526-75.000.
  - Park, Hee C., 4,367,112, Cl. 156-244.230.
- Modica, Frank. Theft deterring apparatus. 4,367,454, Cl. 340-63.000.
- Moiseenkov, Valery M.: *See—*
  - Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.
- Molins Limited: *See—*
  - Bedford, Michael J., 4,366,737, Cl. 83-341.000.
  - Bennett, George R.; and Day, Robert S., 4,366,895, Cl. 198-347.000.
- Mollier, Jean: *See—*
  - Giraud, Georges; and Mollier, Jean, 4,367,402, Cl. 235-385.000.

- Monaghan, Kevin J., to Bunker Ramo Corporation. Optical fiber connector and means and method for centering optical fibers. 4,367,011, Cl. 350-96.200.
- Monsanto Company: *See—*
  - Graham, Tommy E., 4,367,139, Cl. 210-321.300.
  - Posey, Lloyd G., Jr., 4,367,135, Cl. 208-108.000.
  - Rooks, Charles W.; Davis, George D.; Hill, James C.; and McMinn, Talmage D., Jr., 4,367,160, Cl. 252-373.000.
- Montalvo, Edwin J., Jr. Brakes and clutches. 4,366,884, Cl. 188-71.300.
- Montmayeur, Jean-Denis: *See—*
  - Aubert, Michel; Bret, Antoine; Lemercier, Guy; Montmayeur, Jean-Denis; Sauvage, Michel; and Teytu, Andre, 4,367,195, Cl. 376-290.000.
- Moog Automotive, Inc.: *See—*
  - Benya, Robert J.; and Swinney, Gary D., 4,366,969, Cl. 280-668.000.
- Moore, Wayne A.: *See—*
  - Sweet, Richard G.; Moore, Wayne A.; Nozaki, Tom, Jr.; and Stovel, Richard T., 4,367,043, Cl. 356-338.000.
- Moranne, Jean-Pierre, to Societe Anonyme des Usines Chausson. Self-deaerating heat exchanger for engine cooling circuits. 4,366,858, Cl. 165-104.320.
- Morgan Construction Company: *See—*
  - Pariseau, David L.; and Wykes, Philip, 4,366,694, Cl. 72-235.000.
- Mori, Mitsuhiro: *See—*
  - Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
- Morigaki, Masakazu: *See—*
  - Hayashi, Hiroshi; Hamaoka, Tsutomu; and Morigaki, Masakazu, 4,367,272, Cl. 430-17.000.
- Morii, Shuji: *See—*
  - Niyada, Katsuyuki; Hiraoka, Shoji; and Morii, Shuji, 4,367,441, Cl. 328-162.000.
- Morikawa, Masanobu: *See—*
  - Tanaka, Chiaki; Morikawa, Masanobu; and Kohno, Yoshio, 4,367,316, Cl. 525-173.000.
- Morin, Marius J. Tree sap collection apparatus. 4,366,648, Cl. 47-52.000.
- Morinaga, Shigeki; Obara, Sanshiro; Tokuda, Hiroastu; and Nakamura, Hideo, to Hitachi, Ltd. Control apparatus for an internal combustion engine. 4,367,530, Cl. 364-431.060.
- Morinaga, Shigeki: *See—*
  - Muto, Nobuyoshi; Matsuda, Yasuo; Morinaga, Shigeki; and Sugiura, Yasuyuki, 4,367,520, Cl. 363-41.000.
- Morioka, Makoto: *See—*
  - Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
- Morita, Minoru, to Tsukishima Kikai Co., Ltd. Slurry storage tank. 4,367,048, Cl. 366-137.000.
- Morse, James E.: *See—*
  - Crain, Philip W.; and Morse, James E., 4,366,645, Cl. 46-201.000.
- Mortland, Max M.: *See—*
  - Pinnavaia, Thomas J.; and Mortland, Max M., 4,367,163, Cl. 252-455.00R.
- Moss, Herbert H.: *See—*
  - Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayan N.; and Yancey, Irvin R., 4,367,055, Cl. 405-169.000.
- Motorola Inc.: *See—*
  - Dydyk, Michael, 4,367,445, Cl. 333-127.000.
  - Gercekci, Anil; and Maeder, Heinz B., 4,367,558, Cl. 455-164.000.
  - Hull, Thomas W.; and Pagnamenta, Antonio, 4,367,443, Cl. 330-207.00P.
- Mrazek, Franklin C.; Smaga, John A.; and Battles, James E., to United States of America, Energy. Method for uniformly distributing carbon flakes in a positive electrode, the electrode made thereby and compositions. 4,367,159, Cl. 252-182.100.
- MTD Products Inc.: *See—*
  - Parikh, Bhupendra A., 4,366,593, Cl. 15-49.00C.
- Mucke, Gert: *See—*
  - Berger, Bernd; Mucke, Gert; Thies, Helmut; and Neuschutz, Eberhard, 4,366,720, Cl. 73-862.070.
- Mueller, Robert H. Pipe installation fitting. 4,366,652, Cl. 52-200.000.
- Muhlbach, Anton, to USM Corporation. Cement press for cement attaching outsoles to lasted footwear. 4,366,589, Cl. 12-16.400.
- Mukunoki, Yasuo: *See—*
  - Nakayama, Yasuhiro; Yoneyama, Masakazu; Mukunoki, Yasuo; Kitada, Akira; and Kishimoto, Shinzo, 4,367,283, Cl. 430-528.000.
- Mulder, William C.: *See—*
  - Rosier, Lawrence L.; and Mulder, William C., 4,367,105, Cl. 156-79.000.
- Muller, Horst: *See—*
  - Michaelis, Klaus-Peter; Wehner, Wolfgang; Andreas, Holger; and Muller, Horst, 4,367,304, Cl. 524-204.000.
- Muller, Norbert: *See—*
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- Multinorm B.V.: *See—*
  - Vissers, Hermanus H.; and Mijnders, Gijsbert J., 4,366,877, Cl. 180-53.00R.
- Munakata, Yoshitaka, to Sony Corporation. Multifunction concentric plug. 4,367,001, Cl. 339-31.00R.
- Munday, Peter J.: *See—*
  - Gardner, Brian R.; and Munday, Peter J., 4,367,444, Cl. 332-19.000.
- Munter, Ernst A., to Northern Telecom Limited. PCM and PAM Conversion circuit including signal level variation on the PCM portion of the circuit. 4,367,456, Cl. 340-347.00C.
- Muraki, Hideaki: *See—*
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Nakamura, Tamotsu; Yokota, Kouji; and Sobukawa, Hideo, 4,367,162, Cl. 252-443.000.
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Tomita, Makoto; Sobukawa, Hideo; and Fukui, Masayuki, 4,367,166, Cl. 252-462.000.
- Murata, Koshi: *See—*
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- Murata, Masayoshi: *See—*
  - Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,367,228, Cl. 424-246.000.
- Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, to Mitsubishi Chemical Industries Limited. Electrophotographic plate comprising a conductive substrate and a photosensitive layer containing an organic photoconductor layer composed of a hydrazone compound. 4,367,273, Cl. 430-56.000.
- Murray, James G., to Mobil Oil Corporation. Process for suspension polymerization of styrenic monomers. 4,367,320, Cl. 526-75.000.
- Musitronic, Inc.: *See—*
  - Titus, John S., 4,366,741, Cl. 84-478.000.
- Muto, Nobuyoshi; Matsuda, Yasuo; Morinaga, Shigeki; and Sugiura, Yasuyuki, to Hitachi, Ltd. Method and apparatus for controlling pulse width modulation inverter circuit. 4,367,520, Cl. 363-41.000.
- Mutsuwa Taiga Kabushiki Kaisha: *See—*
  - Noguchi, Teruo, 4,366,579, Cl. 2-19.000.
- Mutzel, Wolfgang; Siefert, Hans-Martin; Speck, Ulrich; Pfeiffer, Heinrich; Schulze, Paul-Eberhard; and Acksteiner, Bernhard, to Schering Aktiengesellschaft. Triiodinated 5-aminoisophthalic acid derivatives. 4,367,216, Cl. 424-5.000.
- Nagai, Ryo; Obayashi, Hidehito; Gotoh, Akira; and Kudo, Tetsuichi, to Hitachi, Ltd. Solid electrolyte. 4,367,269, Cl. 429-191.000.
- Nagano, Katsuto: *See—*
  - Asakawa, Yukio; Nagano, Katsuto; and Sasa, Syozo, 4,367,395, Cl. 219-216.000.
- Nagao, Makoto: *See—*
  - Arai, Yoshihiro; Nagao, Makoto; and Nahara, Akira, 4,367,257, Cl. 428-220.000.
- Nagaoka Kanaami Kabushiki Kaisha: *See—*
  - Nagaoka, Tadayoshi, 4,366,608, Cl. 29-157.00R.
- Nagaoka, Shigeo: *See—*
  - Sakai, Yoshiya; Nagaoka, Shigeo; Nakai, Yohji; and Tomoyasu, Takatoshi, 4,367,394, Cl. 219-146.240.
- Nagaoka, Tadayoshi, to Nagaoka Kanaami Kabushiki Kaisha; and Manteufel, Rolf P. C. Method for manufacturing fluid contacting device. 4,366,608, Cl. 29-157.00R.
- Nagoya University: *See—*
  - Kaneko, Yasuyuki; and Ito, Masao, 4,367,288, Cl. 435-133.000.
  - Kaneko, Yasuyuki; Itoh, Masao; Takahashi, Shinji; and Iritani, Masako, 4,367,289, Cl. 435-133.000.
- Nagoya, Yosinari: *See—*
  - Yamazaki, Susumu; Nagoya, Yosinari; Fujimoto, Ryoichi; Nozaki, Koichi; Shirakata, Terukazu; and Yamaguchi, Kazuyoshi, 4,366,678, Cl. 62-186.000.
- Nahara, Akira: *See—*
  - Arai, Yoshihiro; Nagao, Makoto; and Nahara, Akira, 4,367,257, Cl. 428-220.000.
- Nair, Ramon. Combined turbine and generator. 4,367,413, Cl. 290-52.000.
- Naito, Yukio: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Nunose, Akira; and Nishioka, Masaharu, 4,367,322, Cl. 526-137.000.
- Naka, Kozo, to Naka Seiki Company Limited. Variable ratio metering, mixing and dispensing apparatus. 4,366,918, Cl. 222-134.000.
- Naka Seiki Company Limited: *See—*
  - Naka, Kozo, 4,366,918, Cl. 222-134.000.
- Nakahara, Motohiro: *See—*
  - Suto, Shoichi; Hanawa, Fumiaki; Kawachi, Masao; Edahiro, Takao; and Nakahara, Motohiro, 4,367,085, Cl. 65-18.200.
- Nakai, Yohji: *See—*
  - Sakai, Yoshiya; Nagaoka, Shigeo; Nakai, Yohji; and Tomoyasu, Takatoshi, 4,367,394, Cl. 219-146.240.
- Nakajima, Yukio: *See—*
  - Terada, Katumi; and Nakajima, Yukio, 4,367,026, Cl. 354-173.000.
- Nakamura, Hideo: *See—*
  - Morinaga, Shigeki; Obara, Sanshiro; Tokuda, Hiroastu; and Nakamura, Hideo, 4,367,530, Cl. 364-431.060.
- Nakamura, Koji: *See—*
  - Matsushita, Mitsuru; and Nakamura, Koji, 4,367,430, Cl. 313-405.000.
- Nakamura, Tamotsu: *See—*
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Nakamura, Tamotsu; Yokota, Kouji; and Sobukawa, Hideo, 4,367,162, Cl. 252-443.000.
- Nakamura, Teruo: *See—*
  - Hayashi, Kazuya; Shimada, Masato; Nakamura, Teruo; and Fujii, Yoshihiro, 4,367,070, Cl. 8-114.600.
- Nakamura, Toshinobu, to Shinagawa Shoko Co., Ltd. Electronic part with an insulating cover. 4,367,371, Cl. 174-52.00R.
- Nakano, Jiro: *See—*
  - Hachiga, Takasi; Tamaki, Kazuyoshi; Nakano, Jiro; and Ono, Hironobu, 4,366,794, Cl. 123-479.000.

- Nakano, Shoichi: *See—*
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- Nakao, Makoto: *See—*
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- Nakayama, Yoshiki: *See—*
  - Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,367,345, Cl. 564-26.000.
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- Namy, Gerald, to Creusot-Loire Entreprises; and Lafarge S.A. Process and device for manufacturing cement clinker. 4,367,095, Cl. 106-100.000.
- Nanstiel, William F.; and Antol, Ronald F., to Westinghouse Electric Corp. Plug removal apparatus. 4,366,617, Cl. 29-727.000.
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  - Belsky, Valentin I.; Orlov, Gennady I., Suturin, Serafim N.; Dolgov, Anatoly V.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,366,951, Cl. 266-204.000.
- Nash, Stanley G., to Sun Wise, Inc. Solar energy conversion apparatus. 4,366,808, Cl. 126-450.000.
- Nastasy, Viktor K.: *See—*
  - Otto, Mark S.; Nastasy, Viktor K.; and Livshits, Abram L., 4,367,400, Cl. 219-69.00G.
- Nasu, Mitsuo, to Olympus Optical Company Limited. Bearing device for capstan shaft. 4,367,501, Cl. 360-96.300.
- National Gypsum Company: *See—*
  - Pearson, Robert J., 4,366,660, Cl. 52-741.000.
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  - Mendelsohn, Morris A.; and Navish, Francis W., Jr., 4,367,425, Cl. 310-260.000.
- Naylor, Herbert C.: *See—*
  - Larson, Willis A.; and Naylor, Herbert C., 4,367,380, Cl. 200-5.00R.
- NCR Corporation: *See—*
  - Curry, John L., 4,367,468, Cl. 340-768.000.
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  - Satoh, Kenji; Negi, Taichi; and Matsumoto, Kenji, 4,367,305, Cl. 524-398.000.
- Nelson, Roger J., to Deere & Company. Bi-directional flow transducer. 4,366,718, Cl. 73-861.580.
- Nelson, Ronald E. Knee brace. 4,366,813, Cl. 128-80.00C.
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  - Mayer, Gyorgy; and Nemeskeri, Laszlo, 4,366,655, Cl. 52-227.000.
- Neracher, Arnold, to Battelle Memorial Institute. Pulse laser with an electrically excited gaseous active medium. 4,367,553, Cl. 372-55.000.
- Nessler, Hermann: *See—*
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- Neuman, Samuel: *See—*
  - Reisfeld, Renata; and Neuman, Samuel, 4,367,367, Cl. 136-247.000.
- Neuschutz, Eberhard: *See—*
  - Berger, Bernd; Mucke, Gert; Thies, Helmut; and Neuschutz, Eberhard, 4,366,720, Cl. 73-862.070.
- Neuzil, Richard W.: *See—*
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- Newbold, F. E. Dixon: *See—*
  - Levine, Edward H.; and Newbold, F. E. Dixon, 4,366,922, Cl. 224-32.00R.
- Newport Borough Council, of Civic Centre: *See—*
  - Thomas, Howard M.; and Duke, Graham R., 4,366,651, Cl. 52-127.120.
- Nichka, Ronald S.: *See—*
  - Sparks, Robert J.; and Nichka, Ronald S., 4,367,000, Cl. 312-249.000.
- Nickence, John, to Belden Corporation. Housing for cube tap electrical connector. 4,367,007, Cl. 339-210.00M.
- Nihon Mukiseni Kogyo Kabushiki Kaisha: *See—*
  - Hasegawa, Takao; and Takahashi, Wataru, 4,367,271, Cl. 429-252.000.
- Nilsson, Sven W., to SKF Nova AB. Gear. 4,366,726, Cl. 74-800.000.
- Nintendo Co., Ltd.: *See—*
  - Takeda, Genyo; and Hatakeyama, Masato, 4,367,466, Cl. 340-725.000.
- Nippon Cable System, Inc.: *See—*
  - Kondo, Kazuhiko, 4,366,725, Cl. 74-501.00R.
- Nippon Electric Co., Ltd.: *See—*
  - Namiki, Junji; and Furuya, Yukitsuna, 4,367,555, Cl. 375-11.000.
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  - Yamaguchi, Mitsuhiko; and Uchiyama, Masayuki, 4,367,377, Cl. 179-115.50H.
- Nippon Kogaku K.K.: *See—*
  - Tomatsuri, Masakazu; Wakabayashi, Hiroshi; and Okuyama, Takeshi, 4,367,028, Cl. 354-288.000.
- Nippon Sheet Glass Co., Ltd.: *See—*
  - Ikeda, Yoshirou; Kaite, Yoshikazu; and Ikuma, Toshiro, 4,367,012, Cl. 350-96.340.
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  - Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,367,453, Cl. 340-23.000.
  - Yamaguchi, Hiroaki, Hattori, Tadashi; and Ootsuka, Yoshinori, 4,366,702, Cl. 73-35.000.
- Nippon Telegraph & Telephone Corp.: *See—*
  - Ono, Kyosuke; and Murata, Koshi, 4,366,993, Cl. 308-9.000
- Nippon Telegraph & Telephone Public Corporation: *See—*
  - Suto, Shoichi; Hanawa, Fumiaki, Kawachi, Masao; Edahiro, Takao; and Nakahara, Motohiro, 4,367,085, Cl. 65-18.200.
  - Tsuruga, Yuuji; Kobayashi, Akihiro; Yoshitoshi, Makoto, and Nishino, Yutaka, 4,367,375, Cl 179-81.00R.
- Nippondenso Co., Ltd.: *See—*
  - Hachiga, Takasi; Tamaki, Kazuyoshi; Nakano, Jiro; and Ono, Hironobu, 4,366,794, Cl. 123-479.000.
  - Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,367,453, Cl. 340-23.000.
- Nishikawa, Masaji, to Olympus Optical Company Ltd. Temperature controller for photographic heat fixing unit. 4,367,037, Cl. 355-14.0FU.
- Nishimatsu, Masaharu: *See—*
  - Kawahara, Hiroshi; Nishimura, Tadashi; Funakoshi, Masatsugu; and Nishimatsu, Masaharu, 4,367,263, Cl. 428-336.000.
- Nishimura, Daikichi; Sugawara, Toshiaki; and Emoto, Nobuyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. N^4-Alkoxycarbonylarabinofuranosylcytosine. 4,367,332, Cl. 536-23.000.
- Nishimura, Ryoji: *See—*
  - Fujiura, Yoshitsugu; Miyamura, Takahiko; and Nishimura, Ryoji, 4,367,004, Cl. 339-97.00R.
- Nishimura, Tadashi: *See—*
  - Kawahara, Hiroshi; Nishimura, Tadashi, Funakoshi, Masatsugu; and Nishimatsu, Masaharu, 4,367,263, Cl. 428-336.000.
- Nishino, Yutaka: *See—*
  - Tsuruga, Yuuji; Kobayashi, Akihiro; Yoshitoshi, Makoto; and Nishino, Yutaka, 4,367,375, Cl. 179-81.00R.
- Nishioka, Masaharu: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Nunose, Akira; and Nishioka, Masaharu, 4,367,322, Cl. 526-137.000.
- Nishioka, Ryozo, to Fuji Electric Co., Ltd. Geothermal turbine installation. 4,366,675, Cl. 60-693.000.
- Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Haga, Takahiro; and Koyanagi, Toru, to Ishihara Sangyo Kaisha, Ltd 2-Substituted-5-trifluoromethylpyridines and process for producing the same. 4,367,336, Cl. 546-286.000.
- Nishizako, Shizutaka, to Mitsubishi Denki Kabushiki Kaisha. Direct current electromagnetic contactor. 4,367,448, Cl. 335-201.000.
- Nissan Motor Company, Limited: *See—*
  - Endo, Hiroshi; Ishikawa, Yasuki; and Imai, Iwao, 4,366,801, Cl. 123-620.000.
  - Tanaka, Toshiaki; and Kunii, Kazuya, 4,366,788, Cl. 123-198.00F.
  - Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,366,724, Cl. 74-467.000.
- Nithart, Henri: *See—*
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- Niwano, Masahiro: *See—*
  - Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.
- Niyada, Katsuyuki; Hiraoka, Shoji; and Morii, Shuji, to Matsushita Electric Industrial Company, Limited. Method and circuit arrangement for shaping a signal waveform. 4,367,441, Cl. 328-162.000.
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  - Fleming, Ian D.; Noble, David; Noble formerly Gillett, Hazel M.; and Wall, Wilfred F., 4,367,175, Cl. 260-245.300.
- Noble formerly Gillett, Hazel M.: *See—*
  - Fleming, Ian D.; Noble, David; Noble formerly Gillett, Hazel M.; and Wall, Wilfred F., 4,367,175, Cl. 260-245.300.
- Noguchi, Teruo, to Mutsuwa Taiga Kabushiki Kaisha. Mitt for baseball use. 4,366,579, Cl. 2-19.000.
- Noguchi, Yasuhiro: *See—*
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- Nojiri, Akio; Sawasaki, Takashi; and Koreeda, Toshio, to Furukawa Electric Co., Ltd., The. Method of producing crosslinked polypropylene foam. 4,367,185, Cl. 264-22.000.
- Nolte and Nolte, P.C.: *See—*
  - Slavin, James A., 4,366,839, Cl. 137-625.110.
- Nomura, Isshi: *See—*
  - Akagi, Motonobu; and Nomura, Isshi, 4,366,835, Cl. 137-495.000.
- Nomura, Shoji: *See—*
  - Fujiwara, Kiyoshi; Fujimoto, Masaru; Nomura, Shoji; Kanekiyo, Hiroshi; and Yoshinaga, Shoji, 4,367,202, Cl. 422-258.000.
- Nomura, Takaaki: *See—*
  - Miyake, Takashi; and Nomura, Takaaki, 4,366,791, Cl. 123-327.000.
- Nordell, Randy J. Truck cab lifter. 4,366,879, Cl. 180-89.150.
- Nordgren, Bo G.; Akerlind, Bo; and Biedermann, Klaus. Method and apparatus in tunneling. 4,367,021, Cl. 353-121.000.
- Nordson Corporation: *See—*
  - Crum, Gerald W.; and Rooney, Brian M., 4,367,532, Cl. 364-513.000.
- Norris Industries, Inc.: *See—*
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- North American Philips Corporation: *See—*
  - Yu, Chyang J.; and Takiar, Hem P., 4,367,265, Cl. 428-697.000.
- Northern Telecom Limited: *See—*
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- Noshiro, Makoto: *See—*
  - Sato, Kimihiko; Sajima, Yasuo; Iwamoto, Junjiro; Nakao, Makoto; Suhara, Manabu; and Noshiro, Makoto, 4,367,126, Cl. 204-98.000.
- Notelteirs, Victor R.; and Siaens, Gustaaf F. R., to U.S. Philips Corporation. Halogen incandescent lamp. 4,367,428, Cl. 313-222.000.
- Notheisen, Claus: *See—*
  - Lafitte, Raymond; Marchand, Daniel; Notheisen, Claus; and Walther, Rene, 4,366,653, Cl. 52-224.000.
- Nouverine, Werner: *See—*
  - Adelmann, Siegfried; Margotte, Dieter; Nouverine, Werner; and Kleiner, Frank, 4,367,186, Cl. 264-22.000.
- Novation, Inc.: *See—*
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- Nozaki, Koichi: *See—*
  - Yamazaki, Susumu; Nagoya, Yosinari; Fujimoto, Ryoichi; Nozaki, Koichi; Shirakata, Terukazu; and Yamaguchi, Kazuyoshi, 4,366,678, Cl. 62-186.000.
- Nozaki, Tom, Jr.: *See—*
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- Nukem GmbH: *See—*
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- Numata, Koji: *See—*
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- Nunose, Akira: *See—*
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- Nuzzo, Roy, to Delos, Inc. Adjustable digital and metacarpal splint apparatus. 4,366,812, Cl. 128-77.000.
- Oak Industries Inc.: *See—*
  - Larson, Willis A.; and Naylor, Herbert C., 4,367,380, Cl. 200-5.00R.
- Obara, Sanshiro: *See—*
  - Morinaga, Shigeki; Obara, Sanshiro; Tokuda, Hiroastu; and Nakamura, Hideo, 4,367,530, Cl. 364-431.060.
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- Occidental Chemical Corporation: *See—*
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  - Simon-Bierenbaum, R.; and Tang, David Y., 4,367,348, Cl. 570-127.000.
  - Zwaenepoel, Paul; Strzelbicki, Guido; Scharf, Daniel J.; and Wagner, George M., 4,367,315, Cl. 525-169.000.
- Occidental Oil Shale, Inc.: *See—*
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- Ochiai, Kiyoshi: *See—*
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- Ochiai, Tsutomu: *See—*
  - Kumada, Akio; Ihochi, Takahiko; Tanaka, Masashi; Suzuki, Kazuma; Yokosuka, Masaru; Miura, Shinsuke; and Ochiai, Tsutomu, 4,367,426, Cl. 310-358.000.
- Oestreich, Ulrich, to Siemens Aktiengesellschaft. Method and device for manufacturing a stranded unit. 4,366,667, Cl. 57-7.000.
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- Ogura, Masato: *See—*
  - Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.
- Ogura, Osamu: *See—*
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- Ogura, Seiki; and Tsang, Paul J., to International Business Machines Corporation. Method of fabricating an MOS dynamic RAM with lightly doped drain. 4,366,613, Cl. 29-571.000.
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- Ohlinger, Manfred: *See—*
  - Sarnecki, Wilhelm; Marosi, Laszlo; Autzen, Horst; Ohlinger, Manfred; and Steck, Werner, 4,367,214, Cl. 423-634.000.
- Ohsaka, Yohnosuke: *See—*
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- Ohshima, Noboru: *See—*
  - Takeuchi, Yasumasa; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsutsumi, Funio, 4,367,325, Cl. 526-340.000.
- Ohta, Yoshimoto, to Tokico Ltd. Hydraulic force multiplying device. 4,366,742, Cl. 91-49.000.
- Ohtsuka, Kunio: *See—*
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- Okamura, Takayuki: *See—*
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- Okamura, Yasuyuki: *See—*
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- Okutu, Toshimitu: *See—*
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- Okuyama, Kiyotaka: *See—*
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- Okuyama, Takeshi: *See—*
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- Olin Corporation: *See—*
  - Beck, Alexander F., 4,367,123, Cl. 204-15.000.
  - Fiorucci, Louis C.; and Johnson, Michael E., 4,367,213, Cl. 423-607.000.
  - Kircher, Morton S., 4,367,134, Cl. 204-253.000.
  - Sakowski, Walter J.; and Duncan, Budd L., 4,367,209, Cl. 423-474.000.
- Olsen, David T.: *See—*
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- Olympus Optical Co., Ltd.: *See—*
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  - Kimura, Kenji, 4,367,494, Cl. 360-22.000.
  - Nasu, Mitsuo, 4,367,501, Cl. 360-96.300.
  - Nishikawa, Masaji, 4,367,037, Cl. 355-14.0FU.
  - Takayama, Syuichi, 4,367,024, Cl. 354-62.000.
  - Terada, Katumi; and Nakajima, Yukio, 4,367,026, Cl. 354-173.000.
  - Yamasaki, Masafumi, 4,367,022, Cl. 354-24.000.
- O'Neal, Thomas D.; Bhalla, Prithvi R.; and Cross, Barrington, to American Cyanamid Company. Substituted N-nitroaniline compounds and inorganic and organic salts thereof useful for enhancing auxiliary branching, canopy flowering and crop yield of plant and as lodging inhibitors therefor. 4,367,339, Cl. 548-378.000.
- O'Neill, Edward E.: *See—*
  - Brummett, Barry J.; and O'Neill, Edward E., 4,367,243, Cl. 426-303.000.
- Ono, Hironobu: *See—*
  - Hachiga, Takasi; Tamaki, Kazuyoshi; Nakano, Jiro; and Ono, Hironobu, 4,366,794, Cl. 123-479.000.
- Ono, Kyosuke; and Murata, Koshi, to Nippon Telegraph & Telephone Corp. Gas bearings. 4,366,993, Cl. 308-9.000.
- Ono Pharmaceutical Co., Ltd.: *See—*
  - Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
- Ono, Takeo: *See—*
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  - Shiroto, Yoshimi; Higashi, Takehito; and Ono, Takeo, 4,367,164, Cl. 252-457.000.
- Ono, Yuichi: *See—*
  - Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
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- Onose, Masayuki: *See—*
  - Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,367,124, Cl. 204-17.000.
- Onoye, Hideo: *See—*
  - Kitamura, Masatsugu; and Onoye, Hideo, 4,367,498, Cl. 360-72.100.
- Oonishi, Toshihiro: *See—*
  - Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.
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- Oota, Masaru: *See—*
  - Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.
- Ootsuka, Yoshinori: *See—*
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- Oregon Graduate Center for Study and Research: *See—*
  - Holmes, James F., 4,367,244, Cl. 427-8.000.
- Orlov, Gennady I.: *See—*
  - Belsky, Valentin I.; Orlov, Gennady I.; Suturin, Serafim N.; Dolgov, Anatoly V.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,366,951, Cl. 266-204.000.
- Ortner Freight Car Company: *See—*
  - Funk, Stanley, 4,366,757, Cl. 105-248.000.
- Otomo, Mituru: *See—*
  - Kudo, Yoshihiko; Suzuki, Yukio; and Otomo, Mituru, 4,367,205, Cl. 423-243.000.
- Otsuka, Shigenori: *See—*
  - Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, 4,367,273, Cl. 430-56.000.
- Otto, Mark S.; Nastasy, Viktor K.; and Livshits, Abram L. Device for automatic control of electro-erosion machine. 4,367,400, Cl. 219-69.00G.
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  - Prandelli, Achille; and Prandelli, Roberto, 4,367,064, Cl. 425-204.000.

- Ouchi, Hirobumi: *See—*
  - Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.
- Owens-Corning Fiberglas Corporation: *See—*
  - Brannon, Robert C.; Adzima, Leonard J.; and Ramey, Timothy W., 4,367,301, Cl. 524-86.000.
  - Cox, Dan; and Jones, Bernard H., 4,367,084, Cl. 65-10.200.
  - Gaul, David J., 4,367,083, Cl. 65-1.000.
  - Ritter, George W., II, 4,367,248, Cl. 427-307.000.
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- Oyama, Akira: *See—*
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- Paccar Inc.: *See—*
  - Warf, William R., 4,366,878, Cl. 180-54.00A.
- Pace Incorporated: *See—*
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- Pariseau, David L.; and Wykes, Philip, to Morgan Construction Company. Compact rolling mill. 4,366,694, Cl. 72-235.000.
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  - Schnur, Rodney C., 4,367,234, Cl. 424-272.000.
  - Vanderheiden, Dennis B., 4,367,207, Cl. 423-432.000.
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  - Utsch, Francis V.; Merritt, Henry B.; and Sykes, Larry M., 4,366,825, Cl. 131-296.000.
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  - McKay, Dwight L., 4,367,136, Cl. 208-120.000.
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- Ranson, Andre: *See—*
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- Ravinsky, John, to Pace Incorporated. Thermal tool including twisted tip for the tool and method of making tip. 4,367,396, Cl. 219-233.000.
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- Raymond, Gary E. Photographic developer-printer assembly, and a conveying roller unit therefor. 4,367,030, Cl. 354-322.000.
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  - Holmes, David D., 4,367,489, Cl. 358-167.000.
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- Reeves, Lloyd; and Sorensen, L. W., to Funsafe (Canada) Ltd. Convertible inflated play vehicle. 4,366,963, Cl. 280-12.00B.
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- Reinberg, Alan R.: *See—*
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- Reinhardt, Erich: *See—*
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- Remington, Richard C.: *See—*
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- Research Corporation: *See—*
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- Rhode Gear U.S.A.: *See—*
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- Rhodes, Murray G. Gladhand and plug keeper for trucks. 4,366,965, Cl. 280-421.000.
- Rhone-Poulenc Agrochimie: *See—*
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- Riederer, Stephen J., to General Electric Company. Noise reduction in digital fluoroscopy systems. 4,367,490, Cl. 358-167.000.
- Riester, Karlheinz, to Rudolf Riester GmbH & Co. Otoscope with ejector mechanism. 4,366,811, Cl. 128-9.000.
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- Ritter, George W., II, to Owens-Corning Fiberglas Corporation. Treatment of glass for high temperature resistance. 4,367,248, Cl. 427-307.000.
- Ritter, Virgil J.: *See—*
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- Robert Bosch GmbH: *See—*
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  - Eckert, Konrad, 4,366,789, Cl. 123-263.000.
  - Laufer, Helmut, 4,366,795, Cl. 123-502.000.
  - Seeger, Karl; Jundt, Werner; Mezger, Manfred; and Kiencke, Uwe, 4,366,800, Cl. 123-609.000.
- Robert Burkle GmbH & Co.: *See—*
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- Roberts, William E., to AM International, Inc. Lens system for microfiche duplicators. 4,367,518, Cl. 362-224.000.
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  - Frick, Robert J.; Korstad, Ralph J.; and Robinson, Charles J., III, 4,366,863, Cl. 166-245.000.
- Robinson, John W.: *See—*
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- Roettgen, Leslie A., to Cummins Engine Company, Inc. Early warning bypass valve assembly. 4,366,837, Cl. 137-557.000.
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- Rooks, Charles W.; Davis, George D.; Hill, James C.; and McMinn, Talmage D., Jr., to Monsanto Company. Oxidants for gasifying carbon-containing materials. 4,367,160, Cl. 252-373.000.
- Rooney, Brian M.: *See—*
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- Rosenfeld, Jon P.: *See—*
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- Rosier, Lawrence L.; and Mulder, William C. Method and apparatus for making elongated articles having sheathed foam insulation. 4,367,105, Cl. 156-79.000.
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- Rothman, Laura B.: *See—*
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- Roto-Finish Company, Inc.: *See—*
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  - Becelaere, Robert V., 4,366,830, Cl. 137-75.000.
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  - Sato, Kimihiko; Sajima, Yasuo; Iwamoto, Junjiro; Nakao, Makoto; Suhara, Manabu; and Noshiro, Makoto, 4,367,126, Cl. 204-98.000.
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  - Takeuchi, Yasumasa; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsutsumi, Funio, 4,367,325, Cl. 526-340.000.
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- Sakamoto, Makoto: *See—*
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- Salmi, Pekka, to Oy Tampella AB. Rock drill apparatus. 4,366,868, Cl. 173-105.000.
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  - Pedrazzi, Reinhard, 4,367,172, Cl. 260-153.000.
- Sangamo Weston, Inc.: *See—*
  - Emile, Philip, Jr., 4,367,467, Cl. 340-765.000.
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  - Karp, Edward C., 4,367,118, Cl. 156-497.000.
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  - Tanaka, Susumu; and Takahashi, Susumu, 4,367,442, Cl. 330-149.000.
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  - Kondo, Shigeharu; Kikutake, Junichiro; Sugiura, Masakazu; and Yoshida, Masaru, 4,367,309, Cl. 525-54.100.
- Sanyo Electric Co., Ltd.: *See—*
  - Imai, Terutoyo; and Nakano, Shoichi, 4,367,408, Cl. 250-338.000.
  - Tachihara, Jin; and Koyama, Hideaki, 4,367,387, Cl. 219-10.55B.
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  - Fujimaru, Yukio; Sugiwaki, Toshihiro; Ueoka, Keiji; and Fujioka, Shigenobu, 4,367,094, Cl. 106-90.000.
- Sarda, Jean L. Holder for ink separator on a drum of a printing press. 4,366,754, Cl. 101-208.000.
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  - Hanson, David E.; and Frenkel, Martin E., 4,366,834, Cl. 137-489.300.
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- Sarpaneva, Timo. Method for producing decorative glass objects. 4,367,086, Cl. 65-22.000.
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  - Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,367,245, Cl. 427-54.100.
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  - Mizutani, Fumio; Yoshiura, Masahiko; Iriyama, Keiji; Sasaki, Kanji; and Tsuda, Keishiro, 4,367,369, Cl. 136-263.000.
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  - Aubert, Michel; Bret, Antoine; Lemercier, Guy; Montmayeur, Jean-Denis; Sauvage, Michel; and Teytu, Andre, 4,367,195, Cl. 376-290.000.
- Saviano, Francesco: *See—*
  - Lagana, Vincenzo; Saviano, Francesco; and Cavallanti, Virginio, 4,367,258, Cl. 423-228.000.
- Savin Corporation: *See—*
  - Hori, Tatsu, 4,367,035, Cl. 355-10.000.
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  - Nojiri, Akio; Sawasaki, Takashi; and Koreeda, Toshio, 4,367,185, Cl. 264-22.000.
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  - Manning, Maurice; and Sawyer, Wilbur H., 4,367,225, Cl. 424-177.000.

- Sbalchiero, Pierre: *See—*
  - Arnichand, Roger; Coeuillet, Jacques; Darnet, Jean; and Sbalchiero, Pierre, 4,367,436, Cl. 318-628.000.
- Schafer, August W. Apparatus for circumferentially corrugating a tube. 4,366,691, Cl. 72-84.000.
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  - Zwaenepoel, Paul; Strzelbicki, Guido; Scharf, Daniel J.; and Wagner, George M., 4,367,315, Cl. 525-169.000.
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  - Gunther, Wilhelm; and Kreher, Joachim, 4,366,911, Cl. 213-100.00R
- Schaubert, Daniel H.; Farrar, Frederick G.; Hayes, Scott T.; and Sindoris, Arthur R., to United States of America, Army. Frequency-agile, polarization diverse microstrip antennas and frequency scanned arrays 4,367,474, Cl. 343-700.0MS.
- Schenewerk, William E.; and Glasgow, Lyle E., to United States of America, Energy. Emergency core cooling system. 4,367,194, Cl. 376-281.000.
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  - Mutzel, Wolfgang; Siefert, Hans-Martin; Speck, Ulrich; Pfeiffer, Heinrich; Schulze, Paul-Eberhard; and Acksteiner, Bernhard, 4,367,216, Cl. 424-5.000.
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  - Waitz, J. Allan; Reiblein, Walter; and Truumees, Imbi, 4,367,287, Cl. 435-76.000.
- Scherz, Hans R. Safety boot. 4,366,629, Cl. 36-4.000.
- Schiavone, Frank J., to Ball Corporation. Linearly polarized r.f. radiating slot. 4,367,475, Cl. 343-767.000.
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  - Gottert, Hans W.; and Schiffer, Rainer, 4,367,407, Cl. 250-329.000.
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  - Peise, Helmut; Brausse, Reinhard; Lucas, Klaus; Kuhlbrodt, Klaus-Otto; Berger, Friedrich; Gohler, Peter; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudymov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,367,076, Cl. 48-128.000.
- Schlegel (UK) Limited: *See—*
  - Franklin, Timothy W.; Declercq, Paul G.; and Henno, Michael M., 4,367,254, Cl. 428-85.000.
- Schlich, Elmar: *See—*
  - Vietzke, Horst; Pirk, Hans; and Schlich, Elmar, 4,367,201, Cl. 422-257.000.
- Schliep, Edward J. Adjustable socket wrench. 4,366,732, Cl. 81-128.000.
- Schlossberg, Howard R. High pressure, high power, compact laser. 4,367,554, Cl. 372-61.000.
- Schlumberger Technology Corporation: *See—*
  - Seeman, Bronislaw, 4,367,541, Cl. 367-34.000.
- Schmid, Johannes: *See—*
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- Schmidts, Kurt: *See—*
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- Schmit, Joseph L.: *See—*
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  - Grisar, J. Martin; Schnettler, Richard A.; and Dage, Richard C., 4,367,236, Cl. 424-273.00R.
- Schnoes, Heinrich K.: *See—*
  - DeLuca, Hector F.; Schnoes, Heinrich K.; and Wichman, Joseph K., 4,367,177, Cl. 260-397.200.
- Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-substituted oxazolidine-2,4-diones. 4,367,234, Cl. 424-272.000.
- Schole, Murray L. Fluoride containing dentifrice. 4,367,219, Cl. 424-52.000.
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  - Hofbauer, Peter; Heidemeyer, Paulus; and Scholz, Romanus, 4,366,887, Cl. 192-48.100.
- Schroer Manufacturing Co.: *See—*
  - Haake, Lawrence H.; and Anderson, Herschel B., 4,366,774, Cl. 119-17.000.
- Schulze, Paul-Eberhard: *See—*
  - Mutzel, Wolfgang; Siefert, Hans-Martin; Speck, Ulrich; Pfeiffer, Heinrich; Schulze, Paul-Eberhard; and Acksteiner, Bernhard, 4,367,216, Cl. 424-5.000.
- Schwartz, Geraldine C.: *See—*
  - Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,367,119, Cl. 156-643.000.
- Schweier, Guenther: *See—*
  - Bachl, Robert; Klaerner, Peter; Schweier, Guenther; and Ehlers, Ehler, 4,367,321, Cl. 526-124.000.
- Science Applications, Inc.: *See—*
  - Houghton, Alexander J.; and Knasel, Thomas M., 4,367,519, Cl. 362-268.000.
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  - Abbey, Kirk J.; and Erickson, James R., 4,367,298, Cl. 523-402.000.
- Scordato, Richard E.; Varca, Robert J.; and Francis, Robert S., to Medical Laboratory Automation, Inc. Reagent reservoir system for use in testing apparatus. 4,367,198, Cl. 422-102.000.
- Scott, Michael J., to Allflex International Limited. Vacuum closed venting valve. 4,366,831, Cl. 137-103.000.
- Seaborn, Paul E., to Discover Technology, Inc. Machine for sealing disc covers. 4,367,117, Cl. 156-443.000.
- Sedgely, Barrie: *See—*
  - Brunnschweiler, David; and Sedgely, Barrie, 4,366,872, Cl. 177-1.000.
- Seeger, Karl; Jundt, Werner; Mezger, Manfred; and Kiencke, Uwe, to Robert Bosch GmbH. Dwell angle control for internal combustion engine ignition system. 4,366,800, Cl. 123-609.000.
- Seeman, Bronislaw, to Schlumberger Technology Corporation. Apparatus and method for determining velocity of acoustic waves in earth formations. 4,367,541, Cl. 367-34.000.
- Seidler, David, to Revlon Inc. Hinged lid container. 4,366,915, Cl. 220-339.000.
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- Seki, Takeo; Shinoda, Yukio; and Kumada, Akio, to Hitachi Denshi Kabushiki Kaisha; and Hitachi, Ltd. Piezo-electric bimorph type transducer. 4,367,504, Cl. 360-109.000.
- Seliger, Robert L.: *See—*
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- Semenov, Vladimir: *See—*
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- Semenovsky, Oleg P.: *See—*
  - Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.
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- Seneviratne, Padmasiri D., to Varco International, Inc. Marine platform jacket jack. 4,367,056, Cl. 405-228.000.
- Sentry Equipment Corporation: *See—*
  - Henszey, Richard R., 4,366,832, Cl. 137-244.000.
- Serrano, Arthur L., to Novation, Inc. Modem telephone interface circuit. 4,367,374, Cl. 179-2.00C.
- Seyfart, Willi: *See—*
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- Seymour, Shaun A.: *See—*
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- Shadle, Barry L.: *See—*
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- Shah, Navinchandra B.: *See—*
  - Rizk, Sidky D.; and Shah, Navinchandra B., 4,367,313, Cl. 525-102.000.
- Shah, Suresh T., to Medical Incorporated. Elliptical suturing cuff. 4,366,581, Cl. 3-1.500.
- Shapiro, Carl: *See—*
  - Smith, Stanley B., Jr.; and Shapiro, Carl, 4,367,042, Cl. 356-315.000.
- Sharp Kabushiki Kaisha: *See—*
  - Hashimoto, Sadakatsu, 4,367,469, Cl. 340-785.000.
  - Yoshida, Kunio, 4,367,537, Cl. 364-900.000.
- Shaw Aero Devices, Inc.: *See—*
  - Jones, David W., 4,366,669, Cl. 60-39.09R.
- Shell Oil Company: *See—*
  - Slaugh, Lynn H., 4,367,361, Cl. 585-521.000.
  - Wulff, Harald P.; and Wattimena, Freddy, 4,367,342, Cl. 549-529.000.
- Sherman, Guy J., to Sherman Laboratories, Inc. Soft contact lens ambient temperature disinfectant solution containing ascorbic acid or salt thereof. 4,367,157, Cl. 252-106.000.
- Sherman Laboratories, Inc.: *See—*
  - Sherman, Guy J., 4,367,157, Cl. 252-106.000.
- Sherwin-Williams Company, The: *See—*
  - Sullivan, Frederick W., 4,367,337, Cl. 548-257.000.
- Shibata, Norio, to Victor Company of Japan, Limited. Vacuum turntable system for a record player. 4,367,546, Cl. 369-271.000.
- Shibayama, Kimio; Itaya, Kingo; and Fujimoto, Teruo, to Toyo Soda Manufacturing Co., Ltd. Fine fabrication process using radiation sensitive resist. 4,367,281, Cl. 430-313.000.

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- Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Nunose, Akira; and Nishioka, Masaharu, to Sumitomo Chemical Company, Ltd. Process for producing propylene copolymer. 4,367,322, Cl. 526-137.000.
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  - Hayashi, Kazuya; Shimada, Masato; Nakamura, Teruo; and Fujii, Yoshihiro, 4,367,070, Cl. 8-114.600.
- Shimizu, Akihiko: *See—*
  - Asami, Shunichi; Seita, Toru; and Shimizu, Akihiko, 4,367,147, Cl. 210-636.000.
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- Shimizu, Yoichi, to Kabushiki Kaisha Maruyama Seisakusho. Guide plate of a heddle frame. 4,366,843, Cl. 139-91.000.
- Shimohigashi, Katsuhiro, to Hitachi, Ltd. Dynamic memory with an interchangeable pair of data lines and sense amplifiers. 4,367,540, Cl. 365-207.000.
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  - Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.
- Shimomura, Kyoichi: *See—*
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- Shinagawa Shoko Co., Ltd.: *See—*
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- Shinoda, Yukio: *See—*
  - Seki, Takeo; Shinoda, Yukio; and Kumada, Akio, 4,367,504, Cl. 360-109.000.
- Shinshu Seiki Kabushiki Kaisha: *See—*
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- Shipperbottom, Roy: *See—*
  - Warrell, Suzanne; and Shipperbottom, Roy, 4,367,188, Cl. 264-104.000.
- Shirakata, Terukazu: *See—*
  - Yamazaki, Susumu; Nagoya, Yosinari; Fujimoto, Ryoichi; Nozaki, Koichi; Shirakata, Terukazu; and Yamaguchi, Kazuyoshi, 4,366,678, Cl. 62-186.000.
- Shirano, Kenji: *See—*
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- Shirley Institute: *See—*
  - Holker, James R.; Jeffries, Roy; and Lomax, George R., 4,367,327, Cl. 528-61.000.
- Shiroto, Yoshimi; Higashi, Takehito; and Ono, Takeo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Catalysts for hydrotreating heavy hydrocarbon oils and a method of preparing such catalysts. 4,367,164, Cl. 252-457.000.
- Shiroto, Yoshimi: *See—*
  - Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi, 4,367,165, Cl. 252-457.000.
- Shirouchi, Shoji: *See—*
  - Fujita, Isao; Onoda, Mamoru; Sugiyama, Takeshi; and Shirouchi, Shoji, 4,367,091, Cl. 75-0.50R.
- Shogren, David K., to Xerox Corporation. Scanning system for copier. 4,367,034, Cl. 355-8.000.
- Shoop, George W.: *See—*
  - Valimont, James L.; and Shoop, George W., 4,367,108, Cl. 156-104.000.
- Short, David H., to Medtronic, Inc. In situ rehydrating in sterile packages. 4,366,901, Cl. 206-210.000.
- Showa Denko Kabushiki Kaisha: *See—*
  - Maeda, Masahiko; Watanabe, Naotochi; and Fujitani, Kenji, 4,367,306, Cl. 524-411.000.
- Shperling, Betsalel R.; Fakheri, Albert J.; and Ware, Brendan J. Apparatus for clearing faults on untransposed transmission lines using single phase switching. 4,367,507, Cl. 361-43.000.
- Shugart Technology: *See—*
  - Iftikar, Syed H.; and Reeck, David L., 4,367,502, Cl. 360-98.000.
- Shulgin, Grigory M.: *See—*
  - Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.
- Shulman, Lawrence M.: *See—*
  - Leventer, William; and Shulman, Lawrence M., 4,367,488, Cl. 358-147.000.
- Shum, Valentin B.: *See—*
  - Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.
- Siaens, Gustaaf F. R.: *See—*
  - Notelteirs, Victor R.; and Siaens, Gustaaf F. R., 4,367,428, Cl. 313-222.000.
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- Siemens Aktiengesellschaft: *See—*
  - Eckstein, Horst; Seyfart, Willi; and Sutor, Norbert, 4,366,770, Cl. 118-405.000.
  - Forstbauer, Wilhelm; Kroworsch, Hans-Peter; Kuller, Herbert; and Strop, Jurgen, 4,367,522, Cl. 363-137.000.
  - Haas, Wilfried, 4,367,508, Cl. 361-58.000.
  - Hauptmann, Rudolf; and Foeller, Gerhard, 4,367,472, Cl. 343-7.00A.
  - Heinzl, Joachim, 4,367,482, Cl. 346-140.00R.
  - Herbst, Heiner; Pfleiderer, Hans-Joerg; and Grassl, Hans-Peter, 4,367,534, Cl. 364-561.000.
  - Hohne, Karl, 4,367,270, Cl. 429-251.000.
  - Oestreich, Ulrich, 4,366,667, Cl. 57-7.000.
  - Wilhelm, Manfred, 4,367,102, Cl. 148-133.000.
- Simon-Bierenbaum, R.; and Tang, David Y., to Occidental Chemical Corporation. Novel trifluoromethyl benzal chlorides and process for the preparation thereof. 4,367,348, Cl. 570-127.000.
- Simpson, Ellis O.; Simpson, Scott O.; Simpson, Garland E.; and Simpson, Tracy T. Portable water clarifier. 4,367,145, Cl. 210-241.000.
- Simpson, Garland E.: *See—*
  - Simpson, Ellis O.; Simpson, Scott O.; Simpson, Garland E.; and Simpson, Tracy T., 4,367,145, Cl. 210-241.000.
- Simpson, Harold G., to Wickes Corporation, The. Roof panel assemblies for forming weatherproof standing seam joints and the like and methods of joining standing seam roof panels. 4,366,656, Cl. 52-395.000.
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  - Simpson, Ellis O.; Simpson, Scott O.; Simpson, Garland E.; and Simpson, Tracy T., 4,367,145, Cl. 210-241.000.
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  - Simpson, Ellis O.; Simpson, Scott O.; Simpson, Garland E.; and Simpson, Tracy T., 4,367,145, Cl. 210-241.000.
- Simson, Dionizy, to Sulzer Brothers Limited. Nozzle assembly. 4,366,845, Cl. 139-435.000.
- Sinclair, Rosalind: *See—*
  - Heyda, Donald W.; Corley, Richard P.; and Sinclair, Rosalind, 4,366,820, Cl. 128-659.000.
- Sindoris, Arthur R.: *See—*
  - Schaubert, Daniel H.; Farrar, Frederick G.; Hayes, Scott T.; and Sindoris, Arthur R., 4,367,474, Cl. 343-700.0MS.
- Siwiec, Dean M.: *See—*
  - Rainer, Norman B.; and Siwiec, Dean M., 4,366,823, Cl. 131-291.000.
- SKF Nova AB: *See—*
  - Nilsson, Sven W., 4,366,726, Cl. 74-800.000.
- Slanetz, Charles A., Jr. Tactile control device for a remote sensing device. 4,366,810, Cl. 128-6.000.
- Slaugh, Lynn H., to Shell Oil Company. Alkene oligomerization process. 4,367,361, Cl. 585-521.000.
- Slavin, James A., to Nolte and Nolte, P.C. Material processing apparatus. 4,366,839, Cl. 137-625.110.
- Smaga, John A.: *See—*
  - Mrazek, Franklin C.; Smaga, John A.; and Battles, James E., 4,367,159, Cl. 252-182.100.
- Small, Alan H.: *See—*
  - Webb, Paul A., Jr.; Small, Alan H.; and Ball, Dean M., 4,367,041, Cl. 356-72.000.
- Smith, Kendall S., II: *See—*
  - Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 4,366,596, Cl. 16-119.000.
- Smith, Raymond R.: *See—*
  - Anderton, Raymond A.; Smith, Raymond R.; and Tippler, Robert S., 4,366,780, Cl. 123-1.00A.
- Smith, Stanley B., Jr.; and Shapiro, Carl, to Instrumentation Laboratory Inc. Spectroanalytical system. 4,367,042, Cl. 356-315.000.
- Smoot, A. Park: *See—*
  - Jensen, Keith A., 4,366,659, Cl. 52-693.000.
- Snamprogetti, S.p.A.: *See—*
  - Lagana, Vincenzo; Saviano, Francesco; and Cavallanti, Virginio, 4,367,258, Cl. 423-228.000.
- Snitzer, Elias: *See—*
  - Uhlmann, Donald R.; Snitzer, Elias; Hovey, Richard J.; and Chu, Nori Y. C., 4,367,170, Cl. 252-586.000.
- Snyder, Carl E., Jr.: *See—*
  - Tamborski, Christ; and Snyder, Carl E., Jr., 4,367,343, Cl. 556-478.000.
- Snyder, Clair W., Jr.: *See—*
  - Douty, George H.; and Snyder, Clair W., Jr., 4,367,005, Cl. 339-107.000.
- Snyder, Donald J.; and Bozarth, Fletcher A., to RCA Corporation. Anti-latch circuit for power output devices using inductive loads. 4,367,509, Cl. 361-91.000.
- Sobukawa, Hideo: *See—*
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Nakamura, Tamotsu; Yokota, Kouji; and Sobukawa, Hideo, 4,367,162, Cl. 252-443.000.
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- Societe Anonyme des Usines Chausson: *See—*
  - Moranne, Jean-Pierre, 4,366,858, Cl. 165-104.320.

Societe Anonyme dite: L'Oreal: *See—*
Madrange, Annie; and Boixader, Daniel, 4,366,827, Cl. 132-7.000.

Societe Anonyme: Fralch: *See—*
Pillot, Bernard, 4,366,979, Cl. 296-160.000.

Societe Anonyme Francaise du Ferodo: *See—*
Billet, Rene, 4,366,893, Cl. 192-106.200.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Chablaix, Rene, 4,367,241, Cl. 426-128.000.

Societe Europeenne de Propulsion: *See—*
Maistre, Michel, 4,366,658, Cl. 52-648.000.

Societe Nationale des Poudres et Explosifs: *See—*
Le Roy, Patrice M.; and Journeau, Sabine M., 4,367,302, Cl. 524-104.000.

Solod, Vladimir S.: *See—*
Chumanov, Julian M.; Gubaidulin, Vyacheslav F.; Shulgin, Grigory M.; Solod, Vladimir S.; Moiseenkov, Valery M.; Lyashenko, Jury P.; Levichev, Pavel A.; Klimenko, Nalentin M.; Kashaev, Valery M.; Semenovsky, Oleg P.; Bychkov, Alexandr V.; Shum, Valentin B.; and Gritsuk, Nikolai, 4,366,693, Cl. 72-201.000.

Solymos, Karoly: *See—*
Dorombozisi, Bela; Egeto, Csaba; Kalman, Gyorgy; Solymos, Karoly; and Szalay, Zoltan, 4,367,141, Cl. 210-145.000.

Sommansson, Peter S. E., to Telefonaktiebolaget L M Ericsson. Push button mechanism with locking device for two stable positions. 4,367,383, Cl. 200-153.00J.

Sonnonstine, Terry J.: *See—*
Leichter, Louis M.; Sonnonstine, Terry J.; and Stofko, John J., Jr., 4,367,274, Cl. 430-58.000.

Sony Corporation: *See—*
Munakata, Yoshitaka, 4,367,001, Cl. 339-31.00R.

Sorensen, L. W.: *See—*
Reeves, Lloyd; and Sorensen, L. W., 4,366,963, Cl. 280-12.00B.

Sorenson, Richard W., to Carlingswitch, Inc. Snap-on actuator for miniature toggle switch. 4,367,386, Cl. 200-333.000.

Sorger, Heino, to Klockner Stahltechnik GmbH. Immersion-lance for introducing a finely divided, particulate solid material into a metal melt. 4,366,952, Cl. 266-266.000.

Soto, Jose P.: *See—*
Boix-Igleasias, Jose; Soto, Jose P.; Vega-Noverola, Armando; Spickett, Robert G. W.; and Mauri, Jacinto M., 4,367,232, Cl. 424-267.000.

Souma, Ikuo: *See—*
Sakamaki, Hisashi; Kimura, Yoshimasa; Honma, Toshio; and Souma, Ikuo, 4,367,036, Cl. 355-14.00R.

Spaller, Albert E., Jr., to Eastman Kodak Company. Device for transferring layers of tow in a tow baler. 4,366,751, Cl. 100-80.000.

Sparks, Robert J.; and Nichka, Ronald S. Display apparatus. 4,367,000, Cl. 312-249.000.

Speck, Ulrich: *See—*
Mutzel, Wolfgang; Siefert, Hans-Martin; Speck, Ulrich; Pfeiffer, Heinrich; Schulze, Paul-Eberhard; and Acksteiner, Bernhard, 4,367,216, Cl. 424-5.000.

Speer, Billy L., to Dayco Corporation. Composite pulley and method for making. 4,366,609, Cl. 29-159.00R.

Spencer, Robert M., to Acurex Solar Corporation. Solar energy conversion arrangement utilizing photovoltaic members. 4,367,365, Cl. 136-244.000.

Sperry Corporation: *See—*
Jenkins, Vaughn J., 4,367,497, Cl. 360-48.000.
VanGinhoven, Robert M.; Seymour, Shaun A.; and Eberly, Harry C., 4,366,665, Cl. 56-341.000.

Spickett, Robert G. W.: *See—*
Boix-Igleasias, Jose; Soto, Jose P.; Vega-Noverola, Armando; Spickett, Robert G. W.; and Mauri, Jacinto M., 4,367,232, Cl. 424-267.000.

Spitz, Albert W., to Milpat Corporation. Self-cleaning recuperator. 4,366,855, Cl. 165-95.000.

Sport-O-Scope, Inc.: *See—*
Broome, Barry, 4,367,010, Cl. 350-563.000.

Sprecker, Mark A., to International Flavors & Fragrances Inc. Use of norbornyl ethers in augmenting or enhancing the aroma of detergents. 4,367,158, Cl. 252-174.110.

Staebler, Paul J.: *See—*
Goloff, Alexander; and Staebler, Paul J., 4,366,785, Cl. 123-90.510.

Standard Oil Company, The: *See—*
Pesa, Frederick A.; and Graham, Anne M., 4,367,179, Cl. 260-465.400.

Standley, Charles L.: *See—*
Logan, Joseph S.; Mauer, John L., IV; Rothman, Laura B.; Schwartz, Geraldine C.; and Standley, Charles L., 4,367,119, Cl. 156-643.000.

Stanford, Thomas R.: *See—*
Messing, Gilbert S.; Stanford, Thomas R.; Lochet, Jean A.; and Patel, Rajendra B., 4,367,127, Cl. 204-105.00R.

Stanton, Thomas J.: *See—*
Judkins, Thomas E.; and Stanton, Thomas J., 4,366,692, Cl. 72-186.000.

Starr, John B., Jr.: *See—*
Fox, Daniel W.; Kaduk, Bruce A.; and Starr, John B., Jr., 4,367,317, Cl. 525-439.000.

Staub, Thomas J., Sr. Leaf catching and collecting device. 4,366,949, Cl. 256-1.000.

Staubitzer, Fred: *See—*
Bohn, Hans; Stein, Wolfgang; Bernsau, Peter; and Staubitzer, Fred, 4,367,115, Cl. 156-358.000.

Stauffer, Norman L., to Honeywell Inc. Active auto focus system improvement. 4,367,027, Cl. 354-195.000.

Steck, Werner: *See—*
Sarnecki, Wilhelm; Marosi, Laszlo; Autzen, Horst; Ohlinger, Manfred; and Steck, Werner, 4,367,214, Cl. 423-634.000.

Steger, Donald J., to International Business Machines Corporation. Flat rate spring particularly adapted for typewriter cartridges. 4,367,052, Cl. 400-208.000.

Stein, Wolfgang: *See—*
Bohn, Hans; Stein, Wolfgang; Bernsau, Peter; and Staubitzer, Fred, 4,367,115, Cl. 156-358.000.

Steinberg, George N.; Reinberg, Alan R.; and Dalle Ave, Jean, to Perkin-Elmer Corporation, The. High speed plasma etching system. 4,367,114, Cl. 156-345.000.

Sterling Television Presentations Inc. Video Data Systems Division: *See—*
Leventer, William; and Shulman, Lawrence M., 4,367,488, Cl. 358-147.000.

Stern, Joseph L.; and Garodnick, Joseph. Wired broadcasting systems. 4,367,557, Cl. 455-4.000.

Stinton, David P., to United States of America, Energy. Mixed uranium dicarbide and uranium dioxide microspheres and process of making same. 4,367,184, Cl. 264-0.500.

Stofko, John J., Jr.: *See—*
Leichter, Louis M.; Sonnonstine, Terry J.; and Stofko, John J., Jr., 4,367,274, Cl. 430-58.000.

Stokes, Larry W.: *See—*
Yerushalmy, Yosef; and Stokes, Larry W., 4,367,393, Cl. 219-121.0PM.

Stovel, Richard T.: *See—*
Sweet, Richard G.; Moore, Wayne A.; Nozaki, Tom, Jr.; and Stovel, Richard T., 4,367,043, Cl. 356-338.000.

Stratienko, Andrew; and Trainer, Philip. Clamping device. 4,367,053, Cl. 403-371.000.

Stricker, Herbert: *See—*
Gruber, Peter; Brickl, Rolf; Bozler, Gerhard; and Stricker, Herbert, 4,367,217, Cl. 424-19.000.

Strittmatter, Bernhard; and Syre, Wolfgang, to Bodenseewerk Geraetetechnik GmbH. Method of making an external rotor gyroscope. 4,366,615, Cl. 29-598.000.

Stromberg, Sven A. R.; and Gullstrand, Karl-Axel. Device for indicating inadmissible length deviations of a perforated web. 4,367,401, Cl. 235-92.0DN.

Stromsta, Roger R.; Miller, John H., III; and Carlson, Harry J., Jr., to Xerox Corporation. Magnetic head assembly with skewed read/write gap. 4,367,505, Cl. 360-121.000.

Strop, Jurgen: *See—*
Forstbauer, Wilhelm; Kroworsch, Hans-Peter; Kuller, Herbert; and Strop, Jurgen, 4,367,522, Cl. 363-137.000.

Strube, Harald; and Helf, Karl-Eduard, to Hoechst Aktiengesellschaft. Contact element and process for the manufacture thereof. 4,367,398, Cl. 219-541.000.

Strubing, Eric G., to Bell Telephone Laboratories, Incorporated. Coil spring extender tool. 4,366,729, Cl. 81-3.00R.

Strzelbicki, Guido: *See—*
Zwaenepoel, Paul; Strzelbicki, Guido; Scharf, Daniel J.; and Wagner, George M., 4,367,315, Cl. 525-169.000.

Stubbins, Derek, to Davy-Loewy Limited. Variable sized coil carrying car. 4,367,059, Cl. 410-44.000.

Suckow, David S., to Caterpillar Tractor Co. Clutch disengagement system. 4,366,890, Cl. 192-0.096.

Suda, Koichi, to Aisan Kogyo Kabushiki Kaisha. Exhaust gas recirculator. 4,366,799, Cl. 123-568.000.

Suga, Hisashi: *See—*
Wakatsuka, Hirohisa; Shimoji, Katsuichi; Iguchi, Sadahiko; Konishi, Yoshitaka; Suga, Hisashi; Miyata, Yasuyuki; Iguchi, Yoichi; Miyake, Hajimu; and Hayashi, Masaki, 4,367,237, Cl. 424-275.000.

Sugawara, Toshiaki: *See—*
Nishimura, Daikichi; Sugawara, Toshiaki; and Emoto, Nobuyoshi, 4,367,332, Cl. 536-23.000.

Sugimura, Noboru: *See—*
Makino, Shigeo; and Sugimura, Noboru, 4,366,851, Cl. 152-356.00R.

Sugiura, Masakazu: *See—*
Kondo, Shigeharu; Kikutake, Junichiro; Sugiura, Masakazu; and Yoshida, Masaru, 4,367,309, Cl. 525-54.100.

Sugiura, Noboru: *See—*
Furuhashi, Toshio; and Sugiura, Noboru, 4,367,531, Cl. 364-431.080.

Sugiura, Yasuyuki: *See—*
Muto, Nobuyoshi; Matsuda, Yasuo; Morinaga, Shigeki; and Sugiura, Yasuyuki, 4,367,520, Cl. 363-41.000.

Sugiwaki, Toshihiro: *See—*
Fujimaru, Yukio; Sugiwaki, Toshihiro; Ueoka, Keiji; and Fujioka, Shigenobu, 4,367,094, Cl. 106-90.000.

Sugiyama, Takeshi: *See—*
Fujita, Isao; Onoda, Mamoru; Sugiyama, Takeshi; and Shirouchi, Shoji, 4,367,091, Cl. 75-0.50R.

Suhara, Manabu: *See—*
Sato, Kimihiko; Sajima, Yasuo; Iwamoto, Junjiro; Nakao, Makoto; Suhara, Manabu; and Noshiro, Makoto, 4,367,126, Cl. 204-98.000.

Sullivan, Frederick W., to Sherwin-Williams Company, The. Process for conversion of benzimidazolones to benzotriazoles. 4,367,337, Cl. 548-257.000.

Sulzer Brothers Limited: *See—*
Grotloh, Karlheinz, 4,366,833, Cl. 137-334.000.
Simson, Dionizy, 4,366,845, Cl. 139-435.000.

Sumitomo Chemical Company, Limited: *See—*
Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Nunose, Akira; and Nishioka, Masaharu, 4,367,322, Cl. 526-137.000.

Sun Wise, Inc.: *See—*
Nash, Stanley G., 4,366,808, Cl. 126-450.000.

Sunworks, Inc.: *See—*
Barber, Everett M., Jr., 4,366,807, Cl. 126-434.000.

Suss, Lawrence S.: *See—*
Price, Robert E.; and Suss, Lawrence S., 4,366,641, Cl. 43-54.50R

Susset, Jean-Pierre: *See—*
Marin, Guy F. M.; Podvin, Dominique J.; and Susset, Jean-Pierre, 4,367,473, Cl. 343-14.000.

Suto, Jozsef: *See—*
Klopp, Gabor; Suto, Jozsef; Szasz, Karoly; Szebenyi, Imre; Winkler, Gabor; Machacs, Miklos; and Palmai, Gyorgy, 4,367,204, Cl. 423-239.000.

Suto, Shoichi; Hanawa, Fumiaki; Kawachi, Masao; Edahiro, Takao; and Nakahara, Motohiro, to Nippon Telegraph & Telephone Public Corporation. Method of fabricating multi-mode optical fiber preforms. 4,367,085, Cl. 65-18.200.

Sutor, Norbert: *See—*
Eckstein, Horst; Seyfart, Willi; and Sutor, Norbert, 4,366,770, Cl. 118-405.000.

Sutton, David L.: *See—*
Burkhalter, John F.; Childs, Jerry D.; and Sutton, David L., 4,367,093, Cl. 106-87.000.

Suturin, Serafim N.: *See—*
Belsky, Valentin I.; Orlov, Gennady I.; Suturin, Serafim N.; Dolgov, Anatoly V.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,366,951, Cl. 266-204.000.

Suzki, Akiyoshi, to Canon Kabushiki Kaisha. Optical scanning apparatus with beam splitter to provide plural light beams. 4,367,009, Cl. 350-6.500.

Suzuki, Hideo; Kawashima, Nobuo; Yanabu, Satoru; and Takayanagi, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum circuit breaker. 4,367,382, Cl. 200-144.00B.

Suzuki, Kazuma: *See—*
Kumada, Akio; Ihochi, Takahiko; Tanaka, Masashi; Suzuki, Kazuma; Yokosuka, Masaru; Miura, Shinsuke; and Ochiai, Tsutomu, 4,367,426, Cl. 310-358.000.

Suzuki, Takashi; and Kitagishi, Nozomu, to Canon Kabushiki Kaisha. Information mark display device. 4,367,463, Cl. 340-700.000.

Suzuki, Yukio: *See—*
Kudo, Yoshihiko; Suzuki, Yukio; and Otomo, Mituru, 4,367,205, Cl. 423-243.000.

Sweeney, Thomas M. Split escutcheon system. 4,366,866, Cl. 169-37.000.

Sweet, Richard G.; Moore, Wayne A.; Nozaki, Tom, Jr.; and Stovel, Richard T., to Leland Stanford Junior University. Method and means for delivering liquid samples to a sample scanning device. 4,367,043, Cl. 356-338.000.

Swift, Harold E.; and Lunden, Richard W., to Gulf Research & Development Company. Novel polymerization catalyst and process for using same to polymerize olefins. 4,367,161, Cl. 252-429.00B.

Swift, Harold E.: *See—*
Madgavkar, Ajay M.; Vogel, Roger F.; and Swift, Harold E., 4,366,668, Cl. 60-39.060.

Swinney, Gary D.: *See—*
Benya, Robert J.; and Swinney, Gary D., 4,366,969, Cl. 280-668.000.

Sykes, Larry M.: *See—*
Utsch, Francis V.; Merritt, Henry B.; and Sykes, Larry M., 4,366,825, Cl. 131-296.000.

Sykes Ocean Water Ltd.: *See—*
Wilson, Leslie P. S., 4,367,140, Cl. 210-110.000.

Syn-Trac Systems Inc.: *See—*
Forshee, David J., 4,366,905, Cl. 206-511.000.

Syre, Wolfgang: *See—*
Strittmatter, Bernhard; and Syre, Wolfgang, 4,366,615, Cl. 29-598.000.

Szalay, Zoltan: *See—*
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Szasz, Gyorgy: *See—*
Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasuarl nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,367,229, Cl. 424-251.000.

Szasz, Karoly: *See—*
Klopp, Gabor; Suto, Jozsef; Szasz, Karoly; Szebenyi, Imre; Winkler, Gabor; Machacs, Miklos; and Palmai, Gyorgy, 4,367,204, Cl. 423-239.000.

Szebenyi, Imre: *See—*
Klopp, Gabor; Suto, Jozsef; Szasz, Karoly; Szebenyi, Imre; Winkler, Gabor; Machacs, Miklos; and Palmai, Gyorgy, 4,367,204, Cl. 423-239.000.

Taaffe, James: *See—*
Franzen, Wolfgang; and Taaffe, James, 4,367,406, Cl. 250-305.000.

Tachihara, Jin; and Koyama, Hideaki, to Sanyo Electric Co., Ltd. Electronic controlled heat cooking apparatus. 4,367,387, Cl. 219-10.55B.

Tachikawa, Hajime: *See—*
Ishihara, Masahiro; Tachikawa, Hajime; and Kaneko, Kazuo, 4,367,388, Cl. 219-10.55B.

Tadauchi, Masaharu; and Kumasaka, Kenji, to Hitachi, Ltd. Signal processing apparatus. 4,367,457, Cl. 340-347.0AD.

Tadokoro, Hiroyuki; Matsuoka, Shigeru; and Yamauchi, Koji, to Hitachi, Ltd. Door operation control apparatus. 4,367,470, Cl. 340-825.770.

Tajima, Tsunemitsu: *See—*
Murayama, Tetsuo; Otsuka, Shigenori; and Tajima, Tsunemitsu, 4,367,273, Cl. 430-56.000.

Takada, Juichiro. Infant safety carrier for vehicles. 4,366,587, Cl. 5-94.000.

Takagi, Hiroyoshi: *See—*
Sano, Shiro; and Takagi, Hiroyoshi, 4,367,292, Cl. 501-119.000.

Takahashi, Harumi: *See—*
Sakamoto, Koji; Hirakura, Koji; Ogata, Yoshihiro; and Takahashi, Harumi, 4,367,032, Cl. 355-3.0TR.

Takahashi, Shinji: *See—*
Kaneko, Yasuyuki; Itoh, Masao; Takahashi, Shinji; and Iritani, Masako, 4,367,289, Cl. 435-133.000.

Takahashi, Susumu: *See—*
Tanaka, Susumu; and Takahashi, Susumu, 4,367,442, Cl. 330-149.000.

Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, to Hitachi, Ltd. Optical semiconductor device. 4,367,483, Cl. 357-19.000.

Takahashi, Wataru: *See—*
Hasegawa, Takao; and Takahashi, Wataru, 4,367,271, Cl. 429-252.000.

Takaichi, Toshio: *See—*
Fuji, Takiji; Takaichi, Toshio; Yokoyama, Shoji; and Kondo, Hidehiro, 4,366,705, Cl. 73-118.000.

Takasugi, Hisashi: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,367,228, Cl. 424-246.000.

Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, to Fujisawa Pharmaceutical Co., Ltd. Cephem compound and composition. 4,367,228, Cl. 424-246.000.

Takayama, Syuichi, to Olympus Optical Co., Ltd. Photographing system for endoscope. 4,367,024, Cl. 354-62.000.

Takayanagi, Eiichi: *See—*
Suzuki, Hideo; Kawashima, Nobuo; Yanabu, Satoru; and Takayanagi, Eiichi, 4,367,382, Cl. 200-144.00B.

Takeda Chemical Industries, Ltd.: *See—*
Matukura, Yoshiharu; Kataoka, Tokio; and Fujisawa, Hiroshi, 4,366,912, Cl. 215-247.000.

Takeda, Genyo; and Hatakeyama, Masato, to Nintendo Co., Ltd. Display control apparatus of scanning type display. 4,367,466, Cl. 340-725.000.

Takeda Riken Kogyo Kabushikikaisha: *See—*
Mikami, Tsukasa, 4,367,437, Cl. 323-349.000.

Takemura, Ginro: *See—*
Takahashi, Takeo; Kurata, Kazuhiro; Ono, Yuichi; Ito, Kazuhiro; Morioka, Makoto; Mori, Mitsuhiro; Takemura, Ginro; Sakamoto, Makoto; Ichiki, Masahiro; Yasuda, Youichi; and Ouchi, Hirobumi, 4,367,483, Cl. 357-19.000.

Takeuchi, Yasumasa; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsutsumi, Funio, to Japan Synthetic Rubber Co., Ltd. Styrene-butadiene random copolymer and process for the production thereof. 4,367,325, Cl. 526-340.000.

Takiar, Hem P.: *See—*
Yu, Chyang J.; and Takiar, Hem P., 4,367,265, Cl. 428-697.000.

Talmon, Omri: *See—*
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Tamaki, Kazuyoshi: *See—*
Hachiga, Takasi; Tamaki, Kazuyoshi; Nakano, Jiro; and Ono, Hironobu, 4,366,794, Cl. 123-479.000.

Tambert, John: *See—*
Cotten, Whitworth W., Jr.; and Tambert, John, 4,367,548, Cl. 370-3.000.

Tamborski, Christ; and Snyder, Carl E., Jr., to United States of America, Air Force. Synthesis of tetraalkylsilanes. 4,367,343, Cl. 556-478.000.

Tamura, Misao: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,367,245, Cl. 427-54.100.

Tamura, Toshifumi: *See—*
Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.

Tanabe Seiyaku Co., Ltd.: *See—*
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Tanaka, Chiaki; Morikawa, Masanobu; and Kohno, Yoshio, to Toray Industries, Inc. Vulcanized elastomeric molded article. 4,367,316, Cl. 525-173.000.

- Tanaka, Hideki: *See—*
  - Yanadori, Michio; Kamejima, Kohji; Tanaka, Hideki; Kano, Minoru; Uchida, Motokazu; and Abe, Yoritsune, 4,366,856, Cl 165-104.170.
- Tanaka, Masaru: *See—*
  - Goto, Shuji; Tasaka, Kazuyoshi; and Tanaka, Masaru, 4,366,798, Cl. 123-549.000.
- Tanaka, Masashi: *See—*
  - Kumada, Akio; Ihochi, Takahiko; Tanaka, Masashi; Suzuki, Kazuma; Yokosuka, Masaru; Miura, Shinsuke; and Ochiai, Tsutomu, 4,367,426, Cl. 310-358.000.
- Tanaka, Susumu; and Takahashi, Susumu, to Sansui Electric Co., Ltd. Distortion correction circuit for a power amplifier. 4,367,442, Cl. 330-149.000.
- Tanaka, Toshiaki; and Kumi, Kazuya, to Nissan Motor Company, Limited. Internal combustion engine. 4,366,788, Cl. 123-198.00F.
- Tang, David Y.: *See—*
  - Simon-Bierenbaum, R.; and Tang, David Y., 4,367,348, Cl. 570-127.000.
- Tangonan, Gregory L.: *See—*
  - Wang, Victor; Wysocki, Joseph A.; Tangonan, Gregory L.; and Seliger, Robert L., 4,367,429, Cl. 313-362 100.
- Tanno, Takeshi: *See—*
  - Kageyama, Akira; Maekawa, Iwao; Uchigasaki, Isao; and Tanno, Takeshi, 4,367,314, Cl 525-168.000.
- Tanzi, Maria C : *See—*
  - Ferruti, Paolo; Danusso, Ferdinando; Tanzi, Maria C.; and Quadro, Giuseppe, 4,367,176, Cl. 548-482.000.
- Tao, John C , to Air Products and Chemicals, Inc. Integrated hydrogasification process for topped crude oil. 4,367,077, Cl. 48-213.000.
- Tasaka, Kazuyoshi: *See—*
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- Tatsukami, Yoshiharu: *See—*
  - Kitamura, Shuji; Fujita, Fumio; Oonishi, Toshihiro; Tatsukami, Yoshiharu; Ogura, Masato; Niwano, Masahiro; Oota, Masaru; and Tamura, Toshifumi, 4,367,323, Cl. 526-201.000.
- Tawil, Abraham I., to H.I.T. Industries, Ltd. Attache case including expansion gusset. 4,366,886, Cl. 190-44.000.
- TDK Electronics Co., Ltd.: *See—*
  - Asakawa, Yukio; Nagano, Katsuto; and Sasa, Syozo, 4,367,395, Cl. 219-216.000.
  - Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,367,264, Cl. 428-413.000.
  - Kawahara, Hiroshi; Nishimura, Tadashi; Funakoshi, Masatsugu; and Nishimatsu, Masaharu, 4,367,263, Cl. 428-336.000.
- Teague, W. Dorwin, to Castro Convertible Corporation. Ottoman roll latch mechanism. 4,366,586, Cl. 5-28.000.
- Technigaz: *See—*
  - Kotcharian, Michel, 4,366,917, Cl. 220-442.000.
- Teetz, Wolfgang; and Ripkens, Hans-Gerd, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Automatic embroidery machine having a plurality of single-needle embroidery heads. 4,366,763, Cl. 112-98.000.
- Telecom Engineering, Inc.: *See—*
  - Hemmie, Dale L., 4,367,485, Cl. 358-86.000.
- Telefonaktiebolaget L M Ericsson: *See—*
  - Sommansson, Peter S. E., 4,367,383, Cl. 200-153.00J.
- Temple, Davis L., Jr.; and Yeager, Richard E., to Mead Johnson & Company. Thiazolidinylalkylene piperazine derivatives. 4,367,335, Cl. 544-295.000.
- Tennis Machines, Inc.: *See—*
  - Bosworth, Warren, 4,366,958, Cl. 273-73.00A.
- Tension Envelope Corp.: *See—*
  - Hearsh, Tilford, 4,366,636, Cl. 40-159.000.
- Terada, Katumi; and Nakajima, Yukio, to Olympus Optical Company Ltd. Automatic camera. 4,367,026, Cl. 354-173.000.
- Terraillon: *See—*
  - Pidoux, Paul; and Prost, Jean L., 4,366,874, Cl. 177-25.000.
- Tesdata Systems Corporation: *See—*
  - Brown, Glen A.; and Berliner, Steven D., 4,367,525, Cl. 364-200.000.
- Tetra Pak Developpement SA: *See—*
  - Cheever, Richard N., 4,367,412, Cl. 250-492.300.
- Texaco Inc.: *See—*
  - Frick, Robert J.; Korstad, Ralph J.; and Robinson, Charles J., III, 4,366,863, Cl. 166-245.000.
  - Mazzagatti, Roy P., 4,367,440, Cl. 324-445.000.
  - Watts, Lewis W., Jr.; and Marquis, Edward T., 4,367,352, Cl. 585-254.000.
- Teytu, Andre: *See—*
  - Aubert, Michel; Bret, Antoine; Lemercier, Guy; Montmayeur, Jean-Denis; Sauvage, Michel; and Teytu, Andre, 4,367,195, Cl. 376-290.000.
- Theissen, Robert J., to Rhone-Poulenc Agrochimie. Herbicidal N-(5,5-dimethyloxazolideneyl-2,4-dione) 5-(substituted phenoxy-2-substituted benzamides. 4,367,090, Cl. 71-88.000.
- Thies, Helmut: *See—*
  - Berger, Bernd; Mucke, Gert; Thies, Helmut; and Neuschutz, Eberhard, 4,366,720, Cl. 73-862.070.
- Thigpen, Bruce, to Wayne H Coloney Co., Inc. Apparatus for holding record disks by vacuum. 4,367,547, Cl. 369-271.000.
- Thoma, Endre P., to Varian Associates, Inc. Dynamic memory cell. 4,367,539, Cl. 365-189.000.
- Thomas & Betts Corporation: *See—*
  - Piriz, Jose M., 4,367,008, Cl. 339-230.00R.
- Thomas, Howard M.; and Duke, Graham R., to Newport Borough Council, of Civic Centre. Fixing devices. 4,366,651, Cl. 52-127.120.
- Thomas, Joseph J., to Burron Medical Inc. Winged IV catheter. 4,366,817, Cl. 604-174.000.
- Thompson Foss Incorporated: *See—*
  - Foss, Richard C.; and Thompson, Philip M., 4,367,420, Cl. 307-453.000.
- Thompson, Philip M.: *See—*
  - Foss, Richard C.; and Thompson, Philip M., 4,367,420, Cl. 307-453.000.
- Thomson-CSF: *See—*
  - Arnichand, Roger; Coeuillet, Jacques; Darnet, Jean; and Sbalchiero, Pierre, 4,367,436, Cl. 318-628.000.
  - Klausz, Remy, 4,367,409, Cl. 250-385.000.
  - Lacombat, Michel, 4,367,046, Cl. 356-400.000.
- TI Fords Limited: *See—*
  - Ford, Geoffrey E., 4,367,405, Cl. 250-223.00B.
- Tillmann, Ditmar K.: *See—*
  - Wilson, Harold R.; and Tillmann, Ditmar K., 4,367,370, Cl. 174-48.000.
- Tippler, Robert S.: *See—*
  - Anderton, Raymond A.; Smith, Raymond R.; and Tippler, Robert S., 4,366,780, Cl. 123-1.00A.
- Titus, Charles H.: *See—*
  - Bell, Christy W.; Wittle, John K.; and Titus, Charles H., 4,367,132, Cl. 204-180.00R.
- Titus, John S., to Musitronic, Inc. Method and apparatus for displaying musical notations. 4,366,741, Cl. 84-478.000.
- Tokico Ltd.: *See—*
  - Ohta, Yoshimoto, 4,366,742, Cl. 91-49.000.
- Tokuda, Hiroastu: *See—*
  - Morinaga, Shigeki; Obara, Sanshiro; Tokuda, Hiroastu; and Nakamura, Hideo, 4,367,530, Cl. 364-431.060.
- Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
  - Kitao, Ikuo; and Kamiyama, Kiichi, 4,367,019, Cl. 351-211.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Goto, Kenya, 4,367,040, Cl. 356-44.000.
  - Harada, Nozomu; Furukawa, Akihiko; Endo, Yukio; and Yoshida, Okio, 4,367,492, Cl. 358-213.000.
  - Suzuki, Hideo; Kawashima, Nobuo; Yanabu, Satoru; and Takayanagi, Eiichi, 4,367,382, Cl. 200-144.00B.
- Tomatsuri, Masakazu; Wakabayashi, Hiroshi; and Okuyama, Takeshi, to Nippon Kogaku K.K. Camera with protective cover. 4,367,028, Cl. 354-288.000.
- Tome, Eduardo S., to Disyuntor-Regulador A.S.D.,S.A. Multiple selective switch. 4,367,379, Cl. 200-5.00R.
- Tomimatsu, Noriyuki: *See—*
  - Kurahashi, Koichiro; and Tomimatsu, Noriyuki, 4,367,464, Cl. 340-701.000.
- Tomisaka, Yasushi; and Horii, Yuji, to Kabushiki Kaisha Kobe Seiko Sho. Air separating system. 4,367,082, Cl. 62-13.000.
- Tomita, Makoto: *See—*
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; Tomita, Makoto; Nakamura, Tamotsu; Yokota, Kouji; and Sobukawa, Hideo, 4,367,162, Cl. 252-443.000.
  - Fujitani, Yoshiyasu; Muraki, Hideaki; Tomita, Makoto; Sobukawa, Hideo; and Fukui, Masayuki, 4,367,166, Cl. 252-462.000.
- Tomosue, Hiroshi. Device for arranging hen's eggs in erect postures. 4,366,896, Cl. 198-384.000.
- Tomoyasu, Takatoshi: *See—*
  - Sakai, Yoshiya; Nagaoka, Shigeo; Nakai, Yohji; and Tomoyasu, Takatoshi, 4,367,394, Cl. 219-146.240.
- Toppan Printing Co.: *See—*
  - Yoshikawa, Akira, 4,367,110, Cl. 156-219.000.
- Toray Industries, Inc.: *See—*
  - Hayashi, Kazuya; Shimada, Masato; Nakamura, Teruo; and Fujii, Yoshihiro, 4,367,070, Cl. 8-114.600.
  - Tanaka, Chiaki; Morikawa, Masanobu; and Kohno, Yoshio, 4,367,316, Cl. 525-173.000.
- Tordjman, Roger A., to Mecanorma S.A. Arrangements for the dry transfer of characters composed of ink. 4,367,252, Cl. 428-41.000.
- Torgersen, Jan H.: *See—*
  - Gjelsvik, Norvald; and Torgersen, Jan H., 4,367,215, Cl. 423-658.500.
- Torige, Kazuo: *See—*
  - Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,367,124, Cl. 204-17.000.
- Tornos S.A., Fabrique de Machine Moutier: *See—*
  - Aeschbacher, Gottfried, 4,366,734, Cl. 82-2.500.
- Toshiba Silicone Co., Ltd.: *See—*
  - Shimizu, Chiyuki, 4,367,293, Cl. 521-122.000.
- Towmotor Corporation: *See—*
  - Reeves, Jerry L., 4,366,883, Cl. 187-9.00R.
- Townsend Engineering Company: *See—*
  - Townsend, Ray T.; and Ladd, Floyd R., 4,366,600, Cl. 17-52.000.
- Townsend, Ray T.; and Ladd, Floyd R., to Townsend Engineering Company. Method and means of cutting links of encased material. 4,366,600, Cl. 17-52.000.
- Toy, Malcolm D. Garment display rack support. 4,366,907, Cl. 211-60.00R.
- Toyo Denki Seizo Kabushiki Kaisha: *See—*
  - Kohata, Masakazu; Sano, Takashi; and Miyashita, Ichiro, 4,367,521, Cl. 363-136.000.
- Toyo Jozo Company, Ltd.: *See—*
  - Yamaguchi, Tsutomu; and Misaki, Hideo, 4,367,285, Cl. 435-28.000.

- Toyo Kogyo Co., Ltd.: *See—*
  - Hamatani, Teruo, 4,366,978, Cl. 296-68.000.
  - Harasaki, Hayathugu; and Matsuura, Nobuaki, 4,366,598, Cl 16-382.000.
- Toyo Seikan Kaisha, Ltd.: *See—*
  - Katsura, Tadahiko; Ishibashi, Kazuhisa; and Hirota, Kazumi, 4,366,662, Cl. 53-478.000.
- Toyo Soda Manufacturing Co., Ltd.: *See—*
  - Asami, Shunichi; Seita, Toru; and Shimizu, Akihiko, 4,367,147, Cl. 210-636.000.
  - Sakanaka, Yasuhiro; Hayashi, Takao; Koizumi, Tatsuya; and Akashi, Sumio, 4,367,097, Cl. 106-901.000.
  - Shibayama, Kimio; Itaya, Kingo; and Fujimoto, Teruo, 4,367,281, Cl. 430-313.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Goto, Shuji; Tasaka, Kazuyoshi; and Tanaka, Masaru, 4,366,798, Cl. 123-549.000.
  - Hachiga, Takasi; Tamaki, Kazuyoshi; Nakano, Jiro; and Ono, Hironobu, 4,366,794, Cl. 123-479.000.
  - Katagiri, Masayoshi; and Ogura, Osamu, 4,366,744, Cl. 91-369.00A.
  - Miyake, Takashi; and Nomura, Takaaki, 4,366,791, Cl. 123-327.000.
- Trainer, Philip: *See—*
  - Stratienko, Andrew; and Trainer, Philip, 4,367,053, Cl. 403-371.000.
- Treseder, Robert C., to International Business Machines Corporation. Fermetically sealed disk file. 4,367,503, Cl. 360-98.000.
- Tresper, Erhard: *See—*
  - Hucks, Uwe; and Tresper, Erhard, 4,367,330, Cl. 528-196.000.
- Trexler, Philip C. Isolation enclosure members. 4,366,809, Cl. 128-1.00R.
- Tripp, Jeffrey. Combination bridge and tailpiece. 4,366,740, Cl. 84-298.000.
- Trombetti, Albert V., Jr. Tablet pulverizer. 4,366,930, Cl. 241-169.000.
- True Temper Corporation: *See—*
  - Curati, Marino, Jr., 4,366,846, Cl. 141-1.000.
- Trutzschler GmbH & Co. KG: *See—*
  - Beneke, Wolfgang, 4,366,601, Cl. 19-98.000.
- Truumees, Imbi: *See—*
  - Waitz, J. Allan; Reiblein, Walter; and Truumees, Imbi, 4,367,287, Cl. 435-76.000.
- TRW Inc.: *See—*
  - Bohn, Jack R.; and Pearson, Durk J., 4,366,986, Cl. 299-2.000.
- Tsai, Jane: *See—*
  - Katz, Michael; Carluccio, Frank; Mallari, Gil; FitzPatrick, Kevin; Desai, Ashok; Casciano, Robert; and Tsai, Jane, 4,367,363, Cl. 585-809.000.
- Tsang, Paul J.: *See—*
  - Ogura, Seiki; and Tsang, Paul J., 4,366,613, Cl. 29-571.000.
- Tsubakimoto Chain Co.: *See—*
  - Azuma, Hiroaki; Kato, Hideo; and Oyama, Akira, 4,366,897, Cl. 198-502.000.
- Tsuchiyama, Yuji, to Amada Company, Limited. Hydraulic presses. 4,366,699, Cl. 72-389.000.
- Tsuda, Keishiro: *See—*
  - Mizutani, Fumio; Yoshiura, Masahiko; Iriyama, Keiji; Sasaki, Kanji; and Tsuda, Keishiro, 4,367,369, Cl. 136-263.000.
- Tsukishima Kikai Co., Ltd.: *See—*
  - Morita, Minoru, 4,367,048, Cl. 366-137.000.
- Tsuruga, Yuuji; Kobayashi, Akihiro; Yoshitoshi, Makoto; and Nishino, Yutaka, to Iwasaki Tsushinki Kabushiki Kaisha; and Nippon Telegraph and Telephone Public Corporation. Push-button dial circuit. 4,367,375, Cl. 179-81.00R.
- Tsutsumi, Funio: *See—*
  - Takeuchi, Yasumasa; Ohshima, Noboru; Sakakibara, Mitsuhiko; and Tsutsumi, Funio, 4,367,325, Cl. 526-340.000.
- Tuftco Corporation: *See—*
  - Card, Roy T., 4,366,761, Cl. 112-79.00A.
- Tults, Juri, to RCA Corporation. Arrangement for both channel swapping and favorite channel features. 4,367,559, Cl. 455-186.000.
- Turnbull, James A.: *See—*
  - Bayard, Michael A.; and Turnbull, James A., 4,366,816, Cl. 128-213.00A.
- Turner, Norman L.: *See—*
  - Hanley, Peter R.; and Turner, Norman L., 4,367,411, Cl. 250-492.200.
- Tward, Emanuel: *See—*
  - United States of America, National Aeronautics and Space Administration; and Tward, Emanuel, 4,366,680, Cl. 62-514.00R.
- TWB-Pressteile GmbH: *See—*
  - Blecher, Peter, 4,367,142, Cl. 210-163.000.
- Tyquin, Bryan J. Transportable stock unit. 4,366,775, Cl. 119-20.000.
- UCB, Societe Anonyme: *See—*
  - Bontinck, Walter; D'Hondt, Marc; and Jacobs, Roland, 4,367,312, Cl. 525-93.000.
- Uccello, Salvatore A.; and Weinbaum, Barry M., to Lok-Rak Corporation of America. Storage rack assembly and method of assembling same. 4,366,910, Cl. 211-191.000.
- Uchida, Motokazu: *See—*
  - Yanadori, Michio; Kamejima, Kohji; Tanaka, Hideki; Kano, Minoru; Uchida, Motokazu; and Abe, Yoritsune, 4,366,856, Cl. 165-104.170.
- Uchigasaki, Isao: *See—*
  - Kageyama, Akira; Maekawa, Iwao; Uchigasaki, Isao; and Tanno, Takeshi, 4,367,314, Cl. 525-168.000.
- Uchino, Noriyuki: *See—*
  - Matsushita, Takao; and Uchino, Noriyuki, 4,367,169, Cl. 252-542.000.
- Uchiyama, Masayuki: *See—*
  - Yamaguchi, Mitsuhiko; and Uchiyama, Masayuki, 4,367,377, Cl. 179-115.50H.
- Ueda, Ikuo; Kitaura, Yoshihiko; Matsuo, Masaaki; and Konishi, Nobukiyo, to Fujisawa Pharmaceutical Company, Ltd. Phenyl-alkanoic acid derivative and preparation thereof. 4,367,238, Cl. 424-279.000.
- Ueno, Sadayasu: *See—*
  - Sato, Kanemasa; Ueno, Sadayasu; and Miya, Kazuhiko, 4,366,704, Cl. 73-118.000.
- Ueoka, Keiji: *See—*
  - Fujimaru, Yukio; Sugiwaki, Toshihiro; Ueoka, Keiji; and Fujioka, Shigenobu, 4,367,094, Cl. 106-90.000.
- Uhlmann, Donald R.; Snitzer, Elias; Hovey, Richard J.; and Chu, Nori Y. C., to American Optical Corporation. Stabilized photochromic materials. 4,367,170, Cl. 252-586.000.
- Ultrak Inc.: *See—*
  - Hackett, Kenneth R., 4,367,458, Cl. 340-539.000.
- Umehara, Akira: *See—*
  - Kondo, Syunichi; Matsufuji, Akihiro; and Umehara, Akira, 4,367,280, Cl. 430-281.000.
- Umino, Tomio: *See—*
  - Jimbou, Ryutarou; Umino, Tomio; Shida, Tomohiko; Iizuka, Tomio; and Isobe, Shoji, 4,367,017, Cl. 350-486.000.
- Ung, Vincent: *See—*
  - Vignes, Jean P.; and Ung, Vincent, 4,367,536, Cl. 364-745.000.
- Unimax Switch Limited: *See—*
  - Bennett, Geoffrey R., 4,366,688, Cl. 70-395.000.
- Union Carbide Corporation: *See—*
  - Baskent, Feyyaz O.; and Bye, Mark L., 4,367,291, Cl. 521-112.000.
  - Biel, Edward N., 4,367,256, Cl. 428-218.000.
  - Kalnoki-Kis, Tibor, 4,367,266, Cl. 429-101.000.
  - Pelton, John F., 4,366,721, Cl. 73-863.230.
  - Yerushalmy, Yosef; and Stokes, Larry W., 4,367,393, Cl. 219-121.0PM.
- U.S. Energy Research & Development Administration: *See—*
  - Wende, Charles W. J.; Babcock, Dale F.; and Menegus, Robert L., 4,367,196, Cl. 376-333.000.
- United States of America
  - Air Force: *See—*
    - Gover, Avraham, 4,367,551, Cl. 372-2.000.
    - Mayer, Arnold H., 4,366,857, Cl. 165-104.230.
    - McDaniel, Joe W.; and Aume, Nilss M., 4,367,373, Cl. 178-18.000.
    - Sankaran, Venkatesa; and Marvel, Carl S., 4,367,329, Cl. 528-183.000.
    - Tamborski, Christ; and Snyder, Carl E., Jr., 4,367,343, Cl. 556-478.000.
  - Army: *See—*
    - Behl, Wishvender K., 4,367,268, Cl. 429-101.000.
    - Schaubert, Daniel H.; Farrar, Frederick G.; Hayes, Scott T.; and Sindoris, Arthur R., 4,367,474, Cl. 343-700.0MS.
  - Energy: *See—*
    - Donaldson, A. Burl; and Hoke, Donald E., 4,366,860, Cl. 166-59.000.
    - Mrazek, Franklin C.; Smaga, John A.; and Battles, James E., 4,367,159, Cl. 252-182.100.
    - Schenewerk, William E.; and Glasgow, Lyle E., 4,367,194, Cl. 376-281.000.
    - Stinton, David P., 4,367,184, Cl. 264-0.500.
  - National Aeronautics and Space Administration; administrator; with respect to an invention of:
    - Tward, Emanuel. Cycling Joule Thomson refrigerator. 4,366,680, Cl. 62-514.00R.
- U.S. Philips Corporation: *See—*
  - Glenny, Alfred E. T.; and Van Vliet, Johannes A. J. M., 4,367,432, Cl. 315-49.000.
  - Howden, Harry, 4,367,014, Cl. 350-320.000.
  - Hubner, Horst; and Lersmacher, Bernhard, 4,367,556, Cl. 378-125.000.
  - Lersmacher, Bernhard; and Knippenberg, Wilhelmus F., 4,367,246, Cl. 427-228.000.
  - Marin, Guy F. M.; Podvin, Dominique J.; and Susset, Jean-Pierre, 4,367,473, Cl. 343-14.000.
  - Notelteirs, Victor R.; and Siaens, Gustaaf F. R., 4,367,428, Cl. 313-222.000.
  - Waarle, Godfried H., 4,367,384, Cl. 200-159.00B.
- Universal Pioneer Corporation: *See—*
  - Araki, Yositsuga; and Kurihara, Toshihikom, 4,367,543, Cl. 369-45.000.
- University of California, The Regents of the: *See—*
  - Wheatley, John C.; Paulson, Douglas N.; and Allen, Paul C., 4,366,676, Cl. 62-6.000.
- University of Kentucky Research Foundation, The: *See—*
  - Carter, Willis M., 4,367,058, Cl. 409-26.000.
- University of Maine, Board of Trustees of the: *See—*
  - Hill, Richard C., 4,366,805, Cl. 126-285.00R.
- University Patents Inc.: *See—*
  - Wolf, Martin, 4,367,368, Cl. 136-255.000.
- Unzens, Bruno E., to Roto-Finish Company, Inc. Corrosion-inhibiting acid burnishing compound. 4,367,092, Cl. 106-3.000.
- UOP Inc.: *See—*
  - Antos, George J.; and Chao, Tai-Hsiang, 4,367,137, Cl. 208-139.000.

  Arena, Blaise J., 4,367,355, Cl. 585-269.000.
  Kulprathipanja, Santi; and Neuzil, Richard W., 4,367,364, Cl. 585-826.000.
  Vora, Bipin V., 4,367,357, Cl. 585-332.000.
  Ward, Dennis J., 4,367,356, Cl. 585-315.000.
Upjohn Company, The: *See—*
  Gammill, Ronald B., 4,367,341, Cl. 549-387.000.
Urano, Susumu: *See—*
  Kuno, Akira; Matsumoto, Muneaki; Numata, Koji; and Urano, Susumu, 4,367,453, Cl. 340-23.000.
Urba, Richard J., to Electronic Devices, Inc. Rectifier bridge unit. 4,367,523, Cl. 363-141.000.
Uselton, Robert B., to Atlantic Richfield Company. Heat pump water heater with remote storage tank and timed temperature sensing. 4,366,677, Cl. 62-157.000.
USM Corporation: *See—*
  Muhlbach, Anton, 4,366,589, Cl. 12-16.400.
Utsch, Francis V.; Merritt, Henry B.; and Sykes, Larry M., to Philip Morris Incorporated. Expansion of tobacco. 4,366,825, Cl. 131-296.000.
V.G.A S., Inc.: *See—*
  Jackson, Kenneth A.; and Arndt, George I., 4,366,797, Cl. 123-523.000.
Vachee, Pierre, to International Business Machines Corp. Method and apparatus for multiplexing a data signal and secondary signals. 4,367,549, Cl. 370-91.000.
Vacuumschmelze GmbH: *See—*
  Grimm, Werner, 4,367,427, Cl. 313-210.000.
Valeo Societe Anonyme: *See—*
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  Wulff, Harald P.; and Wattimena, Freddy, 4,367,342, Cl. 549-529.000.
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Wiener, Patricia P., to Xerox Corporation. Image bit structuring apparatus and method. 4,367,533, Cl. 364-519.000.
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Willhelm, Joerg, to Ernst Leitz Wetzlar GmbH. Flat field lens with image splitting effect. 4,367,016, Cl. 350-452.000.
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Willis, Clyde A.; and Lingafelter, Jerry K., to Walker-Neer Mfg. Co., Inc. Self-centering clamp for down-hole tubulars. 4,366,606, Cl. 24-263.0DA.
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  Leiter, Larry L., 4,366,924, Cl. 227-155.000.
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  Wiener, Patricia P., 4,367,533, Cl. 364-519.000.

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Yokosuka, Masaru: *See—*

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Kondo, Shigeharu; Kikutake, Junichiro; Sugiura, Masakazu; and Yoshida, Masaru, 4,367,309, Cl. 525-54.100.

Yoshida, Okio: *See—*

Harada, Nozomu; Furukawa, Akihiko; Endo, Yukio; and Yoshida, Okio, 4,367,492, Cl. 358-213.000.

Yoshida, Takeshi, to Hokushin Electric Works, Ltd. Pressure transducer. 4,366,716, Cl. 73-718.000.

Yoshikawa, Akira, to Toppan Printing Co. Decorative laminate and a manufacturing method therefor. 4,367,110, Cl. 156-219.000.

Yoshimura, Minoru. Scale printing instrument. 4,366,755, Cl. 101-329.000.

Yoshinaga, Shoji: *See—*

Fujiwara, Kiyoshi; Fujimoto, Masaru; Nomura, Shoji; Kanekiyo, Hiroshi; and Yoshinaga, Shoji, 4,367,202, Cl. 422-258.000.

Yoshioka, Masahiro, to Hitachi, Ltd. Damped bearing device. 4,366,994, Cl. 308-26.000.

Yoshitomi, Masao: *See—*

Yazawa, Nobuharu; and Yoshitomi, Masao, 4,367,419, Cl. 307-254.000.

Yoshitoshi, Makoto: *See—*

Tsuruga, Yuuji; Kobayashi, Akihiro; Yoshitoshi, Makoto; and Nishino, Yutaka, 4,367,375, Cl. 179-81.00R.

Yoshiura, Masahiko: *See—*

Mizutani, Fumio; Yoshiura, Masahiko; Iriyama, Keiji; Sasaki, Kanji; and Tsuda, Keishiro, 4,367,369, Cl. 136-263.000.

Yu, Chyang J.; and Takiar, Hem P., to North American Philips Corporation. Intergranular insulation type semiconductive ceramic and method of producing same. 4,367,265, Cl. 428-697.000.

Yu, Ruey J.: *See—*

Van Scott, Eugene J.; and Yu, Ruey J., 4,367,224, Cl. 424-175.000.

Yuhara, Yukitomo, to Yoshida Industry Co., Ltd. Vanity case. 4,366,829, Cl. 132-83.00R.

Zaveri, Vikram: *See—*

Klueting, Bernd A.; and Zaveri, Vikram, 4,366,984, Cl. 297-379.000.

Zellweger, Shea. Devices for displaying or performing operations in a two-valued system. 4,367,066, Cl. 434-433.000.

Zidele, Israel. Reversible glove. 4,366,580, Cl. 2-19.000.

Ziegler, Horst; and Bogle, Dagobert, to Christof Stoll GmbH & Co. KG. Standing work seat. 4,366,981, Cl. 297-328.000.

Zimmer, Peter G.; and von Lieres, Diethelm. Chair hinge. 4,366,599, Cl. 16-386.000.

Zimmerman, Mahlon N. Automatic safety gangplank. 4,366,591, Cl. 14-71.300.

Zwaenepoel, Paul; Strzelbicki, Guido; Scharf, Daniel J.; and Wagner, George M., to Occidental Chemical Corporation. Flame retardant polymer systems and polymer compositions. 4,367,315, Cl. 525-169.000.

Zweifel, Hans; Berger, Joseph; Kvita, Vratislav; and Roth, Martin, to Ciba-Geigy Corporation. Photocrosslinkable polymers with thioxanthone and imidyl groupings in side chains. 4,367,324, Cl. 526-256.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JANUARY, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson-Cook, Inc.: *See—*

Anderson, Marvin R., Re. 31,116, Cl. 72-108.000.

Anderson, Marvin R., to Anderson-Cook, Inc. Rotary forming machine and tool. Re. 31,116, Cl. 72-108.000.

Catallo, Frank. Method of padding and extracting a continuously advancing circular knit fabric tube. Re. 31,115, Cl. 8-151.000.

Depew, Noel F., to NCR Corporation. Ribbon cassette with bi-color capability. Re. 31,117, Cl. 400-208.000.

Flintkote Company, The: *See—*

Slater, Thomas C., deceased; and Hamilton, Floyd C., Jr., Re. 31,118, Cl. 106-89.000.

Hamilton, Floyd C., Jr.: *See—*

Slater, Thomas C., deceased; and Hamilton, Floyd C., Jr., Re. 31,118, Cl. 106-89.000.

Kitao, Saburo: *See—*

Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo, Re. 31,119, Cl. 363-126.000.

Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo, to Murata Mfg., Co. Ltd. Fly-back transformer with a low ringing ratio. Re. 31,119, Cl. 363-126.000.

Murata Mfg., Co. Ltd.: *See—*

Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo, Re. 31,119, Cl. 363-126.000.

NCR Corporation: *See—*

Depew, Noel F., Re. 31,117, Cl. 400-208.000.

Slater, Thomas C., deceased (by Slater, Vivian, executrix); and Hamilton, Floyd C., Jr., to Flintkote Company, The. Hydraulic cement and method of producing same. Re. 31,118, Cl. 106-89.000.

Slater, Vivian, executrix: *See—*

Slater, Thomas C., deceased; and Hamilton, Floyd C., Jr., Re. 31,118, Cl. 106-89.000.

Tokuda, Katumi: *See—*

Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo, Re. 31,119, Cl. 363-126.000.

LIST OF DESIGN PATENTEES

Alton Packaging Corporation: *See—*

Boedeker, Michael J.; and Bardon, Dennis A., 267,476, Cl. D9-433.000.

American Can Company: *See—*

Maroszek, Raymond V., 267,474, Cl. D9-418.000.

Maroszek, Raymond V.; Peters, Clifford G.; and Tellock, Jeffrey J., 267,475, Cl. D9-418.000.

Anderson, Robert F. Article carrier. 267,442, 1-4-83, Cl. D3-30.100.

Bachman, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Vending machine. 267,498, 1-4-83, Cl. D20-5.000.

Bardon, Dennis A.: *See—*

Boedeker, Michael J.; and Bardon, Dennis A., 267,476, Cl. D9-433.000.

Barr, Josef J. Spiral ring. 267,481, 1-4-83, Cl. D11-27.000.

Barr, Josef J. Finger ring or similar article. 267,482, 1-4-83, Cl. D11-28.000.

Bean Station Furniture Factory, The: *See—*

Friedman, Alan H., 267,447, Cl. D6-62.000.

Friedman, Alan H., 267,448, Cl. D6-63.000.

Becker, James R.; Eddins, Fred D.; Patterson, Maureen; O'Connell, David V.; and Rossi, Richard M., to Hasbro Industries, Inc. Combined toy boat and figures therefor. 267,502, 1-4-83, Cl. D21-130.000.

Boedeker, Michael J.; and Bardon, Dennis A., to Alton Packaging Corporation. Packaging blank. 267,476, 1-4-83, Cl. D9-433.000.

Borg-Warner Corporation: *See—*

Collins, Scott J., 267,479, Cl. D10-60.000.

Burt, Victor T. Door mat or similar article. 267,459, 1-4-83, Cl. D6-210.000.

Carlson, Ann. Indian doll. 267,503, 1-4-83, Cl. D21-182.000.

Carlsson, Per-Olov A. V.; and Hakansson, Bo H., to Crafon Medical AB. Bladder stimulator. 267,512, 1-4-83, Cl. D24-99.000.

CBS Inc.: *See—*

Rhodes, Harold B., 267,495, Cl. D17-9.000.

Chadima, George E., Jr., to Norand Corporation. Modular computer system CRT. 267,491, 1-4-83, Cl. D14-113.000.

Clarvit, Richard N. Baby shoe. 267,441, 1-4-83, Cl. D2-278.000.

Coca-Cola Company, The: *See—*

Bachman, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 267,498, Cl. D20-5.000.

Cohen, Piet, to Materias Plasticas, Limitada. Clothes hook. 267,455, 1-4-83, Cl. D6-120.000.

Collins, Scott J., to Borg-Warner Corporation. Thermostat housing. 267,479, 1-4-83, Cl. D10-60.000.

Cooper, Kenneth D., to Lor-Ken Holdings Ltd. Game board. 267,499, 1-4-83, Cl. D21-15.000.

Crafon Medical AB: *See—*

Carlsson, Per-Olov A. V.; and Hakansson, Bo H., 267,512, Cl. D24-99.000.

Crisman, Thomas L.; Weaver, Harry R.; and Moore, Stanley R., to Freezesleeves of America. Combined drinking cup and holder. 267,461, 1-4-83, Cl. D7-3.000.

Crowder, Thomas E. Hammer. 267,469, 1-4-83, Cl. D8-75.000.

Crown Marking Equipment Co.: *See—*

Goldstein, Edwin W., 267,496, Cl. D18-15.000.

Daharsh, Lonnie; and Eggers, George W., to Tel-Com Manufacturing, Inc. Telephone. 267,489, 1-4-83, Cl. D14-53.000.

Davis, Charles L.: *See—*

Bachman, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 267,498, Cl. D20-5.000.

Denteco Inc.: *See—*

Gupta, Subhash R., 267,508, Cl. D24-23.000.

Dew, Robert C.: *See—*

Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,464, Cl. D23-138.500.

Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,465, Cl. D23-138.500.

Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,466, Cl. D23-138.500.

Eddins, Fred D.: *See—*

Becker, James R.; Eddins, Fred D.; Patterson, Maureen; O'Connell, David V.; and Rossi, Richard M., 267,502, Cl. D21-130.000.

Eggers, George W.: *See—*

Daharsh, Lonnie; and Eggers, George W., 267,489, Cl. D14-53.000.

Elder, Robert A.: *See—*

McKinnon, Bryan, 267,458, Cl. D6-172.000.

Evans, Charles D. Quick connect coupling. 267,506, 1-4-83, Cl. D23-44.000.

Fine, Lewis. Liquid soap dispenser. 267,454, 1-4-83, Cl. D6-95.000.

Foertmeyer, Mary L.: *See—*

Weigel, Leslie J.; Weigel, Geraldine A.; and Foertmeyer, Mary L., 267,513, Cl. D24-99.000.

Fogless AB: *See—*

Wannag, Arne T., 267,509, Cl. D24-27.000.

Fort Lock Corporation: *See—*

Scherbing, Frank J., 267,470, Cl. D8-333.000.

Foster Industries Co., Limited: *See—*

Leung, Chung S., 267,514, Cl. D26-37.000.

Foto-Quelle GmbH: *See—*

Schade, Hans-Ulrich, 267,493, Cl. D16-23.000.

- Freezesleeves of America: *See—*
  - Crisman, Thomas L.; Weaver, Harry R.; and Moore, Stanley R., 267,461, Cl. D7-3.000.
- Friedman, Alan H., to Bean Station Furniture Factory, The. Seat. 267,447, 1-4-83, Cl. D6-62.000.
- Friedman, Alan H., to Bean Station Furniture Factory, The. Seat. 267,448, 1-4-83, Cl. D6-63.000.
- Fulbright & Jaworski: *See—*
  - Ruxton, Craig, 267,444, Cl. D3-40.000.
- Gennetten, Edward W. Biorhythm calendar. 267,497, 1-4-83, Cl. D19-20.000.
- Goldstein, Edwin W., to Crown Marking Equipment Co. Plastic mount for stamping die. 267,496, 1-4-83, Cl. D18-15.000.
- Golub, Allyn L., to Key Pharmaceuticals, Incorporated. Bandage. 267,510, 1-4-83, Cl. D24-49.000.
- Goshi Kaisha Kanemitsu Doko Yosetsu-sho: *See—*
  - Kanemitsu, Yukio, 267,472, Cl. D8-360.000.
- Graser, Earl J., to Manville Service Corporation. Article carrier blank. 267,477, 1-4-83, Cl. D9-433.000.
- Gupta, Subhash R., to Denteco Inc. Tongue cleaner. 267,508, 1-4-83, Cl. D24-23.000.
- Hakansson, Bo H.: *See—*
  - Carlsson, Per-Olov A. V.; and Hakansson, Bo H., 267,512, Cl. D24-99.000.
- Hamlin, Billy A. Fishing rod holder. 267,504, 1-4-83, Cl. D22-13.000.
- Hardy, Bruce N., to Silver Street, Incorporated. Drum shell and rim spacer. 267,494, 1-4-83, Cl. D17-22.000.
- Hasbro Industries, Inc.: *See—*
  - Becker, James R.; Eddins, Fred D.; Patterson, Maureen; O'Connell, David V.; and Rossi, Richard M., 267,502, Cl. D21-130.000.
- Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., to S & T Industries, Inc. Fireplace grate. 267,464, 1-4-83, Cl. D23-138.500.
- Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., to S & T Industries, Inc. Fireplace grate. 267,465, 1-4-83, Cl. D23-138.500.
- Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., to S & T Industries, Inc. Fireplace grate. 267,466, 1-4-83, Cl. D23-138.500.
- Hayashi, Masakazu, to Kabushiki Kaisha Hayashi Racing. Vehicle wheel. 267,488, 1-4-83, Cl. D12-211.000.
- Heintz, Gary R. Frame for graphics or the like. 267,460, 1-4-83, Cl. D6-235.000.
- Hinson, Donald D. Portable filling indicator for tanks and storage containers. 267,480, 1-4-83, Cl. D10-101.000.
- Interdica S.A.: *See—*
  - Kanoui, Joseph, 267,478, Cl. D10-32.000.
- International Business Machines Corp.: *See—*
  - LaDue, James J.; and Shelkofsky, Clifford I., 267,490, Cl. D14-102.000.
- Kabushiki Kaisha Hayashi Racing: *See—*
  - Hayashi, Masakazu, 267,488, Cl. D12-211.000.
- Kanemitsu, Yukio, to Goshi Kaisha Kanemitsu Doko Yosetsu-sho. Poly-V pulley. 267,472, 1-4-83, Cl. D8-360.000.
- Kanoui, Joseph, to Interdica S.A. Watch. 267,478, 1-4-83, Cl. D10-32.000.
- Key Pharmaceuticals, Incorporated: *See—*
  - Golub, Allyn L., 267,510, Cl. D24-49.000.
- Kipperman, Michael. Holder for a shaving instrument. 267,453, 1-4-83, Cl. D6-88.000.
- Knaeble, James. Combined lamp base and cabinet. 267,515, 1-4-83, Cl. D26-58.000.
- Kneale, Edward H., III, to Kneale, Edward H., III. Tray. 267,462, 1-4-83, Cl. D7-21.000.
- Koziatek, Jerome P.: *See—*
  - Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,452, Cl. D6-79.000.
- Krusche, Kurt. Dish and glass-rack. 267,517, 1-4-83, Cl. D32-55.000.
- LaDue, James J.; and Shelkofsky, Clifford I., to International Business Machines Corp. Data processing system. 267,490, 1-4-83, Cl. D14-102.000.
- Lendvay, Joseph G.: *See—*
  - Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,452, Cl. D6-79.000.
- Leung, Chung S., to Foster Industries Co., Limited. Portable lantern. 267,514, 1-4-83, Cl. D26-37.000.
- Life Link International: *See—*
  - Simms, John, 267,468, Cl. D8-10.000.
- Lonnstedt, Bo G. Ear muff attachment for a safety helmet. 267,440, 1-4-83, Cl. D2-233.000.
- Lopez-Benitez, Carlos L., to Monarch Furniture Corp. Chair. 267,451, 1-4-83, Cl. D6-71.000.
- Lor-Ken Holdings Ltd.: *See—*
  - Cooper, Kenneth D., 267,499, Cl. D21-15.000.
- Lynch, William E., III. Gameboard. 267,500, 1-4-83, Cl. D21-31.000.
- Manville Service Corporation: *See—*
  - Graser, Earl J., 267,477, Cl. D9-433.000.
- Maroszek, Raymond V., to American Can Company. Article carrier. 267,474, 1-4-83, Cl. D9-418.000.
- Maroszek, Raymond V.; Peters, Clifford G.; and Tellock, Jeffrey J., to American Can Company. Article carrier. 267,475, 1-4-83, Cl. D9-418.000.
- Marshall, James W. Ski rack. 267,456, 1-4-83, Cl. D6-125.000.
- Martin, Robert P., Jr. Truck cab. 267,486, 1-4-83, Cl. D12-96.000.
- Materias Plasticas, Limitada *See—*
  - Cohen, Piet, 267,455, Cl. D6-120.000.
- Matsui, Hidetoshi. Kinetic sculpture. 267,484, 1-4-83, Cl. D11-141.000.
- McKinnon, Bryan, to Elder, Robert A. Cabinet. 267,458, 1-4-83, Cl. D6-172.000.
- Monarch Furniture Corp.: *See—*
  - Lopez-Benitez, Carlos L., 267,451, Cl. D6-71.000.
- Moore, Stanley R.: *See—*
  - Crisman, Thomas L.; Weaver, Harry R.; and Moore, Stanley R., 267,461, Cl. D7-3.000.
- Morgan, Annis R., Jr.: *See—*
  - Bachman, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 267,498, Cl. D20-5.000.
- Morgan, Richard O. Hinge splint. 267,511, 1-4-83, Cl. D24-64.000.
- Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., to Questor Corporation. Twin headboard. 267,452, 1-4-83, Cl. D6-79.000.
- Mundorf, Gary W. Automobile engine mounting bracket. 267,471, 1-4-83, Cl. D8-354.000.
- Norand Corporation: *See—*
  - Chadima, George E., Jr., 267,491, Cl. D14-113.000.
- O'Connell, David V.: *See—*
  - Becker, James R.; Eddins, Fred D.; Patterson, Maureen; O'Connell, David V.; and Rossi, Richard M., 267,502, Cl. D21-130.000.
- Olko, Henry. Chaise lounge. 267,446, 1-4-83, Cl. D6-57.000.
- Patterson, Maureen: *See—*
  - Becker, James R.; Eddins, Fred D.; Patterson, Maureen; O'Connell, David V.; and Rossi, Richard M., 267,502, Cl. D21-130.000.
- Peters, Clifford G.: *See—*
  - Maroszek, Raymond V.; Peters, Clifford G.; and Tellock, Jeffrey J., 267,475, Cl. D9-418.000.
- Questor Corporation: *See—*
  - Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,452, Cl. D6-79.000.
- Ragsdale, Robert A. Vehicle top unit. 267,487, 1-4-83, Cl. D12-156.000.
- Rambusch Decorating Company: *See—*
  - Rambusch, Viggo B.; and White, Peter B., 267,516, Cl. D26-72.000.
- Rambusch, Viggo B.; and White, Peter B., to Rambusch Decorating Company. Flood light housing. 267,516, 1-4-83, Cl. D26-72.000.
- Rhodes, Harold B., to CBS Inc. Harp cover. 267,495, 1-4-83, Cl. D17-9.000.
- Robins, Robert R. Wet bar. 267,457, 1-4-83, Cl. D6-144.000.
- Robinson, Helen M. Desk ornament or similar article. 267,485, 1-4-83, Cl. D11-157.000.
- Rossi, Richard M.: *See—*
  - Becker, James R.; Eddins, Fred D.; Patterson, Maureen; O'Connell, David V.; and Rossi, Richard M., 267,502, Cl. D21-130.000.
- Ruxton, Craig, to Fulbright & Jaworski. Portable cooler, caddy and armrest. 267,444, 1-4-83, Cl. D3-40.000.
- Ryan, Bobby W., to WFI International, Inc. Welding outlet. 267,505, 1-4-83, Cl. D23-40.000.
- S & T Industries, Inc.: *See—*
  - Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,464, Cl. D23-138.500.
  - Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,465, Cl. D23-138.500.
  - Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,466, Cl. D23-138.500.
- Salas, Anthony. Combined ski carrier and binding protector. 267,443, 1-4-83, Cl. D3-36.000.
- Schade, Hans-Ulrich, to Foto-Quelle GmbH. Film projector. 267,493, 1-4-83, Cl. D16-23.000.
- Scherbing, Frank J., to Fort Lock Corporation. Combined bicycle lock and bracket. 267,470, 1-4-83, Cl. D8-333.000.
- Schieber, August F. Router holder. 267,492, 1-4-83, Cl. D15-141.000.
- Schweiger Industries, Inc.: *See—*
  - Ungaro, Nicholas A., 267,450, Cl. D6-71.000.
- Seymour, Allen: *See—*
  - Mower, Henry W.; Seymour, Allen; Koziatek, Jerome P.; and Lendvay, Joseph G., 267,452, Cl. D6-79.000.
- Shelkofsky, Clifford I.: *See—*
  - LaDue, James J.; and Shelkofsky, Clifford I., 267,490, Cl. D14-102.000.
- Silver Street, Incorporated: *See—*
  - Hardy, Bruce N., 267,494, Cl. D17-22.000.
- Simms, John, to Life Link International. Extendible snow shovel. 267,468, 1-4-83, Cl. D8-10.000.
- Staton, Jerry W. Armchair. 267,449, 1-4-83, Cl. D6-69.000.
- Tabata, Toshinori, to Tomy Kogyo Co., Inc. Toy airplane. 267,501, 1-4-83, Cl. D21-90.000.
- Tel-Com Manufacturing, Inc.: *See—*
  - Daharsh, Lonnie; and Eggers, George W., 267,489, Cl. D14-53.000.
- Tellock, Jeffrey J.: *See—*
  - Maroszek, Raymond V.; Peters, Clifford G.; and Tellock, Jeffrey J., 267,475, Cl. D9-418.000.
- Telzrow, James L. Bottle or the like. 267,473, 1-4-83, Cl. D9-374.000.
- Thompson, Wayne. Combined butcher block and cutlery cabinet. 267,463, 1-4-83, Cl. D7-46.000.
- Tomy Kogyo Co., Inc.: *See—*
  - Tabata, Toshinori, 267,501, Cl. D21-90.000.
- Ungaro, Nicholas A., to Schweiger Industries, Inc. Seat. 267,450, 1-4-83, Cl. D6-71.000.
- Vosbikian, Mike. Garden tool handle. 267,467, 1-4-83, Cl. D8-01.000.
- Wannag, Arne T., to Fogless AB. Forcep. 267,509, 1-4-83, Cl. D24-27.000.
- Watson, William. Article support stand. 267,445, 1-4-83, Cl. D6-28.000.

- Weaver, Harry R.: *See—*
  - Crisman, Thomas L.; Weaver, Harry R.; and Moore, Stanley R., 267,461, Cl. D7-3.000.
- Wefler, Michael W. Ring. 267,483, 1-4-83, Cl. D11-30.000.
- Weigel, Geraldine A.: *See—*
  - Weigel, Leslie J.; Weigel, Geraldine A.; and Foertmeyer, Mary L., 267,513, Cl. D24-99.000.
- Weigel, Leslie J.; Weigel, Geraldine A.; and Foertmeyer, Mary L. Invalid turntable. 267,513, 1-4-83, Cl. D24-99.000.
- WFI International, Inc.: *See—*
  - Ryan, Bobby W., 267,505, Cl. D23-40.000.
- White, Peter B.: *See—*
  - Rambusch, Viggo B.; and White, Peter B., 267,516, Cl. D26-72.000.
- Wieting, Clifford E.: *See—*
  - Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,464, Cl. D23-138.500.
  - Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,465, Cl. D23-138.500.
  - Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,466, Cl. D23-138.500.
- Wood, Alfred L.: *See—*
  - Woods, Kenneth P.; and Wood, Alfred L., 267,507, Cl. D23-164.000.
- Woods, Kenneth P.; and Wood, Alfred L. Shield for ceiling fans and the like. 267,507, 1-4-83, Cl. D23-164.000.

LIST OF PLANT PATENTEES

- Beineke, Walter F., to Purdue Research Foundation. Black walnut tree. 4,971, 1-4-83, Cl. 32.000.
- Merrill, Grant, deceased; and by Merrill, Lucile B., executrix. Peach tree (A3-10). 4,970, 1-4-83, Cl. 43.000.
- Merrill, Lucile B., executrix: *See—*
  - Merrill, Grant, deceased; and Merrill, Lucile B., executrix, 4,970, Cl. 43.000.
- Purdue Research Foundation: *See—*
  - Beineke, Walter F., 4,971, Cl. 32.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF JANUARY, 1983

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Hercules Incorporated: *See—*
  - McIntyre, Christopher, T102,603, Cl. 426-613.000.
- Hudson, Robert G.: *See—*
  - Isom, Billy G.; and Hudson, Robert G., T102,602, Cl. 119-4.000.
- Isom, Billy G.; and Hudson, Robert G. Culture of freshwater mussel glochidia in an artificial habitat utilizing complex liquid growth media. T102,602, 1-4-83, Cl. 119-4.000.
- McIntyre, Christopher, to Hercules Incorporated. Table syrup containing butter or butter oil. T102,603, 1-4-83, Cl. 426-613.000.
- Parker, Byron R.; and Stumpe, Thomas R. Production of granular ammonium-polyphosphate with an inline reactor and drum granulator. T102,601, 1-4-83, Cl. 71-34.000.
- Stumpe, Thomas R.: *See—*
  - Parker, Byron R.; and Stumpe, Thomas R., T102,601, Cl. 71-34.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 4, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

19	4,366,579
	4,366,580

CLASS 3

1.5	4,366,581
13	4,366,582
36	4,366,583

CLASS 4

307	4,366,584

CLASS 5

18 R	4,366,585
28	4,366,586
94	4,366,587

CLASS 8

114.6	4,367,070
151	Re.31,115
471	4,367,071

CLASS 10

11 A	4,366,588

CLASS 12

16.4	4,366,589

CLASS 14

16.5	4,366,590
71.3	4,366,591

CLASS 15

22 R	4,366,592
49 C	4,366,593
314	4,366,594

CLASS 16

71	4,366,595
119	4,366,596
368	4,366,597
382	4,366,598
386	4,366,599

CLASS 17

52	4,366,600

CLASS 19

98	4,366,601

CLASS 23

302 T	4,367,073

CLASS 24

25	4,366,602
221 R	4,366,603
230 A	4,366,604
230.5 R	4,366,605
263 DA	4,366,606
270	4,366,607

CLASS 29

157 R	4,366,608
159 R	4,366,609
234	4,366,610
416	4,366,611
454	4,366,612
571	4,366,613
580	4,366,614
598	4,366,615
623.5	4,366,616
727	4,366,617
735	4,366,618

CLASS 30

90.1	4,366,619
264	4,366,620
276	4,366,621
	4,366,622

CLASS 33

140	4,366,623
180 AT	4,366,624
251	4,366,625
435	4,366,626

CLASS 34

9.5	4,366,627
207	4,366,628

CLASS 36

4	4,366,629
30 R	4,366,630
50	4,366,631
67 D	4,366,632
101	4,366,633
114	4,366,634

CLASS 37

8	4,366,635

CLASS 40

159	4,366,636
621	4,366,637

CLASS 42

50	4,366,638

CLASS 43

8	4,366,639
21.2	4,366,640
54.5 R	4,366,641
82	4,366,642
113	4,366,643
132 R	4,366,644

CLASS 44

62	4,367,074

CLASS 46

201	4,366,645

CLASS 47

27	4,366,646
42	4,366,647
52	4,366,648

CLASS 48

89	4,367,075
128	4,367,076
213	4,367,077

CLASS 49

362	4,366,649

CLASS 52

118	4,366,650
127.12	4,366,651
200	4,366,652
224	4,366,653
	4,366,654
227	4,366,655
395	4,366,656
405	4,366,657
648	4,366,658
693	4,366,659
741	4,366,660

CLASS 53

397	4,366,661
478	4,366,662
559	4,366,663

CLASS 55

184	4,367,078
208	4,367,079
302	4,367,080
503	4,367,081

CLASS 56

15.2	4,366,664
341	4,366,665
370	4,366,666

CLASS 57

7	4,366,667

CLASS 60

39.06	4,366,668
39.09 R	4,366,669
290	4,366,670
444	4,366,671
452	4,366,672
477	4,366,673
618	4,366,674
693	4,366,675

CLASS 62

6	4,366,676
13	4,367,082
157	4,366,677
186	4,366,678
347	4,366,679
514 R	4,366,680

CLASS 65

1	4,367,083
10.2	4,367,084
18.2	4,367,085
22	4,367,086
163	4,367,087
234	4,367,088

CLASS 66

165	4,366,681

CLASS 68

200	4,366,682

CLASS 70

19	4,366,683
68	4,366,684
70	4,366,685
71	4,366,686
	4,366,687
395	4,366,688

CLASS 71

76	4,367,089
88	4,367,090

CLASS 72

7	4,366,689
53	4,366,690
84	4,366,691
108	Re.31,116
186	4,366,692
201	4,366,693
235	4,366,694
286	4,366,695
339	4,366,696
361	4,366,697
389	4,366,698
	4,366,699

CLASS 73

19	4,366,700
23.1	4,366,710
35	4,366,701
	4,366,702
38	4,366,703
118	4,366,704
	4,366,705
119 A	4,366,706
146	4,366,707
146.8	4,366,708
204	4,366,709
590	4,366,711
600	4,366,712
618	4,366,713
708	4,366,714
714	4,366,715
718	4,366,716
744	4,366,717
861.58	4,366,718
861.76	4,366,719
862.07	4,366,720
863.23	4,366,721

CLASS 74

99 R	4,366,722
424.8 R	4,366,723
467	4,366,724
501 R	4,366,725
800	4,366,726
801	4,366,727

CLASS 75

0.5 R	4,367,091

CLASS 76

25 R	4,366,728

CLASS 81

3 R	4,366,729
9.5 A	4,366,730
57.3	4,366,731
128	4,366,732
	4,366,733

CLASS 82

2.5	4,366,734
44	4,366,735

CLASS 83

101	4,366,736
341	4,366,737

CLASS 84

1.01	4,366,738
1.03	4,366,739
298	4,366,740
478	4,366,741

CLASS 91

49	4,366,742
363 R	4,366,743
369 A	4,366,744
372	4,366,745
467	4,366,746

CLASS 92

72	4,366,747

CLASS 98

40 D	4,366,748

CLASS 99

339	4,366,749
421 V	4,366,750

CLASS 100

80	4,366,751
162 R	4,366,752

CLASS 101

181	4,366,753
208	4,366,754
329	4,366,755

CLASS 104

244.1	4,366,756

CLASS 105

248	4,366,757

CLASS 106

3	4,367,092
87	4,367,093
89	Re.31,118
90	4,367,094
100	4,367,095
	4,367,096
901	4,367,097

CLASS 108

64	4,366,758

CLASS 110

225	4,366,759

CLASS 111

85	4,366,760

CLASS 112

79 A	4,366,761
80	4,366,762
98	4,366,763
121.27	4,366,764
429	4,366,765

CLASS 114

125	4,366,766
144 E	4,366,768
144 R	4,366,767
352	4,366,769

CLASS 118

405	4,366,770
415	4,366,771

CLASS 119

14.01	4,366,772
16	4,366,773
17	4,366,774
20	4,366,775
98	4,366,776
156	4,366,777

CLASS 122

17	4,366,778
26	4,366,779

CLASS 123

1 A	4,366,780
3	4,366,781
	4,366,782
41.12	4,366,783
45 A	4,366,784
90.51	4,366,785
179 F	4,366,786
188 M	4,366,787
198 F	4,366,788
263	4,366,789
325	4,366,790
327	4,366,791
425	4,366,792
436	4,366,793
479	4,366,794
502	4,366,795
	4,366,796
523	4,366,797
549	4,366,798
568	4,366,799
609	4,366,800
620	4,366,801

CLASS 126

110 R	4,366,802
247	4,366,803
263	4,366,804
285 R	4,366,805
415	4,366,806
434	4,366,807
450	4,366,808

CLASS 128

1 R	4,366,809
6	4,366,810
9	4,366,811
77	4,366,812
80 C	4,366,813
156	4,366,814
164	4,366,815
213 A	4,366,816
295	4,366,818
334 C	4,366,819
659	4,366,820
719	4,366,821
753	4,366,822

CLASS 131

291	4,366,823
	4,366,824
296	4,366,825
336	4,366,826

CLASS 132

7	4,366,827
75.6	4,366,828
83 R	4,366,829

CLASS 134

1	4,367,098

CLASS 136

244	4,367,365
246	4,367,366
247	4,367,367
255	4,367,368
263	4,367,369

CLASS 137

75	4,366,830
103	4,366,831
244	4,366,832
334	4,366,833
489.3	4,366,834
495	4,366,835
550	4,366,836
557	4,366,837
615	4,366,838
625.11	4,366,839
894	4,366,840

CLASS 138

109	4,366,841
	4,366,842

CLASS 139

91	4,366,843
435	4,366,845

CLASS 141

1	4,366,846

CLASS 144

193 A	4,366,848
193 R	4,366,847

CLASS 148

6.2	4,367,099
113	4,367,100
	4,367,101
133	4,367,102

CLASS 149

7	4,367,103
	4,367,104

CLASS 152

221	4,366,849
222	4,366,850
356 R	4,366,851

CLASS 156

79	4,367,105
102	4,367,106
	4,367,107
104	4,367,108
113	4,367,109
219	4,367,110
221	4,367,111
244.23	4,367,112
327	4,367,113
345	4,367,114
358	4,367,115
366	4,367,116
443	4,367,117
497	4,367,118
643	4,367,119

CLASS 160

320	4,366,852

CLASS 162

281	4,367,120

CLASS 165

1	4,366,853
74	4,366,854
95	4,366,855
104.17	4,366,856
104.23	4,366,857
104.32	4,366,858
184	4,366,859

CLASS 166

59	4,366,860
105.5	4,366,861
106	4,366,862
245	4,366,863
259	4,366,864

CLASS 169

13	4,366,865
37	4,366,866

CLASS 172

776	4,366,867

CLASS 173

105	4,366,868
109	4,366,869
131	4,366,870
163	4,366,871

CLASS 174

48	4,367,370
52 R	4,367,371
128 S	4,367,372

CLASS 177

1	4,366,872
25	4,366,873
	4,366,874
210 C	4,366,875
	4,366,876

CLASS 178

18	4,367,373

CLASS 179

2 C	4,367,374
81 R	4,367,375
84 T	4,367,376
115.5 H	4,367,377
156 R	4,367,378

CLASS 180

53 R	4,366,877
54 A	4,366,878
89.15	4,366,879
219	4,366,880
271	4,366,881

CLASS 181

30	4,366,882

CLASS 187

9 R	4,366,883

CLASS 188

71.3	4,366,884
377	4,366,885

CLASS 190

44	4,366,886

CLASS 192

0.092	4,366,889
0.096	4,366,890
48.1	4,366,887
89 B	4,366,888
99 S	4,366,891
	4,366,893

CLASS 193

35 R	4,366,894

CLASS 198

347	4,366,895
384	4,366,896
502	4,366,897
692	4,366,898
781	4,366,899
855	4,366,900

CLASS 200

5 R	4,367,379
	4,367,380
48 A	4,367,381
144 B	4,367,382
153 J	4,367,383
159 B	4,367,384
	4,367,385
333	4,367,386

CLASS 203

2	4,367,121

CLASS 204

15	4,367,122
	4,367,123
17	4,367,124
28	4,367,125
98	4,367,126
105 R	4,367,127
108	4,367,128
129.55	4,367,129
157.1 R	4,367,131
157.1 S	4,367,130
180 R	4,367,132
195 P	4,367,133
253	4,367,134

CLASS 206

210	4,366,901
320	4,366,902
387	4,366,903
425	4,366,904
511	4,366,905

CLASS 208

108	4,367,135
120	4,367,136
139	4,367,137

CLASS 209

224	4,367,138

CLASS 210

110	4,367,140
145	4,367,141
163	4,367,142
222	4,367,143
234	4,367,144
241	4,367,145
321.3	4,367,139
608	4,367,146
636	4,367,147
703	4,367,148
753	4,367,149
777	4,367,150

CLASS 211

59.1	4,366,906
60 R	4,366,907
87	4,366,908
116	4,366,909
191	4,366,910

CLASS 213

100 R	4,366,911

CLASS 215

247	4,366,912
329	4,366,913

CLASS 219

10.55 B	4,367,387
	4,367,388
69 G	4,367,400
69 M	4,367,389
	4,367,391
69 W	4,367,390
	4,367,392
121 PM	4,367,393
146.24	4,367,394
216	4,367,395
233	4,367,396
234	4,367,397
497	4,367,399
541	4,367,398

CLASS 220

287	4,366,914
339	4,366,915
404	4,366,916
442	4,366,917

CLASS 222

134	4,366,918
137	4,366,919
145	4,366,920
153	4,366,921

CLASS 224

32 R	4,366,922
42.24	4,366,923

CLASS 227

155	4,366,924

CLASS 228

20	4,366,925

CLASS 235

92 DN	4,367,401
385	4,367,402

CLASS 239

542	4,366,926

CLASS 241

4	4,366,927
30	4,366,928
85	4,366,929
169	4,366,930
186 R	4,366,931

CLASS 242

58.6	4,366,932
86.1	4,366,933
107.4 A	4,366,934
159	4,366,935

CLASS 244

2	4,366,936

CLASS 248

61	4,366,938
68 R	4,366,939
231	4,366,937
542	4,366,940

CLASS 249

120	4,366,941
210	4,366,942

CLASS 250

203 R	4,367,403
207	4,367,404
223 B	4,367,405
305	4,367,406
329	4,367,407
338	4,367,408
385	4,367,409
431	4,367,410
492.2	4,367,411
492.3	4,367,412

CLASS 251

30	4,366,943
141	4,366,944
149.6	4,366,945
159	4,366,946
206	4,366,947

CLASS 252

8.8	4,367,151
47.5	4,367,152
62.55	4,367,153
78.3	4,367,154
99	4,367,155
102	4,367,156
106	4,367,157
174.11	4,367,158
182.1	4,367,159
373	4,367,160
429 B	4,367,161
443	4,367,162
455 R	4,367,163
457	4,367,164
	4,367,165
462	4,367,166
472	4,367,167
511	4,367,168
542	4,367,169
586	4,367,170

CLASS 254

126	4,366,948

CLASS 256

1	4,366,949

CLASS 260

153	4,367,172
154	4,367,173
156	4,367,174
245.3	4,367,175
397.2	4,367,177
403	4,367,178
465.4	4,367,179
978	4,367,180

CLASS 261

70	4,367,181
124	4,367,182
159	4,367,183

CLASS 264

0.5	4,367,184
22	4,367,185
	4,367,186
37	4,367,187
104	4,367,188
137	4,367,189
174	4,367,190
187	4,367,191
255	4,367,192

CLASS 266

49	4,366,950
204	4,366,951
266	4,366,952
	4,366,953

CLASS 269

289 R	4,366,954

CLASS 271

7	4,366,955

CLASS 272

70	4,366,956

CLASS 273

1 GF	4,366,957
73 A	4,366,958
73 D	4,366,959
85 G	4,366,960
155	4,366,961
360	4,366,962

CLASS 280

12 B	4,366,963
242 WC	4,366,964
421	4,366,965
432	4,366,966
504	4,366,967
605	4,366,968
668	4,366,969

CLASS 285

45	4,366,970
55	4,366,971
	4,366,972
276	4,366,973

CLASS 290

52	4,367,413

CLASS 292

336.3	4,366,974
340	4,366,975

CLASS 293

134	4,366,976

CLASS 296

24 R	4,366,977
68	4,366,978
160	4,366,979

CLASS 297

239	4,366,980
328	4,366,981
362	4,366,982
	4,366,983
379	4,366,984
409	4,366,985

CLASS 299

2	4,366,986
	4,366,987
14	4,366,988
34	4,366,989
	4,366,990
39	4,366,991

CLASS 301

37 P	4,366,992

CLASS 307

38	4,367,414
106	4,367,415
132 R	4,367,416
147	4,367,417
252 R	4,367,418
254	4,367,419
453	4,367,420
570	4,367,421
597	4,367,422
	4,367,423

CLASS 308

9	4,366,993
26	4,366,994
	4,366,995
187	4,366,996

CLASS 310

82	4,367,424
260	4,367,425
358	4,367,426

CLASS 312

204	4,366,997
235 R	4,366,998
237	4,366,999
249	4,367,000

CLASS 313

210	4,367,427
222	4,367,428
362.1	4,367,429
405	4,367,430

CLASS 315

38	4,367,431
49	4,367,432
	4,367,433
51	4,367,434

CLASS 318

313	4,367,435
628	4,367,436

CLASS 323

349	4,367,437

CLASS 324

57 R	4,367,438
330	4,367,439
445	4,367,440

CLASS 328

162	4,367,441

CLASS 330

149	4,367,442
207 P	4,367,443

CLASS 332

19	4,367,444

CLASS 333

127	4,367,445
135	4,367,446

CLASS 335

80	4,367,447
201	4,367,448
229	4,367,449

CLASS 336

200	4,367,450

CLASS 337

160	4,367,451
362	4,367,452

CLASS 339

31 R	4,367,001
90 R	4,367,002
91 R	4,367,003
97 R	4,367,004
107	4,367,005
176 MF	4,367,006
210 M	4,367,007
230 R	4,367,008

CLASS 340

23	4,367,453
63	4,367,454
310 A	4,367,455
347 AD	4,367,457
347 C	4,367,456
539	4,367,458
541	4,367,459
550	4,367,460
573	4,367,461
620	4,367,462
700	4,367,463
701	4,367,464
707	4,367,465
725	4,367,466
765	4,367,467
768	4,367,468
785	4,367,469
825.77	4,367,470
825.82	4,367,471

CLASS 343

7 A	4,367,472
14	4,367,473
700 MS	4,367,474
767	4,367,475

CLASS 346

1.1	4,367,476
33 WL	4,367,477
140 A	4,367,481
140 R	4,367,478
	4,367,479
	4,367,480
	4,367,482

CLASS 350

6.5	4,367,009
96.20	4,367,011
96.34	4,367,012
	4,367,013
320	4,367,014
429	4,367,015
452	4,367,016
486	4,367,017
563	4,367,010

CLASS 351

211	4,367,019
213	4,367,018

CLASS 353

120	4,367,020
121	4,367,021

CLASS 354

24	4,367,022
33	4,367,023
62	4,367,024
145	4,367,025
173	4,367,026
195	4,367,027
288	4,367,028
298	4,367,029
322	4,367,030

CLASS 355

3 BE	4,367,031
3 TR	4,367,032
5	4,367,033
8	4,367,034
10	4,367,035
14 FU	4,367,037
14 R	4,367,036
70	4,367,038
91	4,367,039

CLASS 356

44	4,367,040
72	4,367,041
315	4,367,042
338	4,367,043
357	4,367,044
394	4,367,045
400	4,367,046
431	4,367,047

CLASS 357

19	4,367,483

CLASS 358

22	4,367,484
86	4,367,485
88	4,367,486
107	4,367,487
147	4,367,488
167	4,367,489
	4,367,490
188	4,367,491
213	4,367,492
293	4,367,493

CLASS 360

22	4,367,494
39	4,367,495
45	4,367,496
48	4,367,497
72.1	4,367,498
72.2	4,367,499
74.2	4,367,500
96.3	4,367,501
98	4,367,502
	4,367,503
109	4,367,504
121	4,367,505

CLASS 361

31	4,367,506
43	4,367,507
58	4,367,508
91	4,367,509
160	4,367,510
313	4,367,511
334	4,367,512
428	4,367,513

CLASS 362

62	4,367,514
103	4,367,515
111	4,367,516
146	4,367,517
224	4,367,518
268	4,367,519

CLASS 363

41	4,367,520
126	Re.31,119
136	4,367,521
137	4,367,522
141	4,367,523

CLASS 364

200	4,367,524
	4,367,525
411	4,367,526
413	4,367,527
424.1	4,367,528
426	4,367,529
431.06	4,367,530
431.08	4,367,531
513	4,367,532
519	4,367,533
561	4,367,534
736	4,367,535
745	4,367,536
900	4,367,537

CLASS 365

109	4,367,538
189	4,367,539
207	4,367,540

CLASS 366

137	4,367,048

CLASS 367

34	4,367,541
48	4,367,542

CLASS 368

76	4,367,049
80	4,367,050
111	4,367,051

CLASS 369

45	4,367,543
136	4,367,544
213	4,367,545
271	4,367,546
	4,367,547

CLASS 370

3	4,367,548
91	4,367,549

CLASS 371

5	4,367,550

CLASS 372

2	4,367,551
23	4,367,552
55	4,367,553
61	4,367,554

CLASS 375

11	4,367,555

CLASS 376

133	4,367,193
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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority will change as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· Until Jan. 22, 1983, All cases	710.00
· After Jan. 22, 1983, All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,715,334, Re. S.N. 372,833, Filed Apr. 28, 1982, Cl. 528/15, PLATINUM-VINYL SILOXANES, Bruce D. Karstedt, Owner of Record: *General Electric Co., Waterford, N.Y.*, Attorney or Agent: Edward A. Hedman, et al., Ex. Gp.: 142

3,761,950, Re. S.N. 442,128, Filed Nov. 15, 1982, Cl. 346/68, X-Y PLOTTER, John O. Yeiser, Owner of Record: *Bausch & Lomb, Inc., Rochester, N.Y.*, Attorney or Agent: W. F. Hyer, Ex. Gp.: 211

3,937,283, Re. S.N. 420,987, Filed Sept. 21, 1982, Cl. 166/307, FORMATION FRACTURING WITH STABLE FOAM, Roland E. Blauer, et al., Owner of Record: *Scientific Software Corp., Denver, Colo.*, Attorney or Agent: Richard G. Waterman, Ex. Gp.: 356

4,223,966, Re. S.N. 421,440, Filed Sept. 22, 1982, Cl. 312/140, GLASS DISPLAY CASE, Albert C. Winters, Owner of Record: *Manhattan Store Interiors, Inc., Brooklyn, N.Y.*, Attorney or Agent: None, Ex. Gp.: 355

4,232,842, Re. S.N. 439,592, Filed Nov. 5, 1982, Cl. 242/212, FISHING REEL HAVING SUPPORT FOR A DEFLECTED SPOOL SHAFT, Hideo Noda, Owner of Record: *Shimano Industrial Co. Ltd., Osaka, Japan*, Attorney or Agent: Ellsworth H. Mosher, et al., Ex. Gp.: 245

4,245,521, Re. S.N. 425,329, Filed Sept. 28, 1982, Cl. 74/476, MANUAL TRANSMISSION SHIFTER FOR OPERATING A TRANSMISSION WITH ELONGATED ACTUATORS SUCH AS FLEXIBLE CABLES, Charles Osborn, Owner of Record: *JSJ Corp., Grand Haven, Mich.*, Attorney or Agent: Peter P. Price, et al., Ex. Gp.: 352

4,274,519, Re. S.N. 439,937, Filed Nov. 8, 1982, Cl. 192/3.28, LOCK-UP CLUTCH FOR A HYDRAUTIC UNIT, Shuzo Moroto, et al., Owner of Record: *Aisin-Warner K. K., Aichi, Japan*, Attorney or Agent: Thomas F. Moran, et al., Ex. Gp.: 352

4,296,116, Re. S.N. 438,827, Filed Nov. 3, 1982, Cl. 424/272, FUNGICIDAL AGENTS, PROCESSES FOR THEIR PREPARATION AND THEIR USE FOR COMBATING FUNGI, Helmut Kaspers, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 125

4,319,214, Re. S.N. 397,673, Filed July 12, 1982, Cl. 337/343, CREEPLESS, SNAP ACTION THERMOSTAT, Omar Givler, Owner of Record: *Portage Electric Products, Inc., North Canton, Ohio*, Attorney or Agent: Lloyd McAulay, et al., Ex. Gp.: 112

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue

Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Dec. 7, 1982

Copies of the Official Gazette dated Dec. 7, 1982 were not mailed until Dec. 14, 1982. Therefore, for marks published in the Official Gazette dated Dec. 7, 1982, Notices of Opposition filed by Jan. 13, 1983 will be considered timely.

MARGARET LAURENCE,
Dec. 16, 1982. *Assistant Commissioner for Trademarks.*

International Nonproprietary Names for Pharmaceutical Substances

The World Health Organization has published a list of proposed drug names which are being considered for International Nonproprietary Names. The Organization allows interested persons an opportunity to make comments or objections before International Nonproprietary Names are adopted.

A copy of the list of proposed names, which was published in the Oct. 1982, *WHO Chronicle*, may be obtained by writing or calling the Office of the Director of the Trademark Examining Operation, Box 5, Patent and Trademark Office, Washington, D.C. 20231, telephone (703) 557-3268. Comments or objections should be sent directly to the Pharmaceuticals Unit, World Health Organization, Ave. Appia, 1211 Geneva 27, Switzerland, not later than Feb. 28, 1983. Comments or objections should refer to the drug in question, cite the proposed name, and state clearly and in appropriate detail the comments or objections (legal, technical, scientific, or other). The individual or agency making the comments or objections should be identified.

MARGARET M. LAURENCE,
Dec. 13, 1982. *Assistant Commissioner for Trademarks.*

Errata

It is requested that the following errata be published in the Official Gazette at your convenience:

In the Official Gazette of Apr. 8, 1975 under TRADEMARK REGISTRATIONS RENEWED, on page TM 138, "607,923. 'POWER CUSHION.' Int. Cl. 6 (U.S. Cl. 23). 6-28-55." should be deleted and "607,923. 'POWER CUSHION.' Int. Cl. 7 (U.S. Cl. 23). 6-28-55." should be inserted.

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Official Gazettes of Oct. 26, 1982 and Nov. 16, 1982, were inadvertently issued:

TMOG Oct. 26, 1982	TMOG Nov. 16, 1982
1,214,232	1,216,774

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

HERBERT C. WAMSLEY,
Dec. 6, 1982. *Director, Trademark, Examining Operation.*

PATENT NOTICES

Certificates of Correction for the Week of Jan. 11, 1983

4,171,841
4,206,362
4,235,860
4,245,096
4,249,254
4,251,330
4,279,839
4,287,100
4,295,524
4,301,069
4,302,768
4,303,464
4,303,879
4,305,874
4,306,369
4,307,871
4,308,959
4,310,346
4,311,387
4,315,543
4,315,679
4,317,736
4,330,698
4,331,549
4,332,201
4,334,566
4,334,937
4,335,595
4,336,080
4,336,368
4,336,445
4,337,138
4,338,669
4,338,670
4,338,713
4,339,553
4,339,755
4,341,083
4,342,011
4,342,645
4,343,823
4,343,848
4,344,622
4,344,843
4,345,081
4,345,189
4,345,275
4,346,044
4,346,863
4,347,266
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4,350,612
4,350,660
4,351,191
4,351,524
4,351,875
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4,355,396
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4,355,457
4,356,012
4,356,223
4,356,244
4,356,269
4,357,090
4,357,170
4,357,698
4,357,763
4,357,789
4,358,553
4,359,466
4,359,496
4,359,990

Disclaimers

2,968,164.—*Alden W. Hanson,* Midland, Mich. METHOD OF GENERATING SNOW. Patent dated Jan. 17, 1961. Disclaimer filed May 19, 1982, by the inventor.

Hereby enters this disclaimer to claim 4 of said patent.

3,998,935.—*Ben E. Adams,* Hanford, Calif.; *John B. Sardisco,* Shreveport, La.; and *Erhart K. Drechsel,* Houston, Tex. MANUFACTURE OF POTASSIUM SULFATE. Patent dated Dec. 21, 1976. Disclaimer filed Nov. 24, 1982, by the assignee, *Pennzoil Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5 and 6 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries, except the Cleveland Public Library, offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 27, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-19-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	8-28-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-18-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-17-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-16-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	12-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-02-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-09-80

Expiration of patents: The patents within the range of numbers indicated below expire during November 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,214,767 to 3,221,338, inclusive
Plant Patents	Numbers 2,566 to 2,576 inclusive

REEXAMINATIONS

January 11, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,553,638 (39th)

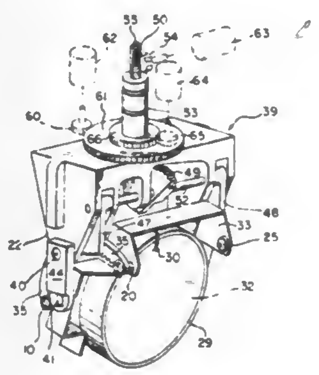
SONAR SCANNING MECHANISM

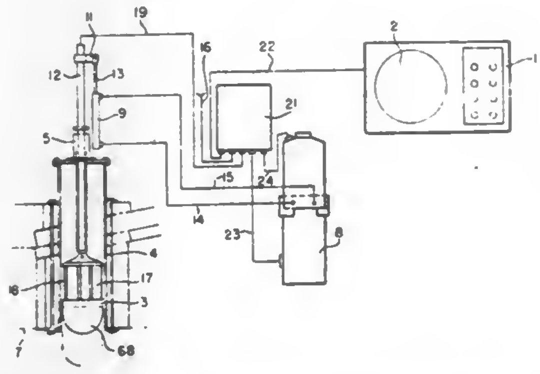
Kenneth L. Sublett, Seattle, Wash., assignor to Western Marine Electronics Company, Seattle, Wash.

Reexamination Request No. 90/000,025, Jul. 13, 1981.

Reexamination Certificate for Patent No. 3,553,638, issued Jan. 5, 1971, Ser. No. 841,188, Jan. 19, 1969.

U.S. Cl. 367/12 Int. Cl.^{3} G01S 7/52.





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 5–10 and 14 is confirmed.

Claims 11 and 13, having been finally determined to be unpatentable, are cancelled.

Claims 1–4 and 12 are determined to be patentable as amended:

1. A sonar system for installation in a marine vessel which comprises:

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

support means:

pendulum means having a longitudinal axis;

suspension means for pendulously suspending said pendulum means from said support means for gravity-determined orientation of the pendulum means so that its longitudinal axis is normally a substantially vertical axis;

mounting means journaled to said [support] *pendulum* means and mounting said transducer to said [support] *pendulum* means such that said [support means and] transducer [are] *is* independently pivotable *relative to said pendulum means* about a transverse axis *spaced below said suspension means and perpendicular to said longitudinal axis;*

vertical scan drive means operably coupled to said transducer to rotate said transducer about [a] *said* transverse axis for vertical scanning without [affecting the independent pivotability of said transducer and support means] *moving the longitudinal axis of the pendulum from a substantially vertical position;* [and]

horizontal scan drive means operably [coupled to] *interconnected with* said transducer to rotate said transducer about [a vertical] *said longitudinal* axis [perpendicular to said transverse axis] for horizontal scanning without [affecting the independent pivotability of said transducer and support means] *moving the longitudinal axis of the pendulum from a substantially vertical position; and*

a watertight housing independent of operation of said horizontal scan drive means and enclosing said transducer, support means, pendulum means, and suspension means.

2. The system of claim 1 wherein said [horizontal] *vertical* scan drive means includes:

a pinion gear journaled for rotation in said support means;

a ring gear rigidly connected to said transducer and in mesh with said pinion gear for [effecting] *affecting* variations in the angle of said transducer and sonar scanning beam in response to rotation of said pinion gear; and

pinion drive means to rotate said pinion gear.

3. The system of claim 2 wherein said support means includes a frame, *and said pendulum means includes* a support arm pivotally connected at one end to said frame on an axis coincident with the axis of rotation of said pinion gear and pivotally connected at the other end to said transducer on an axis coincident with the axis of rotation of said ring gear, the teeth of the ring and pinion gears meshed to allow rotation of the pinion gear relative to the ring gear.

4. The system of claim 3, further including [a housing enclosing the transducer frame;] a platform rigidly attached to said housing, said frame being rotatably supported from said platform for rotation about said vertical axis to permit 360° scanning of said transducer.

12. *A sonar system for installation in a marine vessel which comprises:*

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

support means;

mounting means journaled to said support means and mounting said transducer to said support means such that said support means and transducer are independently pivotable about a transverse axis;

vertical scan drive means operably coupled to said trans-

ducer to rotate said transducer about a transverse axis for vertical scanning without affecting the independent pivotability of said transducer and support means;

horizontal scan drive means operably coupled to said transducer to rotate said transducer about a vertical axis perpendicular to said transverse axis for horizontal scanning without affecting the independent pivotability of said transducer and support means;

an elevator well adapted for mounting within the hull of a ship adjacent the keel and open at the lower end;

a watertight housing enclosing said transducer and transducer drive means mounted within said elevator well;

a lift mechanism connected to said housing for raising and lowering the housing within the elevator well to advance said transducer to a scanning position below the keel of a ship and to retract the housing to a rest position within said well for protection of said transducer when not in use; and

[The system of claim 11 further including] guide members attached to said housing and abutting the inner walls of the elevator well to prevent lateral movement of the housing within the well and permit free flow of water past the housing as the housing is raised and lowered.

B1 4,255,962 (40th)

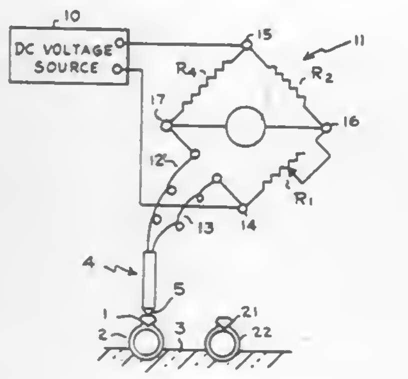
METHOD AND MEANS OF RAPIDLY DISTINGUISHING A SIMULATED DIAMOND FROM NATURAL DIAMOND

Leland E. Ashman, Belmont, Mass.; assignor to Ceres Corporation, Waltham, Mass.

Reexamination Request No. 90/000,083, Oct. 13, 1981.

Reexamination Certificate for Patent No. 4,255,962, issued Mar. 17, 1981, Ser. No. 885,502, Apr. 10, 1978.

U.S. Cl. 374/44 Int. Cl.³ G01N 25/18.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 11-18 is confirmed.

Claims 1 and 2 have been disclaimed.

Claims 3-10, 20-22 and 24-26, having been finally determined to be unpatentable, are cancelled.

Claims 19 and 23 are determined to be patentable as amended:

New claims 27-32 are added and determined to be patentable.

23. A method of distinguishing diamond gems from lower conductivity gems comprising the steps of:

providing a test probe having a small gem contacting tip, the tip comprising a small mass of high conductivity thermal contact material *having a small gem contacting surface* and small heat-flow and temperature-sensing means for subjecting the tip to heat flow and for sensing the temperature of the tip,

preheating the probe tip by applying electric power to the heat flow means in the tip;

positioning the tip of the probe against a gem and subjecting the gem to heat flow [relative to] *from the heat flow means in* the probe tip *while applying electric power to the heat flow means, the heat flow means being in sufficiently close thermal relationship with the small gem contacting surface of the probe tip that the heat flow means is thermally responsive to the test gem within a few seconds while power is applied thereto;*

sensing a temperature of the probe tip within a few seconds after subjecting the gem to said heat flow; and

providing an indication of the thermal conductivity of the gem based on the temperature of the probe tip;

the contact material providing an intimate thermal contact between the gem and the heat-flow and temperature sensing means, substantially all heat flow relative to the tip being through the high conductivity gem when contacted;

the contact area between the tip and gem and the thermal mass of the tip being sufficiently small that the difference in temperature of the probe tip, with and without heat flow relative to a contacted 0.5 carat diamond, is dominated by the conductivity of the diamond independent of the gem mounting; and

the thermal mass of the tip being sufficiently small that the temperature of the tip reaches near steady state relative to the temperature of the main body of a diamond gem within a few seconds of a change in heat flow between the tip and the gem.

B1 4,261,953 (41st)

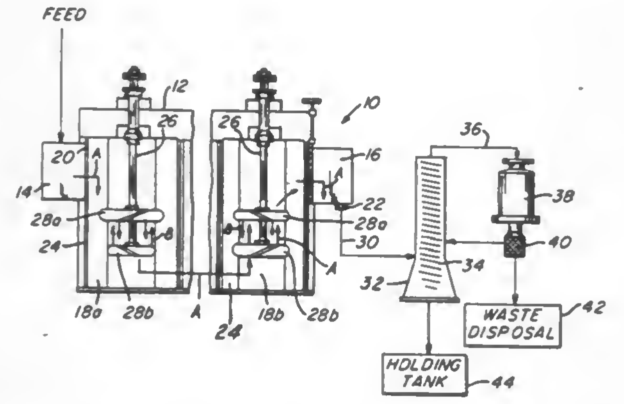
LIME SLAKING APPARATUS

Henry J. Gisler, Denver, Colo. assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Reexamination Request No. 90/000,122, Dec. 10, 1981.

Reexamination Certificate for Patent No. 4,261,953, issued Apr. 14, 1981, Ser. No. 16,260, Feb. 28, 1979.

U.S. Cl. 422/162 Int. Cl.³ C04B 1/08.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended:

Claims 2-9, dependent on amended claims, are determined to be patentable.

1. A lime slaking system for the hydration of lime, said system comprising: vessel means for containing a mass of material including at least one reaction chamber to contain such a mass of material during hydration of the lime content of such mass and an inlet for feeding such material into said reaction chamber and an outlet to permit withdrawal of product from said reaction chamber; agitator means, *including impellers,* associated with said vessel means and operable for agitating such mass of material contained in said reaction chamber; flow inducing means [associated] *integral* with said [agitator means] *impellers* and cooperable therewith to promote movement of such contained mass of material from said inlet toward said outlet; first comminution means integral with said [agitator means] *impellers* and concomitantly movable therewith for comminution of the lime particle content of such mass of material simultaneously with such agitating and such movement thereof in a manner to promote high intensity inter particle contacts between such lime particles in such mass for driving such hydration reaction at a reaction rate greater than the spontaneous hydration rate of such lime particles through a receding surface reaction mechanism to produce within said reaction chamber a product mass including a hydrated lime component and a residual component; processing means communicating with said outlet of said reaction chamber to receive such product from said reaction chamber for processing thereof; said processing means including classifying means for separating such product into such hydrated lime component and such residual component and second comminution means associated with said classifying means for comminution of such residual component and recycling of at least a portion of such residual component to said classifying means for additional processing thereof through said processing means.

Sublett, Kenneth L., to Western Marine Electronics Company. Sonar scanning mechanism. B1 3,553,638, Cl. 367—12.

Western Marine Electronics Company: *See—*
Sublett, Kenneth L. B1 3,553,638.

Gisler, Henry J., to Joy Manufacturing Company. Lime slaking apparatus. B1 4,261,953, Cl. 422—162.

Joy Manufacturing Company: *See—*
Gisler, Henry J. B1 4,261,953.

Ashman, Leland E., to Ceres Corporation. Method and means of rapidly distinguishing a simulated diamond from natural diamond. B1 4,255,962, Cl. 374—44.

Ceres Corporation: *See—*
Ashman, Leland E. B1 4,255,962.

REISSUES

JANUARY 11, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

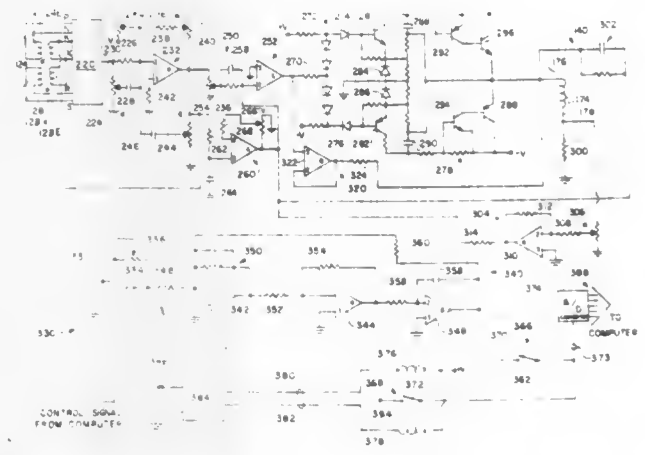
Re. 31,120
IMBALANCE DETERMINING APPARATUS AND METHOD

Thomas J. Bacsanyi, Novi, Mich.; Edward J. Harmon, deceased, late of Wixom, Mich. (by Patricia Harmon, joint personal representative), and by National Bank of Detroit, joint personal representative, Detroit, Mich., assignors to Ransburg Corporation, Indianapolis, Ind.

Original No. 4,060,003, dated Nov. 29, 1977, Ser. No. 733,433, Oct. 18, 1976. Application for reissue Aug. 13, 1979, Ser. No. 65,967

Int. Cl.^{3} G01M *1/08*

U.S. Cl. 73—483 **12 Claims**



18. A method for determining the amount and location of imbalance in an article having an axis about which it is to be balanced comprising the steps of positioning the article on an article receiving means with the axis at a predetermined location thereon, applying at least first and second forces to the article receiving means at at least first and second locations about the axis to bring the article reveiving means into a neutral orientation, and determining the amount and location of the force required to bring the article receiving means into neutral orientation, the determining step comprising the steps of generating outputs representative of the amount and location of each applied force and combining these force-representative outputs into an output representative of a composite force at a single location, *the first and second forces being applied to the article receiving means substantially 90° apart about the axis at substantially equal distances from the axis, the step of combining the force-representative outputs comprises the steps of squaring the magnitudes of the first and second force-representative outputs, summing the squares of the magnitudes, taking the square root of the sum, determining which of the first and second force-representative outputs is smaller, and dividing the smaller force-representative output by the square root of the sum.*

Re. 31,121
CONTROL DEVICE FOR PROSTHETIC URINARY SPHINCTER CUFF

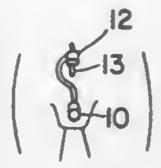
Robert H. Reinicke, Mission Viejo, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Original No. 4,167,952, dated Sep. 18, 1978, Ser. No. 884,864, Mar. 9, 1978. Application for reissue Aug. 8, 1980, Ser. No. 176,546

Int. Cl.^{3} F16K *17/18;* **A61B** *17/00;* **A61F** *1/00*

U.S. Cl. 137—493 **27 Claims**

1. A device useful with a prosthetic [urinary sphincter valve] *inflatable implant* for controlling flow of fluid from a reservoir to a receiver, said device comprising an envelope with a movable wall portion and which envelope is closed except for a first duct connectable to the reservoir and a second duct connectable to the receiver, a control unit in said envelope, said unit including a valve element and a ported seat member for controlling flow of fluid between said ducts, said seat member being spring pressed to a first position in which said valve element may be spring pressed into engagement *with* the seat member for closing the port therein, manually operable means for moving the seat member to a second position, means to prevent the valve element from seating on the seat member when the seat member is in said second position whereby the port in the seat member will be open, and said seat member having an effective area subject to pressure of fluid in said second duct and movable thereby to said second position.



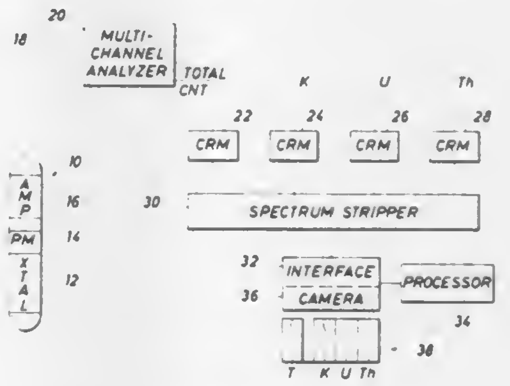
Re. 31,122
METHOD FOR ASCERTAINING OPTIMUM LOCATION FOR WELL STIMULATION AND/OR PERFORATION

Walter H. Fertl, Houston, and Donald B. Vaello, San Antonio, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Original No. 4,187,908, dated Feb. 12, 1980, Ser. No. 947,132, Sep. 29, 1978. Application for reissue Sep. 2, 1980, Ser. No. 183,139

Int. Cl.^{3} E21B *47/00, 47/05;* **G01V** *5/00*

U.S. Cl. 166—254 **10 Claims**



6. A method for determining the optimum location along the length of a borehole penetrating an earth formation for instituting well stimulation operations, comprising the steps of:

traversing the borehole penetrating the earth formation with a logging instrument having a gamma ray detector;

detecting natural gamma radiation occurring in the earth formation in the vicinity of the borehole and generating signal functionally and depth-point related to the energy and frequency of occurrence of such gamma radiation;

separating said signals into at least three energy regions corresponding to gamma radiation produced by the decay of the naturally occurring radioactive isotopes of potassium, uranium and thorium occurring in said earth formations at said related depth-point;

processing said separated signals for producing individual count signals each representative of radiation occurring in each of said at least three energy regions at said relative depth-point;

combining the count signals representative of at least one of such energy regions corresponding to gamma radiation produced *by the decay of the radioactive isotopes of potassium and thorium with said remaining energy region count signals corresponding to gamma radiation produced by the decay of the radioactive isotopes of uranium for deriving a differential signal; and*

comparing said differential with a preselected reference signal level for determining optimum stimulation locations and at said depth-point location as indicated by said differential signal exceeding said preselected reference signal.

Re. 31,123

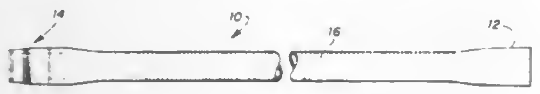
PIPE SECTION AND COUPLING

Billy P. Simmons, Mineral Wells, Tex., assignor to Centron Corporation, Mineral Wells, Tex.

Original No. 4,154,466, dated May 15, 1979, Ser. No. 756,186, Jan. 3, 1977. Application for reissue Jan. 14, 1980, Ser. No. 112,061

Int. Cl.^{3} F16L *15/00, 21/02*

U.S. Cl. 285—334 **26 Claims**



1. An oilfield flow line pipe section with connection means on the ends thereof for connecting a plurality of sections together in series, said section comprising:

a length of tubing, mating male and female threads formed on the tubing adjacent the ends thereon for use in connecting the sections together;

an annular seal supporting surface in said tubing on one end thereof;

a seal engaging surface in said tubing in the end opposite said seal supporting surface, said seal engaging surface having a frusto-conical shape; and

a compressible seal means mounted on said seal supporting surface of said tubing, said seal means being positioned on said tubing to be compressed between the seal engaging surface of one section and the seal supporting surface of another section when the two sections are connected together by the mating male and female threads, said seal means being of a size to provide effective sealing over a range of diametric clearances between the seal engaging surface of one section and the mating seal supporting surface of a connected section, and said seal engaging surface having an apex angle whose value is no greater than the angle θ and where θ is greater than 0° and less than 90° and where Tan θ equals the normal operational range of diametric clearance between the seal engaging and seal supporting surfaces for effective sealing divided by the lead of the male and female threads on the end of the tubing whereby interconnected sections can be relatively rotated at least one full turn while still providing a seal therebetween.

Re. 31,124

REINFORCED PLASTICS CARRIER FOR PRINTED CIRCUITS

Hendrik Jongetjes, Heenskerk, Netherlands, assignor to Koninklijke Paplerfabrieken Van Gelder Zonen N.V., Amsterdam, Netherlands

Original No. 3,937,865, dated Feb. 10, 1976, Ser. No. 436,669, Jan. 25, 1974. Continuation of Ser. No. 818,058, Jul. 22, 1977, abandoned, which is a continuation of Ser. No. 196,782, Nov. 8, 1971, abandoned. Application for reissue Dec. 14, 1978, Ser. No. 969,363

Claims priority, application Netherlands, Nov. 11, 1970, 7016489

Int. Cl.^{3} D21H *5/18*

U.S. Cl. 162—156 **6 Claims**

5. A non-woven glass fiber web characterized in that water in which the web has been kept for 24 hours at 20° C. has a conductivity of not more than 20 μS/cm which consists essentially of E-glass fibers having a thickness of 5–15μ and a length of 5–30 mm, and a binder; said web being made by the steps of:

(*a*) *forming a 0.005–0.05% suspension in water of said fibers and from 5–25%, based upon weight of the fibers, of said binder in swollen particulate form, said particulate binder being polyvinyl alcohol having a degree of hydrolization of 98–100%, a dry particle size of 50–180μ, a degree of swelling in water at 20° C. of 3–8, and having a viscosity, measured as a 4% solution in water at 20° C., of 20–100 cP;*

(*b*) *dewatering said suspension on a fiber web making machine to form a wet, non-woven glass fiber web;*

(c) *heating the wet web obtained in step* (*b*) *to a temperature sufficient to dissolve said swollen binder particles in their own swelling water; and then*

(*d*) *further heating the web of step* (*c*) *at a temperature sufficient to dry the web and to dehydrate and harden the polyvinyl alcohol binder.*

6. A process for making a non-woven glass fiber web characterized in that water in which the web has been kept for 24 hours at 20° C. has a conductivity of not more than 20 μS/cm, which comprises the steps of:

(*a*) *forming a 0.005–0.05% suspension in water of E-glass fibers of 5–15μ thickness and 5–30 mm length together with from 5–25%, based upon weight of the glass fibers, of particulate polyvinyl alcohol having a degree of hydrolization of 98–100%, a dry particle size of 50–180μ, a degree of swelling in water at 20° C. of 3–8, and having a viscosity measured as a 4% solution in water at 20° C., of 20–100 cP;*

(*b*) *dewatering said suspension on a fiber web making machine to form a wet, non-woven glass fiber web having swollen particulate binder retained therein;*

(c) heating the wet web of step (*b*) *to a temperature sufficient to dissolve said swollen binder particles in their own swelling water; and then*

(*d*) *further heating the web of step* (*c*) *at a temperature sufficient to dry the web and to dehydrate and harden the polyvinyl alcohol binder.*

PLANT PATENTS

GRANTED JANUARY 11, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,972

AFRICAN VIOLET NAMED AURORA

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Apr. 10, 1981, Ser. No. 252,836

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct African Violet plant, substantially as herein shown and described, characterized by its profuse production of deep purple flowers, each flower having its petals trimmed with a narrow edging of white.

4,973

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 10, 1981, Ser. No. 272,330

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name of Echo, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned anemone capitulum type; ivory white ray floret color; diameter across face of capitulum ranging from 70 to 75 mm. at maturity; uniform nine week flowering response; medium plant height, and upright branching pattern.

PATENTS

GRANTED JAN. 11, 1983

ERRATA

For CLASS	See PATENT NO.
604–043	4,367,740
241–283	4,367,855
419–051	4,368,074
156–051	4,368,214
365–205	4,368,529

PATENTS

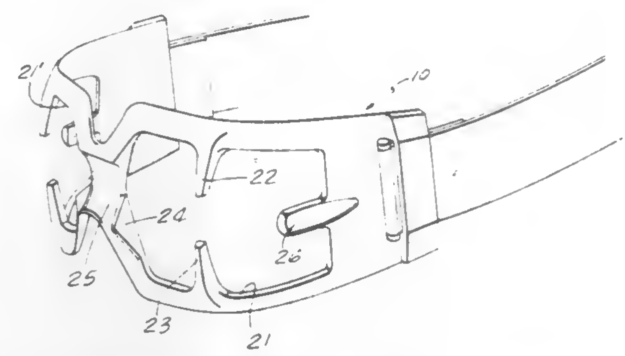
GRANTED JANUARY 11, 1983

GENERAL AND MECHANICAL

4,367,561

SAFETY SPORT GOGGLES

Ray L. Solari, 1670 Cordova St., Los Angeles, Calif. 90007
Filed Oct. 3, 1977, Ser. No. 838,809
Int. Cl.^{3} A61F *9/02*
U.S. Cl. 2—439 **1 Claim**



1. Sport safety goggles, comprising:

frame means for being worn on the face of a sport participant, including first frame parts contacting the nose and the temple regions of the wearer and second frame parts defining first and second openings located respectively opposite the eyes of the wearer;

first and second elongated members extending generally vertically from top and bottom portions of the second frame parts into the opening defined by said frame parts;

third and fourth elongated members affixed to the first frame temple region parts and extending generally horizontally into the respective first and second openings; and

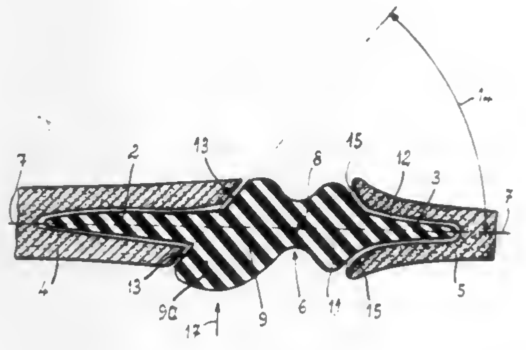
fifth and sixth elongated members affixed to the first frame parts contacting the nose and extending respectively into the first and second openings;

all portions of the members extending into said first and second openings being free of contact of each other and the frame parts other than those parts at which they are affixed to said frame parts.

4,367,562

JOINT PROSTHESIS

Georges Gauthier, 85, cours Albert-Thomas, Lyon (Rhone), France
Filed Jun. 16, 1981, Ser. No. 274,259
Claims priority, application France, Jun. 19, 1980, 80 13915
Int. Cl.^{3} A61F *1/04, 5/04*
U.S. Cl. 3—1.91 **6 Claims**

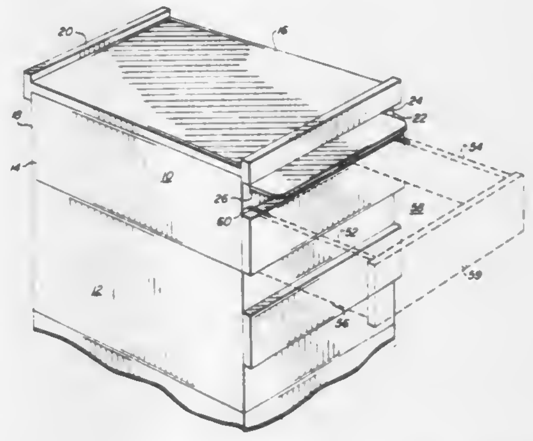


1. A joint prosthesis for the replacement of a joint between a proximal bone and a distal bone, said prosthesis comprising a unitary elongated body of a flexible, elastic and biocompatible material having a proximal projection receivable in said proximal bone, a distal projection receivable in said distal bone, and a body portion between said projections, said projections and said body being aligned along a common longitudinal axis in an elongate position of said prosthesis, said body portion being formed at an intermediate location therealong with a thin zone defining a transverse articulation axis substantially perpendicular to said longitudinal axis of said body and said projections, said body portion comprising a proximal rounded bulge between said thin zone and said proximal projection and a distal rounded bulge between said thin zone and said distal projection, said bulges being smooth, continuous and extending in all directions outwardly of said projections at the respective junctions of said projections with said bulges, said proximal projection having a greater volume than said distal projection.

4,367,563

COMBINATION BEE POLLEN TRAP AND HIVE CONTAINMENT APPARATUS

William M. Ferguson, P.O. Box 32; Gene R. Howard, Box AH, and Charles F. French, Box 313, all of Thatcher, Ariz. 85552
Continuation of Ser. No. 64,123, Aug. 6, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,024
Int. Cl.^{3} A01K *47/06*
U.S. Cl. 6—4 R **3 Claims**



1. A combination pollen trap and containment apparatus for attachment to a standard bee hive, said apparatus comprising:

(a) an attachment frame having opposite sides, a rear wall and a front wall defining an opening therein providing an entrance passageway to the hive, said frame being dimensioned to be positionable with a standard bee hive;

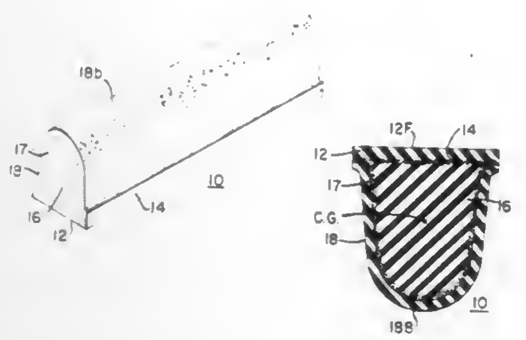
(b) pollen collection means defining apertures therein through which bees may pass and which are restricted to loosen pollen as the bees pass therethrough, said pollen collection means being selectively insertable in said entrance passageway to restrict the passage to cause the bees to pass through said apertures and being removable from said entrance passageway to permit unrestricted access to the associated hive, said apertures extending substantially from the entrance passageway rearward when said pollen collection means is inserted in said entrance passageway, and further including a deck portion extending exteriorly of said entrance in said inserted position;

(c) a pollen collection receptacle removably positioned in said frame and removable from the frame at one of said walls, said receptacle being positioned subjacent the said pollen collection means and substantially co-extensive with said apertures to collect and receive the pollen loosened from the bees when said pollen collection means is inserted in the entrance passage of said apparatus;

(d) containment means having openings therein which permit passage of air but prohibits passage bees therethrough, said containment means being detachably securable on said frame to confine the bees in the hive while permitting ventilation of the hive via the attachment frame.

4,367,564
SWEEPER BRISTLE AND METHOD OF MAKING

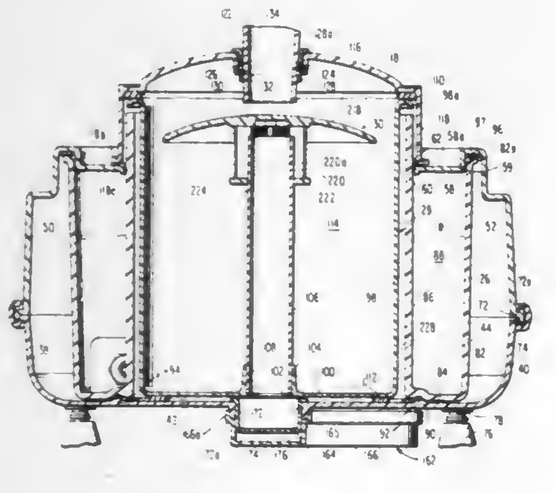
John D. Holley, 1872 Cherry St., Montgomery, Ala. 36107
Filed Apr. 14, 1981, Ser. No. 254,174
Int. Cl.³ A46D *1/04;* **A46B** *7/10*
U.S. Cl. 15—179 **19 Claims**



1. A roadbed cleaning solid reinforced elastomeric elongate bristle having at least a first elongate elastomeric member, a second elongate elastomeric member distinct from the first elongate elastomeric member and a first piece of reinforcing stranded material; and wherein said first elongate elastomeric member and second elongate elastomeric member are bonded together with said first piece of reinforcing stranded material therebetween, and said first piece of reinforcing stranded material is further from a bristle center of gravity axis than from the nearest external surface of the bristle, and wherein said first elongate elastomeric member includes a curved external surface extending between two noncontiguous boundary portions.

4,367,565
DOUBLE INSULATED WET/DRY VACUUM EXTRACTION MACHINE

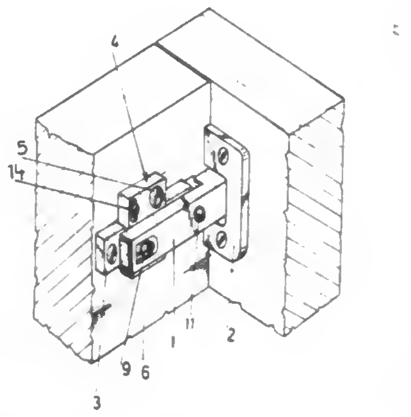
Carl Parise, Reno, Nev., assignor to Parise & Sons, Inc., Sparks, Nev.
Filed May 13, 1981, Ser. No. 263,382
Int. Cl.³ A47L *9/12, 9/18*
U.S. Cl. 15—321 **16 Claims**



1. An electrically double insulated wet/dry vacuum extraction machine comprising:
- an outer casing of electrical and thermal insulation material, said casing being generally rectangular in plan configuration and formed of longitudinally spaced vertical end walls, laterally spaced vertical sidewalls, a bottom wall and a top wall, an annular opening within said top wall,
- a double walled water tank formed of electrical and thermal insulation material mounted within said casing, said water tank comprising integrally inner and outer vertical walls and a bottom wall, said inner wall being of tubular form and centered within the opening wihtin the top wall of said outer casing,
- a removable tubular dump tank mounted coaxially within said tubular inner wall of said water tank,
- a dome overlying the opening within said outer casing top wall,
- means for locking said dome to said casing, in sealed contact with the top of the dump tank,
- means for mounting at least one filter bag assembly within the interior of said water tank inner wall upon removal of said dump tank such that application of vacuum pressure to said dump tank or to the interior of said at least one filter bag assembly permits machine operation selectively under wet and dry vacuum extraction modes, means for supplying vacuum pressure to the interior of said dump tank during said wet vacuum extraction mode, and to the interior of said inner wall of said water tank during said dry vacuum extraction mode, and
- elbow means carried by said dome and projecting therethrough for returning air, water and entrained dirt during wet vacuum extraction mode to the dump tank and air plus entrained dirt to said at least one filter bag assembly when operating under dry vacuum extraction mode.

4,367,566
MOUNTING PLATE FOR A FURNITURE HINGE

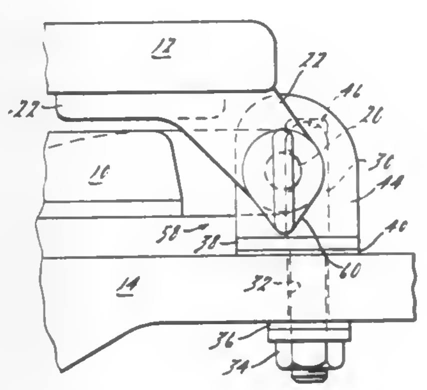
Erich Röck, and Herbert Blum, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Jun. 18, 1980, Ser. No. 160,738
Claims priority, application Austria, Jul. 2, 1979, 4601/79
Int. Cl.³ E05D *7/04*
U.S. Cl. 16—236 **4 Claims**



1. A multimember base plate assembly for mounting a hinge arm of a furniture hinge to a furniture side wall, said assembly comprising:
- a mounting plate adapted to be fastened to a furniture side wall;
- a carrier plate adjustably fastened to said mounting plate, said carrier plate including means for mounting thereon a hinge arm to extend along a longitudinal center axis;
- said mounting plate having first and second leg portions extending transversely of said center axis on opposite sides thereof, and said carrier plate having first and second wing portions extending transversely of said center axis on opposite sides thereof;
- first mounting means located on one side of said longitudinal center axis for attaching said first wing portion of said first leg portion, said first mounting means comprising longitudinal grooves formed in said first wing portion and longitudinal projections on said first leg portion, said projections extending into said grooves;
- second mounting means for attaching said second wing portion to said second leg portion on the opposite side of said longitudinal center axis, said second mounting means comprising a threaded hole in said second leg portion, an elongated slot in said second wing portion overlying said threaded hole, and a clamping screw extending through said slot and threaded into said threaded hole, whereby loosening of said clamping screw allows displacement of said carrier plate relative to said mounting plate in opposite directions; and
- said projections extending from said first leg portion in directions transverse to the direction of elongation of said slot.

4,367,567
DETACHABLE HINGE ASSEMBLY

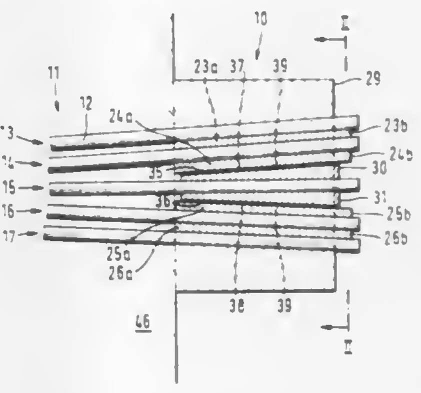
Jack J. Sendoykas, 23510 Denton - Apt. 227T, Mt. Clemens, Mich. 48043
Filed May 13, 1981, Ser. No. 263,113
Int. Cl.³ E05D *7/10;* **A47K** *13/12*
U.S. Cl. 16—263 **3 Claims**



1. A quickly releasable hinge assembly for a conventional toilet seat and a conventional toilet seat cover having mounting portions provided with normally aligned pivot openings, said hinge assembly comprising:
- a pair of studs adapted to be mounted in upstanding relation on and detachably fastened to a conventional toilet bowl in laterally spaced mounting holes with which such bowls are conventionally provided;
- a pair of blocks adapted to interfit with the mounting portions of said toilet seat and said toilet seat cover and having pivot openings therein alignable with the pivot openings in the mounting portions of said seat and of said cover;
- a single elongate hinge pin extending through and rotatable in the pivot openings of said blocks and adapted to extend into and to turn in the pivot openings in the mounting portions of both said seat and of said cover,
- said blocks having sockets adapted to accept said studs,
- said sockets being disposed transversely of and intersecting the pivot openings in said blocks and the portions of said hinge pin in said openings,
- the mentioned portions of said hinge pin having transverse recesses,
- said recesses being disposed in a first rotative position of said pin to face toward said sockets and in a second rotative position of said pin to face away from said sockets,
- said recesses in said first rotative position complementing said sockets to permit said studs to penetrate said sockets past said pin, and
- said studs having transverse slots disposed to accept the mentioned portions of said hinge pin when said studs are fully inserted into said sockets and the pin is turned to said second rotative position to face said recesses away from said sockets, and
- a readily accessible, manually operable handle fixed to said pin for turning the same between said first and second positions,
- whereby said pin is interlocked with said studs in the second rotative position of said pin to fasten said seat and said cover to said bowl in all rotative positions of said seat and said cover on said bowl,
- whereby said hinge pin is disengageable from said studs in the first rotative position of the pin to permit ready removal of said seat and said cover simultaneously from said bowl, and
- whereby both said seat and said cover can be simultaneously affixed to or removed from said bowl by a single manual manipulation of said handle from a conveniently located position with respect to said seat and said cover.

4,367,568
ANCHORAGE DEVICES FOR A TENSION WIRE BUNDLE OF TENSION WIRES

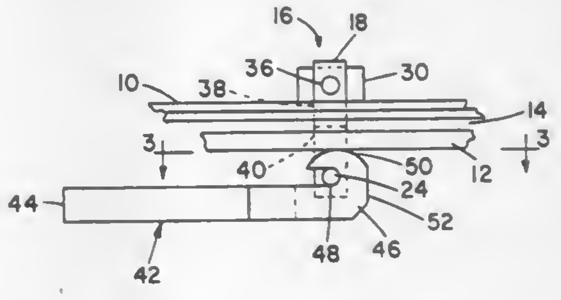
Martin Weiser, Cologne, Fed. Rep. of Germany, assignor to Strabag Bau-AG, Cologne, Fed. Rep. of Germany
Filed May 20, 1981, Ser. No. 265,354
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019978; May 8, 1981, 3118220
Int. Cl.³ E04C *5/12;* **F16G** *11/00*
U.S. Cl. 24—122.6 **19 Claims**



1. An anchorage device for a tension wire bundle of tension wires which are arranged in a plurality of tension wire layers between clamping surfaces, said anchorage device including: a rectangular frame defining an aperture; a plurality of non-slidable clamping plates arranged within the aperture; first clamping surfaces arranged between respective clamping plates and the frame for clamping n-1 of the tension wire layers; a pair of slidable clamping wedges arranged within the aperture centrally with respect to the clamping plates; second clamping surfaces between the clamping wedges for clamping the other tension wire layers; and sliding surfaces located on the clamping wedges and adjacent clamping plates.

4,367,569
CAM LOCKING PIN

Samuel R. Harmon, Clinton, Iowa, assignor to Bee Line Company, Bettendorf, Iowa
Filed Jul. 13, 1981, Ser. No. 282,676
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—211 P **1 Claim**



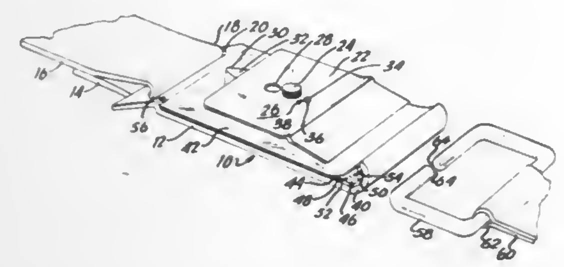
1. A clamping device, comprising: a pin-like element of cylindrical section having first and second ends, said first end including a pair of lugs projecting radially from the opposite sides of the element and said second end including a diametrical slot therein opening axially of the element and providing a pair of diametrically spaced apart legs rigid with the element and lying within the cylindrical surface of the element, a pawl received in the slot and having a long dimension greater than the diameter of the element, a short dimension at least not

substantially exceeding the element diameter and a thickness commensurate with the transverse dimension of the slot so that the combined thickness of the legs and pawl does not exceed the diameter of the element, pivot means crosswise of the legs and recess and mounting the pawl on the legs for selective angular positioning about said pivot means between a first position in which the pawl lies with its long dimension crosswise of the element and projects diametrically beyond both sides of the element and a second position 90° from the first position in which the long dimension of the pawl extends lengthwise of the element, said recess being of such depth as to accommodate at least part of the pawl in its second position, and a force-applying tool having a pair of hooks spaced apart to straddle the element and removably engageable respectively with the lugs for exerting a force axially of the element and between the lugs and the pawl member in its first position, each of said hooks including a wedging portion of increasing dimension in the direction of the pawl, and said tool further including handle means for manual rocking of the tool about the lugs.

4,367,570

AUTOMATICALLY DISENGAGABLE SAFETY BUCKLE ASSEMBLY

Andrew L. Barbal, 147-29 16th Rd., Whitestone, N.Y. 11357
Filed Aug. 3, 1981, Ser. No. 289,247
Int. Cl.³ A43C *11/08*
U.S. Cl. 24—230 R **9 Claims**

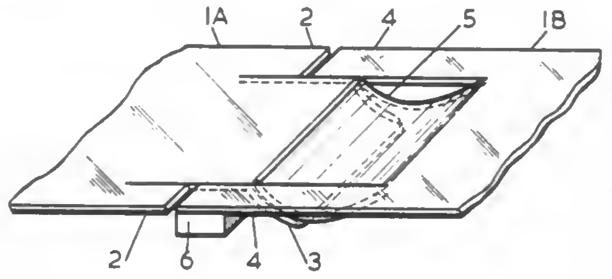


1. An automatically disengagable safety buckle apparatus comprising a plate, one end of said plate having a hook-like shape, the other end of said plate being secured to one end of a first flexible strap, a rod-like element, said rod-like element having a pair of free ends, said pair of free ends being disposed in opposite directions, said pair of free ends each having generally a rounded shape, a second flexible strap, said second flexible strap being secured to said rod-like element, a first resilient spring-like member, said first resilient spring-like member being disposed secured to a first lateral surface of said plate, said first lateral surface of said plate being co-extensive with the concave portions of said hook-like end, said first resilient spring-like member having one end thereof extending upwardly and outwardly from said lateral surface of said plate and residing adjacent said hook-like end, at least one retaining sheet, said retaining sheet being disposed fixedly secured at least along a portion thereof to said plate, said at least one retaining sheet being disposed spaced outwardly from a lateral surface of said first spring-like member, and said lateral surface of said plate, said at least one retaining sheet having one end thereof disposed a greater distance from said first resilient spring-like member than the other end thereof, means to slidably engage said pair of free ends of said rod-like element along at least a portion of said first resilient spring-like member and said at least one retaining sheet, at least one bar, said at least one bar being disposed intermediate said at least one retaining sheet and said first resilient spring-like member, means to releasably restrain the free travel of said pair of free ends of said rod-like member along the length of said at least one bar and at one point along the length thereof.

4,367,571

ADJUSTABLE CLAMP FOR FASTENING AROUND A TUBULAR OR LIKE OBJECT

Graeme K. Speirs, and Anthony D. Cameron, both of Aberdeen, Scotland, assignors to Webco Industrial Rubber Limited, Aberdeen, Scotland
Filed Mar. 7, 1980, Ser. No. 128,356
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—249 R **4 Claims**

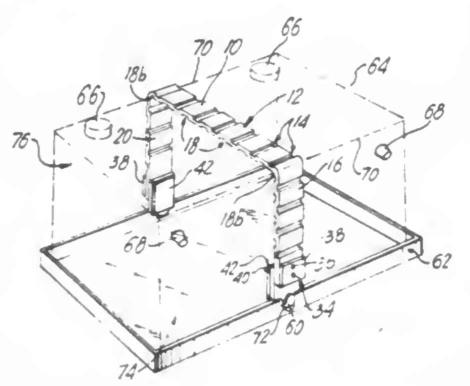


1. A clamp for fitting around a tubular or bar-like object comprising a strip of flexible material one end of which is formed with a number of sets of three parallel tongues projecting longitudinally of the strip and the other end of which is formed with an equal number of sets of three separate parallel tongues also projecting longitudinally of the strip, each set of tongues at said one end consisting of a short tongue flanked by two long tongues which project beyond the short tongue and each set of tongues at said other end consisting of a long tongue flanked by two short tongues and a rigid bar bridging at their tips the two long tongues of each set of two long tongues flanking a short tongue, the rigid bar being located beyond the tip of the short tongue and being fixed to the two long tongues only, each long tongue at said one end of the strip being in line with a short tongue at said other end of the strip and being narrower than the distance between the long tongues flanking the short tongue.

4,367,572

ELASTIC CLAMPING APPARATUS

Anthony L. Zielenski, 63-42 83rd St., Middle Village, N.Y. 11379
Filed Jun. 19, 1980, Ser. No. 161,194
Int. Cl.³ F16F *1/36*
U.S. Cl. 24—301 **10 Claims**

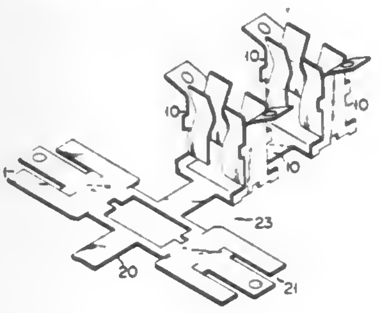


1. An elastic clamping apparatus comprising an elongated resilient member, said elongated member having a lateral surface thereof including a plurality of spaced apart notches, said spaced apart notches extending transverse to the longitudinal axis of said extensible member, an elongated fabric-like reinforcement member, said fabric-like reinforcement member being disposed having a saw-tooth configuration entirely within said extensible member, said fabric-like member residing in a saw-tooth course imbedded within said extensible member and extending substantially along said longitudinal axis of said extensible member, said extensible member having a pair of free ends, said free ends of said fabric-like member secured to said pair of free ends of said elongated resilient member, each of said free ends having means to removeably secure said each of said free ends to a supporting structure, means to change the amplitude of said saw-tooth configuration when said free ends are forceably displaced away from each other.

4,367,573

METHOD FOR MANUFACTURING A BASELESS INCANDESCENT LAMP ASSEMBLY

Masaharu Baba, Yokohama; Kiyokazu Honda, Zushi, and Akiyoshi Hashima, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 4, 1980, Ser. No. 213,079
Claims priority, application Japan, Dec. 20, 1979, 54-165987
Int. Cl.³ H01R *33/06;* H01K *3/08*
U.S. Cl. 29—25.13 **7 Claims**



1. A method for manufacturing a baseless incandescent lamp assembly comprising a baseless incandescent lamp having a flattened seal section and external lead wires led outward from said flattened seal section; a main socket body having a lamp holding chamber to contain the flattened seal section of said baseless incandescent lamp; and a pair of conductive holding members disposed inside the lamp holding chamber of said main socket body to hold the flattened seal section of said baseless incandescent lamp and electrically connected with said external lead wires, said method comprising:

a step for molding a conductive plate material into a continuous holding member chain including a number of facing pairs of holding members on both sides of a belt-like coupling section;

a holding step for causing the flattened seal section of said baseless incandescent lamp to be held between said pair of holding members;

a step for cutting off said paired holding members from said coupling section while keeping the flattened seal section of the baseless incandescent lamp between said holding members; and

a step for inserting said holding members holding the flattened seal section of said baseless incandescent lamp therebetween into the lamp holding chamber of said main socket body, thereby fixing said holding members to said main socket body.

4,367,574

FLUORESCENT TUBE HOLDER

Masatoshi Hayakawa, Nagoya; Koei Ogi, Komaki, and Michio Takahara, Iwakura, all of Japan, assignors to CKD Corporation, Komaki, Japan
Filed Aug. 14, 1980, Ser. No. 178,110
Claims priority, application Japan, Jan. 10, 1980, 55-1702
Int. Cl.³ H01J *9/06*
U.S. Cl. 29—25.19 **7 Claims**

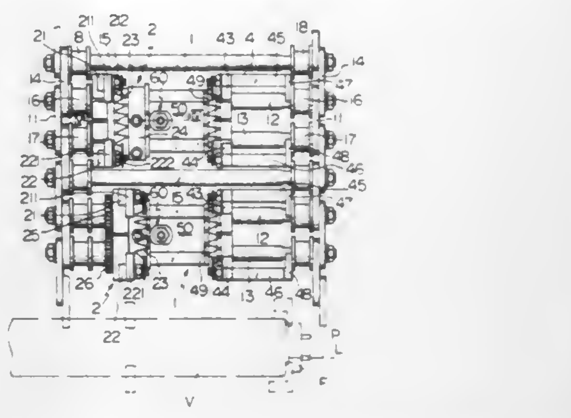
1. A fluorescent tube holder, comprising:

a fluorescent tube holding chuck having a first pair of releasable claws for holding a fluorescent tube in a longitudinally extending direction;

a base holding chuck having a second pair of releasable claws for holding a base for the fluorescent tube on the outer periphery thereof, said base holding chuck being movable in said longitudinally extending direction toward and away from an end of the fluorescent tube;

said fluorescent tube holding chuck and said base holding chuck being advanceable in a first direction; and

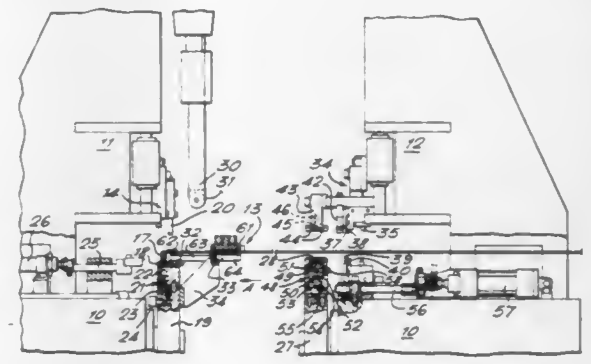
means, including a body pivotally receiving said base holding chuck, a roller rotatably mounted on said body, and a cam provided along said first direction and engaging said roller, for moving said base holding chuck in said longitudinally extending direction toward and away from said end of the fluorescent tube during advancement of said fluorescent tube holding chuck and said base holding chuck in said first direction.



4,367,575

DEVICE FOR SIMULTANEOUS CONNECTION OF A SERIES OF CABLES TO CORRESPONDING CONTACTS

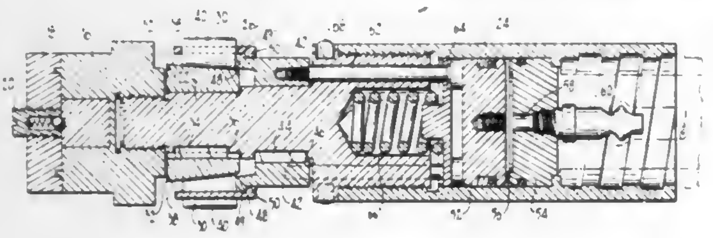
Peter Forster, Egelsbach; Werner Heidotting, Muenster, both of Fed. Rep. of Germany; Wilhelm Janosi, Vienna, Austria, and Georg Kampfmann, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 14, 1980, Ser. No. 167,862
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1979, 2928704
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—33 M **5 Claims**



1. Apparatus for terminating individual wires of a series of wire simultaneously in respective contacts arranged in a row in an electrical connector which apparatus comprises a terminating station comprising a connector support and a ram mounted to reciprocate relative to the support to drive wires into wire-receiving parts of respective contacts of the connector when mounted on the support, and a wire holding head mounted to reciprocate between the terminating station and a wire supply to feed a series of wires from the supply to a location spaced from, and between, the connector and the ram, the wire holding head comprising a wire clamp and a wire guide pivotally mounted on the clamp to extend towards the terminating station, and having a series of wire-receiving passageways retaining wires when held in the clamp, in predetermined, laterally spaced, parallel coplanar relation, an abutment being mounted on the ram arranged to engage the wire guide during a terminating stroke to pivot the guide towards the connector

support to guide leading ends of the wires to wire connecting parts of respective contacts in the connector.

4,367,576
SKIVING AND ROLLER BURNISHING TOOL
Lawrence C. Dickinson, 2255 Eva Adams, Reno, Nev. 89504
Filed Sep. 2, 1980, Ser. No. 183,664
Int. Cl.³ B24B *39/00, 39/02*
U.S. Cl. 29—90 R **9 Claims**



1. A skiving and roller burnishing tool for cutting and burnishing the interior of a cylinder or other workpiece comprising:

a cutter assembly;

an elongate drive member coupled to the cutter assembly and adapted to rotate the cutter assembly to drive the cutter assembly in a forward direction through the interior of the workpiece to cut the interior of the workpiece to its approximate final diameter;

a roller race generally axially aligned with and to the rear of the cutter assembly and coupled to the drive member, said roller race having frustoconical configuration in section tapering radially outwardly forwardly;

a plurality of rollers distributed circumferentially about and bearing on the roller race, said rollers being frustoconical in section so that the radially outermost surface of each roller is generally parallel to the axis of the drive member;

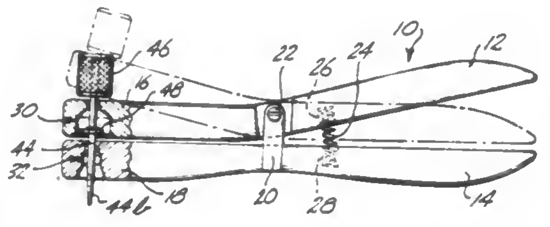
a roller cage having a plurality of slots, said roller cage circumscribing and being spaced apart from the roller race so that said slots and said roller race together define a plurality of cavities for receiving individual rollers;

a roller pusher having (1) a forward extension for directly engaging the rear surfaces of the individual rollers when the pusher is moved forwardly relative to the roller race to push the follers forwardly to cause the rollers to translate radially outward along the tapered surface of the roller race within the cavities defined by the roller cage, and (2) a lip for directly engaging the roller cage when the pusher is moved rearwardly relative to the roller race to draw the rollers rearward and allow the rollers to translate radially inward;

means for applying a selected constant axial force on the roller pusher in a forward direction to drive the forward extension of the pusher against the rollers so that the individual rollers are moved forwardly and biased outwardly by the frustoconical roller race and apply a selected radial burnishing force to the interior of the workpiece, said rollers automatically adjusting to variations in the diameter of the interior of the workpiece; and

means for retracting the roller pusher when the axial force is released to draw the roller cage rearwardly so that the rollers move rearwardly and radially inward and the tool can be withdrawn from the workpiece.

4,367,577
EXTRACTOR FOR REMOVING BROKEN TUBING TIPS FROM CATHETER HUBS
Nicholas S. Muff, 1044 Rolling Ridge Dr., Sedro Woolley, Wash. 98284
Filed Dec. 8, 1980, Ser. No. 214,421
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—234 **11 Claims**



1. An apparatus for extracting a tubing segment from a member in which said tubing segment is inserted comprising:

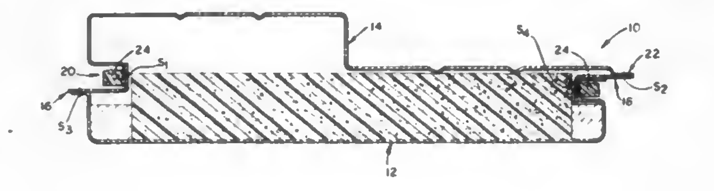
first and second handles terminating at one end thereof in respective first and second jaw portions, said second jaw portion including an aperture,

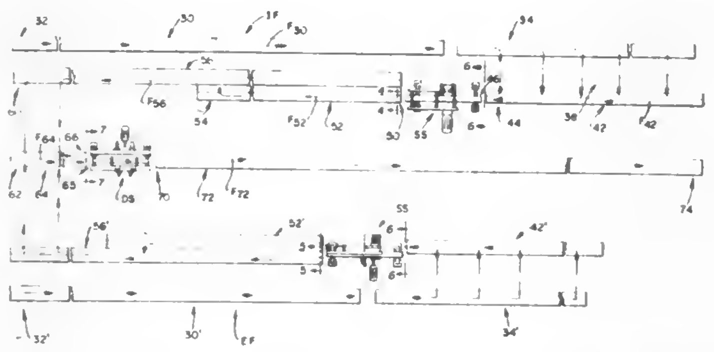
means joining said handles for relative swinging movement so that, as the other ends of said handles are swung toward each other, said jaw portions are separated,

grasping means coacting with said first jaw portion for insertion into and grasping said tubing segment,

coaction means on said second jaw portion for coacting with said member so that relative axial force is exerted on said tubing segment and said member as said jaw portions are separated, said coaction means defining a receptacle for receiving an extracted tubing segment, said receptacle communicating with said aperture, said grasping means extending through said aperture and said receptacle.

4,367,578
METHOD OF PLACING STITCHES IN A MOVING PANEL
Claris E. Johnson, Alexis, and Hubert C. Crump, Galesburg, both of Ill., assignors to Butler Manufacturing Company, Kansas City, Mo.
Division of Ser. No. 945,551, Sep. 25, 1978, Pat. No. 4,245,766. This application Jun. 10, 1980, Ser. No. 158,220
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—429 **2 Claims**





1. A method of placing stitches in a moving panel comprising steps of:

moving a first panel along a fabrication path, said panel having major planar faces and longitudinal edge flanges;

moving the first panel along a conveyor with such first panel having planar faces oriented to be essentially horizontal;

tilting such first panel on edge to orient the planar faces thereof to be essentially vertical;

moving such first tilted panel along a conveyor;

moving the first panel through a stitching machine;

placing first stitches in such first tilted panel while such first tilted panel is moving;

moving the first stitched panel along a conveyor;

tilting the first stitched panel to orient the planar faces to be essentially horizontal;

further including a step of moving a second panel along a second conveyor with such second panel having planar faces oriented to be essentially horizontal, said second panel having major planar faces and longitudinal edge flanges;

tilting such second panel on edge to orient the planar faces thereof to be essentially vertical;

moving such second panel along another conveyor;

moving the second panel through a stitching machine;

placing other stitches in such second tilted panel while such second tilted panel is moving;

moving the second stitched panel along a further conveyor;

tilting the second stitched panel to orient the planar faces thereof to be essentially horizontal;

placing insulation into said second panel;

superposing the first and second stitched panels;

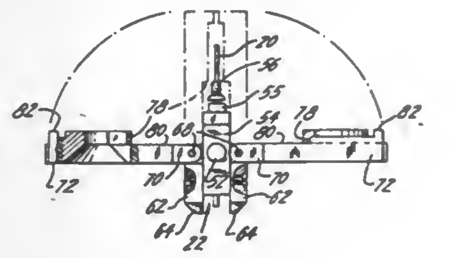
moving the superposed panels through a stitching machine;

coupling stitching strips to the panel edge flanges;

positioning the coupling strips between the stitching machine during the panel tilting steps; and

stitching the first and second panels together while those panels are moving.

4,367,579
METHOD OF CONNECTING A CRYSTAL TO A CRYSTAL HOLDER
Alan Kaplan, West Caldwell, N.J., assignor to Emkay Manufacturing Co. Inc., East Hanover, N.J.
Continuation of Ser. No. 34,780, Apr. 30, 1979, Pat. No. 4,236,487. This application Oct. 6, 1980, Ser. No. 194,078
Int. Cl.³ B23Q *7/00*
U.S. Cl. 29—559 **5 Claims**



1. A method of externally connecting a crystal to a crystal holder having an insulated body comprising the steps of:

(a) pivoting a pair of mask holders of the crystal holder to an open position;

(b) connecting the crystal to the crystal holder in an open series circuit in the insulated body holder;

(c) placing masks in the mask holders and pivoting the mask holders to a closed position to place the masks in alignment with each other and sandwich the crystal therebetween; and

(d) positioning openings in the mask adjacent to the crystal to permit plating thereon as desired.

4,367,580
PROCESS FOR MAKING POLYSILICON RESISTORS
Daniel C. Guterman, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 21, 1980, Ser. No. 132,702
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—571 **6 Claims**

1. A method of making a resistor element in an integrated semiconductor device of the type having at least one active circuit element at a face of a semiconductor body, comprising the steps of:

depositing a first layer of polycrystalline silicon on said face,

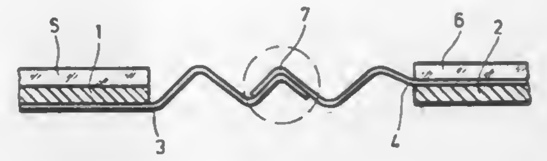
introducing conductivity-determining impurity into said first layer to establish a first level of impurity doping therein,

patterning said first layer to define a resistor area and a first electrode area for said active circuit element, the resistor area and the first electrode area being spaced from one another on said face,

depositing a second layer of conductive material on said face overlying said first layer but insulated therefrom, and

patterning said second layer to define a mask area over part of said resistor area and a second electrode area for said active circuit element.

4,367,581
METHOD OF MANUFACTURING AN ARRAY OF SOLAR CELLS
Kranz Köhler, Unterhaching, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany
Division of Ser. No. 144,954, Apr. 29, 1980, Pat. No. 4,296,270. This application Oct. 10, 1980, Ser. No. 195,752
Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919041
Int. Cl.³ B23P *17/00;* H01L *31/04*
U.S. Cl. 29—572 **10 Claims**



1. A method of manufacturing a solar cell array having a plurality of solar cells with N-type and P-type conducting zones, a plurality of contacting connectors electrically interconnecting the N-type with the P-type conducting zones of adjacent cells, and with each contacting connector extending outwardly from the periphery of a respective cell, comprising:

applying a foil ribbon to the surface of each of the plurality of solar cells so that each ribbon extends outwardly from at least one edge of each solar cell;

securing each ribbon to its repective solar cell to form each contacting connector;

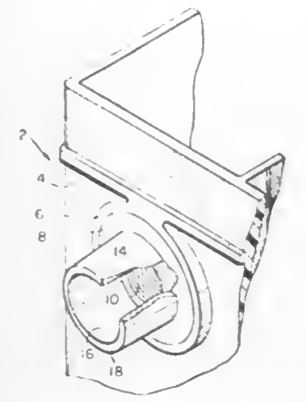
applying a wave-shaped corrugated profile to each contacting connector at least at a portion of each connector extending outwardly from the at least one edge of each solar cell;

overlapping at least a portion of the contacting connectors of adjacent solar cells without the connector of one solar cell contacting an adjacent solar cell; and

connecting the overlapping portions of the contacting connectors of adjacent solar cells.

4,367,582
METHOD FOR MANUFACTURING A BATTERY HAVING A TEMPORARY SIDE TERMINAL THEREON

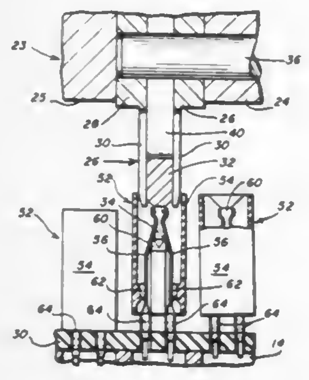
Harry M. Channing, South Lake Tahoe, Calif.; John M. Nees, Wyomissing, and William J. Eberle, Reading, both of Pa., assignors to General Battery Corporation, Reading, Pa.
Division of Ser. No. 121,780, Feb. 14, 1980, Pat. No. 4,263,379. This application Sep. 22, 1980, Ser. No. 189,044
Int. Cl.^{3} H01M *2/06, 2/30*
U.S. Cl. 29—623.1 **1 Claim**



1. A method for manufacturing a lead acid storage battery having electrical terminals in the side wall of said battery for achieving electrical interconnections, said method comprising the steps of:
(a) molding a battery case;
(b) casting electrical terminals, said electrical terminals having a portion thereof which extends through the side wall of said battery case and further having a conical outer surface which tapers toward the free end thereof and a passageway which extends from the free end thereof through to said terminal through said battery case;
(c) assembling battery components to complete the said storage battery;
(d) forming and charging said battery as formed in step (c);
(e) removing said portion of the battery terminal having a conical outer surface which tapers toward the free end thereof and a passageway which extends from the free end thereof through to said terminal in said battery case.

4,367,583
CONNECTOR MOUNTING PRESS

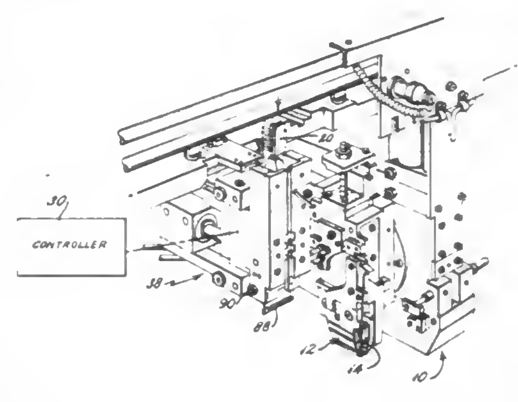
James S. C. Baccei, Terryville, Conn., assignor to Litton Systems, Inc., Watertown, Conn.
Filed Mar. 12, 1981, Ser. No. 242,914
Int. Cl.^{3} H05K *3/32*
U.S. Cl. 29—739 **3 Claims**



1. A connector mounting press for pressing loosely fit connectors into a printed circuit board wherein the connector comprises a housing and two adjacent rows of press fit contacts and the circuit board comprises rows of plated through apertures, the mounting press comprising:
selectively horizontally locatable bed means for supporting a circuit board,
insertion head means supported above said bed means for vertical displacement relative thereto,
said insertion head means including a first comb means, a second comb means, and alignment means,
said alignment means being slidably mounted between said first and second comb means for initially engaging the interior of a selected connector and accurately positioning said connector for reception of said first and second comb means,
the slidable mounting of said alignment means with respect to said first and second comb means allowing both of said comb means to be displaced relative to said alignment means to engage first and second rows of contacts subsequent to the engagement of the connector by said alignment means while said alignment means maintains accurate positioning of said connector, whereby continued vertical displacement of said insertion head causes said first and second comb means to press said rows of contacts of said connector into mating engagement with rows of plated through apertures.

4,367,584
METHOD AND APPARATUS FOR STRAIGHTENING LEADS AND VERIFYING THE ORIENTATION AND FUNCTIONALITY OF COMPONENTS

Stanley Janisiewicz, Endwell; Michael M. Levie, and Andrew J. Czebiniak, both of Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.
Filed Sep. 15, 1980, Ser. No. 187,368
Int. Cl.^{3} H05K *3/30;* **B23P** *6/00;* **B21F** *1/02*
U.S. Cl. 29—837 **18 Claims**

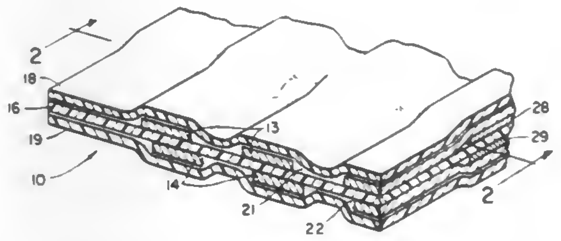


1. An apparatus for testing components of the type having a body and dual, in-line, parallel leads projecting from said body, said apparatus comprising:
circuit means for determining defective components;
contact means for connecting said leads to said circuit means for said testing and having plural electrical contacts engageable with respective ones of said leads; and
lead straightening means for forming said leads for insertion and for straightening bent leads during said testing.

13. A method of testing the functioning of electronic components having leads, some of which may be bent and straightening said bent leads, prior to insertion of said components into a printed circuit board by an inserter, comprising the steps of:
guiding said components to a test position in a test assembly having lead engageable electrical contacts;
providing selected electronic logic combinations from a controller adapted to simulate operating modes of different selected components;
engaging said contacts with said leads, upon command, and applying said selected logic combination to said contacts during said engagement to effect said testing;
providing said controller with a characteristic number indicative of a good component;
sensing a resultant output of said component by said controller;
comparing said resultant output and said characteristic number to determine good and bad test results;
forming said leads during said testing for insertion into said printed circuit board; and
straightening said bent leads during said testing.

4,367,585
METHODS FOR THE TERMINATION AND CONNECTORIZATION OF MULTI-CONDUCTOR FLAT CABLE

William A. Elliott, Reynoldsburg, and Thomas J. Taylor, Gahanna, both of Ohio, assignors to Western Electric Company, Inc., New York, N.Y.
Division of Ser. No. 106,599, Dec. 26, 1979, Pat. No. 4,310,365. This application Aug. 31, 1981, Ser. No. 298,219
Int. Cl.^{3} H01R *43/00*
U.S. Cl. 29—857 **21 Claims**

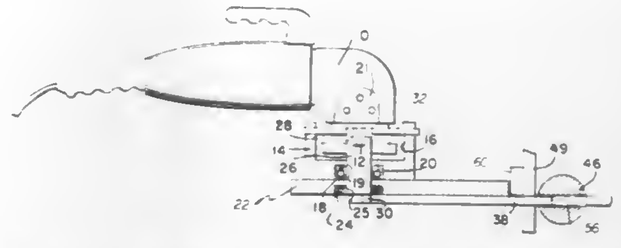


1. A method for the termination and connectorization of a flat cable having two arrays of conductors separated by a center insulative film, with two outer films respectively positioned to overlie a different one of the two arrays of conductors, and adapted to laminate the two arrays of conductors between the center and the respectively associated outer films when said films and arrays of conductors are advanced through a nip of a pair of laminating rollers of a laminating apparatus, said method further including the steps of:
positioning and securing a spaced array of insulative isolating members on each side of, and extending transversely across, the center film at predetermined spaced cable termination points therealong prior to that film, together with the isolating members thereon, being advanced through the nip of the laminating rollers, the members on opposite sides of the center film being aligned in pairs, and of a type of material that allows the two arrays of conductors in the laminated cable to subsequently be readily separated from the center film for connectorization;
terminating a predetermined length of the cable in a region of a pair of aligned isolating members, and thereafter:
peeling conductor end portions in each array, together with that portion of the associated outer film bonded thereto, that are co-extensive with an adjacent terminating isolating member away from at least the center film;
positioning the conductor end portions of each separated array thereof into an aligned relationship with respectively associated contacts of a connector, and
securing said aligned conductor end portions to said connector contacts.

4,367,586
DUSTLESS CUTTER

James G. Baranczyk, and Richard J. Baranczyk, both of 208 Main St., P.O. Box 211, Pulaski, Wis. 54162
Filed Dec. 15, 1980, Ser. No. 246,331
Int. Cl.^{3} B23D *29/00*
U.S. Cl. 30—241 **10 Claims**

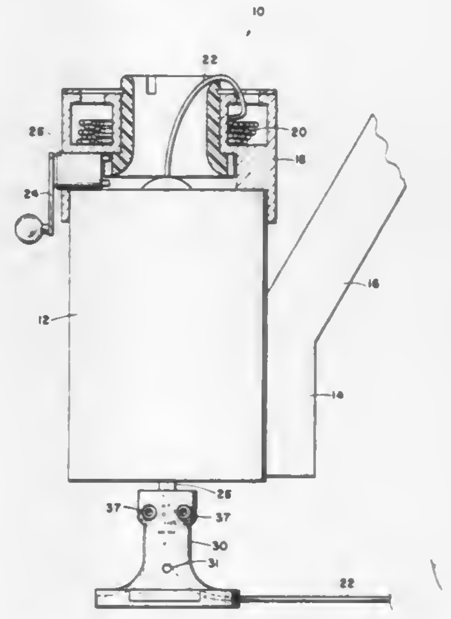
1. A dustless cutter device adapted to be connected with an electric drive motor which comprises:
a flat cutter blade;
an eccentric drive means for driving said flat cutter blade in a reciprocating motion;
support means for supporting said flat cutter blade and said eccentric drive means;
said support means including a housing with a flat plate surface,
guide rails secured to said flat plate surface in spaced parallel relationship for guiding said flat cutter blade in a reciprocating motion relative to said flat plate surface,
a die means secured to said flat plate surface relative to said cutter blade and spaced therefrom for passage of a sheet of material to be cut;



said flat cutter blade having a cutting end formed at an angle relative to its direction of reciprocating motion with the slope of the angular end such that the forward edge of the cutter blade is shorter than the trailing edge; and
said eccentric drive means and said flat cutter blade being so related that the forward edge of the cutter blade during its maximum cutting stroke will not contact the sheet of material to be cut with the trailing edge passing completely through said material to be cut.

4,367,587
FILAMENT VEGETATION TRIMMER

Lauren G. Kilmer, 1927 E. 35 Pl., Tulsa, Okla. 74105
Continuation-in-part of Ser. No. 958,519, Nov. 7, 1978, Pat. No. 4,265,019. This application Dec. 11, 1980, Ser. No. 215,180
Int. Cl.^{3} A01D *50/00*
U.S. Cl. 30—276 **4 Claims**



1. A filament vegetation trimmer having a rotary drive means; a hollow shaft attached to the drive means, said shaft terminating at a gyrational end; a gyrator head, one end of which is attached to said gyrational end the other end forming a trimming end and having an outwardly curved axial opening therethrough to a transverse groove at the trimming end, and means to supply the filament from a non-rotatable supply source through said shaft and said opening to said gyrator head, the improvement comprising intrinsic means intersecting the groove and the axial opening to create a corridor to cause the filament to be maintained in said transverse groove and to extend outwardly forming a rotary whip for trimming.

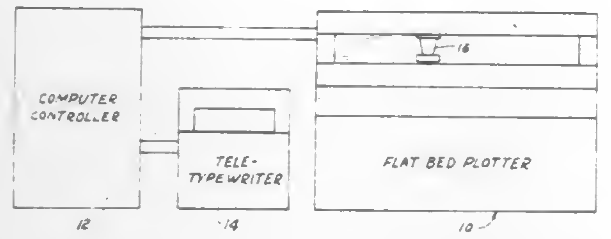
4,367,588
PROCESS FOR CUTTING STRIPPABLE FILM

Thomas A. Herbert, 3044 Old Yellow Springs Rd., Fairborn, Ohio 45324

Continuation-in-part of Ser. No. 909,153, May 24, 1978, abandoned. This application Jun. 20, 1979, Ser. No. 50,241

Int. Cl.^{3} B26D *3/08;* B43L *13/00*

U.S. Cl. 33—1 M **1 Claim**



1. The process of cutting curvilinear patterns in the plastic layer on a strippable material with a computer controlled X-Y flat bed plotter wherein the computer is programmed to move the plotting head over the strippable material with desired pattern, comprising: placing the diamond point cutter in the plotting head of the flat bed plotter; adjusting the scribe pressure on said diamond point cutter to between 200 and 300 grams; moving the plotter head over the strippable material in response to the computer command at a head speed of between 20 and 30 inches per second with a plotter head acceleration between 0.4 G and 0.7 G.

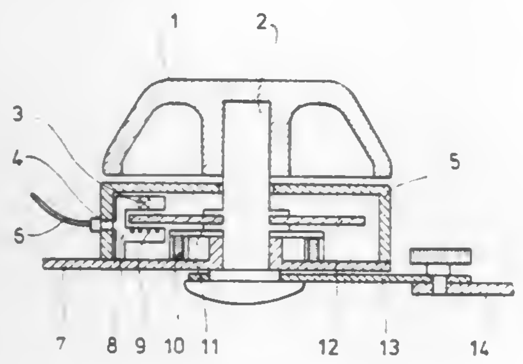
4,367,589
DRAFTING MACHINE HEAD

Joachim Mainka, Friedrich Ebert Str., D 8080 Fürstenfeldbruck, and Gerd Vogl, Zugspitzstr., D 8031 Eichenau, both of Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,794

Int. Cl.^{3} B43L *13/14*

U.S. Cl. 33—1 N **14 Claims**



1. A drafting machine head, comprising:

a housing a drawing ruler carrier, a shaft rotatably mounted in said housing and having said ruler carrier and graduated disc attached thereto, scanning elements mounted in said housing and associated with said graduated disc, an up/-down counter electrically associated with said sensor, one or more electronic data stores, the angular position of said rotatable drawing ruler carrier on said graduated disc being incrementally detected by means of said scanning elements and being converted into displayable angular values by said up/down counter; and

an electrically actuatable locking unit for restricting the rotary movement of said drawing ruler carrier, said unit being active in any angular position, an electronic comparator electrically connected to said unit and said one or more electronic data stores in such a way that the angular values detected on the graduated disc and the angular values contained in said data store trigger the locking if they are in coincidence.

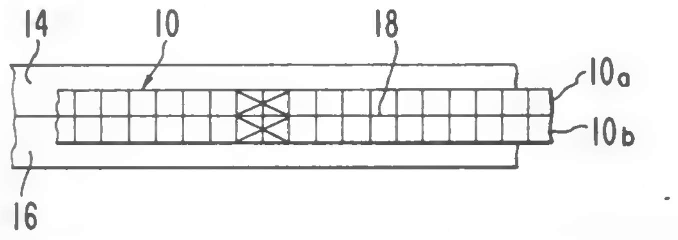
4,367,590
CALIBRATED TAPE FOR USE IN CONSTRUCTING WALL WITH VERTICAL STUDS

Craig R. Winter, 296 Manfre Rd., Watsonville, Calif. 95076; Stanley M. Bird, Sr., and Keneth E. Presba, both of Star Route, Georgetown, Calif. 95634

Filed Mar. 27, 1981, Ser. No. 248,398

Int. Cl.^{3} G11B *3/10*

U.S. Cl. 33—137 R **12 Claims**



1. A device for use in determining the attachment locations of a plurality of spaced studs on a pair of spaced, parallel plates of a wall comprising: a tape of one-piece construction and having a pair of opposed faces, one of the faces having a plurality of indicia thereon at spaced locations along the length of the body, the opposite face of the tape having means around for attaching the tape to said plates when the plates are tacked together, the tape being separable into halves along a longitudinally extending line, the indicia on one tape half being identical to and transversely aligned with the indicia on the other tape half whereby, when the plates are tacked together and the tape halves are attached to respective plates, the tape halves will separage from each other and remain secured to respective plates when the plates are untacked and moved away from each other.

4,367,591
FITTING DEVICE

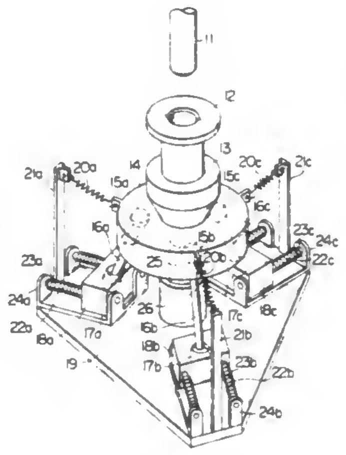
Hisaaki Hirabayashi, and Koichi Sugimoto, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,915

Claims priority, application Japan, Sep. 7, 1979, 54-114197

Int. Cl.^{3} B25G *3/00;* F16D *1/00;* F16G *11/00*

U.S. Cl. 33—169 C **13 Claims**



1. A fitting device for orienting one of a peg member and a hole formed in a hole member, comprising:

a stationary base;

a movable base for supporting said one of said peg member and said hole member; and

a three-dimensional spatial mechanism having at least six degrees of freedom connecting said movable base to said stationary base, said three-dimensional spatial mechanism comprising at least three sliders supported on said stationary base for movements in a direction substantially perpendicular to the axis of said one of said peg member and said hole member, at least three links each connected at one end thereof to one of said at least three sliders and at the other end thereof to said movable base through a turning pair, operation regulating means for allowing rotational movement of said movable base relative to said stationary base and for limiting movement of said movable base relative to said stationary base in a direction substantially perpendicular to the axis of said one of said peg member and said hole member in a predetermined range, and means for resiliently retaining said movable base in a predetermined position.

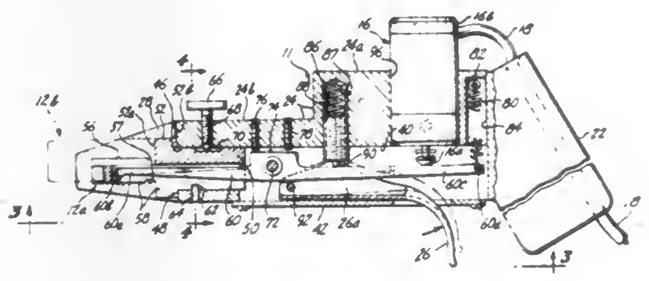
4,367,592
GAUGE APPARATUS AND METHOD FOR MEASURING THE DEPTH OF A CIRCUMFERENTIAL GROOVE ON THE INSIDE WALL OF A TUBULAR PART

Douglas Thompson, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 24, 1980, Ser. No. 220,137

Int. Cl.^{3} G01B *5/12*

U.S. Cl. 33—172 E **10 Claims**



1. A gauge apparatus for measuring the depth of a circumferential groove on the interior wall of a tubular part, comprising:

a probe head having an axis of symmetry and defining a forward end adapted for insertion into an open end of a tubular part that has an interior circumferential groove and said probe head defining a rear end, said probe head including a relief portion adjacent said rear end to allow cocking of said probe head at a constant skew angle relative to a centerline of said tubular part as said probe head is moved axially within said tubular part;

a support structure to which said probe head is mounted adjacent its rear end so that said support structure can be manipulated for inserting the forward end of said probe head into an open end of a tubular part and cocked at said skew angle with an edge on the forward end of said probe head contacting an inside wall surface of such tubular part at a first head-to-wall surface contact location and an edge adjacent said relief portion of said probe head contacting an inside wall surface of such tubular part at a second head-to-wall surface contact location that is rearwardly spaced from the first contact location;

a probe arm oriented generally parallel to the axis of symmetry of said probe head, said probe arm pivotally mounted on said support structure and having a forward feeler tip end receivably disposed within an opening provided therefor in said probe head, for arcuate movement relative to said probe head so as to be movable between a retracted position recessed within said opening in said head and an operative position protruding transversely from said probe head at a position axially intermediate said forward and rear ends of said probe head so as to contact an interior wall surface of a tubular part into which the probe head has been inserted;

trigger mechanism means mounted on said support structure for actuating said arm to move said forward feeler tip end between said retracted position and said operative position; and

indicator means operatively associated with said probe head and probe feeler means for providing an indication of the magnitude of relative movement of said feeler means with respect to said probe head.

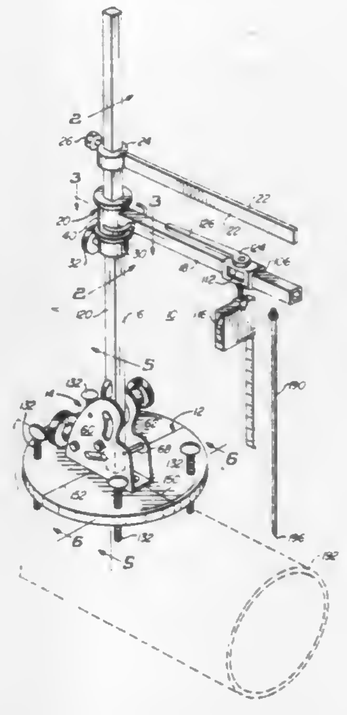
4,367,593
PATTERN DRAFTING TOOL

Loraine T. Whitworth, 5024 S. Sunkist Pl., Tucson, Ariz. 85706

Filed Sep. 14, 1981, Ser. No. 301,456

Int. Cl.^{3} G01B *3/14*

U.S. Cl. 33—174 N **12 Claims**



1. A drafting tool for determining true length measurements for patterns of transitions and pipe miter joints, said tool comprising in combination:

(a) a base for defining a plane of reference for one edge of the pattern to be developed;
(b) a post extending upwardly from said base, said post including indicia correlatable with the reference plane and the longitudinal dimension of the pattern to be formed;
(c) a bar extending radially from said post, said bar being positionable angularly about the longitudinal axis of said post in any one of several predetermined positions, said bar including indicia correlatable with the lateral dimensions of one end of the transition or joint being patterned;
(d) an indicator repositionable along said bar to correspond with the lateral dimension;
(e) means for determining the true length distance between said indicator and at least one point lying on the one edge of the pattern for each radial position of said bar; and
(f) means for obtaining the true length distance between adjacent positions of said indicator on repositioning said bar; whereby, the true length distances obtained in combination with the known angular repositioning of said bar provide sufficient information to draft directly the pattern sought.

4,367,594
ALIGNMENT SYSTEM

Malcolm G. Murray, Jr., 220 E. Texas Ave., Baytown, Tex. 77520

Filed Jan. 14, 1980, Ser. No. 111,779

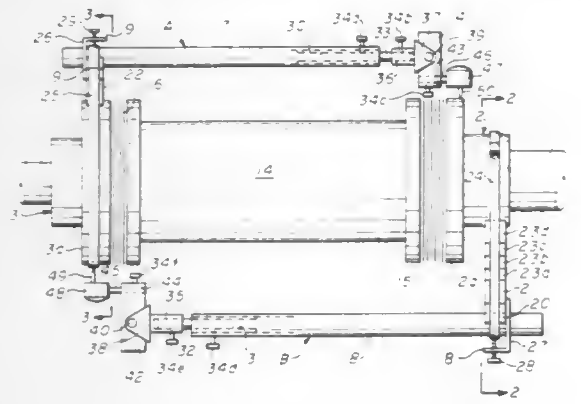
Int. Cl.^{3} G01B *3/30*

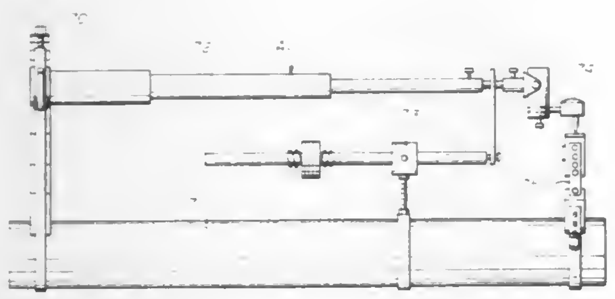
U.S. Cl. 33—181 R **26 Claims**

1. An alignment apparatus system comprising in combination:

an alignment fixture comprising a modular radial arm adapted to seat on a first shaft to be aligned, said radial arm being extendable by modular units, an arm extending laterally from said radial arm and axially in regard to said first shaft to be aligned, a metal strap associated with said radial arm for attaching said radial arm to said first shaft and means located along said metal strap to fasten and adjust said metal strap, a holder connected to said laterally extending arm distal to said radial arm and having a channel therein, and a block for positioning a dial indicator, said block being adjustably mounted in said channel, said dial indicator having a plunger actuated hand for making readings, and

an adjustable fixture post comprising a first block adapted to seat on a second shaft to be aligned and extend radially therefrom; a pair of metal straps attached to said first block for attaching said first block to said second shaft and means located along said metal straps to fasten and adjust said straps, a pair of substantially parallel members mounted to said block and extending radially therefrom, a second block repositionably mounted between said substantially parallel members for repositioning said second block at various distances from said first block, said second block providing a contact surface for said plunger of the dial indicator.





4,367,595
METHOD AND APPARATUS FOR DRYING PRODUCTS, ESPECIALLY CORN OR PIECE PRODUCTS

Laszlo Szücs; Andras Horvath; Emod 'Sigmond; Imre Szabo, and Verona Toth, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

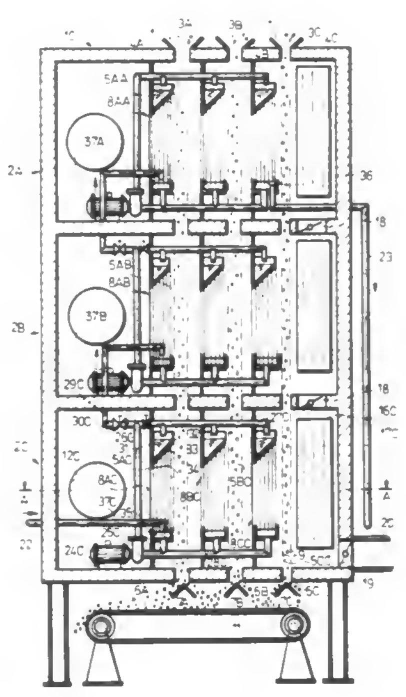
Filed Sep. 4, 1980, Ser. No. 184,184

Claims priority, application Hungary, Sep. 13, 1979, EE2693

Int. Cl.^{3} F26B *3/04, 21/08*

U.S. Cl. 34—27 **45 Claims**

1. In a method of drying products, comprising the steps of flowing a drying gas stream so as to cause it to pass the product to be dried; contacting the drying gas stream with a desiccant liquid to remove moisture from the gas; and regenerating the desiccant liquid by circulating at least a part of it through regenerating means to remove moisture therefrom; the improvement comprising arranging the product to be dried in at least two product parts; conducting said flowing so that the drying gas stream passes said at least two product parts successively; and performing said contacting each time before the drying gas stream passes each of said at least two product parts or each time after the drying gas stream passes each of said at least two product parts, the drying gas, in the course of passing said product parts once, being subjected to a plurality of said contacting steps for moisture removal with said contacting steps alternating with the flow of the drying gas stream past each of a plurality of said product parts.



4,367,596
DRYING APPARATUS

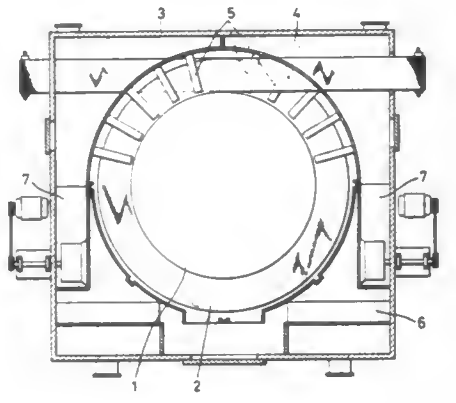
Hirohumi Onodera, 340, Mizuhai Higashiosaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 966,752, Dec. 5, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,388

Claims priority, application Japan, Apr. 17, 1978, 53-52438[U]; Sep. 1, 1978, 53-120854[U]

Int. Cl.^{3} F26B *13/00*

U.S. Cl. 34—147 **7 Claims**



1. A drying apparatus comprising:

a casing made of a heat insulating material;

a rotary drum mounted within said casing for rotation about a vertical axis;

an endless conveyor spirally wound about said rotary drum and rotatable therewith, said conveyor being in the form of plural, vertically spaced convolutions;

a vertically extending wall transversely surrounding at least a portion of the circumference of said conveyor;

said casing and said wall defining therebetween an enclosed chamber which surrounds at least a portion of the circumference of said conveyor and which is partitioned into at least two pressure compartments and a suction compartment;

means for supplying hot blast under pressure into each of said pressure compartments such that the pressure of said hot blast within all portions of said each of said pressure compartments is equalized; each of said pressure compartments being individually provided with a separate respective one of said supplying means;

means for injecting said hot blast from said pressure compartments through said wall and for directing said hot blast at equal pressure vertically directly against plural surfaces of said conveyor, said injecting and directing means comprising a plurality of blast pipes extending inwardly from said wall in directions radially of said axis of said rotary drum and orthogonally of said convolutions of said conveyor, said blast pipes having therein openings directed vertically toward said surfaces of said conveyor, whereby said hot blast passes, at equal pressure, from said chamber through said plurality of blast pipes and is discharged therefrom through said openings therein in vertical directions against said surfaces of said conveyor, said blast pipes being arranged between adjacent said convolutions, such that each said convolution has blast pipes directing said hot blast directly thereagainst; and

said rotary drum, said conveyor, said chamber, said means for supplying hot blast under pressure into each of said compartments, and said blast pipes being accommodated within said casing.

4,367,597
GAS-LIQUID COOLING APPARATUS

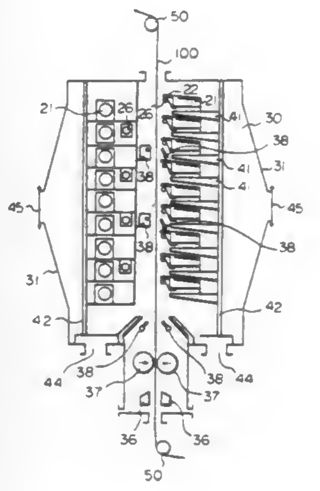
Hiroshi Iida; Tetuya Ohara, both of Himeji, and Masakatu Tuji, Hyogo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,716

Claims priority, application Japan, Dec. 13, 1979, 54-161914; Sep. 29, 1980, 55-135680; Sep. 29, 1980, 55-135681

Int. Cl.^{3} F26B *13/02*

U.S. Cl. 34—155 **8 Claims**



1. A gas-liquid cooling apparatus for cooling a strip-like material moving substantially vertically, said apparatus comprising: a first nozzle means for discharging at least one gas jet stream and a second nozzle means for discharging at least one liquid jet stream in a direction intersecting the gas jet stream at an acute angle for forming only a single narrow jet of a gas-liquid mixture in front of said nozzle means; said apparatus being directed toward the material to be cooled with all of said jet of gas-liquid inclined upwardly toward the material at an angle for being bounced off said strip-like material at an angle of reflection substantially equal to the angle of upward inclination of said jet; one of said nozzle means having an inclined liquid guide plate thereabove extending at least as close to the material to be cooled as the outlet of said nozzle means for receiving substanially all of the gas-liquid mixture bounced off said strip-like material and inclined downwardly and away from the material for collecting the liquid which is separated from the gas-liquid mixture after it is bounced off the material to be cooled and carrying the liquid away from the material.

4,367,598
THERMAL TREATMENT APPARATUS FOR BULK MATERIAL

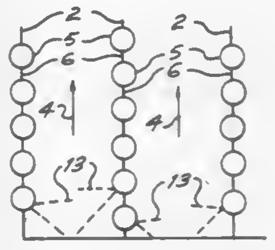
Bruno Hillinger, Hinterbruhl, and Georg Bechmann, Vienna, both of Austria, assignors to Waagner-Biro Aktiengesellschaft, Austria

Filed Jun. 20, 1980, Ser. No. 161,382

Claims priority, application Austria, Jun. 25, 1979, 4422/79

Int. Cl.^{3} F26B *17/26*

U.S. Cl. 34—164 **3 Claims**



1. In vibratory conveyor apparatus for transporting bulk material, such as lime or coal, in a stream from an entry or feed side to a discharge side and including means for thermally treating the bulk material as the same is transported through the apparatus, the improvement comprising, said thermal treatment means being constituted by a plurality of vertical partition members provided in said vibratory conveyor apparatus, each extending in the direction in which the stream of bulk material is transported, so as to define between them a plurality of channels, said plurality of vertical partition members constituting means for dividing the bulk material stream into parallel partial streams separated from each other over at least a part of the length of the vibratory conveyor apparatus, and means operatively associated with said vertical partition members for carrying a thermal transfer fluid therein, and further including means for screening the fine portion of the bulk material disposed in said plurality of channels between said feed and discharge sides.

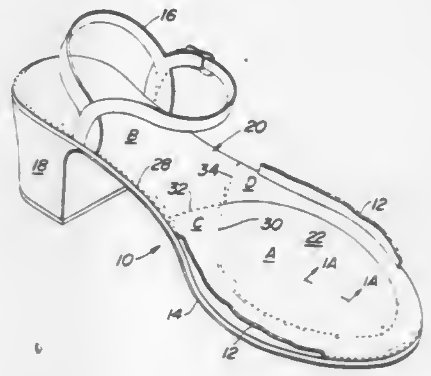
4,367,599
SHOE SOLE STRUCTURE HAVING CONTROLLED SLIPPAGE

Frederick J. Diamant, 20 E. 35 St., New York, N.Y. 10016

Filed Oct. 16, 1980, Ser. No. 197,444

Int. Cl.^{3} A43B *13/40, 13/18, 7/14*

U.S. Cl. 36—44 **13 Claims**



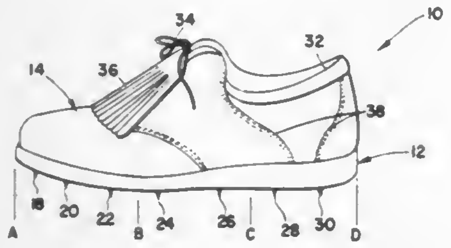
1. An insole for use in a shoe comprising a sock lining layer corresponding generally to the shape of a shoe, a foam layer substantially the same size and shape as the sock lining layer, a backer layer substantially the same size and shape as the sock lining layer, means joining the periphery of said layers, means providing a slippage control between said sock lining layer and said foam layer, said slippage control means including stitching in the form of a closed loop wholly disposed at the location adapted to support a ball of a foot, said loop stitching having two extensions each extending from one end of said loop to said peripheral joining means at a location between the heel

end of the layers and said one end of said loop, said loop stitching and said extensions constituting one continuous and uninterrupted stitching.

4,367,600
GOLF SHOE WITH IMPROVED TRANSVERSE TRACTION

Henry D. Cross, III, Colt's Neck, N.J.; Charles C. Eaton, Jr.; John Larsen, both of Hingham, Mass., and Rob R. McGregor, Concord, Mass., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,581
Int. Cl.^{3} A43B *5/00;* A43D *9/00*
U.S. Cl. 36—127 **26 Claims**



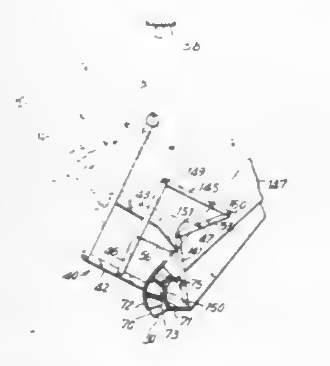
1. In a pair of golf shoes having sole and heel assemblies integrally attached to flexible shoe uppers; the improvement comprising:

a continuous ground contacting plane formed by the lowermost surfaces of said sole and heel assemblies over the entire area thereof, each of said pair of shoes having a first and a second set of ground engaging spikes affixed to the lowermost surfaces of said assemblies, said first set of spikes attached along curved paths spaced adjacent to the leading side edges of each of said pair of assemblies as defined by the direction of a golf club swing, said paths extending from the central toe position of said shoes through the heel positions and having at least two spikes positioned in the instep region of said shoes along each of said paths, said second set of ground engaging spikes affixed to the lowermost surface of said assemblies along the trailing edge of said shoes in the toe region and in the heel region, said first set of spikes providing ground engaging frictional traction along the entire leading edges of said pair of shoes to anchor said shoes against lateral forces between said shoes and the ground during a golf club swing.

4,367,601
SEPARABLE MEANS FOR EXCLUDING OVERSIZED SLENDER OBJECTS

John P. Latimer, and John H. Hall, both of Newport News, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Feb. 9, 1981, Ser. No. 232,862
Int. Cl.^{3} E02F *3/92*
U.S. Cl. 37—57 **22 Claims**

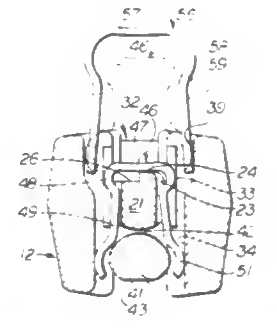


1. Screening means for screening long slender particles to prevent passage through a fluid-flow conduit, wherein the particles have their long dimension extending along the direction of fluid flow, the screening means comprising a conduit; two sets of a plurality of opposed pairs of corrugated surfaces; and moving means to move the two sets relative to each other, between a first position, where the two sets are interleaved and a second non-interleaved position: in the first position, the axes of the folds of the corrugated surfaces extend transversely to, and the corrugated surfaces are folded along, the direction of fluid flow through the conduit, such that the interleaved corrugated surfaces define a plurality of separate curved flow channels through the conduit portion; in the second position, at least one of the sets of corrugated surfaces is moved, so that the two sets are not interleaved; any material jammed between adjacent interleaved surfaces in the first position is thereby released in the second position.

4,367,602
LOCK AND KEY RETAINER FOR EXCAVATOR TOOTH

Gerald A. Petersen, 37 Sullivan Dr., Moraga, Calif. 94556

Filed Oct. 13, 1981, Ser. No. 310,472
Int. Cl.^{3} E02F *9/28*
U.S. Cl. 37—142 A **9 Claims**



1. In combination, an excavating tooth having a distal portion having a cutting edge at one end and a first shoulder at its opposite end and a proximal portion having a reduced width portion and a second shoulder rearward of said reduced width portion; a holder having a distal end shaped to receive the thrust of said first shoulder as said tooth digs, said holder being formed with a recess extending inward from said distal end to receive said proximal portion of said tooth and an opening spaced rearward from said distal end and extending generally transverse to said recess and intersecting said recess, said opening having opposed side walls, a first retainer formed of resilient material and having a first connecting portion and a pair of initially outward diverging first legs, said first legs being slidable into said opening between outer and inner positions and when in the inner position being opposite said reduced width portion and forward of said second shoulder and a second retainer formed of resilient material and having a second connecting portion and a pair of initially outward diverging second legs, said second legs being wider apart than said first legs, said second retainer being slidable into said opening between outer and inner positions and when in the inner position being located between said first legs and said side walls and compressing said first legs into inward position, said first legs when in inward position restraining withdrawal of said tooth from said holder by interfering with outward movement of said second shoulder.

4,367,603
SNOW CASTER HAVING RING GEAR AND SPUR GEAR DRIVE MEANS

William J. Schlapman, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 28, 1981, Ser. No. 305,981
Int. Cl.^{3} E01H *5/09*
U.S. Cl. 37—251 **10 Claims**

1. A snow caster comprising:

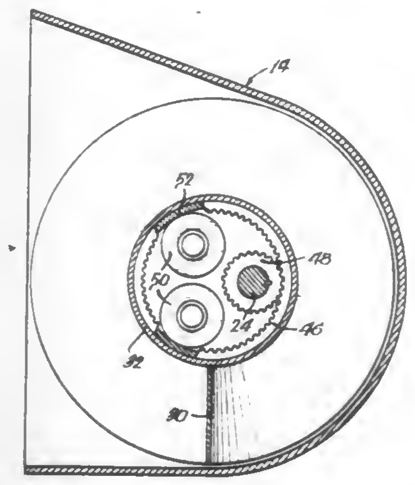
(a) an elongated housing having ends and an opening extending substantially between the ends defining the front of the housing, the housing also having a discharge spout positioned rearwardly of the front;

(b) a drive shaft rotatably mounted transversely within the housing;

(c) a fan mounted on the drive shaft adjacent the discharge spout to propel material such as snow through the discharge spout;

(d) an auger unit including an auger blade mounted on an auger tube, the auger unit rotatably mounted within the housing with the drive shaft extending into the auger tube, the auger unit adapted to propel material such as snow toward the fan as the auger unit is rotated; and

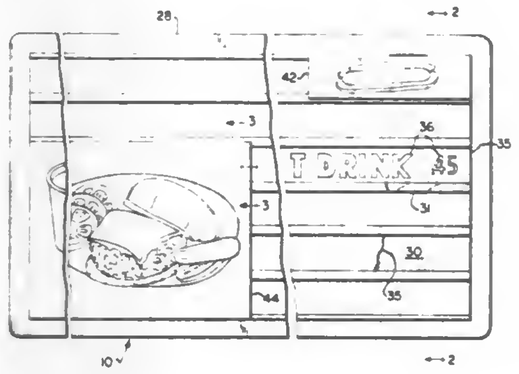
(e) speed reduction means for operably interconnecting the drive shaft and the auger unit such that the auger unit rotates at a slower speed with respect to the fan, the speed reduction means including a ring gear mounted coaxially on the auger unit, an internal spur gear mounted on the drive shaft engaging the ring gear, and an idler roller rotatably mounted on the housing to coact with the inside of the auger tube to align the auger unit and maintain the ring and spur gears in mesh.



4,367,604
MENU BOARD

Stephen T. Porter, II, Potomac, and Paul G. Gaiser, Gaithersburg, both of Md., assignors to Marriott Corporation, Washington, D.C.

Filed Mar. 27, 1981, Ser. No. 248,343
Int. Cl.^{3} G09F *21/04*
U.S. Cl. 40—564 **9 Claims**



1. An illuminated sign structure, comprising

a housing having an opaque frame and a translucent front panel within said frame;

a source of light mounted in said housing;

a plurality of substantially parallel ribs mounted on the outer surface of said front panel and extending across said panel in equally spaced relationship, said ribs each having, in cross section, a stem portion protruding outwardly from said panel and lateral flanges extending in opposite directions from said stem portion, said flanges being spaced from said outer surface and having opaque front surfaces;

a plurality of elongated strips each having a width no greater than the distance between said stem portions of adjacent ones of said ribs and a thickness no greater than the spacing between said outer surface and said flanges such that each of said strips can be inserted between adjacent ones of said ribs, at least some of said strips having opaque and translucent regions defining alphanumeric characters; and

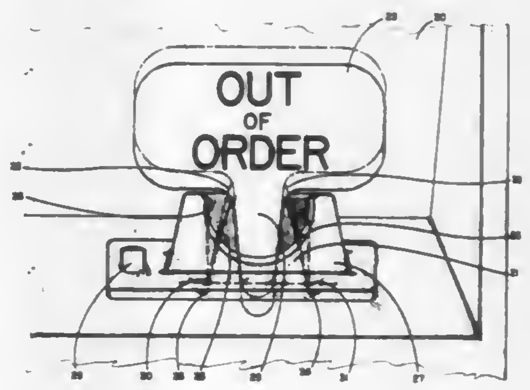
a plurality of picture display units, each said unit having end walls, upper and lower spaced, generally parallel side walls, and a front panel, the rear of each said unit being substantially open, said front panel of each unit having translucent portions forming a pictorial representation of an object, each of said upper and lower side walls having means at the rear edges thereof defining outwardly extending hook members shaped to engage flanges which extend toward each other on two of said ribs, said side walls of said picture display units being spaced apart by different distances, each said distance being substantially equal to an integral multiple of the center-to-center distance between said ribs;

whereby a plurality of said strips and picture display units can be mounted on said frame front panel to occupy substantially all of the area within said frame to permit passage of light only through said translucent regions of said strips and translucent portions of said display units.

4,367,605
SIGN FOR COIN-OPERATED MACHINE

Hampton A. Clifton, 4307 El Carnal Way, Las Vegas, Nev. 89121

Filed Mar. 23, 1981, Ser. No. 247,864
Int. Cl.^{3} G09F *7/00*
U.S. Cl. 40—584 **4 Claims**



1. A sign for indicating the inoperative condition of a coin-operated apparatus having a coin slot for receiving coins comprising display means, a flat guide member adapted to fit into the coin slot, and fastening means for removably attaching the sign of the coin-operated apparatus comprising a pair of legs biased outwardly from the guide means.

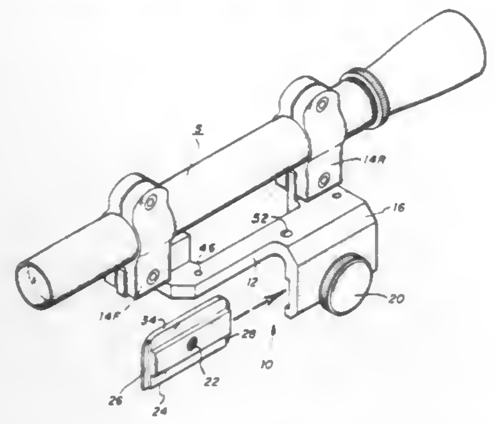
4,367,606
MOUNT FOR RIFLE TELESCOPE SIGHT

Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109

Filed Oct. 6, 1980, Ser. No. 178,782
Int. Cl.^{3} F41G *1/38*
U.S. Cl. 42—1 ST **15 Claims**

1. Apparatus for mounting a scope on a rifle, comprising:

(a) a removable plate having a configuration which permits it to be inserted into a prepared recess along the side of the rifle, and said plate having front and rear edges which have thicknesses which are appropriately sized so as to be inserted into grooves which coincide generally with the front and rear boundaries of said prepared recess, and the plate being configured to abut a rigid portion of the rifle so that the plate has a limitation on its upward movement, and said plate having threads which are accessible from the outer surface of the plate; and



(b) structural means for selectively mating with said plate and including a complementary threaded member for engaging the threads on said plate, and further including support means for holding a scope so that it is essentially parallel to the bore of the rifle.

4,367,607

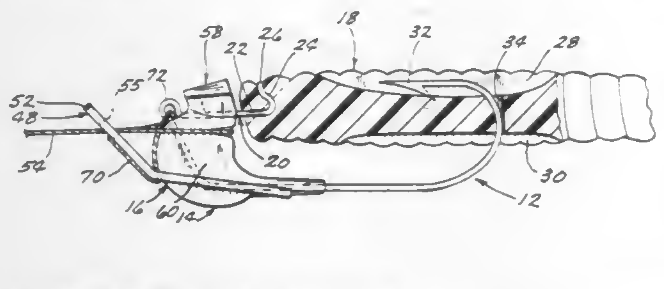
WEEDLESS, CHANGEABLE PLASTIC LURE

Dean L. R. Hedman, 4410 NW. 61st St., Des Moines, Iowa 50322

Continuation-in-part of Ser. No. 888,853, Mar. 22, 1978, Pat. No. 4,219,956. This application Aug. 29, 1980, Ser. No. 182,686

Int. Cl.^{3} A01K *85/00, 83/06*

U.S. Cl. 43—42.1 **17 Claims**



1. A weedless fish lure comprising,

a hook means having a shank portion with forward and rearward ends, a pointed arcuate hook portion with a rearwardly disposed barb element connected to the pointed end of said hook portion and the other end of said hook portion connected to said rearward end of said shank portion and an eyelet connected to said forward end of said shank portion,

a pliable body member having forward and rearward ends with a middle portion therebetween, and

retainer means rigidly connected to said shank portion being in lateral spaced relation to said shank portion and including a substantially straight portion operatively extending rearwardly from the forward end of said shank portion into the forward end of said body member along its longitudinal center axis and thence laterally outwardly to detachably secure said forward end of said body member to said shank portion with said hook portion extending into said middle portion of said body member, said straight portion of said retainer means merging into a return bend portion terminating in an end laterally spaced from said straight portion to provide a substantial hook-like means for holding engagement with said pliable member.

4,367,608

BUBBLES EMITTING TOY VEHICLE

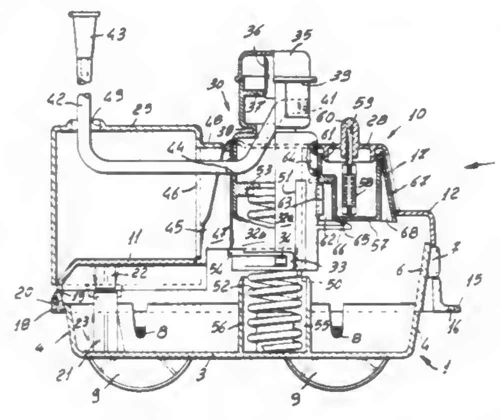
Athos Melotti, Via dello Spalto, 3, Bologna, Italy

Filed Jun. 29, 1981, Ser. No. 278,221

Claims priority, application Italy, Jul. 24, 1980, 4913/80[U]

Int. Cl.^{3} A63H *33/28*

U.S. Cl. 46—7 **2 Claims**



1. A toy vehicle emitting bubbles of the type of soap bubbles, comprising a wheel-mounted frame, an opening formed in said frame, a blowring carried inside said frame and facing said opening, a puppet guided for sliding movement in a vertical direction in said frame, a hole formed in said puppet and connected with air blowing means, spring means urging said puppet in a raised position, a reservoir containing a liquid for forming bubbles fixed onto said puppet and engaged by said blowring when the puppet is in said raised position, said air blowing means being effective when the puppet is depressed in a lowered position against the bias of said spring means and the blowring is aligned with said hole, and a plate rigid with said puppet for covering said opening, said opening configuring a front window of the vehicle and said plate forming the windshield of said window.

4,367,609

USE OF MICROORGANISMS IN CONJUNCTION WITH SEEDS

John M. Lloyd, Richmond, New Zealand, assignor to Coated Seed Limited, Christchurch, New Zealand

Filed Jul. 14, 1981, Ser. No. 283,338

Claims priority, application New Zealand, Jul. 28, 1980, 194466

Int. Cl.^{3} A01C *1/06*

U.S. Cl. 47—57.6 **37 Claims**

1. In a method of sowing seeds in which a micro-organism is present for the purpose of promoting a desired effect on the seed or in conjunction with the seed, the improvement comprising using a water soluble polyvinyl-pyrrolidone to promote the survival of the micro-organism.

4,367,610

DOOR OPENING AND CLOSING MECHANISM

David J. Goode, Great Missenden, England, assignor to John Mowlem & Company Limited, Brentford, England

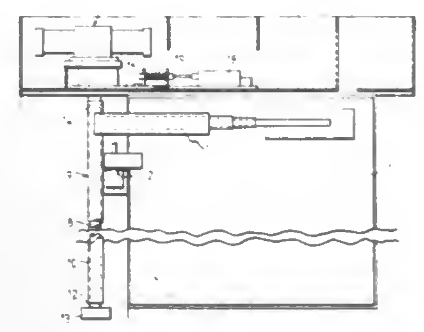
Filed Apr. 4, 1980, Ser. No. 137,192

Claims priority, application United Kingdom, Apr. 10, 1979, 7912499

Int. Cl.^{3} E05F *11/00*

U.S. Cl. 49—336 **6 Claims**

1. An opening and closing mechanism for a blast resistant pivoted door, said mechanism including a rotary actuator; an elongated torque tube assembly having two operative ends, first means connecting one end of said torque tube assembly with said rotary actuator; second means connecting the other end of said torque tube assembly to a blast resistant door, rotary movement generated by said rotary actuator being transmitted through said torque tube assembly via said first and second connecting means to open and close said door, and means enabling said torque tube assembly to be strained torsionally by rotating one end thereof with respect to said other end in response to a blast rebound, whereby said torque tube assembly absorbs said rebound and helps prevent damage both to said actuator and to said door.



4,367,611

CAGE SLOT GRINDING MACHINE

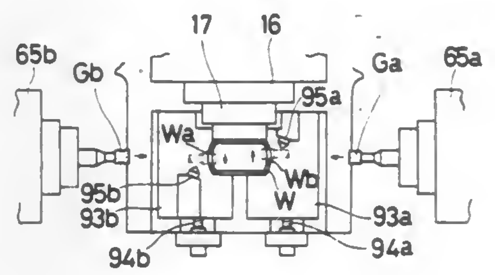
Makoto Kikuchi, and Akiyoshi Kobayashi, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 19, 1980, Ser. No. 218,211

Claims priority, application Japan, Dec. 19, 1979, 54-165212

Int. Cl.^{3} B24B *5/36*

U.S. Cl. 51—41 **5 Claims**



1. A cage slot grinding machine for grinding a plurality of cage slots formed on a circumferential surface of a cage member, comprising:

a bed;

a work head provided on said bed;

a work spindle rotatably carried on said work head and adapted to hold said cage member at one end thereof;

first and second support means slidably mounted on said bed for movement in first and second directions, said directions being respectively perpendicular and parallel to the axis of said work spindle, said first and second support means respectively carrying first and second grinding wheels each rotatable about an axis perpendicular to the axis of said work spindle;

a spindle indexing device connected to said work spindle for angularly indexing said work spindle so as to successively bring said cage slots, two at a time, into alignment respectively with said first and second grinding wheels;

traverse feed means connected with said first and second support means for moving the same in said first direction, but in opposite senses, so as to extend said first and second grinding wheels respectively into said two of said cage slots brought into alignment therewith;

infeed means connected with said first and second support means for moving the same in said second direction but in opposite senses so as to infeed said first and second grinding wheels respectively toward an edge on one side of one of said two cage slots and an edge on the other side of the other of said two cage slots; and

rotational oscillatory means connected with said work spindle for rotationally oscillating the same along a predetermined angular distance.

4,367,612

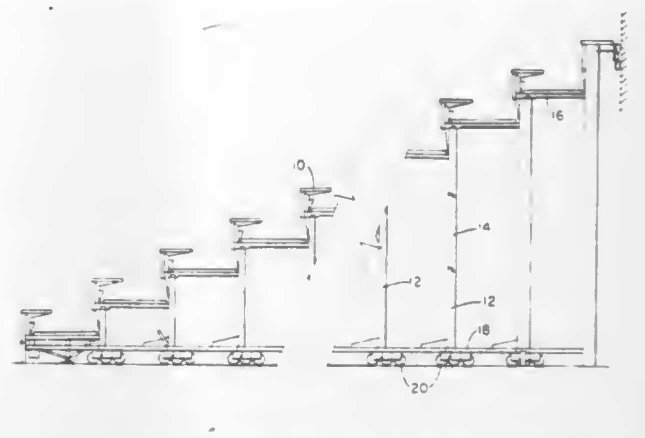
COMPOSITE SUPPORTING STRUCTURE

David L. Sutter, Kennebunkport, Me., assignor to Hussey Manufacturing Company, North Berwick, Me.

Filed Apr. 14, 1980, Ser. No. 139,783

Int. Cl.^{3} E04H *3/12*

U.S. Cl. 52—9 **1 Claim**



1. A composite telescoping support structure comprising:

at least a first open rectangular load supporting frame having a frontwardly facing central open area, said open centralarea forming a cavity of substantially the same shape as said first frame;

at least a second open rectangular supporting frame having a shape substantially the same as but slightly smaller than the central open area of said first frame;

said second frame fitting within the central open area of said first frame in telescoping relation;

means for bracing said first frame against lateral swaying comprising a first unsupported diagonally mounted column flush with the rear of said first frame, means for bracing said second frame against lateral swaying comprising a second diagonally mounted column flush with the rear of said second frame,

said columns each comprising two substantially equal flanges set at an angle between about 80° to 45°,

means including rollers for moving said second frame from a stowed position within said first frame to a use position adjacent to but in front of said first frame, and said second diagonally mounted column connected to said second frame in substantially parallel relation to said first column;

said first and second columns in abutting and partially overlapping relation when said frames are in the stowed position.

4,367,613

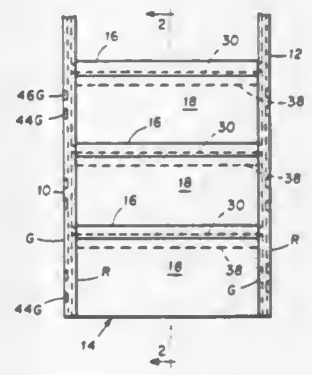
STAIRS AND METHOD OF MAKING THE SAME

Robert D. Strub, 817 S. Capitol, Iowa City, Iowa 52240

Filed Feb. 20, 1981, Ser. No. 236,036

Int. Cl.^{3} E04F *11/00*

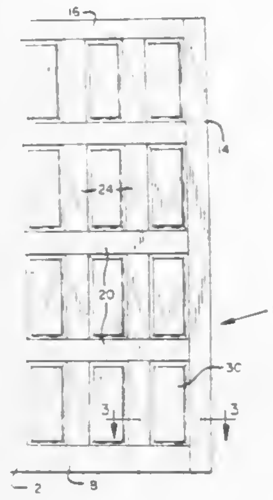
U.S. Cl. 52—188 **8 Claims**



1. A construction for wooden stairs to span the distance between a lower level and an upper level, said stairs compris-

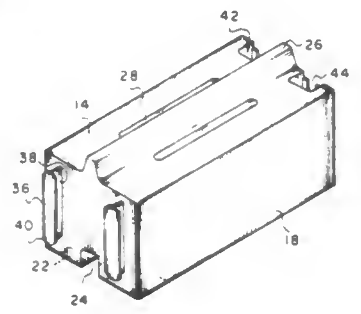
ing longitudinally extending spaced-apart stringers each having a first side and a second side opposite thereto, said stringers extending from the lower level to the upper level, a plurality of treads extending between said stringers in longitudinally spaced-apart horizontal planes according to a predetermined rise, a plurality of risers alternating with said treads and extending between said stringers in longitudinally spaced-apart vertical planes according to a predetermined run, spaced-apart grooves formed in the first side of each of said stringers to receive the ends of said treads and position them according to a first predetermined rise when said stairs are assembled with said first sides of said stringers facing each other, spaced-apart grooves formed in the second side of each of said stringers to receive the ends of said treads and position them according to a second predetermined rise when said stairs are assembled with said second sides of said stringers facing each other, and means to hold said stringers, treads and risers in assembled condition to form a completed stairs with a predetermined rise and run depending upon the selected position of said stringers.

4,367,614
FIRE ENDURANCE DOOR
Charles H. Warwick, Lake Oswego, Oreg., assignor to Tyre Mfg. Co., Inc., Alhambra, Calif.
Filed Oct. 14, 1980, Ser. No. 196,217
Int. Cl.³ E06B *3/70*
U.S. Cl. 52—455 **6 Claims**



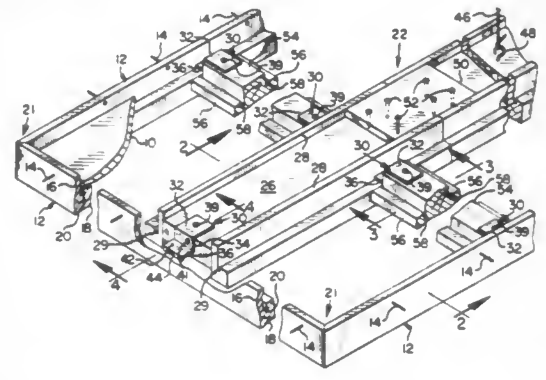
1. In a door, a first set of laterally spaced members extending in the direction of the height of the door and a second set of laterally spaced members extending in the direction of the width of the door spanning the space between the first set of members and connecting with the first set of members,
- said first and second set of members having inwardly facing side edges defining a rectangular space bounded by the members and said inwardly facing side edges having channels extending therealong recessed thereinto,
- a rectangular panel mounted within said space having elongate edge margins extending along the perimeter thereof with said edge margins seated within said channels,
- said edge margins of the panel having grooves extending their lengths and the bases of said channels having grooves extending along their lengths which face the grooves in said edge margins,
- and strips of fire-resistant material having one set of margins fitted within the grooves in the bases of said channels and an opposite set of margins fitted within the grooves in said edge margins of the panels.

4,367,615
REINFORCED INTERLOCKING BUILDING BLOCK
Louis Feldman, 1900 S. Palm Canyon Dr., Palm Springs, Calif. 92262
Filed Sep. 9, 1980, Ser. No. 185,447
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—583 **4 Claims**



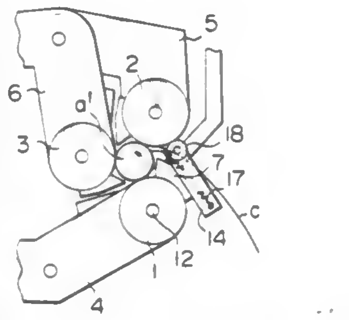
1. An interlocking reinforced building block comprising:
- a substantially rectangularly shaped block comprised essentially of cementitious material;
- at least one metal reinforcing member embedded within said cementitious material, said reinforcing member extending substantially the entire height and the entire length of said block of cementitious material;
- one end of said reinforcing member extending past one end of said block and terminating in an elongated, headed tongue of substantially T-cross section, said tongue extending substantially the entire height of said block, the other end of said reinforcing member terminating in an elongated groove of substantially rectangular cross section, said groove extending substantially the entire height of said block and including a slotted opening running substantially vertically adjacent the other end of said block, said groove having an opening at the top and bottom thereof, the opening at the top being smaller than the cross section of said groove and being only slightly larger than is needed to allow the tongue of a similarly constructed block to pass vertically through, and
- said tongue and groove being constructed so that the tongue of one block can be slid vertically into the groove of a similarly constructed block and wherein the two blocks may have limited longitudinal and pivotal movement with respect to each other while said tongue and groove are engaged.

4,367,616
WOODEN BEAM SUSPENDED CEILING ASSEMBLY
Ronald D. Pearson, 22015 - 146th Ave. East, Graham, Wash. 98338
Filed Apr. 25, 1980, Ser. No. 144,177
Int. Cl.³ E04B *5/52;* **E04F** *19/06*
U.S. Cl. 52—664 **13 Claims**



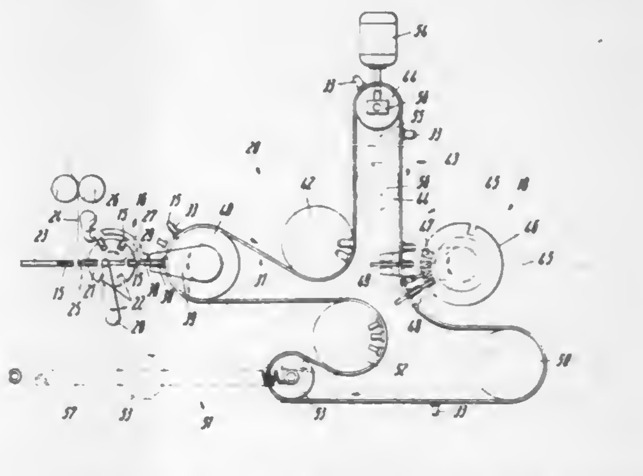
1. A support structure for supporting a plurality of ceiling panels as a suspended ceiling assembly over an area defined by perimeter walls, the support structure comprising:
- (a) an elongated wall hanger attachable to the walls of the defined area and having an upwardly facing horizontal support surface provided with a recess therein terminating above the bottom side of the wall hanger and extending the full length thereof,
- (b) at least one main beam of substantial rigidity arranged to extend freely between opposite walls inwardly of the wall hanger, the main beam having a cross section including a pair of horizontal extensions, one on each side, each having an upwardly facing horizontal support surface provided with a recess therein terminating above the bottom side of its horizontal extensions and extending the full length thereof,
- (c) main beam support means comprising longitudinal extensions on the opposite ends of each main beam arranged to rest on the horizontal support surfaces of the wall hanger on opposite walls for supporting the main beam therebetween for removal vertically upward therefrom, each longitudinal extension including a downwardly extending tongue configured to fit in the recess in the wall hanger,
- (d) a plurality of cross beams each arranged to extend freely between opposed pairs of said horizontal support surfaces, each cross beam having a cross section including a pair of horizontal extensions, one on each side, each having an upwardly facing horizontal support surface, and
- (e) cross beam support means comprising longitudinal extensions on the opposite ends of each cross beam arranged to rest on opposed pairs of the horizontal support surfaces for supporting the cross beam therebetween for removal vertically upward therefrom, each longitudinal extension including a downwardly extending tongue configured to fit in a recess in the wall hanger or main beam,
- (f) the main and cross beam support means being arranged to dispose the horizontal support surfaces of the wall hanger and main and cross beams in a common plane to form an upwardly facing support for the edges of ceiling panels.

4,367,617
GUIDE DEVICE FOR GUIDING WRAPPING PAPER IN COIN WRAPPING MACHINE
Yorizo Miyazaki, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1981, Ser. No. 242,328
Claims priority, application Japan, Apr. 2, 1980, 55-44281[U]
Int. Cl.³ B65B *11/04*
U.S. Cl. 53—212 **3 Claims**



1. A coin wrapping machine for wrapping coins with a web of wrapping sheet, the machine having coin wrapping rollers which are adapted to move toward each other to take a first position where the coin wrapping rollers are engaged with the coins for a wrapping operation and to move away from each other to take a second position where the coin wrapping rollers are retracted, said machine further comprising:
- a main guide plate mounted on one of the coin wrapping rollers for rotation about the axis thereof;
- a subsidiary guide plate slidably mounted on the main guide plate for guiding said web between said wrapping rollers and coins; and
- biassing means for biassing the subsidiary guide plate to project toward another one of the coin wrapping rollers when the coin wrapping rollers take the first position, said subsidiary guide plate being provided with at least one abutting roller to abut against the periphery of the another one of the coin wrapping rollers when the coin wrapping rollers take the first position.

4,367,618
VARIABLE CAPACITY BUFFER STORAGE CONVEYOR FOR CIGARETTE PACKAGING APPARATUS
Heinz Focke, Moorstrasse 64, 309, Verden/Aller, Fed. Rep. of Germany
Continuation of Ser. No. 48,117, Jun. 13, 1979, abandoned, which is a continuation of Ser. No. 929,051, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 550,797, Feb. 18, 1975, abandoned. This application Sep. 18, 1980, Ser. No. 188,418
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1974, 2407580
Int. Cl.³ B65B *11/30*
U.S. Cl. 53—234 **8 Claims**



1. In a cigarette packaging apparatus including a first unit for wrapping groups of cigarettes in an inner blank of tin-foil or the like to form individual blocks wherein flaps of the blank are folded but not glued, and a second unit for enclosing the blocks in an outer box of paper or the like wherein flaps of a box blank are glued together, and wherein the second unit is more susceptible to operational breakdowns and malfunctions than the first unit, the improvement characterized by:
- a variable capacity buffer storage device operatively disposed in series between the first and second units to serially receive blocks from the first unit and deliver them to the second unit, said storage device comprising:
  - (a) an endless belt conveyor,
  - (b) a plurality of fixed pulleys over which the conveyor is guided,
  - (c) at least two movable pulleys over which the conveyor is guided to define a variable length storage loop and a variable length takeup loop in the conveyor,
  - (d) a plurality of generally rectangular compartments serially mounted on the conveyor for individually receiving a foil-wrapped cigarette block,
  - (e) each compartment including a bottom wall having a slot formed therein, and a plurality of upstanding side walls defining an entrance opening with the spacing between the walls and their dimensions being configured to closely accommodate cigarette blocks to prevent the unfolding of the foil wrapper flaps during storage and transport on the conveyor.
  - (f) means for moving one of the movable pulleys to decrease the length of the storage loop in response to a breakdown in the second unit
- wherein said first unit comprises a rotating member (21) having radially outwardly open compartments (22) for receiving cigarette groups (15) with a tin-foil blank member partially folded thereabout, folding means for further partially folding said tin-foil blank about said cigarette groups to form cigarette blocks, means for radially transferring said blocks from said rotating member into receiving means, means for accelerating said receiving means to

the speed of said endless belt conveyor, and means for laterally transferring said blocks from said receiving and accelerating means into the conveyor compartments with an end of each blank having no flaps or folds disposed in an outwardly facing compartment opening, and

wherein said second unit comprises means for individually ejecting the cigarette blocks from the conveyor compartments and delivering them to box-containing compartments of a rotating receiving means, said ejecting means including a reciprocating member mounted on a rotatable element, means for accelerating said element to the speed of said conveyor, and means for reciprocating said member to extend through said slot to eject said cigarette blocks from said conveyor compartments.

4,367,619

DEVICE FOR STACKING SLIDE FRAMES INTO A CONTAINER

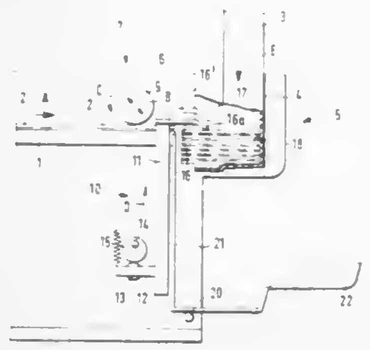
Johannes Lorsch, An der Bleiche 49, D-4172 Straelen, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 177,444

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932286

Int. Cl.^{3} B65B *5/10*

U.S. Cl. 53—245 **7 Claims**



1. A device for stacking flat slide frames and the like into a container, comprising conveyor means for conveying the frames consecutively into the container inserted in a receiver; means operatively positioned to maintain a selected vertical container position in said receiver corresponding to the elevational position of slide frames moving along said conveyor; a lifting mechanism timed synchronously with said conveyor to produce a pressing force that exceeds a braking force of said container position means for maintaining stacked slides below the elevational position of the conveyor means, a pusher extendable into a stack receiving area of said container and being vertically movable a predetermined height in the plane of moement of said containers to exert the pressing force, said pusher having movement reversal points located on opposite sides of an area of said receiver and said container which operatively coact with the said conveyor in the direction of movement of said slide frames; and means for accelerating slide frames into the container, including an accelerating roll operatively positioned above the conveyor path, said accelerating roll being adjustable relative to the conveyor path to contact and accelerate slide frames and the like of varying thicknesses.

4,367,620

VALVED BAG SEALING

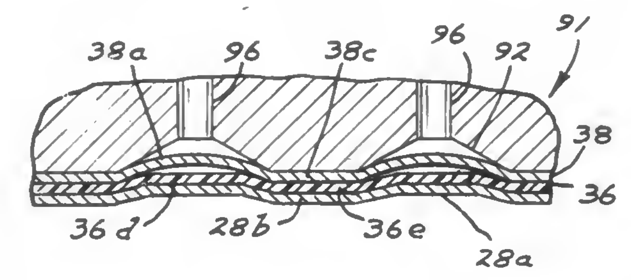
Harold K. Fox, Minneapolis, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Dec. 15, 1980, Ser. No. 216,446

Int. Cl.^{3} B65B *7/06, 51/10*

U.S. Cl. 53—479 **10 Claims**

1. A method of forming a sealed valve bag top closure on a filled valve bag that in an upright condition has juxtaposed bag top closure wall portions including at least one relatively porous upper wall portion and a valve member adherable to at least one upper wall portion through the application of heat and cooling to form a valve closure, said valve member extending below and along at least part of the lower surface of said at least one wall portion, comprising heating a heater vacuum head, applying a vacuum through the heated vacuum head through the at least one upper wall portion after the bag is filled to draw at least part of the valve member against the adjacent part of the at least one upper wall portion and the at least one upper wall portion against the head, and heat said parts sufficiently that after cooling the said parts adhere to one another to form a valve closure seal, then discontinuing the application of the vacuum through the vacuum head, and thence moving the vacuum head away from the bag and allowing the valve member and the at least one upper wall portion to cool to form the sealed valve closure.



4,367,621

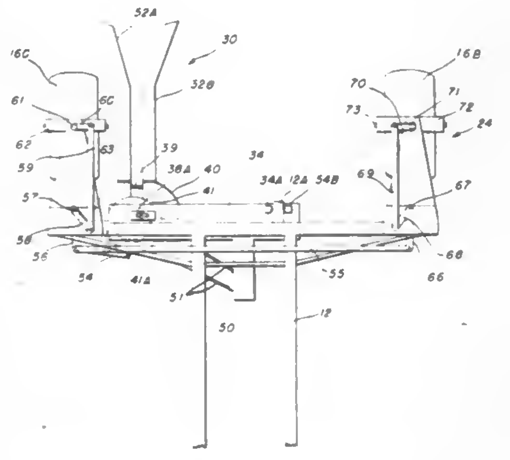
CROP HARVESTER INCLUDING A QUICKLY ADJUSTABLE SEMI-FLOATING, SELF-STEERING CUTTER HEAD

Larry D. Swetnam; James H. Casada, and Linus R. Walton, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Apr. 9, 1981, Ser. No. 252,315

Int. Cl.^{3} A01D *45/16, 55/00, 91/04*

U.S. Cl. 56—10.2 **25 Claims**



1. A harvesting aid for harvesting row crops comprising:

a support frame mounted on a plurality of ground engaging wheels;

a motor means operatively connected to at least one ground engaging wheel to impel the support frame along the ground surface;

steering linkage means connected to at least one ground engaging wheel to steer the support frame along the ground surface;

a self-steering cutter adjustably mounted on the support frame and operatively connected to said steering linkage, said self-steering cutter including a top steering plate rotatably mounted thereto and a cutter blade for severing row crops as the harvesting aid is steered along a specific predetermined row of row crops;

said self-steering cutter including outwardly projecting guidance sensors which are attached to said top steering plate, said guidance sensors being positioned to engage said specific predetermined row of row crops to selectively impart movement to the steering linkage means to steer the harvesting aid along the specific predetermined row of crops and being mounted for limited vertical movement; and

adjustment means for adjusting said self-steering cutter relative to said support frame to adjust the height of said self-steering cutter above ground level enabling severing of the row crops in close proximity to the ground surface;

said self-steering cutter and said adjustment means being constructed as an integral unit to enable steering of the harvesting aid along the specific predetermined row of row crops while severing the row crops in close proximity to the ground surface.

4,367,622

PICK-UP DEVICE

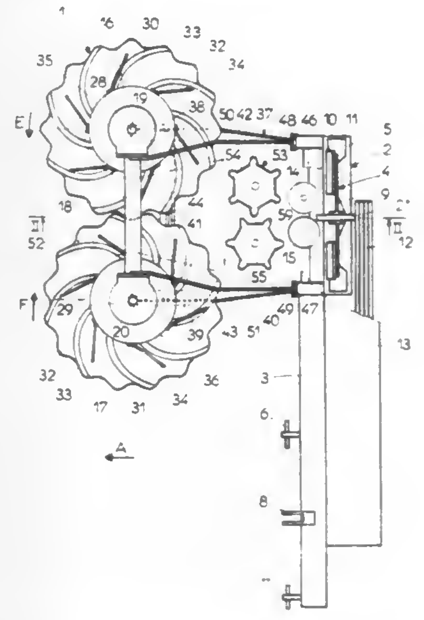
Jerome Aron, Bouxwiller; Michel Quirin, Wasselonne, and Albert Wattron, Marmoutier, all of France, assignors to Belrecolt S.A., Marmoutier, France

Filed Apr. 13, 1981, Ser. No. 253,220

Claims priority, application France, Apr. 15, 1980, 80 08668; Jul. 22, 1980, 80 16400

Int. Cl.^{3} A01D *43/00, 65/00, 89/00*

U.S. Cl. 56—364 **13 Claims**



1. An arrangement for gathering forage situated at the level of the ground, particularly cut herbage,

comprising, in combination,

a support movable in an advancing direction on the ground;

at least one carrier mounted on said support for rotation about an upright axis which is slightly inclined in the advancing direction with respect to the vertical;

rotating means for rotating said carrier about said axis;

a flexible deformable skirt mounted near the lower portion of said carrier for rotation therewith and adapted to make contact with the forage on the ground at its forward section to gather the forage;

receiving means arranged near the rear of said carrier operable for receiving the gathered forage, and

a plate extending from below said skirt rearwardly to said receiving means for guiding the forage gathered by said skirt towards said receiving means.

4,367,623

PIECING UP A FRICTION SPINNING APPARATUS

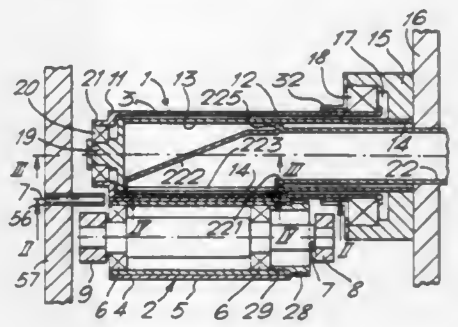
Alan Parker, 7 Darvel Close, Breightmet, Bolton, Lancashire; Peter J. Dickinson, 30 Narcissus Ave., Helmshore, Rossendale, Lancashire; Douglas O. Clough, 26 Parkwood Dr., Rawtenstall, Rossendale, Lancashire, and William M. Farnhill, 335 Colne Rd., Burnley, Lancashire, all of England

Filed Feb. 17, 1981, Ser. No. 235,332

Claims priority, application United Kingdom, Feb. 16, 1980, 8005322

Int. Cl.^{3} D01H *15/02*

U.S. Cl. 57—263 **21 Claims**



1. A method of starting spinning an open-end spinning apparatus including at least one surface, fibre feed means for feeding fibres onto the surface at a yarn formation area, means for applying a suction through the surface at a yarn formation area, means for moving the surface past the yarn formation area to twist the fibres deposited thereon the form a yarn, means for withdrawing the yarn transversely to the direction of motion of the surface, and means for packaging the withdrawn yarn,

the method comprising, taking the yarn end from the package and withdrawing it such that the end portion of the yarn extends to a predetermined length, placing the end portion of the surface at the yarn formation area, restarting the fibre feed means and restarting the withdrawal of the yarn from the yarn formation area,

characterized in that the end portion is first moved to a position such that it lies adjacent the yarn formation area and in such a condition that it is free from the influence of the suction and then the end portion is brought under the influence of the suction such that it is drawn to lie on the yarn formation area.

12. Apparatus for open-end spinning yarn comprising at least one surface, fibre feed means for feeding fibres onto the surface at a yarn formation area, means for applying a suction through the surface at the yarn formation area drive means for moving the surface past the yarn formation area to twist the fibres deposited thereon to form a yarn, means for withdrawing the yarn transversely to the direction of motion of the surface and means for packaging the withdrawn yarn,

characterized in that for starting spinning on the apparatus there are provided means for moving an end portion of yarn withdrawn from the package to a position adjacent the yarn formation area, the end moving means and suction means being so arranged that in said position the end portion is free from the influence of the suction means, and means for bringing the end portion under the influence of the suction means such that it is drawn to lie on the yarn formation area.

4,367,624

CONTROL SYSTEM FOR HYDRAULIC ACTUATOR

Yasuhiro Ogata, and Norishige Mutou, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 15, 1980, Ser. No. 121,735

Claims priority, application Japan, Feb. 20, 1979, 54-19754[U]

Int. Cl.^{3} F15B *11/16*

U.S. Cl. 60—484 **3 Claims**

1. A control system for controlling a hydraulic actuator

during full stroke operations and inching operations, said control system comprising:

an engine;

a first hydraulic pump with a large displacement capacity driven by said engine;

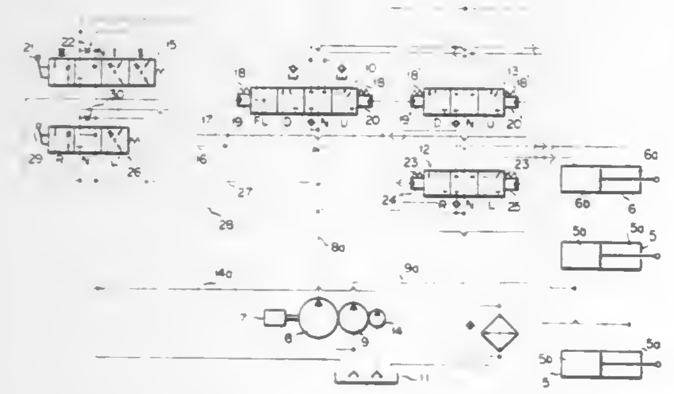
a second hydraulic pump with a small displacement capacity driven by said engine;

a pilot pump driven by said engine;

first pilot operated control valve means connected at the input side thereof to said first pump, the output side thereof being selectively connected to said hydraulic actuator and a drain;

second pilot operated control valve means connected at the input side thereof to said second pump, the output side thereof being selectively connected to said hydraulic actuator and a drain wherein said second pilot operated control valve means is actuated by a lower pilot pressure than said first pilot operated control valve means; and

third control valve means for pilot pressure connected at the input side thereof to said pilot pump, the output side thereof being connected to said first and second pilot operated control valve means for controlling the actuation thereof, such that, during full stroke operations, said first and second pilot operated control valve means are actuated by said third control valve means such that said hydraulic actuator is operated by hydraulic fluid from said first and second hydraulic pumps and during inching operations, only said second pilot operated control valve means is operated by said third control valve means such that said hydraulic actuator is operated by hydraulic fluid from only said second hydraulic pump, wherein each of said first and second pilot operated control valve means has two pilot ports formed therein one of which is connected to said third control valve means for pilot pressure through a first conduit, the other port being connected to said third control valve means for pilot pressure through a second conduit and wherein adjustable restrictor means is provided between said first and second conduits, said restrictor means being interlocked with lever means for operating said third control valve means for pilot pressure.



4,367,625
STIRLING ENGINE WITH PARALLEL FLOW HEAT EXCHANGERS

Nicholas G. Vitale, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

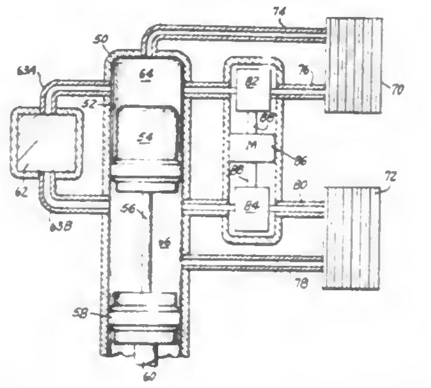
Filed Mar. 23, 1981, Ser. No. 246,879

Int. Cl.^{3} F02G *1/04*

U.S. Cl. 60—517 **11 Claims**

1. A Stirling engine having at least one cylinder having a first piston mounted for reciprocation therein; an expansion space in said cylinder on one side of said piston; a regenerator having one side communicating with said expansion space; a compression space communicating with the other side of said regenerator; a second piston mounted for reciprocation in a second cylinder and communicating with said compression space; a gas heater in communication with said expansion space, and a gas cooler in communication with said compression space; wherein the improvement comprises:

a first circuit including a first set of parallel gas flow conduits connecting said gas heater to said expansion space, and first means for circulating working gas through said heater, through one of said conduits on one set, through said expansion space, through the other of said conduits on said one set, and back to said heater;



a second circuit including a second set of parallel gas flow conduits connecting said gas cooler to said compression space, and second means for circulating working gas through said cooler, through one of said conduits on the other set, through said compression space, through the other conduit on said other set, and back to said cooler;

whereby the thermodynamic process in each space tends to be isothermal and the critical length phenomenon is alleviated for improved cycle efficiency.

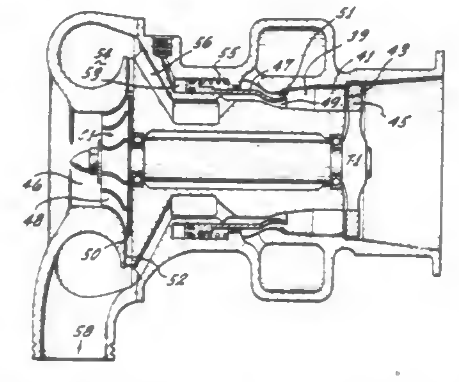
4,367,626
TURBOCHARGER SYSTEMS

Everett H. Schwartzman, 2751 Toledo St., Torrance, Calif. 90503

Filed Jul. 16, 1979, Ser. No. 57,563

Int. Cl.^{3} F02B *37/00*

U.S. Cl. 60—606 **16 Claims**



1. A turbocharger system for a combustion engine comprising:

a compressor having an ambient air inlet and a compressed air outlet,

a turbine having an inlet for driving fluid and an outlet,

ejector mixing means having a first and second inlet and an outlet, the outlet of said ejector mixing means being connected to the inlet of said turbine,

means connected to receive the compressed air from the outlet of said compressor and for flowing one portion thereof to the combustion engine and another portion thereof to said first inlet of said ejector mixing means,

means to flow exhaust gas from the combustion engine to said second inlet of said ejector mixing means,

said ejector mixing means including ejector nozzle means cooperating with said first and second inlets whereby the engine exhaust gas is admixed with the other portion of the compressor output in said nozzle means to form a turbine drive fluid which flows out of said ejector mixing means outlet; a said ejector nozzle means being movable with respect to said first and second inlets and including a primary nozzle and a secondary nozzle and wherein the area of one is increased as the area of the other is decreased, and

means connecting said turbine to drive said compressor.

4,367,627
SYSTEMS FOR UTILIZING THE ENERGY OF A MOVING AIR CURRENT

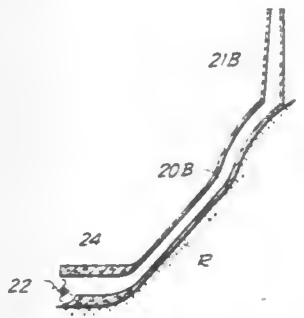
Gisberto Pretini, 3, Via Macerata, S. Frediano A Settimo, Pisa, Italy

Filed Jun. 30, 1980, Ser. No. 164,574

Claims priority, application Italy, Jul. 6, 1979, 45217 A/79; Jul. 12, 1979, 45219 A/79

Int. Cl.^{3} F03G *7/02*

U.S. Cl. 60—641.12 **1 Claim**



1. An energy utilization system comprising:

a plurality of chimneys arranged side by side in a row, said chimneys extending upwardly along and conforming to a natural hilly slope, said row lying across the slope;

said chimneys each having a bottom portion extending substantially horizontally and having a lower inlet mouth;

said chimneys each including a top portion extending substantially vertical, each top portion having a substantially horizontally lined outlet mouth for inducing an air current into each lower inlet mouth and through said chimneys to each upper outlet mouth respectively;

means on said chimney for absorbing external heat for increasing a temperature of the air current and thus increasing the air current in said chimneys;

a single engine mounted on said chimneys at said bottom portions thereof and in a path of the air current;

said engine comprising a rotor mounted for rotation about a horizontal axis and including a plurality of radially extending blades each being concave in a direction opposite the air current adjacent the tip of each inlet mouth; and

a deflector upstream of the air current positioned adjacent a bottom of each inlet mouth and in front of a bottom portion of said rotor whereby the air current is concentrated at a top of said rotor to rotate said rotor and drive said engine.

4,367,628
LOW CHEMICAL CONCENTRATING STEAM GENERATING CYCLE

James D. Mangus, Greensburg, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 27, 1981, Ser. No. 238,774

Int. Cl.^{3} F01D *17/00*

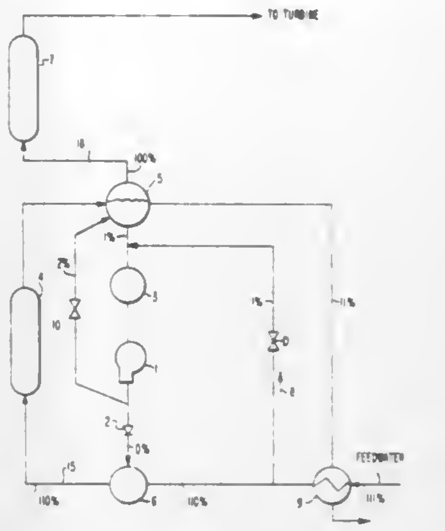
U.S. Cl. 60—657 **1 Claim**

1. A steam cycle for the generation of steam in a power generation station which comprises:

A. an evaporator;

B. a steam drum-separator in fluid contact with said evaporator;

C. a circulation pump disposed to remove a portion of fluid flow from said steam drum-separator and pump said portion back through said evaporator to said separator through a first flow path, operation of said circulation pump thereby constituting a recirculation mode of operation for said steam cycle and non-operation of said circulation pump constituting a closed mode of operation of said steam cycle;



and further comprising a second flow path allowing controlled flow from the discharge of said circulation pump directly to the steam separator without passing through said evaporator.

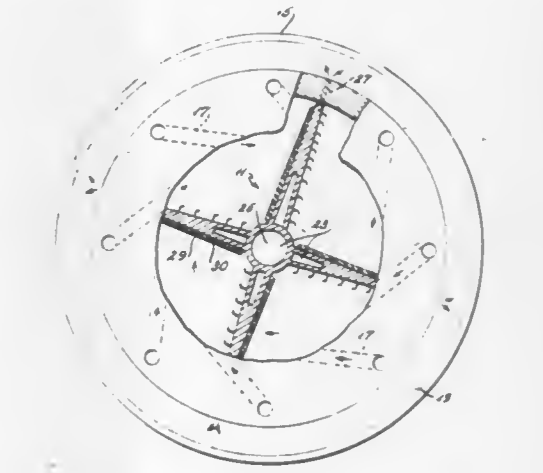
4,367,629
RANKINE CYCLE ENGINE

Gordon L. Cann, P.O. Box 279, Laguna Beach, Calif. 92652

Filed Oct. 7, 1980, Ser. No. 194,918

Int. Cl.^{3} F01K *9/00, 11/04*

U.S. Cl. 60—669 **17 Claims**



1. A rotary Rankine cycle engine comprising:

(a) a rotor having cooling passageways therein, the rotor having a plurality of blades thereon and being rotatable about a center axis;

(b) a stator consisting of a stationary housing having a center axis and a perimeter, the center axis of the stationary housing being coincidental with the center axis of the stationary housing being coincidental the with center axis of the rotor;

(c) a rotor housing area within the stator, the rotor housing area containing the rotor;

(d) a duct housing integral with the stator and located within the stator adjacent the rotor housing area;

(e) an outer chamber, the outer chamber consisting of a fluid space within the stator extending from the outer perimeter to the duct housing;

(f) a heat-receiving portion on the perimeter of the stator, the heat-receiving portion conducting heat from without the stator to within the stator, thereby permitting the outer chamber to act as a boiler section;

- (g) fluid ducts within the duct housing, the fluid ducts permitting fluid to flow from the outer chamber to the rotor housing area;
- (h) rotor axis bearings, the rotor axis bearings supporting the rotor for rotation about said coincidental axes;
- (i) a fluid impingement surface on at least one side of each blade, the fluid impingement surfaces operable to receive fluid from the fluid ducts, thereby acting as working surfaces to convert kinetic energy of fluid received from said ducts to rotational mechanical energy output from the rotor;
- (j) a condensation surface on each blade, so that the blade is operable to communicate heat from said condensation surface to said cooling fluid passageways,
- (k) baffle means on the condensation surface, the baffle means communicating with an outlet end and arranged so that, with the rotor rotating, condensate on the condensation surface is directed by centrifugal force radially outward toward the outer chamber.

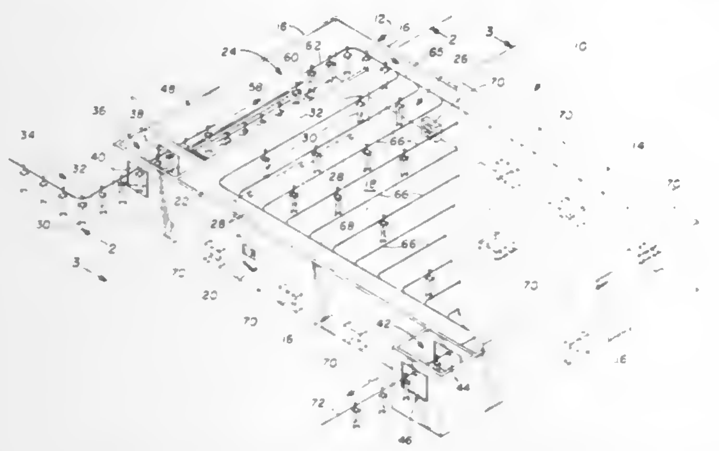
wherein, when heat is applied to the heat-receiving portion of the stator and cooling fluid is provided to the cooling passageways of the rotor, a working fluid may be heated in the outer chamber, expand in the fluid ducts and rotor housing area, impinge against the working surface, be condensed at the condensation surface and be directed back to the outer chamber.

4,367,630

SYSTEM FOR RAPIDLY CHILLING CARCASSES

Vincent R. Bernard, Dallas County; R. James Ellis, Collin County, both of Tex., and Ivan Rasovich, Los Angeles County, Calif., assignors to The Jimmy Dean Meat Company, Inc., Dallas, Tex.

Filed Sep. 10, 1980, Ser. No. 186,145
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 9 Claims



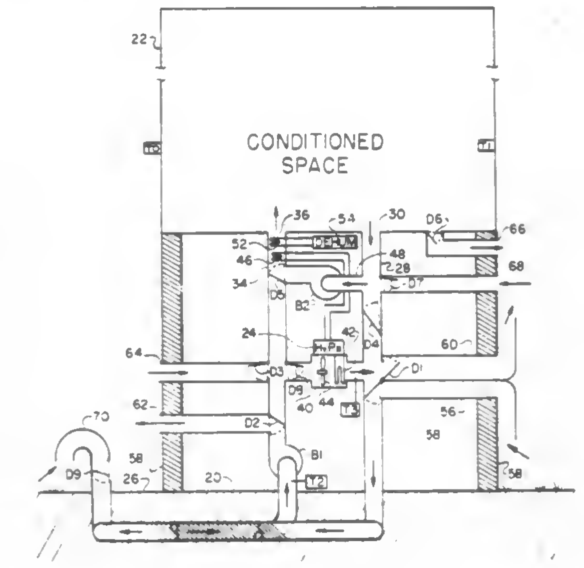
1. A method of chilling a fresh-killed carcass at substantially original body temperature to a temperature slightly above freezing, comprising the steps of:
- (a) providing an enclosure including a first subchamber with a tank of cryogenic liquid therein, and a second subchamber filled with circulating vapors liberated from the tank of cryogenic liquid;
- (b) advancing the carcass into the first subchamber and over the tank of cryogenic liquid;
- (c) lowering the carcass into the tank of cryogenic liquid;
- (d) lifting the carcass out of the tank of cryogenic liquid after a time sufficient to crust-freeze exterior portions of the carcass;
- (e) advancing the carcass into the second subchamber;
- (f) holding the carcass in the second subchamber and the circulating vapors liberated from the tank of cryogenic liquid for a time sufficient to chill the interior portions of the carcass and accomplish substantial equilibration thereof; and
- (g) removing the carcass from the second subchamber for further processing.

4,367,631

AIR CONDITIONING APPARATUS AND METHODS USING UNDERGROUND DUCT

Harold R. Johnson, P.O. Box 849, Monroe, N.C. 282110; Harold F. McKnight, and Richard Ferguson, both of Charlotte, N.C., assignors to Harold R. Johnson, Monroe, N.C.

Filed Jun. 16, 1980, Ser. No. 159,671
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—79 9 Claims



1. An energy-conserving method for exchanging heat between air and a heat pump at the reservoir side thereof for enabling heat exchange between the working side of said heat pump and indoor air thereat, said method including the use of underground duct means, said method comprising:
- (a) passing ambient outdoor air to said heat pump through said duct means for exchanging heat between said passing air and said duct means when said exchange is favorable to condition the temperature of said ambient air for increased efficiency of operation of said heat pump as compared to passing ambient outdoor air directly to said heat pump for said exchanging heat therewith; and
- (b) selectively discontinuing step (a) while passing ambient outdoor air directly to said heat pump for directly exchanging heat therebetween when the temperature of said ambient air passing directly to said heat pump is favorable for increased efficiency of operation of said heat pump as compared to passing air through said duct means to said heat pump, while passing other ambient outdoor air through said duct directly back to the outdoors for exchanging heat between said duct and said other air passing therethrough.

4,367,632

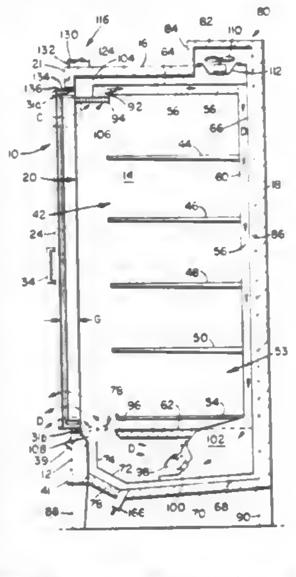
FLEXIBLE DOOR OPERATING MECHANISM FOR REFRIGERATED MERCHANDIZER DISPLAY CABINET

Fayez F. Ibrahim, Niles; Elmer J. Subera, Cassopolis, and James E. Myers, Niles, all of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed May 8, 1981, Ser. No. 261,872
Int. Cl.³ F25D *21/12*
U.S. Cl. 62—82 25 Claims

10. A method for operating a refrigerated display cabinet having refrigeration means and a display space therein, and having an opening in at least one wall of the cabinet for communicating ambient outside air with the air in the cabinet, the opening comprising an access opening for permitting products to be moved into and out of said display space, air moving means for circulating at least one air band within the cabinet and into contact with the refrigeration means during a refrigeration cycle, covering means for the opening including a barrier door for substantially covering the access opening, and the refrigeration means comprising a low temperature element; the method comprising the steps of:

selectively operating the display cabinet and a refrigeration cycle of operation and in a defrost cycle of operation; during a refrigeration cycle, circulating the air band through the cabinet and into contact with the low temperature element; during a defrost cycle of operation, terminating operation of the refrigeration means, causing ambient air to be drawn into the cabinet and across the low temperature element, causing the defrost ambient air to be ejected from the cabinet, creating a gap between the barrier door and the access opening to enable ambient air through-flow and providing for closing of the gap between the barrier door and the access opening by exertion of an outside force by the take-up of motion in a flexing means and re-establishment of the gap when the force is removed; the closing of the gap transmitting the exerted outside force to the cabinet; whereby ambient air is drawn into the air band and across the low temperature element to defrost the same by communicating ambient air with the air band in the display cabinet.

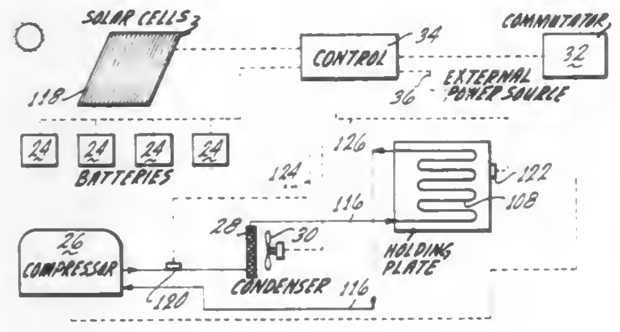


4,367,633

BATTERY AND SOLAR POWERED REFRIGERATING SYSTEM

Ronald L. Strathman, P.O. Box 6557, San Diego, Calif. 92106

Filed Jan. 7, 1980, Ser. No. 110,233
Int. Cl.³ F25B *27/00;* F25D *23/12*
U.S. Cl. 62—236 2 Claims



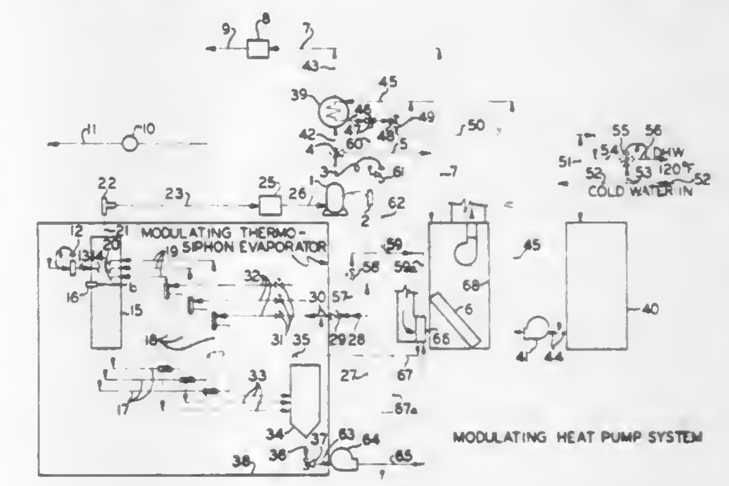
1. A refrigerating system comprising:
- a thermally insulated storage container having an interior compartment;
- a refrigerant circuit for cooling the interior compartment of the storage container when energized with a predetermined minimum level of electric power, including a refrigerant compressor for delivering compressed refrigerant, a condensor for receiving the compressed refrigerant and delivering it to an evaporator coil, and a fan for circulating air past the condenser;
- a holding plate tank mounted in the interior compartment of the storage container and housing the evaporator coil;
- a quantity of a eutectic solution within the tank having a freezing point below 32° F.;
- a plurality of batteries for providing the predetermined minimum level of electric power when sufficiently charged;
- an array of solar cells having an output which is above the predetermined minimum level of power when exposed to a sufficient intensity of solar radiation; and
- control means interconnected with the refrigerant circuit, the batteries and the solar cells for causing the refrigerant circuit to be powered by the solar cells when their output is above the predetermined minimum level of power, and for causing the refrigerant circuit to be powered by the batteries when the output of the solar cells is below the predetermined minimum level of power, the control means including first thermostat means for causing the refrigerant circuit to operate only so long as the temperature of the eutectic solution is above a first predetermined temperature, and second thermostat means for causing the fan to operate only when the temperature of the refrigerant delivered by the compressor is above a second predetermined temperature.

4,367,634

MODULATING HEAT PUMP SYSTEM

Bruce E. Bolton, 485 Akron Rd., Wadsworth, Ohio 44281

Continuation-in-part of Ser. No. 29,325, Apr. 12, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,507
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 5 Claims



1. A heating and cooling system for use in a dwelling comprising,
- a fluid source of heat,
- a source of fluid heat transfer media,
- a closed circuit heat transfer system comprising
- a recirculating thermosiphon heat transfer unit having an inner pipe disposed within an outer pipe to define a coaxial pipe having an annulus therebetween, said pipes being coiled to form a coil helix,
- container means for holding a fixed level of a liquid phase of the fluid heat transfer media,
- one end of said inner pipe being connected to the bottom of said container means with the liquid phase of said fluid heat transfer media flowing therethrough,
- the opposite end of said inner pipe being connected to said container means above the level of the liquid phase of said fluid heat transfer media,
- the outer of said pipes being connected at its one end to the pipes containing the source of fluid heat,
- the opposite end of said outer pipe being connected to means to enable a self-draining flow of said fluid heat source through said annulus,
- variable capacity compressor means connecting with said container means being operable to move the fluid heat transfer media through said system at a controllable mass rate,
- the input of said compressor means being connected with

said container means above the level of the fluid phase of said media disposed therein,

the flow of said fluid heat source being effective to cause at least a partial vaporization of the heat transfer media in said inner pipe being operable to separate said media into a liquid phase and a vapor phase whereby said media flows through said inner pipe absorbing the heat of vaporization,

the liquid phase of said heat transfer media returning to the lower part of said container means and the vapor phase of said heat transfer media returning to the input of said compressor means,

and heat exchanger means operatively connected to the output of said compressor for receiving the vapor phase of said heat transfer media and removing heat therefrom.

4,367,635

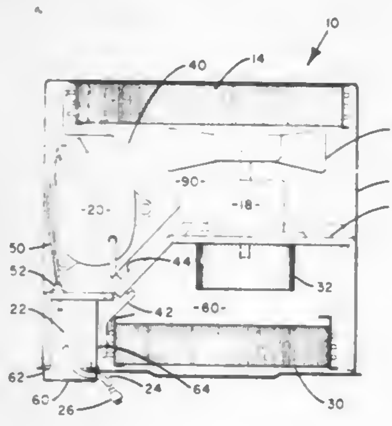
COMBINATION CONTROL BOX AND SERVICE CORD STRAIN RELIEF FOR AN AIR CONDITIONING UNIT

Brad G. Leech, Fayetteville, and Cosimo Caronna, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse. N.Y.

Filed Jun. 15, 1981, Ser. No. 274,013

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.1 **10 Claims**



1. An air conditioning unit which comprises a compressor, an indoor heat exchanger and an outdoor heat exchanger connected to form a refrigeration circuit, fan means for circulating air to be conditioned in heat exchange relation with the indoor heat exchanger, a control box wherein electrical components for the unit may be located, a power cord for connecting electrical components of the unit to an external power source and wherein said control box includes a clip portion forming a cord strain relief device, said power cord passing between the clip portion and a planar surface of the control box and further including fastening means for displacing the clip portion to secure the power cord between the clip portion and the planar surface.

4,367,636

AIR CONDITIONER

Kiyoshi Sakuma; Isamu Nakazima, and Tetuo Sugiyama, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1981; Ser. No. 288,353

Claims priority, application Japan, Sep. 24, 1980, 55-135521[U]; Sep. 24, 1980, 55-135522[U]; Sep. 24, 1980, 55-135523[U]

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—262 **10 Claims**

1. An air conditioner comprising:

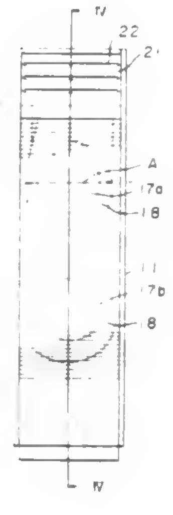
a casing having a front and a rear;

an air suction grille adjacent said front of said casing;

a heat exchanger positioned adjacent, and to the rear of, said grille;

an inner casing positioned to the rear of said heat exchanger, said inner casing having at least an upper and a lower suction inlet facing said heat exchanger, the perpendicular distance between said heat exchanger and said lower inlet being greater than the perpendicular distance between said heat exchanger and said upper inlet;

a multiblade blower facing each of said inlets from the rear thereof,



a casing outlet; and

first and second air passages respectively connected between the blowers of said upper and lower inlets and said outlet, said second air passage extending between said rear of said casing and said blower of said upper inlet.

4,367,637

APPARATUS FOR THE MAINTENANCE OF REFRIGERATION EQUIPMENT

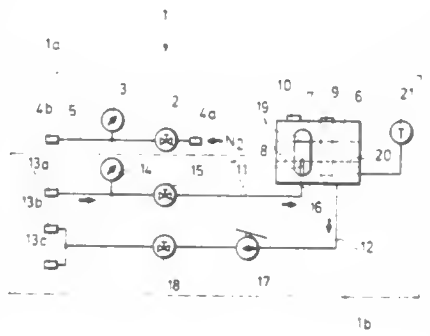
Horst Paulokat, Horneburg, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 274,870

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024098

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—292 **9 Claims**



1. An apparatus for the maintenance of refrigeration equipment, comprising first conduit means (*1a*) including first coupling members connectable to said refrigeration equipment and to a source of nitrogen under pressure for pressure emptying said refrigeration equipment, second conduit means (*1b*) including second coupling members and a source of refrigerant connectable to refrigeration equipment and to said source of refrigerant for replenishing refrigeration equipment with new refrigerant, and venting means forming part of said second means connectable to refrigeration equipment for venting the refrigeration equipment, and wherein said second conduit means (*1b*) comprise a tank for holding a quantity of refrigerant, an inlet conduit (**11**) operatively connected to said tank (**6**), an outlet conduit (**12**) operatively connected to said tank (**6**), a pressure gage (**14**) operatively connected to said inlet conduit, a valve (**15**) operatively connected in said inlet conduit (**11**), further valve means (**18**) connected in said outlet conduit (**12**), and pump means (**17**) operatively connected to said outlet conduit (**12**) for conveying refrigerant, said second coupling means being connected to the free end of said outlet conduit means (**12**).

4,367,638

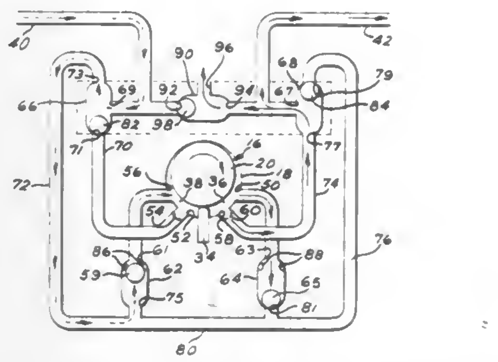
REVERSIBLE COMPRESSOR HEAT PUMP

David A. Gray, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 30, 1980, Ser. No. 164,666

Int. Cl.³ F25B *13/00;* **F04C** *18/00, 29/08*

U.S. Cl. 62—324.6 **8 Claims**



1. A reversible hermetically sealed rotary refrigerant compressor comprising:

a hermetic casing containing a high pressure refrigerant gas including a first and second opening;

a compressor unit positioned in said casing; including a cylinder having an annular chamber, spaced under and lower end walls connecting with said cylinder and enclosing said annular chamber, a rotor eccentrically rotatable within said chamber with the peripheral surface of said rotor arranged to move progressively into sealing relation with successive portions of said annular chamber;

a reversible motor in said casing having a shaft thereon extending into said cylinder for driving said rotor;

a radial slot in said cylinder communicating with said chamber;

a blade slidably positioned in said radial slot;

means biasing said blade against said rotor for following said rotor thereby to drive said chamber into interchangeable high and low pressure sides;

a first gas suction port in said cylinder communicating with one side of said chamber;

a first gas discharge port in said cylinder communicating with the other side of said chamber;

a second gas suction port in said cylinder communicating with the other side of said chamber;

a second gas discharge port in said cylinder communicating with said one side of said chamber;

a discharge check valve associated with each of said discharge ports dimensioned to prevent reverse flow of refrigerant into the respective side of said chamber;

a suction check valve associated with each of said suction ports dimensioned to prevent reverse flow of refrigerant from the respective side of said chamber;

first conduit means connecting said first suction port to said one casing opening and said first discharge port to said other casing opening when rotation of said rotor in one direction;

second conduit means connecting said second suction port to said other casing opening and said second discharge port to said one casing opening when rotation of said rotor is in the other direction; and

valve means communicating with said first and second conduit means being responsive when high pressure refrigerant gas is flowing through one of said conduit means from its associated discharge port for discharging a portion of said high pressure refrigerant gas therefrom into said casing to maintain the interior of said casing at said high pressure while preventing the flow of high pressure discharge gas from entering the suction port through the other of said conduit means.

4,367,639

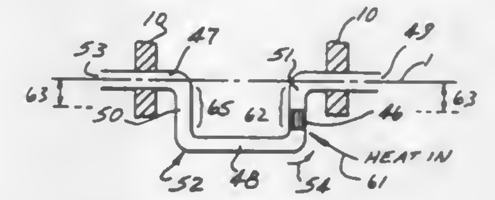
ROTARY THERMODYNAMIC APPARATUS AND METHOD

Frederick W. Kantor, 2875 Broadway, New York, N.Y. 10025

Continuation of Ser. No. 4,606, Jan. 18, 1979, abandoned, which is a division of Ser. No. 770,316, Feb. 18, 1977, Pat. No. 4,136,530, which is a division of Ser. No. 569,478, Apr. 18, 1975, Pat. No. 4,010,018, which is a continuation of Ser. No. 78,552, Oct. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 864,112, Oct. 6, 1969, Pat. No. 3,808,828. This application Mar. 3, 1981, Ser. No. 240,135

Int. Cl.³ F25B *3/00*

U.S. Cl. 62—499 **35 Claims**



1. A rotary thermodynamic system including a rotatable fluid flow conduit having radially outwardly-directed and inwardly-directed sections in which conduit the thermodynamic pressure drop decreases with an increase in the rate of flow of working fluid through said system, and impedance control means for providing an increase of pressure drop for an increase in the rate of flow of working fluid through said conduit, the amount of said increase in pressure drop being effective to cause the overall pressure drop for said system to increase with an increase in said rate of flow, and thereby stabilizing the flow of working fluid through said conduit, said impedance control means including a liquid trap.

4,367,640

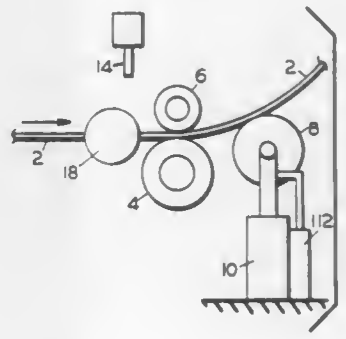
APPARATUS FOR FORMING SHEET METAL DUCT WORK

Steven C. Heitzman, 2664 NW. Thurman St., Portland, Oreg. 97210

Continuation of Ser. No. 115,726, Jan. 28, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,633

Int. Cl.³ B21D *5/14*

U.S. Cl. 72—11 **10 Claims**



1. Apparatus for forming sheet metal ducts of variable conical configuration from a pre-cut blank having a marked baseline and marked element lines thereon comprising:

(a) a frame supporting
  (1) power-driven feed rolls,
  (2) pinch rolls adapted to pinch the blank against the feed rolls,
  (3) a bending roll rotatably supported in spaced relation to the feed rolls,

(b) means for maintaining the baseline of the blank at its established position relative to the frame, and

(c) means for maintaining the successive element lines of the blank parallel to the axis of the feed rolls.

4,367,641
APPARATUS FOR BENDING AND TWISTING ELONGATED PIECES

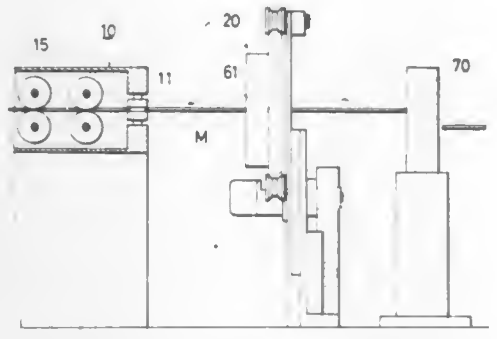
Tomihiko Mizutani, Anjyo, Japan, assignor to Inoue MTP Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 22, 1980, Ser. No. 180,405

Claims priority, application Japan, Jan. 21, 1980, 55-5580

Int. Cl.^{3} B21D *11/14*

U.S. Cl. 72—65 **5 Claims**



1. An apparatus for bending an elongated piece which is conveyed in the longitudinal direction thereof, comprising a feeding unit having a pair of feeding rolls for feeding an elongated piece having a longitudinal axis along a path into a bending unit having a pair of bending rolls located downstream from said feeding unit, said feeding rolls and said bending rolls being arranged along said path and separated by a predetermined distance, said bending unit comprising means for displacing the bending rolls in directions perpendicular to the path to bend the elongated piece in the directions perpendicular to the longitudinal axis of the elongated piece and for rotating the bending rolls about the axis of the path extending through the nip of the bending rolls and the longitudinal axis of the elongated piece to simultaneously twist and bend the elongated piece said bending rolls serving to movably support said elongated piece so that said piece can be fed through said bending rolls for said bending and twisting operations and means to simultaneously rotate and perpendicularly move said bending rolls.

4,367,642
METHOD OF PRODUCING H-BEAMS

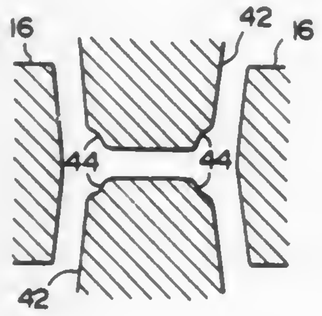
Teruyuki Nakanishi, Kibi, and Kiyoshi Hitomi, Kurashiki, both of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 74,501, Sep. 11, 1979, Pat. No. 4,322,962. This application Aug. 14, 1981, Ser. No. 292,874

Claims priority, application Japan, Sep. 12, 1978, 53-112731

Int. Cl.^{3} B21B *1/12*

U.S. Cl. 72—234 **6 Claims**



1. A method of producing a steel H-beam having joints between a web and flanges high in mechanical strength and toughness by means of universal mills, comprising:

rolling a piece by means of a two-high rolling mill having breakdown rolls thereby performing a breakdown process;

repeatedly forming by means of a roughing process excess convexes on said piece during a roughing pass, said convexes being formed alternately on the outer side surface and on the inner side surfaces of the joints between the web and the flanges of the piece being rolled by means of two or more roughing universal mills for performing a pass, whereby metal flows are forcibly caused to said joints to thereby increase the amounts of strain of said joints; and

pressing said convexes to provide a planer surface by means of a finishing process, thereby obtaining a steel H-beam having predetermined dimensions.

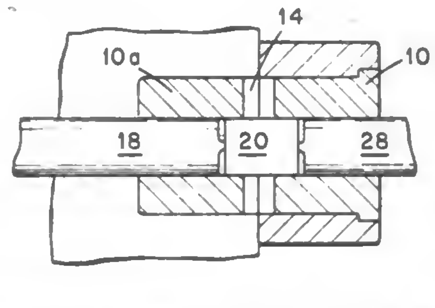
4,367,643
METHOD AND APPARATUS FOR COLD FORMING METAL ARTICLES HAVING IRREGULAR CROSS-SECTION

Kenneth P. Hackett, Nashville, Tenn., assignor to The Gleason Works, Rochester, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,956

Int. Cl.^{3} B21D *22/00*

U.S. Cl. 72—353 **8 Claims**



1. An apparatus for defining a die cavity in an apparatus for cold forming a metal slug into an article having irregular lateral cross-section, including a hydraulically operated, longitudinally movable, force applying member adapted to apply force to said slug during formation, said die cavity defining apparatus comprising a frame defining a central bore and a plurality of elongated channels extending generally radially from said central bore, said central bore being located coaxially with said force applying member, a plurality of elongated die nibs, each of said die nibs having a first end and a second end, said first end being mounted within said bore, at least one of said die defining members being slidably mounted within one of said channels, said slidable member including an inclined surface at said second end, cam bar means secured to said force applying member, said cam bar means including a cam surface adapted to engage said inclined surface of said slidable member to urge said sliding member generally radially toward said bore when said force applying member is moved to a force applying position.

4,367,644
ADJUSTABLE DIE AND KEY ASSEMBLY

Fred Kramer, Downingtown, Pa., and Gregg Gill, Cuyahoga Falls, Ohio, assignors to Pennsylvania Crusher Corporation, Allentown, Pa.

Filed Oct. 6, 1980, Ser. No. 194,101

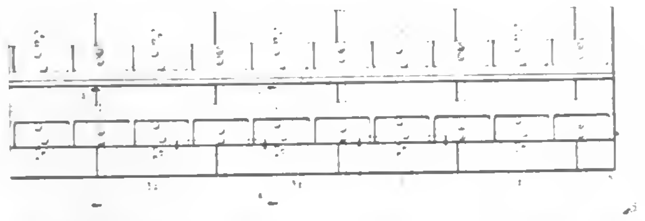
Int. Cl.^{3} B21D *5/02*

U.S. Cl. 72—389 **19 Claims**

1. An assembly for precisely positioning a pair of die members on the bed of a press beneath a ram mounted for movement toward and away from said bed, said assembly comprising:

a frame member having an upwardly facing surface for supporting said die members;

clamping means extending between each of said die members and said frame member for selectively clamping and unclamping each of said die members with respect to said upwardly facing surface; and



self-lifting means on said die members for lifting said die members, when unclamped, out of contact with said upwardly facing surface.

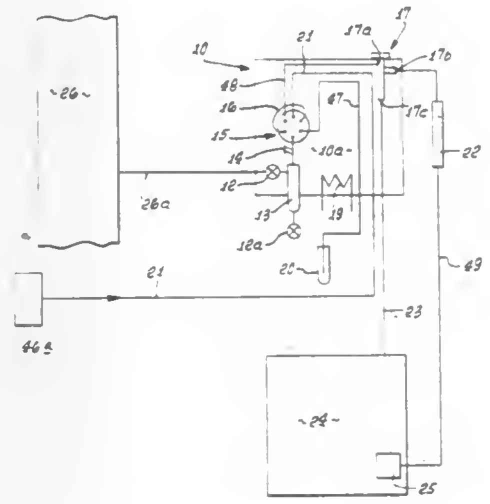
4,367,645
HOT GAS SAMPLING

Gilbert F. Froment, Deurle, Belgium, assignor to Kinetics Technology International Corporation, Pasadena, Calif.

Filed Dec. 3, 1980, Ser. No. 212,583

Int. Cl.^{3} G01N *31/08, 1/22*

U.S. Cl. 73—23.1 **13 Claims**



1. An apparatus for sampling a stream of hot gas containing hydrocarbons, and employing a heated transfer valve, a source of carrier gas for sampling and diluting the hot gas and transferring it over a hot capillary coated pre-separation column to analytical equipment, a gas splitter and a gas receiver, the improvement comprising

(a) said transfer valve being heated and having multiple inlet ports and multiple outlet ports,

(b) there being a sample receiving duct in communication with said valve,

(c) said valve having relatively movable members defining a sampling position, and an injection position,

(d) said sampling position characterized in that one inlet port, the sample receiving duct and one outlet port are connected in series to pass said hot gas to said receiver, and other inlet and outlet ports are connected in series to pass the carrier gas to the analytical equipment through the splitter and a hot line which is a pre-separation coated capillary column,

(e) said injection position characterized in that said one inlet port and said one outlet port are connected in series to pass said hot gas to the receiver, and said other inlet port, said sample receiving duct and said other outlet port are connected in series with said source of carrier gas to pass a sample of hot gas in said duct to the analytical equipment through the splitter and a hot line which is a pre-separation coated capillary column,

(f) a gas chromatograph connected in series with the splitter to receive a portion of the hot gas sample from the splitter, and

(g) a side passage connected with the splitter to pass split carrier gas toward a flow controller.

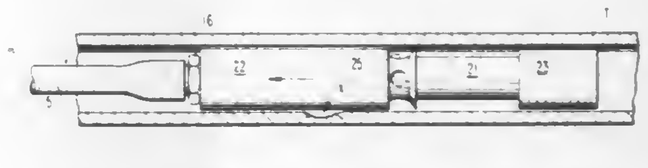
4,367,646
APPARATUS AND METHOD FOR DETECTING AND MEASURING LOCALIZED AREAS OF DETERIORATION ON THE INTERIOR OF TUBES

J. Hunter Allen, Sr., Rte. 7, Box 1074, Mt. Juliet, Tenn. 37122; Amos L. Gillespie, Jr., 1184 Ashley Lake Dr., Marietta, Ga. 30067, and George D. Johnson, 3358 Ezell Rd., Nashville, Tenn. 37211

Filed Nov. 7, 1980, Ser. No. 204,961

Int. Cl.^{3} G01B *13/22, 13/10*

U.S. Cl. 73—37.9 **17 Claims**



1. A probe for use in apparatus in detecting, measuring the extent of and locating localized deteriorated areas on the interior of tubes, said probe being an elongated cylindrical member having an axially extending recessed center section of substantially lesser diameter than and lying between two axially extending end portions, said probe containing an internal passage extending from the outer end of one of said end sections to an aperture in said recessed center section, and a narrow baffle ring extending outwardly transversely of said center section between said aperture and the other one of said end sections, the diameters of said end sections and baffle ring being closely equal, said outer end section containing at least one opening extending between said recessed center section and the outer end of said other end section, said baffle ring having a circumferential cross section tapering from a thicker portion at the juncture with said recessed center section to a thin portion extending circumferentially of the outer tip.

4,367,647
STATIC PENETROMETER

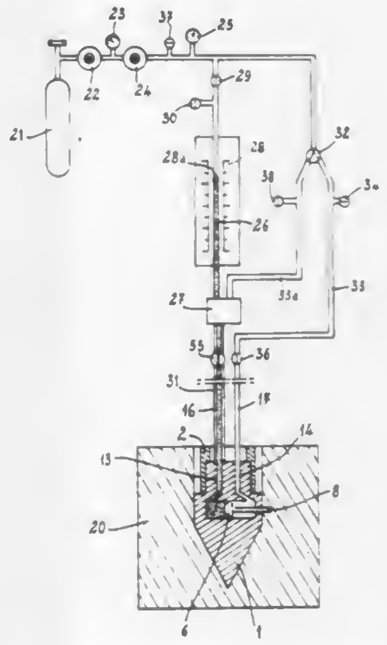
Francois Barnoud, 12 Rue Chancelier-de-l'Hospital, Dijon (Cote-d'Or), and Jean-Bernard Labays, Saint-Martin-sous-Montaigu, (Saone-&-Loire), both of France

Filed Jan. 19, 1981, Ser. No. 226,405

Claims priority, application France, Jan. 18, 1980, 80 01557

Int. Cl.^{3} G01N *3/42*

U.S. Cl. 73—84 **9 Claims**



1. A static penetrometer usable in combination with a drill string, said penetrometer comprising:

a downwardly directed point fixed at the lower end of said string and having a substantially conical lower portion and a substantially cylindrical upper portion, said upper

portion having an upright outer surface and a bore opening horizontally at said surface;
- a horizontal rod in said bore of said point having a rod end horizontally displaceable in one direction between an outer position spaced horizontally outward from said surface and an inner position generally flush with said surface, whereby said string with said point can be driven or drilled down into the ground with said rod in said inner position to form a hole in which said point fits snugly;
- a fluid cylinder in said point connected to said rod;
- means for pressurizing said cylinder and urging said rod from said inner to said outer position and thereby pressing said upper portion oppositely to said direction against the side of said hole opposite said rod end; and
- means connected to said rod and cylinder for indicating the position of said rod end relative to said surface and the pressure exerted horizontally back against said rod end when same is being urged outward by the pressurizing means.

4,367,648

DARK FIELD VIEWING APPARATUS

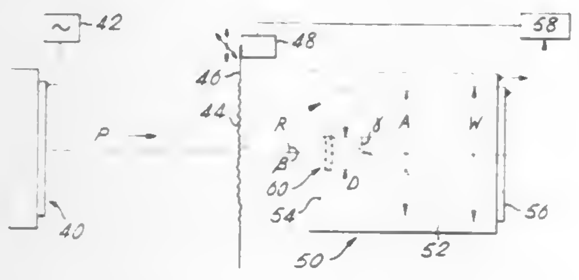
David A. Sinclair, and Ian R. Smith, both of London, England, assignors to National Research Development Corporation, London, England

Filed Mar. 19, 1981, Ser. No. 245,547

Claims priority, application United Kingdom, Mar. 25, 1980, 8009980

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—620 **32 Claims**



1. Dark field viewing apparatus comprising:
- a source of acoustic radiation;
- spatially integrating acoustic receiving means disposed in axial alignment with the source; and
- on-axis elimination means;
- one of the source and the receiving means being focused on a point in an object plane, and the elimination means eliminating any acoustic radiation which in the region of the focus in the object plane would travel substantially parallel to the axis of the apparatus.

4,367,649

ACOUSTIC POLARIMETER

Jean Rouge, and Andre Robert, both of Paris, France, assignors to Thomson-CSF, Paris, France

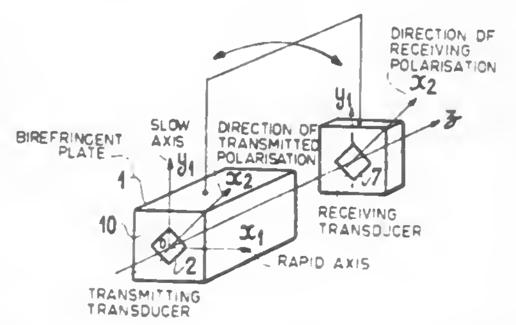
Filed Jan. 26, 1981, Ser. No. 228,622

Claims priority, application France, Jan. 29, 1980, 80 01895

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—645 **9 Claims**

1. An acoustic polarimeter for measuring the anisotropy of a sample having substantially parallel faces so as to permit determination of the directions of the fast axis $O\xi$ and of the slow axis $O\eta$ as well as the phase-shift angle ϕ_0 at a frequency $\omega_0/2\pi$ between the components of a transverse acoustic wave along the axes $O\xi$ and $O\eta$, said wave having passed through the sample at right angles to its faces, the polarimeter comprising a birefringent plate for measuring the fast axis Ox_1 and slow axis Oy_1, an electroacoustic transducer which is fixed on one face of the birefringent place whose opposite face can be placed in contact with the entrance face of the sample, said transducer transmitting acoustic waves which are polarized substantially along an axis Ox_2 located at 45° with respect to the fast axis Ox_1 of the plate and said transducer being connected to means for generating high-frequency electrical signals having an angular frequency ω which can be varied manually and/or frequency-modulated at the low frequency pulsatance Ω, wherein the waves which have passed through the sample are received by a single transducer fixed on a support frame and applied against the exit face of the sample, wherein the receiving transducer is sensitive only to the component of the acoustic wave along the axis Ox_2, wherein the assembly formed by the transmitting transducer, the measuring plate and the support frame of the receiving transducer is capable of rotating as a single unit about the axis Oz in an arrangement designated as a "probe",wherein the electrical signals delivered by the receiving transducer are applied to receiving circuits, a signal delivered at the output of said circuits bing applied to a null indicator, wherein, in the case of an angular frequency $\omega=\omega_0$ of the wave, a zero measurement read on the indicator is obtained if the angle between the axis $O\xi$ or the axis $O\eta$ and the axis Ox_2 is zero, thus determining the orientation of the axis $O\xi$ to within 90°, wherein, after rotation of the probe through an angle of 45° and by varying the value of the angular frequency of the wave, the direction of variation on the null indicator gives the sign of the phase shift ϕ_0 and the discrimination between slow axis and fast axis of the sample and the value ϕ_0 is obtained from the values ω_0 and ω_1 at which the indicator is again at zero.



4,367,650

FIXTURE FOR MOUNTING VIBRATION SENSOR NEAR LIMITED ACCESS MACHINE PARTS

Reinhard Hilgner, Karlsruhe; Wolfgang Utz, Kandel, and Heinrich Schröder, Karlsruhe, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

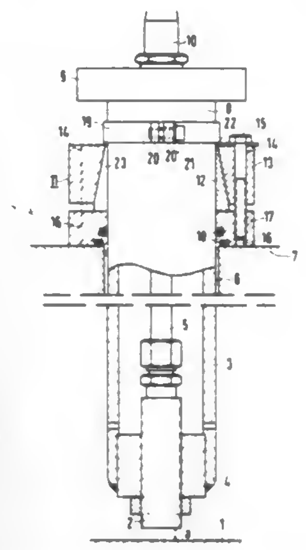
Filed Apr. 28, 1981, Ser. No. 258,531

Claims priority, application Fed. Rep. of Germany, May 5, 1980, 3017193

Int. Cl.^{3} G01H *11/00*

U.S. Cl. 73—649 **3 Claims**

1. A fixture for mounting a sensing transducer in a machine, the fixture having a probe tube having a longitudinal axis, the probe tube being fastened at an opening of a machine housing so as to be axially movable therethrough, the sensing transducer being disposed at a lower end portion of the probe tube which is inserted within the machine housing, the fixture further comprising:
- collet-type holding means for coupling the probe tube to the machine housing in an axially slidable manner; and
- setting collar means disposed around the probe tube on the other side of said collet-type holding means from the machine housing, said setting collar means being in contact with a contact surface of said collet-type holding



means for facilitating axial displacement of the probe tube by a predetermined distance.

4,367,651

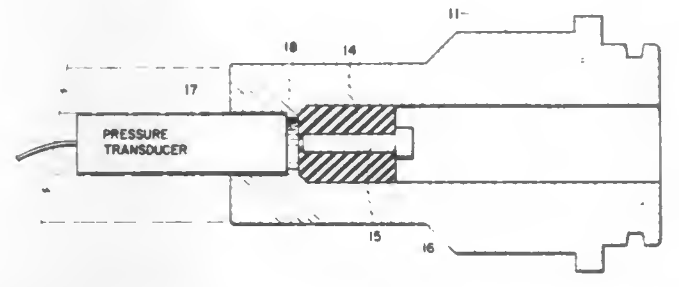
PRESSURE TRANSDUCER BODY

Donald C. Cameron; Donnie L. Stufflebeam, both of Tulsa, Okla., and John W. Ekey, Harris, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1981, Ser. No. 248,770

Int. Cl.^{3} G01L *7/00;* F15B *15/18;* F16J *3/00*

U.S. Cl. 73—706 **5 Claims**



1. A pressure transducer body having a first end and a second end defining a bore of generally circular crosssection which extends, along with its axis of generation, from the first end to the second end, and having
- (a) means for receiving a pressure transducer,
- (b) a fluid reservoir,
- (c) a stationary elastic plug member, and
- (d) a chamber for receiving a fluid under pressure;
- said means for receiving a pressure transducer, (a), being located near the first end of said transducer body and in fluid communication with said fluid reservoir,
- said fluid reservoir, (b), being defined within said bore and being located between said means for receiving a pressure transducer, (a), and said stationary elastic plug member,
- said stationary elastic plug member, (c), having a first end in fluid communication with said fluid reservoir (b), and a second end adjacent to said chamber for receiving a fluid under pressure,
- said chamber for receiving a fluid under pressure, (d), being defined within said bore,
- said plug member (c) also having a rigid pin member, (p), embedded therein; said pin member, (p), being defined by an elongate shaft extending partially through said stationary elastic plug (c), and positioned coaxial to the bore and having (i) a first end disposed toward said fluid reservoir, (b), and defining a flat or substantially flat face which is positioned perpendicular to the bore, and (ii) a second end disposed toward said chamber for receiving a fluid under pressure (d), said second end having an attached head which is external to said plug member, (c), and which has a flat or substantially flat face positioned perpendicular to the bore, the flat face of the head having a surface area greater than a cross-sectional area of the shaft but less than a cross-sectional area of the bore.

4,367,652

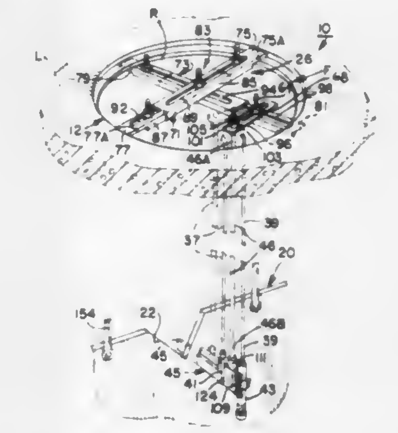
METHOD AND APPARATUS FOR MONITORING WASTEWATER

Nicholas A. Venuso, Hickory Hills, Ill., assignor to The Metropolitan Sanitary District of Greater Chicago, Chicago, Ill.

Filed Jul. 7, 1980, Ser. No. 166,372

Int. Cl.^{3} G01F *15/00, 15/14, 15/18*

U.S. Cl. 73—861 **11 Claims**



8. A probe carrying means for use in monitoring wastewater flowing through manholes, comprising:
- a rigid transverse elongated member;
- a long rigid rod adapted to be positioned in an upright position and connected at its lower end to the elongated member extending transversely to the longitudinal axis of the rod;
- said transverse elongated member having a lower knife edge.

4,367,653

DEVICE FOR MEASURING SOLIDS IN A MOVING STREAM

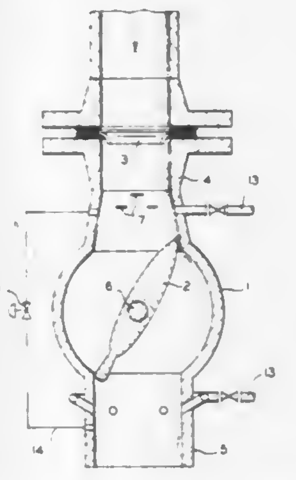
Hans-Hugo Richter, and Fritz-Dieter Trumper, both of Dortmund, Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,654

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1980, 3013027

Int. Cl.^{3} G01F *3/14*

U.S. Cl. 73—861.21 **8 Claims**



1. A measuring device for measuring solids of a moving stream in a closed system in which the prevailing pressure is equal to or higher than atmospheric pressure, comprising:

a. a housing having a portion larger than a vertically disposed inlet opening located above said larger portion so that a solid-free internal volume remains available adjacent the inlet opening;

b. a diverter member rotatable about a horizontal axis within said housing, the length of said diverter member exceeding the width of the housing and having a center of gravity located above the axis of rotation wherein the upper edge of the diverter member is adapted to be alternately positioned outside the flow of solids adjacent one wall of said housing and the lower edge of said diverter member is adapted to contact the opposite wall of said housing; and

c. position sensing means for sensing and transforming the rotational movement of said diverter member into an output signal.

4,367,654

DEVICE FOR MEASURING THE FLOW VELOCITY OF FLUIDS

Lucas Ymker, Culemborg, and Christiaan J. Hoogendijk, H'veld-G'dam, both of Netherlands, assignors to Altometer, Productiebedrijf Van Rheometron A.G., Sliedrecht, Netherlands

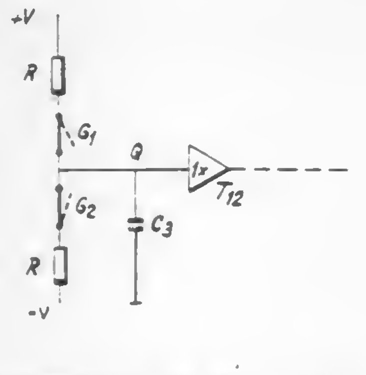
PCT No. PCT/NL79/00005, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/00876, PCT Pub. Date May 1, 1980

PCT Filed Oct. 25, 1979, Ser. No. 205,998

Claims priority, application Netherlands, Oct. 25, 1978, 7810630

Int. Cl.^{3} G01F *1/66*

U.S. Cl. 73—861.29 **11 Claims**



1. A device for measuring the flow velocity of fluids comprising: at least one pair of electro-acoustic transducers positioned at the ends of a measurement path, each pair of said transducers simultaneously transmitting acoustic pulses and receiving the same at first and second times dependent on the velocity of the fluid, a clock pulse generator, a transmission circuit, a receiving circuit including an amplifier and a separate detection circuit for each of the transducers, an integration circuit including an integration capacitor for use in processing the difference in propagation time of the acoustic pulses wherein the transmission and reception times for each of the transducers are determined, said integration capacitor being connected to the branch point of a two-legged potential divider which is connected to a gate circuit and which has in each leg a switching means conductive in the rest condition after the transmission time, two different potentials being supplied in the rest condition to the one leg and to the other leg of said divider whereby the capacitor adjusts itself to the middle of the potential difference, while controlled by the gate circuit, the switching means associated with the one transducer of each pair being blocked after the first reception time and subsequently the switching means associated with the other transducer of each pair being blocked after the second reception time.

4,367,655

METHOD AND APPARATUS FOR MEASURING THE CLOSING AND HOLDING FORCE ON PRESSURE DIECASTING AND INJECTION MOULDING MACHINES

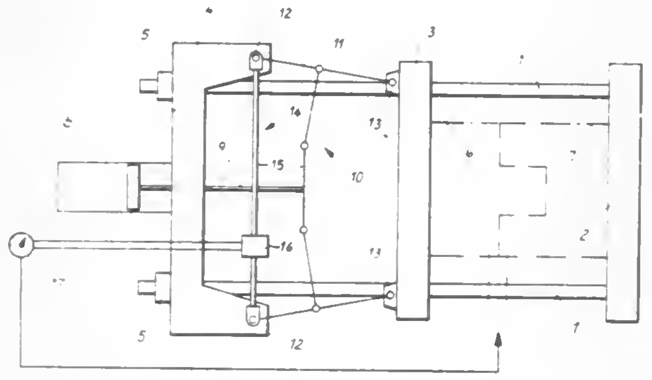
Hans Blüml, Burgthann, and Gerhard Schmidt, Wendelstein, both of Fed. Rep. of Germany, assignors to Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,656

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928940

Int. Cl.^{3} G01L *5/00*

U.S. Cl. 73—862.54 **9 Claims**



1. A method of measuring the closing and holding force exerted on a moulding tool of a pressure die casting machine or an injection moulding machine, said machine having as a closing and holding device a toggle lever mechanism with toggle levers which are pivoted to projecting lugs of an end plate which is supported on bars of the machine, and to a tool backing plate which is slidable on said bars, the lugs projecting towards said tool backing plate, comprising the step of: determining the change in distance between a point on said end plate at one of said lugs and a point on said end plate spaced from said one lug in a direction transverse to said bars by an amount equalling at least approximately half the distance between said lugs, to thereby measure said closing and holding force.

3. In a die casting or injection moulding machine having an end plate supported on bars extending with their axes parallel to one another, a first tool backing plate fixedly secured on said bars opposite to said end plate, a second tool backing plate between said end plate and said first tool backing plate and movable on said bars in parallel direction thereto, a mould tool secured to said second tool backing plate, a toggle lever mechanism as a holding and closing device for moving said movable tool backing plate and for closing said mould tool, said toggle lever mechanism having toggle levers pivoted to lugs on said end plate, which project towards said movable tool backing plate, and also pivoted to the movable tool backing plate, said lugs being offset with respect to the bars in a direction normal to the axes of the bars: a measuring apparatus for measuring the closing and holding force exerted onto said mould tool, said apparatus comprising a measuring element extending between a point at one of said lugs and a point on said end plate spaced from said lug in a direction transverse to said bars by an amount equalling at least approximately half the distance between said lugs, for measuring the change in distance of said points under the deflection of the end plate when loaded by said holding and closing force.

4,367,656

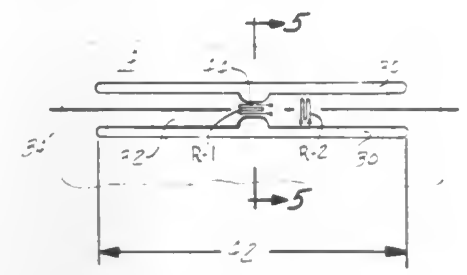
SINGLE AXIS FORCE TRANSDUCER

Joseph E. Fritsch, Oak Park, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Dec. 1, 1980, Ser. No. 211,595

Int. Cl.^{3} G01L *1/22*

U.S. Cl. 73—862.65 **4 Claims**



1. A single axis force transducer comprising:

an integral homogeneous longitudinally extending principal beam having opposed generally parallel sidewalls and subject to bending loading transverse to its neutral axis and subject to tensile and compressive loading parallel to its neutral axis, said principal beam being provided with an intermediate central beam defined by two reltively narrow parallel longitudinally extending slots extending through the principal beam from one of said sidewalls to the other of said sidewalls, said central beam being provided with means for mechanically amplifying tensile and compressive loads applied to the principal beam, and

strain sensing means associated with said means for mechanically amplifying loads.

4,367,657

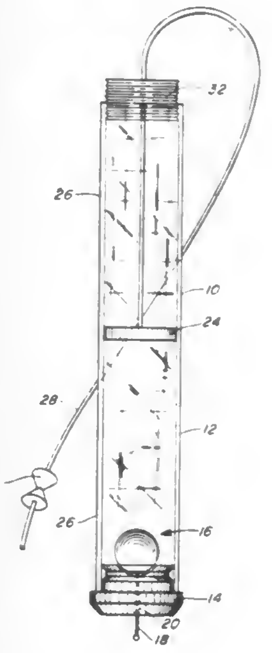
SLUDGE SAMPLER

Ralph C. Ward, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,435

Int. Cl.^{3} G01N *1/12*

U.S. Cl. 73—864.61 **6 Claims**



1. A sludge sampler comprising:

an elongated generally cylindrical housing having an upper end and a lower end;

a baffle containing an aperture disposed within said housing separating said upper and lower ends;

a flexible tube having a valve for presure control within said housing communicating with said aperture in said baffle and exiting said housing at said upper end;

a ball check valve, an upsetting pin and an upsetting pin guide disposed at said lower end of said housing.

4,367,658

OSCILLATING MEMBER FOR TRANSFORMING A ROTARY MOTION INTO A RECIPROCATING MOTION

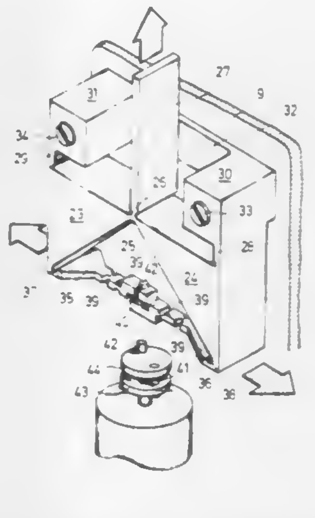
Günter Rochelt, Josef-Schwarz-Weg 11, DE 8000 München - Solln, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 175,204

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931479

Int. Cl.^{3} F16H *21/32, 21/18*

U.S. Cl. 74—40 **13 Claims**



1. An oscillating member for transforming a rotary motion of a drive motor into a reciprocating motion, comprising a bell-crank lever having substantially stiff lever arms which extend at an angle to each other to their junction with one another and define a bell crank lever plane, said bell crank lever being connected to a stationary part by a first film hinge secured to said bell-crank lever adjacent to said junction of said lever arms and defining a bending axis, a second such bell-crank lever connected to the stationary part by such a first hinge and having such lever arms which also in position of rest lie substantially in said plane, one of said lever arms of said first mentioned and second bell-crank levers being connected by a connecting film hinge; an oscillating arm secured to a free end of one of said lever arms and extending substantially parallel to the other of said lever arms, said oscillating arm being provided with a phurality of further film hinges which define bending axes and render said oscillating arm bendable in said plane, a second oscillating arm secured to a free end of the other lever arm of said second bell-crank lever, said oscillating arms having bearing bores mounted on a motor shaft which has two crank pins; and an oscillating beam substantially aligned with a drive shaft of a drive motor and secured to said other lever arm of said firstmentioned and second bell-crank levers by an additional film hinge defining a bending axis which extends at right angle to said plane, said oscillating beam being connected to the center of said connecting film hinge by said additional film hinge.

4,367,659

TWIN LEVER CONTROL ACTUATOR

Kerry Karpathian, Fond du Lac, Wis., and Darrell L. Trowbridge, Burnsville, Minn., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jun. 30, 1980, Ser. No. 164,724

Int. Cl.^{3} F16C *1/10*

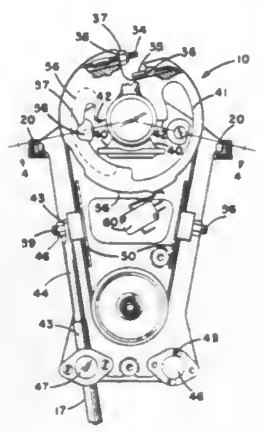
U.S. Cl. 74—501 R **17 Claims**

1. An actuator assembly for moving a core of a push-pull cable relative to a cable sheath comprising:

(A) a control body;

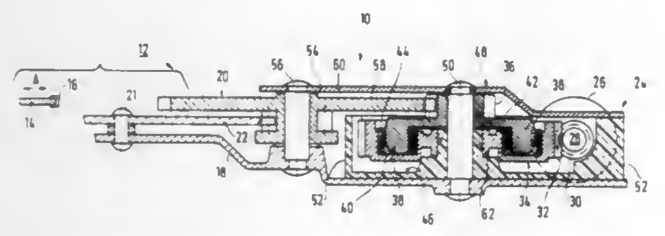
(B) a control arm pulley mounted for rotation on said control body;

(C) an idler pulley mounted for rotation on said control body;
(D) a pulley cable carried on rims of said pulleys;



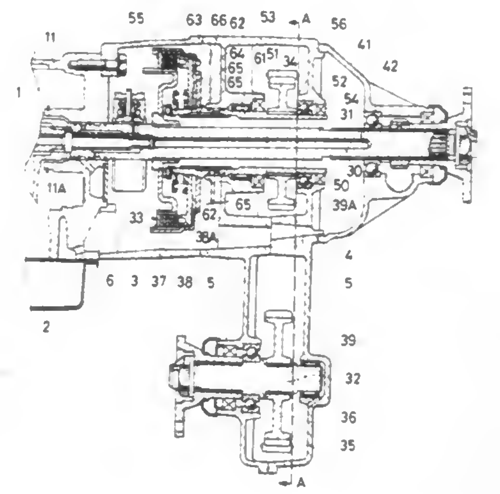
(E) an attachment means for attaching one end of the core of said push-pull cable to said pulley cable between said pulleys; and
(F) a support means to hold said end of said core parallel to a straight run of said pulley cable.

4,367,660
WINDOW LIFT DRIVE
Herbert Becker, Coburg; Gerhard Schelhorn, Untersiemau, and Manfred Sünkel, Sonnefeld, all of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Fed. Rep. of Germany
Filed Apr. 11, 1980, Ser. No. 139,420
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915669
Int. Cl.^{3} F16H *1/16, 1/20*
U.S. Cl. 74—625 **21 Claims**



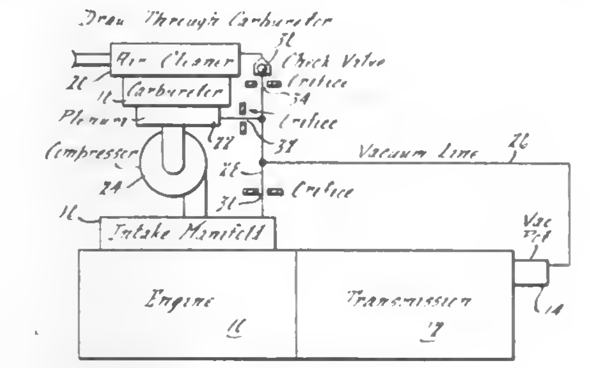
1. An electrical window lift drive especially for use in a motor vehicle, comprising:
a drive housing;
an electrical motor attached to said housing and having a shaft extending into the interior of said housing;
a worm gear mounted on the motor shaft for rotation thereby;
a worm wheel mounted for independent rotation coaxially with respect to a first portion of a bearing shaft and on elongated stationary bearing surface means fixed to said housing and independent of said bearing shaft intermediate said shaft and said wheel, said worm wheel meshing with and being driven by said worm gear and said bearing shaft being supported in said housing on both sides of said worm wheel;
a drive member mounted coaxially with respect to a second portion of said bearing shaft; and
means intermediate said worm wheel and said drive member transferring rotary motion of said worm wheel to said drive member, said means including at least one arm attached to said drive member and extending radially outwardly therefrom, a protrusion at the distal end of said arm extending in an axial direction of the first portion of said bearing shaft, and at least one recess in said worm wheel engagedly receiving said protrusion, said recess including a lining of elastic material directly intermediate the engaging members.

4,367,661
TRANSMISSION FOR FOUR-WHEEL DRIVE VEHICLES
Shuzo Moroto, Handa; Goichi Matsumoto, Okazaki, and Yoichi Hayakawa, Toyoake, all of Japan, assignors to Aisin-Warner Kabushikikaisha, Aichi, Japan
Filed May 28, 1980, Ser. No. 153,962
Claims priority, application Japan, May 31, 1979, 54-73402[U]
Int. Cl.^{3} F16H *37/06, 57/02*
U.S. Cl. 74—665 GE **1 Claim**



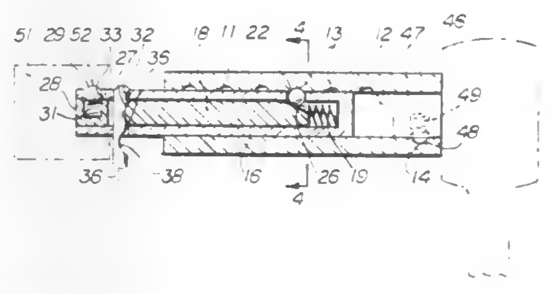
1. A transmission for a four-wheel drive vehicle having an engine, said transmission comprising:
a front transmission section including gear means and located adjacent said engine, said front transmission section having a front transmission section output shaft rotatable in connection with an engine output shaft;
a rear transmission section including a bearing supporting a first output shaft, said first output shaft directly engaging said front transmission section output shaft and supplying power to a first set of wheels;
a transfer section positioned between said front and rear transmission sections and including means for fluidly isolating said transfer section from said front and rear transmission sections, said transfer section further including a first sprocket, a second output shaft mounted off-axis relative to said front transmission section output shaft and supplying power to a second set of wheels, a second sprocket fixed to said second output shaft and chain means rotatably linking said first and second sprockets;
clutch means for selectively rotatably linking said first sprocket to said front transmission section output shaft;
means for actuating said clutch for simultaneously providing power to both sets of wheels;
casing means enclosing said front, rear and transfer sections, said casing means defining spaces in each said section;
a lubricating oil passage formed at least in part in said front transmission section output shaft, said oil passage extending through said front, rear and transfer sections, one end of said oil passage communicating with an oil pressure source in said front transmission section and the other end of said oil passage communicating with said space of said rear transmission section; and
a lubricating oil return passage formed in a portion of said casing means extending through said transfer section from said rear transmission section to said front transmission section, said oil return passage being in fluid isolation from said space of said transfer section, wherein one end of said oil return passage opens at the bottom of said rear transmission space and the other end of said oil return passage opens at a portion of said front transmission space which is lower than said one end of said oil return passage, whereby oil is returned by gravity through said oil return passage.

4,367,662
TRANSMISSION THROTTLE VALVE SYSTEM FOR SUPERCHARGED INTERNAL COMBUSTION ENGINES
Thomas L. Greene, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 20, 1980, Ser. No. 179,624
Int. Cl.^{3} B60K *41/16;* **F02B** *33/00*
U.S. Cl. 74—863 **5 Claims**



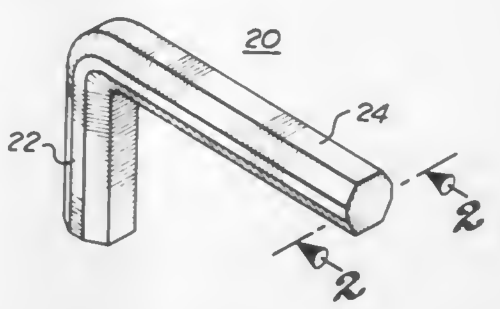
1. In an automatic power transmission for use with an internal combustion engine having an air intake manifold, a throttle controlled carburetor and a supercharger compressor in the gas flow path through said carburetor:
a vacuum modulator valve means for said transmission for developing an engine torque signal, said modulator valve means having a vacuum signal line;
a pressure line extending from said manifold to a location on the upstream side of said carburetor, a first calibrated orifice in said pressure line on one side of said vacuum signal line, a second calibrated orifice in said pressure line on the other side of said vacuum signal line; and
a check valve in said pressure line on said other side of said vacuum signal line adapted to accommodate flow toward said upstream location but preventing flow in the opposite direction.

4,367,663
VARIABLE LENGTH TORQUE ROD
Joseph S. Merics, 1537 Carol, Burlingame, Calif. 94010
Filed Mar. 30, 1981, Ser. No. 249,084
Int. Cl.^{3} B25G *1/04, 3/00*
U.S. Cl. 81—177 A **7 Claims**



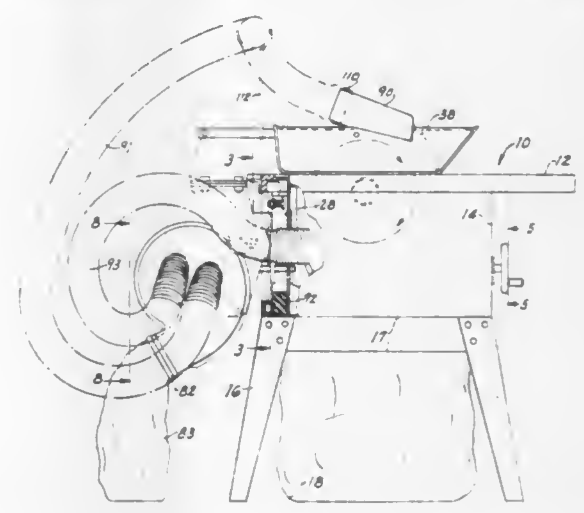
1. An adjustable length connection for use between a driver member and driven member comprising a hollow sleeve having a non-circular interior and an open second end, the interior of said sleeve being formed with a series of longitudinally spaced depressions, a hollow stem shaped to fit inside said sleeve with a sliding fit and having a closed first end inside said sleeve, a second end external to said sleeve shaped to receive the other of said members, and a first hole formed in the wall of said shank transverse to the axis of said stem spaced from said first end, and an aligned pair of second holes transverse to said axis external to said sleeve, an actuating pin slidable in said stem having a first end formed with a cam surface and a second end formed with a cam follower surface, a detent movable in said first hole, said actuating pin when retracted in said stem forcing said detent outward of said stem and into a selected one of said depressions, a cam pin slidable in said second holes formed with first and second cams engaged by said cam follower surface, said cams controlling the position of said actuating pin relative to said stem between retracted and projected positions.

4,367,664
COMBINATION TOOL
Leonid Ekshtut, 1520 16th Ave., Apt. #6, Seattle, Wash. 98122
Filed Feb. 2, 1981, Ser. No. 230,680
Int. Cl.^{3} B25B *15/00*
U.S. Cl. 81—436 **4 Claims**



1. A drive tool insertable within both square and hexagonal shaped cavities of corresponding size, said drive tool comprising a shank portion which in cross section includes at least eight sides, with:
a pair of major sides disposed in spaced parallel relationship;
a pair of minor sides disposed in spaced parallel relationship in a direction substantially perpendicular to said major sides; and
two pairs of intermediate sides extending diagonally from each end of said major sides at an included angle of approximately 120° to intersect an adjacent end of a corresponding minor side.

4,367,665
SAWDUST COLLECTION SYSTEM
Daniel A. Terpstra, Kirkwood, and Richard B. Brundage, Ladue, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Dec. 19, 1980, Ser. No. 217,950
Int. Cl.^{3} B27B *5/16, 5/29*
U.S. Cl. 83—100 **14 Claims**



2. Sawdust collection apparatus for a belt driven table saw having a horizontal worktable, a saw blade, a hinged saw guard resting on said table, a base below the table having an open bottom and one open side and partially enclosing saw blade tilting and elevating mechanism, and a saw driving motor positioned outboard of the open side of said base and attached to said mechanism for movement with the saw blade; the apparatus including a collector bag detachably connected to and enclosing the open bottom of said base, means movable

with said motor substantially closing the open side of said base, a centrifugal blower mounted outboard of said base and driven by said motor, said blower including a casing having two inlets and an outlet, a first flexible conduit connecting said saw guard with one of said inlets, a second flexible conduit connecting the interior of said base with the other of said inlets and a collector bag detachably connected to said outlet.

4,367,666

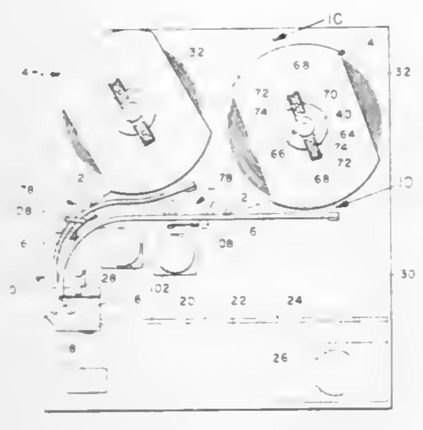
TICKET STOCK FEED AND SHEAR SYSTEM

John E. Toth, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Dec. 1, 1980, Ser. No. 211,028

Int. Cl.^{3} B26D *5/28*

U.S. Cl. 83—203 2 Claims



1. A system for cutting tickets from rolls of stock comprising:
- a pair of reels each for carrying a roll of stock having a free end, and each including means for releasably clamping a core portion of the roll;
- means for rotatably supporting each of the reels including means for providing a reverse rotational bias on each of the reels in a direction opposite to the direction of rotation required to unwind stock from the roll carried thereby;
- a shear including a rotary blade and an opposing fixed blade defining a path therebetween for stock, the rotary blade cutting the stock upon rotation thereof without contacting the fixed blade;
- first sensor means for detecting the presence of stock in the shear path;
- a pair of ticket guide tracks each for directing the free end of the rolls from the reel carrying the roll to the path of the shear;
- second sensor means for detecting the presence of stock along each of the guide tracks;
- feed means for engaging and selectively propelling the free ends of the rolls along corresponding ones of the guide tracks through the path of the shear;
- drive means for rotating the rotary blade to cut a portion representing a ticket from stock fed from either of the rolls; and
- third sensor means for sensing the amount of rotation of the rotary blade to detect the completion of the cutting of a ticket.

4,367,667

FRENCH FRY CUTTER FOR FOOD PROCESSORS

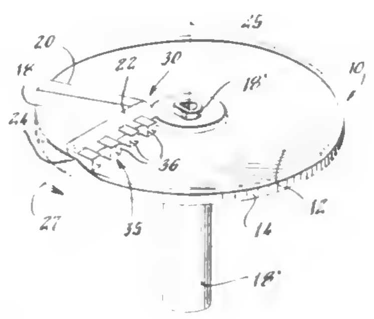
Koichiro Shibata, Seto, Japan, assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Feb. 27, 1981, Ser. No. 238,974

Int. Cl.^{3} B26D *7/00*

U.S. Cl. 83—356.3 16 Claims

1. A French fry cutter tool for use in a food processor of the type having an upright working bowl with tool drive means extending into the bowl for rotating various removable food processing tools in said bowl, a removable cover for closing the bowl when in use, and a feed passage for introducing food material into the bowl, said French fry cutter tool having a hub removably engageable with said drive means to be rotated thereby in a predetermined direction of rotation about an axis with a disc-like member secured to the hub for rotation therewith, said disc-like member having an opening therein extending from a region near said hub to a region near the periphery of said disc-like member, said opening being further defined by an elevated portion of said disc-like member located behind said opening, the novel French fry cutter tool comprising:
- a cutting structure formed by a sharpened continuous strip of blade metal bent to form alternating spaced, flat lower portions and spaced, flat upper portions, interconnected by upright, spaced, parallel portions,
- said continuous blade strip having the general configuration of a square wave with a sharpened leading edge,
- said flat, lower portions of said continuous blade strip being mounted to the underside of said disc-like member near the front edge of said opening in said disc-like member,



- said flat, upper portions of said continuous blade strip being mounted on said elevated portion of said disc-like member,
- said upright, spaced, parallel portions forming a plurality of spaced parallel vertical blades positioned in said opening and spaced radially with respect to said axis of rotation,
- said flat, upper portions of said continuous blade strip facing the direction of rotation of said disc forming a plurality of horizontally aligned blades which are elevated above the level of the top surface of said disc-like member, and
- horizontal blade means elevated above the level of said disc-like member for horizontally cutting the regions of food between said flat upper portions,
- whereby said blades in cooperation with the sharp leading edges of said elevated flat portions and said horizontal blade means produce French fry cuts from food items fed onto the rotating tool.

4,367,668

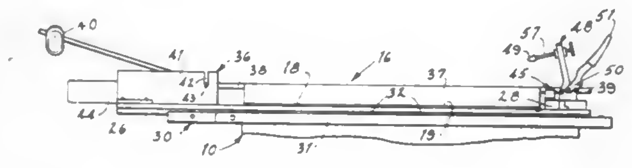
CIRCULAR SAW ATTACHMENT

Joseph D. Jensen, Spokane, Wash. 99203

Filed Dec. 22, 1980, Ser. No. 218,630

Int. Cl.^{3} B27B *25/08, 27/06*

U.S. Cl. 83—415 20 Claims



1. A cut-off attachment for use in combination with a stationary saw table having an upwardly projecting circular saw blade, said cut-off attachment being especially designed for the cutting of small workpieces and comprising:
- a saw-top plate mounted to move over the table in guided, longitudinal fashion, and having a longitudinally extending, saw blade receiving slot of essentially saw blade width, through which the saw blade projects;
- a blade guard and workpiece holddown means arranged to completely cover and closely surround the projecting portion of the saw blade while the saw-top plate is moved with respect to the saw blade when workpieces are being cut and while the workpieces are being placed on or removed from the saw-top plate between cuts, said blade guard and workpiece holddown means including a fixed portion surrounding the exposed portion of the saw blade when the saw-top plate is in its rearmost position with respect to the saw table and a movable, vertically floating portion comprising a workpiece engaging portion and including top and side wall means the lower edges of which are engageable with the saw top plate or with workpieces thereon along lines closely alongside and parallel to the saw blade receiving slot throughout the extent of travel of the slot relative to the saw blade during cutting, such engagement being maintained during cutting essentially only by the weight of the movable, vertically floating portion of the blade guard and workpiece holddown means; and
- cut-off guide means on the saw-top plate at the rear end thereof and extending to opposite sides of the blade.

4,367,669

DEVICE FOR CUTTING ANGULAR PROFILES APPLICABLE TO HYDRAULIC SHEARS

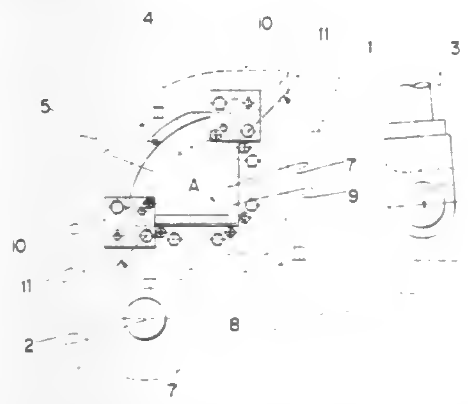
Jose A. Lopetegui Legorburu, Guipuzcoa, Spain, assignor to Maquinaria Geka, S.L., Oyarzun, Spain

Filed Dec. 4, 1980, Ser. No. 213,152

Claims priority, application Spain, Apr. 7, 1980, 249.858

Int. Cl.^{3} B23D *15/04, 23/00*

U.S. Cl. 83—579 2 Claims



1. A device for use with hydraulic shears for cutting a member having an angular transverse cross-sectional configuration without deformation or loss of material of such member, said device comprising:
- a knife bearer plate adapted to be mounted on a shaft for partial reciprocating angular movement thereabout by means of a hydraulic pressure cylinder, said knife bearer plate having in a front surface thereof a curved recess;

and
- a knife plate of generally triangular shape and including two sides as cutting edges forming a dihedral and a curved third side, said knife plate having extending from a rear surface thereof, at a position adjacent said curved third side, a curved prismatic projection, the curve of said third side and the curve of said projection being complementary to the curve of said recess in said knife bearer plate, and said projection being fitted into said recess, thereby enabling relative movement between said knife plate and said knife bearer plate along said complementary curves, said cutting edges extending parallel to respective cutting edges of a counterknife.

4,367,670

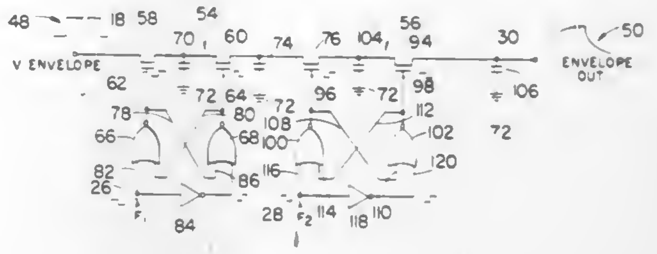
ENVELOPE GENERATOR EMPLOYING DUAL CHARGE PUMP

Stephen L. Howell, Huntingburg, and Ralph N. Dietrich, Georgetown, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 18, 1981, Ser. No. 274,881

Int. Cl.^{3} G10H *1/057*

U.S. Cl. 84—1.26 23 Claims



1. In an electronic musical instrument having means for generating tones in response to the actuation of a keyboard, an envelope generator for controlling the attack and decay of the tones comprising:
- a source of input voltage connected to an input of the envelope generator,
- an output,
- a first charge pump comprising means for incrementally transferring the input voltage to a first capacitor over a first sequence of discrete time frames, said charge pump comprising a first electronic switch device interposed between said input and said first capacitor, and clock means for switching said electronic switch device on and off at a first frequency; and
- a second charge pump comprising means for incrementally transferring the voltage on said first capacitor to a second capacitor over a second sequence of discrete time frames, said second charge pump being connected in series between said first charge pump and said output, said second charge pump comprising a second electronic switch device, and said clock means switches said second electronic switch device on and off at a second frequency at least twice as high as said first frequency.

4,367,671

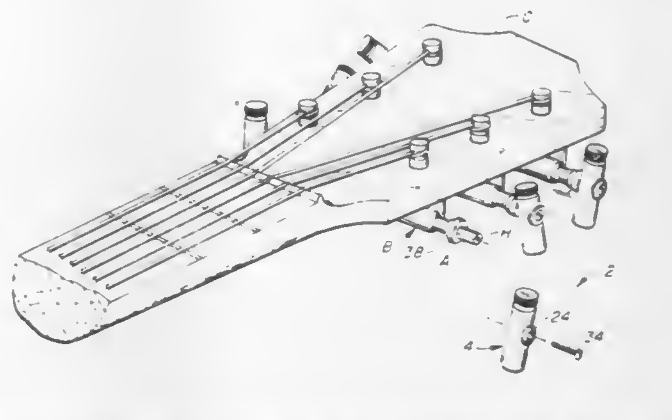
CLUTCHED TUNING PEG HANDLE

Slim Chance, 100 Eldridge St., Mill Valley, Calif. 94941, and William T. Gray, 19612 Grandview Dr., Topanga, Calif. 90290

Filed Sep. 8, 1980, Ser. No. 184,702

Int. Cl.^{3} G10D *3/14*

U.S. Cl. 84—306 12 Claims



1. A handle for mounting on the rotatable drive shaft of a tuning peg assembly on a stringed musical instrument, such as a guitar, comprising:
- an elongate body having a longitudinal axis; and
- means for mounting said body to said drive shaft transverse

to said longitudinal axis, said mounting means including adjustable slip clutch means for applying a chosen torque to said drive shaft by said elongate body so that when said chosen torque is applied to the drive shaft said slip clutch means allows said body to generally free wheel about the drive shaft thereby providing a predetermined tension on the string.

4,367,672
AUXILIARY POWER STEERING, ESPECIALLY FOR MOTOR VEHICLES

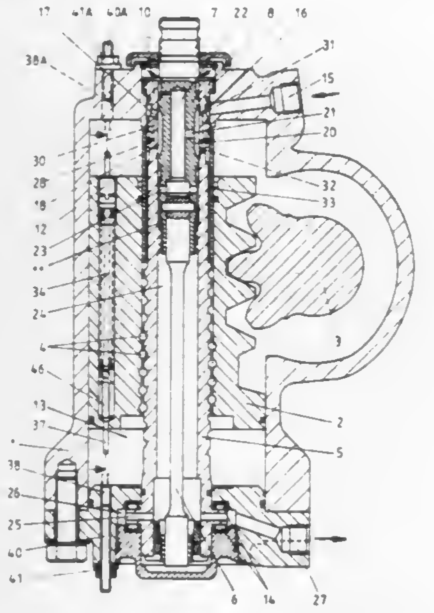
Dieter Elser, Essingen-Lauterburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,551

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930498

Int. Cl.^{3} F15B *15/22, 9/10*

U.S. Cl. 91—375 A **6 Claims**



1. In an auxiliary power steering device having a steering gear housing (**1**) enclosing an operating piston and opposing pressure chambers (**12** and **13**) to which the piston is exposed and to which pressurized fluid is supplied and exhausted under control of a steering control valve means, and mechanically actuated bypass valve means (**36**, **36A**) mounted within two axial bores (**34**, **34A**) formed in the piston for depressurizing an active one of the opposing chambers in response to arrival of the piston at one of two limit positions, the improvement residing in said bypass valve means including a pair of valve elements and control means associated with each of the valve elements wherein each valve element is rendered operative for limiting travel of the piston by opening thereof to depressurize said one of the opposing pressure chambers only when the piston arrives at one of the travel limit positions thereof in one direction of piston travel and to limit pressure by opening thereof in response to excessive pressure within the active one of the opposing chambers during travel of the piston in the other direction of piston travel to the remaining travel limit position.

4,367,673
SYSTEM AND METHOD FOR CONTROLLING THE ELEVATION OF A BOOM HOIST DEVICE

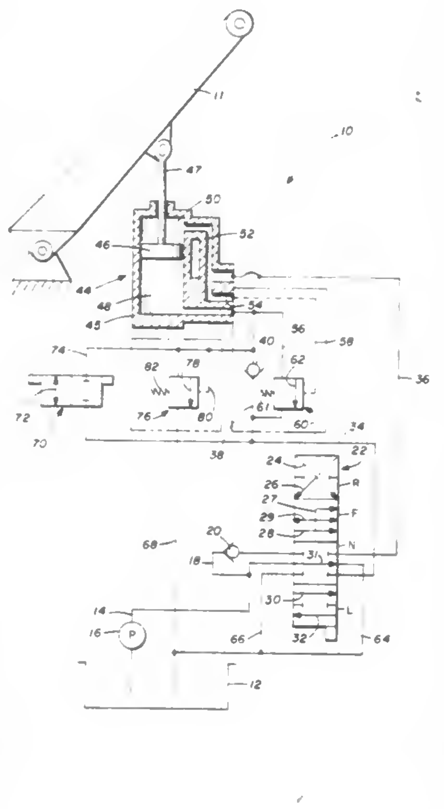
John F. Krueck, Mansfield; Donald G. Braden, Galion, and William J. Askins, Lexington, all of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 9, 1981, Ser. No. 223,870

Int. Cl.^{3} F15B *11/08*

U.S. Cl. 91—437 **1 Claim**

1. A multi-purpose lifting vehicle having a boom hoist device which can be selectively used in a crane mode of operation or in a front end loader mode of operation, hydraulic cylinder means operably connected to the boom hoist device, and a hydraulic system for delivering hydraulic fluid to the hydraulic cylinder means, said hydraulic system comprising a sump serving as a source of hydraulic fluid; a mode selector valve having first, second, and third operating positions, pump means communicating with said sump for delivering hydraulic fluid from the sump to said selector valve, means defining a first flow path for returning hydraulic fluid to the sump from the selector valve, means defining a second flow path, including a one-way flow valve, for delivering hydraulic fluid from the selector valve to the raising end of said cylinder means and a first normally closed valve, which when placed in an open position, provides a first by-pass path about said one-way flow valve, means defining a third flow-path providing fluid communication between the selector valve and the lowering end of said cylinder means, and means defining a fourth flow-path including a second normally closed valve, which when placed in an open position, provides a second by-pass path about said one-way flow valve, said fourth flow-path providing fluid communication between said raising and lowering ends of said cylinder means through said selector valve, whereby when the control valve is in its first operating position it provides communication between, on the one hand, said pump means and said second flow-path, and, on the other hand, said third flow-path and said first flow-path to deliver fluid to the raising end of the cylinder means and to permit fluid to leave the lowering end of the cylinder means to raise the boom hoist device, and the one-way flow valve prevents reverse flow of fluid from the raising end of the cylinder means, whereas when the control valve is in its second operating position and said first normally closed valve is open communication is provided between, on the one hand, the raising end of the cylinder means and said first flow-path and, on the other hand, said pump means and the third flow-path to deliver fluid to the lowering end of the cylinder means and permit fluid to leave the raising end of the cylinder means to lower the boom hoist device and when said selector valve is in its third operating position and said second normally closed valve is open fluid communication is provided through said selector valve and said second normally closed valve between said raising and lowering ends of said cylinder means.



4,367,674
ACTUATOR DEVICE

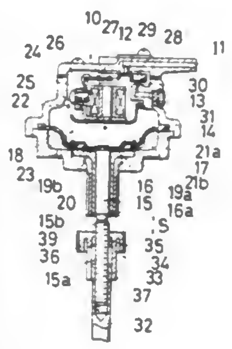
Masami Inada, and Kongou Aoki, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 22, 1980, Ser. No. 123,516

Claims priority, application Japan, Feb. 23, 1979, 54-23425[U]

Int. Cl.^{3} F01B *19/00*

U.S. Cl. 92—13.2 **4 Claims**



1. An actuator device for use with an engine-idle control system of an automobile provided with an air-conditioner, said actuator device comprising:

an actuator housing;
a guide member disposed within said housing;
diaphragm means positioned within said housing to thereby define two chambers within said housing;
a plunger member secured to said diaphragm means and extending out from said housing, said plunger member being slidably supported by said guide member and having a threaded portion formed thereon; and
adjusting means mounted on said plunger member and threadedly connected to said threaded portion formed on said plunger member for adjusting the stroke of said plunger member wherein said adjusting means further comprises;
a hub portion;
a nut member engaging said threaded portion of said plunger member and which is positioned within said hub portion;
an operating rod engaging said plunger member;
a lock nut interconnecting said rod and said plunger member and which includes a hexagonal external face; and
a plurality of extending members which axially extend from said hub portion, wherein said hub portion further comprises a ring shaped peripheral portion having a knurled periphery, said plurality of said extending members elastically contacting said hexagonal external face of said lock nut and said hub portion including a stopping flange portion which contacts said guide member upon shifting of said adjusting means.

4,367,675
DEVICE FOR ORIENTING AND TOPPING TAPERED VEGETABLES

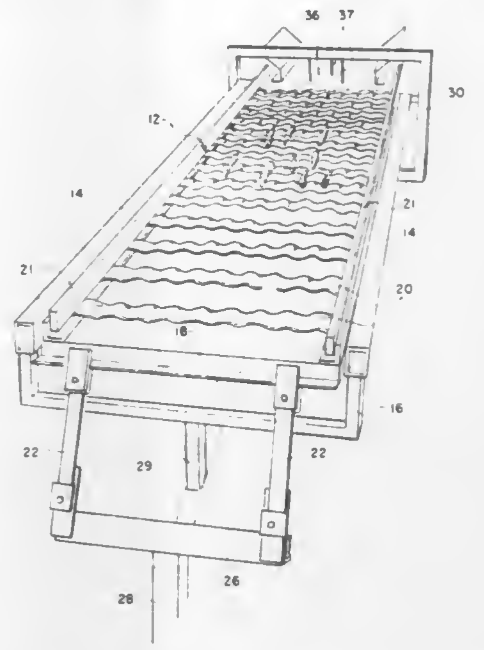
Gordon C. Boots, Orlando, Fla., assignor to A. Duda & Sons, Inc., Oviedo, Fla.

Filed Nov. 24, 1980, Ser. No. 209,771

Int. Cl.^{3} A23N *15/04*

U.S. Cl. 99—546 **10 Claims**

1. A machine for effecting an orientation of carrots or other elongate, tapered vegetables placed thereon, said machine comprising a vibratory table of elongate configuration, with one end of said table being somewhat higher than the other, the upper surface of said table being principally constituted by a plurality of generally parallel, corrugated members spaced along the longitudinal centerline of the table, with the spacing between the members increasing incrementally such that the minimum spacing between members exists at said one end of the table, and the maximum spacing between members exists at the other end, the corrugations of said members being longitudinally aligned and serving as alignment means for bringing about an alignment of vegetables deposited adjacent said one end of said table, such that elongate vegetables individually aligned with the longitudinal axis of the table can travel for a portion of the length of the table, bridging at least some of the spaces between corrugated members, at least two leaf springs being utilized at each end of said table to provide a substantial degree of freedom and mobility to said table, vibration-producing means connected to said vibratory table for inducing sufficient vibration into said corrugated members as to cause the elongate vegetables to travel toward said other end of the table until such time as each vegetable has reached a space between two corrugated members that it is unable to bridge, at which time it falls crown end first between such pair of members, chute means for receiving the vegetables and directly delivering same to a topping device, said topping device functioning to rapidly and consistently sever the crowns from the vegetables.



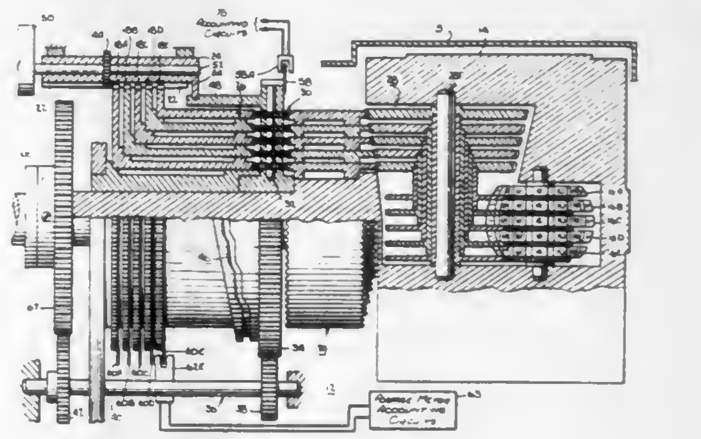
4,367,676
POSTAGE METER VALUE SELECTING SYSTEM

John I. Clark, Milford, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed May 22, 1981, Ser. No. 266,561

Int. Cl.^{3} B41J *1/20*

U.S. Cl. 101—91 **18 Claims**

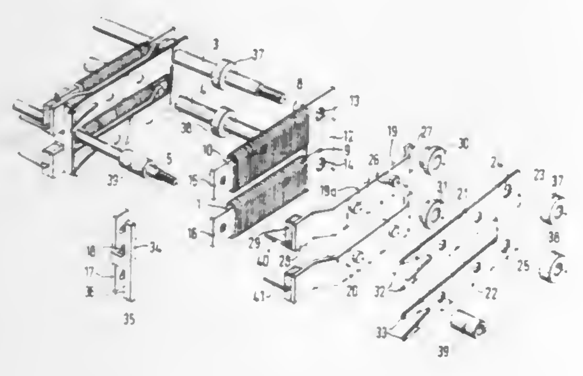


1. A postage meter of the type adapted to print selected value amounts on a print receiving surface, comprising:

a rotary print drum;
value print means supported within said print drum, said value print means having a plurality of value print elements adapted to be moveably positioned within said print head and further positioned such that each of said plurality of value print elements can be selectively moved into a

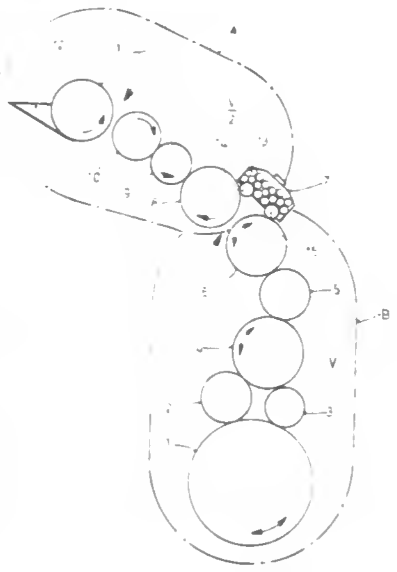
position to project from the surface of said rotary print drum;
drive means coupled to said print drum for driving said print drum to rotate such that a selected value print element projecting from the surface of said rotary print drum is moved through a position where the selected print element is adapted to imprint on the print receiving surface;
selection means coupled to said value print means for moving said plurality of print elements to position a selected one of said plurality of print elements to project from the surface of said rotary head, said selection means operable to selectively move said plurality of print elements when (1) said drive means is operating to drive said print drum to rotate, (2) when said drive is not operating to drive said print drum to rotate; and
accounting means operatively coupled to monitor the position of said print drum and said value print means for accounting for the imprinting of a selected unit value amount.

4,367,677
ELECTROMAGNETIC WIRE PRINTER
Klaus H. Mielke, Radavägen 82, S-435 00 Mölnlycke, Sweden
Continuation of Ser. No. 50,059, Jun. 19, 1979, Pat. No. 4,302,114. This application May 22, 1981, Ser. No. 266,604
Claims priority, application Sweden, Jun. 19, 1978, 7806984
Int. Cl.^{3} B41J *3/12*
U.S. Cl. 101—124 10 Claims



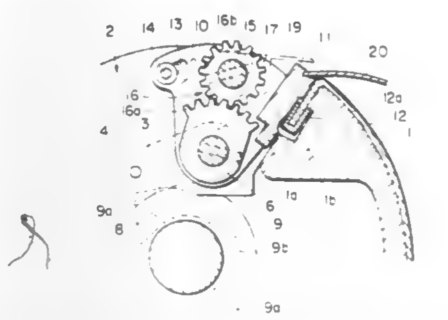
1. In a wire printer of the type comprising a group of substantially straight and substantially parallel printing wires, means for guiding the printing ends of said wires for longitudinal movement towards and away from a printing station, a group of electromagnets comprising one electromagnet for each of said printing wires, means for supporting said electromagnets in a row extending along said group of printing wires, each of said electromagnets comprising a core extending at right angles to the printing wires and having a front end adjacent to said group of printing wires and a rear end remote from said group of printing wires, a winding on said core, an armature extending along said core, means for pivotally connecting said armature to the rear end of said core, a biasing spring tending to move the armature away from the front end of the core, and means for connecting the front end of the armature to the rear end of a corresponding one of said printing wires for imparting said longitudinal movement thereto,
the improvement characterized in that each of said cores consists of a substantially plane and substantially straight strip the plane of which and the longitudinal axis of which form right angles with the plane of the printing wires, and
that each of said armatures consists of a strip having a flat main portion, a rear portion magnetically connected to the rear end of the core strip, and a front portion offset towards the core to form a pole face separated from the front end of the core by an air gap.

4,367,678
OFFSET PRINTING MACHINE DIFFERENTIAL SPEED INKING SYSTEM
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany
Filed Sep. 12, 1980, Ser. No. 186,439
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942733
The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.
Int. Cl.^{3} B41F *31/10*
U.S. Cl. 101—350 10 Claims



1. In a rotary offset printing machine comprising a plate cylinder (**1**),
an inking system having
an ink supply means (**12**);
a duct roller (**11**) in ink receiving relation to the ink supply means;
a plurality of ink distribution and transfer rollers (**3–6**; **8**, **9**, **10**) forming an ink roller train and positioned in mutually ink-transferring relation, located between the ink duct roller and the plate cylinder,
and wherein,
the ink distribution and transfer rollers are divided into two groups (A,B) positioned adjacent each other in the direction of ink transfer, the rollers (**8**, **9**) of one of the groups (A) being driven at a circumferential speed which is substantially less than the speed of the rollers (**2-6**) of the other group (B);
wherein a gap is placed between a terminal roller (**8**) of one group (A) and a terminal roller (**6**) of the other group (B) which is adjacent the terminal roller (**8**) of the first group (A) and is in ink transferring relation thereto, to separate adjacent rollers of the two groups rotating at said substantially different speeds,
said gap being wider than the thickness of ink film being transferred;
and wherein a bridging element (**7**) is provided comprising a cage-like holder (**7**),
two rollers (**14,15**) projecting from said cage-like holder in surface contact with the respective terminal rollers (**8, 6**) of said two groups (A, B) of distribution and transfer rollers,
and a plurality of roller elements (**13**) in said cage-like holder having circular cross section and ink-receiving surfaces, said roller elements (**13**) being loosely placed in centerless floating arrangement, randomly positioned horizontally and vertically adjacent each other and selectively adjacent the two rollers (**14,15**) projecting from said cage-like holder, said cage-like holder being positioned to span said gap between the terminal rollers (**6, 8**) of said groups,
rotation of the respective terminal distribution and transfer roller of the respective group rotating the respective projecting roller (**14, 15**) in the cageroller elements (**13**) retained therein.

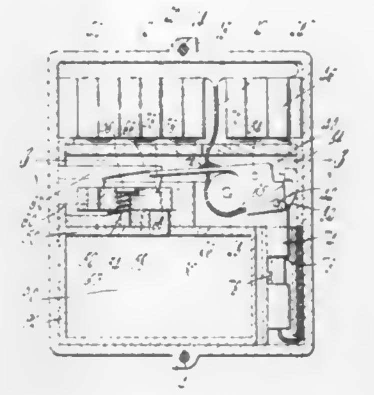
4,367,679
PACKING SHEET OVERLAYING DEVICE FOR OFFSET PRINTING MACHINE
Koji Ishii, Fuchu, and Taro Goto, Hiroshima, both of Japan, assignors to Ryobi, Ltd., Hiroshima, Japan
Filed Jan. 5, 1981, Ser. No. 222,795
Claims priority, application Japan, Jan. 8, 1980, 55/841[U]
Int. Cl.^{3} B41F *21/04*
U.S. Cl. 101—410 5 Claims



1. A packing sheet overlaying device for an offset printing machine comprising:
a printing machine cylinder;
a cam lever shaft provided parallel to a longitudinal opening in said printing machine cylinder;
a cam lever provided at one end of said cam lever shaft, said cam lever shaft being turned by said cam lever, said cam lever having a cam follower;
a fixed cam having cam surfaces of different levels, said cam follower being maintained in contact with said fixed cam;
a gripper shaft provided with a gripper, brackets securing said gripper, a gripper holder, and a gripper base adapted to clamp a printing sheet between said gripper and said gripper base, said cam lever shaft and said gripper shaft being rotatably supported by said brackets and being arranged parallel to each other;
a gear-transmission mechanism for coupling said cam lever shaft and said gripper shaft so that said cam lever shaft and said gripper shaft are rotated relative to each other;
said cylinder having an opening edge in which a locking groove is formed confronting said gripper base so that one end of a packing sheet is detachably lockable in said locking groove; and
a bolt for tightening said brackets to and releasing said brackets from said cylinder, said bolt passing through a slot formed in one of said brackets extending in the direction of rotation of said brackets, said brackets when released being movable between a clamping and a nonclamping position within a range defined by said slot, said gripper base being in close proximity of said packing sheet when said brackets are in said clamping position and said gripper base being displaced from said packing sheet when said brackets are in said non-clamping position.

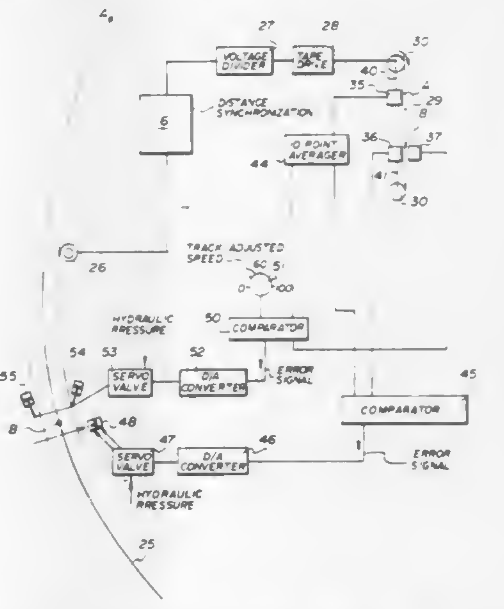
4,367,680
STANDOFF MUNITION
William H. Hart, 85 Dudley Rd., Newton Center, Mass. 02159, assignor to William Howard Hart, Newton Center, Mass.
Filed Oct. 31, 1963, Ser. No. 320,288
Int. Cl.^{3} F42B *25/02*
U.S. Cl. 102—387 9 Claims

1. A standoff munition comprising a removable outer case in which a pair of symmetrical cover elements with a gasket therebetween are held in place by at least one shear pin, an explosive container disposed within said case, a fuze container disposed within said case and on said explosive container, a multiplicity of elongated beads disposed in side-by-side relation above said fuze container and alongside said fuze container, a folded parachute disposed on said beads above said fuze container, a detonator holder, bore lock safety, firing pin lever, and pulley disposed in said fuze container, said beads, parachute, and bore lock safety being held against movement away from the rest of said munition only be said case and a stop resisting movement of the innermost bead, said detonator holder being pivotally mounted to bring a detonator therein beneath a firing pin carried by said firing pin lever upon withdrawal of said bore lock safety, said firing pin lever being pivotally mounted about an axis in said fuze container and carrying a cord-supporting pin on one side of said axis and being provided with a one-way hole on the other side of said



axis, said pulley being rotatable about a second axis therebetween, said innermost bead extending upwardly into said fuze container and including a first shoulder for upwardly urging said cord-supporting pin, a second shoulder cooperating with a stop to limit movement away from the rest of said munition, and a third shoulder cooperating with an edge of said firing pin lever to jam the same against rotation in the event said innermost bead moves downwardly only slightly, and said cord, extending from said parachute down through said one-way hole, over said pulley, over said cord-supporting pin, through said innermost bead, and through the remainder of said beads successively.

4,367,681
DYNAMIC LOADING CORRECTING DEVICE
John K. Stewart, Lexington, S.C.; Charles A. Shupe, Beaconsfield, Canada, and Helmuth von Beckmann, Columbia, S.C., assignors to Canron Corp., West Columbia, S.C.
Continuation of Ser. No. 956,600, Nov. 1, 1978, abandoned. This application Jan. 11, 1982, Ser. No. 338,655
Int. Cl.^{3} E01B *29/04*
U.S. Cl. 104—7 B 10 Claims



1. A method of correcting railroad track comprising obtaining a first record on a recording medium representing the actual geometric condition of at least one parameter of a length

of track under speed and axle loading conditions similar to expected speed and axle loading conditions when the track is in normal operation, reading the record in a track correction vehicle moving along the track and at a speed corresponding to the speed of the track correction vehicle, the reading of the record being at a rate such that the part of the record being read at any given instant is the record for the track at the position of the track correction vehicle on the track at that instant, and deriving from the record electrical error signals indicative of the difference between the actual geometric condition and the desired geometric condition and using the error signals to control track moving means on the track correction vehicle in a direction to reduce the difference.

9. A track correction vehicle for correcting at least one parameter of a length of track, comprising a record reading system adapted to read a first record on a recording medium representing the actual geometric conditions of at least one parameter of a length of track, the record reading system having record drive means synchronized with the vehicle speed, an upstream and a downstream read head mutually spaced a predetermined distance along the direction of travel of the recording medium which distance corresponds to a predetermined length of track, means for sampling at both heads the alignment record at predetermined intervals, the upstream read head having an output connected to an averaging circuit which derives at an output thereof a running average of a plurality of samples; and a comparator to which the output of the averaging circuit and an output of the downstream read head are connected to and which derives electrical error signals indicative of the difference between the actual geometric conditions and the desired geometric conditions and the desired geometric condition are derived, and track moving means operable under control of the electrical error signals to move the track in a direction to reduce the difference.

4,367,682

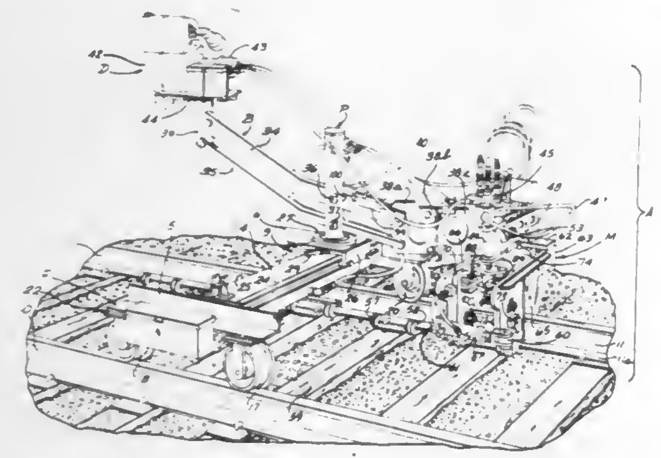
RAIL ANCHOR DRIVE MACHINE

Max Freilich, Ashtabula, and Ramesh C. Gulati, Mentor, both of Ohio, assignors to True Temper Corporation, Cleveland, Ohio

Filed Oct. 15, 1980, Ser. No. 197,014

Int. Cl.^{3} E01B ***29/32***

U.S. Cl. 104—17 A **29 Claims**



25. A rail anchor driving machine comprising:
- a wheeled frame adapted to be moved along a railroad track having two rails,
- a vertical centerpost rotatably about its vertical axis and slidably mounted on said wheeled frame for linear movement from one end of the frame adjacent one rail to the other end of the frame adjacent the other rail,
- a balance arm operatively pivoted intermediate its ends to said centerpost for predetermined vertical movement about its pivot relative to the frame,
- an anchor drive mechanism disposed at or adjacent one end of the balance arm,
- and anchor drive mechanism drive means disposed adjacent the other end of the balance arm whereby the anchor drive mechanism may be operatively positioned on either of the two rails when the wheeled frame is disposed at a preselected position on the track and without removing the frame from the track, said rail anchor drive mechanism comprising;
- a back frame,
- a pair of coacting anchor clamp housing side plates vertically pivoted to said back frame for hinged movement toward and away from each other in a horizontal plane,
- a single hydraulic boxing piston-cylinder mechanism pivotally secured to said side plates for
  - selectively moving the plates about their back frame pivots and toward each other to box two associated coacting anchors against an associated cross-tie,

a pair of coacting anchor drive arms pivoted intermediate their ends to said side plates, and a single anchor drive hydraulic piston-cylinder mechanism operatively pivoted to said back frame
- and to the upper end of said drive arms to drive the pivot arms about their side plate pivot points and cause the lower end of the drive arms to drive the two boxed anchors into final operative position on an associated rail base flange.

4,367,683

DRIVELESS VEHICLE WITH SPEED CONTROL

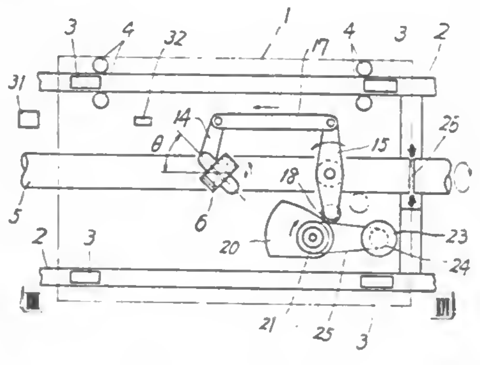
Kinjiro Tokunaga, Chiba, Japan, assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 18, 1980, Ser. No. 217,861

Claims priority, application Japan, Dec. 18, 1979, 54-175692[U]

Int. Cl.^{3} B61B ***13/12***

U.S. Cl. 104—166 **5 Claims**



1. A driverless vehicle comprising a frame having support wheels for riding on a track, at least one drive wheel on the frame for frictional contact with a drive shaft, said drive wheel being supported for movement between a drive position and an accumulation position, the improvement comprising a motor driven cam on said frame, and means on the frame for coupling the cam to the drive wheel whereby the drive wheel is moved between said positions by said cam.

4,367,684

SAFE HAVING LATERALLY RETRACTABLE SWING DOOR WINGS

Hans Jucker, Horgen, Switzerland, assignor to Tell-Kassenfabrik und-Tresorbau, Brack & Peter, Inh. Jucker & Co., Switzerland

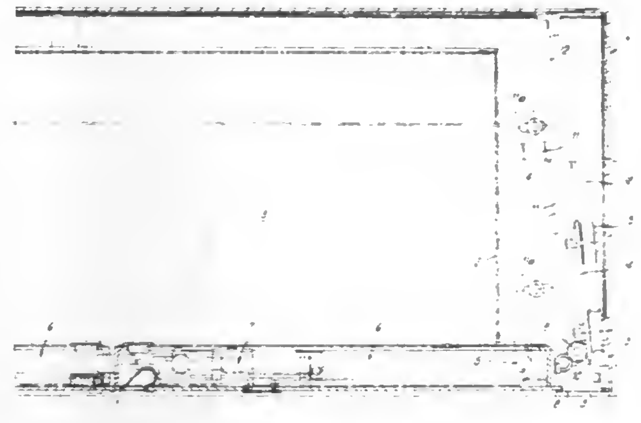
Filed Aug. 13, 1981, Ser. No. 292,491

Claims priority, application Switzerland, Sep. 4, 1980, 6645/80

Int. Cl.^{3} E05D ***15/56***

U.S. Cl. 109—70 **7 Claims**

1. An improved safe of the type having a case defining an enclosed volume and a door opening opened to the volume, wall means for dividing the volume into a useful space and a retraction space laterally adjacent to the useful space, and at least one door wing, wherein the door wing is laterally swingable out of the door opening and concurrently retractable into the retraction space, comprising, a supporting column, hinge means swingably mounting the door wing to the supporting column, a guide roller mounted proximate the retraction space for rotation in engagement with the door wing, a guide rail extending obliquely inwardly through the retraction space from the plane of the door opening, an elongated supporting plate fixedly mounted to said supporting column, a first roller and a second roller mounted to said supporting plate at horizontally and vertically offset positions and engaged to said guide rail for rotation therealong, and said supporting column being movable along said guide rail so that to open the safe, the door wing is pivoted from its closed position in the door opening plane about the hinge access of said hinge means and is simultaneously shifted on and turned about said guide roller through ninety degrees and moved into an open position in which an edge of the door wing is flush with the door opening plane.



4,367,685

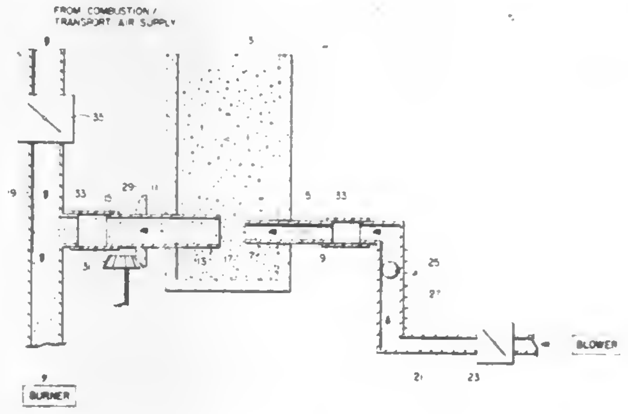
PROCESS AND APPARATUS FOR PRECISELY METERING QUANTITIES OF GRANULAR OR PULVERULENT SOLIDS

Scott W. Frame, 413 Knox Ave., Anniston, Ala. 36201, and David P. Frame, 217 S. Ellis St., Salisbury, N.C. 28144

Filed Sep. 8, 1980, Ser. No. 185,388

Int. Cl.^{3} F23D ***1/00;*** **B65G** ***53/50;*** **F23K** ***3/02***

U.S. Cl. 110—347 **17 Claims**



1. An apparatus for precisely metering quantities of granular or pulverulent solid fuel to a burner to achieve stoichometric combustion of the fuel at the burner, said apparatus comprising:
- a supply container means for containing therein a supply of granular or pulverulent solid fuel material;
- an air supply conduit extending into said supply container means, said air supply conduit having an outlet end at a position within said supply container means to be embedded within said solid fuel material, and said air supply conduit having an inlet end;
- a fuel outlet conduit extending into said supply container means, said fuel outlet conduit having an inlet end at a position within said supply container means to be embedded within said solid fuel material, and said fuel outlet conduit having an outlet end positioned outwardly of said supply container means;
- said outlet end of said air supply conduit and said inlet end of said fuel outlet conduit being separated from each other by a space and confronting each other at locations within said supply container means;
- transport conduit means, connected to said outlet end of said fuel outlet conduit and having means for connecting said transport conduit means to a burner, for transporting to the burner a feed flow and entrained particles;
- said fuel outlet conduit extending substantially horizontally from said inlet end thereof at said space to said outlet end thereof connected to said transport conduit means;
- air supply means, connected to said inlet end of said air supply conduit, for supplying a feed flow of air through said air supply conduit and outwardly through said outlet end thereof, for entraining and blowing particles of said solid fuel material positioned in said space into said inlet end of said fuel outlet conduit, and for discharging said feed flow and entrained particles from said outlet end of said fuel outlet conduit into said transport conduit means;
- combustion air supply means, connected to said transport conduit means, for supplying to the burner through said transport conduit means combustion air, and thereby for conveying said feed flow and entrained particles through said transport conduit means to the burner; and
- said air supply means comprising means for supplying less than 2% of the quantity of air required for stoichometric combustion of said particles of solid fuel material at the burner, and said combustion air supply means comprising means for supplying the remainder of air required for such stoichometric combustion.

4,367,686

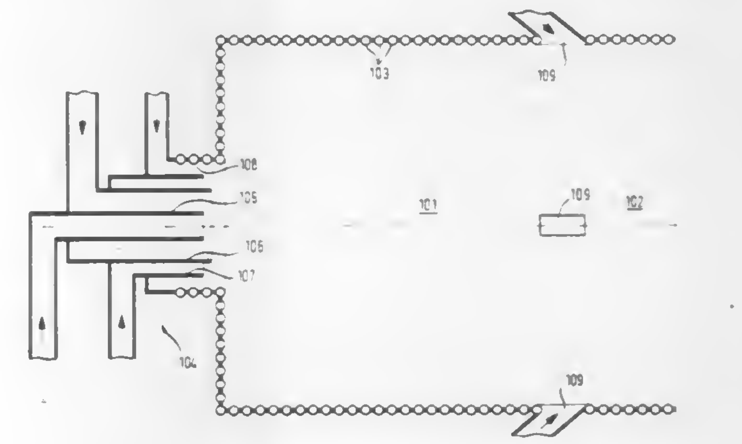
METHOD FOR OPERATING A COAL DUST FURNACE AND A FURNACE FOR CARRYING OUT THE METHOD

Fritz Adrian, Ratingen, Fed. Rep. of Germany, assignor to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,319

Int. Cl.^{3} F23K ***5/00***

U.S. Cl. 110—347 **6 Claims**



1. A method for operating a coal dust furnace with reduced formation of nitrogen oxides, comprising the steps of:
- blowing into the furnace a mixture of air and combustion coal dust having a specified range of grain sizes, the range of grain sizes having an upper limiting grain size,
- blowing into the furnace a swirling stream of combustion air surrounding said mixture;
- blowing into the furnace a mixture of combustion air and temperature reducing coal dust surrounding said swirling stream of combustion air, the range of grain sizes of the additional coal dust lying essentially above said upper limiting grain size;
- blowing into the furnace a non-swirling stream of combus-

tion air surrounding said mixture of air and temperature reducing coal dust,

and burning said temperature reducing coal dust in an afterburning area of the furnace.

4. A method for operating a coal dust furnace with reduced formation of nitrogen oxides, comprising the steps of:

blowing into the furnace a mixture of air and temperature reducing coal dust,

blowing into the furnace a non-swirling stream of combustion air surrounding said mixture of air and temperature reducing coal dust,

blowing into the furnace a mixture of air and combustion coal dust having a specified range of grain sizes, the range of grain sizes having an upper limiting grain size and the mixture surrounding said non-swirling stream of combustion air,

blowing into the furnace a stream of combustion air surrounding said mixture of air and combustion coal dust,

the range of grain sizes of the temperature reducing coal dust lying essentially above said upper limiting grain size

and burning said temperature reducing coal dust in an afterburning area of the furnace.

4,367,687
WORKTABLE FOR SEWING MACHINES

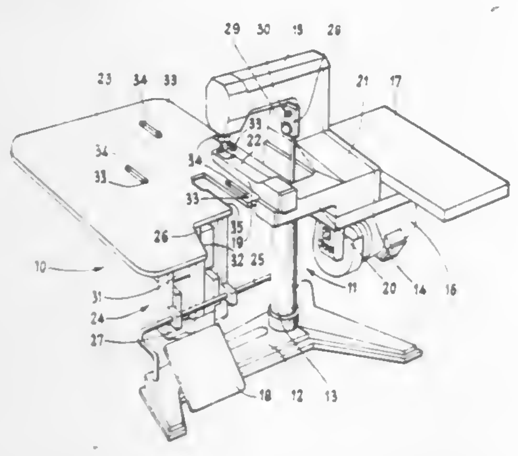
Roberto Sanvito, Milan, Italy, assignor to Rockwell-Rimoldi, S.p.A., Italy

Filed May 29, 1981, Ser. No. 268,606

Claims priority, application Italy, Jun. 12, 1980, 22033/80[U]

Int. Cl.^{3} D05B ***75/00;*** **A47B** ***29/00***

U.S. Cl. 112—217.1 **3 Claims**



1. A worktable for a sewing unit of the type having a sewing machine with a free-arm type base mounted on a support bench, said worktable comprising:

(a) a support shaft (**26**) mounted for vertical movement on the support bench;

(b) a planar support surface (**23**) attached to the upper end of said support shaft;

(c) means operatively connected to said support shaft for selectively raising and lowering said support surface to and from operative association with the sewing machine base; and

(d) means interconnecting said support shaft (**26**) and support surface (**23**) for selectively moving the latter a limited horizontal distance parallel with the longitudinal axis of the sewing machine base.

4,367,688
SAILBOAT RIG

Thomas B. A. Godfrey, Coombs Neck, Vinalhaven, Me. 04863

Filed Dec. 12, 1980, Ser. No. 215,652

Int. Cl.^{3} B63H ***9/04***

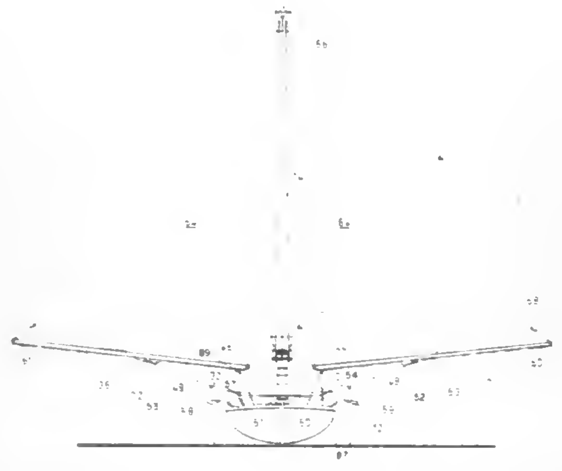
U.S. Cl. 114—39 **19 Claims**

1. In a sailboat having a rotatable mast, in combination,

twin booms pivotally connected to the lower part of the mast so as to swing independent of mast rotation in a horizontal plane together to the same side of the boat or separately to opposite sides of the boat, and

a single, generally triangular sail passed around the mast and adapted to be rolled up thereon or unrolled therefrom when the mast rotates with one corner of the triangle comprising the head of the sail, the other two corners comprising the clews, and the base of the sail, where it passes about the mast, comprising the tack, the tack being releasably attached to the mast,

said clews being adapted for outhauling one on each boom when said mast rotates in its unrolling direction whereby when said booms are together and said sail sections outhauled along their respective booms, one-half the unrolled said area is exposed to the wind to provide an efficient air foil leading edge at the mast for conventional sailing, when said booms are separated, the entire unrolled sail area is exposed to the wind for running and reaching, and when said booms are separated, said sail is fully unrolled, and said tack is released from said mast, the full area of the sail is exposed to the wind, as an unbroken air foil, separated from and without interference from the leading edge of the mast, for running and reaching.



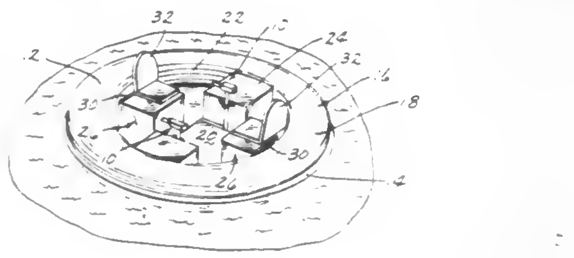
4,367,689
WATER RECREATIONAL VEHICLE

Leonard J. Lukehart, and Vernon H. Sietmann, both of Laurel, Iowa 50141

Filed Aug. 27, 1980, Ser. No. 181,868

Int. Cl.^{3} B63B ***35/72***

U.S. Cl. 114—346 **1 Claim**



1. A water recreational vehicle comprising:

a floatable circular tube having a geometric centerpoint defining a center axis, a longitudinal axis, and a lateral axis,

a rigid housing shell mounted on said tube,

two hand controlled battery powered outboard motors mounted within said rigid housing and being symmetrically positioned on opposite sides of said centerpoint on said lateral axis,

two oppositely facing seats mounted within said rigid housing and being symmetrically positioned on opposite sides of said centerpoint on said longitudinal axis,

clamp means mounting said motors to said housing and

permitting rotation of said motors about a vertical axis in either a clockwise or counterclockwise direction,

a control means on each of said motors to permit selective control of the speed of said propellers and the direction of rotation of said propellers,

said tube being free from protrusions on its outer perimeter to permit easy rotation thereof about said axis when in a floating condition by causing one propeller to rotate in a clockwise direction and causing the other propeller to rotate in a counterclockwise direction.

4,367,690
HEATED ROLLER TYPE FIXING APPARATUS

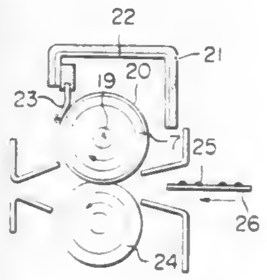
Hirofumi Sakaguchi; Ken-ichi Matsumoto, and Keiji Masuda, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 21, 1981, Ser. No. 226,735

Claims priority, application Japan, Jan. 21, 1980, 55/5630[U]

Int. Cl.^{3} G03G ***15/20***

U.S. Cl. 118—60 **1 Claim**



1. In a fixing apparatus operable for substantially permanently affixing a toner image to a sheet, and including a first rotatable roller having a heat source therein for heating the peripheral surface of the roller, a cleaning blade disposed in contact with the peripheral surface of said first roller for removing foreign matter therefrom, a second rotatable roller having a peripheral surface normally spaced from said first roller surface, said first and second rollers being normally maintained non rotatably stationary and relatively spaced apart during nonoperation of said fixing apparatus, means for moving at least one of said rollers into peripheral surface pressure contact with the other of said rollers during operation of said fixing apparatus so that a toner image on a sheet passing between the two rollers is fixed to the sheet by the heated first roller, and means for causing rotation of said first and second rollers when said first and second rollers are relatively moved into peripheral surface pressure contact with each other, the improvement comprising:

means for initiating rotation of said first roller prior to said relative movement of the rollers into contact with each other so that said first roller is caused to rotate through at least one complete revolution prior to contact with said second roller whereby foreign matter is removed from the peripheral surface of said first roller by said cleaning blade prior to contact with the peripheral surface of said second roller.

4,367,691
APPARATUS FOR ADJUSTMENT OF THE COATING THICKNESS IN THE COATING OF TRAVELING WEBS

Erwin Bergs, Neuss, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

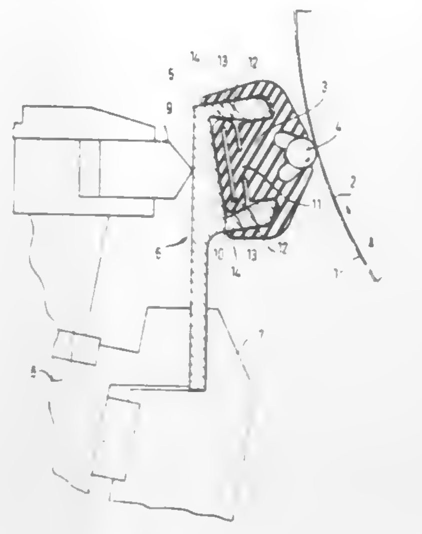
Filed Jun. 15, 1981, Ser. No. 274,324

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022955

Int. Cl.^{3} B05C ***11/02***

U.S. Cl. 118—119 **5 Claims**

1. In an apparatus for coating a traveling web and comprising coating means for the web, a doctor roll which bears on the coated side of the web, an elastomeric doctor-roll bed supporting the doctor roll and secured to the machine frame through a mount, the doctor roll bed including an inflatable tube constructed as a pressure chamber, and means for adjusting the location of the doctor roll and thus for adjusting the coating thickness, the improvement wherein the pressure chamber is joined through a central fillet extending parallel to the doctor roll to that part of the doctor-roll bed which carries the doctor roll.



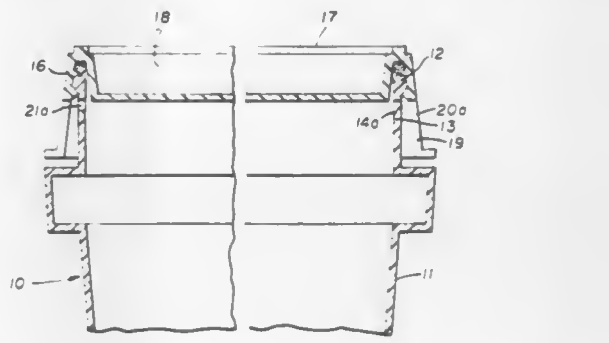
4,367,692
JOINT COMPOUND DISPENSER

Arthur A. Underwood, Libertyville, Ill., and Richard L. Radtke, Cincinnati, Ohio, assignors to United States Gypsum Company, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,677

Int. Cl.^{3} B05C ***3/12, 3/18***

U.S. Cl. 118—415 **4 Claims**



1. Apparatus for applying joint compound on wall board seam tape consisting essentially of a pail adapted to receive said joint compound and having a side wall whose upper edge includes a pair of opposed elongate notches, and a lid having a top wall and a skirt pendent therefrom along its perimeter and whose lower edge includes a pair of opposed elongate notches which are superimposable over said side wall notches to form a tape entrance slot and a tape exit slot, the lower horizontal margin of the side wall notches including one blunt-edged tab protruding on each side of centerline thereof and approaching the upper edge of the side wall, whereby the notches may be aligned to form slots and the container inverted to place the container in a dispensing mode such that a tape being drawn through the slots is contacted only by the tab portions of the side wall notches.

4,367,693
DEVELOPMENT APPARATUS

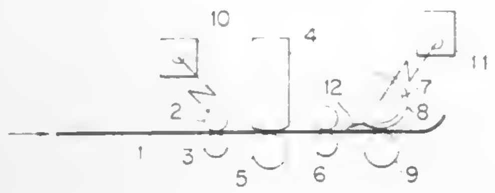
Masato Ogihara, and Masamitsu Tsubaki, both of Sagamihara, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1980, Ser. No. 202,162

Claims priority, application Japan, Nov. 20, 1979, 54/150466

Int. Cl.^{3} B05C *11/10;* G03G *15/09*

U.S. Cl. 118—674 **7 Claims**



1. A development apparatus comprising a sleeve for applying magnetic toner to a movable record medium, pulse motor means for stepwise transporting said record medium in accordance with pulses input thereto, a magnetic roller disposed within said sleeve, at least one of said sleeve and said magnetic roller being a rotatable member; drive means for rotating said rotatable member and speed variation means for changing the revolutions per unit time of said rotatable member in accordance with the number of said pulses per unit time input to said pulse motor means.

4,367,694
MODULAR ELEMENT TO BUILD GROUPS OF CAGES FOR EGG-LAYING FOWLS AND THE LIKE

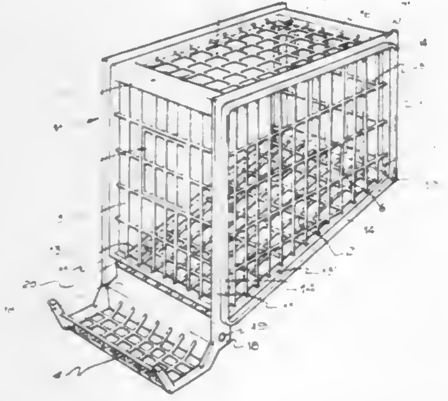
Esteban Jose Goyheneix, Reconquista 661, 2°, Buenos Aires, Argentina (1003)

Filed Sep. 30, 1980, Ser. No. 192,258

Claims priority, application Argentina, Oct. 12, 1979, 278485

Int. Cl.^{3} A01K *31/06*

U.S. Cl. 119—17 **9 Claims**



1. An apparatus for housing farm animals and the like, comprising:

(a) a modular cage which can be combined with similar cages to form aligned groups of cages, said cage comprising a unitary and essentially monolithic structure of substantially rigid plastic material, and including a cage floor, roof, back wall, front wall and a first side wall, the side of said cage opposed to said first side wall being open, said cage further comprising two peripheral borders, one around said first side wall and another around said opposed open side, said peripheral borders of adjacent cages comprise interfitting projecting and depressed areas respectively, that mate with each other to form a tight junction,

(b) means for supporting a plurality of said cages generally horizontally aligned in such a manner that the first side wall of a particular cage overlies the open side of an adjacently disposed cage, and

(c) means for retaining said aligned row of cages on said support means.

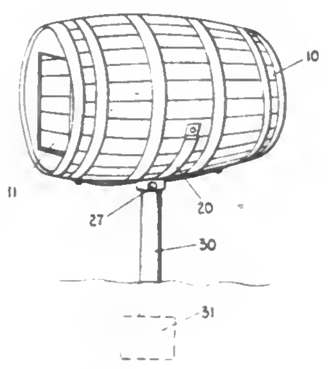
4,367,695
BARREL DOG HOUSE

Thomas N. Lance, 9410 Shaner, Rockford, Mich. 49341

Filed Jun. 25, 1981, Ser. No. 277,280

Int. Cl.^{3} A01K *1/00*

U.S. Cl. 119—19 **2 Claims**



1. An improved mounting means for mounting a barrel dog house of a generally cylindrical configuration on its cylindrical side comprising:

a mounting pole adapted to be mounted in the ground and extending above the ground such that when the dog house is mounted on the pole, the space under the dog house is available to the dog for movement and shade, thereby increasing the space available to the dog in a closely confined area;

a barrel mounting bracket adapted to be mounted on the top of the pole, the mounting bracket including:

an annular collar that fits over the top of the pole, the collar including a central plate mounted at the top thereof, with the plate having an opening means therein for attaching the mounting plate to

the cylindrical side of the barrel, the collar being of sufficient length to restrict the barrel from tipping when mounted on the pole;

four (4) mounting arms fastened to the outer periphery of the collar and extending outwardly at 90° intervals around the collar, two mounting arms being opposed side arms that are curved upwardly so as to conform to the cylindrical sides of the barrel, said side arms extending somewhat less than half way around the barrel in a plane perpendicular to the axis of the barrel so as to prevent the barrel from rolling off the mounting means in a sideways direction, the two remaining mounting arms extending longitudinally along the underside of the barrel to a point short of the ends of the barrel, all of the support arms including opening means in the outer ends thereof for attaching the support arms to the barrel;

threaded fastener means that extend through the openings in the support arms and central plate for rigidly attaching the barrel mounting means to the barrel; and

pole fastening means for securely fastening the collar to the top of the pole after the barrel has been attached to the mounting bracket such that the barrel and attached mounting bracket cannot be lifted off the pole when the fastening means is secured.

4,367,696
CAT MANAGEMENT CHAMBER

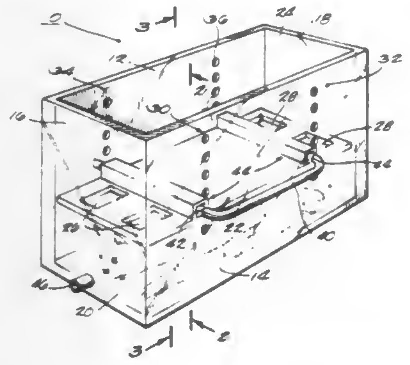
Dennis R. Hamann, 5345 N. Lovers Lane Rd., Milwaukee, Wis. 53225

Filed Nov. 12, 1981, Ser. No. 320,275

Int. Cl.^{3} A01K *29/00*

U.S. Cl. 119—96 **1 Claim**

1. A restraining device for a cat to confine the cat during administration of medication comprising wall means defining an enclosure having a bottom wall, end walls and spaced side walls, a partition movable within said walls in opposed relationship to said bottom wall and means for selectively adjustably positioning said partition relative to said bottom wall to provide an appropriate space there between to confine the cat located therein, said means comprising a U-shaped handle having a web portion and projecting parallel end portions interconnected by an intermediate portion, said end portions having a length greater than the distance between said side walls, each of said side walls having two spaced vertically aligned rows or apertures with the rows in each side wall spaced at the same distance from the adjacent end walls and from each other and the height of corresponding apertures on each side wall being approximately the same and said partition having sleeve portions generally spanning the partition, said sleeve portions being spaced to receive the end portions of said handle so that said handle can be inserted through two horizontally aligned apertures in one side wall and be guided for movement into two horizontally aligned apertures in the opposite side wall by said sleeve portions so that any four of said apertures can be employed to support the partition at the selected height, with said handle web portion located laterally outwardly of a side wall for easy access.



4,367,697
MULTI-ZONE BOILER FOR FIRING WITH SOLID AND LIQUID FUEL

Karl Ackerman, Marktplatz, Massing, Rott, Fed. Rep. of Germany

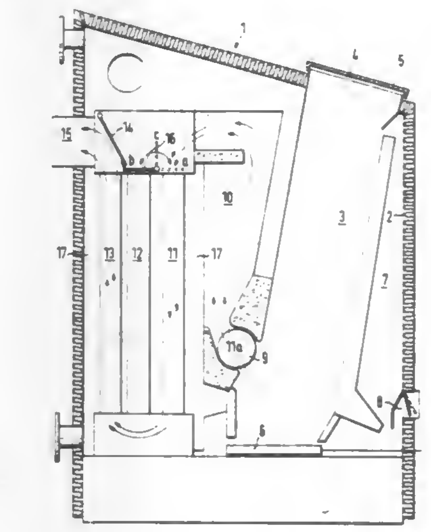
PCT No. PCT/DE80/00029, § 371 Date Nov. 5, 1980, § 102(e) Date Nov. 5, 1980, PCT Pub. No. WO80/01947, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1980, Ser. No. 212,733

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909720

Int. Cl.^{3} F22B *31/04*

U.S. Cl. 122—2 **9 Claims**



1. An alternative fuel furnace for alternately burning solid and liquid fuel with heat heat transfer efficiency, said furance comprising:

a furnace housing;

oil burning means in said housing;

solid fuel burning means in said housing;

a combustion chamber in said housing and communicating with both said oil and solid fuel burning means;

combustion gas discharge means in said housing for removing combustion gases from said housing, said combustion gas discharge means including a flue gas pipe;

a plurality of chimney gas flues in the form of flue gas duct units in said housing, each of said flue gas duct units having an upper end connected to said combustion chamber and a second end connected to said flue gas pipe for flowing gases in a single direction;

means at said upper end of said flue gas duct units for selectively bypassing said gas flow directly from said combustion chamber to said combustion gas discharge means;

means at said upper end of said flue gas duct units for selectively restricting the gas flow to selected ones of said flue gas duct units, said means for selectively restricting comprising at least one tiltable closure flap arranged at the upper end of the flue gas duct units, wherein each said closure flap is arranged between two flue gas duct units and is positionable for alternate full or partial closure of one of the other of the flue gas duct units, wherein in a central position of each said at least one closure flap all of said flue gas duct units are open so that the flue gases may flow therethrough; and

a control mechanism connected to said means for restricting, said control mechanism constructed to control said means for restricting depending upon the fuel being used and the temperature of the gases in said combustion gas discharge means,

whereby the selective positioning of said means for restricting can prevent residue of said solid fuel from reducing the heat transfer efficiency of selected ones of said flue gas duct units.

4,367,698
INTERNAL COMBUSTION ENGINE BASED ON REACTANT CONTACT IGNITION

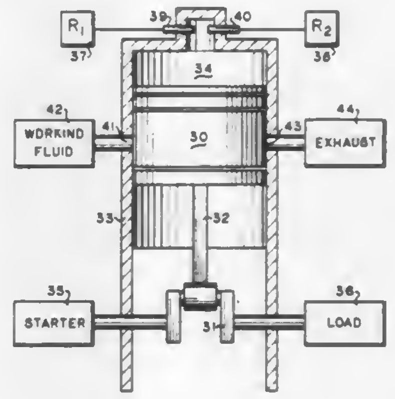
Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 301,285, Oct. 27, 1972, abandoned, and a continuation-in-part of Ser. No. 457,207, Apr. 2, 1974, Pat. No. 3,911,284, and a continuation-in-part of Ser. No. 464,454, Apr. 26, 1974, abandoned, and a continuation-in-part of Ser. No. 578,527, May 19, 1975, Pat. No. 4,020,798, and a continuation-in-part of Ser. No. 781,747, Mar. 28, 1977, abandoned, and a continuation of Ser. No. 950,845, Oct. 12, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 181,080

The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.

Int. Cl.^{3} F02B *75/12*

U.S. Cl. 123—1 A **12 Claims**



1. In an engine having an internal combustion chamber and

power generating displaceable engine means in said combustion chamber, the improvement comprising:

a source of reactants having negligible activation energy, joining said source of reactants to said internal combustion chamber,

means for introducing a working fluid into said internal combustion chamber whereby heat of an explosive reaction of said reactants directly operates said power generating displaceable engine means, and

a collector outside said internal combustion chamber to collect and store particulate by-products of combustion.

4,367,699

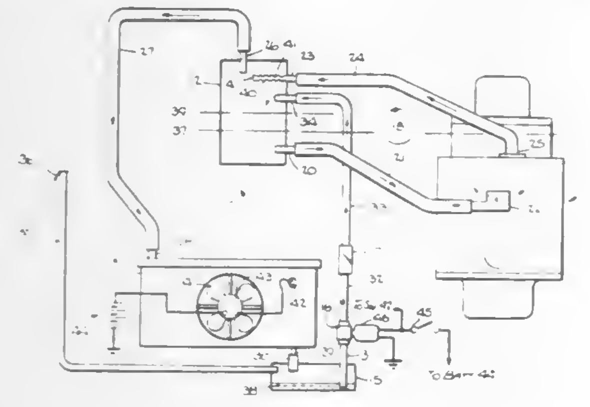
BOILING LIQUID ENGINE COOLING SYSTEM

John W. Evans, Sharon, Conn., assignor to EVC Associates Limited Partnership, Moorestown, N.J.

Continuation-in-part of Ser. No. 228,714, Jan. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 157,892, Jun. 9, 1980, abandoned. This application May 8, 1981, Ser. No. 261,695

Int. Cl.^{3} F01P *3/22*

U.S. Cl. 123—41.23 39 Claims



1. In a boiling liquid cooling system for an internal combustion engine including a coolant inlet and a coolant outlet, said cooling system including a separation tank coupled to said coolant inlet and coolant outlet for separating vaporized coolant from liquid coolant, condenser means coupled to said separation tank for condensing vaporized coolant flowing from said separation tank to said condenser means during operation of said engine, sump means coupled to said condenser means for receiving condensed coolant from said condenser means, said sump means being coupled to said separation tank for returning liquid coolant to said separation tank and to said engine, and vent means for venting non-condensible gases from said cooling system during operation of said engine, the improvement comprising said condenser means including means adapted to flow ambient air in heat exchange relation with said condenser means, and means, coupled to said air flow means and responsive to the presence of vaporized coolant at a selected location in said condenser means, for actuating said air flow means under high ambient air temperature engine operating conditions, whereby the rate of condensation of vaporized coolant in said condenser means is matched to the rate vaporized coolant is generated by said engine and flows to said condenser means and the flow of vaporized coolant from said condenser means into said sump means is prevented during operation of said engine, and a virtually constant predetermined pressure and predetermined temperature are maintained in said cooling system under all engine operating conditions.

4,367,700

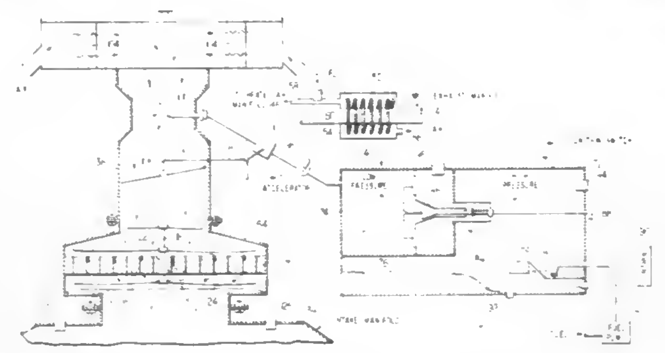
APPARATUS FOR INSURING THE COMPLETE BURNING OF FUEL IN A SIX CYCLE COMBUSTION ENGINE

James L. Pace, Calvert City, Ky., assignor to Hotspur International Corporation, Inc., Louisville, Ky.

Filed Jan. 19, 1981, Ser. No. 225,995

Int. Cl.^{3} F02B *75/02;* F02M *31/00*

U.S. Cl. 123—64 10 Claims



1. In an internal combustion engine operating on a six stroke cycle, the combination comprising:

(a) at least one cylinder having a cylinder wall and a cylinder head therefor, said cylinder head having a fuel and air mixture intake valve, a preheated air purge valve and an exhaust valve communicating with said cylinder, said intake valve, said purge valve and said exhaust valve each being connected to a common respective intake, purge and exhaust manifold,

(b) a piston operable in said cylinder,

(c) means connected to said intake manifold for supplying a mixture of fuel and ambient air to said cylinder via said intake valve during the first cycle of said piston, which is then compressed and expanded during the second and third cycles, respectively, of said piston, and

(d) means connected to said purge manifold for supplying air preheated to a temperature above that of ambient air to said cylinder for imparting heat to said wall of said cylinder to improve subsequent combustion of said mixture via said purge valve during the fifth cycle of said piston, said exhaust valve being opened during said fourth cycle of said piston for removing therefrom the products of combustion and opened during said sixth cycle of said piston for removing said preheated air.

4,367,701

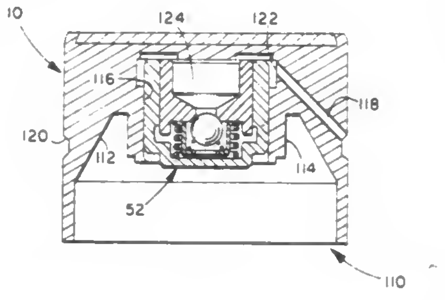
ACTING VALVE GEAR

Stephen M. Buente, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 5, 1979, Ser. No. 100,690

Int. Cl.^{3} F01L *1/14, 1/24*

U.S. Cl. 123—90.55 8 Claims



1. An hydraulic lash adjusting tappet for use in the valve gear of an internal combustion engine, said tappet comprising:

(a) body means, including structure defining,

(i) an outer annular wall having the outer periphery thereof forming a wear resistant surface;

(ii) an annular hub disposed within said annular wall and spaced therefrom, said hub having one end thereof closed and the annular inner periphery thereof disposed in generally parallel relationship to said wear surface;

(iii) a plurality of webs disposed in circumferentially spaced arrangement about said annular wall and with each web extending inwardly therefrom to said hub and joined thereto for supporting same, wherein said body means structure is formed of material having a coefficient of thermal expansion not less than 22×10^{-6} per unit length per degree centigrade as measured in the range 20–100 degrees C.;

(b) a face member having a cam face formed thereon, said member being disposed over said hub end and extending outwardly to said annular wall and being joined thereto, said face member being formed of material having surface hardness value of at least 89 as measured on the Rockwell 15 N scale for the cam face;

(c) hydraulic lash adjusting means movably received in the open end of said hub, said lash adjusting means including structure defining a reaction surface adapted for contacting associated components of the engine valve gear, said reaction surface extending generally parallel to said cam face and being movable with respect thereto, said lash adjusting means including means defining a fluid pressure chamber and one-way valve means operable to admit fluid to said chamber for altering the position of said reaction surface with respect to said cam face for lash adjustment in said valve gear, said lash adjusting means further including means biasing said reaction surface away from said cam face;

(d) said body means including structure defining a fluid passage from said wear resistant surface to said one-way valve means for communicating fluid thereto upon installation of said tappet in an engine and supplying pressurized fluid to said passage; and,

(e) means retaining said lash adjusting means in said hub.

4,367,702

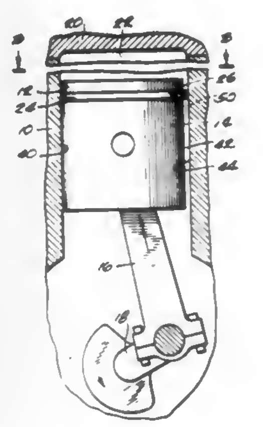
INTERNAL COMBUSTION ENGINE WITH AUTOMATIC COMPRESSION RELEASE

George G. Lassanske, Oconomowoc, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 30, 1981, Ser. No. 230,126

Int. Cl.^{3} F02F *5/00*

U.S. Cl. 123—182 3 Claims



1. An internal combustion engine including an engine block, a cylinder located in said engine block, a cylinder head defining an end wall of said cylinder, a piston housed in said cylinder and defining with said cylinder and said cylinder head a combustion space adapted to receive therein a mixture of fuel and air, and said piston being reciprocably movable toward said cylinder head to compress a fuel mixture in said cylinder and away from said cylinder head, said piston engaging one side of said cylinder as said piston moves toward said cylinder head and engaging an opposite side of said cylinder as said piston moves away from said cylinder head, an annular groove in the periphery of said piston, and a piston ring housed in said annular groove, said piston ring including opposite ends being spaced apart and forming a gap, said piston ring being positioned with said gap adjacent said opposite side of said cylinder so that said gap is closed during piston movement from said head and so that said gap provides compression relief during piston movement toward said head.

4,367,703

APPARATUS FOR ENGAGING AND DISENGAGING DISCRETE CRANKSHAFTS IN INTERNAL COMBUSTION ENGINES

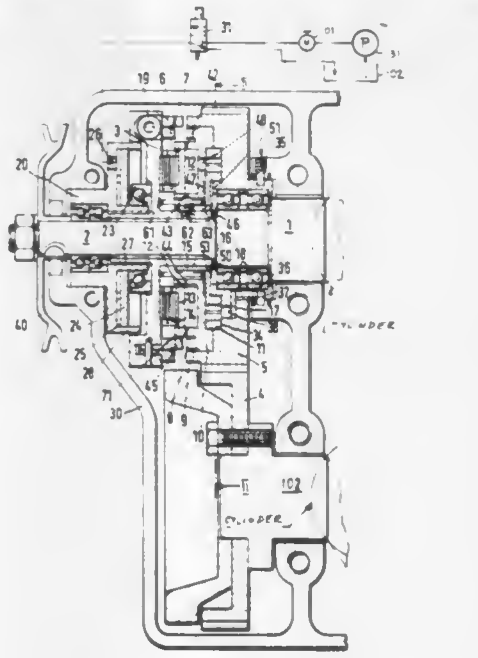
Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,959

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005345

Int. Cl.^{3} F02B *75/18*

U.S. Cl. 123—198 F 26 Claims



1. In an internal combustion engine, the combination of a first engine section having a normally rotating first crankshaft; a second engine section having a second crankshaft parallel to said first crankshaft; means for accelerating said second crankshaft to the speed of said first crankshaft; and clutch means operable to separably couple said crankshafts upon completed acceleration of said second crankshaft.

4,367,704

INTERNAL COMBUSTION ENGINE WITH SEPARABLE CRANKSHAFTS

Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,960

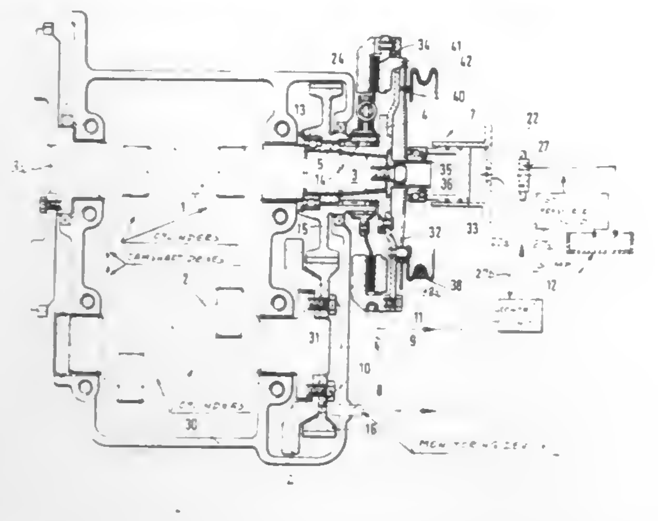
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005368

Int. Cl.^{3} F02B *75/18*

U.S. Cl. 123—198 F **30 Claims**

1. In an internal combustion engine, the combination of a first engine section having a first crankshaft; a second engine section having a second crankshaft parallel with said first crankshaft; an accelerating clutch actuatable to transmit torque from one of said crankshafts to the other of said crankshafts, said clutch including a first clutch member receiving torque from said one crankshaft, a second clutch member arranged to transmit torque to said other crankshaft and to receive torque from said first clutch member, and actuating means having

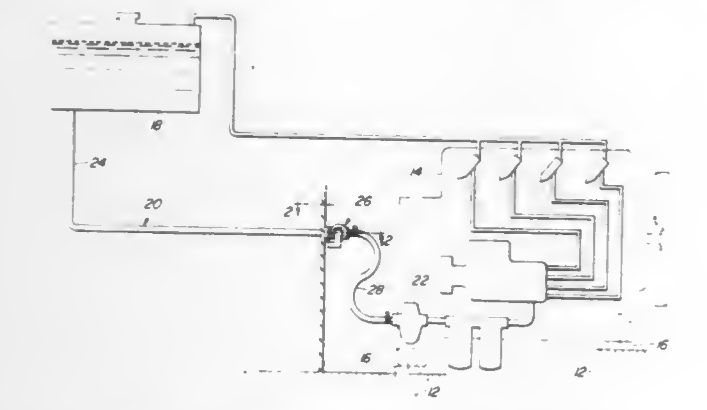
means for gradually increasing the rate of torque transmission from said first to said second clutch member until the rotational speed of said second clutch member at least approximates the rotational speed of said first clutch member.



4,367,705
HEAT ACTIVATED FUEL SHUT-OFF VALVE ACTUATOR

James F. Oeth, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 30, 1981, Ser. No. 259,138
Int. Cl.³ F02B *37/00*
U.S. Cl. 123—198 DB **2 Claims**

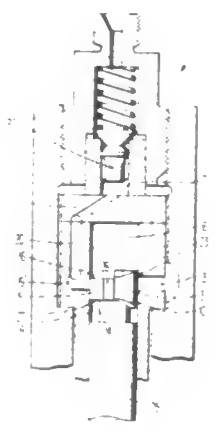


1. In a vehicle including an engine, a fuel pump carried by the engine, a fuel tank, and a fuel line connected between the tank and the pump and including at least one section of flexible hose having an end connected to the fuel pump, the improvement of an automatic fuel shut-off device comprising: a valve housing defining a valve bore and inlet and outlet ports leading to spaced locations of the bore, a valve element reciprocably mounted in the bore between the inlet and outlet ports for movement between first and second positions for respectively establishing and preventing fluid communication between the ports, and a heat sensitive actuator connected to the valve element for moving the latter from its first to its second position in response to receiving heat at a temperature indicative of a fire in the vicinity of the controller, and said outlet port being connected to the flexible hose, and metal conduit means connecting the inlet port to the fuel tank.

4,367,706
FUEL INJECTION PUMP FOR AIR-COMPRESSING FUEL INJECTED INTERNAL COMBUSTION ENGINES

Heinz Scheying, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,262
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836961
Int. Cl.³ F02M *45/06*
U.S. Cl. 123—300 **9 Claims**



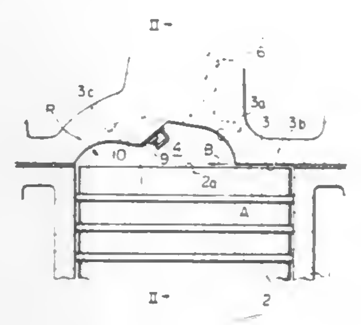
1. A fuel injection pump for an air-compressing fuel injected internal combustion engine, the fuel injection pump including a pump piston means arranged in a pump cylinder means for controlling a fuel control bore communicating with a pump working chamber means, a fuel control element in constant connection with the pump piston means, means provided in said control element for constantly communicating the pump working chamber means with an intermediate chamber means disposed above the control element and for communicating the pump working chamber means with a pump pressure chamber means during a stroke of the piston means, characterized in that means are provided for temporarily interrupting the communication between the pump working chamber means and the pump pressure chamber means for a predetermined period of time during a stroke of the pump piston means such that, prior to the interruption, a variable preliminary injection quantity of fuel is conveyed and subsequent to the interruption, a principal injection quantity of fuel is conveyed by the fuel injection pump,

- the control element is integrated into the pump piston,
- the pump piston means includes a top control edge means and a bottom control edge means for controlling the flow of fuel to be injected, the top control edge means and bottom control edge means being arranged on a first half of the pump piston means, the means for constantly communicating the pump working chamber means with the intermediate chamber means and for communicating the pump working chamber means with the pump pressure chamber means includes a bore arrangement leading to the pump pressure chamber means, the control element includes a top and bottom control edge means arranged in a half of the pump piston means disposed oppositely the half of the pump piston means provided with the top and bottom control edge means, the pump piston means includes a neck portion disposed beneath the control element, the neck portion and a portion of the pump cylinder means form an annular chamber means defining the pump working chamber means, and in that a passage means is provided in the control element for placing the annular chamber means in constant communication with the intermediate chamber means, and
- the top control edge means of the control element serves to interrupt a feed of fuel so as to define an end of the preliminary injection and the bottom control edge means of the control element serves to reinstate the feed of the fuel so as to define a beginning of the principal injection.

4,367,707
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Makoto Suzuki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 184,488, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 972,290, Dec. 22, 1978, abandoned. This application Jan. 25, 1982, Ser. No. 342,319
Claims priority, application Japan, Oct. 31, 1978, 53-133142
Int. Cl.³ F02B *23/00*
U.S. Cl. 123—306 **4 Claims**



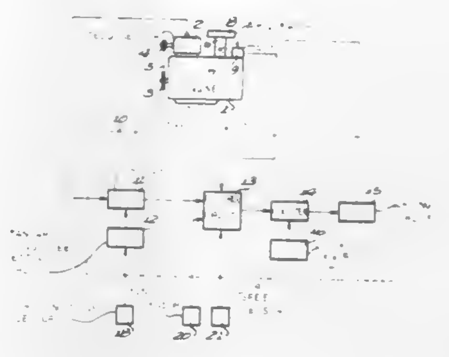
1. An internal combustion engine comprising

- a cylinder block having a cylinder bore therein;
- a piston having a flat top face and being reciprocally movable in said cylinder bore;
- a cylinder head fixed onto said cylinder block and having an inner wall overlying the adjacent end of the cylinder bore, said inner wall having a flat wall portion and a concave wall portion, said flat wall portion circumferentially extending along a part of the periphery of said inner wall and defining a flat squish area on one side of the axis of said cylinder bore between said flat wall portion and said flat top face of said piston, said concave wall portion and said flat top face of the piston defining a combustion chamber when said piston is at its top dead center position, which combustion chamber has a central axis parallel to and offset on an opposite side of the axis of said cylinder bore;
- an intake valve arranged on said concave wall portion;
- an exhaust valve arranged on said concave wall portion; and
- a spark plug having a spark gap arranged in said combustion chamber, wherein the improvement comprises:
- a projection having a concave bottom wall and a flat side wall extending from a region of the surface of the concave wall portion of said inner wall of the cylinder head located between the axis of the cylinder bore and said central axis of the combustion chamber, the flat side wall being inclined at an acute angle with respect to said central axis of the combustion chamber and facing the squish area, and a threaded bore extending through said projection perpendicular to said flat side wall, the spark plug being mounted in said threaded bore with its spark gap located close to the plane of said flat side wall approximately at a point on said central axis of the combustion chamber which is midway between the intersections of said central axis with the concave wall portion of the inner wall of the cylinder head and the flat top face of the piston when the piston is at its top dead center position, wherein the cross-sectional area of the projection progressively decreases with distance from said inclined flat side wall on the opposite side of the combustion chamber from the squish area, such that the concave bottom wall of the projection becomes flush with the concave wall portion of said cylinder head surrounding the projection prior to reaching the plane of said flat wall portion of said cylinder head, wherein the volume of the combustion chamber on said opposite side of the inclined side wall is approximately the same as the volume on the side facing the squish area.

4,367,708
SYSTEM FOR REGULATING THE ENGINE SPEED

Hiroyuki Nakamura, Higashiyamato; Makoto Shikata, Musashimurayama, and Masaaki Ohgami, Musashino, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Mar. 5, 1981, Ser. No. 240,689
Claims priority, application Japan, Mar. 7, 1980, 55-29334
Int. Cl.³ F02D *9/02*
U.S. Cl. 123—339 **8 Claims**



1. A system for regulating the engine speed of an internal combustion engine having a carburetor and a throttle valve in said carburetor, comprising:

- an electro-mechanical actuator for maintaining said throttle valve to an open state,
- a speed sensor for detecting the speed of said engine,
- comparing circuit means connected to said speed sensor,
- setting circuit means for applying a standard level to said comparing circuit means for comparing the output of said speed sensor with the standard level,
- control circuit means for producing a pair of output signals for a time period in dependency on the output of said comparing circuit means,
- driving circuit means for driving said electro-mechanical actuator for increasing and decreasing said open state of said throttle valve in dependency on said output of said control circuit means,
- said control circuit means comprises a clock pulse generating circuit, a counter for counting the clock pulses, a logic circuit connected to said comparing circuit means and to said counter, and gate means, which are so arranged that said gate means are opened for a time period in dependency on the output of said comparing circuit means.

4,367,709
DIESEL ENGINE SPEED GOVERNOR

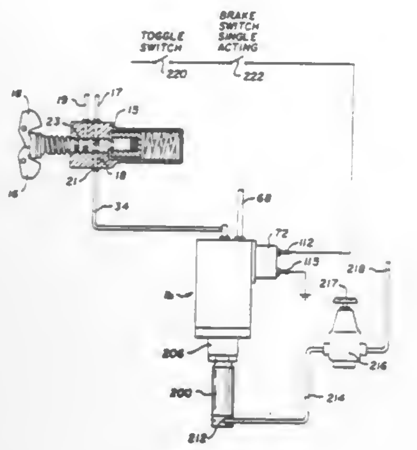
Ernest R. Codrington, 1580 Cornell Ave., Coquitlam, B.C., Canada (V3J 3A1)

Continuation-in-part of Ser. No. 961,523, Nov. 17, 1978, Pat. No. 4,291,657. This application Jun. 29, 1981, Ser. No. 278,047
Int. Cl.³ F02D *1/04;* F02M *69/00;* F02D *11/10;* F02B *77/00*
U.S. Cl. 123—339 **14 Claims**

1. A fuel system for a diesel engine having a common rail fuel injection system, the system comprising a fuel pump mechanically driven by the diesel engine;

- a centrifugal governor to govern maximum engine speed;
- means defining a first fuel pathway to the centrifugal governor from the fuel pump;
- means defining a second fuel pathway from the centrifugal governor to the fuel pump;
- means defining a third fuel pathway from the centrifugal governor from a position in the centrifugal governor between the first and second passageways;
- a high idle speed governor comprising a hydraulically activated valve means with a body;
- a fuel inlet for connecting the valve means to the third passageway;
- a fuel outlet for connecting the valve means to the fuel injectors of the engine, the valve means being activated by

increasing fuel pressure to decrease the flow of fuel from the inlet to the outlet and being activated by decreasing fuel pressure to increase the flow of fuel from the inlet to the outlet.



4,367,710

SPARK COIL CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE EQUIPPED WITH ELECTRONIC IGNITION ADVANCE

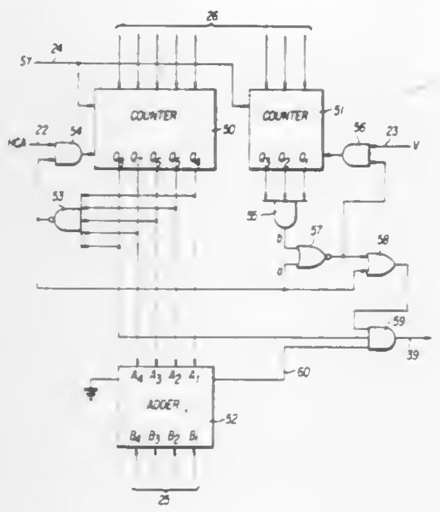
Robert Deleris, Bailly, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 10, 1980, Ser. No. 214,973

Claims priority, application France, Jan. 29, 1980, 80 01834

Int. Cl.^{3} F02P *5/08*

U.S. Cl. 123—416 **5 Claims**



1. A spark coil control device for an internal combustion engine having a crankshaft and plural cylinders, of the type provided with a target having associated therewith a number of protrusions distributed around its periphery which is rotating with the crankshaft, and at least one fixed position primary element associated with said target for generating a data signal, an ignition coil, and a spark distributor intended to induce explosions within the various cylinders of the engine in succession by the intermediary of respective sparkplugs, comprising:

a stage for treatment of the data signal generated by the position primary element, which provides a synchronization signal, a speed of rotation signal, and a third (HCA) signal having a frequency which is the product of the speed or rotation of the engine by the associated number of protrusions on the periphery of the target;

an electronic ignition advance calculator having a first output which provides a gross numerical value for ignition advance angle and a second output which provides a gross numerical value for the angle of conduction of the coil;

a power stage for commanding said ignition coil;

a command signal generator stage connected to the two outputs of the electronic advance calculator and the power stage commanding the ignition coil, said command signal generator stage comprising,

a first counter, a second counter, and means for treating the initial conduction angle of the coil and the ignition advance angle based on the three signals provided by said stage for treatment of the primary element data signal,

said first counter and said second counter having respective inputs connected to the output of the ignition advance calculator providing the gross numerical value for the ignition advance angle,

said first counter having a clock input connected to the stage for treatment of the data signal generated by the position primary element thereby to receive therefrom the third (HCA) signal and output bits ranging from a most significant output bit to a least significant output bit,

said second counter having a clock input connected to the stage for treatment of the signal retrieved by the position primary element so as to receive therefrom the speed of rotation signal, and

an adding stage connected by a first series of inputs to selected of the output bits of said first counter and by a second series of inputs to the output of said ignition advance calculator for providing a gross numerical value for the conduction angle.

4,367,711

METHOD AND APPARATUS FOR IGNITION SYSTEM SPARK TIMING CONTROL WITHIN WARM-UP PERIOD OF THE ENGINE

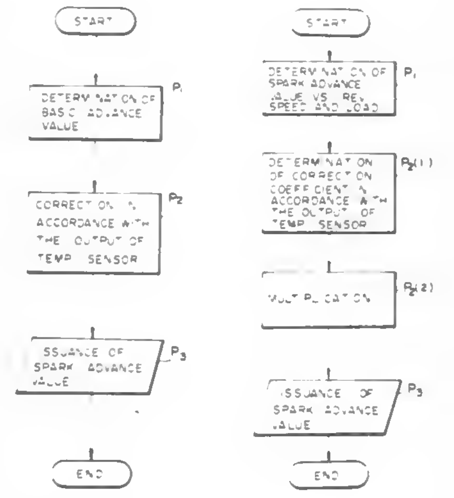
Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 3, 1980, Ser. No. 136,959

Claims priority, application Japan, Apr. 16, 1979, 54-45327

Int. Cl.^{3} F02P *5/04*

U.S. Cl. 123—417 **4 Claims**


START
DETERMINATION OF BASIC ADVANCE VALUE
P1
CORRECTION IN ACCORDANCE WITH THE OUTPUT OF TEMP SENSOR
P2
ISSUANCE OF SPARK ADVANCE VALUE
P3
END
START
DETERMINATION OF SPARK ADVANCE VALUE VS REV SPEED AND LOAD
P1
DETERMINATION OF CORRECTION COEFFICIENT IN ACCORDANCE WITH THE OUTPUT OF TEMP SENSOR
P2(1)
MULTIPLICATION
P2(2)
ISSUANCE OF SPARK ADVANCE VALUE
P3
END

1. A method for the control of an ignition system spark timing for a spark ignition internal combustion engine, said method comprising the steps of:

sensing engine temperature of the engine; and

correcting a value of spark advance that is determined by calculation based upon engine operating parameters excluding the sensed engine temperature in accordance with the sensed engine temperature,

said correcting step including the steps of:

finding by table look-up in a read only memory a correction coefficient for the sensed engine temperature, said read only memory having a plurality of correction coefficient values and a plurality of corresponding engine temperature values stored therein which values define a two dimensional table having a first zone wherein the value of the correction coefficient remains constant with increase of temperature, a second and subsequent zone in which the value of the correction coefficient decreases proportionally with respect to increase in temperature, a third and subsequent zone in which the value of the correction coefficient remains constant with increase in temperature, a fourth and subsequent zone in which the value of the correction coefficient increases to a level equal to the level at which the correction values remain constant in said first zone and a fifth and subsequent zone in which the values of said correction coefficient remain constant with increase of temperature;

multiplying the value of spark advance that is determined by calculation based upon engine operating parameters excluding the sensed engine temperature with said coefficient to provide a result; and

providing said result as an output value of spark advance.

4,367,712

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

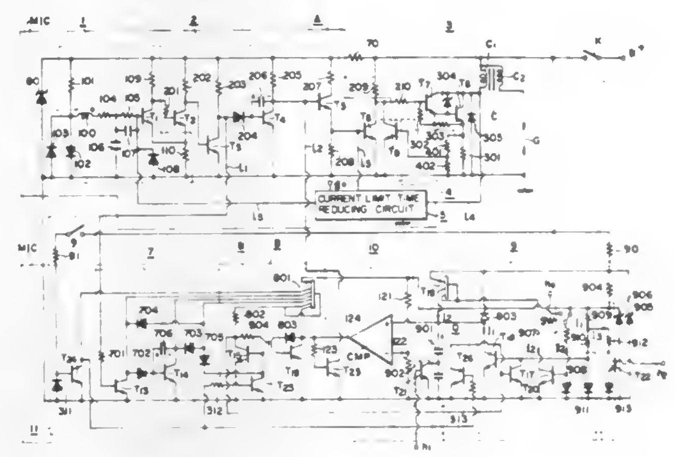
Noboru Sugiura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,202

Claims priority, application Japan, Sep. 29, 1978, 53-119350; Mar. 7, 1979, 54-25591; Mar. 7, 1979, 54-27160

Int. Cl.^{3} F02P *5/04*

U.S. Cl. 123—427 **19 Claims**



1. The ignition timing control system for an internal combustion engine comprising a circuit for generating a reference ignition signal in synchronism with the rotation of the engine, a circuit for generating a retard ignition signal at a point shifted by a selected shaft angle of the engine from the reference ignition signal, and an ignition circuit for controlling the ignition timing of the engine according to the retard ignition signal, wherein said retard ignition signal generator includes a capacitor circuit for charging and discharging, a first current circuit for always supplying a first current to the capacitor circuit, said first current circuit forming a first current mirror circuit including a first transistor coupled to said capacitor circuit, a second current circuit for supplying said capacitor circuit with a second current which has reverse polarity to the first current and which is equal to the sum of the first current and a discharge current from the capacitor circuit, said second current circuit forming a second current mirror circuit including a second transistor coupled to said capacitor circuit, a switching circuit which starts the flow of the second current in synchronism with the reference ignition signal and cuts off the second current when the terminal voltage across said capacitor circuit reaches a reference level, and an output circuit for generating the retard ignition signal when the terminal voltage across said capacitor circuit reaches the reference level, wherein each of said first and second current circuits comprises a series circuit of a resistor and a diode which is connected with an emitter-base path of each of said first and second transistors in parallel, so that the collector currents of said first and second transistors are equal to the first and second currents respectively.

4,367,713

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING AIR/FUEL CONTROL FUNCTION AT ENGINE DECELERATION

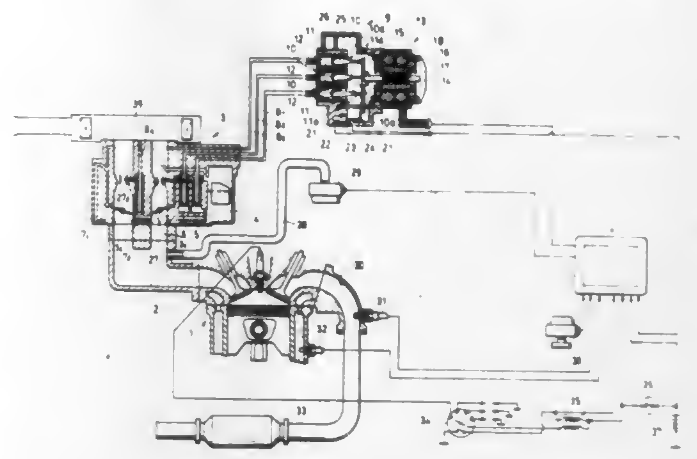
Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,416

Claims priority, application Japan, Jul. 21, 1980, 55-99481

Int. Cl.^{3} F02M *7/00;* F02G *3/00;* F02B *33/00;* F02M *11/00*

U.S. Cl. 123—440 **2 Claims**



1. In an air/fuel ratio control system for performing feedback control of the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine, including an O_2 sensor for detecting the concentration of oxygen present in exhaust gas emitted from said engine, fuel quantity adjusting means for producing said air/fuel mixture being supplied to said engine, and means operatively connecting said O_2 sensor with said fuel quantity adjusting means in a manner effecting feedback control operation in response to an output signal produced by said O_2 sensor to control the air/fuel ratio of said air/fuel mixture to a preset value, the combination comprising: an absolute pressure sensor for detecting absolute pressure in an intake pipe provided in said engine, first means connected to said absolute pressure sensor for producing a signal for interrupting said feedback control operation when the absolute pressure in said intake pipe, detected by said absolute pressure sensor is lower than a predetermined value, second means responsive to said feedback control interrupting signal to interrupt said feedback control operation, and third means responsive to said feedback control interrupting signal to operate to cause said fuel quantity adjusting means to supply an air/fuel mixture having a predetermined air/fuel ratio to said engine, said first, second and third means forming said connecting means.

4,367,714

FUEL INJECTION PUMP

Robert A. DiDomenico, Ludlow; John B. Cavanaugh, West Springfield, both of Mass., and John A. Kimberley, East Granby, Conn., assignors to Ambac Industries Incorporated, Springfield, Mass.

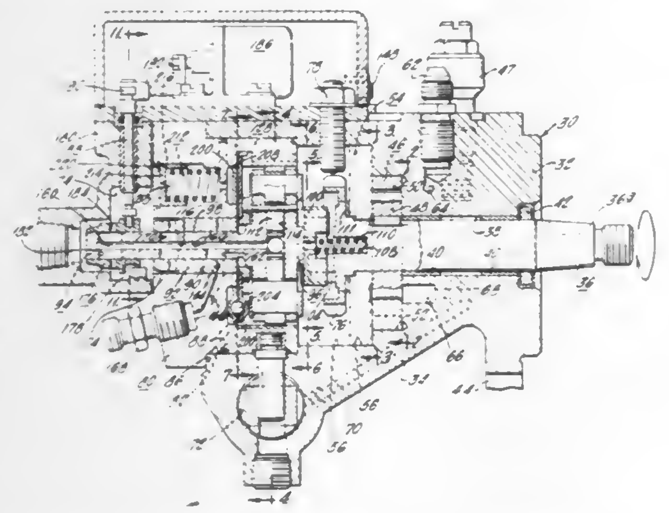
Filed Jan. 19, 1981, Ser. No. 226,441

Int. Cl.^{3} F02D *1/02;* F02M *45/00*

U.S. Cl. 123—449 **15 Claims**

1. A fuel injection pump for a diesel engine comprising a housing assembly, a rotor disposed within said housing assembly, means for driving said rotor in rotation at a speed corresponding to engine speed, said rotor comprising a pump body and a distributor shaft, a hydraulic head in said housing assembly, a bore in said hydraulic head for rotatably supporting said rotor distributor shaft, opposed pistons disposed within radial bores of said pump body, said pump body radial bores intersecting to form a pumping chamber, tappet assemblies associated with each said piston, an internal ring cam disposed in said housing concentrically with said rotor for cooperation with said tappet assemblies to provide a pumping movement of said

pistons upon rotation of said rotor, means for varying the rotational position of said cam in response to changes in engine operating conditions, an axial bore within said distributor shaft communicating with said pumping chamber, a distributor slot in said distributor shaft, a plurality of spaced distributor ports in said hydraulic head, said distributor slot aligning sequentially with said distributor ports upon rotation of said rotor, passage means in said hydraulic head communicating with said distributor ports for connecting said ports with the engine fuel injection nozzles, a fuel gallery adjacent one end of said hydraulic head, means for supplying fuel under pressure to said fuel gallery, said pump body being disposed adjacent the other end of said hydraulic head at one end of said distributor shaft, the opposite end of said distributor shaft extending beyond said hydraulic head into said fuel gallery, a spill sleeve on said extending end of said distributor shaft, slot and port means on said distributor shaft and spill sleeve for providing a communication of said distributor shaft bore and said gallery to effect termination of injection, fuel metering control means for varying the position of said spill sleeve with respect to said distributor shaft in accordance with the operating conditions and the fuel demands of the engine, port closing means for providing fluid communication between said distributor shaft bore and said fuel gallery during an initial portion of the pumping stroke of said pistons and for cutting off said communication to initiate fuel injection, and timing control means for simultaneously changing the timing of the closing of said port closing means and the opening of said spill sleeve and distributor shaft slot and port means.



4,367,715

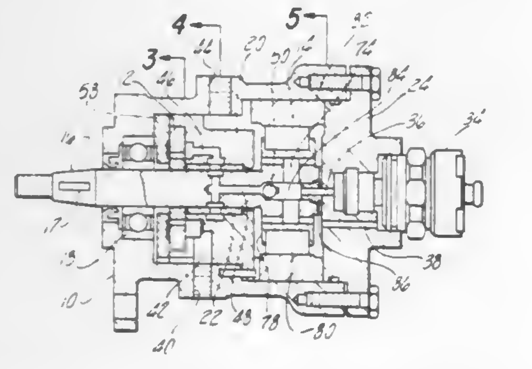
DISTRIBUTION INJECTION PUMP FOR DIESEL ENGINES

Edwin B. Watson, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1980, Ser. No. 217,298

Int. Cl.^{3} F02M *37/04*

U.S. Cl. 123—458 **11 Claims**



1. A distributor fluid injection pump controlled by electrical signals comprising:

a generally cylindrical housing having an enclosed end and an open end, a shaft aperture passing concentrically through said enclosed end, and an inlet port disposed intermediate said enclosed end and said open end;

a shaft passing through said shaft aperture having a driven end adapted to be rotatably driven external to said housing and an internal portion supported for rotation within said housing, said shaft having a concentric axial bore in said internal portion receiving fluid from said inlet port at one end and forming an axial spill port exiting at the end of the internal portion of said shaft;

injection pump means attached to said shaft intermediate said one end of said axial bore and said spill port for pumping the fluid received at said one end of the axial bore in response to the rotation of said shaft to generate a fluid flow in said internal bore towards the spill port;

a distributor block enclosing the open end of said housing and interfacing the end of the internal portion of said shaft, said distributor block having a return passageway, a spill passageway disposed concentric with said shaft and interconnecting said spill port with said return passageway, and a plurality of injection ports disposed symmetrically around said spill passageway;

distributor means having an outlet port connected to said axial bore for interconnecting said outlet port to said injection ports, one at a time in a repetitive sequence in response to the rotation of said shaft; and

a single solenoid valve connected to said distributor block between said spill and return passageways for controlling the fluid flow through said spill passageway in response to electrical signals; said solenoid valve having a first state enabling said fluid flow through said spill passageway to said return passageway and a second state blocking a fluid flow through said spill passageway.

4,367,716

FUEL INJECTION TIMING CONTROL SYSTEM

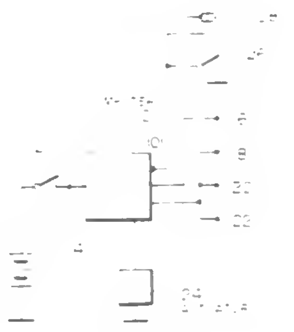
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 30, 1980, Ser. No. 192,368

Claims priority, application Japan, Oct. 4, 1979, 54-128159

Int. Cl.^{3} F02M *51/00*

U.S. Cl. 123—478 **8 Claims**



1. A fuel injection timing control system for use in an internal combustion engine having an accelerator pedal, said system including a computer responsive to various conditions of said engine for determining an optimum value of fuel-injection timing, manually operable control means for providing a control signal, and first switch means for disconnecting said control signal if said accelerator pedal is depressed more than a predetermined amount, and said computer being responsive to the control signal from said control means for retarding the fuel-injection timing a predetermined value with respect to said optimum value of fuel injection timing.

4,367,717

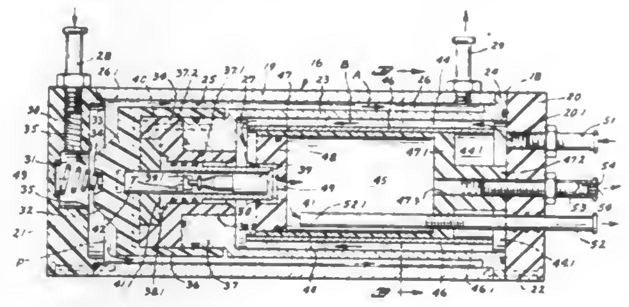
FUEL TREATING APPARATUS FOR ENGINES

Dennis A. Ray, Crookston, Minn., assignor to Northwest Investments, Crookston, Minn.

Filed Apr. 7, 1980, Ser. No. 138,218

Int. Cl.^{3} F02M *31/00*

U.S. Cl. 123—557 **11 Claims**



1. An engine attachment for heating liquid fuel with heat from the hot engine coolant comprising

an elongate container having an elongate annular side wall with ends upon which transverse first and second end walls are affixed,

an elongate annular heat transfer wall affixed within the container and extending from said first transverse end wall and along and in spaced relation to the annular side wall to define a hot engine coolant flow passage therebetween and entirely surrounding the heat transfer wall,

fuel flow guide means within the heat transfer wall and around the entire inner periphery thereof for defining restricted passage means extending from one end of the heat transfer wall to the other end thereof and causing the fuel to scrub against the heat transfer wall as the fuel progresses through the container,

a variable flow valve in flow communication with the hot engine coolant flow passage to regulate and vary the flow of the hot engine coolant through said passage and along the heat transfer wall, the flow valve having a temperature sensitive control varying the flow opening of the valve and a temperature sensing element for the control and in flow communication with the fuel inwardly of the heat transfer wall,

a fuel inlet fitting on the container adjacent the first end wall and directing the fuel into said passage means,

a hot engine coolant inlet fitting adjacent the end of the elongate container opposite said first end wall for supplying the hot engine coolant into the hot engine coolant flow passage,

said temperature sensing element of the temperature sensitive control being located in said passage means adjacent an end of the heat transfer wall remote from said first transverse end wall to sense fuel temperature after heating of the fuel is complete,

and the container also having outlet means for discharging hot engine coolant from the flow passage adjacent said first end wall, and

fuel outlet means adjacent the temperature sensing element to discharge the fuel after the temperature has been sensed.

4,367,718

FUEL PREHEATING DEVICE

Jacob Heine, 3349 Wunder Ave., Cincinnati, Ohio 45211

Filed Oct. 20, 1980, Ser. No. 198,535

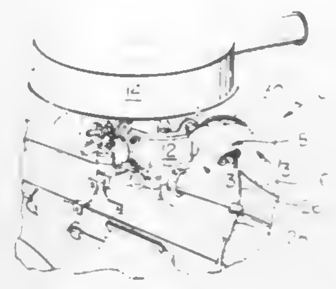
Int. Cl.^{3} F02M *31/00*

U.S. Cl. 123—557 **4 Claims**

1. In combination with an internal combustion engine having a fuel conduit for supplying fuel to the engine, a fuel preheating device, comprising:

(a) a pair of elongated electrical resistance heating elements;

(b) a retaining clip which securely holds said pair of electrical heating elements in spaced parallel relationship to each other, said retaining clip resiliently biasing each one of said pair of elongated heating elements in juxtapositional contacting heat transfer relationship with the fuel conduit on opposite sides of the fuel conduit so as to compressingly engage the fuel conduit between the heating elements, said retaining clip spanning the fuel conduit between the heating elements along substantially the entire length of the heating elements to inhibit heat transfer between the heating elements and the atmosphere; and



(c) means for connecting said heating elements to an electrical power source.

4,367,719

CROSS-FLOW TYPE INTERNAL COMBUSTION ENGINE HAVING AN EXHAUST GAS RECIRCULATION SYSTEM

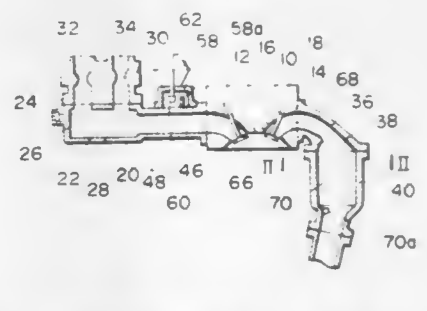
Susumu Kimura, Tokyo; Hiroyosi Ario, and Minoru Midorikawa, both of Koganei, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 2, 1981, Ser. No. 239,658

Claims priority, application Japan, Mar. 3, 1980, 55-26154[U]

Int. Cl.^{3} F02M *25/06*

U.S. Cl. 123—568 **12 Claims**



1. An internal combustion engine having a cross-flow type cylinder head, an intake manifold mounted to one side of said cylinder head, a carburetor arranged upstream of said intake manifold, an exhaust manifold mounted to the other side of said cylinder head, and an exhaust gas recirculation system which feeds a part of the exhaust gas of said engine into said intake manifold, said exhaust gas recirculating system comprising:

a first block integrally mounted on said intake manifold, said first block including therein a first through passage having one end open to a distribution chamber of the intake manifold from which chamber branch tubes of the intake manifold extend toward said cylinder head and an opposite end connected to a second through passage formed in a portion of said cylinder head;

a second block integrally formed with said exhaust manifold, said second block including therein a third through passage having one end connected to the other end of said second through passage and an opposite end of third through passage being open to a portion downstream of branch tubes of the exhaust manifold; and

gas flow rate control means for controlling the exhaust gas flowing in the connected first, second and third through passages in accordance with operation modes of said engines.

4,367,720

RUN ON PREVENTION SYSTEM SUPPLYING MAXIMUM EXHAUST GAS RECIRCULATION

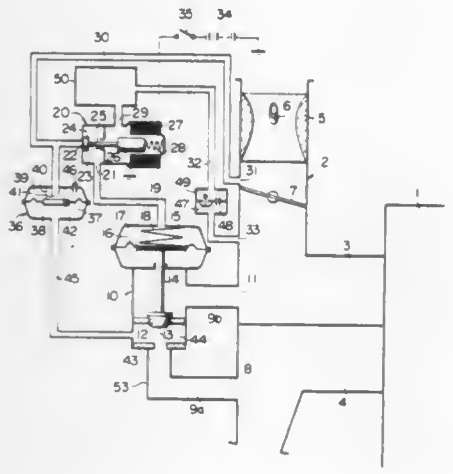
Takeo Miyoshi; Takanori Nagai, and Akira Ii, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1980, Ser. No. 215,701

Claims priority, application Japan, Jul. 29, 1980, 55-104004

Int. Cl.^{3} F02M *25/06;* F02D *7/00*

U.S. Cl. 123—571 **1 Claim**



1. For an internal combustion engine comprising:

an ignition system;

an exhaust system;

an intake system including an intake passage with a throttle valve mounted therein;

pipe means connecting said exhaust system with said intake system;

a vacuum operated flow control valve arranged on said pipe means and having a vacuum operating chamber which is normally connected to a first vacuum port formed in said intake passage at a position located slightly upstream of said throttle valve when closed in its idle position, said vacuum operated valve being opened by a vacuum signal transmitted to said chamber from said first vacuum port when the throttle valve is, during the operation of the engine, opened from said idle position so that the port is located downstream of said throttle valve, thereby causing a part of the gas from the exhaust system to be recirculated to the intake system via said pipe means;

a run on prevention system comprising:

a vacuum tank and a parallel connection of a one way valve and a throttling element, said vacuum tank receiving vacuum from said intake system through a second vacuum port formed in said intake passage at a position downstream of said throttle valve in its idle position, said vacuum tank receiving vacuum through both said one way valve and said throttling element while said internal combustion engine is running; and

switching valve means which connect said vacuum operating chamber with said first port when said ignition system is supplied with actuating electrical power and which disconnects the connection of said vacuum operating chamber with said first port and connects said vacuum operating chamber with said vacuum tank when said ignition system is not supplied with actuating electrical power.

4,367,721

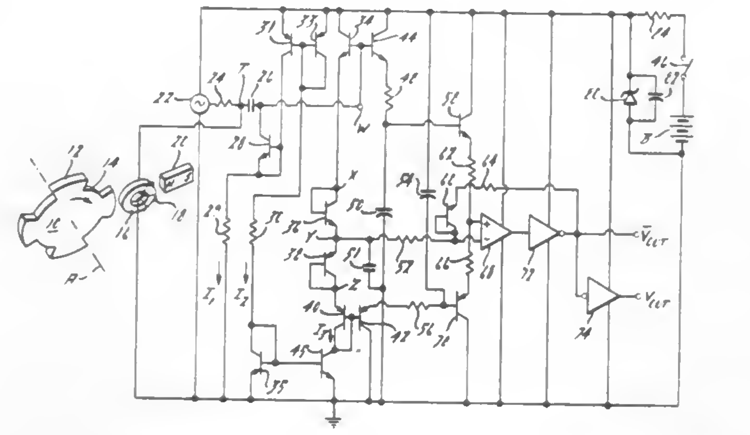
SIGNAL DETECTION CIRCUIT WITH SELF-ADJUSTING THRESHOLD HAVING MODULATED CARRIER INPUT

Wesley D. Boyer, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 64,699, Aug. 8, 1979, Pat. No. 4,293,814. This application Oct. 20, 1980, Ser. No. 198,890

Int. Cl.^{3} F02P *1/00*

U.S. Cl. 123—617 **6 Claims**



1. A signal condition detection circuit with self-adjusting threshold, said circuit comprising:

an oscillator for producing a first AC signal at a first frequency;

means for amplitude modulating said first AC signal;

means for demodulating said first amplitude modulated AC signal to produce a second cyclically varying signal corresponding to the peak to peak value of said amplitude modulation;

means for sensing the maximum peak value of said second cyclically varying signal;

means for sensing the minimum peak value of said second cyclically varying signal;

means for generating a DC threshold signal having a voltage level bearing a predetermined relationship to both said sensed minimum and maximum peak values of said second cyclically varying signal; and

means for generating an electrical output signal having a voltage level characteristic that changes from a first to a second predetermined voltage level whenever said second cyclically varying signal crosses said DC threshold level;

whereby said DC threshold signal characteristic varies as a function of said sensed minimum and maximum values of said second cyclically varying signal.

4,367,722

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tiaki Mizuno, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 24, 1980, Ser. No. 190,255

Claims priority, application Japan, Sep. 27, 1979, 54-125119

Int. Cl.^{3} F02P *1/00*

U.S. Cl. 123—644 **4 Claims**

1. A contactless ignition system for an internal combustion engine comprising:

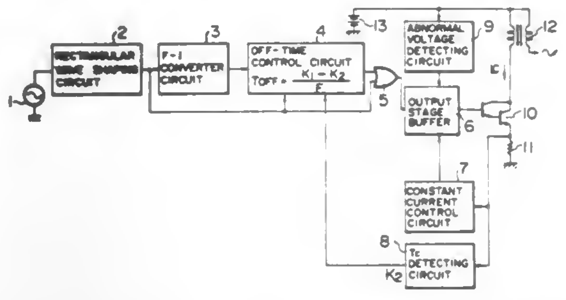
an ignition coil including a primary winding and a secondary winding;

switching means connected to the primary winding of said ignition coil for controlling the starting time and interruption time of primary current supplied to said primary winding;

current detecting means connected to the primary winding of said ignition coil for detecting the level of primary current supplied to said primary winding;

a rising time detecting circuit connected to said current detecting means for detecting the rising period of time for the level of the primary current to attain a predetermined setting;

rotational speed detecting means for detecting the rotational speed of the engine; and



a dwell angle control circuit connected to said switching means, said rising time detecting circuit and said rotational speed detecting means for controlling the starting time of primary current supplied to said primary winding by said switching means in response to the rising period of time detected by said rising time detecting circuit.

4,367,723

AIR GUN WITH PISTON FULLY COCKED IN PLURALITY OF STAGES

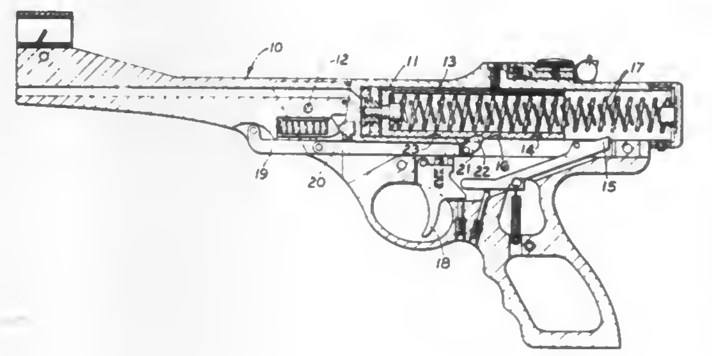
Harold F. Resuggan, Birmingham, England, assignor to Webley and Scott Limited, Birmingham, England

Filed Jan. 5, 1981, Ser. No. 222,676

Claims priority, application United Kingdom, Jan. 9, 1980, 8000682

Int. Cl.^{3} F41B *11/00*

U.S. Cl. 124—67 **6 Claims**



1. A high performance air gun including an air-compressing power piston mounted in a cylinder, spring means operable to apply a substantial driving force to the piston, a barrel of substantial length pivoted for breaking movement between a loading position at which a projectile is loaded into a breech end of the barrel and an operating position at which the breech is closed for the projectile to be driven along the barrel by air pressure under the action of said piston; trigger releasable retaining means for co-acting automatically with the piston at the fully cocked position and at at least one intermediate position between the fully cocked position and its fully released location to retain the piston at either of said positions; trigger means selectively operable for disengaging the retaining means from the piston when the latter is at either said position so enabling the gun to be used selectively at less than full power, and cocking means driven by lever action of the barrel during said breaking movement and engageable with the piston at the fully released location in an outward lever movement for driving the piston to said intermediate position and re-engageable with the piston following inward lever movement in a repeat outward lever movement for driving the piston from said intermediate position to the fully cocked position, said cocking means including a member longitudinally slidable relative to said cylinder, said member having a pawl mounted thereto for engagement with said piston, said pawl being pivotally mounted to said member and being slidable therewith, said trigger releasable retaining means being located rearwardly of said pawl and being pivotally mounted to said air gun so as to engage said piston rearwardly of where said pawl engages said piston, said cocking means being arranged with high mechanical advantage whereby the piston is fully cocked in a plurality of stages so reducing the effort otherwise needed to effect full cocking against said substantial driving force of said spring means.

4,367,724

BAKER'S OVENS

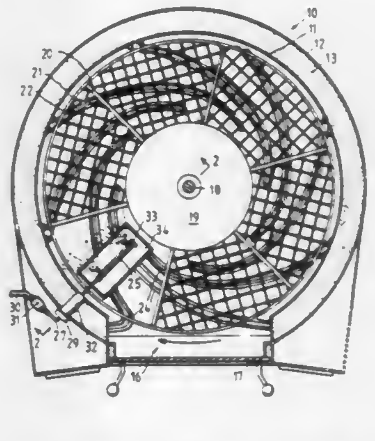
Paul L. [illegible]illett, 43 Porter St., Redcliffe, Queensland 4020, Austr[illegible]ia

Filed Nov. 10, 1980, Ser. No. 205,298

Clai[illegible] priority, application Australia, Nov. 16, 1979, PE1362; Jul. 1[illegible]1980, PE4523

Int. Cl.^{3} A21B *1/08*

U.S. [illegible] 126—20 **6 Claims**



1. A baker's oven comprising an upright baking compartment having a side wall loading door and top and bottom walls, stationary electrical heating elements attached to said top and bottom walls, a horizontal support for bake goods in the lower portion of said compartment, vertical axis rotational drive means for the horizontal support in said compartment, a horizontal radially disposed intermittently operated steam injection unit on the side wall of the compartment above said support and having steam injection nozzle means thereon for directing steam in a direction away from the loading door and along the rotational path of movement of said support, said steam injection unit being disposed within a recess formed in said side wall of said compartment, said side wall being cylindrical and said support for bake goods being annular and being at an elevation below said steam injection unit, and a vertically shiftable horizontal lid in said compartment in superposed relationship with the support for bake goods and adapted to vertically traverse the side wall recess containing the steam injection unit without interferring the latter.

4,367,725

WOOD AND COAL BURNING HEATING METHOD AND APPARATUS

Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.

Continuation-in-part of Ser. No. 86,673, Oct. 19, 1979, Pat. No. 4,279,238. This application Feb. 28, 1980, Ser. No. 125,335

Int. Cl.^{3} F24C *1/14*

U.S. Cl. 126—77 **18 Claims**

1. A method for operating a heating apparatus for burning, in one configuration, coal and in a second configuration, wood, comprising the steps of

providing an inlet port in a frame of the heating apparatus having a cross-sectional area sufficiently large for providing the air required for the heating apparatus to efficiently burn coal,

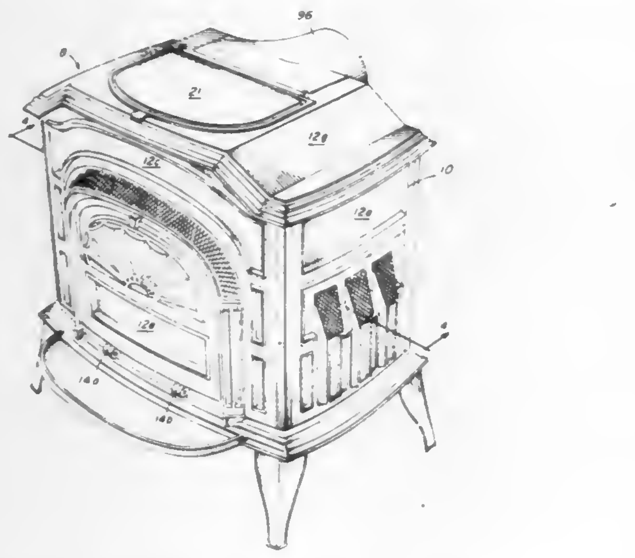
directing said air from said inlet port to a fuel combustion chamber wherein said coal can be efficiently burned, and removably inserting into air supply paths to the fuel combustion chamber, at a position interior of the heating apparatus, and prior to supplying said air to said fuel combustion chamber, removable flow restriction elements for limiting and controlling the rate at which air can be supplied to said fuel combustion chamber when said fuel combustion chamber is employed for burning wood.

3. A heating apparatus for burning wood and for burning coal comprising

a heat conducting frame member having front, side, and back vertical wall panels, a top panel, and a bottom panel for enclosing a defined volume,

a fireback,

at least one removable plate for defining in combination with said fireback and at least one of said wall panels a first air supply network for providing air from an inlet port in said frame member to a fuel holding combustion chamber,



said air supply network having a first enclosed enlongated path for supplying air at a first side of the apparatus to said fuel holding combustion chamber,

said frame member having a flue gas exit aperture in gaseous communication with said fuel holding combustion chamber, and

removable restriction means having in an operating position structural connection with said removable plate and with at least one wall of said frame member and having a slot therein, said restriction means interfering in said first enclosed elongated path at a position which is interior of said frame member, and prior to supplying air to said fuel holding chamber, for restricting at said position along said first enclosed elongated path the available cross-sectional area of said enclosed elongated path for controlling the air flow volume through said first path.

4,367,726
SOLAR HOT WATER HEATER

Reed E. Maes, Jr., Ypsilanti, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 13,839, Feb. 22, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,415

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—422 **10 Claims**

1. A solar water heating device comprising:

an open-topped insulated, integrated solar collection and storage tank defining a cavity adapted to hold a quantity of water at ambient atmospheric pressure for collecting and storing solar energy;

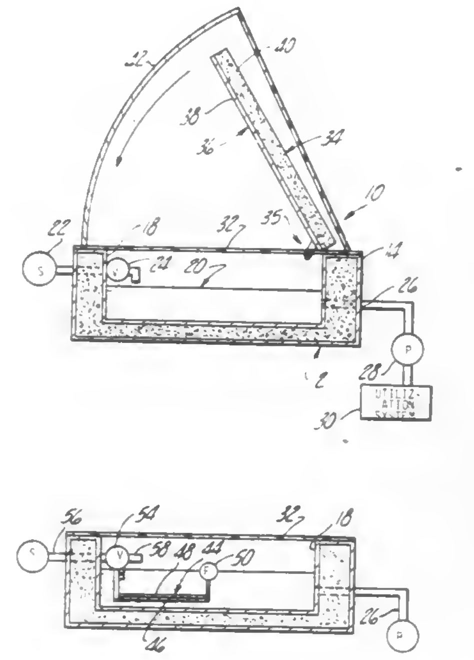
inlet water supply;

means for introducing water into said tank from said supply thereof to be at said atmospheric pressure within said tank;

outlet means for withdrawing heated water from said tank;

a pivoted insulated panel mounted to said tank for pivoting movement from a first position overlying the opening of said tank to a second position tilted upwardly from said opening;

water level control means producing a variable level of water in said insulated tank including means within said tank for varying the water in said tank with the temperature of said water, such as to increase the level of water in said tank upon said water being heated to a predetermined temperature level;



whereby said tank is mounted to receive solar radiation of said insulated panel pivoted to said closed position during periods of slow solar radiation and storing said water in a heated condition in said tank, and said capacity increases with increased levels of solar radiation by increased levels of water in said tank.

4,367,727
COLLECTORS OF SOLAR ENERGY TRAPPING DEVICES

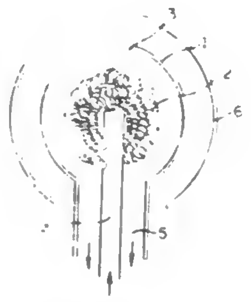
Alfredo B. Llorach, Avenida Sindical 22, Palma de Mallorca, Spain

Filed Aug. 19, 1980, Ser. No. 179,550

Claims priority, application Spain, Aug. 21, 1979, 483.541

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—449 **1 Claim**



1. A solar collector comprising:

a spherical transparent receptacle defining a spherical space and having an opening at the bottom thereof;

an outer conduit connected to said receptacle at said opening and depending downwardly from said receptacle;

an inner conduit coaxial with said outer conduit extending through said opening and into said space, said inner conduit terminating at an upper end thereof near a center of said sphere, said inner conduit having a plurality of openings therein in said space;

a plurality of spherical layers of metallic filamentation material having a black solar radiation absorbing coating disposed in said space and centered about the center of said space and around said inner conduit and over said inner conduit openings, said plurality of layers having progressively increasing density of filamentatious material toward the center of said space; and

a spherical thermal protection shell surrounding and at all locations spaced from said transparent spherical receptacle having an opening at the bottom thereof for the passage of said outer conduit;

said inner conduit adapted for receiving a heat transfer fluid and discharging the fluid through said filamentatious material into said space, said outer conduit adapted for passing the fluid out of said space.

4,367,728
ISOLATION APPARATUS

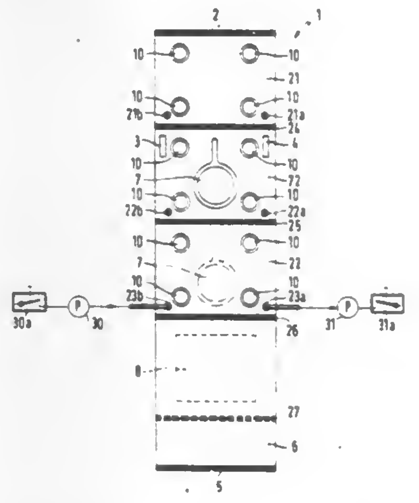
Hans G. Mutke, Drygalskiallee 117, 8000 Munich, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,299

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936256

Int. Cl.^{3} A61M *16/02*

U.S. Cl. 128—1 R **15 Claims**



1. Isolation apparatus useful for medical, biological, chemical, physical or the like experiments and treatments in a sealed surrounding, comprising a flexible envelope in the form of an elongated sack; the sack being divided at spaced intervals along its length into at least two sections; a transparent window defined in the sack at at least one section of the sack for permitting viewing into the sack therethrough; a glove secured in sealed manner to the sack at at least said one section of the sack for enabling an operator to have access to an object connected to the sack at least said one section from the outside thereof; ventilation means in the sack for ventilating and inflating the sack with controllable pressure; a sealable passage opening into a side of the sack in said other section for through passage and holding therein of articles in the sack; at least one access opening into said one section for passing an object therethrough and into the sack wherein said object is adapted to be held in said access opening; said at least one access opening having means for airtight engagement of the periphery thereof about an object adapted to project and be held therein; selectively openable and closable sealing means at said spaced intervals along the length of and intermediate the length of the sack for dividing the sack into the at least two sections whereby the sections are separate from and selectively sealable from each other and are sealed from the environment.

4,367,729
ENDOSCOPE PROVIDED WITH AN ELONGATE MEDICAL TREATING INSTRUMENT UTILIZING LASER BEAMS

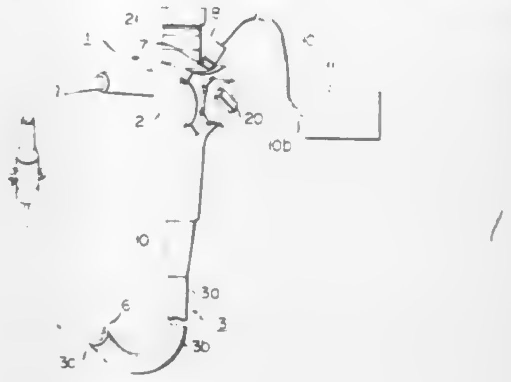
Hisao Ogiu, Oume, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 197,806

Claims priority, application Japan, Oct. 22, 1979, 54-146156[U]

Int. Cl.^{3} A61B *1/06*

U.S. Cl. 128—6 **6 Claims**



1. An endoscope provided with an elongate medical treating instrument utilizing laser beams comprising:

a control section having two ends;

an elongate flexible insertion section having two ends, one of which is fixed to one of said two ends of said control section, and the other of which constitutes a distal end part and is provided with a distal end face;

a transparent glass cover member which is mounted in said distal end face of said distal end part and has a rear face;

a channel extending through said control section and said insertion section;

an elongate laser guide which extends through said channel and has two ends, one of which is connected to a laser oscillator provided outside of said endoscope and stop means provided on said laser guide

a holder mounted on the other end of the control section and having an end wall; and an elastically expansible member disposed in said holder between said stop means and the end wall of said holder to urge the laser guide toward said other end of said insertion section of said endoscope and cause the other end of the laser guide to tightly abut against said rear face of said glass cover member no matter how much said insertion section is bent.

4,367,730
WATER PROOF COVER FOR ENDOSCOPE

Hitoshi Tanaka, Iwatsuki, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Oct. 30, 1980, Ser. No. 202,116

Claims priority, application Japan, Oct. 31, 1979, 54-150091[U]

Int. Cl.^{3} A61B *1/06*

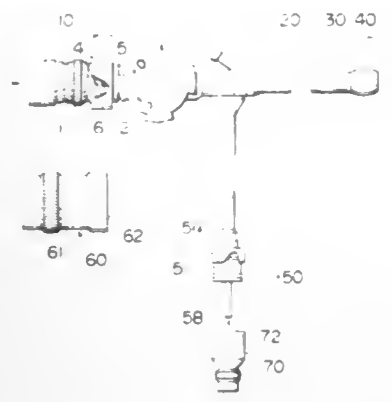
U.S. Cl. 128—6 **9 Claims**

1. Structure for waterproofing a portion of an endoscope, said endoscope including an operating portion and a portion to be waterproofed, comprising:

an annular connecting means for forming a connecting neck on an endoscope between an operating portion thereof and a portion to be waterproofed, said annular connecting means having a packing ring mounted therearound;

a protective cover fixed to said connecting means for covering and protecting said packing ring, said protective cover forming a space surrounding said packing ring;

a waterproof cover having a bottom and an open end opposite to said bottom, said open end being adapted for insertion into said space, said waterproof cover having a smooth engaging face on an interior portion thereof for liquid tightly engaging with said packing ring; and



means for firmly mounting said waterproof cover on said connecting means at a position where said smooth engaging face is liquid-tightly engaged with said packing ring.

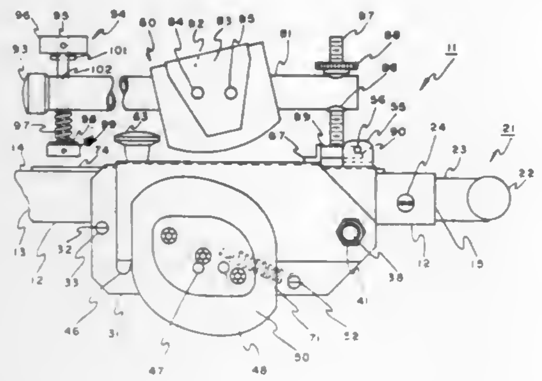
4,367,731
LOWER BODY SUPPORTING MECHANISM FOR A TILTABLE BODY EXERCISER

S. Morgan Barber, 138 N. Hwy. 95, Yerington, Nev. 89447

Filed Apr. 6, 1981, Ser. No. 251,484

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—71 **13 Claims**



1. In a therapeutic device for the human body in which a main frame pivotally mounts a body supporting structure for longitudinal tilting movements, said body supporting structure having an elongated central frame member, an upper body supporting portion adapted for secure attachment to the upper end portion of said elongated central frame member, and a lower body supporting portion mounted upon and slidable along the lower end portion of said elongated central frame member, the improvement wherein said lower body supporting portion comprises:

(a) a carriage member mounted upon and slidable along the lower end portion of said elongated central frame member, said carriage member having upper and lower end portions;

(b) step means attached to the lower end portion of said carriage member, said step means being adapted to extend under each foot to form a support limiting endwise movement of the body in a downward direction when the body supporting structure is tilted so as to elevate the head of a body thereon above a horizontal position;

(c) a pair of ankle-area embracing members adapted for attachment to said carriage member intermediate its upper and lower end portions, said ankle-area embracing members extending laterally from each side of said carriage member; and

(d) manually releasable locking means pivotally mounted with respect to the lower end portion of said carriage member, said manually releasable locking means including a knob with locking pin located adjacent the upper end portion of said carriage member, said locking pin being adapted for insertion into and removal from a selected one of a number of spaced-apart holes located within the lower end portion of said elongated central frame member, said locking pin preventing sliding movement of said carriage member along said elongated central frame member when inserted into a selected one of the holes within said elongated central frame member.

4,367,732
SKIN BARRIER

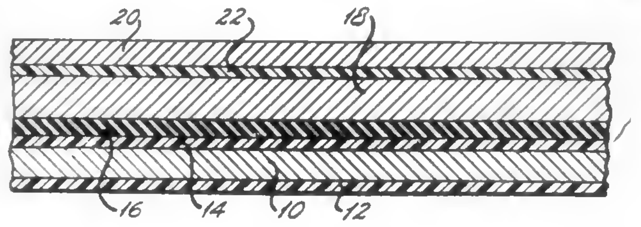
Finn Poulsen, Vaerlose, and Peter Samuelsen, Rungsted Kyst, both of Denmark, assignors to Coloplast A/S, Espergaerde, Denmark

Filed Nov. 30, 1981, Ser. No. 325,788

Claims priority, application Denmark, Dec. 5, 1980, 5209/80

Int. Cl.³ A61L *15/00*

U.S. Cl. 128—156 **10 Claims**



10. A skin barrier, essentially consisting of the following elements in combination:

(A) a non-adhesive, substantially water-impervious, elastic film, secured to one of the faces of an adhesive layer of

(B) an adhesive material which is a gel-like, at least weakly elastic mixture consisting of

(I) a continuous phase consisting of

(a) at least one physically cross-linked elastomer selected from the group consisting of styrene-olefin-styrene block copolymers,

(b) at least one hydrocarbon tackifier resin selected from the group consisting of polymers and copolymers of cyclopentadiene, dicyclopentadiene, α-pinene and β-pinene,

(c) a polar plasticizer for the elastomer, being copatible at least with its styrene blocks and decreasing the upper glass transition temperature of the styrene blocks of the elastomer,

(d) an antioxidant, and

(e) 0–25%, based on the weight of the adhesive material, of an oily extender,

(II) dispersed in the continuous phase a discontinuous phase consisting of at least one hydrocolloid which is swellable in water,

(C) a detectable protective cover secured to the other face of the adhesive layer,

the aggregate of said water-impervious elastic film (A) and the adhesive material (B) adhering thereto, but without the protective layer (C), having a low resistance to quick deformation and after deformation a rapid recovery to substantially its original shape.

4,367,733
ANKLE SUPPORT

Lawrence T. Stromgren, 2917 Hillcrest Dr., Hays, Kans. 67601

Filed Jul. 24, 1980, Ser. No. 172,073

Int. Cl.³ A61F *13/06*

U.S. Cl. 128—166 **9 Claims**

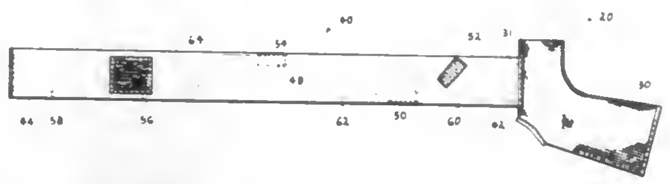
1. An ankle wrap comprising:

a socklike sheath adapted to slip over the foot of the wearer;

an elongated panel having first and second end portions and made of an elastic material for a compressive wrapping about the ankle and arch of said foot in a predetermined manner to provide lift to said arch and first and second heel locks to said foot on the respective lateral sides of said ankle;

means for connecting said first end portion of said panel to said sheath;

heel lock maintenance means on said wrap for holding in an operative position at least one of said heel locks presented by said elongated panel and including fastener elements on said panel disposed about said foot during said wrapping for mutual interengagement; and



means along said second end portion for securing said portion to said foot upon conclusion of said wrapping whereby to maintain said at least one heel lock on said foot of the wearer.

4,367,734
Y-FITTING IN THE PATIENT SYSTEM OF RESPIRATORS

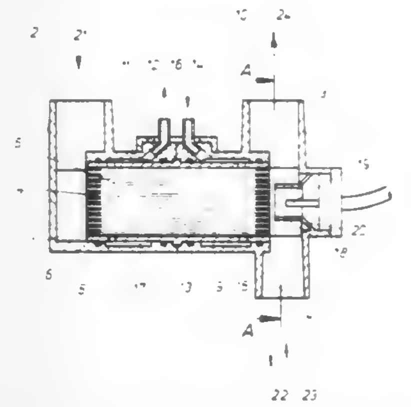
Frank Benthin, Lübeck-Hamberge, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,806

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032438

Int. Cl.³ A61M *11/04*

U.S. Cl. 128—204.13 **4 Claims**



1. A Y-fitting for the patient system of a respirator, comprising, a housing, a membrane humidifier mounted within said housing, said membrane humidifier including an exchangeable element with a plurality of water vapor permeable hollow filaments and mounting means for mounting said filaments in side-by-side and spaced relationship in said element thereby defining a flow path for breathing gas therethrough and a water space therearound and means supplying water to said water space for externally charging said filaments with water circulating therearound, said housing comprises a first housing part including a first externally tapered connection for receiving a flexible inspiration tube and means for surrounding and sealably securing one end of said exchanged element therein providing a gas flow path between said first externally tapered connection and said filaments, a second housing part including an internally tapered connection for receiving a flexible tube connecting to the patient and a second externally tapered connection for receiving a flexible expiration tube and communicating with said internally tapered connection and means for surrounding and sealably securing the opposite end of said exchangeable element therein providing a gas flow path between said filaments and said internally tapered connection and said second externally tapered connection, a ring detachably connecting said first housing part to said second housing part, said first housing part having a first tube connection and a first recess portion surrounding said exchangeable element and communicating with said first tube connection, said second housing part having a second tube connection and a second recess portion surrounding said exchangeable element and communicating with said second tube connection and passage means in said mounting means communicating with said first and second recess portions whereby water is circulated from said first tube connection and recess portion through said space and back through said second recess portion and said second tube connection of said second houging part.

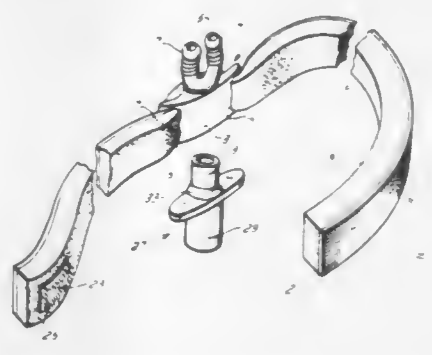
4,367,735
NASAL CANNULA

Carmelo Dali, Chesire, Conn., assignor to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Dec. 31, 1979, Ser. No. 108,667

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.18 **9 Claims**



1. A nasal cannula for aiding the breathing of a patient by use of a respirator comprising:

a body made of a soft pliable material and including two hollow tubular bored prongs and a base, each prong having a nasal end and a respirator end, the respirator ends of the prongs merging adjacent said base, said base having an axial bore in communication with the bores of said prongs, the periphery of substantially the entire length of each prong intermediate said nasal and respirator ends being provided on its outer circumference with axially displaced circular ribs integrally formed and occupying planes substantially normal to the respective longitudinal axes of said tubular prong to permit flexing of each prong and substantially maintain the original cross-sectional diameter of the tubular bored prongs.

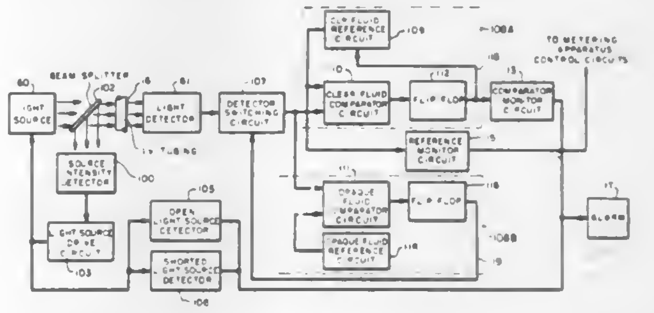
4,367,736
SYSTEM FOR DETECTING BUBBLE FORMATION IN CLEAR AND OPAQUE FLUIDS

John E. Gupton, Vernon Hills, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 25, 1980, Ser. No. 181,063

Int. Cl.³ A61M *5/14*

U.S. Cl. 128—214 E **16 Claims**


LIGHT SOURCE
BEAM SPLITTER
102
60
61
LIGHT DETECTOR
IV TUBING
SOURCE INTENSITY DETECTOR
100
LIGHT SOURCE DRIVE CIRCUIT
103
OPEN LIGHT SOURCE DETECTOR
105
SHORTED LIGHT SOURCE DETECTOR
106
DETECTOR SWITCHING CIRCUIT
107
CLR FLUID REFERENCE CIRCUIT
109
108A
CLEAR FLUID COMPARATOR CIRCUIT
FLIP FLOP
112
COMPARATOR MONITOR CIRCUIT
TO METERING APPARATUS CONTROL CIRCUITS
REFERENCE MONITOR CIRCUIT
OPAQUE FLUID COMPARATOR CIRCUIT
FLIP FLOP
OPAQUE FLUID REFERENCE CIRCUIT
108B
ALARM

1. A bubble detector for detecting a fluid absence in either

clear or opaque fluid in the transparent tubing of an administration set, said bubble detector comprising, in combination:

a light source arranged at one side of the tubing;

a light detector generally arranged at the opposite side of the tubing for receiving light from said source having passed through the tubing, said detector being adapted to generate an output signal level indicative of the intensity of light incident on said detector, the level of said output being above a first predetermined level in the presence of a clear fluid in the tubing, and being below a second predetermined level which is lower than said first predetermined level in the presence of an opaque fluid within the tubing; and being between said first and second levels in the presence of a bubble or absence of fluid in the tubing, wherein said second level is selected so that when inverted it is higher than said first level;

detector output switching means having an inverting signal input and a signal input connected to said detector output, said switching means being adapted to output said detector output signal in the absence of an inverting signal input and to output an inverted detector output signal in the presence of an inverting signal input,

first and second comparision means connected to the output of said detector switching means, wherein said second comparison means is adapted to apply an inverting signal to said detector switching means in the event that said detector switching means output level falls below said second predetermined level, thereby causing said detector switching means to output an inverted detector output signal, and wherein said first comparision means is adapted to provide a control signal in the event that the detector switching means output level rises above said first predetermined level, and

alarm circuit means adapted to issue an alarm in the event that said first comparision means fails to issue a control signal within a predetermined period of time.

4,367,737

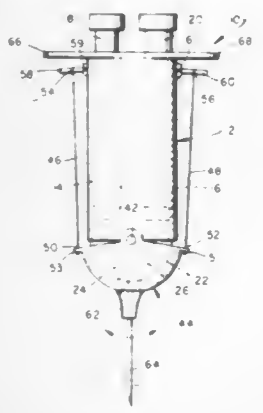
MULTIPLE BARREL SYRINGE

George Kozam, 234 E. Clinton Ave., Tenafly, N.J. 07670, and Pat Romanelli, 224 Brook St., Harrington Park, N.J. 07640

Filed Apr. 6, 1981, Ser. No. 251,311

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—215 **10 Claims**



1. A multiple barrel syringe for the selective dispensing of fluids, comprising

a body portion having a pair of independent fluid-retaining bores, a pair of individually depressible plungers extending respectively into said bores, and a first fluid conduit and second fluid conduit communicating with the respective bores and opening through the bottom surface of said body portion at spaced locations thereon,

a needle carrier member mounted on said body portion below the bottom surface thereof and comprising an upper body portion, a depending portion mounting a hollow needle, and a single needle bore extending through said upper body portion and communicating with said hollow needle,

and means movably mounting said needle carrier member on said syringe body portion for movement of said needle carrier member between a first operative position in which said needle bore is in registry with and communicates with said first fluid conduit and said second fluid conduit is covered over and blocked by the upper body portion of said needle carrier member, and a second operative position in which said needle bore is in registry with and communicates with said second fluid conduit and said first fluid conduit is covered over and blocked by the upper body portion of said needle carrier member.

4,367,738

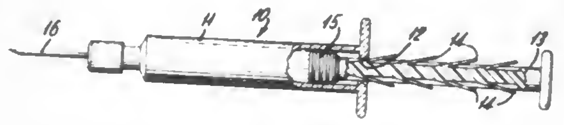
PRE-FILLED SYRINGE FOR ABUSABLE DRUGS

Robert Legendre, Piscataway, and Steven Schlossberg, East Windsor, both of N.J., assignors to Janssen Pharmaceutica Inc., New Brunswick, N.J.

Filed Oct. 28, 1981, Ser. No. 315,800

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—218 PA **3 Claims**



1. A disposable, non-reusable, pre-filled syringe comprising:

(a) a barrel having a first open end having a restricted opening and a second end adapted to receive a hypodermic needle;

(b) a piston assembly within said barrel comprising a piston and plunger rod attached to the piston and extending out through the restricted opening of the first open end of the barrel, said plunger rod having a plurality of short, stiff, flexible spikes attached thereto at an oblique angle away from the piston; and

(c) a fluid to be injected contained within said barrel between said piston and said second end of the barrel,

whereby a push on the plunger rod will inject the fluid through the hypodermic needle since the oblique-angled; spikes will contract to pass through the restricted opening, while a pull on the plunger rod will be resisted by the oblique-angled spikes, thus preventing aspiration of fluid into the barrel.

4,367,739

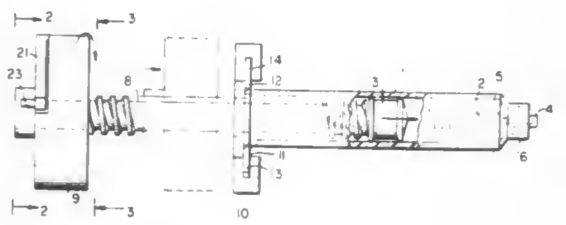
SYRINGE

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Eric G. LeVeen, 3-3 Woodlike Rd., Albany, N.Y. 12203, and Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147

Filed Apr. 20, 1981, Ser. No. 255,352

Int. Cl.^{3} A61M *1/00*

U.S. Cl. 128—236 **7 Claims**



1. A manually actuable syringe comprising:

a hollow body with an interior wall, a fluid transport opening at one end thereof and a piston receiving opening at the opposite end thereof;

a piston within said body which has fluid tight engagement with said interior wall, said piston being slidable toward and away from said transport opening;

a manually operable actuating rod extending at one end from said piston receiving opening and slidable within said body, said rod having means engageable with said body for moving said rod toward said transport opening when said rod is rotated and being connected to said piston at one end of said rod;

a manually engageable knob rotatably mounted on said rod at the end thereof opposite from the end thereof which is connected to said piston;

spring means interconnecting said knob with said rod and opposing rotation of said knob with respect to said rod;

means adjacent said knob rotatable with said rod;

means on said knob adjacent said means rotatable with said rod for indicating rotation of said knob relative to said rod and thereby, indicating the pressure applied to fluid within said body of said piston.

4,367,740

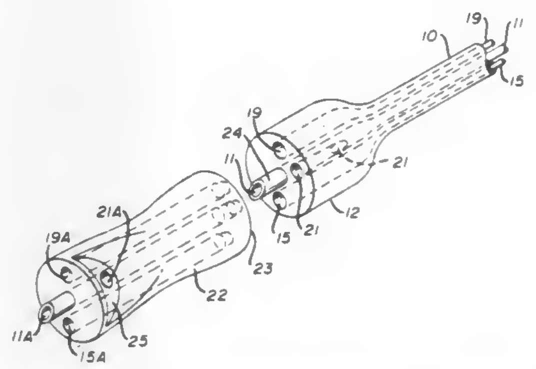
COMBINATION CATHETER CYSTOMETER SYSTEM AND GASTRIC FEEDING DEVICE

Constant J. Evanoski, III, 868 36th St., Altoona, Pa. 16601

Filed Dec. 10, 1980, Ser. No. 214,640

Int. Cl.^{3} A61M *25/00*

U.S. Cl. 604—43 **3 Claims**



1. An improvement in a catheter adapted for insertion into a body passage of restricted size and also usable in a cystometer system and in a gastric feeding device and comprising an elongated flexible shaft, a drainage lumen defined by said flexible shaft and extending from a first opening adjacent the distal end of the flexible shaft to the proximal end thereof, an inflatable balloon about said flexible shaft inwardly from the distal end thereof, a pressure lumen defined by said flexible shaft and extending from said balloon to the proximal end of said flexible shaft, an irrigating lumen defined by said flexible shaft communicating with said drainage lumen in the distal end of said flexible shaft and extending to the proximal end of said flexible shaft, the improvement comprising means for introducing sterile fluid into said drainage lumen and thereby into said body passage while said catheter is inserted in said body passage, said means including a second opening in said drainage lumen adjacent said proximal end of said flexible shaft, a passageway in said proximal end of said flexible shaft communicating with said second opening and with the exterior of said proximal end of said flexible shaft and removable means normally closing said second opening.

4,367,741

DISPENSER POWERED BY CROSS-LINKED HYDROPHILIC POLYMER GRAFTED TO HYDROPHILIC POLYMER

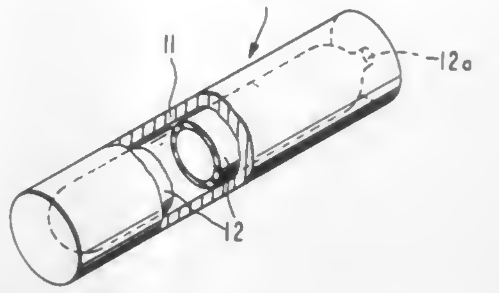
Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Dec. 22, 1980, Ser. No. 218,729

Int. Cl.^{3} A61M *7/00*

U.S. Cl. 128—260 **12 Claims**

1. A dispenser comprising: a housing formed of a laminate comprising a layer of a cross-linked hydrophilic polymer grafted to a layer of a noncross-linked hydrophilic polymer; a container within the housing, said container made of a material changeable from a storing capacity to a substantially emptied capacity over time; an outlet mean in the container that communicates with the container and the exterior of the dispenser, and wherein, when the dispenser is in operation in the environment of use, the dispenser releases its contents in response to the laminate absorbing fluid from the environment and expanding, thereby exerting pressure on the container which changes from a storing capacity to a substantially emptied capacity and dispenses its contents through the outlet means from the dispenser.



4,367,742

OSTOMY BAG

Murray Ornstein, 115 Fairfield Dr., Short Hills, N.J. 07480

Continuation-in-part of Ser. No. 43,170, May 29, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 192,124

Int. Cl.^{3} A61F *5/44*

U.S. Cl. 128—283 **7 Claims**

1. An ostomy bag of the type adapted to be attached to the body of the patient and formed of two thin sheets of tough but pliable material having the general characteristics of polyethylene, welded together at the peripheral edges thereof with one sheet constituting the body-side of the bag and the other sheet the outer-side of the bag and having, further, a small intake orifice near the top of the body-side sheet, a mounting pad connected to the ostomy bag to the body of the patient, and an integrally formed escape opening for accumulated gas, the improvement comprising:

a gas permeable, re-openable and re-sealable deodorant chamber intermediate the gas escape opening and a gas entrance opening into the chamber from the ostomy bag, said bag further comprising a deodorant carrier having substantially the same volume and configuration as the inside of the said deodorant chamber and said carrier completely filling said chamber.

4,367,743

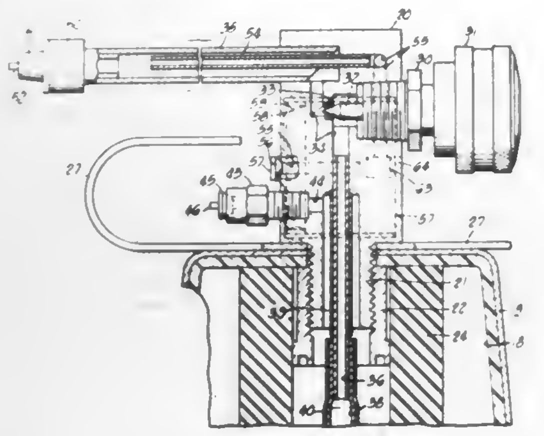
SELF-PRESSURIZING CRYOGENIC APPARATUS AND METHOD

Harold D. Gregory, West Covina, Calif., assignor to Virginia M. Gregory, West Covina, Calif.

Continuation of Ser. No. 936,909, Aug. 25, 1978, abandoned, which is a division of Ser. No. 688,962, May 24, 1976, abandoned. This application Dec. 22, 1980, Ser. No. 218,531

Int. Cl.^{3} A61B *17/36*

U.S. Cl. 128—303.1 **44 Claims**



1. In a cryogenic unit, a spray jetting nozzle, a pressure-regulated source of liquid cryogen under substantially uniform pressure, conducting means constantly connecting said source to said nozzle, and manually operable flow control means continuously assembled to said unit and in communication with said conducting means and operable to control the pressure in said conducting means without varying the pressure of said pressure-regulated source of liquid cryogen and effective to cause said cryogen to issue selectively substantially instantaneously from said nozzle as a continuous stable jet of gas or as a continuous stable spray of finely divided liquid particles and gas.

4,367,744

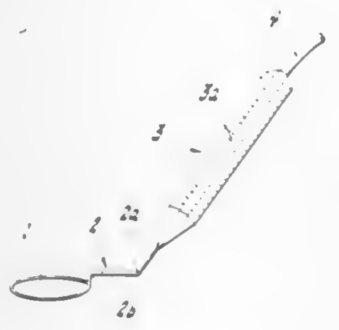
MEDICAL INSTRUMENT, AND METHOD OF UTILIZING SAME

Gary M. Sole, 510 Overbrook, Bloomfield Hills, Mich. 48013

Filed Dec. 29, 1980, Ser. No. 221,065

Int. Cl.^{3} A61B *17/38*

U.S. Cl. 128—303.1 **12 Claims**



1. A medical instrument, comprising:

cautery means for burning the anterior lens capsule of an eye at the periphery of a portion of said capsule to be removed during surgery;

said cautery means comprising a cautery portion formed of a fine wire and shaped so as to correspond to a peripheral part of said portion of said capsule to be removed;

a handle portion;

a substantially rigid elongated stem portion extending from said cautery portion and connected with said handle portion, said stem portion being electrically-conductive and covered with an electrically-insulative material;

said cautery portion having a dimension corresponding to the diameter of the pupil of an eye to be operated upon;

said stem portion having a dimension which is substantially inversely proportional to said dimension of said cautery portion; and

means for connecting said cautery portion, via said electrically-conductive stem portion, with an electrical power source.

4,367,745

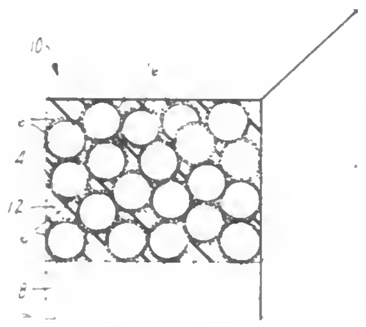
CONFORMABLE ELECTRICALLY CONDUCTIVE COMPOSITIONS

Norbert A. Welage, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 27, 1980, Ser. No. 153,413

Int. Cl.^{3} A61B *17/36*

U.S. Cl. 128—303.13 **12 Claims**



1. In a comformable conductive composition comprising: (a) a soft polymeric binder forming a cohesive matrix having a Shore A hardness of less than about 40; (b) a plurality of insoluble, deformable, generally nonreactive microspheres having Shore A hardness less than about 40 dispersed in said binder in an amount from about 20 to 60 percent by weight of said composition; and (c) electrically conductive particles dispersed in said binder in an amount effective to provide at least one electrically conductive pathway through said composition; the improvement wherein said polymeric binder is polar, said microspheres are nonpolar, said conductive particles are oleophilic, and said conductive particles have an affinity for said microspheres and concentrate at the surface of said microspheres.

12. In a grounding plate electrode comprising an electrically-conductive metal film having an upper surface and a lower, skin-contacting surface; means for attaching a lead wire to said metal film; a backing laminated to said upper surface; and a layer of a conformable, electrically-conductive composition on said skin-contacting surface; the improvement wherein said electrically conductive composition comprises: (a) a soft polar polymeric binder forming a cohesive matrix having a Shore A hardness of less than about 40; (b) a plurality of insoluble, deformable, generally non-reactive, non-polar microspheres having a Shore A hardness less than about 40 dispersed in said binder in an amount from about 20 to 60 percent by weight of said composition; and (3) oleophilic electrically conductive particles dispersed in said binder in an amount effective to provide at least one electrically conductive pathway through said composition, said conductive particles having an affinity for said microspheres and being concentrated at the surface of said microspheres.

4,367,746

CLIP-HOLDER INSTRUMENT FOR CLIPPING BLOOD VESSELS

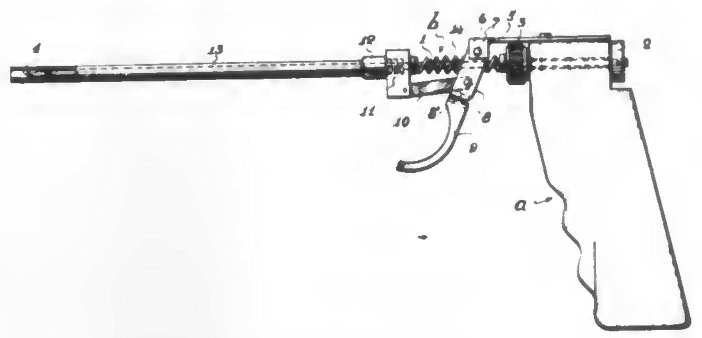
Victor E. Derechinsky, Sarmiento St. No. 2176, Buenos Aires, Argentina

Filed Dec. 8, 1980, Ser. No. 214,105

Claims priority, application Argentina, Dec. 11, 1979, 279236

Int. Cl.^{3} A61B *17/12*

U.S. Cl. 128—325 **8 Claims**



1. A clip-holder instrument for clipping blood vessels comprising, in combination:

(a) a grip handle, said grip handle having an upper portion and a bottom portion, said bottom portion being a pistol butt-shaped member;

(b) operating means for operating said grip handle, said operating means being assembled on said upper portion of said grip handle;

(c) a clip;

(d) a rod and tube assembly means for clamping and releasing said clip, having a rod, said rod having a front portion and a rear portion, said rear portion passing through said upper portion of said grip handle, said front portion forming a hooking means for hooking said clip, said rod being freely rotatable and having an operation knob joined on said rear portion of said rod opposite said grip handle, said operation knob controlling the rotation of said rod; and

(e) lever means and a retraction member for operating said rod and tube assembly, said lever means having a power arm, said power arm being a trigger-shaped member, said lever means extending from said upper portion of said grip handle and being connected to said retraction means.

4,367,747

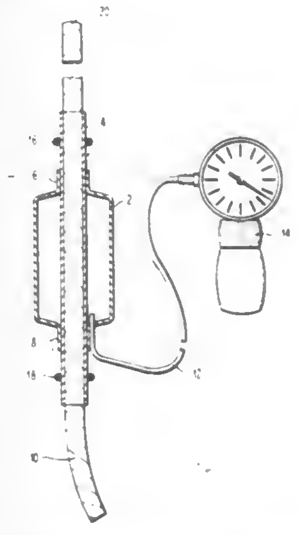
PNEUMATIC DILATATOR FOR INTRODUTION INTO THE ESOPHAGUS

Lothar Witzel, Hangweg 8 A, D-1000 Berlin 28, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,071

Int. Cl.^{3} A61M *29/08*

U.S. Cl. 128—344 **6 Claims**



1. A pneumatic dilatator for introduction into the esophagus and for treatment of a constricted segment of the intestinal system of a living being, comprising in combination:

(a) an inflatable balloon of generally cylindrical shape having two cylinder end faces opposed to each other, said balloon consisting throughout of a flexible material of small elasticity, thereby limiting the diameter of said balloon to a given upper value of approximately 40 mm when said balloon is inflated in said constricted segment at an internal excess pressure of approximately 300 mmHg;

(b) a tube of a flexible material having a given length, said tube being passed through said balloon and said balloon being secured thereon in the range of said cylinder end faces, said balloon thereby extending along said tube at a length of approximately 150 mm;

(c) a gastroscope passed through said tube for visual control of the introduction of the dilatator into said constricted segment and/or of an inflation of said balloon;

(d) means for detachably mounting said tube on said gastroscope;

(e) a flexible inflation pipe opening into said balloon; and

(f) a blood pressure manometer including a squeeze bulb connected to said inflation pipe for inflating said balloon when positioned in said constricted segment.

4,367,748

ANATOMIC-CORRECTING GIRDLE

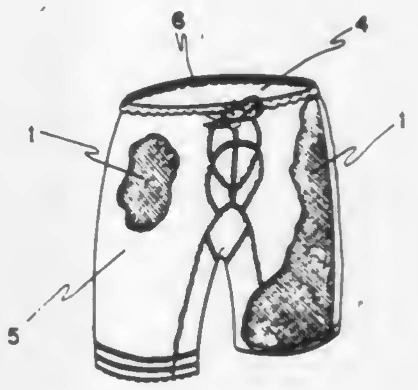
Jose M. Masso Remiro, Sor Eulalia de Anzizu, 11 Barcelona, Spain

Filed May 20, 1981, Ser. No. 265,567

Claims priority, application Spain, Mar. 4, 1981, 256.654[U]

Int. Cl.^{3} A41C *1/04, 1/00*

U.S. Cl. 128—521 **1 Claim**



1. An anatomical correcting girdle comprising:

a composite inner body including an inner layer of ribbed knitted fabric joined to an outer layer of latex, said knitted fabric being stretchable in all directions and having ribs oriented longitudinally;

an outer body of knitted fabric stretchable in all directions and having a less energetic gripping capacity than said inner body, said outer body having an adorned surface and aesthetic appearance; and

said outer body comprising a cover over said inner body and being joined thereto only at the waist.

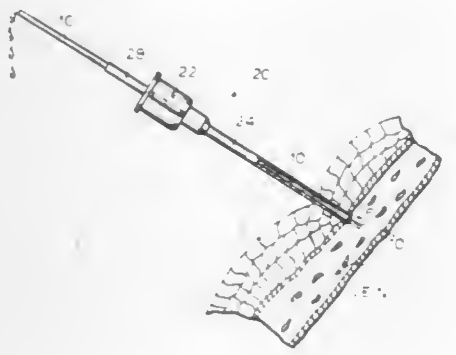
4,367,749
NONTHROMBOGENIC ARTICLES AND METHOD OF PREPARATION

Betty J. Dudley, deceased, late of Durham, N.C. (by Kenneth H. Dudley, executrix), and Joel L. Williams, Cary, N.C., assignors to Becton, Dickinson & Company, Paramus, N.J.

Division of Ser. No. 76,201, Sep. 17, 1979, Pat. No. 4,302,368, which is a continuation-in-part of Ser. No. 899,342, Apr. 24, 1978, abandoned, and a continuation of Ser. No. 752,247, Dec. 20, 1976, abandoned, and a continuation-in-part of Ser. No. 888,951, Mar. 22, 1978, abandoned, which is a continuation of Ser. No. 764,474, Jan. 31, 1977, Pat. No. 4,116,898. This application Dec. 3, 1980, Ser. No. 212,475

Int. Cl.^{3} A61B *19/00*

U.S. Cl. 128—637 1 Claim



1. A blood compatibility determination method which comprises

- providing a test material in the form of a hollow tube having first and second open ends and a length exceeding the length of a cannula hereinafter described;
- providing said cannula of a size and dimension to receive in its bore in a close fitting relationship said tube, said cannula having first and second ends and a bore communicating between said first and second cannula ends;
- inserting the first end of said cannula into the blood vessel of a living mammal;
- inserting the first end of said tube into the second end of said cannula, through said bore and beyond said first end of said cannula, whereby the first end of said tube is positioned in said blood vessel while leaving the second open end of the tube outside of the mammal's body, whereby blood flows from said blood vessel, through said first end of said tube, through said tube and out of the open second end of said tube without contacting any solid surface other than the surface of said tube; and
- measuring the time period between the initial flow of blood out of the second end of said tube to cessation of said flow.

4,367,750
DEVICE FOR OBTAINING STOOL SAMPLES

Robert A. Levine, 31 Pilgrim, Guilford, Conn. 06437

Filed Nov. 3, 1980, Ser. No. 203,083

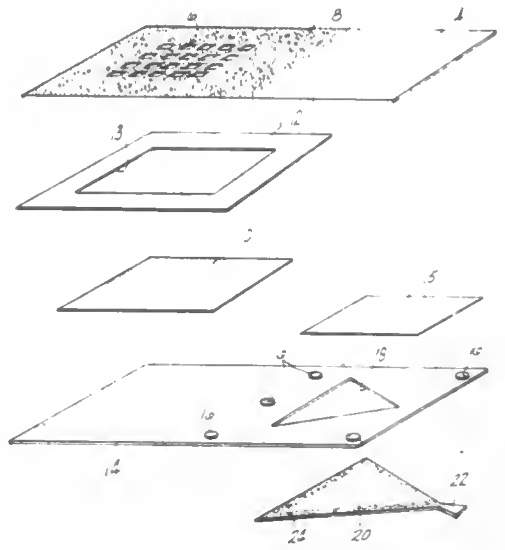
The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.^{3} A61B *10/00*

U.S. Cl. 128—638 6 Claims

1. A stool sampling device for obtaining stool samples, said device comprising:

- (a) a first sheet of transparent pliant impermeable material;
- (b) a pad secured to one side of said first sheet, said pad being operable to receive a stool smear;
- (c) a second sheet of pliant material disposed on said first sheet, said second sheet overlying said one side of said first sheet, and said second sheet including stool volume controlling openings therethrough aligned with said pad;
- (d) releasable adhesive means securing said second sheet to said first sheet whereby said second sheet can be peeled off of said first sheet after a stool smear has been deposited on said pad;
- (e) means for hermetically sealing said pad within said first sheet after a stool smear has been deposited on said pad;
- (f) means forming an opening in said first sheet which opening is aligned with said pad when the latter is sealed within said first sheet;



- (g) a pliant impermeable cover sheet hermetically sealing said opening in said first sheet; and
- (h) said transparent first sheet allowing visual observation of the test results therethrough on a side of said pad opposite said opening.

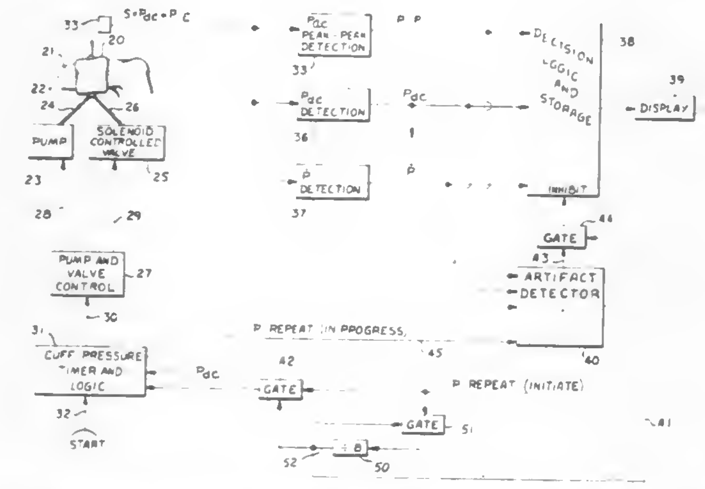
4,367,751
APPARATUS AND PROCESS FOR PRODUCING ARTIFACT EFFECT ON SPHYGMOMETRIC INFORMATION

William T. Link, Berkeley; Jerry D. Haney, Sunnyvale, and William Jansen, Palo Alto, all of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 27, 1976, Ser. No. 754,388

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—682 14 Claims



1. Apparatus for producing information indicative of the diastolic and systolic pressures of a living test subject comprising:

- means for controllably applying a selectively changeable pressure to the test subject adjacent a blood vessel;
- means for measuring a time dependent fluctuating value representative of pulsatile pressure within the blood vessel;
- means for measuring a value representative of the selectively changeable pressure applied externally adjacent the blood vessel;
- signal producing means responsive in a predetermined manner to said pulsatile pressure representing value as a function of the applied pressure for providing an output indication of the diastolic and systolic pressures of the living test subject;
- means for detecting an artifact value in at least said pulsatile pressure representing value across at least the diastolic-systolic pressure range of said test subject and providing a control indication thereof;
- means responsive to a said artifact indication for inhibiting said response in said predetermined manner of said signal processing means to said detected artifact value;
- control means associated with said pressure applying means for normally changing said applied pressure in a single direction across at least the diastolic-systolic pressure range of said test subject and for automatically repeating the applied pressure at which an indication of an artifact occurred through a predetermined range within and normally less than the pressure range previously applied in response to each said artifact indication across at least the diastolic-systolic pressure range of said test subject, thereby to seek artifact-free values of said pressures.

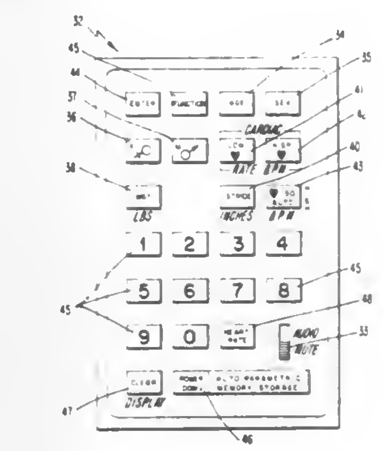
4,367,752
APPARATUS FOR TESTING PHYSICAL CONDITION OF A SUBJECT

Oscar Jimenez, Miami, and Frank J. Bianco, Pembroke Pines, both of Fla., assignors to Biotechnology, Inc., Miami, Fla.

Filed Apr. 30, 1980, Ser. No. 145,765

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—689 53 Claims



31. Apparatus for testing the physical condition of a subject comprising means adapted to be mounted on the subject for monitoring and deriving a first signal indicative of heart activity of the subject, an electronic instrument housing adapted to be carried by the subject, means for coupling said first signal to terminals on the instrument housing, said housing including: (a) an inertial member for monitoring the quantity of repetitive actions taken by a limb of the subject and for deriving a second signal indicative of said quantity, (b) a keyboard for enabling signals to be derived indicative of numerical quantities associated with a plurality of physiologically relevant parameters of the subject, (c) a clock source of deriving timing signals, (d) digital computer means responsive to the first, second, timing and keyboard signals for deriving plural digital output signals indicative of different physical activities of the tested subject, (e) visual digital indicator means, (f) plural key switches, each associated with a different one of the physical activities, and (g) means responsive to activation of the plural key switches for selectively coupling different ones of the plural output signals to the visual indicator means so only one of the output signals is supplied to the indicator means at a time.

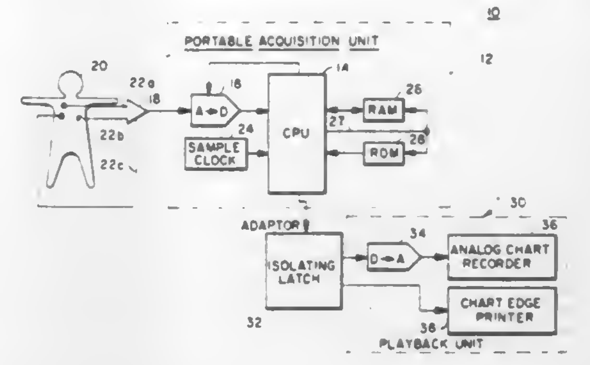
4,367,753
APPARATUS FOR MONITORING AND STORING HEARTBEATS OF A PATIENT

Thomas L. Jirak, Plymouth, Minn., assignor to Medtronic Inc., Minneapolis, Minn.

Filed Jan. 23, 1980, Ser. No. 114,594

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—708 41 Claims



1. Apparatus for evaluating electrical signals indicative of a patient's heart activity with a set of criteria indicative of the waveform of a QRS complex, said apparatus comprising:

- (a) means coupled for receiving and sampling a patient's heart signal at selected intervals in real time for providing a sequence of sampled heart signals of a single QRS complex; and
- (b) evaluating means for comparing one sampled heart signal with a subsequent sampled heart signal of the same QRS complex to determine whether the relation therebetween meets said criteria of a valid QRS complex waveform.

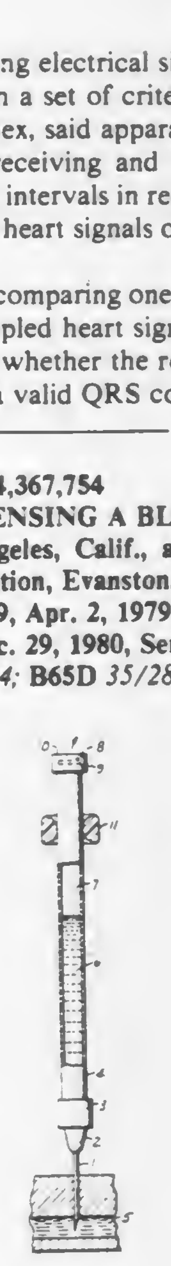
4,367,754
METHOD OF DISPENSING A BLOOD SAMPLE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 25,979, Apr. 2, 1979, Pat. No. 4,266,558. This application Dec. 29, 1980, Ser. No. 220,571

Int. Cl.^{3} A61B *5/14;* B65D *35/28;* G01N *1/10*

U.S. Cl. 128—763 1 Claim



1. A method of segmenting and dispensing a blood sample to be tested from a flexible tube reservoir containing an air contaminated blood portion comprising the steps of:

- (a) positioning a clamp along a flexible tube reservoir containing a blood sample intermediate the volume of the blood sample to be tested and the contaminated blood portion;
- (b) pinching the clamp to segment the air contaminated blood sample portion from the testing blood sample portion;
- (c) moving the pinched clamp along the flexible tube reser-

voir to dispense the testing blood sample from the flexible tube reservoir.

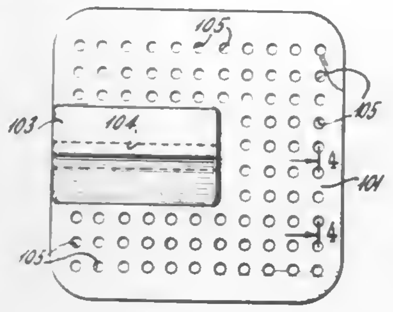
4,367,755
STIMULATING ELECTRODE

William D. Bailey, Wayzata, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.

Filed Jan. 31, 1979, Ser. No. 8,011

Int. Cl.^{3} A61N *1/04*

U.S. Cl. 128—798 **3 Claims**



1. A two layer transcutaneous electrical nerve stimulation electrode for delivery of electrical energy to a patient and having a first layer and a second layer wherein said two layers are interconnected so that when said electrode is removed from a patient the two layers will not tear apart comprising:

(a) said first layer including an electrically conductive, flexible adhesive pad, which is capable of melting upon the application of heat and solidifying when cooled to facilitate the attachment of said adhesive pad to the backing layer, said pad adherent to the skin of the patient and defining the shape of said electrode;

(b) said second layer including an electrically conductive backing layer, overlying and having substantially the same shape as said pad, said backing layer being composed of conductive silicone rubber based material, said backing layer defining a multiplicity of perforations therein at predetermined intervals, each perforation extending completely through said conductive backing layer, said backing layer further defining an integral, unperforated, raised portion in an upper surface thereof, said raised portion defining a slot therein for receipt of a connector for a stimulation unit, said pad and said backing layer being bonded to one another along a lower surface of said backing layer, said pad being open to the ambient atmosphere through said perforations in said conductive backing layer; said adhesive pad having a corresponding multiplicity of projections extending axially at least part way into said backing layer perforations and forming tight mechanical contact with at least part of the inner surface of said perforations to increase the mechanical and adhesion bonding between said backing layer and said adhesive pad so that said electrode may be removed from the skin of the patient easily without tearing said backing layer away from the adhesive pad.

4,367,756
VIBRATION-FREE SELF-PROPELLING HARVESTER THRESHER

Heinrich Roderfeld, and August Kampwerth, both of Harsewinkel, Fed. Rep. of Germany, assignors to Claas OHG, Harsewinkel, Fed. Rep. of Germany

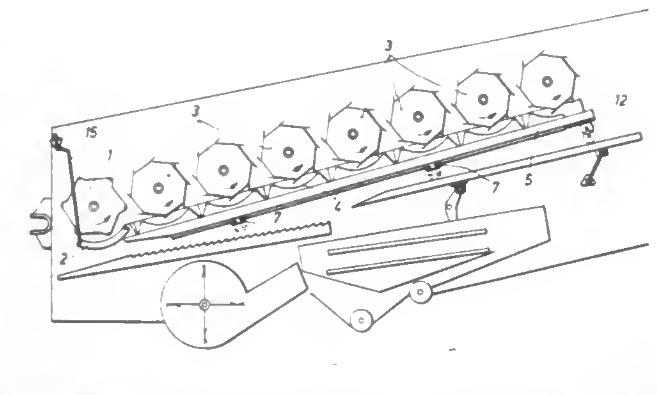
Filed Mar. 30, 1981, Ser. No. 249,178

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013113

Int. Cl.^{3} A01F *12/44*

U.S. Cl. 130—23 **12 Claims**

1. A vibration-free self-propelled harvester thresher, comprising threshing means including a threshing drum and a thresh basket associated with one another; separating means including a plurality of separating drums and a plurality of separating elements each located under a respective one of said separating drums, said separating drums and elements being arranged behind said threshing means and successively one behind the other, as considered in a transporting direction; and single means for simultaneously and jointly adjusting said separating elements substantially in horizontal and vertical directions.



4,367,757
HARVESTER-THRESHER COMBINE

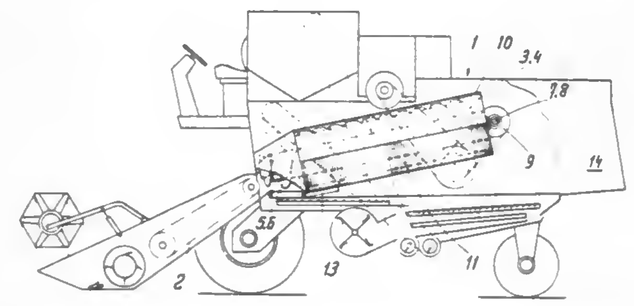
Helmut Claas, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,215

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023756; Sep. 1, 1980, 3032863

Int. Cl.^{3} A01F *12/20*

U.S. Cl. 130—27 T **8 Claims**



1. In a harvester-thresher combine including a support movable in a predetermined direction on an agricultural field from which cereal plants are to be harvested, and an arrangement for mowing the plants, a combination comprising at least two elongated threshing and separating drums mounted on the support for rotation about parallel axes extending along the predetermined direction such that said threshing and separating drums have respective leading and trailing ends as considered in the predetermined direction; means for rotating said threshing and separating drums about the respective axes thereof in the same sense of rotation; and a common housing mounted on the support and bounding a substantially oval chamber which accommodates both of said threshing and separating drums and has a common inlet opening at said leading, and a common discharge opening at said trailing, ends of said threshing and separating drums.

4,367,758
CIGARETTE MANUFACTURING MACHINE OF THE CONTINUOUS ROD TYPE

Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa per Azioni, Italy

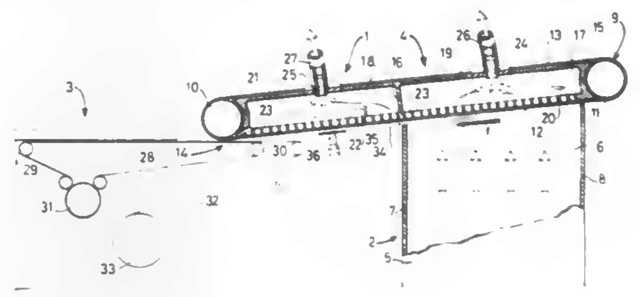
Filed Nov. 5, 1980, Ser. No. 204,343

Claims priority, application Italy, Nov. 16, 1979, 50840 A/79

Int. Cl.^{3} A24C *5/18, 5/31*

U.S. Cl. 131—84 B **3 Claims**

1. A cigarette manufacturing machine of the continuous rod type comprising a substantially vertical duct for feeding a continuous stream of tobacco particles from the bottom upwards, a conveyor system for forming and transferring a layer or filler of tobacco particles comprising an air-permeable conveyor belt in the form of an endless loop disposed to close the upper end or outlet of said duct and extending in the direction of its motion substantially in a straight-line path as far as a position, known as the discharge position, at which it meets the feed track of a cigarette paper web, first independent suction means arranged to retain said filler on said belt and applied to that face of said belt opposite the one holding said filler and acting transversely to the direction of movement of said belt, said conveyor system being characterised in that said suction means are divided into first suction means operating over a first portion of said belt disposed at the outlet of said duct, and second suction means, independent of the first, operating over a second portion of said belt between said duct and said discharge position whereby the second independent suction means applies a suction force so as to compensate for the loss of force exerted by said rising air current which communicates with said first independent suction means.



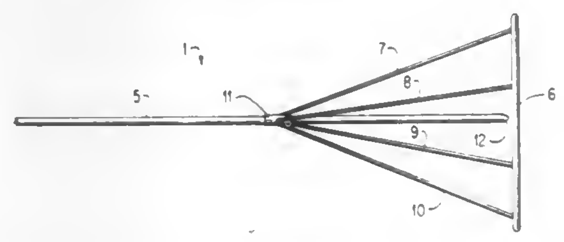
4,367,759
FLEXIBLE TEETH-CLEANING DEVICE

Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Filed Feb. 22, 1982, Ser. No. 351,271

Int. Cl.^{3} A61C *15/00*

U.S. Cl. 132—89 **8 Claims**



1. A device for use in cleaning teeth and adjacent areas comprising:

a. a shaft with a cleaning end;

b. a flexible rest, with an opening through which said shaft extends, operative to be placed against said teeth and adjacent areas to stabilize the position of said device and flexible rest comprising a plurality of flexible struts secured to said securing means and extending outward from said securing means at varying positions with respect to said shaft, forming said opening through which said shaft extends, and a guard face, which may be placed against said teeth and adjacent areas, and to which each of said flexible struts are secured; and

c. securing means secured to said shaft with a cleaning end, and to said flexible rest,

whereby when said flexible rest is placed against said teeth and adjacent areas and said shaft is pressed forward, said flexible area reduces in length allowing said cleaning end of said shaft to project through said flexible rest a distance dependent on the distance said shaft is pressed forward.

4,367,760
COIN DISPENSER MADE WITH ADJUSTABLE HEIGHT STRUCTURE

Kim Thomas, 51 Thirkleby Close, Slough (Berkshire), England, and Wilhelm A. Van Zeggeren, Van Goghlaan 18, Bleiswijk, Netherlands

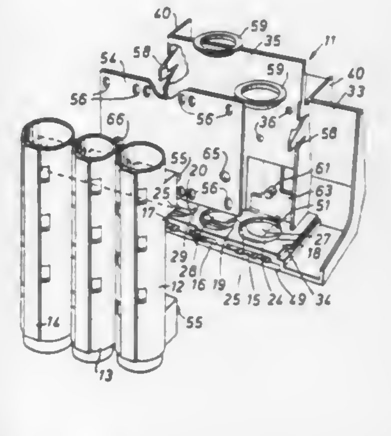
PCT No. PCT/US80/00202, § 371 Date Nov. 3, 1980, § 102(e) Date Nov. 3, 1980, PCT Pub. No. WO80/01852, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 29, 1980, Ser. No. 212,715

Claims priority, application United Kingdom, Mar. 1, 1979, 7907251

Int. Cl.^{3} G07D *1/02*

U.S. Cl. 133—4 A **17 Claims**



1. A coin dispenser comprising:

(a) a substantially horizontally extending channel of shallow cross-section,

(b) an upright coin tube extending down through an opening in the upper wall of the channel,

(c) an aperture in the lower wall of the channel offset from the axis of the coin tube,

(d) an apertured slide plate mounted for reciprocating movement in the channel between a position in which the slide plate's aperture is below the coin tube and a position in which the slide plate's aperture is above the aperture in the lower wall,

(e) a mounting member fixed vertically with respect to the substantially horizontally extending channel,

(f) a plurality of deformed pegs carried by the coin tube, and

(g) vertically elongated slots in the mounting member for receiving the deformed pegs, the deformation of the pegs locking the lower end of the coin tube at a predetermined height above the lower wall of the channel, said predetermined height being slightly greater than the thickness of the denomination dispensed by the tube.

4,367,761
PORTABLE FABRIC SHELTER

Daniel Winant, 144 Rue de la Source, 92000 Nanterre, France

Filed Aug. 7, 1980, Ser. No. 175,961

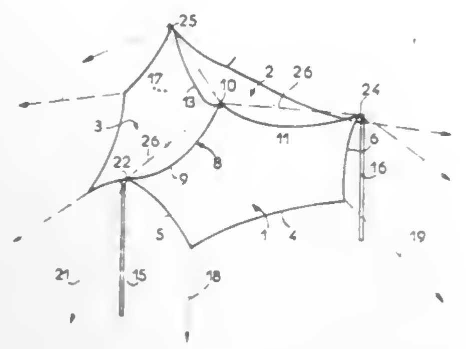
Claims priority, application France, Aug. 14, 1979, 79 20671

Int. Cl.^{3} E04B *1/347*

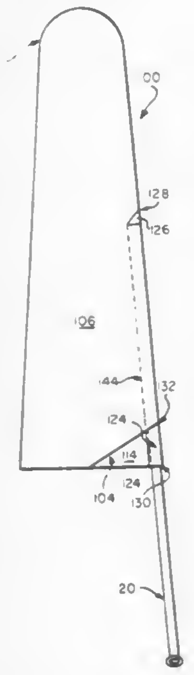
U.S. Cl. 135—87 **16 Claims**

16. A fabric shelter which is capable of being taken down, such as a roof, tent, or the like, said shelter comprising a plurality of assembled fabric roof panels which panels have in their upper part a seam line between adjoining roof panels along a curvilinear upper edge of each roof panel, which curvilinear edge is concave and relates to an upwardly facing concave curvilinear seam line between adjoining roof panels, support posts adjacent outer ends of said edges and in supporting relation to the roof panels, and means for tensioning each of said roof panels, said means being fixed to a substantially rectilinear

edge of the corresponding roof panel opposed to the seam line at two points which are spaced apart a distance which is less than a distance between said support posts in supporting relation to the corresponding panel.

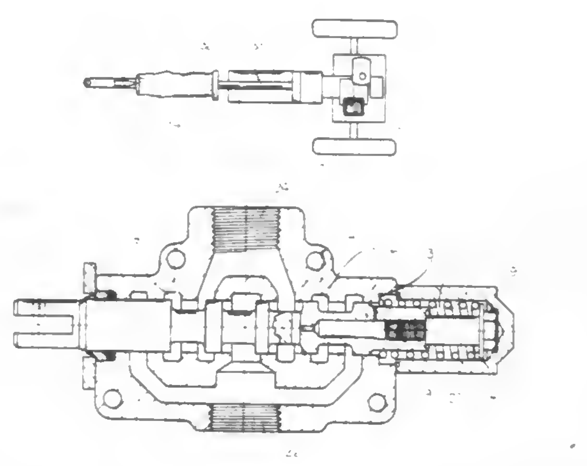


4,367,762
UMBRELLA COVER AND METHOD OF MAKING
Emanuel Dubinsky, 99 Kingston Ave., Yonkers, N.Y. 10704
Continuation-in-part of Ser. No. 220,119, Dec. 24, 1980. This application Mar. 6, 1981, Ser. No. 241,020
Int. Cl.³ A45B *25/24*
U.S. Cl. 135—33 C **10 Claims**



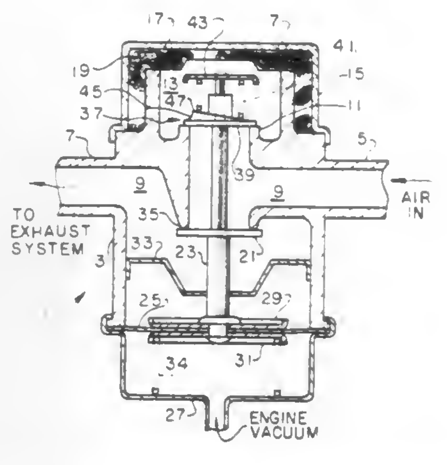
1. An umbrella cover comprising a sleeve of substantially pliable material having a front and a rear opposed side, with said sleeve having an upper end and a lower end, said lower end being open for receiving the canopy of an umbrella into said sleeve, said front and rear side having first and second edges defining the edges of said sleeve, said front side having an upwardly extending aperture at said first edge thereof extending inwardly from said lower end to a point along said first edge substantially above said lower end so as to expose the interior of said opposed said rear side, said exposed interior forming a backing member for said aperture; a rod retaining pocket portion longitudinally extending along said first edge to said lower end; and a substantially rigid telescoping support rod member retainable within said pocket portion and partially extending along said sleeve first edge in the direction of said sleeve longitudinal axis; whereby said cover may be readily mounted upon said umbrella canopy with said support rod telescopically extended by cooperation between said support rod and said and exposed backing member coverage of said canopy completed by telescopic closure of said support rod.

4,367,763
FOUR-WAY DIRECTIONAL VALVE
Glen Brand, 4114 N. 79th, Omaha, Nebr. 68134
Filed Mar. 9, 1981, Ser. No. 242,094
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—106 **2 Claims**



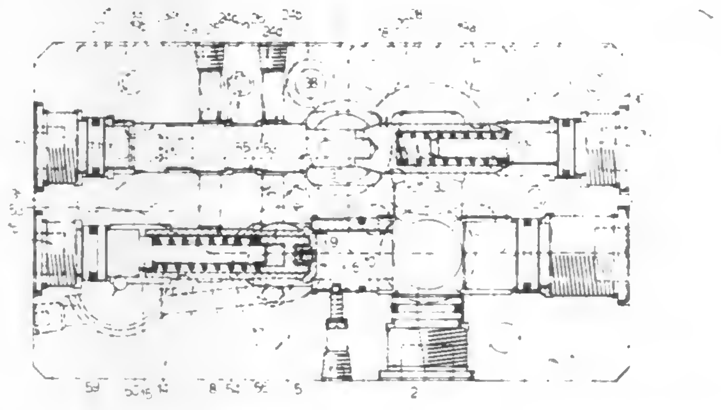
1. A four-way directional hydraulic spool valve having a valve body with a valve spool bore comprising:
a high pressure port into said valve body bore;
a return port into said valve body bore;
a first working port into said valve body bore;
a second working port into said valve body bore;
a spool valve slidably disposed within said valve body bore having a first working position, a central neutral position, and a second working position;
means on said valve spool for connecting said high pressure port with said first working port and said second working port with said return port when the spool is in said first working position;
means on said valve spool for connecting said high pressure port with said return port and locking fluid in the working ports when said spool is in the center neutral position;
means on said valve spool for connecting said high pressure port with said second working port and said first working port with said return port when the spool is in said second working position;
biasing means within said valve body bore for urging said valve spool into said first working position whereby force must be applied to the valve spool to move it from the first working position into either the neutral position or the second working position; and
fluid bypass means for automatically moving said spool valve from said first working position against the force of said biasing means, to said neutral position and fluidly holding said spool valve in said neutral position upon reaching a predetermined pressure in said high pressure port, said bypass means including pressure receiving means on a portion of said spool disposed within a chamber within said valve body for moving said spool, against the urging of the biasing means, from the first working position into said neutral position, and passageway means disposed within said spool valve and being in constant fluid communication with said high pressure port and said pressure receiving means when said spool valve is in same first working position thereof for transferring fluid pressure from said high pressure port to said pressure receiving means, whereby an operating restraint in the first working position of said spool valve will cause the spool valve to be moved to and held in the neutral position until the pressure in said high pressure port drops below said predetermined level or said spool valve is moved to said second working position thereof.

4,367,764
BY-PASS VALVE IMPROVEMENT
John B. Fitzgerald, St. Louis, Mo., and George L. York, Belleville, Ill., assignors to ACF Industries, Inc., New York, N.Y.
Filed Apr. 24, 1981, Ser. No. 257,464
Int. Cl.³ F16K *31/126*
U.S. Cl. 137—115 **10 Claims**



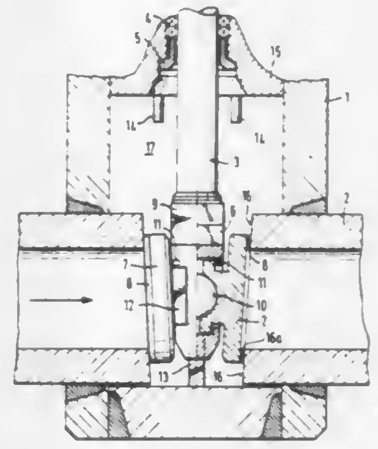
1. In an air by-pass valve having an air inlet, and air outlet, a relief port, and a relief valve responsive to excessive air pressure for opening the relief port and dumping air to atmosphere, the improvement wherein the relief valve comprises a valve member mounted on a stem and movable relative thereto, one side of the valve member being acted on by a spring biasing the valve member to close the relief port and air pressure acting on the opposite side of the valve member to move the valve member against the spring and open the relief port, the side of the valve member against which the spring acts being contoured so the spring force is unevenly applied to the valve member over the surface on which the spring acts, uneven application of this force causing the valve member to cock against the stem when the valve member is moved from its relief port closing position by excessive air pressure whereby air flow around the valve member is unbalanced thereby reducing relief valve hammer caused by harmonic vibrations induced by air flow around the relief valve member.

4,367,765
FLOW REGULATOR FOR HYDRAULIC CIRCUITS
Luciano Moretti, Turin, and Giulio Dotti, Milan, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Strada Torino, Italy
Filed Dec. 31, 1980, Ser. No. 221,628
Claims priority, application Italy, Jan. 8, 1980, 67018 A/80
Int. Cl.³ F15B *13/02*
U.S. Cl. 137—881 **10 Claims**



1. A flow regulator designed to control the flow of a pressurized fluid between a source of said fluid which feeds it at a feed pressure, and a user device in which said fluid is at a utilization pressure which depends on the operating conditions of the device, comprising: a body in which there is provided a feed chamber and a utilization chamber, a discharge valve arranged to open and to feed towards a discharge chamber at least part of said fluid from said source when the difference between said feed pressure and said utilization pressure exceeds a given value, a valve element mobile in the direction of its axis which is arranged to vary the degree of closure of an orifice between said feed chamber and said utilization chamber of said body and is kept normally by the action of a spring in a rest position in which it closes said orifice, a first and second cavity in which a first and a second active surface of said valve element are respectively housed, each active surface being arranged to sense a pressure acting on it and to determine a corresponding axial movement of said valve element, said first cavity being in communication with said utilization chamber by way of a first duct in order to cause said utilization pressure to act on said first active surface of the valve element and said second cavity being in communication with said feed chamber by way of a second duct, said first and second ducts being in communication with each other by way of a third duct, and an interception member disposed within said third duct and designed to vary the the flow of said fluid through said third duct, said feed chamber and said second duct being in communication with each other by way of a bore of predetermined size which is arranged to reduce the pressure of said fluid passing from said feed chamber to said second duct, such that the degree of closure of said orifice between said feed chamber and said utilization chamber is varied by adjusting said interception member which varies the flow of said fluid through said third duct and thus generates in said second duct a control pressure which is transmitted to said second cavity and to said second active surface and consequently moves said valve element.

4,367,766
SLIDE VALVE
Vilho Uomala, Pietarsaari, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland
Filed Apr. 14, 1980, Ser. No. 140,243
Claims priority, application Finland, Apr. 18, 1979, 791247
Int. Cl.³ F16K *29/00*
U.S. Cl. 137—243 **11 Claims**



1. A slide valve or the like, comprising:
a slightly wedge-formed valve member arranged to close a flow duct in said valve by a cross-wise movement relative to said duct;
said valve having annular sealing surfaces surrounding said flow duct and being engageable by sealing side portions of said valve member for closing said valve;
said sealing side portions of the valve member being considerably narrower than said annular sealing surfaces surrounding said flow duct, and being in the closing position of said valve, located relative to said annular sealing surfaces at a relatively great distance from the inner edge of said annular sealing surfaces;
said sealing side portions of the valve member being located each to a separate unit journalled in a body portion of said valve member; and
flexible pins eccentrically located relative to said slide units

for causing rotation thereof when said slide units come into contact with said flexible pins at an extreme open position to achieve even wear on the sealing side portions of said valve member.

4,367,767

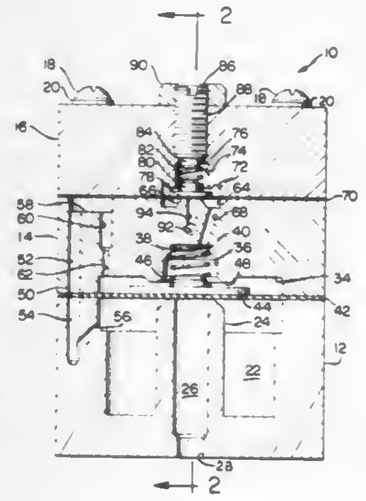
SERVO-CONTROLLED GAS PRESSURE RELIEF VALVE

Claude C. Hurd, Riverside, Calif., assignor to Bear Medical Systems, Inc., Riverside, Calif.

Filed Dec. 4, 1980, Ser. No. 212,889

Int. Cl.³ F16K *17/10*

U.S. Cl. 137—489 **8 Claims**



1. A gas pressure relief valve for maintaining the gas pressure in a pressurized gas system at a selected pressure, comprising:

- a first body section having a first face;
- a second body section having opposed second and third faces, said second face adjoining said first face and forming a first chamber therebetween;
- means in said first body section for providing an inlet to said first chamber for receiving pressurized gas and an outlet for conducting said gas to said system;
- an exhaust port in said first body section and communicating with said first chamber through a first valve seat, said first valve seat being approximately coplanar with the juncture between said first and second faces;
- a third body section having a fourth face adjoining said third face and forming a second chamber therebetween;
- a bleed vent in said second body section and communicating with said second chamber through a second valve seat, said second valve seat being approximately coplanar with the juncture between said third and fourth faces;
- main valving means, in said first chamber, for opening said exhaust port in response to the opening of said bleed vent and including a first pressure-responsive diaphragm captured between said first and second faces and engageable with said first valve seat;
- conduit means for communicating pressure between said first and second chambers; and
- pilot valving means, in said second chamber, and responsive to the pressure in said first chamber, for opening said bleed vent when the pressure in said second chamber exceeds said selected pressure, said pilot valving means including a second pressure-responsive diaphragm captured between said third and fourth faces and biased to close against said second valve seat with said selected pressure.

4,367,768

REFRACTORY PROTECTIVE TUBE FOR THE HEAT TREATMENT OF SEMICONDUCTOR COMPONENTS

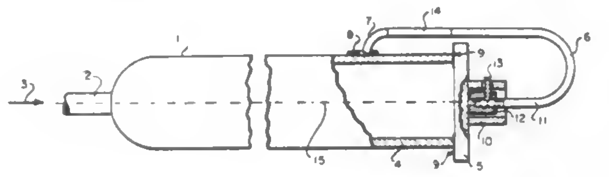
Karl A. Schülke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,089

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1979, 2907371

Int. Cl.³ C23C *13/08*

U.S. Cl. 137—527.6 **9 Claims**



1. In a refractory protective tube for the heat treatment of semi-conductor components which is constricted at one end and at such constricted end is provided with a treating or working gas inlet, said tube having opposite to said gas inlet a gas outlet to be closed, the improvement for the prevention of back diffusion of ambient air wherein said gas outlet is normally closed by a cover, which cover is fastened to a holding bracket which is pivotally movably suspended from the tube, said holding bracket yieldably biasing said cover toward said closed position and allowing movement of said cover away from said gas outlet in response to a predetermined pressure being attained within the tube.

4,367,769

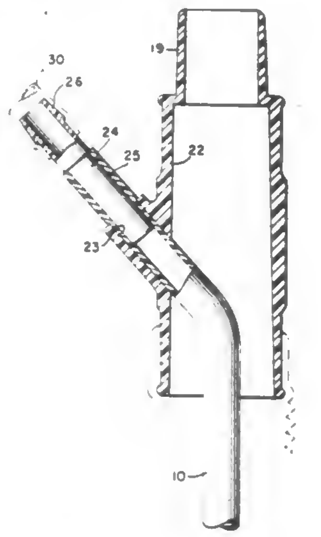
SAFETY CONNECTOR FOR FLEXIBLE TUBE DEVICE

James Bain, 1650 Gloucester Rd., London, Ontario, Canada (N6S 2S6)

Filed Jul. 17, 1978, Ser. No. 925,393

Int. Cl.³ F16L *11/12*

U.S. Cl. 138—114 **2 Claims**



1. A connector comprising a rigid tubular member, said rigid tubular member having in axial alignment a first tubular end portion and a second tubular end portion, said tubular member having a substantially centrally located portion, a first flexible tubing having an end portion concentrically frictionally positioned on said first end portion, said second end portion having a tube stub extending axially beyond said second end portion and of a diameter less than said second end portion, said centrally located portion having a tubular stub having a bore therethrough in communication internally with respect to said rigid tubular member and at an angle less than 90° with respect to the axis of said rigid tubular member in the direction towards said second end portion, said tubular stub having a second flexible tubing threaded therethrough into said rigid tubular member and through said first flexible tubing, said second flexible tubing having an end portion extending beyond said tubular stub, said end portion of said second flexible tubing being fitted with a tubular connecting means, said tubular connecting means having a portion fitted internally of said second flexible tubing and having a diameter to distend the said end portion and a portion of the tubular connecting means extends into said tubular stub.

4,367,770

ROTATIONAL DOBBY

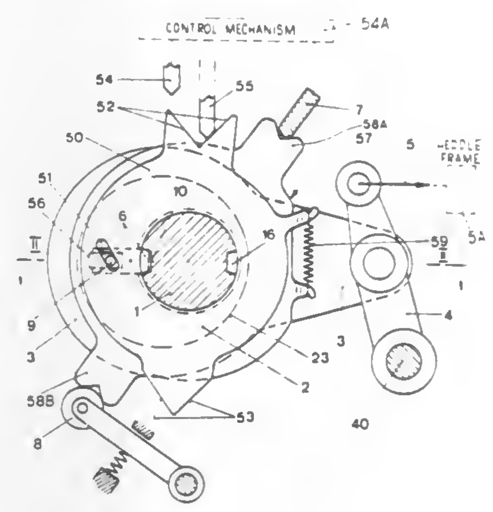
Rudolf Schwarz, Horgen-Zuerich, Switzerland, assignor to Staeubli Ltd., Horgen-Zuerich, Switzerland

Filed Aug. 11, 1980, Ser. No. 177,159

Claims priority, application Switzerland, Aug. 16, 1979, 7500/79

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R **12 Claims**



1. In a rotational dobby for controlling at least one heddle frame in a weaving machine, including at least one eccentric disk which is rotatably supported on a drive shaft and has a coupling wedge supported thereon for movement into and out of selective engagement with two grooves provided on diametrically opposite sides of said shaft, a connecting rod supported on the outer circumference of said eccentric disk and means for operatively coupling said connecting rod to said heddle frame, a control mechanism having two movably supported pressure fingers, and a control member supported for movement relative to said eccentric disk and operatively coupled to said coupling wedge, the improvement comprising wherein said control member is a control disk which is supported for a limited amount of rotation on said drive shaft, said control disk having cam means slidingly engaging a bolt provided on said coupling wedge for effecting in response to rotation of said control member said movement of said coupling wedge into and out of engagement with said grooves in said shaft, and having two control stops which are diametrically opposed and are operatively engaged by said pressure fingers during movement thereof, each said control stop having two stop surfaces thereon inclined in opposite directions with respect to the direction of movement of said pressure fingers, whereby movement of a said pressure finger into engagement with one of said stop surfaces effects rotary movement of said control member.

4,367,771

CONNECTING PART FOR ELECTRICAL WARP STOP MOTION ON WEAVING MACHINES

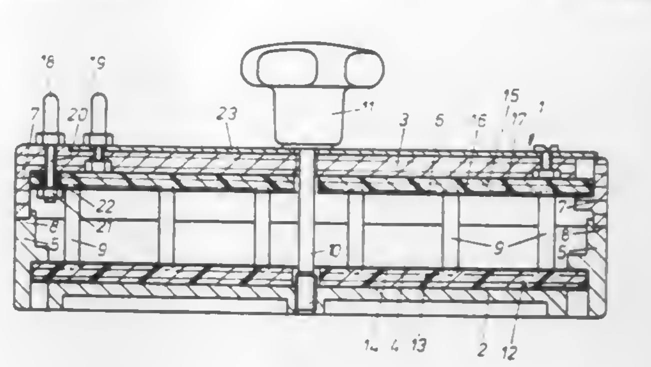
Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Oct. 1, 1980, Ser. No. 192,858

Claims priority, application Switzerland, Oct. 2, 1979, 8856/79

Int. Cl.³ C03D *51/28*

U.S. Cl. 139—358 **6 Claims**



1. Connecting part for warp stop motion, for conducting electrical current to several contact bars positioned parallel to each other and each consisting of two insulated current rails, including a first and a second housing shell, each with two longitudinal side frames with supporting slots at equal distances to take up the contact bars, and two narrow lateral side frames, are pressed against each other by means of a securing device, and that on the interior bases of both housing shells a strip of elastic material, covered by a contact foil or band, is attached for the purpose of conducting electrical current to all the contact bars, whereby the complementary distance of the two contact foils is less than the length of the supporting slots for the contact bars extending between them, and that terminal contacts on the exterior side of one housing shell are electrically connected to one each of the two contact foils on the interior bases of both housing shells.

4,367,772

NOZZLE ASSEMBLY FOR A WEAVING MACHINE

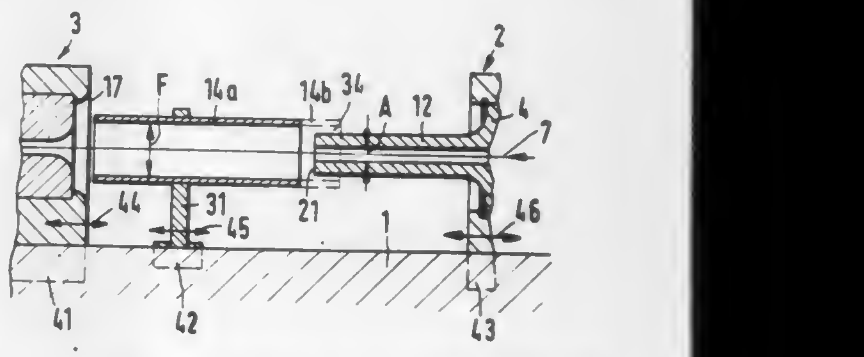
Erich Wall, Brutten, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,522

Claims priority, application European Pat. Off., Aug. 8, 1979, 79 102849.1

Int. Cl.³ D03D *47/28*

U.S. Cl. 139—435 **14 Claims**



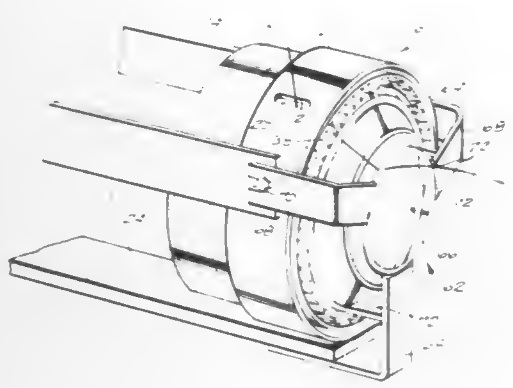
1. A yarn insertion nozzle assembly for a weaving machine, said assembly comprising

- at least one insertion nozzle having a passage for a yarn, a plurality of air admission channels merging with said passage into an outflow channel for passage of a yarn and a transporting stream therethrough and therefrom in a given flow direction; and
- a guide channel following said outflow channel, said guide channel being a tube adjustably mounted for movement in said flow direction to guide a yarn therethrough.

4,367,773

GUIDE FOR WITHDRAWING YARN FROM A FILLING MEASURING AND SUPPLYING DEVICE FOR A LOOM

Kermit T. Newcomb, South Hill, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Feb. 18, 1981, Ser. No. 236,282
Int. Cl.^{3} D03D *47/36*
U.S. Cl. 139—452 **2 Claims**



1. In a loom having means for inserting predetermined lengths of filling yarn and means for measuring and supplying such yarn lengths to the inserting means including a rotatable circular yarn winder provided with a circular array of yarn-etching fingers along a peripheral edge thereof, the combination of a guide for yarn lengths withdrawn endwise from one end of the winder to direct the withdrawn yarn to the inserting means, comprising:

a first ring having an inner diameter slightly smaller than the outer diameter of the winder fixedly mounted concentrically therewith adjacent to but spaced from the fingers; and

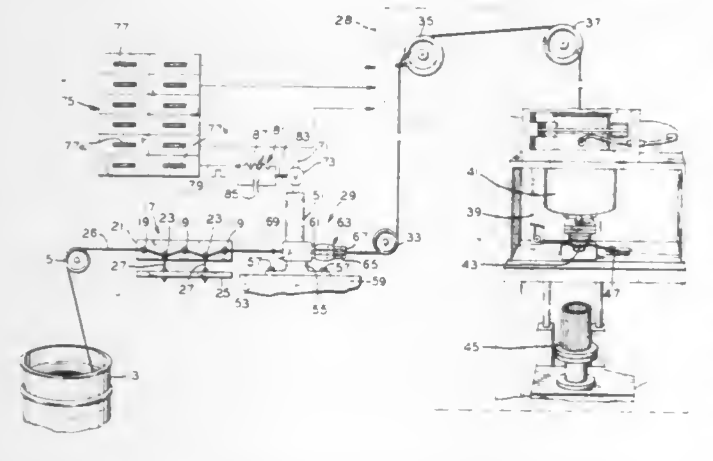
a second ring having an inner diameter less than that of said first ring fixedly mounted concentrically with said first ring in spaced relation with that side thereof opposite the winder;

said first ring cooperating with said fingers for enabling catching of yarn thereby for winding it on the winder and said second ring preventing undue ballooning of the yarn as it is withdrawn from the end of the winder and supplied to the inserting means.

4,367,774

METHOD AND APPARATUS FOR STRIPPING INSULATION OFF WIRE IN COIL WINDING MACHINES

Richard B. Arnold, and Leo M. Schlaudroff, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.
Filed Aug. 5, 1980, Ser. No. 175,441
Int. Cl.^{3} H01F *41/05;* H02K *15/04*
U.S. Cl. 140—1 **20 Claims**



1. A method of stripping insulation from a continuous length of wire during a generally continous coil winding process involving a rotating flyer generating turns of wire about a coil form comprising: continuously moving insulated wire along a wire feed path from a wire supply, past a tensioning means, and developing a plurality of coils of wire in a coil winding machine by winding a continuous length of the wire drawn along the path around a coil form with the rotating flyer, counting the number of revolutions of the flyer, and providing a wire stripper device having a plurality of rotatable blades arranged in a circular array about the wire feed path between the wire supply and the winding machine; relatively moving the wire and stripper device while the wire is under tension and thereby causing the wire to be located along a straight path along the center of the circular array of blades; preselectively actuating the stripper device in response to the flyer having rotated a predetermined number of revolutions, rotating the blades, and moving the blades radially inwardly toward the wire so that the blades rotate about, engage, and strip the insulation off a segment of the wire as it and the stripper device undergo relative movement and before such segment reaches the coil form; winding wire around the coil form after the segment has been stripped, and until the segment of wire which has been stripped is located in a wire cutter; and then actuating the wire cutter to sever the wire at a point within the stripped segment.

16. Apparatus for developing coils for electric motors comprised of insulated wire and for stripping the insulation off a segment of the wire comprising:

a supply of insulated wire,

winding means for drawing wire from the supply and winding the wire around of coil form, said winding means comprising a flyer rotatable about the form,

a wire stripper device positioned between the wire supply and the winding means such that the wire passes through the stripper device as it is drawn by the winding means, said stripper device being actuatable for selectively stripping the insulation off a segment of the wire,

said winding means including a wire cutter positioned to selectively engage and cut the wire, and

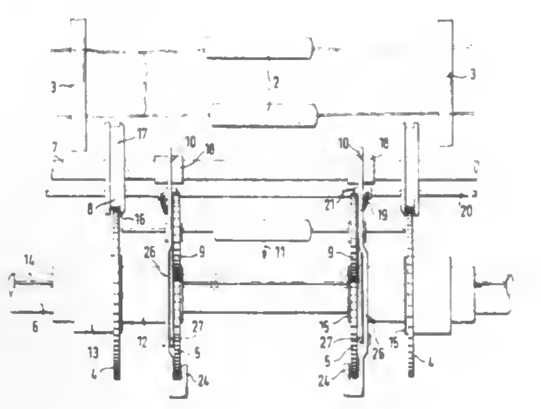
control means for actuating the stripper to strip a segment of wire after the flyer has rotated a first predetermined number of revolutions about the coil form, and for stopping the winding of the wire after a second predetermined number of revolutions, greater than the first predetermined number of revolutions, and wherein the first and second predetermined numbers are selectively determinable.

4,367,775

APPARATUS FOR CUTTING TO SIZE AND BENDING LEADS OF ELECTRICAL COMPONENTS

Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany
Filed Nov. 6, 1980, Ser. No. 204,517
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944666
Int. Cl.^{3} B21F *45/00*
U.S. Cl. 140—105 **13 Claims**

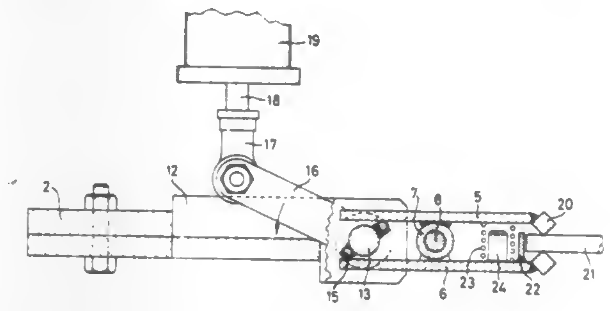
1. In an apparatus for cutting to size and bending leads of electrical component, the apparatus comprising: transport toothed wheel means for taking up leads between teeth thereof, bending toothed wheel means, all of said wheel means being keyed on a main driving shaft means supported by bearings in a supporting structure; cutting tool means for use with the transport toothed wheel means; bending tool means for use with the bending toothed wheel means, gripping toothed wheel means elastically acted upon for meshing with said bending toothed wheel means; and a further shaft means, parallel to said main driving shaft means, for supporting said gripping toothed wheel means, wherein the improvement comprises a plurality of arm means, each of said plurality of arm means is rotatably supported by said further shaft means, said arm means being equal in number to a number of bendinhg toothed wheel means and constructed for use therewith, and a spring means for urging each of said arm means in a direction of said main shaft means, and wherein said gripping toothed wheel means and said bending tool means are supported on said arm means.



4,367,776

MACHINE FOR THE MANUFACTURE OF REINFORCING BODIES FOR PRECAST CONCRETE PARTS

Georg Pfender, Kisslegg, Fed. Rep. of Germany, assignor to MBK Maschinenbau GmbH, Kisslegg, Fed. Rep. of Germany
Filed Oct. 23, 1980, Ser. No. 199,736
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945556
Int. Cl.^{3} B21F *27/10*
U.S. Cl. 140—112 **3 Claims**



1. A machine for the manufacture of reinforcing bodies for precast concrete parts, including pipes, having longitudinal bars and wires wound over and welded at the points of intersection of the bars, comprising:

a base frame;

a main disc mounted fixedly on the base frame;

guide pieces for the longitudinal bars radially displaceable relative to and carried by the main disc;

a carriage displaceable relative to the axis of the main disc;

a support disc mounted on the carriage and coaxially relative to the main disc; and

elongate clamping members carried by the support disc which constitute radially extending clamping slits, the length and position thereof corresponding to the range of adjustment of the guide pieces on the main disc, for clamping the ends of the longitudinal bars at a selectively different spacing from the axis of the support disc.

4,367,777

VIOLIN, KIT AND METHOD OF MAKING SAME

Charles P. Baker, 6905 Moyer Pl., McLean, Va. 22101
Division of Ser. No. 85,203, Oct. 16, 1979, Pat. No. 4,304,164. This application Jun. 30, 1981, Ser. No. 279,152
Int. Cl.^{3} G10D *1/02;* B27D *1/00*
U.S. Cl. 144—346 **2 Claims**

1. A method of making a violin comprising the steps of forming a violin body, neck, backplate and sound post as an integral, unitary structure,

the body having walls and an opening in the end thereof opposite the neck end, and

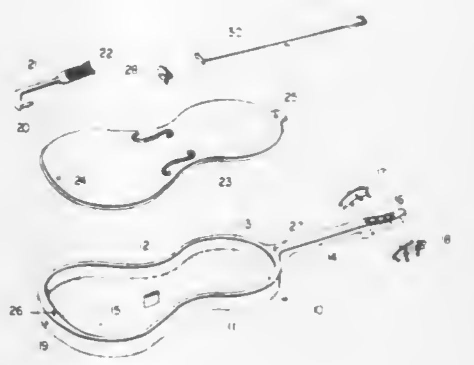
the neck having side and front openings therein near the distal end thereof to receive tuning pegs and strings, respectively;

forming a top plate and bass bar as a separate assembly;

adhering the top plate to the walls of the body;

separately forming a unitary fingerboard, nut and shim structure;

adhering the fingerboard and shim structure to the neck;



providing a bridge;

adhering the bridge to the top plate;

providing a tailpiece having a generally U-shaped hook at one end dimensioned to be received in the opening at the end of the body and four hook elements at the other end;

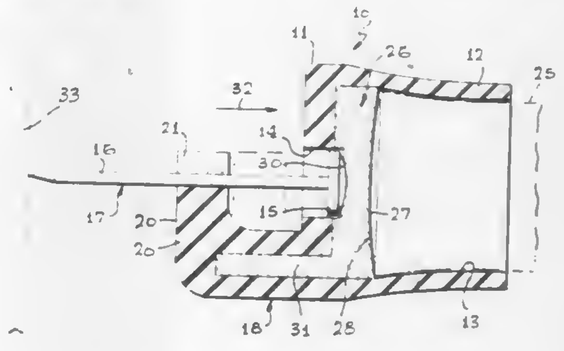
attaching tuning pegs to the openings provided therefor in the neck; and

connecting violin strings between the tailpiece hook elements and the tuning pegs.

4,367,778

NAIL DRIVER ACCESSOR HAVING A NAIL HOLDER MECHANISM

Ray Bradbury, 500 E. Fairmount Rd., Burbank, Calif. 91501
Filed Oct. 28, 1980, Ser. No. 201,429
Int. Cl.^{3} B25C *1/02*
U.S. Cl. 145—30 R **3 Claims**



1. A nail driver accessory for releasably holding a nail having a shank and a head so that it may be driven into a workpiece by a hammer, the combination comprising:

a substantially L-shaped body in side elevational of soft, pliable material having a receptacle provided at one end and an opening coaxial therewith provided at its opposite end;

a projection integral with the opposite end of soft, pliable material outwardly extending from said body terminating in a yoke in spaced relationship to said body opening provided with a slot lying on the longitudinal central axis of said body opening and said receptacle;

a metal plate carried in said body jointly serving as the bottom of said receptacle and said opening so as to separate them therebetween and having a projection portion extending within and surrounded by said outwardly extending projection;

said receptacle is adapted to form fit and insertably receive and releasably engage with the conventional impact head of the hammer so that it bears against one side of said metal plate;

said body opening is adapted to insertably receive the head of a nail while the shank lies in said yoke slot so that the head of the nail bears against the other side of said metal plate from its side bearing against the impact head of the hammer;

said metal plate includes an inner surface serving as the bottom for said receptacle which is concave so as to substantially conform with the contour of the hammer impact head;

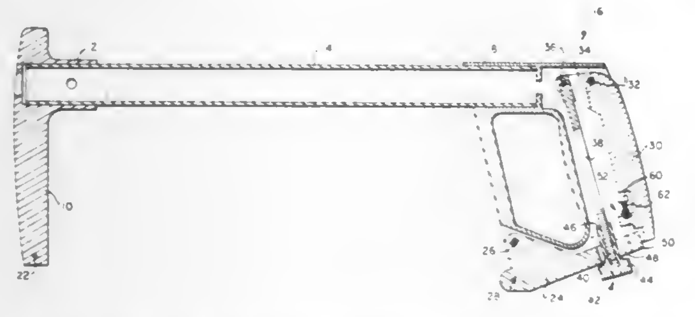
said metal plate includes an outer surface engagable with said body and having a recess therein coaxial with respect to said body opening substantially occupied by the head of the nail.

4,367,779
HACKSAW WITH IMPROVED BLADE TENSIONING MECHANISM
John F. Ewig, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Mar. 23, 1981, Ser. No. 246,273

Int. Cl.^{3} B23D *49/12, 51/10;* **B27B** *21/06*

U.S. Cl. 145—33 A **11 Claims**



1. In a hacksaw of the type having a front generally vertical frame member, a top horizontal frame bar attached at its forward end to the upper end of the front frame member, a handle attached at its upper end to the rear end of the top horizontal frame bar, a rocker arm pivoted to the lower portion of the handle, and a blade held at its forward end by a front mounting post at the lower end of the front frame member, the blade being held at its rear end by a rear mounting post located on the rocker arm near one end thereof, improved means for adjustably applying tension to the blade, said improved tensioning means comprising:

(a) a manually movable lever pivoted adjacent its upper end to the handle, said lever having a rod mounting portion extending forwardly of the lever pivot point;

(b) a tension rod pivoted at its upper end to said rod mounting portion and hanging downwardly, said movable lever and tension rod pivot points being located with relation to each other such that pivoting said lever clockwise causes said tension rod to be lifted, and pivoting said lever counter-clockwise causes said tension rod to be lowered;

(c) a tension adjusting knob means cooperating with the lower end of said tension rod and the other end of the rocker arm for altering the distance between the other end of the rocker arm and the tension rod pivot point; and

(d) latch means for locking said lever to the handle;

(e) said lever pivoting in the clockwise direction to increase blade tension, and pivoting in the counter-clockwise direction to decrease blade tension.

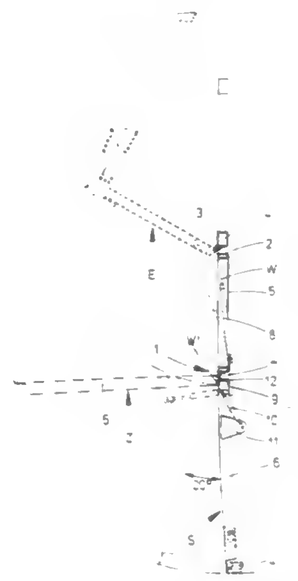
4,367,780
CLOSURE MEMBER FOR VEHICLES
Wilhelm Walcher, Ulm/Donau, Fed. Rep. of Germany, assignor to Karl Kässbohrer Fahrzeugwerke GmbH, Ulm, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,895

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936049

Int. Cl.^{3} E05D *15/00*

U.S. Cl. 160—213 **10 Claims**



1. In a closure member for a compartment opening in a vehicle body, having a swivel axis which is arranged at the closure member's upper edge and is substantially horizontal and having at least one first pressure spring which is hinged between the vehicle body and the closure member for opening and keeping open the closure member in an upwardly swung end position which exposes the compartment opening, the improvement comprising wherein the closure member is horizontally divided and, viewed in a closed position, has upper and lower closure member parts which are connected through a substantially horizontal connecting axis, the first pressure spring being hinged between the upper closure member part and the vehicle body, and including at least one second pressure spring arranged between the two closure member parts, which second pressure spring is used during opening of the lower closure member part, the upper closure member part being initially held by a lock, for swinging up the lower closure member part about the connecting axis into an intermediate position defined by a stop between the two closure member parts, upon the reaching of which intermediate position the upper closure member part is released from the lock and can also be swung out, so that then the first pressure spring swings both the closure member parts about the swivel axis into the end position.

4,367,781
INTERLEAVED FLEXIBLE WEATHER DOOR AND METHOD OF MANUFACTURE
Theodore E. Vallieres, Jr., 301 Porter St., Manchester, N.H. 03103, and Nicholas F. Dinicola, Wire Rd., P.O. Box 393, Merrimack, N.H. 03054

Filed Sep. 24, 1980, Ser. No. 190,190

Int. Cl.^{3} A47H *23/05*

U.S. Cl. 160—332 **9 Claims**

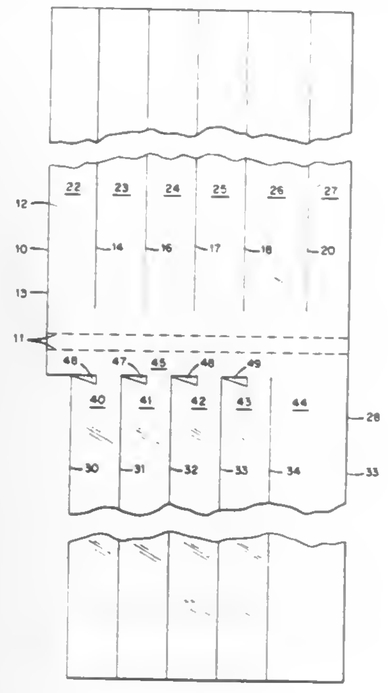
1. A flexible weather barrier for doorways comprising: a barrier section having

(a) A flexible sheet of plastic folded in the middle, halfway of its length dimension, to form a double layer;

(b) a first plurality of slits in a first layer of said double layer extending from a first end edge inwardly to a first transverse region near said middle dividing said first layer into a first series of strips;

(c) a second plurality of slits in a second layer of said double layer extending from a second end edge inwardly to a second transverse region near said middle and opposite to said first transverse region to form a second series of strips, said second plurality of slits offset from said first plurality of slits whereby said slits do not fall on each other; and,

(d) a plurality of apertures in said first layer, each aperture extending transversely from a respective one of said first plurality of slits at the end nearest said middle partially across the respective one of said first series of strips, said second series of strips passing partially through said apertures whereby said first series of strips and said second series of strips are interleaved with at least some of said strips being partly on one side and partly on the other side of said double layer.

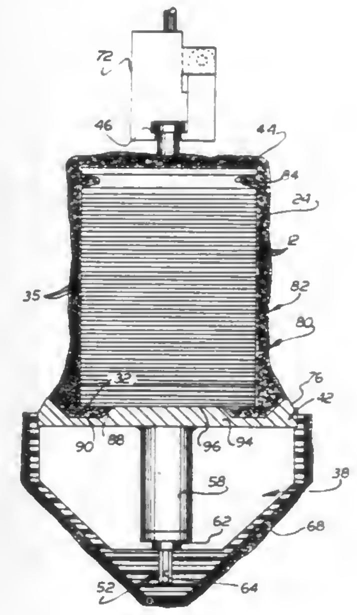


4,367,782
METHOD AND APPARATUS FOR USE IN MOLDING ARTICLES
Gustav E. Schrader, Pepper Pike, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jun. 1, 1976, Ser. No. 691,217

Int. Cl.^{3} B22D *17/22*

U.S. Cl. 164—137 **28 Claims**



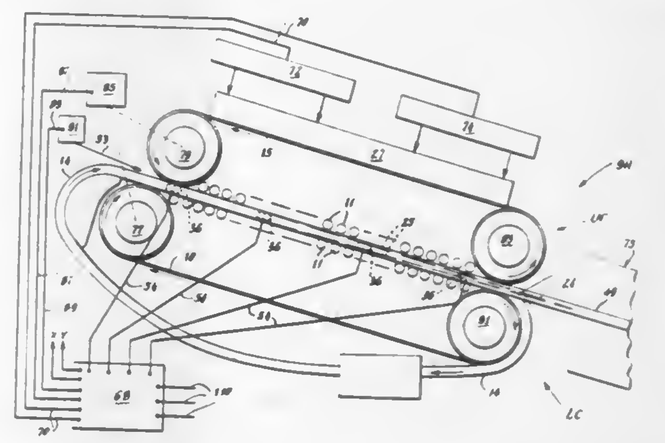
1. A method comprising the steps of providing a plurality of mold sections which at least partially define at least one mold cavity, applying a wet coating of liquid ceramic material over the mold sections, retaining the mold sections against movement relative to each other during said step of applying a wet coating of ceramic material over the mold sections by clamping the mold sections between a pair of rigid members, forming a rigid casing at least partially enclosing the mold sections by drying the wet coating of ceramic material, moving at least one of the rigid members away from a clamping position engaging at least one of the mold sections to a disengaged position spaced apart from the mold sections after performing said step of drying the wet coating of ceramic material, sealingly engaging a surface of the rigid casing of ceramic material which was exposed by said step of moving the one rigid member with a molten metal dispensing assembly, flowing molten metal from the molten metal dispensing assembly into a mold cavity which is at least partially defined by the mold sections, and holding the mold sections against movement relative to each other with the rigid casing of ceramic material during said step of flowing molten metal into the mold cavity, said step of flowing molten metal into the mold cavity including the step of flowing the molten metal from the molten metal dispensing assembly along a path extending through the ceramic casing surface exposed by moving the one rigid member.

4,367,783
METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL UNDER CONTROLLED LOAD CONDITIONS
John F. B. Wood, Burlington; Stanley W. Platek, Essex Junction; Joseph C. O'Kane, and Gary P. Ackel, both of Burlington, all of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed Oct. 27, 1980, Ser. No. 201,006

Int. Cl.^{3} B22D *11/06, 11/16*

U.S. Cl. 164—452 **25 Claims**



1. In the method of continuously casting metal product directly from molten metal in which the molten metal is confined and solidified in a casting region vertically defined by parallel areas of upper and lower cooled, endless, flexible travelling casting belts supported in respective upper and lower belt carriages and laterally defined by first and second cooled endless, flexible travelling side dams, the invention which comprises:

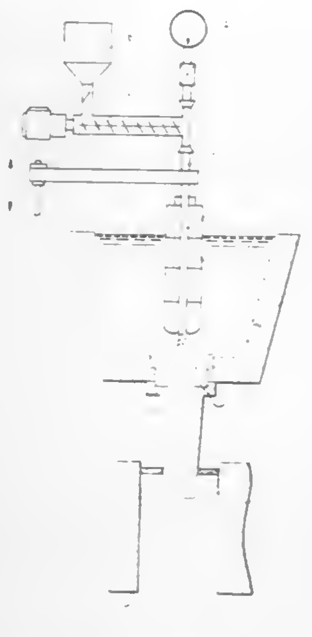
establishing a plurality of monitoring locations along the confines of said casting region;

measuring, at each of said monitoring locations, the force serving to confine the solidifying metal within said casting region by sensing the force exerted by said metal through either carriage by measuring the relative displacements, occurring between the upper and lower carriages; and

utilizing the resulting information for improving the casting operation.

4,367,784
METHOD FOR ADDING COOLING POWDERS TO STEEL DURING CONTINUOUS CASTING

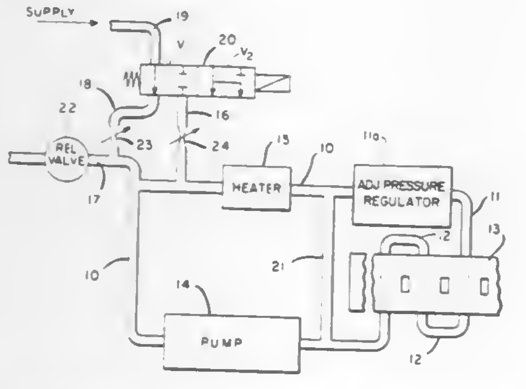
Alberto Praitoni, and Antonio Spaccarotella, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy
Filed Apr. 12, 1978, Ser. No. 895,851
Claims priority, application Italy, Apr. 18, 1977, 49007 A/77
Int. Cl.^{3} B22D *11/10*
U.S. Cl. 164—473 **1 Claim**



1. A method of adding steel powder to steel during the continuous casting of steel, comprising positioning a receptacle above a continuous casting mold with an outlet of the receptacle continuously feeding molten steel to the mold, maintaining a quantity of molten steel in the receptacle above the outlet from the receptacle to the mold, injecting into said molten steel in the receptacle beneath the surface thereof and adjacent said outlet, a continuous stream of inert gas containing steel powder in the amount of 0.5 to 3% by weight of the steel being cast and having a grain size of from 0.02 mm. to 3.0 mm, and immersing said outlet of the receptacle into the molten steel in the continuous casting mold, to a substantial depth below the surface of said molten steel in said mold.

4,367,785
LIQUID CIRCULATION METHOD AND APPARATUS

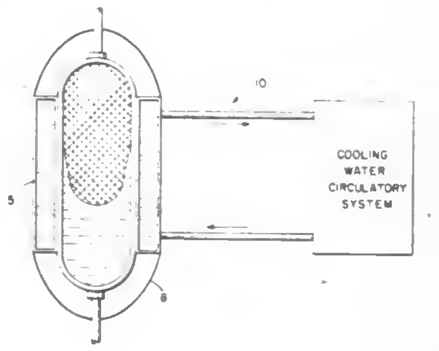
Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.
Filed Feb. 9, 1981, Ser. No. 232,467
Int. Cl.^{3} F28F *27/00*
U.S. Cl. 165—2 **27 Claims**



20. A method for controlling the pressure of a liquid circulated by a pump means within a liquid circulation conduit which is adapted to receive additional pressurized supply liquid, as required, from a pressurized main supply liquid source and is adapted to discharge said circulated liquid to a drain line having a drain pressure equal to the pressure desired within the circulation conduit, which comprises maintaining said liquid circulation system filled with liquid and open to said drain conduit at all times, opening said pressurized supply liquid source to said liquid circulation system to supply additional liquid, as required, to said circulation conduit, the pressure of the liquid which is permitted to circulate through said circulation conduit being reduced by the discharge of liquid from said circulation conduit out said drain line, and closing said pressurized supply liquid source to said circulation conduit while maintaining said circulation conduit open to said drain line in order to maintain an equilibrium between the pressure of the liquid within said circulation conduit and the pressure of the liquid in said drain line.

4,367,786
HYDROSTATIC BLADDER-TYPE STORAGE MEANS

Günther Häfner, and Hans-Josef Haepp, both of Stuttgart, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Nov. 24, 1980, Ser. No. 209,417
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947258
Int. Cl.^{3} F28D *17/02;* **F28F** *23/00*
U.S. Cl. 165—10 **12 Claims**

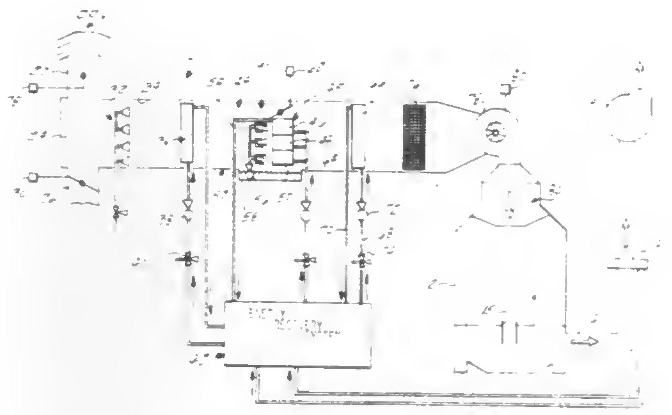


9. A hydrostatic bladder-type storage means for storing mechanical energy, the storage means comprising a pressure bottle means, an elastically resilient bladder means disposed in an interior of the pressure bottle means for accommodating a compressible medium, means provided on a first side of the pressure bottle means for enabling an introduction of the compressible medium into the bladder means, and means provided on a second end of the pressure bottle means for enabling a hydraulic fluid to be forced into and removed from the space in the pressure bottle means located between an interior wall of the pressure bottle means and the bladder means, characterized in that a porous elastic body of a foam synthetic resinous material is disposed in the bladder means and intimately joined thereto, the compressible medium fills the pores in the porous elastic body, the material in the porous elastic body has a specific thermal capacity which is higher than a thermal capacity of the compressible medium, and in that means are provided for maintaining the pressure bottle means at a predetermined temperature level.

4,367,787
AIR CONDITIONING APPARATUS AND METHOD FOR PAINT SPRAY BOOTHS

Norman F. Bradshaw, Richmond, England, assignor to Haden Schweitzer Corporation, Madison Heights, Mich.
Filed May 16, 1980, Ser. No. 150,537
Int. Cl.^{3} G05D *23/00*
U.S. Cl. 165—35 **11 Claims**

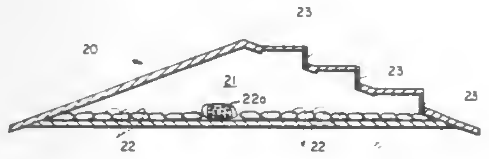
6. Air conditioning apparatus comprising:
a duct receiving a common mass of air flow therethrough;
heat exchanger means disposed in said ducting means receiving a portion of said flow through said ducting means;
means for causing a heat transfer media to be circulated through said heat exchanger means to cause said air flow to be varied in temperature after passing therethrough;
bypass ducting means receiving a portion of said air flow not passing through said heat exchanger means;
jet nozzle means disposed downstream of said heat exchanger means;



distribution ducting means receiving said bypass air flow causing said air flow to pass into said jet nozzle means, said jet nozzle means being disposed to direct said bypass air flow into said air flow after passing through said heat exchanger means;
whereby thorough mixing of said bypass flow and said air flow passing through said heat exchanger means is produced.

4,367,788
METHOD AND APPARATUS FOR STORING ENERGY

William A. Cordon, 1090 N. 1800 East, Logan, Utah 84321
Filed Sep. 8, 1980, Ser. No. 185,353
Int. Cl.^{3} F24D *11/00*
U.S. Cl. 165—53 **4 Claims**

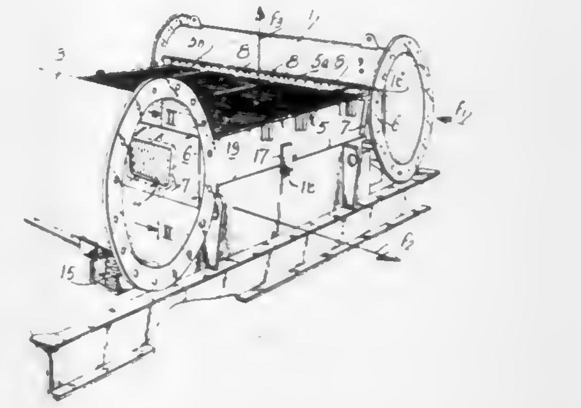


1. A method of insulating structures comprising the steps of
forming an insulating material by substantially filling the voids of a porous carrier material particles with a phase-change compound while maintaining said particles in a surface dry condition; and
positioning the insulating material adjacent to at least one surrounding wall of the structure.

4,367,789
INDUSTRIAL COOLING EXCHANGER USED FOR COOLING AIR OR OTHER GASES

Jean-Pierre Moranne, Franconville, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France
Filed Nov. 16, 1979, Ser. No. 94,881
Claims priority, application France, Nov. 20, 1978, 78 32646
Int. Cl.^{3} F28F *7/00*
U.S. Cl. 165—76 **9 Claims**

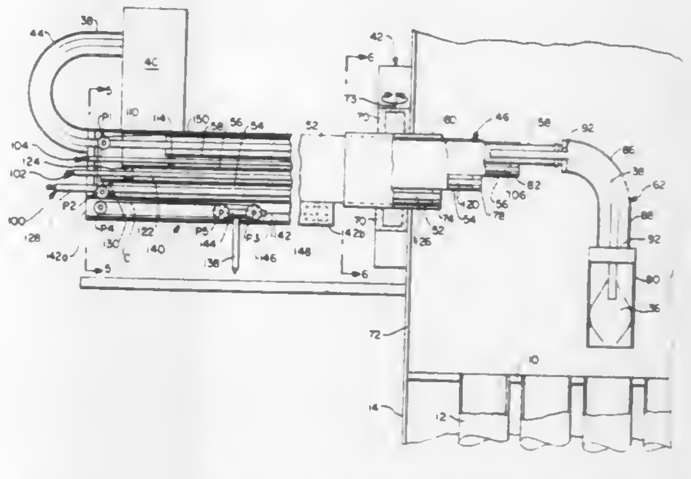
1. An industrial cooling exchanger for cooling air or other gases comprising an inlet collector and a return outlet collector spaced from each other, support means, means for floatingly mounting said inlet and outlet collectors on said support means, a plurality of heat exchanger elements interconnecting said inlet and outlet collectors and aligned with each other, means including insertable parts for dismountably assembling each of said heat exchangers onto said inlet and outlet collectors, said insertable parts comprising at least one deformable gasket interposed between said inlet and outlet collectors and each end of said heat exchanger elements, each of said inlet and outlet collectors comprising a plurality of openable cradles aligned with each other on each collector and of substantially U-shaped form, said plurality of cradles including one cradle for each end of each of said heat exchanger elements, means to mount all of said cradles on the outsides of said inlet and outlet collectors, each of said cradles having an upper portion and a groove for receiving the deformable gasket to be engaged therein; each of the heat exchanger elements comprising, at each of the two ends thereof, a heat exchanger tube end plate engaging said deformable gasket in sealed relationship there-



with, and a plurality of grooved covers one for each of said cradles for engaging said deformable gasket in sealed relationship therewith for selectively closing said upper portion of said cradle to thereby mount said heat exchanger element in operative relation to said collectors; whereby each of said heat exchanger elements can be removed from said cradles on said inlet and outlet collectors without disturbing said collectors on said support means after removal of said grooved covers from the two cradles at the inlet and outlet collector ends of an individual heat exchanger element.

4,367,790
MULTIPLE TUBE CLEANING APPARATUS

Walter A. Draeger, 1539 Haydenview Dr., Coeur d'Alene, Id. 83814
Filed Dec. 16, 1980, Ser. No. 217,090
Int. Cl.^{3} F28G *15/02, 15/04, 15/08*
U.S. Cl. 165—95 **19 Claims**

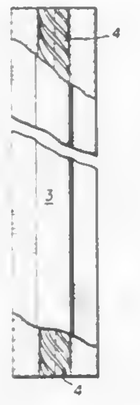


8. An apparatus for cleaning a plurality of vertically extending tubes which are fixedly located adjacent one another and opened at their top ends, said apparatus comprising:
a tube cleaning arrangement including a mechanical cleaning head and means for moving said head vertically between a raised position and a lowered position; and
a cleaning head support arrangement including means for moving said cleaning head horizontally to locations above said tubes when said head is in its raised position, whereby to clean any given tube by first moving said cleaning head

to a point directly above said given tube and thereafter lowering said head into and through the latter, said support arrangement also including means positioned horizontally to one side of said tubes for indicating the horizontal location of said cleaning head relative to said tubes, whereby said indicating means serves as a guide in locating said cleaning head above any of said tubes.

4,367,791
HEAT TRANSFER TUBING FOR NATURAL GAS EVAPORATOR

Takayoshi Asami, Otsu, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan
Division of Ser. No. 7,324, Jan. 29, 1979, Pat. No. 4,296,539. This application Oct. 22, 1980, Ser. No. 199,529
Claims priority, application Japan, Jan. 27, 1978, 53-8601
Int. Cl.³ F28F *13/12, 1/42;* **F28D** *3/02*
U.S. Cl. 165—109 T **39 Claims**



1. A heat transfer tube assembly including extrudates of aluminum for a water spray-panel type evaporator for the gasification of liquified natural gases comprising:

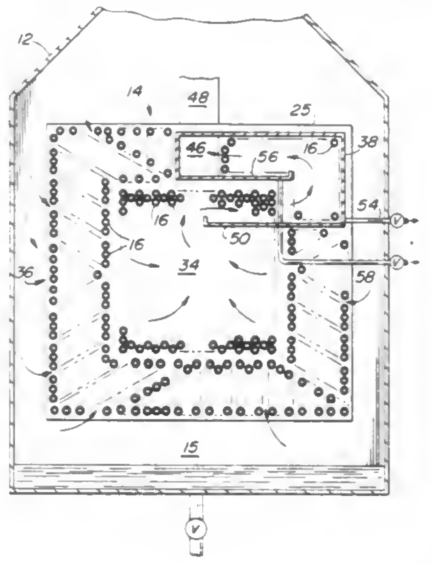
a plurality of heat transfer tubes each comprising a tubular body, an opposite pair of planar members each projecting outwardly from the peripheral surface of said tubular body and radially with respect to the longitudinal axis of said tubular body and extending longitudinally along said axis, said planar members and said tubular body being provided with a plurality of external fins extending in parallel with said longitudinal axis, and a helical fin element including extrudates of aluminum and having a helical lead L and an outer diameter D, said helical fin element disposed within said tubular body and including at least three fin members each having a thickness in the range of 1.0 to 1.5 millimeters and each projecting radially outwardly with respect to said longitudinal axis to provide a helical formation extending along and about said longitudinal axis such that each said helical fin element comprises a ratio of L/D in the range of 9 to 10, the helix of said helical formation contacting the internal surface of said tubular body in a pressure-fitting relationship; and

said plurality of heat transfer tubes being interconnected in a row with said planar members lying in a common plane and adjoining planar members being secured to each other in a parallel and juxtaposed relationship.

4,367,792
SURFACE CONDENSER

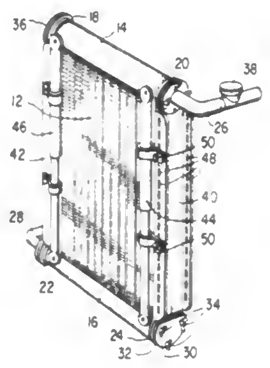
Leslie L. Forster, Easton, Pa., and Edward F. Hay, deceased, late of Belvidere, N.J. (by Constance Hay, executrix), assignors to Ecolaire, Incorporated, Malvern, Pa.
Filed Aug. 18, 1980, Ser. No. 179,410
Int. Cl.³ F28B *9/08*
U.S. Cl. 165—113 **10 Claims**

1. A steam condenser comprising a tube bundle mounted within a shell which is horizontally disposed, said shell having a steam inlet and a condensate outlet from a hot well, the improvement comprising at least one tube bundle within the shell and having an inner zone of tubes surrounded by an outer zone of tubes, means for introducing cold water through the outer zone of tubes and warmer water through the inner zone tubes so that most of the steam is condensed by the outer zone tubes with steam flow being radially inwardly toward the inner zone tubes and upwardly therefrom into a cooling section, the cooling section being in the outer zone and extending along the length of the tube bundle at the upper end thereof, said cooling section including a conduit having multiple inlets at spaced locations therealong for receiving cooled non-condensable gases and associated steam.



4,367,793
UNIVERSAL RADIATOR ASSEMBLY

John J. MacIntosh, 10269 Choiceana Rd., Hesperia, Calif. 92345
Filed Mar. 18, 1977, Ser. No. 778,877
Int. Cl.³ F28D *1/04*
U.S. Cl. 165—151 **2 Claims**



1. A universal radiator assembly for use as a replacement for automobiles having either upright or cross-flow type radiators, comprising:

a radiator core;

first and second tanks connected respectively to opposite ends of said radiator core in fluid sealing contact with said radiator;

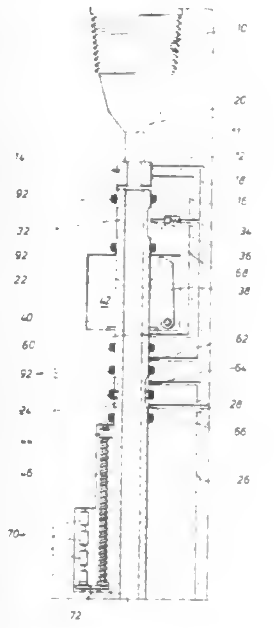
selected separate inlet and outlet fittings having a configuration to match the radiator being replaced, said fittings including quick-attachment securing means;

mounting means located at each end of each of said tanks, including matching quick-attachment means for securing said selected inlet and outlet fittings in the desired orientation, to substantially correspond to the configuration of the automobile radiator being replaced;

said mounting means including means for attaching and for releasing and permitting removal of said inlet and outlet fittings at room temperature, and reorienting of said inlet and outlet fittings or the substitution of new inlet and outlet fittings and the securing of said reoriented or new fittings to the ends of the tanks at from temperature; universal mounting means for mechanically securing said radiator into automobiles having many different radiator supporting arrangements, said universal mounting means including telescoping mounting brackets, and means for securing the parts of said telescoping brackets against relative movement with respect to each other.

4,367,794
ACOUSTICALLY ACTUATED DOWNHOLE BLOWOUT PREVENTER

John M. Bednar, Houston, and Clifford W. Petersen, Missouri City, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.
Filed Dec. 24, 1980, Ser. No. 219,631
Int. Cl.³ E21B *33/127, 34/06, 34/16*
U.S. Cl. 166—65 R **72 Claims**



1. A device suitable for use as a downhole BOP in a well comprising:

a housing having an inner bore, an exterior wall, an inflatable packer which extends beyond the exterior wall when inflated, at least one first passageway extending between the inner bore and the exterior wall, at least one second passageway extending between two openings on the inner bore, at least one inflation passageway extending between an opening on the inner bore and the packer,

a control valve assembly having a sleeve-shaped valve body slidably mounted in the inner bore of the housing and adapted to provide, in a first position, open fluid communication between the inflation passageway and the exterior wall of the housing through said first passageway whereby the packer is deflated, and, in a second position, open fluid communication between the inflation passageway and the inner bore through said second passageway whereby the packer can be inflated,

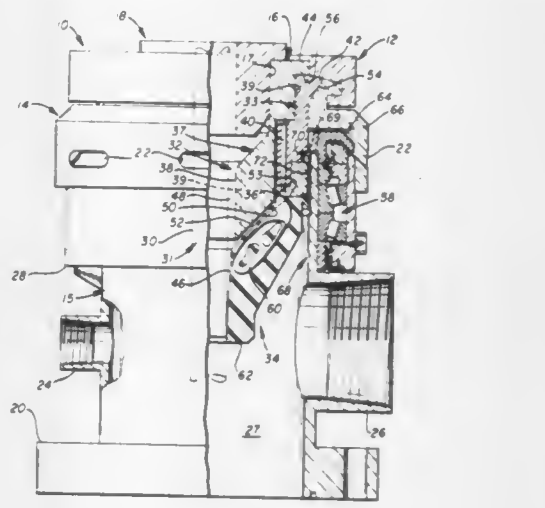
a flapper valve adapted to substantially close the inner bore of the housing when the sleeve-shaped valve body is in its second position.

4,367,795
ROTATING BLOWOUT PREVENTOR WITH IMPROVED SEAL ASSEMBLY

Morris S. Biffle, Rte. 3, Box 445-D, Midland, Tex. 79701
Filed Oct. 31, 1980, Ser. No. 202,688
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—84 **14 Claims**

1. A rotating blowout preventor having a main body, a longitudinal extending axial passageway formed therethrough through which a driving member can be received; said main body includes a lateral outlet in communication with the lower end of said axial passageway; means for removably mounting said main body to the upper end of a cased borehole; a rotating head assembly received within said axial passageway which forms the upper marginal end of said rotating blowout preventor;

a stripper assembly which includes a stripper rubber for sealingly receiving a longitudinally extending driving member in axial slidable relationship therewith; a stripper mount body to which said stripper rubber is affixed, an outer marginal length of said stripper assembly being of a configuration to be supportedly received in a removable manner within said rotating head assembly; seal means located between said stripper mount body and said axial passageway for precluding flow of drilling fluid therebetween;



an insert axially received within said stripper mount body, said insert includes a lower wedge face which is of conical configuration and which downwardly and inwardly slopes towards the axial passageway; said stripper rubber includes an upper conical face made complementary respective to said wedge face; said conical face of said stripper rubber abuttingly engages said wedge face;

an axial passageway formed through said stripper assembly which is concentrically arranged respective to the first said axial passageway;

and means associated with said stripper assembly for enabling a driving member to impart rotational motion thereinto which causes said rotating head and stripper assembly to rotate.

4,367,796
BLOWOUT PREVENTER AND GUIDELINE HANDLING

Vance E. Bolding, Irvine, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.
Filed Nov. 21, 1980, Ser. No. 208,868
Int. Cl.³ E21B *19/02, 41/00*
U.S. Cl. 166—341 **13 Claims**

1. Apparatus for handling a flexible guideline extending from a selected location in a structure on or above the surface of an ocean or the like to a submerged location, the apparatus comprising:

a guideline frame mounted for lateral movement in the structure and from which the guideline extends to the submerged location;

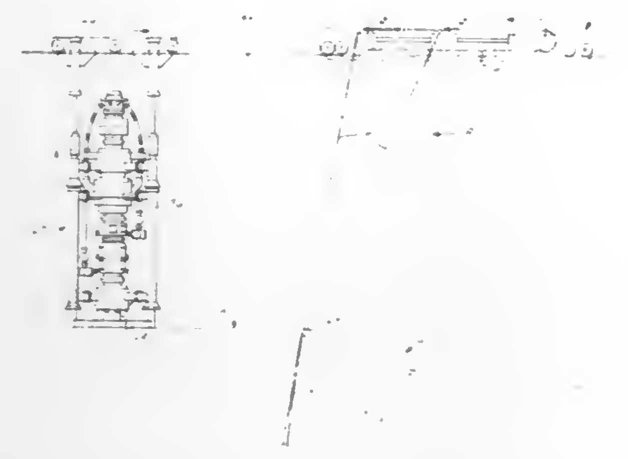
means for moving the frame laterally in the structure between a first position and a second position, the frame at the first position being disposed at said selected location in the structure, the frame at the second position being displaced laterally from its first position; and

tension means connected to the guideline for controlling tension in the guideline between the frame and the submerged location

12. A method for handling flexible guidelines connecting a structure located on or near the surface of an ocean to a sub-

merged location in the course of moving an object between the structure and the submerged location along a substantially vertical path of movement during which movement of the object is guided by the guidelines, the method comprising the steps of:

extending the flexible guidelines to the submerged location



from a movable frame disposed in the structure away from the path;

positioning the object along the path;

moving the frame sufficiently in the structure to place the guidelines in parallel relation to the path; and

engaging the flexible guidelines with the object to guide it along the path.

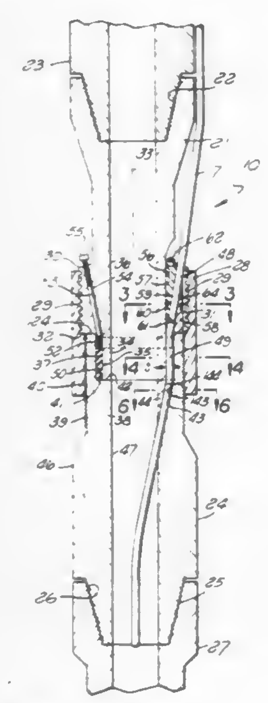
4,367,797
CABLE TRANSFER SUB FOR DRILL PIPE AND METHOD

Robert L. Brown, Buena Park, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,808

Int. Cl.^{3} E21B *47/00*

U.S. Cl. 166—380 **30 Claims**



14. The method that comprises:

connecting to the upper end of a drill string a first tubular member of a transfer sub assembly;

lowering a cable into the string through said first tubular member; and

then connecting a second tubular member of the sub assembly to said first tubular member with said cable extending between opposed portions of said two tubular members from the interior of the first tubular member to the exterior of the second tubular member for extension to the surface of the earth at the outside of the drill string.

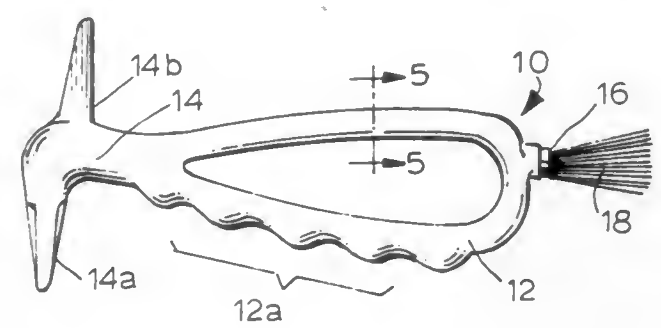
4,367,798
HORSE HOOF CLEANING TOOL

Linda M. Sabol, 4270 Potomac Ave., West Palm Beach, Fla. 33406

Continuation of Ser. No. 74,433, Sep. 16, 1979, abandoned. This application May 18, 1981, Ser. No. 264,356

Int. Cl.^{3} A01L *11/00*

U.S. Cl. 168—45 **2 Claims**



1. A combination tool for performing all operations necessary to clean and care for a horse's hoofs including manually picking, scraping, and brushing the horse's hoofs comprising:

an elongated, narrow, generally open-centered rigid body, said body having an upper portion, a lower portion, a first end, a mid portion, and a second end, said body lower portion including undulations for receiving the fingers of a user, said first end including first and second protrusions lying in the plane of the body, and perpendicular to the longitudinal axis of said body said first protrusion being substantially conical in shape tapering toward the protruding end to a rounded point, said first protrusion including first and second flatened portions on opposing sides of said first protrusion, said flatened portions lying and facing in the plane of the body, said second protrusion being substantially trapazoidal in shape, with the outer protruding end being wider than the inner portion, said second protrusion having flatened edge portions on opposing edges of said second protrusion which lay in the plane of the body, said second protrusion having flatened side portions on opposing sides of said second protrusion which are generally perpendicular to the longitudinal axis of said body tapering toward the protruding end to a relatively sharp straight straper edge; and

a brush having a plurality of bristols, said brush being attached to said second end of said body said bristols of said brush extending in a direction in the plane of said body, whereby said tool first protrusion is useful for dislodging clay or mud from the interior of a horse's hoof, said second protrusion can be used for scraping mud and dirt from the outer areas of the horse's hoof, and the brush can be used for cleaning the horse's hoof.

4,367,799
APPARATUS FOR CONTINUOUS DISCHARGE OF MATERIAL AT LOCALIZED DAMAGE POINT

William B. Tarpley, Jr., West Chester, Pa., assignor to Energy & Minerals Research Co., Exton, Pa.

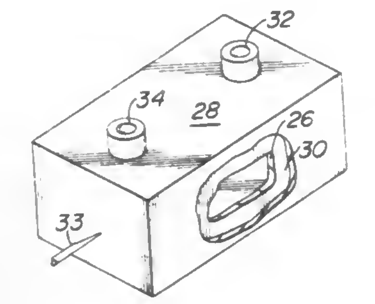
Division of Ser. No. 945,969, Sep. 26, 1978, Pat. No. 4,274,491. This application Feb. 2, 1981, Ser. No. 230,220

The portion of the term of this patent subsequent to Jun. 23, 1982, has been disclaimed.

Int. Cl.^{3} A62C *35/10*

U.S. Cl. 169—46 **19 Claims**

1. A dispenser in combination with chamber means, said dispenser comprising means defining a confined space associated with said chamber means and containing a pressurized thixotropically gelled material, comprising a thixotropically gelled suspension of fire suppressant powder in liquefied gas, said means defining said confined space being constructed of a



substance selected from the group consisting of readily breakable and meltable substances so as to allow discharge of said material when said substance is broken or melted.

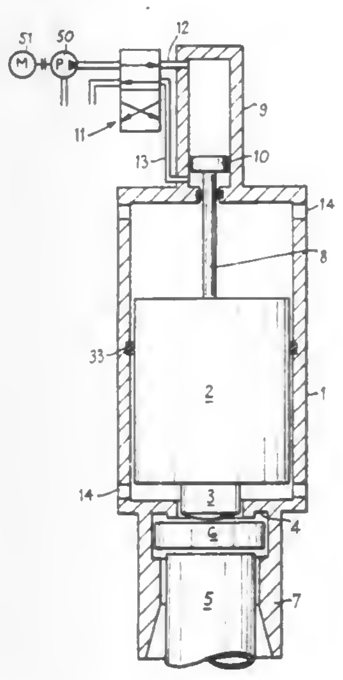
4,367,800
SUBSEA PILE DRIVER

Dirk Arentsen, Leiderdorp, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Feb. 26, 1980, Ser. No. 124,701

Int. Cl.^{3} E02D *7/02, 7/06*

U.S. Cl. 173—127 **8 Claims**



1. Underwater pile driving apparatus comprising a housing having means defining an opening in its bottom end, a motor driven pump producing a pressurized driving liquid, and a hammer movable upwards and downwards in said housing and which is driven in at least the upward direction by said pressurized driving liquid and is arranged to deliver, through said opening, an impact to a pile to be driven, said housing in which the hammer moves being filled, during operation, with the driving liquid which is present both above and below the hammer, the housing enclosing the liquid in which the hammer moves, the pump being in communication with the liquid in the housing through a closed circuit system, and pressure and volume compensating means being provided between the liquid in the housing and the ambient water. whereby the liquid in the housing is maintained substantially at the pressure of the ambient water in which the apparatus is submerged.

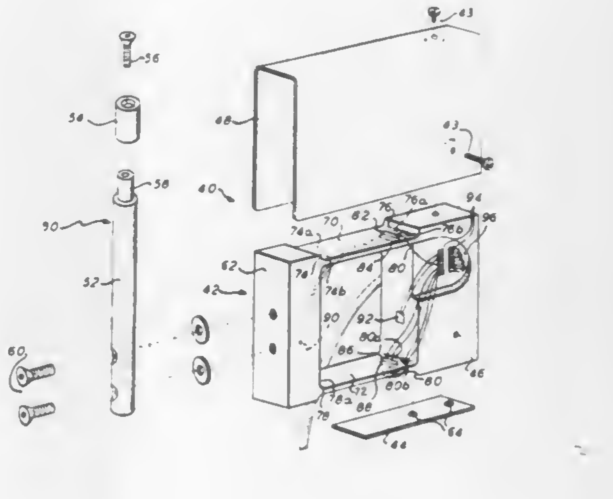
4,367,801
LOAD CELL FOR USE WITH ELECTRONIC COUNTING AND WEIGHING SCALES

James S. Bryan, Harrisburg, Pa., assignor to Pennsylvania Scale Company, Leola, Pa.

Continuation of Ser. No. 949,204, Oct. 6, 1978, abandoned. This application Apr. 22, 1981, Ser. No. 256,551

Int. Cl.^{3} G01G *3/14*

U.S. Cl. 177—211 **8 Claims**



1. A weighing scale comprising:

(a) a weighing platform;

(b) a parallelogram shaped frame having a first vertical member connected to support said frame a second vertical member connected to said weighing platform for receiving vertically directed forces to be measured, and first and second horizontal flexure members extending between the upper and lower ends of said first and second vertical members and to define said parallelogram, said horizontal flexure members having corner flexure region adjacent the junction thereof with each of said first and second vertical legs;

(c) a first pair of strain gauges mounted directly one above the other at one corner flexure region of one of said horizontal flexure members with one of said strain gauges mounted on an upper surface and the other on a lower surface of the flexure member;

(d) a second pair of strain gauges mounted directly one above the other at a corner flexure region of the other horizontal flexure region directly below the first pair of strain gauges in vertical alignment therewith, said second pair of strain gauges being mounted one on the upper surface and the other on the lower surface of the second flexure member;

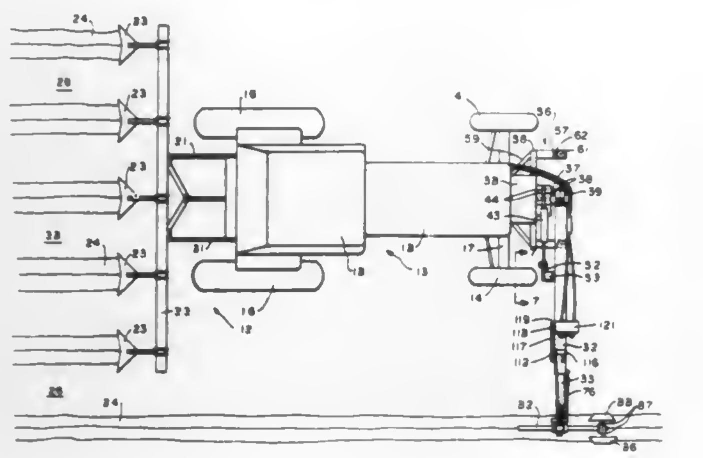
(e) the ends of the horizontal flexure members, remote from the corner flexure regions having the strain gauges thereat, being free of strain gauges whereby the free ends of the horizontal flexure members may be adjusted by machining and the like to compensate for symmetry errors arising during fabrication and assembly of the parallelogram shaped frame; and

(f) means to connect each of said strain gauges into arms of a Wheatstone bridge whereby second order bending moments produced at the corner flexure regions by a "longitudinal off-set loading" and varying as a square of the applied load are cancelled.

4,367,802

AUTOMATIC STEERING MECHANISM FOR USE ON APPARATUS FORMING BEDS OF UNIFORM WIDTHS AND ROWS OF UNIFORM SPACING

Alonzo B. Stiff, and Gilbert L. Harris, both of Brawley, Calif., assignors to Russell Eugene Jordan, Brawley, Calif.
Continuation of Ser. No. 88,412, Oct. 26, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 237,870
Int. Cl.^{3} B62D *5/06*
U.S. Cl. 180—131 **31 Claims**



16. In an automatic steering mechanism for use on apparatus for forming beds of uniform widths and rows of uniform spacing, the apparatus being of a type comprising a self-propelled vehicle having a steering apparatus for steering the vehicle, and a ground engaging implement carried by the vehicle for forming an indentation in the ground, the steering mechanism comprising a framework structure adapted to be secured to the front end of the vehicle, a boom structure, means for mounting the boom structure on the framework for pivotal movement about a horizontal axis parallel to the longitudinal axis of the vehicle, an arm, means pivotally mounting the arm intermediate its ends on the outer extremity of the boom structure for rotation about a horizontal axis substantially parallel to the first named horizontal axis, indentation following means carried by each end of the arm, means secured to said arm for dampening the motion of said arm, stops carried by said boom structure for limiting the pivotal movement of said arm, said indentation following means being capable of following an indentation in the ground made by the ground engaging implement in a previous pass through the field, a source of hydraulic fluid under pressure, a steering valve connected to the source of hydraulic fluid, a control linkage connecting said arm to said control valve and means adapted to connect said control valve to said steering apparatus whereby when said indentation following means causes operation of the steering valve hydraulic fluid will be supplied to the steering apparatus to automatically steer the vehicle in accordance with movement of the indentation following means.

4,367,803

STEERING SYSTEM

Richard A. Wittren, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Mar. 16, 1981, Ser. No. 244,394
Int. Cl.^{3} B62D *5/10;* **F15B** *9/02*
U.S. Cl. 180—153 **10 Claims**

1. A steering system comprising:

(a) first and second steering cylinders each having a piston with a piston rod extending through one end thereof and each cylinder having a head chamber and first and second feedback chambers;

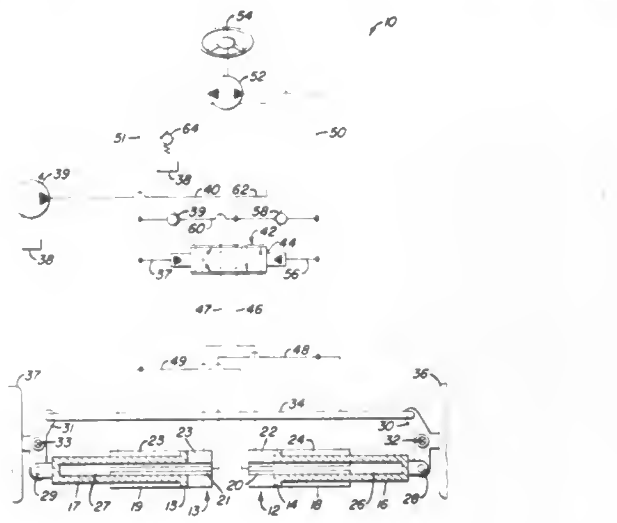
(b) link means for connecting said first and second cylinders to a pair of steerable wheels so that said cylinders can operate simultaneously;

(c) a fluid reservoir;

(d) a supply pump connected to said reservoir for supplying pressurized fluid to said head chambers of said cylinders;

(e) a plurality of passage means, a first for fluidly connecting said first feedback chamber of said first cylinder to said second feedback chamber of said second cylinder, a second for fluidly connecting said second feedback chamber of said first cylinder to said first feedback chamber of said second cylinder, and a third for fluidly connecting together said first and second passage means;

(f) valve means for selectively controlling the flow of said pressurized fluid from said supply pump to said head chambers of said steering cylinders, said valve means connected across said third passage means and actuatable by pressure differences in said third passage means;



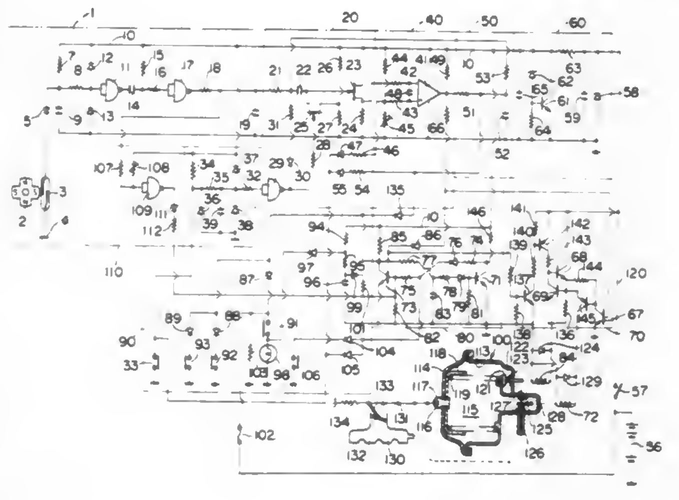
(g) a metering pump connected across said third passage means for facilitating movement of said fluid between said feedback chambers of said first and second cylinders and thereby causing a pressure difference across said third passage means; and

(h) a manually operable steering element connected to said metering pump for controlling the steering of said wheels.

4,367,804

VEHICLE CONSTANT SPEED DRIVING APPARATUS

Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan
Filed Oct. 1, 1980, Ser. No. 192,873
Claims priority, application Japan, Oct. 3, 1979, 54-127471
Int. Cl.^{3} B60K *31/00*
U.S. Cl. 180—176 **2 Claims**

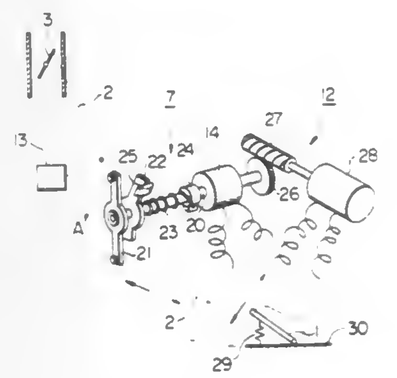


1. A vehicle constant speed driving apparatus comprising:
means for providing a vehicle actual speed signal;
means for providing a vehicle target speed signal;
means for comparing said vehicle actual speed signal and said vehicle target speed signal and for generating a throttle valve control signal representing the difference between said compared signals;
a vacuum actuator including a vacuum chamber for controlling a throttle valve, a normally-closed releasing valve for coupling, when open, said vacuum chamber to the ambient atmosphere, a releasing valve solenoid for selectively opening said releasing valve, a modulator valve for coupling, when open, said vacuum chamber to the ambient atmosphere and for coupling, when closed, said vacuum chamber to a pressure source, and a modulator valve solenoid disposed in substantially the same thermal condition as the releasing valve solenoid for selectively opening and closing said modulator valve; and
a current control circuit responsive to said throttle valve control signal for selectively supplying a constant current to said releasing valve solenoid and a voltage varied by said constant current to said modulator valve solenoid to compensate for the effects of changes in the temperature of said releasing valve solenoid and said modulator valve solenoid and to control the pressure in said vacuum chamber thereby controlling the opening of said throttle valve to minimize the difference between said vehicle actual speed signal and said vehicle target speed signal.

4,367,805

GOVERNING CONTROL APPARATUS FOR AUTOMOBILES

Shinzo Totani, Nagoya; Takaaki Kato, Toyohashi; Yoshikazu Mizuno, Aichi, and Munetaka Noda, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Nov. 3, 1980, Ser. No. 203,147
Claims priority, application Japan, Nov. 26, 1979, 54-152639
Int. Cl.^{3} B60K *31/00*
U.S. Cl. 180—179 **5 Claims**

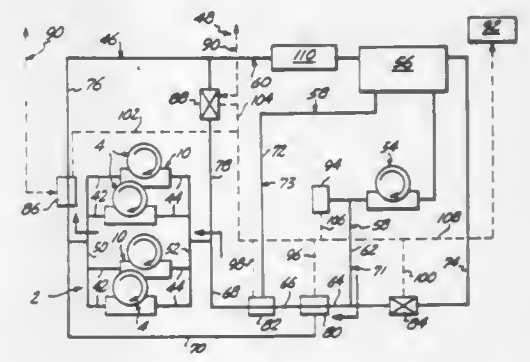


1. A governing control apparatus for an automotive vehicle comprising:
vehicle speed adjusting means for controlling the speed of an engine of said vehicle so as to control the running speed of said vehicle;
actuating means adapted for control by a vehicle operator for operating said speed adjusting means;
vehicle speed sensing means for sensing the actual running speed of said vehicle;
setting means for setting a desired running speed of said vehicle; and
load adjusting means responsive to said vehicle speed sensing means and to said setting means for applying to said actuating means a counter-force which opposes and limits movement of said actuating means in a direction to accelerate said vehicle when said running speed sensed by said sensing means reaches said desired running speed, wherein said load adjusting means comprises:
a drive shaft;
an intermediate first movable member rotatably mounted on said drive shaft for transmitting a movement of said actuating means to said speed adjusting means;
a second movable member rotatably mounted on said drive shaft and disposed to come into and out of engagement with said first movable member for limiting a range of movement of said first movable member in the direction to accelerate said vehicle;
control means responsive to said actuating means, said vehicle speed sensing means and said setting means for moving said second movable member to variably control the movement limiting position thereof so that the running speed of said vehicle is adjusted to said desired running speed,
electromagnetic clutch means for transmitting a drive output of said control means to said second movable member by way of said drive shaft; and
spring means mounted on said drive shaft for applying a limiting force opposing the rotary movement of said second movable member adapted to be engaged with and rotated by said first movable member.

4,367,806

COMBINED DRIVE AND BRAKE MECHANISM FOR A WHEELED VEHICLE CARRIAGE

Amos H. Ramquist, 13722 NE. 70th Pl., Redmond, Wash. 98052
Filed Oct. 8, 1980, Ser. No. 195,316
Int. Cl.^{3} B60K *17/14*
U.S. Cl. 180—308 **15 Claims**



1. In combination, a wheeled vehicle carriage and a combined drive and brake mechanism for the same comprising a hydraulic circuit having a power driven pump, a reservoir for hydraulic fluid, and a motor for each wheel or two or more coaxial wheels of the carriage, the motor having a movable driven member therein and ports for the infeed and outfeed of fluid therethrough, and there being connecting means between the pump, the reservoir and the ports whereby the fluid can be circulated through the motor to drive the driven member thereof, a connection between the driven member of the motor and the corresponding wheel or wheels whereby the motion of one is directly transmitted to the other and vice versa, depending on which is being driven at faster speed, means in the hydraulic circuit for varying the speed of the driven member, and means whereby the vehicle operator can control the speed varying means to adjust the rotational speed of the respective wheel or wheels of the carriage in relation to the speed of the vehicle, the connecting means including means whereby the hydraulic circuit can be programmed to assume (1) a mode of operation in which the pump output is fed to the motor to drive the driven member thereof at the relatively faster speed, or (2) a mode of operation in which the motor is connected to the reservoir in suction and the pump output is bypassed to the reservoir independent of the motor, and the control means including means whereby the vehicle operator can cause the circuit programming means to program the circuit to assume the first mentioned mode of operation, and means responsive to a predetermined pressure in the pump output to cause the circuit programming means to program the circuit to assume the second mentioned mode of operation.

4,367,807
SOUND ABSORBER FOR COMPRESSED-AIR OPERATED APPARATUSES, IN PARTICULAR COMPRESSED AIR VIBRATORS

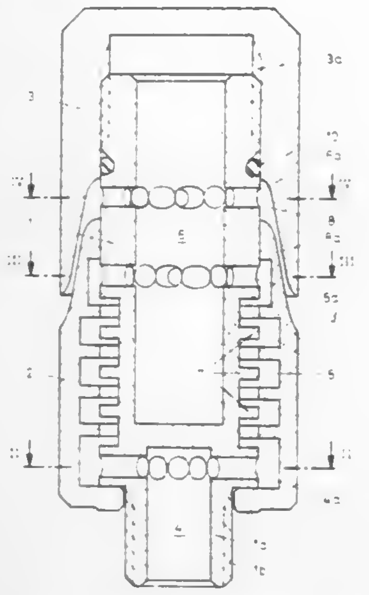
Willy Fink, Giersbergstrasse CH-8479 Waltalingen, Switzerland, and Alex Fehr, Henggart, Switzerland, assignors to Willy Fink, Waltalingen, Switzerland

Filed May 29, 1981, Ser. No. 268,487

Claims priority, application Switzerland, May 30, 1980, 4245/80

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—230 **3 Claims**



1. A sound absorber for compressed air-operated apparatuses, comprising a body having an inlet connector, connectable to an outlet aperture of the air-operated apparatus, and further comprising a plurality of sequentially arranged relief chambers for the compressed air, said inlet connector being coupled to a first chamber (4) having first through-bores (4*a*) extending therefrom to a second chamber (5), which includes an elongate, annular hollow chamber having an outer wall and contains therein labyrinth-like baffles (7), said second chamber (5) further being connected by second through-bores (5*a*) to a third chamber (6) which includes third through-bores (6*a*) extending to an annular outlet slit (8*a*), and said outlet slit having an adjustable cross-section.

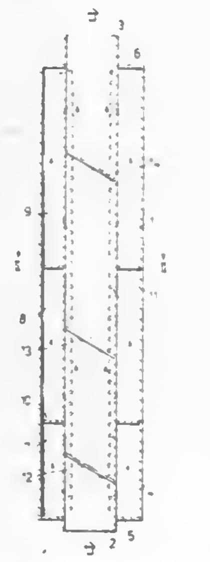
4,367,808
SILENCER

Olov T. Öberg, 21 Strutsgatan, S-961 00 Boden, Sweden

Filed Jul. 6, 1981, Ser. No. 280,806

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—272 **2 Claims**



1. A silencer for exhaust gases from combustion engines, comprising a pipe (1) which is perforated along the wall thereof and provided with an inlet (2) and an outlet (3), and in the interior of which there are arranged fixed intermediate walls (12,13,14) which connect with the inner surface of said pipe, and which pipe (1) is surrounded by a gas-impermeable shell (4,5,6) which forms a space between itself and said pipe, said space being divided into a plurality of damping chambers (7,8,9), by partitions (10,11) abutting the shell and the pipe, said partitions being located between the intermediate walls, permitting exhaust gases to flow out of the pipe in front of an intermediate wall and into an adjacent damping chamber and from there back into the pipe behind said intermediate wall, characterized in that each intermediate wall (12,13,14) is provided with a plurality of through-flow openings (e.g. 15,16) so as to create a flow of exhaust gas in the axial direction of the perforated pipe which meets the flow of incoming gas in front of said intermediate wall.

4,367,809
APPARATUS FOR CONVEYING RUBBLE

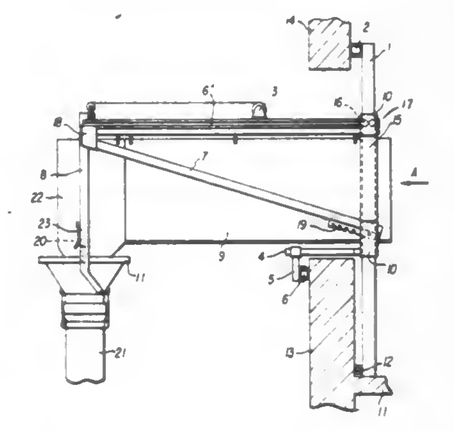
Reinhard Eikelmann, Buchengrund 10, 4955 Hille 1, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,987

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936594

Int. Cl.³ B65G *11/00;* **E04F** *17/12*

U.S. Cl. 182—48 **4 Claims**



1. An apparatus for conveying rubble comprising
a pair of spaced upright supports;
an upper cross-piece detachably connected to said supports;
a pair of tensioning arms, each said arm extending outwardly of a respective support;
a pair of downwardly-directed support legs, each said leg being movably mounted on a respective tensioning arm;
a second cross-piece detachably connected to said support legs;
a pair of cantilevers extending outwardly from said supports, each cantilever being detachably connected to a respective support;
a suspension device for supporting a rubble chute connected to said cantilevers;
pulling devices mounted on said cantilevers for raising and lowering said suspension device; and
a foldable tray suspended from said cantilevers to define a walkway.

4,367,810
ELEVATOR CAR AND DOOR MOTION INTERLOCKS

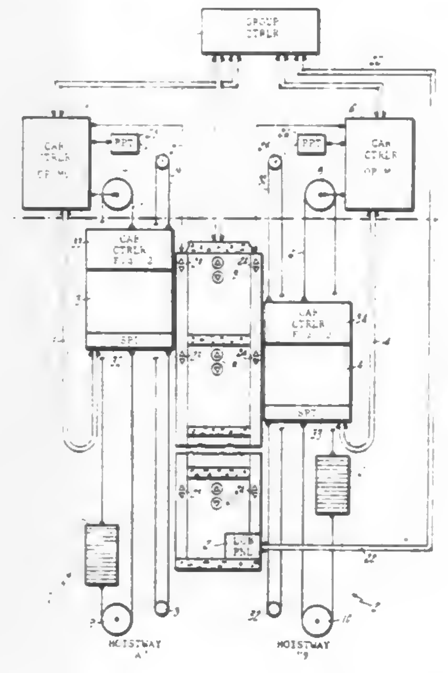
John C. Doane, Glastonbury, Conn.; J. Mark Deric, Johnson City, Tenn., and Gary K. Roberts, Enfield, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 27, 1979, Ser. No. 107,691

Int. Cl.³ B66B *5/02*

U.S. Cl. 187—29 R **4 Claims**

1. An elevator for servicing a plurality of floor landings, served by doors, adjacent an elevator hoistway in a building, comprising:
hall call means for registering requests for up or down service at each of said landings;
a car movably disposed in said hoistway;
car motion means for providing and arresting the motion of said car;
car controller means for providing signals indicative of conditions of said car, of said car motion means and of the hoistway doors, for exchanging signals with said car, for controlling said car motion means to cause said car to move in a selected up or down direction in said hoistway and to stop in response to said signals indicative of conditions of said car and of said car motion means and to signals received from said car and said hall call means;
said car including a door for providing access to and from said car, a door motion means for opening and closing said door, switch means for registering calls for service by passengers in said car, and a cab controller means for providing cab signals indicative of calls for service registered by said switch means and safety-related functions including the position of said car relative to an adjacent floor landing and the open or closed status of said door, for exchanging signals including said cab signals with said car controller, and for controlling said door motion means in response to said cab signals and in response to signals received from said car controller; characterized by
said car controller including car motion inhibit means operative in either of two states for enabling said car motion means to move said car when in a first one of said states and for forcing said car motion means to arrest the motion of said car when in the second one of said states;
said car including door inhibit means operative in either of two states for enabling said cab controller to control said door motion means to move said door when in a first one of said states and for forcing said door motion means to be unresponsive to said cab controller when in the second one of said states;
said cab controller means comprising signal processing means for providing a car motion inhibit signal in response to said cab signals indicative of said safety-related functions indicating an unsafe condition of said car, and for setting said car motion inhibit means into said second state in response to said car motion inhibit signal; and
said car controller means comprising signal processing means for providing, in response to said signals indicative of conditions, an inhibit door signal indicative of one of said hoistway doors being open concurrently with said car not being within a permissible distance of any of said door landings or concurrently with said car having a velocity in excess of a permissible velocity, and for setting said door inhibit means into said second state in response to said inhibit door signal.



4,367,811
ELEVATOR CONTROL SYSTEM

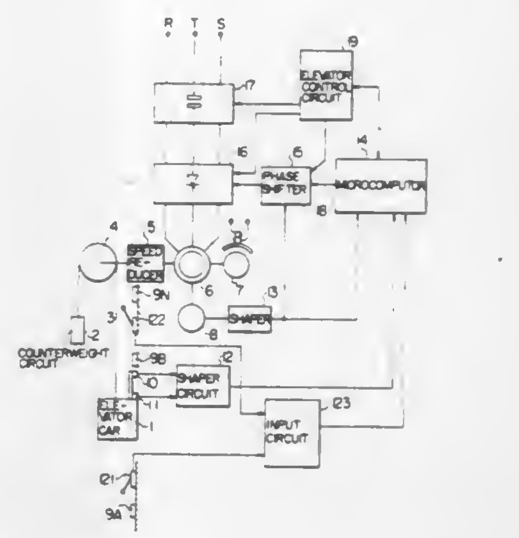
Kenji Yoneda; Kazuhiro Sakata; Takeo Yuminaka; Masao Nakazato; Tomiaki Kurihara; Soshiro Kuzunuki, all of Katsuta, and Yasunori Katayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,608

Claims priority, application Japan, Feb. 22, 1980, 55-20442

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **9 Claims**



1. An elevator control system comprising:
an elevator car moving in a hatchway in a building structure with a plurality of floors;
means for providing distance pulses in proportion to the distance travelled by the car;
means for detecting the landing of the car at each floor;
means for memorizing floor height data indicative of the distance of the landing position at each floor from a reference point in the hatchway, said memorizing means being capable of renewing memorized data;
means for counting said distance pulses;
means for controlling the elevator traffic at least according to a car position obtained from said counting means and the memorized floor height data stored in said memorizing means;
means for generating a floor height measurement run request signal;
means for setting said counting means under the control of said floor height measurement drive request signal to drive the car in the up or down direction from a predetermined position relative to the hatchway; and
means for loading the count of said counting means into said renewable data memory means under the control of said landing detecting means.

4,367,812
CONTROL APPARATUS FOR TORQUE CONVERTER DIRECT COUPLING CLUTCH IN AUTOMATIC TRANSMISSIONS

Kouzi Kobayashi, Toyota, and Keizo Kobayashi, Anjo, both of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

Filed Aug. 18, 1980, Ser. No. 178,766

Claims priority, application Japan, Aug. 18, 1979, 54-105143

Int. Cl.³ B60K *41/22;* **F16D** *33/00*

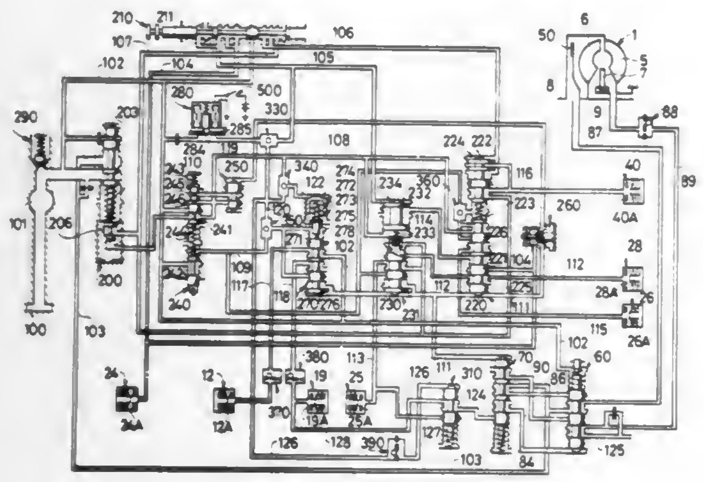
U.S. Cl. 192—3.3 **9 Claims**

1. A control apparatus for torque converter direct coupling clutch for the automatic transmission of the type including a torque converter to which a direct coupling clutch is disconnectably to be direct-coupled and a gear transmission having a

plurality of friction engaging elements for providing a plurality of shift ranges comprising;

(a) maximum speed shift range selector means for selectively providing any desired maximum speed shift range according to the vehicle driver,

(b) switch valve means for switching over between a connection from a hydraulic power source to a hydraulic line for engaging the direct coupling clutch and a connection from the hydraulic power source to a hydraulic line for releasing the direct coupling clutch; and



(c) lockup valve means for providing a hydraulic pressure output which enables the switch valve means to connect between the hydraulic power source and the hydraulic line for engaging the direct coupling clutch, the lockup valve means being adapted only to provide its output in each of the maximum speed shift ranges selected by the vehicle driver.

4,367,813

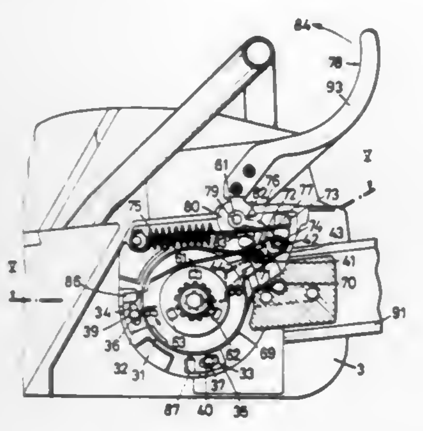
MECHANISM TO CONTROL POWER CHAIN SAW CLUTCH OPERATION

Dieter Wieland, Neckarrems, and Walter Merz, Auenwald, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Continuation of Ser. No. 776,750, Mar. 11, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,976

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—17 R **14 Claims**



1. A power saw, especially power chain saw, which includes in combination: motor means having a drive shaft, a sprocket wheel, an intermediate clutch including clutch elements interposed between and drivingly connected to said motor means and said sprocket wheel, and movable selectively from a disengaged position to an engaged position and vice versa, a housing enclosing said intermediate clutch, a control member operatively connected to said intermediate clutch and operable to selectively shift said intermediate clutch from engaged position to disengaged position and vice versa, actuating means operatively connected to said control member for selectively moving the latter from a first position in which it holds said intermediate clutch in engaged position to a second position in which said control member is held in disengaged position, a follower member movable from an effective position in which said motor means having said drive shaft is operatively connected with said sprocket wheel to an ineffective position and vice versa for respectively connecting and disconnecting said clutch elements connected to said intermediate clutch and comprising a centrifugal clutch portion having a centrifugal weight carrier and a clutch drum, a brake member operatively connected to said clutch drum, said brake member comprising a brake band looped around said clutch drum, holding means movably mounted on said housing, a said control member and said brake band having one end mounted in common on said holding means, spring means continuously urging holding means into ineffective position for disengagement of said brake band and for disengagement of said control member, means associated with said actuating means for holding said control member and said brake band in disengaged position against the thrust of said spring means, said holding means alone being effective upon said control member and said brake band in a shock-like manner relative to said clutch drum in a minimum time without delay to assure operator safety, said holding means comprising at least one extension extending in about the axial direction of said intermediate clutch and said centrifugal clutch portion, said control member and said one end of said brake band being mounted on said extensions, and a supporting member connected to said drive shaft for rotation therewith, said follower member being supported by said supporting member in axial direction of said motor shaft, said supporting member having that side thereof which faces away from said follower member in engagement with said centrifugal clutch portion, the extensions of said centrifugal clutch portion being in conformity with the speed of said motor shaft, said follower member for engagement and disengagement being shiftable by said control member directly in axial direction, said follower member doing axial shifting thereof being positively guided upon the centrifugal weight carrier of said centrifugal clutch portion.

4,367,814

SAFETY LIFT AND TIE-DOWN APPARATUS FOR PORTABLE ELEVATORS AND THE LIKE

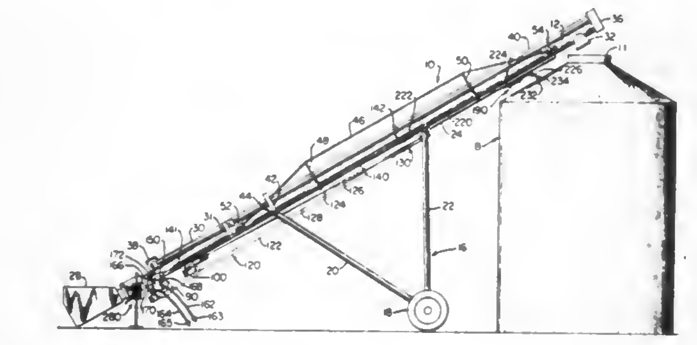
Wendell M. Young, Berlin, N. Dak. 58415

Continuation-in-part of Ser. No. 817,156, Jul. 20, 1978, Pat. No. 4,206,839. This application May 27, 1980, Ser. No. 153,603

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ B65G *43/00*

U.S. Cl. 198—301 **9 Claims**



1. In elevator apparatus having elongated conveyor means for conveying material, the improvement comprising:

powered lift means for raising one end of said conveyor means, and tie-down limit stop means on said conveyor for simultaneously attaching said conveyor means to an anchor to prohibit the conveyor means from being moved more than a predetermined distance away from the anchor and prohibiting said powered lift means from operating to apply a lifting force to raise said one end of said conveyor means beyond the range allowed by the anchor.

4,367,815

APPARATUS FOR STACKING NOTE BOOKS OR THE LIKE

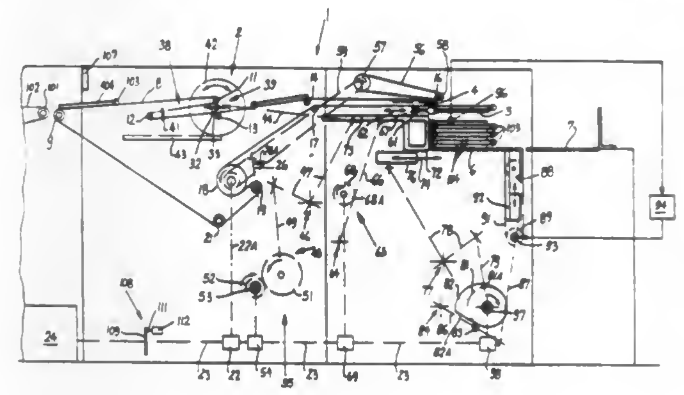
Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Division of Ser. No. 959,831, Nov. 13, 1978, Pat. No. 4,268,200. This application Oct. 16, 1980, Ser. No. 197,675

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752372

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—374 **7 Claims**



1. In an apparatus for manipulating substantially flat commodities, such as note books or pads, the combination of means for transporting a succession of commodites in identical orientation in a predetermined direction and along a predetermined path; orientation changing means adjacent said path and actuatable to change the orientation of selected commodities in said path, said orientation changing means including a pocket having an opening and being movable between a first position in which said opening is located in the path of an oncoming commodity and a second position in which said opening allows the commodity to leave said pocket by moving in said direction; and means for actuating said orientation changing means including means for pivoting said pocket about an axis which is substantially normal to said direction and means for moving said pocket and said axis in said direction during movement of said pocket from the first to the second position and counter to said direction during movement of said pocket from the second to the first position.

4,367,816

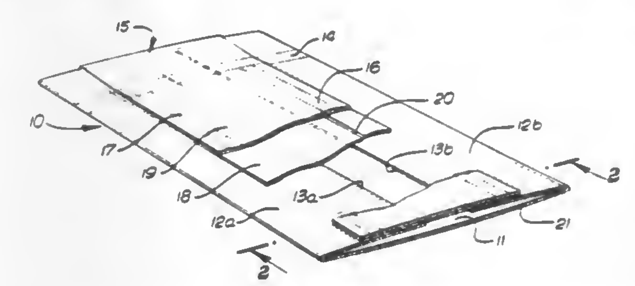
TEAR STRIP FOR GAS STERILIZABLE PACKAGE AND PACKAGE

Kenneth R. Wilkes, 1410 E. 15th St., Los Angeles, Calif. 90021

Filed Jun. 10, 1981, Ser. No. 272,186

Int. Cl.³ B65B *61/18;* B65D *65/40, 75/30*

U.S. Cl. 206—439 **24 Claims**



1. A tear strip for a gas sterilizable package of the type comprising a plastic bag having an access opening and a gas permeable tear strip peelably sealed to said bag around said access opening which comprises:

a. a plastic sheet having a perforated area; and

b. a gas permeable sheet sealed to said plastic sheet with a plurality of line seals enclosing said perforated area.

4,367,817

COLOR DISCRIMINATING MACHINE

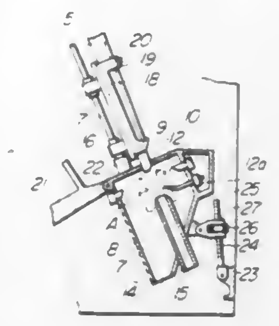
Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,749

Claims priority, application Japan, Feb. 22, 1980, 55-22065

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—580 **3 Claims**



1. The combination comprising:

a color discriminating machine comprising means for supplying granular materials having incorporated therein granular materials of colors different from that of the granular material of interest, means for feeding granular materials supplied to the machine, an inclined downward-flow trough located on the outlet end of said granular material feeding means, and a photoelectric discriminating chamber connected to the lower end of said downward-flow trough, said photoelectric discriminating chamber having mounted therein a photoelectric sensing device directing a light beam against a flux of granular materials flowing straight from the downward-flow trough into the photoelectric discriminating chamber and detecting a light beam reflected or transmitted by the granular materials of different colors, and air injection nozzle means electrically connected through a control circuit to said photoelectric sensing device so as to be actuated by an output of said photoelectric sensing device for separating the granular materials of different colors from the flux of granular materials; and

a downward-flow trough angle adjusting device comprising downward-flow trough mounting means secured to the photoelectric discriminating chamber for detachably mounting said downward-flow trough, and angle adjusting means connected to said photo electric discriminating chamber for adjusting the angle of inclination of said downward-flow trough.

4,367,818

FORWARD FEED MERCHANDISING DEVICE FOR SOFT DRINK BOTTLES

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Aug. 18, 1980, Ser. No. 178,933

Int. Cl.³ A47F *7/28*

U.S. Cl. 211—49 D **9 Claims**

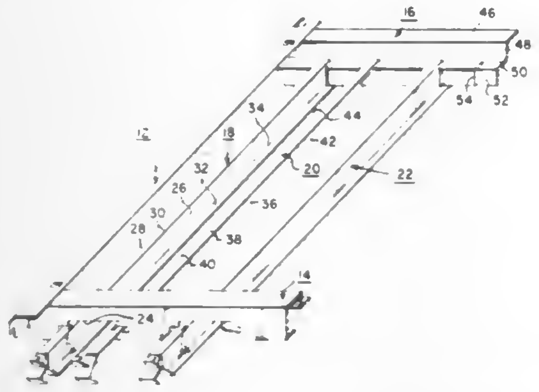
1. A merchandising device for bottles having integrally formed, externally projecting neck rings comprising track means providing a pair of substantially parallel supporting surfaces having opposed edges spaced from each other to form a slot of substantially uniform width adapted to receive the necks of said bottles underneath said neck rings, and means supporting said track means in a fixed position, in which said track means comprises at least one removable, elongated track element providing one of said opposed edges, said supporting means and said track means including means for removably supporting said removable elongated track element in a first position such that said slot has a first width and in a second position such that said slot has a second and different width, whereby bottles having different neck widths can be accommodated;

said supporting means comprising first and second supporting members spaced from each other in the direction of elongation of said track element;

said track element being in engagement with both of said first and second supporting members and a portion of said track element extending between said first and second support members;

said first supporting member comprising, means engageable by a first portion of said elongated track element, for:

(a) locking said first portion of said track element against rotation beyond a limit in a first direction about an axis parallel to its direction of elongation while permitting rotation in the direction opposite to said first direction; and



(b) locking said first portion of said track element against lateral and longitudinal translation when said element is rotated to its limit in said first direction;

said second supporting member comprising means removably engageable by a second portion of said elongated track element longitudinally spaced from said first portion, for preventing lateral translation thereof and for preventing rotation thereof relative to said means removably engageable by said elongated track element; and

having resilient means for resisting rotation of said first portion of said track element in said opposite direction.

4,367,819

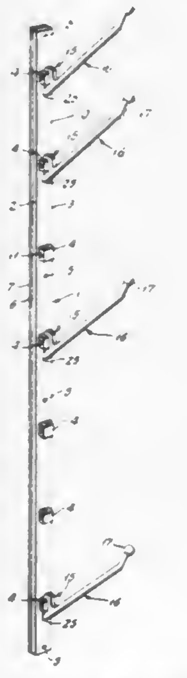
DISPLAY RACK

Lawrence A. Lewis, Englewood, N.J., assignor to Clip Strip Corporation, South Hackensack, N.J.

Filed Jul. 30, 1980, Ser. No. 173,817

Int. Cl.^{3} A47F *5/08*

U.S. Cl. 211—59.1 **9 Claims**



1. A display rack comprising a relatively long and narrow support member with a back face for for facing a support, a front face and lateral side edges, said support member having at least one projection extending from said front face, said projection having an outer surface extending around a line which extends transversely to said front face and having a first plurality of hook receiving openings in said surface which face in a direction transverse to said line and said openings being spaced apart in a direction peripherally of said line, said projection also having a second plurality of openings therein, each of said second plurality of openings being respectively on the opposite side of said line from one of said first plurality of openings, and a relatively long and narrow hook having a free end for receiving an article to be displayed and an opposite end for engaging said projection, said opposite end having an arm extending transversely to the length of said hook which is J-shaped and thereby has a longer leg joined to a shorter leg by an intermediate leg, said shorter leg having a free end and said free end of said shorter leg being detachably receivable in any one of said openings, whereby said support member may be mounted with the length thereof oriented in either of two directions transverse to each other and said arm of said free end of said shorter leg may be inserted into an opening selected to cause said arm to be substantially parallel to the length of said support member when the length of the latter is oriented in one of said two directions and into another opening selected to cause said arm to be substantially perpendicular to the length of said support member when the length of the latter is oriented in the other of said two directions, said hook also comprising a further arm extending therefrom in opposition to the shorter leg of said first-mentioned arm, whereby when the free end of said shorter leg of said first-mentioned arm is received in one of the first plurality of openings the further arm is received in the opposite one of said second plurality of openings.

4,367,820

SATURATED POLYESTER RESIN BOTTLE AND STAND

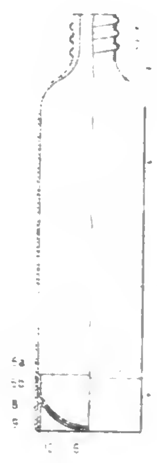
Yataro Yoshino, Tokyo; Takami Tsukada, Funabashi; Tadao Saito, and Takamitsu Nozawa, both of Tokyo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

PCT No. PCT/JP79/00162, § 371 Date Mar. 3, 1980, § 102(e) Date Mar. 3, 1980, PCT Pub. No. WO81/00009, PCT Pub. Date Jan. 8, 1981

PCT Filed Jun. 22, 1979, Ser. No. 251,530

Int. Cl.^{3} B65D *23/00*

U.S. Cl. 215—12 R **3 Claims**



1. In combination: a saturated polyester resin bottle including a mouth, a generally cylindrical drum portion, a reduced diameter portion at the lower end of said drum portion, and generally downwardly bulged bottom wall; and a bottle stand having an outer circumferential wall for close concentric reception over said reduced diameter portion of said bottle, said outer circumferential wall being a cylindrical smooth wall of the same diameter as the drum portion of the bottle, an inner circumferential wall combining with said outer wall to define a flat supporting base and extending upwardly therefrom generally concentrically with respect to said outer wall so that the inner wall touches the inner surface of the outer wall adjacent the lower end portion of the drum portion, and a center portion formed integrally with said inner wall for supporting the bottom wall of said bottle.

4,367,821

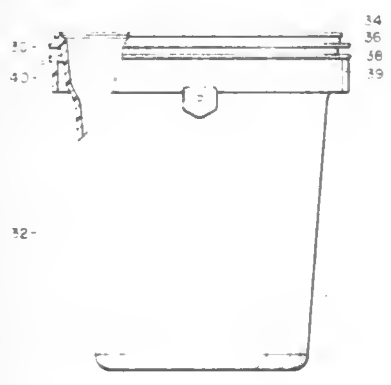
PAINT PAIL WITH DEPENDING SKIRT FOR LABEL ATTACHMENT

William G. Holt, Raynham, Mass., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 12, 1980, Ser. No. 186,875

Int. Cl.^{3} B65D *1/12*

U.S. Cl. 220—72 **6 Claims**



1. A container comprising:

an injection molded annular mouth portion having detail of high definition,

a generally cylindrical body portion blow molded from a parison injection molded integrally with the mouth portion, said body portion having a closed bottom and an inside diameter slightly larger than the inside diameter of the mouth portion, and

an annular reinforcing region joining the mouth portion to the body portion and forming a transitional surface therebetween,

in which the detail of high definition provided in the mouth portion includes as an outside wall over said reinforcing region an annular depending skirt which is integrally injection molded as a feature of the mouth portion.

4,367,822

AIRTIGHT RECEPTACLE LOCK FOR EMERGENCY RESPIRATORS

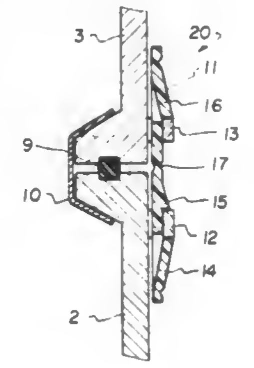
Adalbert Pasternack, Bad Schwartau, and Claus-Dieter Hinz, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,542

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032416

Int. Cl.^{3} B65D *55/02, 55/06*

U.S. Cl. 220—265 **4 Claims**



1. In a gas tight receptacle, particularly for an emergency respirator, which includes a bottom part, a cover part, a seal between the bottom and cover parts and closure means holding the parts together, a safety lock comprising:

an eyelet connected in the cover part;

an eyelet connected in the bottom part; and

a locking member having a first elastic tongue and stop engaged with one of the eyelets for holding the locking member fixed with respect to the one eyelet, a second elastic tongue engaged with the other eyelet for holding the locking member fixed with respect to the second eyelet in at least one direction, the locking member having a weakened area adapted to be broken for removal of the cover part from the bottom part.

4,367,823

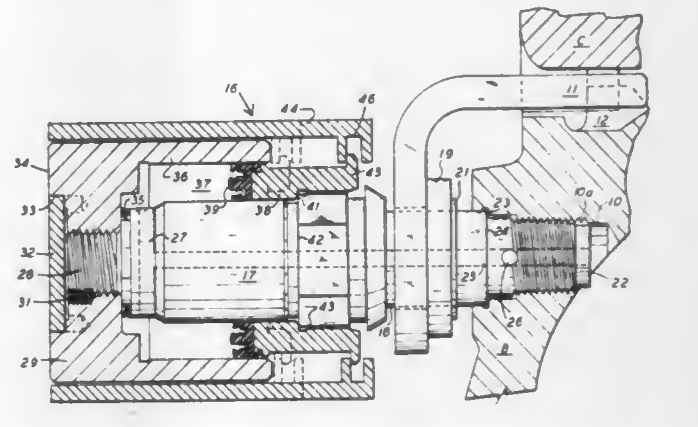
LOCKING DEVICE FOR CONNECTORS AND CLOSURES

Clarence L. Raver, Houston, Tex., assignor to Thornhill-Craver Company, Houston, Tex.

Filed Oct. 8, 1981, Ser. No. 309,714

Int. Cl.^{3} B65D *45/00*

U.S. Cl. 220—316 **10 Claims**



1. A connector comprising,

a pair of members adapted to sealingly engage each other,

means for holding said members in engagement and releasing said members upon rotation of said means,

a threaded port in one of said pair of members,

means including a plug in said port preventing rotation of said holding means,

a wrench surface on the plug,

a pressure responsive member slidable relative to the plug,

passage means in the plug exposing said pressure responsive member to pressure fluid in said port, and

a sheath carried by said pressure responsive member and movable axially therewith,

said pressure responsive member maintaining said sheath over said wrench surface when said port is pressurized,

said sheath movable to a position exposing said wrench surface when the pressure responsive member is not subjected to a pressure differential thereacross.

4,367,824

FLUID RESERVOIR WITH COVER FASTENING MEANS

Kaoru Tsubouchi, and Akira Funahashi, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 13, 1981, Ser. No. 282,590

Claims priority, application Japan, Jul. 16, 1980, 55-100950[U]; May 29, 1981, 56-083347

Int. Cl.^{3} B65D *45/16*

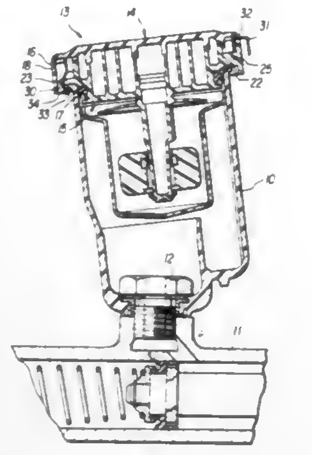
U.S. Cl. 220—326 **9 Claims**

1. A fluid reservoir assembly including a reservoir cap for closing a cylindrical upper opening of said reservoir, said reservoir assembly comprising:

an outward flange formed on an outer periphery of an upper portion of said reservoir;

nail means provided on said reservoir cap and having a tip portion bent radially inwardly;

biasing means biasing said nail means into engagement with said outward flange; and



nail operating means connected to said nail means for moving said nail means by said nail operating means against said biasing means.

4,367,825

PRESSURE-RESISTANT HOUSING HAVING A RECTANGULAR LID

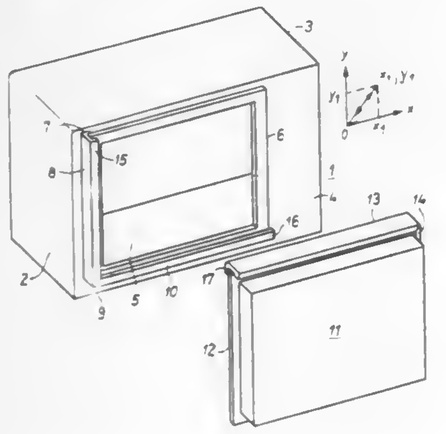
Kurt Pollerspöck, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1981, Ser. No. 303,077

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035835

Int. Cl.^{3} B65D *43/20*

U.S. Cl. 220—346 **10 Claims**



1. A pressure-resistant housing of substantially prismatic configuration having a generaly rectangular opening, and comprising a lid of substantially rectangular shape and means for locking the lid adjacent to the opening to close the opening, said means being operative to generally diagonally move the lid towards the opening and lock the lid to the housing simultaneously at the four sides of the lid.

4,367,826

DISPENSING APPARATUS AND METHOD HAVING ABUTMENT STOP

Robert L. Glaser, Chicago, Ill., assignor to Single Vend, Inc., Chicago, Ill.

Filed Jan. 14, 1981, Ser. No. 225,095

Int. Cl.^{3} B65H *3/22*

U.S. Cl. 221—213 **18 Claims**

1. In a device for dispensing a single article of a stack of generally flat articles through a discharge opening from within an enclosure;

a support frame,

an elevator means mounted in said frame adapted for yieldable vertical reciprocable movement in said frame,

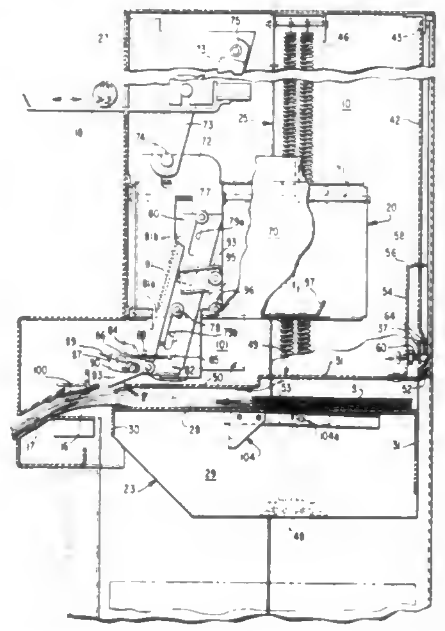
said elevator means having vertically extending lateral wall sections, spaced vertically extending rear wall sections and a substantially horizontal platform section which is adapted to support a plurality of articles in the form of a vertical stack,

a generally horizontally disposed abutment member supported by said frame substantially above the lower end of said frame opposite said discharge opening and extending into the interior of said enclosure,

said abutment member being movably supported on the lower end portion of an elongated panel member pivotally connected at the upper end thereof to said frame and disposed between the inner ends of said spaced rear wall sections of said elevator means,

said abutment member having contact means associated therewith at a point above the lower edge of said rear wall sections adapted to engage said rear wall sections when said abutment member is moved upwardly by the uppermost of said articles in said stack supported on said platform section being yieldably urged into engagement with the lower surface of said abutment member and forming a frictional engagement between said rear wall sections and said panel member which holds said elevator means against further upwardly movement relative to said frame until said uppermost article in said stack is moved out of engagement with said abutment member, and

dispensing means supported within said enclosure for moving at least a portion of said uppermost article in said stack outwardly from the periphery of said stack while said elevator means is prevented being moved upwardly by said frictional engagement.



4,367,827

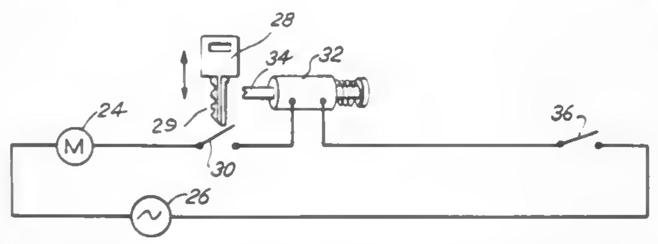
ANTITHEFT MECHANISM FOR GASOLINE PUMP

Gerald H. Keller, Palos Heights; Frank J. Senese, Hickory Hills, and John G. Vlasic, South Holland, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 8, 1980, Ser. No. 214,186

Int. Cl.^{3} B67D *5/10*

U.S. Cl. 222—2 **7 Claims**



1. In a pump apparatus for dispensing gasoline or other fuel, the improvement of security means to inhibit theft of fuel, said means including a remote control switch and also including a key operated relay connected in series with a power supply for the pump apparatus and the pump apparatus, said relay comprising, in combination:

a barrel having a slot for receipt of a key, said slot defining an axis;

a contact switch to be contacted by a key after insertion of that key into the slot;

a key gripping member aligned generally transverse to the axis and translatable in a passage in the barrel into and out of a position of engagement with the key positioned in the slot, said key gripping member comprising bifurcated arms projecting on opposite sides of the axis and slot for engagement with a bit of the key in the slot; and

solenoid means attached to the key gripping member to drive the member into and out of engagement with the key in the slot, said solenoid means in series with the contact switch to effect operation of the solenoid means for movement to engage the key and also in series with said remote control switch for release of the solenoid means upon operation of the remote switch.

4. In a pump apparatus for dispensing gasoline or other fuel, the improvement of security means to inhibit theft of fuel comprising, in combination:

a key operated relay connected in series with a power supply for the fuel pump apparatus and the fuel pump apparatus, said relay including barrel means defining a slot for receiving a key and having an axis, a key gripping member aligned generally transverse to the axis and translatable into and out of a position of engagement with the key comprising separate jaw members,

a contact switch located so as to be contacted by a key after insertion of that key into the slot, and a means for closing and opening the jaw members into engagement with a key in the slot, and

a remote switch means in series with said contact switch for causing said means to open the jaw members from the key.

4,367,828

LIQUID PACKAGING CONTAINER WITH POURING SPOUT AND AIR INLET

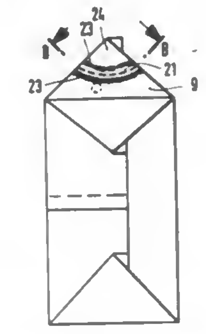
Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Aug. 18, 1980, Ser. No. 179,331

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939093

Int. Cl.^{3} B65D *47/10*

U.S. Cl. 222—528 **10 Claims**



1. A packaging container of cardboard, paper, or the like, for liquids, rendered impermeable by an internal coating of plastic, and having at least on one side, a double-thickness wall portion, the interior of which communicates with the interior of the container, said wall portion being provided with a strip of cardboard which can be gripped with the fingers, characterized in that said wall portion (**8, 9**) includes at least one score line (**20, 21, 22**) penetrating through only one of said double-thicknesses of said wall portion and along which said wall portion is severable upon lifting of said strip of cardboard with the fingers and, closely adjacent thereto, at least one weld-seam (**23**) by means of which said double-thickness is welded together in a fluid-tight manner.

4,367,829

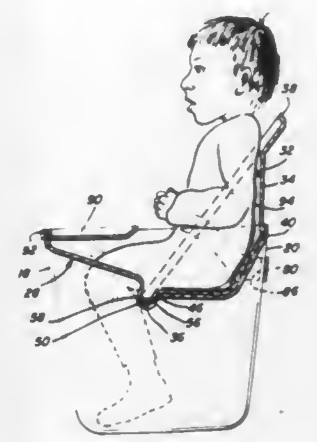
UNIT FOR CARRYING CARGO AND/OR CHILD

John P. Kusz, 5536 N. Monitor, Chicago, Ill. 60630

Filed Jan. 16, 1981, Ser. No. 225,706

Int. Cl.^{3} B62J *1/28, 9/00*

U.S. Cl. 224—31 **26 Claims**



26. A combined child carrier and cargo container for mounting upon a cycle having wheels, comprising:

an open-topped container having a front end and a back end, a pair of downwardly extending side portions positioned on opposite sides of one of the cycle wheels, and a bridge portion disposed between and connecting said side portions and positioned above said cycle wheel,

a top member having a front end and a back end, said top member being movable between a first position in which said top member serves as a cover that overlies said container, and a second position in which said front end of said top member is inserted into said container, said top member in said second position serving as a seat for a child with the child's feet positioned within said downwardly extending side portions of said container.

4,367,830

MUSICAL INSTRUMENT SUPPORT

Douglas Jaquith, deceased, late of Yakima, Wash.; by Hope Jaquith, heiress, 13732 Hillhurst Dr. #24, Laguna Niguel, Calif. 92677; by Kent Jaquith, heir, Zillah, Wash., and by William Jaquith, heir, Laguna Niguel, Calif., assignors to Hope Jaquith, Laguna Niguel, Calif.

Filed Jul. 14, 1981, Ser. No. 283,165

Int. Cl.^{3} A44B *17/00;* **C10D** *3/00*

U.S. Cl. 224—258 **3 Claims**

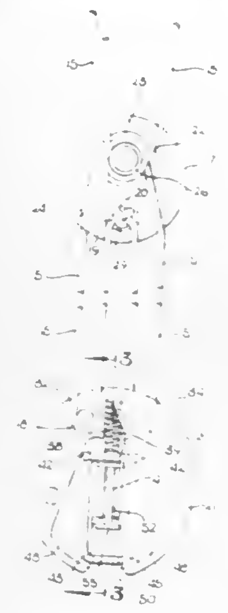
1. In a musical instrument support having a neck engaging loop member adapted to be worn around the neck of a human being, a cord coupled to each of two ends of said neck engaging loop member, and a clasp adapted to engage said cord, said clasp disposed at an end of said support opposite said neck engaging loop member, the improvement comprising:

a slide adapted to slidingly and frictionally engage said cord, said slide disposed intermediate the ends of said support;

said slide comprising a substantially round body portion having a first channel disposed within said slide, adapted to receive said cord coupled to one end of said neck engaging loop, a second channel disposed within said slide, adapted to receive said cord coupled to the other end of said neck engaging loop, an annular loop portion disposed intermediate said first channel and said second channel, and adjacent to each of said channels, a substantially cylindrical sleeve adjacent to and encircling an inner surface of said annular loop portion, a cavity disposed intermediate said first channel and said second channel, said cavity adapted to receive said cord and to retain a portion of said cord;

a clasp adapted to engage said cord, said clasp disposed at an end of said support opposite said neck engaging loop member;

said clasp comprising a body portion having a cutout defined on one end thereof, two retractable jaws, each of said jaws normally extending into said cutout from opposite sides thereof, a spring disposed within said body portion adapted to urge said jaws to extend into said cutout, a plunger disposed within said body portion adapted to compress said spring and urge said jaws to a retracted position when a predetermined pressure is applied to said plunger in a direction opposite said cutout, said plunger having an end which extends into said cutout, which end has a predetermined extent;



whereby the length of said support is adjustable by the action of said slide and a musical instrument may be removably coupled to said clasp by the action of said jaws, said predetermined pressure applied to said plunger at said end of predetermined extent which extends into said cutout, and said spring.

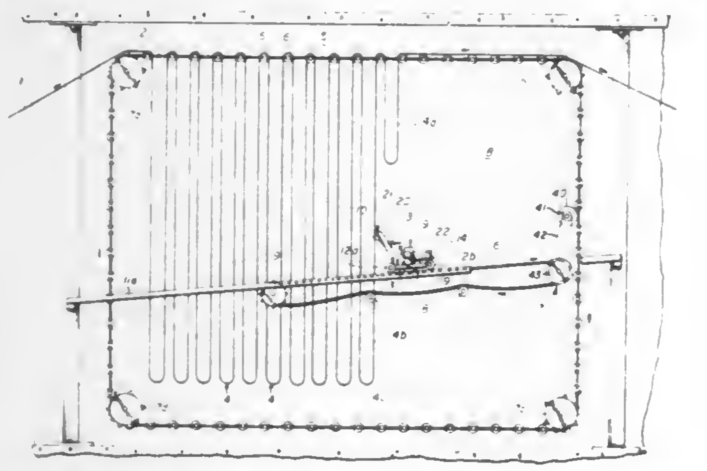
4,367,831
LOOPER

Emile Dubuc, 9141 Bayne, LaSalle (Quebec), Canada (H8R 26G); Maurice Bourgeois, 2315 Guindon St., St. Francois, Laval, Canada (H7R 2YH); Stanley May, 779 44th Ave., LaSalle (Quebec), Canada (H8T 2T7), and Robert Zoeller, 835 49th Ave., Lachine (Quebec), Canada

Continuation of Ser. No. 92,075, Nov. 5, 1979, abandoned. This application Nov. 17, 1981, Ser. No. 322,221

Int. Cl.^{3} B65H *25/00*

U.S. Cl. 226—14 **12 Claims**



1. In a looper apparatus used in the manufacture of asphalt impregnated roofing felt including a chamber, an endless driven belt movable through the chamber and including spaced tubular members adapted to carry hanging loops of asphalt impregnated felt between pairs thereof, a trolley rollably mounted on a track in the chamber and inclined toward the felt loops, and means extending from the trolley for contacting the foremost loop in the chamber under the influence of gravity acting upon the trolley located on the inclined track, the improvement comprising:

a driven chain mounted in said chamber and coupled to said endless driven belt for movement thereby at the same rate and in the same direction as said endless driven belt;

means, on said trolley, for releasably coupling said trolley to said driven chain; and

means, coupled to said means extending from said trolley for contacting the foremost loop in the chamber, for activating said means for releasably coupling said trolley to said driven chain to thereby move said trolley with said driven chain.

4,367,832
LOOP LIFTER

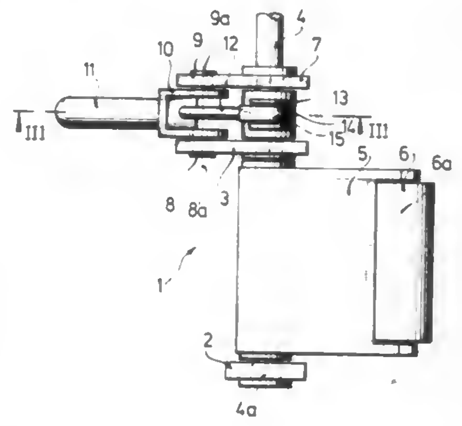
Wolfgang Fabian, Dortmund; Horst Heinen, Waltrop, and Theodor Sevenich, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,355

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 2911881

Int. Cl.^{3} B65H *17/54;* B21B *39/20*

U.S. Cl. 226—108 **6 Claims**



1. A loop lifter for continuous strip-rolling mills in which the strip forms pendant loops, comprising: a support having a stationary abutment; an arm having a free end portion; a shaft rotatably supported by said support, said arm being connected to said shaft for pivotal movement about a substantially horizontal first axis so that the free end portion of the arm can bear from below against a respective loop and lift the same; spring means reacting between said arm and the stationary abutment for counter balancing the arm weight in all positions of action; said arm including a roll freely turnably journalled in said free end portion of said arm on a substantially horizontal second axis and engageable with the respective loop; a lever having a free end and mounted on said shaft for rotation therewith; said spring means reacting between the free end of said lever and the stationary abutment; said spring means having a pivot; the distance of said pivot from said first axis being equal to the length of said lever; said spring means including a cylindrical housing mounted on said pivot; a rod extending coaxially and slidably into said housing through one housing end thereof and having an inner end provided with an auxiliary abutment and an outer end connected to said lever, and a spring surrounding said rod and having opposite end portions bearing upon said auxiliary abutment and said one housing end, respectively; said one housing end being of bifurcated configuration.

4,367,833
TACKER

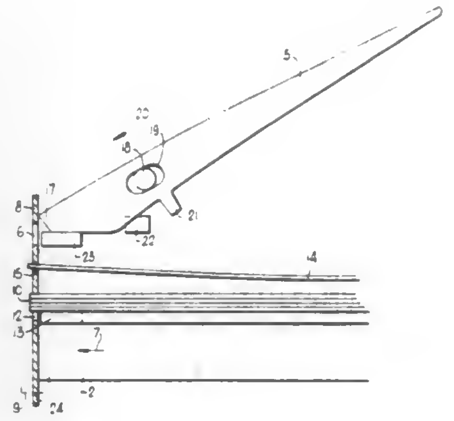
Alan G. Kenney, Over, England, assignor to Ofrex Group Limited, London, England

Filed Oct. 14, 1980, Ser. No. 197,011

Claims priority, application United Kingdom, Oct. 15, 1979, 7935722

Int. Cl.^{3} B25C *5/00, 7/00*

U.S. Cl. 227—8 **4 Claims**



1. A stapler, said stapler comprising a magazine for containing staples to be ejected from the stapler and means for biassing said staples to one end of the magazine, means defining an ejection slot adjacent said end of the magazine, a striker movable in the ejection slot to eject said staples from the stapler, a first relatively strong spring for biassing the striker to the ejecting position said striker and said first spring being connected by a lost motion connection so as to permit relative movement between said striker and said first spring, said striker having follower means adapted to cooperate with a pawl, which pawl forms part of a pivoted handle assembly so that, when the pawl engages the said follower means, the handle can be operated to raise the striker against the bias of said first spring, said pawl then being disengaged from the follower means of the striker to permit the striker to move under the bias of said first spring to eject a staple from said guide slot, a second relatively weak spring means for biassing said striker following ejection of a staple to a rest position in which one end of the striker protrudes from said guide slot, said follower means of the striker then being spaced from the pawl so that the pawl cannot engage the said follower means, the arrangement being such that when the stapler is placed on a surface, the striker is moved back into the ejection slot against the bias of the second relatively weak spring means to bring the said follower means on the striker into alignment with the pawl so that the pawl can engage the said follower means on the striker.

4,367,834
TAG-ATTACHING GUN

Battista Lozio, Campione d'Italia, Italy, assignor to Battista Lozio & Figli S.P.A., Milan, Italy

Filed Feb. 20, 1981, Ser. No. 236,153

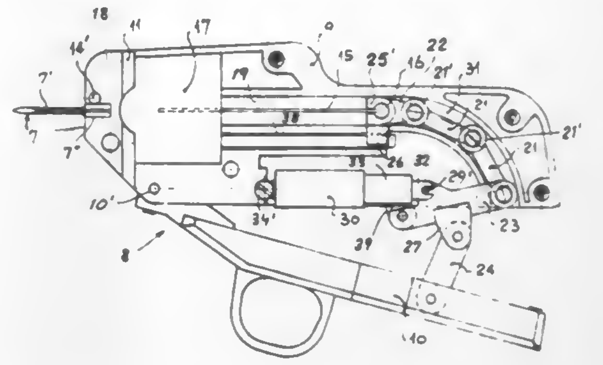
Claims priority, application Italy, Apr. 4, 1980, 21195 A/80

Int. Cl.^{3} B25C *1/00*

U.S. Cl. 227—67 **10 Claims**

1. In a gun for the attachment of bar-lock tags to a penetrable article, comprising a body with a front end engaging a longitudinally slotted forwardly projecting needle, a barrel extending rearward from said front end, a plunger guided in said barrel in line with said needle, a trigger pivoted to said body for manual displacement between an idle position and a working position, and coupling means connecting said trigger with said plunger for advancing a tip of the latter in the slot of said needle upon movement into said working position for ejecting a bar-lock tag previously inserted into said slot,

the improvement wherein said barrel is open to one side and said plunger is laterally detachable from said coupling means, said body being provided with detachable cover means normally overlying said barrel at said one side, removal of said cover means enabling a lateral extraction of said plunger from said barrel in the idle position of said trigger, said body being further provided with retaining means keeping said needle removably seated in said front end.



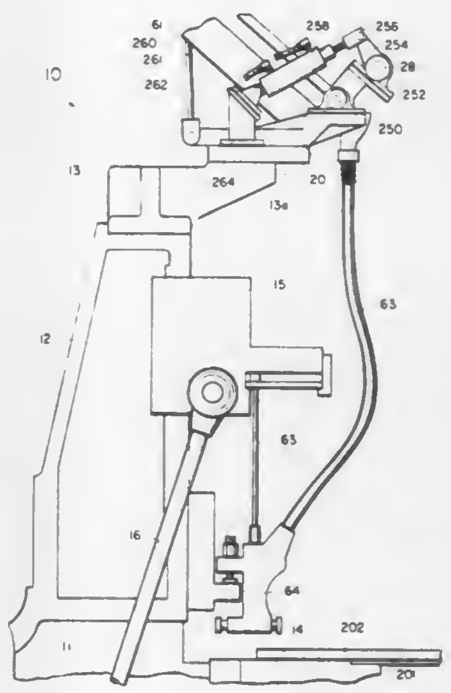
4,367,835
FEEDER FOR NAILING MACHINE

Ronald G. Stephenson, R.D. #1 Box 268, Hamburg, N.J. 07419

Filed Jun. 30, 1980, Ser. No. 164,045

Int. Cl.^{3} B27F *7/13*

U.S. Cl. 227—109 **2 Claims**



1. In a nailing machine having a plurality of nail feeding means, means for controlling the discharge of nails from the nail feeding means, feed governing means associated with the controlling means at each of the nail feeding means, a work table for supporting a work piece to be nailed, means for driving nails advanced by the nail feed controlling means into the work piece supported on the work table, wherein the improvement comprises the nail discharge control means and the feed governing means including:

(a) a feed control drum bar rotatably mounted on the nail machine;

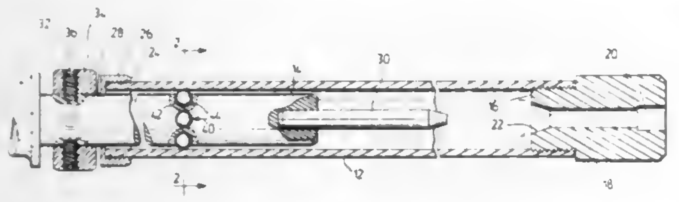
(b) programmer means for generating a plurality of control signals for sequencing the nail machine through various work steps comprising a complete work cycle;

(c) means for rotating said feed control drum bar back and forth between a first and second position only in response to predetermined ones of said control signals; and,

(d) means fixedly disposed on said feed control bar for controlling the dispensing of nails from the nail feeding means at each of said first and second positions in accordance with first and second predetermined patterns.

4,367,836
NAIL DRIVER

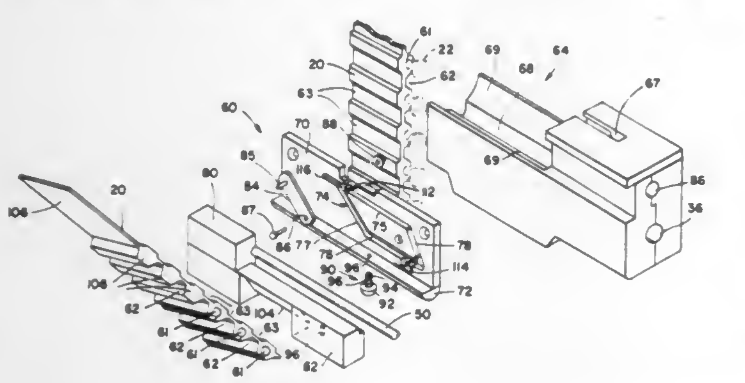
Ivan E. Hodson, 99 Marlborough Ave., Toronto, Ontario, Canada (M5R 1X6)
Filed Aug. 4, 1980, Ser. No. 174,763
Claims priority, application Canada, Aug. 24, 1979, 334528
Int. Cl.^{3} B25C *1/02*
U.S. Cl. 227—142 **15 Claims**



1. In a nail driver comprising an elongated tube, an elongated ram mounted for reciprocal movement in said tube, said ram having a first end and an opposite end thereto having a handle means therefor, the improvement wherein the radial dimension of said ram is substantially less than that of the tube, so as to provide a substantial clearance between the radial wall of said ram along the length thereof and the interior wall of said tube, and wherein low friction spacing means is provided adjacent said first end of said ram, said low friction spacing means being dimensioned and located so as to substantially preclude lateral displacement of said first end of said ram with respect to said tube and comprising a plurality of rolling surfaces.

4,367,837
TAPE MAGAZINE FEED APPARATUS FOR HEAD DRIVEN FASTENERS

Anthony P. Manino, 1185 J Chess Dr., Foster City, Calif. 94404
Filed Apr. 25, 1980, Ser. No. 143,887
Int. Cl.^{3} B65H *17/40*
U.S. Cl. 227—136 **6 Claims**

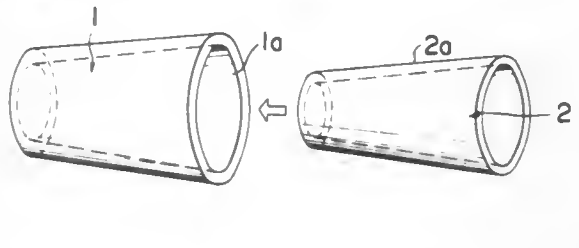


1. In a driving tool for driving fasteners into workpieces from a flexible tape having a plurality of equally spaced grooves extending transversely across one surface thereof with a plurality of said fasteners distributed along one side of said tape and extending transversely of said tape, said driving tool comprising a foot member, a driving channel extending through said foot member to an open end, a drive rod movable back and forth in the axial direction of said driving channel adapted to engage a fastener in said driving channel and move said fastener through a portion of said driving channel and out of said open end thereof, a feed channel of generally rectangular cross-section extending through said foot member transversely of and tangential to said portion of said driving channel, an elongated opening communicating between said feed channel and said drive channel with its axis of elongation extending parallel to the axis of said drive channel, said elongated opening and the cross-section of the first portion of said feed channel from one end thereof to said elongated opening having their long dimensions greater than the length of said fasteners and their short dimensions greater than the width of said fasteners, said feed channel having cross-sectional dimensions adapted to pass said tape throughout; the improvement comprising:

positioning said first portion of said feed channel with respect to the remainder of said feed channel to form an included angle therebetween on the opposite side thereof from said driving channel which is less than one hundred degrees with the vertex of said angle tangential to said driving channel and said elongated opening extending along said vertex of said angle.

4,367,838
METHOD OF PRODUCING CLAD STEEL ARTICLES

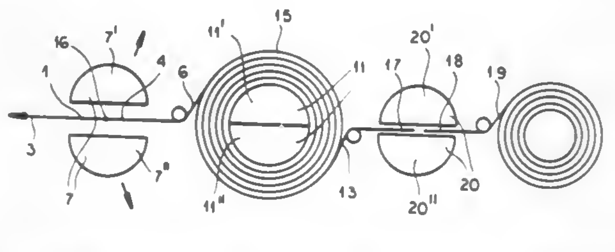
Toshio Yoshida, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
Filed Aug. 14, 1980, Ser. No. 178,347
Claims priority, application Japan, Sep. 20, 1979, 54-120127
Int. Cl.^{3} B23K *20/12*
U.S. Cl. 228—112 **6 Claims**



1. An improved method of producing clad steel articles which comprises placing a dissimilar metal material in a laminated state against a steel material, having mutual contact along respective frustoconical faying surfaces, and friction welding the metal materials by relative rotation at their faying surfaces to cause bonding of said metal materials together, the improvement comprising the steps of: forming one of the metal materials to be friction welded as an outer tube, having an inner wall surface finished to be the frustoconical faying surface thereof, forming the other metal material as an inner tube having an outer surface finished to mate with said frustoconical faying surface, producing by said friction welding a bonded metal blank an subjecting said metal blank to plastic working to produce a clad steel article.

4,367,839
METHOD AND APPARATUS FOR THE PRODUCTION OF METAL STRIPS OF INDEFINITE LENGTH FROM ROLLED-STRIP SECTIONS

Klaus Angerer, Weiherstrasse 7, 8551 Röttenbach, Fed. Rep. of Germany
Filed Aug. 22, 1980, Ser. No. 181,157
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934115
Int. Cl.^{3} B23K *28/02;* **B21C** *49/00;* **B21B** *41/00*
U.S. Cl. 228—155 **7 Claims**



1. A method of producing a metal strip of indefinite length from a plurality of limited-length rolled-strip sections joined to one another end-to-end, comprising the steps of:

(a) welding a trailing end of a first strip section to a confronting leading end of a second strip section;

(b) clamping the welded ends of said first and second strip sections between halves of a first reel;

(c) unidirectionally rotating said first reel to wind said first and second strip sections into a first double-layer coil thereon;

(d) welding a trailing end of said strip section to a leading end of a third strip section;

(e) clamping the welded ends of said second and third strip sections between halves of a second reel disposed upstream of said first reel;

(f) unidirectionally rotating said second reel while simultaneously rotating said first reel in a direction opposite that of step (c) for unwinding said first and second strip sections therefrom, said first strip section being fed forward while said second strip section is fed back for joint winding with said third strip section into a second double-layer coil on said second reel;

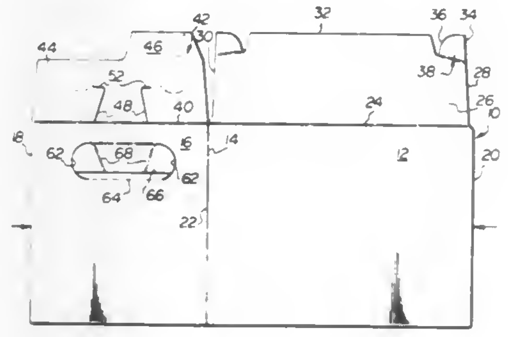
(g) welding a trailing end of said third strip section to a leading end of a fourth strip section;

(h) unclamping the welded ends of said first and second strip sections from said first reel; and

(i) rotating said second reel in a direction opposite that of step (f) for unwinding said second and third strip sections therefrom.

4,367,840
CONTAINER

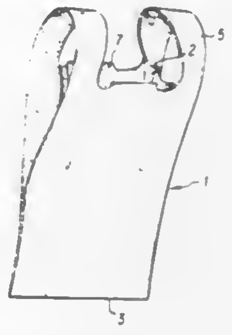
Richard D. McFadden, London, Canada, assignor to Labatt Brewing Company Limited, London, Canada
Continuation-in-part of Ser. No. 134,079, Mar. 26, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 318,700
Int. Cl.^{3} B65D *5/10, 5/66*
U.S. Cl. 229—39 R **9 Claims**



1. A container comprising a base, end and side walls connected by hinge lines to one another; opposing pairs of end and side panels connected by hinge lines to the upper edges of respective end and side walls and extending substantially the length thereof, each end and side panel being adapted to fold toward its opposing respective end or side panel, said side panels being further adapted to overlie said end panels and co-act therewith to form the top wall with the longitudinal edges of said side panels substantially abutting; one of said end panels being provided with a pair of inwardly convergent slots closely straddling the centerline of said end panel, each said slot being oriented at an angle to the hinge line between said end panel and respective end wall; said end panel being further provided with a slit joined to the inner extremity of said slot and extending a very short distance toward the closest side wall and substantially parallel to said end wall hinge line; a pair of tabs, each tab disposed in the area of its respective side panel adapted to overlie said end panel containing said slots, said tabs being adapted to bend out of the plane of its respective side panel and enter said slots such that the tabs extend partially under a portion of the end panel between said slots thereby providing a strong frictional engagement at least a portion of an edge of said slits, whereby said side and end panels are mechanically secured together.

4,367,841
THERMOPLASTIC CARRYING BAG WITH BINARY POLYOLEFIN RESIN BLEND

Ranjit Mazumdar, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Nov. 18, 1980, Ser. No. 208,091
Int. Cl.^{3} B65D *33/00;* **B32B** *27/08*
U.S. Cl. 229—54 R **6 Claims**

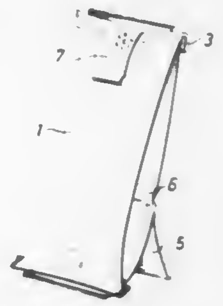


1. An undershirt-type handle strap carrying bag formed of a thin polyolefin film consisting of a homogeneous binary blend of hydrocarbon resins, said resin blend containing:

a. 10 to 40 wt. % linear low density copolymer of ethylene with 1 to 10 wt. % alpha-olefin having 4 to 8 carbon atoms, and having a melt index of 0.2 to 2; and
b. 60 to 90 wt. % highly branched low density ethylene homopolymer having a fractional melt index of 0.5 to 0.9.

4,367,842
PACKING CONTAINER FOR PRESSURIZED CONTENTS

Hans Rausing, Lund, Sweden, assignor to Tetra Pak International AB, Sweden
Filed Nov. 20, 1980, Ser. No. 208,834
Claims priority, application Sweden, Nov. 30, 1979, 7909884
Int. Cl.^{3} B65D *33/02*
U.S. Cl. 229—55 **14 Claims**



1. A packing container for pressurized contents, comprising:
a tubular container body;
a transverse sealing fin disposed at each end of said container body to seal said container body, said sealing fin having inside surfaces of said body sealed together; and
a strengthening band, lying outside said container body disposed only on one side of said container body and secured only to said sealing fins, said sealing fins being folded down against said container body on said one side, and said band being sealed to said fins whereby said band holds said sealing fins folded down against said container body to take up axial tensile stresses on said sealing fins caused by internal pressure in said container body and to prevent the pressurized contents from leaking out through said sealing fins.

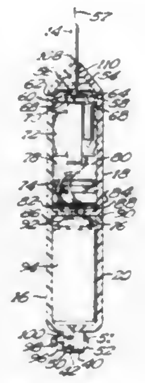
4,367,843
ANIMAL PROD

Daniel M. Bros, Edina; William G. Bartel, Wayzata, and LaVerne M. Larsen, Edina, all of Minn., assignors to Hot-Shot Products Co., Savage, Minn.

Filed Mar. 3, 1980, Ser. No. 126,946

Int. Cl.³ B68B *11/00;* **F41B** *15/04*

U.S. Cl. 231—2 E **13 Claims**



1. An animal prod comprising:

a case having a plurality of bores;

a plurality of electrically conductive rod electrodes each having a base and side and being mounted inside said bores and projecting from said case for delivering electrical stimulus shocks to the body of an animal;

electrically circuitry contained inside said case and electrically connected to said rod electrodes for providing said rod electrodes with electrical stimulus shock signals;

a restraint means mounted inside said case for retaining one of said rod electrodes inside one of said bores, wherein said restraint means comprises:

a first member; and

a second member interacting with the base of said rod electrode to trap said rod electrode between said first member engaging the side of said rod electrode and said second member so that said rod electrode is prevented from moving along said bore.

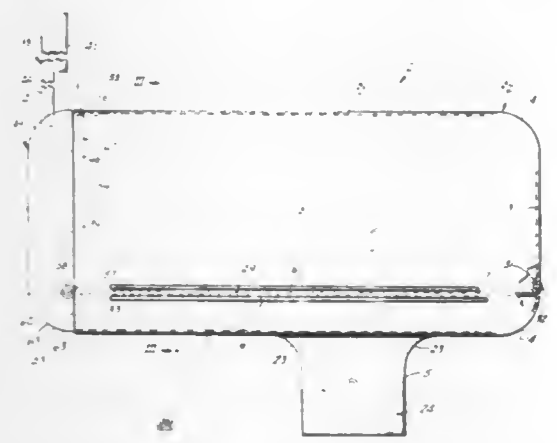
4,367,844
MAILBOX

Donald J. Drummond, A6351 - 143rd Ave., Holland, Mich. 49423

Filed Aug. 14, 1980, Ser. No. 178,181

Int. Cl.³ B65D *91/00*

U.S. Cl. 232—17 **17 Claims**



1. A mailbox, comprising:

a hollow, closed molded body having an open end through which mail and the like is inserted and withdrawn from said body, said body further including a top wall, a bottom wall and side walls, and closing means secured to said body for selectively closing and sealing said open end; and

a rigid mounting sleeve extending perpendicularly from one of said walls of said body and being formed integrally and in one piece with said body, said mounting sleeve defining an aperture shaped to telescopically receive a mailbox support post therein and further including means for connecting said sleeve to the post to securely support said mailbox and its contents at a selected location above the ground, said body having smooth rounded edges and corners and said mounting sleeve having a noncircular lateral cross-sectional shape for preventing rotation of said mailbox on said support post, said body and said sleeve are molded as a single part from a synthetic resin material, and wherein:

said mounting sleeve depends from and opens through said bottom wall of said body at a substantially perpendicular relationship thereto.

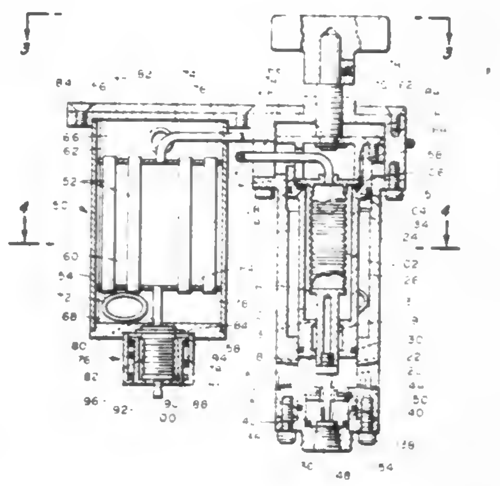
4,367,845
AUTOMATIC TEMPERATURE CONTROL SYSTEM FOR DIVER HEATING SYSTEM

Sergius S. Sergev, Ventura, and Theodore J. Roster, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 143,079, Apr. 24, 1980, Pat. No. 4,295,604. This application Jul. 29, 1981, Ser. No. 288,247

Int. Cl.³ F23N *5/06*

U.S. Cl. 236—21 R **3 Claims**



1. A thermally controlled gas flow valve in which the gas flow through said valve is a function of the temperature of a first fluid comprising:

seat means having an orifice therethrough, a gas being fed under pressure into one end of said orifice;

means for transferring heat between the first fluid and a second fluid having a high coefficient of thermal expansion, including:

a reservoir filled with said second fluid; and

a plurality of tubes disposed within said reservoir, said plurality of tubes being coupled to receive said first fluid so that said first fluid passes through said tubes, said first and second fluid being in thermal contact with each other through said tubes so that heat may be transferred between said fluids;

means for opening or closing said orifice through which gas may flow as a function of the volume of the second fluid, including;

expansion bellows means communicating with said reservoir to receive said second fluid so that an increase or decrease in the volume of said second fluid produces an expansion or contraction, respectively, of said bellows means along its longitudinal axis, and

a plug coupled to said bellows means so that expansion and contraction of said bellows means moves said plug to open or close said orifice for varying the cross-sectional area of the passageway therethrough, thereby controlling the gas flow through said orifice;

a valve body having a cavity, said expansion bellows and seat means being disposed therein; the cavity communicating with said orifice so that the gas passing through said orifice may flow to surround said bellows means in said cavity;

means for protecting said expansion bellows means from over pressure due to expansion of said second fluid; said means for protecting said expansion bellows from over pressure due to expansion of said second fluid including:

a housing having an inwardly directed shoulder;

second bellows means communicating with said reservoir for receiving said second fluid and disposed in said housing;

a pressure plate disposed between said housing and said second bellows, said pressure plate having an inwardly directed shoulder extending over the movable end of said second bellows and an outwardly directed shoulder on the other end, a cavity being formed between said pressure plate and said housing; and

a spring disposed in said cavity between said pressure plate and said housing, whereby expanding of the second bellows acts against the spring force between the pressure plate and the housing.

4,367,846
FUEL INJECTION VALVE ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

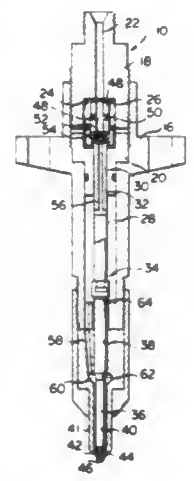
Jiro Akagi, Oyama, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 19, 1980, Ser. No. 218,430

Claims priority, application Japan, Dec. 25, 1979, 54-178650; Dec. 25, 1979, 54-178652

Int. Cl.³ F02M *47/02*

U.S. Cl. 239—96 **9 Claims**



1. A fuel injection valve assembly for an internal combustion engine, comprising:

(a) a body having formed therein:

(1) a fuel inlet for admitting successive charges of pressurized fuel;

(2) a spring chamber in constant communication with the fuel inlet;

(3) a storage chamber for storing each incoming charge of pressurized fuel; and

(4) a fuel outlet for discharging in the form of droplets the pressurized fuel fed from the storage chamber;

(b) spring means in the spring chamber,

(c) needle valve means mounted within the body for reciprocable motion between a first and a second position and extending between the spring chamber and the fuel outlet through the storage chamber and normally held under the bias of the spring means in the first position to close the fuel outlet, the needle valve means having:

(1) an inlet passageway for the introduction of the pressurized fuel from the fuel inlet into the storage chamber; and

(2) means adapted to be acted upon at least by the pressurized fuel stored in the storage chamber, the needle valve means when so acted upon being moved from the first to the second position against the bias of the spring means for opening the fuel outlet; and

(d) a check valve for blocking the inlet passageway after each charge of pressurized fuel is introduced into the storage chamber from the fuel inlet.

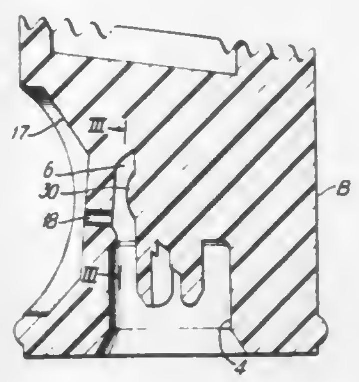
4,367,847
ONE-PIECE MECHANICAL BREAK UP (MBU)

Christian Bayer, Armonk, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,994

Int. Cl.³ B05B *1/34*

U.S. Cl. 239—337 **6 Claims**



1. In a one-piece integral molded valve actuator for a pressurized aerosol dispenser, said actuator having means to mount the actuator on the valve of the dispenser in communication with the product discharge passage of the valve, a generally circular swirl chamber molded within the actuator, a passage molded within the actuator in communication with the valve discharge passage and extending to an entrance aperture of the swirl chamber, the entrance aperture being located to introduce product circumferentially of the swirl chamber, the swirl chamber having a front wall with a discharge orifice extending from the front wall of the swirl chamber to the front exterior of the actuator, and a rear wall normal to the central axis of the swirl chamber, the improvement which comprises a sloped mound on the rear wall protruding into the swirl chamber centrally thereof, and the discharge orifice being located off-center of the swirl chamber axis and remote from the entrance aperture.

4,367,848
SPREADER

Richard J. Ehmke, and Arthur Linsenmeyer, both of Beatrice, Nebr., assignors to Dempster Industries, Inc., Beatrice, Nebr.

Filed Aug. 7, 1981, Ser. No. 290,946

Int. Cl.³ A01C *17/00*

U.S. Cl. 239—665 **10 Claims**

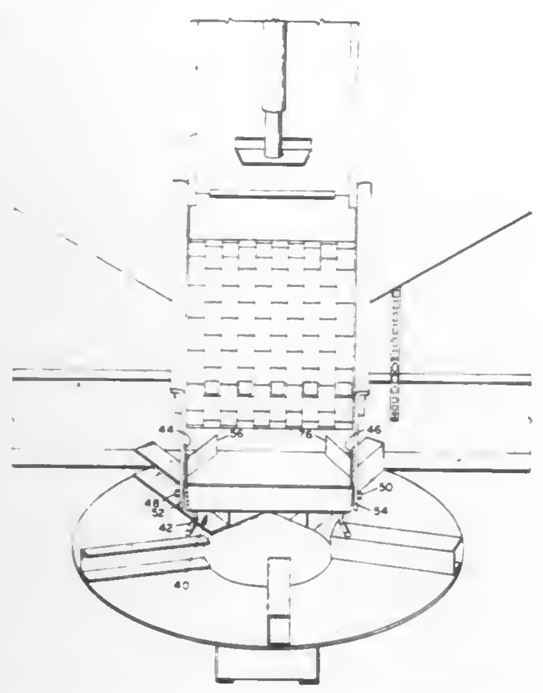
1. Adjustable vane rear chute for use with a spinner disc including a conical spinner axially driven behind and below of feedgate and longitudinal conveyor chain running longitudinally of a geometrically configured hopper of a dry material spreader, said chute comprising;

a. configured means including a base, left side and right side members affixed to said base, two opposing holes in said base, and two pluralities of holes positioned in a rearward portion of said base on opposing geometrical arcs;

b. two geometrically configured handle rods, each rod including a vertical axial member extending up through each of said opposing holes and including means in a rearward horizontal portion for engaging into one of said holes of each of said geometrical arc;

c. longitudinal directional control vanes affixed to each of said axial member for positioning at an angle with respect to an end of said chute for directing dry material coming down thereto to a precise position over said conical spinner of said spinner disc;

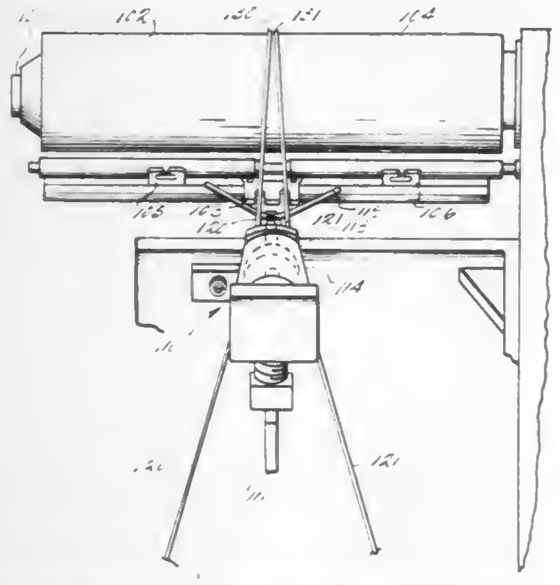
d. means axially supporting said end of said axial extending member of said rod to said side of said configured means; and,



e. means securing configured means to a rear of said spreader whereby said vanes are adjustable by said rods subsequently secured in position by said engaging means into said holes on said geometrical arcs for directing dry material to said conical spinner of said spinner drive, thereby optimizing and equalizing distribution pattern of said dry material.

4,367,849
PNEUMATIC TRANSFER MECHANISM FOR FORMING YARN TAIL ENDS

Enek E. Irby, Altavista, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Mar. 17, 1981, Ser. No. 244,592
Int. Cl.^{3} B65H *54/02, 54/20*
U.S. Cl. 242—18 PW **5 Claims**

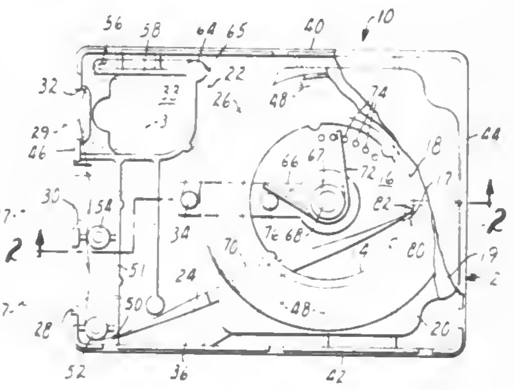


1. An apparatus for simultaneously winding yarn on multiple winding tubes comprising:

(a) means for rotatably mounting at least two abutting winding tubes,
(b) means for rotating said winding tubes,
(c) means for feeding at least one yarn strand to each of said winding tubes,
(d) fixed yarn holding means for holding the yarn strands adjacent the abutting ends of said winding tubes,
(e) reciprocating guide means associated with said mounting means for moving the yarn strands back and forth across said winding tubes to form yarn packages, said reciprocating guide means located between said winding tubes and said yarn holding means,
(f) and movable transfer means comprising,
  a rod having two free ends bent at about its midpoint so that each end lies closer to said reciprocating guide means than its midpoint, and
  drive means for moving said rod in a fixed plane from a first position to a second position whereby in said first position said rod is located between said yarn holding means and said winding tubes and in said second position said yarn holding means is located between said winding tubes and said rod, and
  wherein during the course of movement from said first to said second position each of said free ends of said rod engages at least one yarn strand and disengages said strand from said yarn holding means whereby said strands are moved away from each other and are directed into the paths of said reciprocating guide means.

4,367,850
ENDLESS LOOP TAPE CARTRIDGE

Alfred H. Moris, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Dec. 8, 1980, Ser. No. 214,042
Int. Cl.^{3} G11B *23/06*
U.S. Cl. 242—55.19 A **7 Claims**



1. A cartridge comprising:

a housing adapted to be received in a machine and having access openings adapted to receive heads and a tape drive mechanism in said machine;

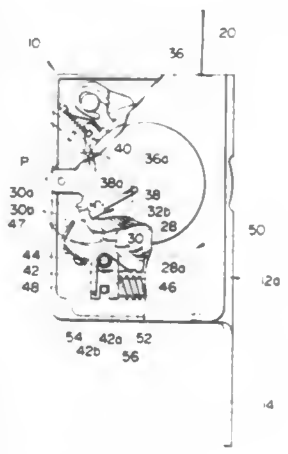
a hub fixed on said housing at a position spaced from said access openings, said hub having a generally cylindrical peripheral surface fixed with respect to said housing, a central opening, and a slot extending axially across the full width of the hub opening through said peripheral surface and communicating with said central opening;

an endless length of magnetic tape having a major portion wrapped about said peripheral surface to form a coil and a minor portion extending from the innermost wrap of the coil through said slot into said central opening, and around the side surface of the coil to the outermost wrap of the coil; and

means on said housing for defining a tape path for and producing tension in said minor portion, comprising means for guiding said minor portion in a free path past said access openings in a predetermined position for engagement by the heads and drive mechanism of the machine, a guide pin guiding said minor portion between said access openings and the outermost wrap of said coil, means mounting said guide pin for movement along a path adjacent to the periphery of the coil in a direction generally transverse to a normal tape path between the access openings and the coil between a first position providing a first path length between said access openings and said coil and a second position providing a second path length longer than said first path length between said access openings and said coil, and means for biasing said guide pin toward said second position with a low force to provide a low tension in the outermost wrap of the coil about said peripheral surface so that with the tape drive mechanism of a said machine engaged with the minor portion of the tape between the slot and the guide pin, the low tension in the outermost wrap of the coil produces a significantly higher tension in the tape between the innermost wrap of the coil and the drive mechanism that is sufficient to press the tape guided across the openings against the heads in the machine, and said guide pin will move and maintain generally a uniform low tension in the outermost wrap and thus maintain generally a uniform relatively high tension in the tape guided across the heads in response to changes in length in the minor portion of the tape during operation of the cartridge.

4,367,851
SEAT BELT RETRACTOR WITH A TENSION ELIMINATOR

Kouzou Maeda, Yokohama, and Ken Kamijo, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Feb. 9, 1981, Ser. No. 232,500
Claims priority, application Japan, Feb. 8, 1980, 55-14582
Int. Cl.^{3} A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.7 **9 Claims**



1. A seat belt retractor having a tension eliminator, comprising:

a belt take up reel on which a seat belt is wound, said reel being biased to rotate in a direction to retract thereon said belt;

a belt measuring wheel which is rotatable with said reel about the axis of said reel;

slide means movable in response to the rotation of said belt measuring wheel;

first signal producing means for producing a signal when said slide means takes a predetermined position;

second signal producing means for producing a signal when said belt takes an operative position to restrain the seated occupant;

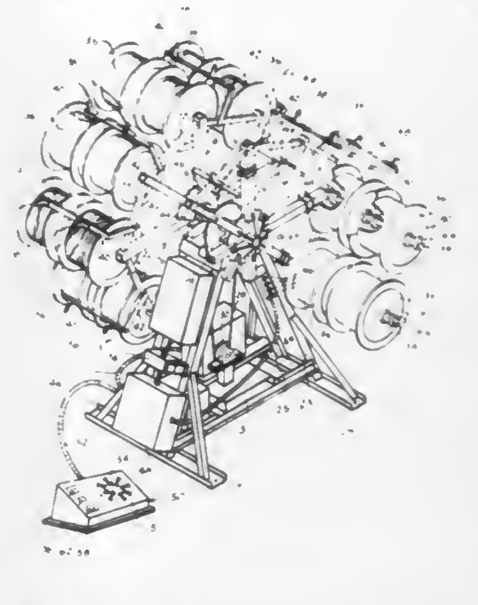
blocker means having an operative position for preventing rotation of said reel in the direction to retract said belt in response to receiving both the signals produced by said first and second signal producing means, and an inoperative position allowing free rotation of said reel;

stopping means for stopping the rotation of said belt measuring wheel in the same direction as that of said reel to withdraw the belt when said slide means takes said predetermined position and said blocker means takes said inoperative position; and

obstruction means for preventing said blocker means from taking said operative position when said belt measuring wheel is in a predetermined angular range.

4,367,852
POWERED WIRE SPOOL HOLDING AND POSITIONING APPARATUS

Luis J. Lazaro, Jr., Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 29, 1980, Ser. No. 221,313
Int. Cl.^{3} B65H *49/00*
U.S. Cl. 242—129.72 **9 Claims**



1. Apparatus for selectively positioning spools containing wire so as to place said wire in a presentment position for removal of said wire from said spools comprising:

base means;

rack means rotatably mounted on said base means;

a plurality of spool receiving means associated with said rack means for receiving said spools;

position-monitoring means associated with said rack means for producing a first signal indicative of rack position;

position selection means operable to produce a second signal indicative of a desired rack position;

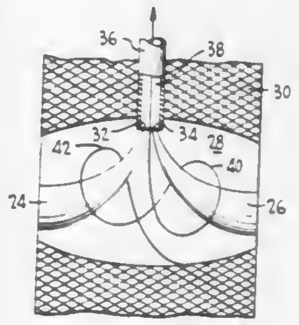
comparison means for receiving said first signal and said second signal, said comparison means producing a third signal upon said rack position coinciding with said desired position;

motor means associated with said rack and said position selection means to drive said rack; and

motor controller means associated with said motor means, said motor controller means being responsive to said third signal to stop the motion of said rack upon reception of said third signal.

4,367,853
GUIDE AND SUPPORT MEMBERS FOR UNWINDING FLEXIBLE MATERIAL FROM A WOUND PACKAGE

Frank W. Kotzur, Mahopac, N.Y., assignor to Windings, Inc., Goldens Bridge, N.Y.
Filed Dec. 7, 1981, Ser. No. 328,224
Int. Cl.^{3} B65H *55/02*
U.S. Cl. 242—163 **5 Claims**



1. A package of flexible material comprising a plurality of layers each formed of a plurality of figure-8 winds with the crossovers of the winds progressing around the package, said

package having a radial opening therein, and having an axial opening into which said radial opening extends, and the free inner end of said flexible material being let out through said radial opening, said package further including a pair of inwardly tapering members extending into said axial opening and each tapering member including an end portion positioned closely adjacent and pointed towards the inner opening of said radial opening so as to guide loops of material withdrawn from the package for payout through said radial opening.

4,367,854

TAPE CASSETTE

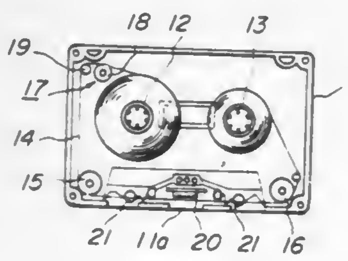
Sinichi Saitou, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,669

Claims priority, application Japan, Jun. 18, 1979, 54-83184[U]; Jun. 18, 1979, 54-83185[U]

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—198 **1 Claim**



1. A tape cassette comprising:

a generally quadrilateral cassette body formed with four corners having a head inserting window portion on a first side thereof;

a pair of tape hubs arranged in said body;

a magnetic tape wound around said hubs and fed from one of said hubs to the other of said hubs;

a pair of turning rollers each located respectively at a first and a second of said four corners of said cassette body for guiding said tape between said turning rollers along a path extending generally parallel to said first side of said cassette body past said window portion, said first and said second corners being located at opposite ends of said first side; and

a tape guide portion located at a third of said four corners at the end of a second side of said cassette opposite said first side and generally parallel thereto;

said tape being wound to extend from one of said tape hubs directly to and about said guide portion and from said guide portion to one of said turning rollers parallel to a third side of said cassette body which extends perpendicularly to said first and second sides thereof between said guide portion and said one turning roller;

said tape guide portion consisting essentially of a rotating roller guide member and a fixed guide member adapted to direct said tape from said one hub so as to guide the running direction of said tape by operation of said fixed guide member and said rotating roller guide member, said rotating roller guide member being arranged to receive said tape directly from said one hub, said roller guide member being thereby located between said fixed guide member and said one tape hub taken in the running direction of said tape.

4,367,855

APPARATUS FOR THE EXCISION AND REMOVAL OF BLOCKS OF SILAGE

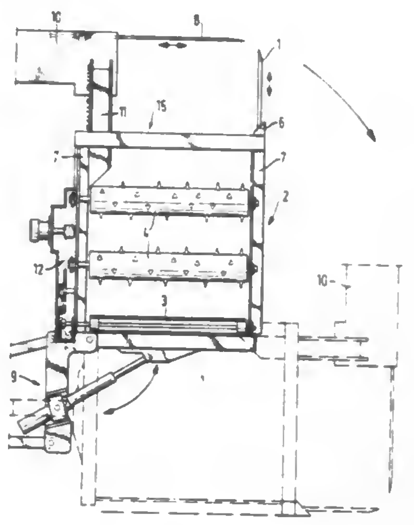
Hans von der Heide, Ibbenbürener Str. 17, 4533 Laggenbeck, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,528

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006881

Int. Cl.³ B02C *18/02*

U.S. Cl. 241—283 **3 Claims**



1. An apparatus for the excision and removal of blocks of silage from a stock of silage, comprising: a frame; prongs fastened to the frame; a knife; means for moving the knife on a U-shaped path at a distance above a plane through the prongs corresponding approximately to the length of the knife; a feed container disposed on the frame behind the prongs and having an open front side, means for forming the rear wall thereof as a scraper flight conveyor, and a lateral opening for dispensing the silage; and means for pivoting the feed container and frame about 90 degrees from a position wherein the open side is vertical to a position wherein the rear wall scraper flight conveyor means forms the bottom of the feed container to effect the input of silage into the feed container and the subsequent output of the silage through the lateral opening.

4,367,856

REEL SHAFT BRAKING DEVICE OF MAGNETIC RECORDING TAPE RUNNING APPARATUS

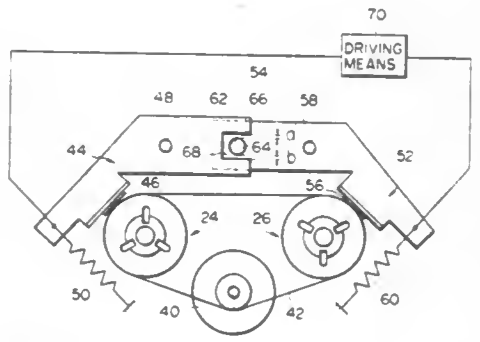
Shiro Kondo, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,562

Claims priority, application Japan, May 9, 1980, 55-63622[U]

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—204 **3 Claims**



1. A reel shaft braking device used in a magnetic recording tape running apparatus with a pair of reel shafts, comprising:

a first lever pivotally mounted at the middle portion thereof so as to be able to rock within a plane intersecting the axis of rotation of one of said pair of reel shafts between a first position where one end portion of said first lever abuts against said one reel shaft to be frictionally engaged therewith and a second position where said one end portion is separated from said one reel shaft, the other end portion of said first lever having an opening provided with a pair of edges which extend along a direction to intersect the movement locus of said other end portion and are spaced from each other;

a second lever pivotally mounted at the middle portion thereof so as to be able to rock within a plane intersecting the axis of rotation of the other of said pair of reel shafts between a first position where one end portion of said second lever abuts against said other reel shaft to be frictionally engaged therewith and a second position where said one end portion thereof is separated from said other reel shaft;

a projection fixed to the other end portion of said second lever, said projection being separated from said pair of edges of said first lever when said first and second levers are located in their respective first positions, and abutting against one of said pair of edges to locate said second lever in said second position thereof when said first lever is located in said second position thereof, and abutting against the other of said pair of edges to locate said first lever in said second position thereof when said second lever is located in said second position thereof;

urging means for urging said first and second levers toward their respective first positions; and

driving means for shifting said second lever from said first position to said second position thereof by shifting said first lever from said first position to said second position thereof when said one reel shaft serves as a take-up reel shaft, and for shifting said first lever from said first position to said second position thereof by shifting said second lever from said first position to said second position thereof when said other reel shaft serves as the take-up reel shaft.

4,367,857

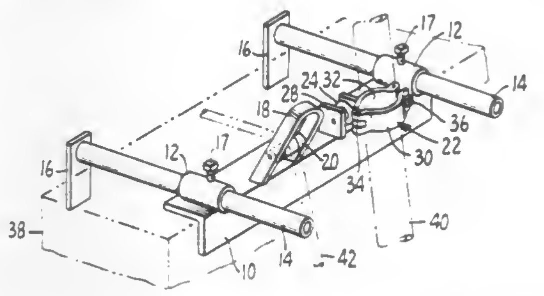
ADJUSTABLE HOT PIPE BRACKET

Bartholomew J. McCarthy, Redwood City, Calif., assignor to Cleasby Manufacturing Co., Inc., San Francisco, Calif.

Filed Dec. 29, 1980, Ser. No. 220,838

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74 R **2 Claims**



1. A mounting bracket for connecting hot tar pipes to building parapets comprising an elongated unitary angle member to be disposed in direct clamping relation to the upper and outer side of a parapet, said member having outer end portions and an intermediate portion, a pair of sleeve members positioned above and fixedly attached to the angle member and extending transversely thereof at said outer end portions, a pair of tubular members slidably disposed in said sleeve members, said tubular members having at their inner or roof-adjacent ends flange elements to be disposed in clamping relation to the inner side of said parapet, a pipe clamp connected to the intermediate portion of said angle member, said clamp being positionable outwardly of said angle member and said parapet and having a universal pivot connection with said angle member, and means to adjustably and releasably connect said tubular members in fixed relation with said sleeve members.

4,367,858

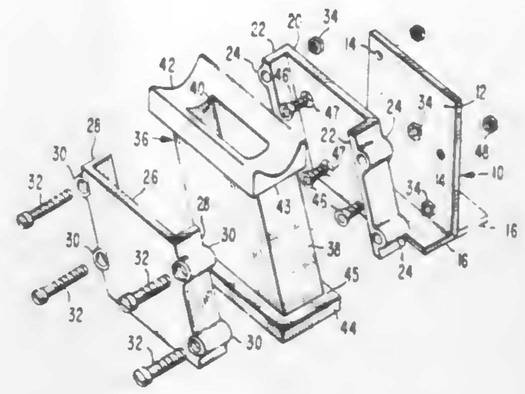
NOZZLE BRACKET MOUNT

Theodore Ziaylek, Jr., 140 Riverview Dr., Yardley, Pa. 19067

Filed Dec. 4, 1980, Ser. No. 213,141

Int. Cl.³ B05B *15/06*

U.S. Cl. 248—75 **10 Claims**



1. A support for a hose nozzle having a pistol-grip handle, comprising:

(a) first and second, confronting retainer plates;

(b) means extending between and connecting said plates for adjustment toward and away from each other; and

(c) a socket having a bore adapted to receive a pistol-grip handle of a hose nozzle, said socket being adapted for compression between the retaining plates when the plates are drawn toward each other, whereby to reduce the transverse dimension of the bore, thus to accommodate the bore to receiving pistol-grip handles of differing widths, said socket being formed at one end with a saddle adapted to supportably receive the body of said nozzle in a position in which the pistol-grip handle of the nozzle extends into the bore of the socket.

4,367,859

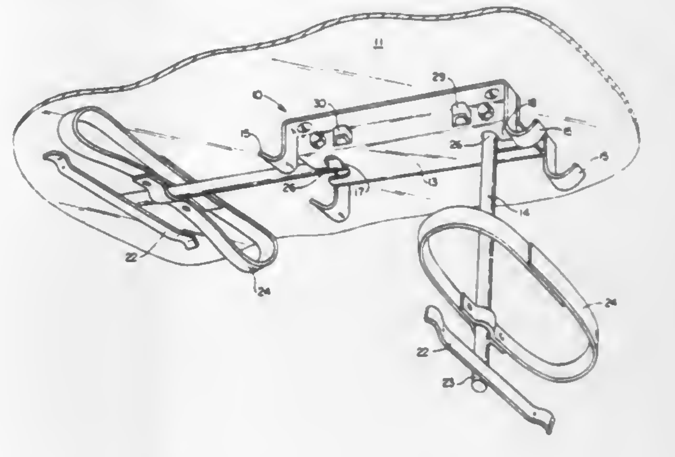
CEILING-MOUNTED HOLDER FOR INTRAVENOUS FLUID RECEPTACLES

David M. Lamon, Columbus, Ohio, assignor to The Horton Company, Columbus, Ohio

Filed Jul. 14, 1980, Ser. No. 167,940

Int. Cl.³ A47H *1/10*

U.S. Cl. 248—318 **3 Claims**



1. A ceiling-mounted holder for intravenous (I.V.) fluid receptacles, said holder comprising:

(a) a relatively shallow, box-like supporting frame for rigid attachment to a ceiling and including:

(i) hook means for supporting an I.V. receptacle, and

(ii) a generally L-shaped guide slot opening at one end of said frame and defining thereon an arm-locking detent;

(b) a receptacle-stabilizing arm pivotally connected to said frame for swinging movement between an "up" position substantially flush with the ceiling and a "down" position depending from the ceiling; a portion of said arm being movable within the guide slot of said frame as said arm swings between its "up" and "down" positions;

(c) spring means carried by said frame and arranged normally to bias said arm laterally into engagement with the locking detent of said frame when said arm occupies either its "up" or "down" positions to thereby hold said arm against swinging movement; and

(d) manually operable lever means carried by said frame and operable to disengage said arm from said detent and thereby free said arm for swinging movement.

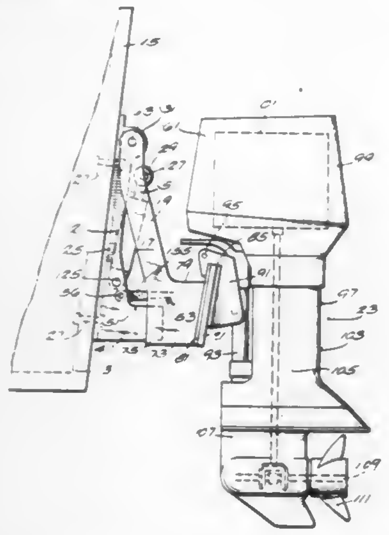
4,367,860

HIGH PIVOT TRANSOM BRACKET ASSEMBLY FOR MOUNTING OUTBOARD MOTOR

Charles D. Strang, Lake Forest, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 25, 1980, Ser. No. 190,589
Int. Cl.^{3} F16M *13/00*

U.S. Cl. 248—641 **11 Claims**



1. A bracket assembly for supporting an outboard motor from a boat transom so as to permit tilting of the outboard motor substantially wholly in the area aft of the transom, said bracket assembly comprising a transom bracket adapted to be fixed to the boat transom and including an upper end having a bore which is horizontal when said transom bracket is boat mounted, and a lower part projecting rearwardly and including spaced vertically extending side walls, a tilt pin extending in said bore, and a tilt member including an upper end having a bore receiving said tilt pin, and a lower part having a transverse cross section of U-shape which is adapted to be located in telescopic relation to said rearwardly projecting lower part of said transom bracket and which includes laterally spaced side walls positioned in laterally adjacent relation to said transom bracket side walls and a rearwardly located outer end, and an outboard motor mounting member fixed to said outer end of said lower part, extending generally vertically, and located substantially below said tilt pin and substantially rearwardly of said tilt pin.

4,367,861

INSTALLATION CONTROL VALVES

Geddes A. Bray, Moston, and Richard J. Holker, Marple, both of England, assignors to Mather & Platt Limited, Manchester, England

Continuation of Ser. No. 916,692, Jun. 19, 1978, abandoned. This application Sep. 11, 1980, Ser. No. 186,044

Claims priority, application United Kingdom, Jul. 14, 1978, 29595/77

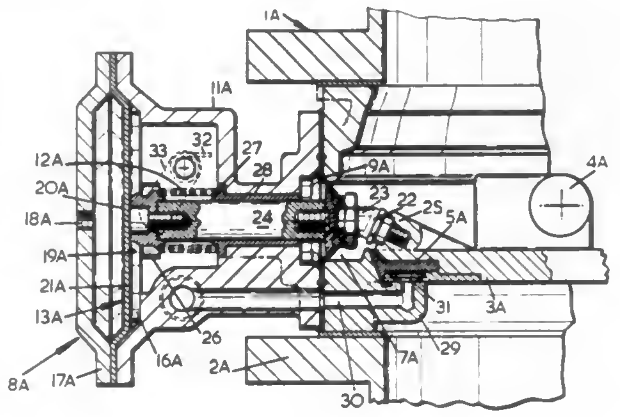
Int. Cl.^{3} F16K *31/126*

U.S. Cl. 251—61 **18 Claims**

1. An installation control valve comprising:

(a) a valve body for disposition in fire extinguishing installation pipework downstream of a pressurized source of extinguishant;

(b) a butterfly valve disc within said valve body and normally retained closed to prevent the flow of extinguishant through the installation pipework, said valve disc being fixedly rotatably mounted within said valve body about an axis of rotation, that is off-set longitudinally of the point of intersection of a plane in which the periphery of said valve disc lies and a longitudinal axis of said disc normal to said plane by a distance sufficiently great that said valve disc will open with a slight pressure differential thereon and will close upon cessation of fluid flow, and said axis of rotation being parallel to said plane in all positions of said valve disc;



(c) a movable stop cooperable with said butterfly valve disc and which in one position abuts said valve disc to retain said valve closed against pressure forces acting thereon and which in a second position frees said valve disc for pivotal movement; and

(d) a retaining mechanism which is releasably held to resist stop movement and prevent said valve disc from opening, and which is operable under a predetermined condition to permit stop movement from said one position to said second position whereby unequal pressure forces on either side of the said off-set axis on one side of the valve disc can cause valve opening.

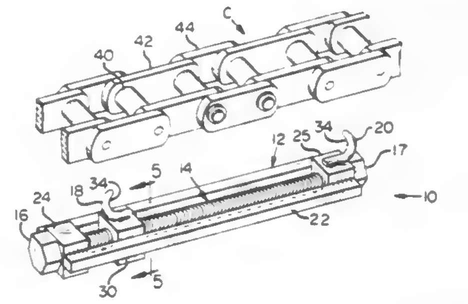
4,367,862

ROLLER CHAIN-CONNECTING TOOL

Robert I. McGregor, Chemainus, Canada, assignor to Nordic Diving Salvage & Marine Contractors Ltd., British Columbia, Canada

Filed Mar. 3, 1981, Ser. No. 240,027
Int. Cl.^{3} B66F *3/08*

U.S. Cl. 254—231 **8 Claims**



1. A chain-connecting tool for pulling the opposite ends of a chain toward one another for interconnection, the tool comprising:

an elongated body having spaced ends;

a threaded rod mounted for axial rotation in the body, the rod having end portions journaled in and extending through each end of the body and rigidly supported thereby;

rotating means for rotating said rod independently of the body;

a pair of chain-engaging means for engaging said chain ends; and

mounting means threadedly mounting at least one of the pair of chain-engaging means on the rod for movement therealong toward the other chain-engaging means when the rotating means is actuated to rotate the rod for pulling said end links toward one another;

the mounting means being spaced laterally inwardly of said body a distance enabling the mounting means to be rotated relative to said body through a predetermined angular range for positioning the chain-engaging means on the ends of said chain.

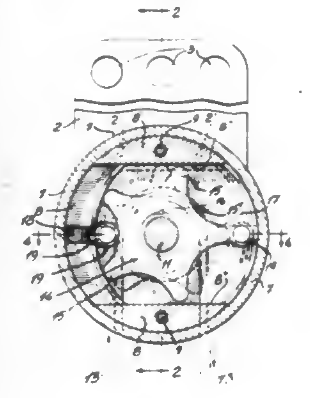
4,367,863

TORQUE LIMITER MEANS FOR CONTROLLING ROTARY MOTION

Jacques Dulondel, 1081 Saint-Viateur, Outremont, Prov. of Quebec, Canada (H2V 1Y6), and Philippe R. de la Messuziere, 30 Zircon Crt., Willowdale, Ontario, Canada (M2H 2A1)

Filed Sep. 16, 1980, Ser. No. 187,949
Int. Cl.^{3} B66D *3/04*

U.S. Cl. 254—391 **5 Claims**



1. A torque limiter means for controlling rotary motion comprising a casing, a shaft rotatably mounted in said casing, a pulley fixedly secured to said shaft and adapted to rotate therewith; said pulley carrying a cable; a rotor having an odd number of radially-disposed and equally spaced-apart cam projections defining an equal number of indentations, and also rigidly fixed to said shaft; a follower plate transversely oriented to said shaft and laterally displaceable relative to the same; two longitudinally-aligned cam follower pins carried by said follower plate and in contact with said rotor at all times, at two diametrically-spaced zones relative to the shaft axis, and rectilinear guide means formed by said casing and engaging the assembly of said follower plate and of said follower pins for restricting said follower plate to a rectilinear back-and-forth motion, whereby said shaft is braked by the force required to accelerate and decelerate said follower plate during its back-and-forth motion.

4,367,864

NEWEL POST ASSEMBLY

Gene H. Eldeen, 17861 Jaguar Path, Lakeville, Minn. 55044

Continuation-in-part of Ser. No. 123,841, Feb. 22, 1980, Pat. No. 4,295,638. This application Dec. 12, 1980, Ser. No. 215,798

Int. Cl.^{3} E04H *17/14*

U.S. Cl. 256—59 **17 Claims**

1. A newel post assembly for installation with respect to a floor type surface, comprising:

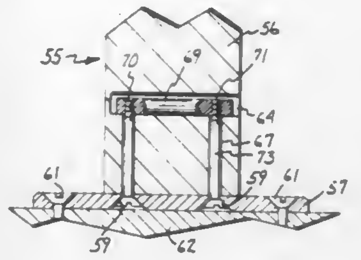
an elongate wooden newel post for intended use in a generally upright orientation and having a transverse bottom surface;

said newel post having a generally horizontal opening near the lower end thereof;

said newel post having a generally vertical opening extending from the bottom surface to the horizontal opening;

an anchoring member positioned in the horizontal opening;

a base plate in surface engagement with the transverse bottom surface of the newel post, said plate defined by first, second, third and fourth edges respectively with transverse dimensions greater than the bottom surface of the newel first fastening means connected at one end to the base plate, extending through the vertical opening and connected at an opposite end to the anchoring member to secure the base plate to the newel post generally adjacent the first of said base edges; and



means to connect the base plate to floor type surface comprised as a plurality of mounting holes disposed proximate the second, third and fourth edges of said base plate in surrounding relationship to said newel post, and second linear fastening means extending from the upper surface of the base plate through the mounting holes with respect to a floor type surface.

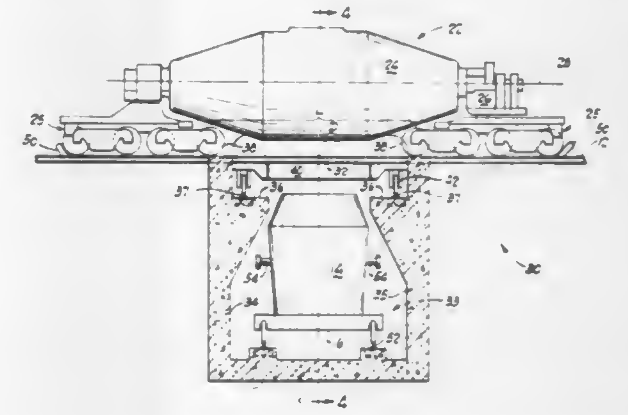
4,367,865

METHOD AND APPARATUS FOR EMPTYING BOTTLE CARS

Matthew J. Blair, Niles, and George E. Keifer, Jr., Warren, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Sep. 21, 1981, Ser. No. 304,198
Int. Cl.^{3} F27D *3/14*

U.S. Cl. 266—44 **14 Claims**



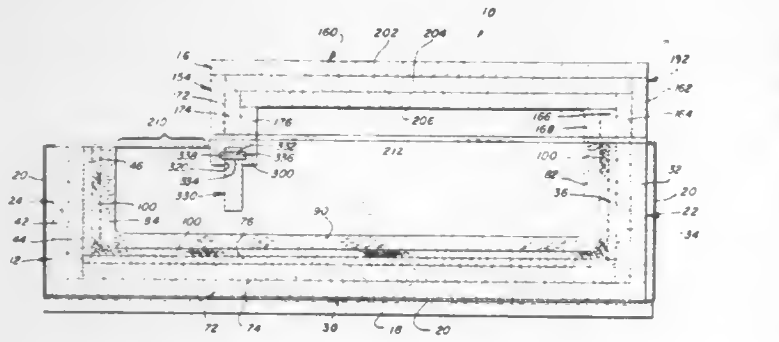
1. A method of pouring iron or slag or both from a railroad bottle car in which a bottle that contains molten iron is supported by spaced trucks on an extending track and is rotatable about a horizontal longitudinal axis to pour contents from an opening located between said trucks into a first vessel located below the car and track, said method comprising the steps of:

positioning the car on the track and the vessel below the track so the trucks are spaced on opposite sides of the vessel and the bottle opening is in alignment with the vessel in the direction of the extending track,

moving a section of the track between the trucks in a direction transversely of the extending track to a location to one side of the car, and

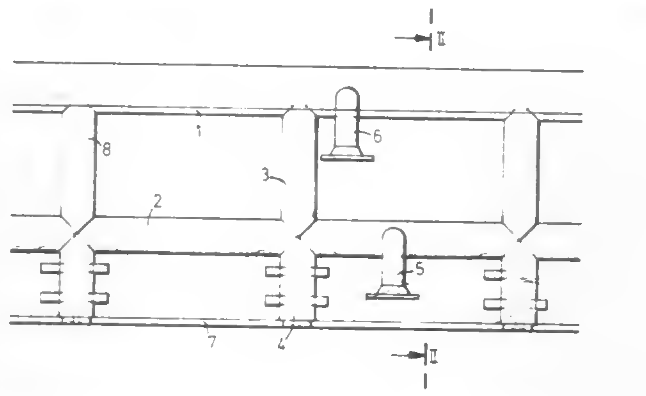
rotating the bottle about said axis to move the opening from a position adjacent the top of the bottle toward the bottom in a direction away from the side to which the track section was moved, to pour at least a portion of the contents into said first vessel in a path that passes through an area where the track section was located prior to being moved.

4,367,866
FURNACE ADAPTED TO CONTAIN MOLTEN METAL
John N. Acker, Ringwood, and Robert A. Petersen, Elgin, both of Ill., assignors to Sunbeam Equipment Corporation, Meadville, Pa.
Filed Apr. 10, 1981, Ser. No. 252,971
Int. Cl.^{3} F27D *1/16*; F27B *14/00*
U.S. Cl. 266—99 5 Claims



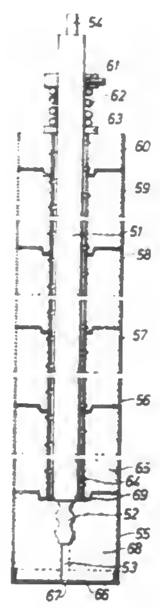
1. In a furnace, which is adapted to hold molten zinc, molten aluminum, or other molten metal, a combination comprising:
(a) an outer vessel, which has lateral and bottom walls,
(b) a removable, seamless, vacuum-formed, ceramic-fiber, one-piece, inner vessel, which is adapted to contain the molten metal, which has lateral and bottom walls, and which is fitted into the outer vessel so as to leave sufficient clearance around the inner vessel, between the lateral walls of the inner and outer vessels, for particulate matter to be packed around the inner vessel, between the lateral walls of the inner and outer vessels, and
(c) a mass of unbonded particulate matter, which is packed around the inner vessel, between the lateral walls of the inner and outer vessels, so as to lodge the inner vessel laterally within the outer vessel despite nonconformities between the lateral walls of the inner and outer vessels, and so as to enable the inner vessel to be lifted readily from the outer vessel,
(d) a layer of said matter, which is packed on the bottom walls of the outer vessel, between the bottom walls of the inner and outer vessels, so as to support the inner vessel and its contents firmly despite nonconformities between the bottom walls of the inner and outer vessels, and
(e) an electrical circuit including electrical conductors, which are imbedded within the layer of said matter on the bottom wall of the outer vessel, said matter being packed so as to be previous to the molten metal, the electrical circuit not being attached to the inner vessel, the electrical circuit being open in normal operation of the furnace, the conductors being arranged to close the electrical circuit if any of the molten metal leaks from the inner vessel, perfuses said matter, and bridges the conductors, the electrical circuit including a signalling means, which is arranged to emit a signal if the electrical circuit is closed.

4,367,867
COOLING SUPPORT ELEMENTS FOR METALLURGICAL FURNACE
Heinrich Schnitzer, Rheinberg, and Volker Mauermann, Kempen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Sep. 8, 1981, Ser. No. 300,023
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036564
Int. Cl.^{3} C21B *7/10*
U.S. Cl. 266—190 3 Claims



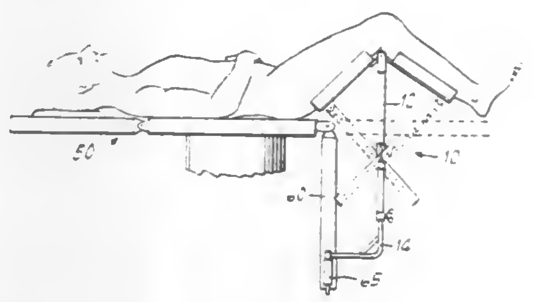
1. In a metallurgical furnace in which the interior wall of the furnace, above the melting zone, is provided with interconnected cooling pipes which are supported on a skeletal support structure, the improvement characterized by
(a) said support structure comprises horizontal rings configured as a cage around said furnace;
(b) said rings are constructed from pipe-shaped segments; and
(c) said horizontal rings are positioned at vertically spaced intervals from one another.

4,367,868
REFRACTORY LINING FOR A METAL PIPE
Ingvar G. A. Blom, and Reima J. Vuokivi, both of Nyhamnsläge, Sweden, assignors to Hoganas AB, Sweden
PCT No. PCT/SE80/00056, § 371 Date Oct. 1, 1980, § 102(e) Date Oct. 1, 1980, PCT Pub. No. WO80/01923, PCT Pub. Date Sep. 18, 1980
PCT Filed Feb. 28, 1980, Ser. No. 245,347
Claims priority, application Sweden, Mar. 16, 1979, 7902388
Int. Cl.^{3} C21C *5/32*
U.S. Cl. 266—225 5 Claims



1. A lance for supplying materials to metallurgical processes, comprising a steel tube, means at an inlet end of said tube for connecting the tube to a supply hose for said materials, at least one outlet opening for said materials at an outlet end of said tube, and a protecting sheath encompassing said tube, said sheath comprising an inner metal wall sized to form a clearance with said tube, an outer wall, and a refractory ceramic composition between said walls, and means for fastening a front end of said sheath to said steel tube adjacent said outlet end, a second end of said sheath being freely movable relative to said inlet end of said tube.

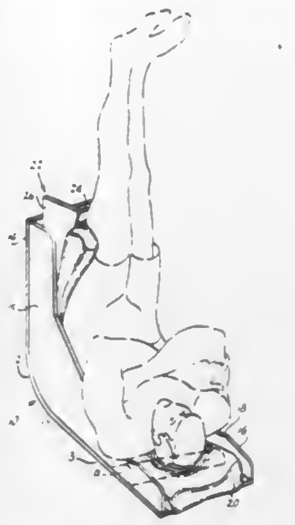
4,367,869
STIRRUP ATTACHMENT FOR SURGICAL TABLE
Thomas H. Dailey, 347 E. 84 St., New York, N.Y. 10028, and Gregory W. Brabbee, 74 Brayton St., Englewood, N.J. 07631
Filed Sep. 10, 1981, Ser. No. 300,925
Int. Cl.^{3} A61G *13/00*
U.S. Cl. 269—324 9 Claims



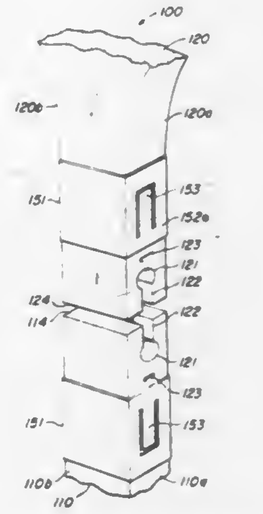
1. A stirrup attachment for a surgical table which comprises:
an extendable support shaft provided at one end with an attachment member for attaching the support shaft to a surgical table and hinging means at its other end, the shaft being rotatable about the attachment member;
a first locking means for fixing the support shaft in a desired position relative to the attachment member;
an adjustable calf support member, comprising a portion adapted to receive and support a human calf hingedly attached at one end to said hinging means and a first rod provided with a series of slots pivotally attached to the other end of said calf support portion;
an adjustable thigh support member, comprising a portion adapted to receive and support a human thigh, hingedly attached at one end to said hinging means opposite said calf support portion and a second rod provided with a series of slots pivotally attached to the other end of said thigh support portion;
a slideably adjustable sleeve member on the shaft, said sleeve member being provided with two engagement members, each adapted to receive and hold one of said rods by engaging one of said slots, so that said calf and thigh support members can be held in desired positions; and
a second locking means for fixing the sleeve in a desired position relative to the shaft.

4,367,870
SHOULDER STAND DEVICE
Robert A. Birch, Gardner Hollow Rd., Poughquag, N.Y. 12570
Filed Apr. 25, 1980, Ser. No. 143,553
Int. Cl.^{3} A63B *23/02*; A47C *3/02*
U.S. Cl. 272—144 1 Claim

1. A device for assisting a person to assume a shoulder stand comprising a base member, said base member consisting of a horizontal planar seat portion and a vertical planar back portion positioned at substantially a 90° angle to each other, an arcuate portion connecting said horizontal and said vertical portions, said horizontal planar portion being shorter than said vertical portion and acting as a seat in the horizontal position and as a leg support in the vertical position, an upstanding side member on each side of said base member, each side member being the approximate length of said base member said side members having cut out portions therein to receive the shoulders of a user, a cushioning pad of the approximate length of said base member fitted between said side members and resting on said base member, at least one shaped member for insertion between said cushioning pad and said base member, at least one of said at least one shaped member being wedge shaped, said device being a seat when resting on its seat portion, and rotatable backwards 90° onto its back portion so that a person seated therein can assume a shoulder stand with the wedge shaped member being located between the backs of the thighs and the base member so that while lying on one's back the extended legs assume a position backward slightly beyond vertical so as to maintain the shoulder stand position, and pivotally mounted support legs on said upstanding side members rotatable from a non-use position when said device is used on its back for a shoulder stand to a use position when used as a seat by extending back beyond the base so as to prevent rearward tilting.



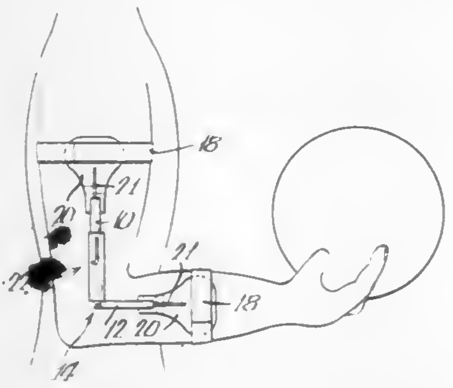
4,367,871
ARTICULABLE TRAINING DEVICE FOR RACQUET SPORTS AND THE LIKE
William E. Schiefer, 305 Walnut St., San Diego, Calif. 92103
Filed Jul. 25, 1980, Ser. No. 172,178
Int. Cl.^{3} A63B *69/38*
U.S. Cl. 273—29 A 3 Claims



1. A tennis racquet comprising an elongate handle member, a second member having a ball rebounding surface, means connecting said handle and second members for free relative pivotal movement about an axis substantially transverse to the longitudinal dimension of said handle and generally parallel with said ball rebounding surface, said means comprising a flexible key member having shoulder means formed upon opposite ends thereof, each of said handle and second members having a recess extending inwardly from an end face thereof and communicating between opposite side portions of said handle and second members, said recesses being of a shape substantially complemental to said key member so that said key member may be manually, slideably inserted into said recesses

for engagement therein, and means for securing said flexible key member within said recesses, said securement means comprising first and second sleeve members slideably surmounted, respectively, upon said handle and second members, said sleeve members each including means for detachably locking said sleeve members upon said handle and second members in first closed positions whereby to secure said flexible key member therebetween.

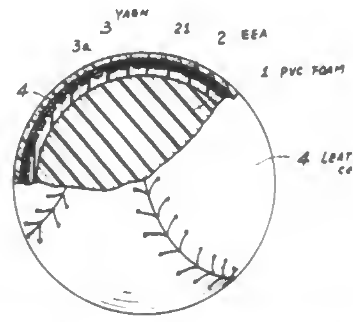
4,367,872
ATHLETIC ACCESSORY
Herbert Langston, 401 E. 32nd St., Chicago, Ill. 60616
Filed Sep. 18, 1980, Ser. No. 188,582
Int. Cl.^{3} A63B *69/36, 69/00*
U.S. Cl. 273—54 B **3 Claims**



1. An athletic accessory comprising:
a pair of rigid members;
pivot means for pivotally connecting said rigid members;
attaching means for securing each of said rigid members to the corresponding limb members of a jointed limb of an athlete, with said pivot means located coincident with the axis of rotation of the athlete's limb joint;
a sleeve slidably mounted on and encircling one of said rigid members adjacent said pivot means and movable between a first position accommodating pivotal movement of said rigid members and the athlete's limb members and, upon longitudinal alignment of said rigid members, a second position overlying said pivot means and engaging the adjacent ends of said rigid members to lock said rigid members in longitudinal alignment for thereby preventing the athlete from inadvertently rotating the limb joint, said sleeve having a vertically disposed bayonet slot cut through said sleeve;
a stop pin mounted on said one of said rigid members extending slidably through the bayonet slot in said sleeve for limiting the travel of said sleeve;
a shoulder on said one of said rigid members, underlying said sleeve and facing toward said pivot means;
an internal flange on said sleeve facing toward said shoulder to define a chamber between said sleeve, said shoulder and said internal flange; and
a compression spring located within said chamber biased at one end against said shoulder and at the other end against said internal flange, for resiliently biasing said sleeve toward the other rigid member.

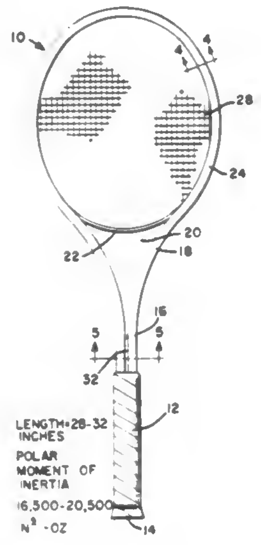
4,367,873
GAME BALL
Paul P. H. Chang, Room 3, 7 Fl. No. 603, Tung-Hwa S. Rd., Taipei, and Chen-Shin Chu, No. 17, La. 685, Chung-Hsing Rd., Lung-Tan, Taoyuan, both of Taiwan
Filed Jun. 30, 1981, Ser. No. 279,020
Int. Cl.^{3} A63B *37/12, 37/06*
U.S. Cl. 273—60 R **5 Claims**

1. A game ball for use in playing such games as baseball or softball comprising a spherical core, a core cover, yarn windings and an outer leather cover to have essentially the same playing characteristics as conventional balls, the improvements which comprise:
(a) a spherical core made of polyvinyl chloride foam coated with a core cover made of ethylene copolymer; and



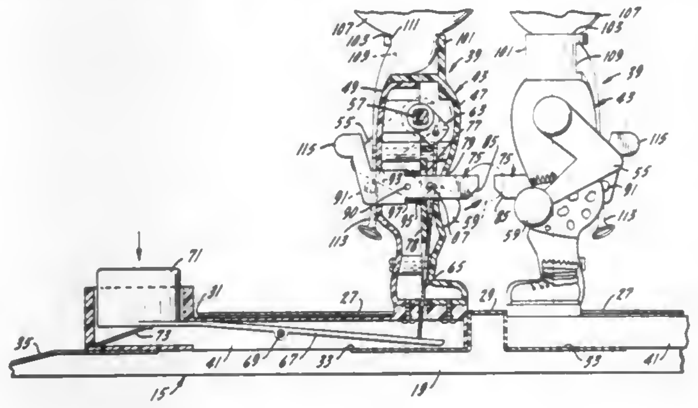
(b) corrugations and rough patterns being formed on the outer surface of said core cover.

4,367,874
TENNIS RACQUET AND METHOD OF MAKING SAME
Anthony F. Staub; Norman T. Staub, both of Dayton, Ohio, and John R. Erwin, Paradise Valley, Ariz., assignors to Starwin Industries, Inc., Dayton, Ohio
Filed Jan. 4, 1979, Ser. No. 929
Int. Cl.^{3} A63B *49/00*
U.S. Cl. 273—73 R **3 Claims**



1. A method of making a tennis racquet, comprising the steps of:
selecting a conventional reference racquet design having a frame including a head portion connected to a handle portion having a butt end, said frame having a predetermined overall length (Lr) in the range of 26–28 inches and a predetermined polar moment of inertia about an axis perpendicular to the longitudinal central axis of said racquet, at about 24 inches from said butt end and remote from said racquet, in the range of 16,500 to 20,500 in.^{2}-oz,
selecting a desired length (L) for the new racquet in the range of 28–32 inches and greater than Lr,
determining the weight of each of a plurality of incremental elements of said reference racquet along the length of said frame,
determining the distance of each such element from said perpendicular axis,
multiplying the length of each such element by a factor X equal to L/Lr,
determining the new weight of each such element for said new length of racquet by dividing the square of the distance from said perpendicular axis of each original such element times the weight thereof by the square of the distance from said perpendicular axis of each such element of said new length of racquet,
determining the necessary cross sectional shapes for portions of the frames of said new length of racquet such that said determined weights of the new such elements and the weight distribution throughout the new length of racquet will be obtained, and then,
constructing a new racquet having said selected length and incremental elements of said length and said weights and cross sections as determined in the previous steps,
whereby said new racquet will have the same said predetermined polar moment of inertia as said reference racquet.

4,367,875
BOXING GAME
Gordon A. Barlow, Glenview; John R. Newcomer, Des Plaines; John R. Krutsch, Glenview, and Fred Bezark, Northbrook, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.
Filed Feb. 8, 1982, Ser. No. 346,638
Int. Cl.^{3} A63F *9/14;* **A63H** *13/06*
U.S. Cl. 273—85 F **8 Claims**

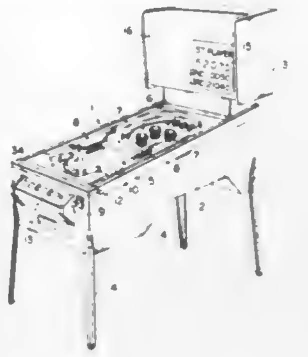


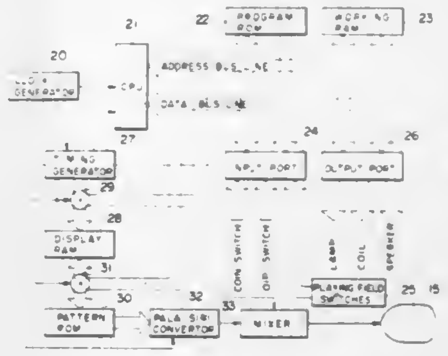
1. A boxing type amusement game including a pair of figures of boxers, each figure of a boxer including:
a torso having a blow actuated trigger, means to releasably mount a head on the torso in the form of an inflated launchable balloon,
at least one arm pivotally mounted on the torso and having a fist means for hitting and actuating a trigger of an opposing boxer, and
means to releasably hold the launchable balloon mounted on the torso under tension and sealed against air leakage,
said balloon release and sealing means being operably connected to the trigger to release the balloon from tension, unseal the air and launch the balloon upon actuation of the trigger as the result of a blow from an opposing boxer.

4,367,876
SCORE DISPLAY APPARATUS FOR PINBALL GAME MACHINES AND DISPLAY METHOD THEREFOR
Yukio Kotoyori, Nihonbashi, Japan, assignor to Kabushiki Kaisha Universal, Oyama, Japan
Filed Mar. 12, 1980, Ser. No. 129,652
Claims priority, application Japan, Mar. 12, 1979, 54-27706
Int. Cl.^{3} A63F *7/40, 9/22*
U.S. Cl. 273—121 A **8 Claims**

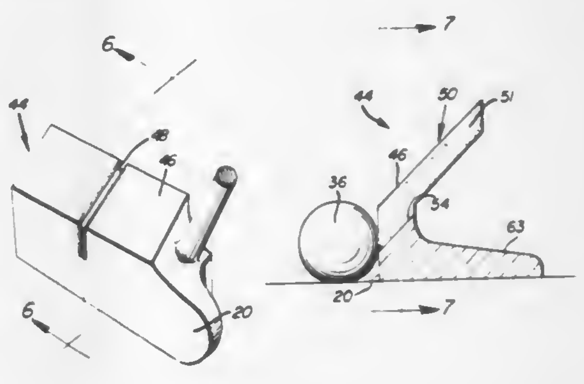
5. A method for operating pinball machines having the steps of including a casing containing a playing field providing circuitous paths for a ball rolling on the playing field, providing a micro-computer for computing the scores of a plurality of players and providing a CRT visual display unit on which the scores computed by the micro-computer are displayed, said steps further comprising computing in said micro-computer the score of the player who is up according to the circuitous path followed by a ball about said playing field as directed by the player who is up, and simultaneously displaying the scores of a plurality of players by said CRT visual display unit with the score of the player who is up displayed in large-size digits and the other scores in small-size digits.

8. In a pinball machine including a casing containing a playing field providing circuitous paths for a ball rolling on the playing field and a micro-computer for computing the scores of a plurality of players and a CRT visual display unit on which the scores computed by the micro-computer are displayed; the improvement comprising means for computing in said micro-computer the score of the player who is up according to the circuitous path followed by a ball about said playing field as directed by the player who is up, means for simultaneously displaying the scores of a plurality of players by said CRT visual display unit with the score of the player who is up displayed in large-size digits and the other scores in small-size digits and means connected to said score displaying means for providing said large- and small-size digits.





4,367,877
PUTTER
Ronald F. Gibson, 811-4th Ave. N., Kent, Wash. 98031, and Hendrick W. Haynes, Seattle, Wash., assignors to Ronald F. Gibson, Kent, Wash.
Filed Aug. 2, 1979, Ser. No. 63,335
Int. Cl.^{3} A63B *53/04*
U.S. Cl. 273—164 **5 Claims**

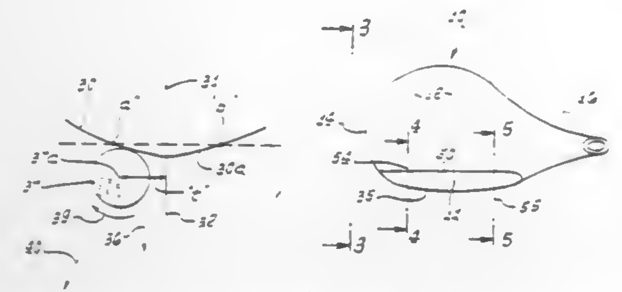


1. A golf club comprising:
a shaft;
a grip region formed on said shaft; and
a golf ball striking head attached to said shaft, said head including a striking surface portion and an upwardly sloped planar extension portion extending rearwardly of the head from an area proximate to said striking surface portion, said extension portion including a first mirrored surface with sighting means centrally positioned thereon, said sighting means including a groove cut into said first

mirrored surface, said groove having darkened sidewalls so as to form a contrast between said first mirrored surface and said groove, and further wherein said head includes a second mirrored surface disposed proximate said groove for reflecting light through said groove whereby said groove is thoroughly illuminated during a use of said golf club.

4,367,878
GOLF CLUB HEAD

Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208
Filed Apr. 20, 1981, Ser. No. 255,686
Int. Cl.^{3} A63B *53/04*
U.S. Cl. 273—175 **5 Claims**



1. In a golf wood head having a heel, toe, top surface, bottom surface, a rear side and a front face to strike a ball, the improvement comprising

(a) said front face having bulge curvature defined by the line intersections of parallel planes normal to said front face and inclined downwardly and rearwardly relative to the horizontal, at a shallow angle,

(b) said intersections defining curved lines which are parabolas, when viewed from a position above the club head and spaced rearwardly of a line normal to said bottom surface, whereby the front face as defined is tilted rearwardly,

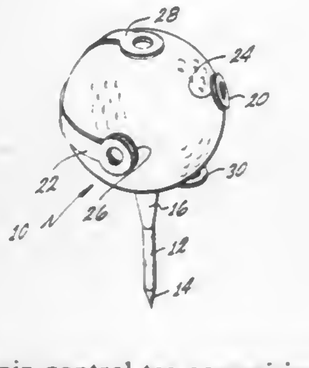
(c) said front face also having roll curvature defined by intersections of forwardly extending vertical planes with said front face, said last named intersections defining curved lines which are forwardly convex,

(d) the forwardmost parabolic curved line having a focus which is in direct rearward alignment with the center of said front face,

(e) said front face having compound curvature as defined and intersecting the uppermost frontal portion of the head along a generally straight line when viewed downwardly from a position above said front face.

4,367,879
GOLF TEE WITH HOLDING CUP WITH SPIN CONTROL MEMBER

Steve Messer, 1325 Washington Ct., Brookfield, Wis. 53005
Filed Dec. 11, 1980, Ser. No. 215,511
Int. Cl.^{3} A63B *57/00*
U.S. Cl. 273—211 **6 Claims**



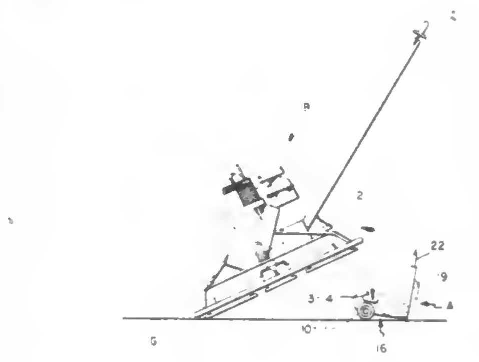
1. A golf ball spin control tee comprising:

an elongated ground engaging stem having an anchoring point at the lower end and a ball supporting head on the upper end including a shield extending upward from said supporting head and having a semispherical portion for engaging the back surface of a ball and to be struck by a golf club for imparting an impelling force to the ball, and

elongated arm means extending from and supported by said shield for partially encircling and extending to and terminating in an outer end at a position at the front opposite said shield of a ball resting on said head, and said arm means including friction means at the outer end thereof for frictionally engaging the surface of the ball for affecting the spin of the ball when struck and propelled from said tee by a golf club.

4,367,880
TRANSPORT DEVICE FOR WHEELLESS POWER DRIVEN EQUIPMENT

Edward M. Harding, Middletown, Md., assignor to Equipment Development Company, Inc., Frederick, Md.
Filed May 5, 1980, Ser. No. 146,246
Int. Cl.^{3} B62B *1/12*
U.S. Cl. 280—47.13 R **5 Claims**



1. A dolly for transport service when attached to a base and an operating handle of a relatively large and heavy surface treating machine and detachably connectable between said base and said handle of the machine;

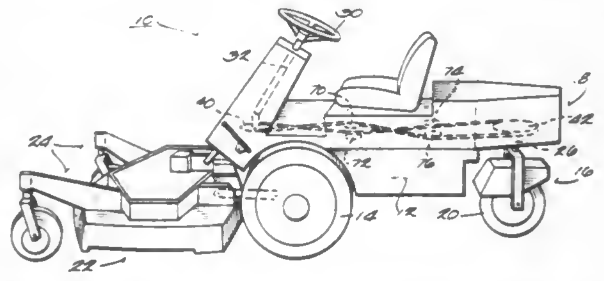
said dolly including an upstanding cradle for engagement with said handle of the machine and being extendably, manually adjustable to regulate the angular position of said machine handle;

said manually adjustable cradle including a locking lever to retain the cradle in an extended position to set said handle in a desired angular position with respect to a surface normally supporting said machine;

whereby a manually applied downward push on said handle tilts said machine with respect to a base support surface to transpose the entire support of said machine from said surface to said dolly for manually maneuverable transport service.

4,367,881
VEHICLE STEERING SYSTEM

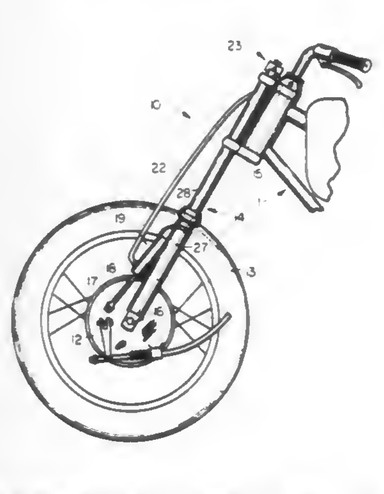
Dwight E. Williams, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 1, 1980, Ser. No. 192,711
Int. Cl.^{3} B62D *9/00*
U.S. Cl. 280—96 **7 Claims**



1. A steering system for a vehicle including a frame and a steerable dirigible wheel unit rotatably mounted on the frame for rotation about a steering axis to steer the vehicle, said steering system including a rotatable steering control member rotatably supported from the frame at a location remote from the dirigible wheel unit, a drive sprocket mounted for common rotation with said steering control member, a first section of chain trained about said drive sprocket, a driven sprocket mounted for common rotation with the dirigible wheel about the steering axis, a second section of chain trained above said driven sprocket, a first set of two coaxially aligned pulleys rotatably mounted on the frame between said drive and driven sprockets, a second set of two coaxially aligned pulleys rotatably mounted on the frame between said first set of pulleys and said driven sprocket, and first and second flexible members interconnecting the ends of said first and second chain sections such that said driven sprocket is rotated in response to rotation of said drive sprocket, said first and second flexible members being trained over the same side of separate ones of said pulleys in each of said sets.

4,367,882
SUSPENSION APPARATUS

Graham H. Alexander, Upper Arlington, and David C. Doerschuk, Grove City, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio
Filed Apr. 11, 1980, Ser. No. 139,361
Int. Cl.^{3} B62K *25/08*
U.S. Cl. 280—276 **12 Claims**



1. Suspension apparatus for the front end of a motorcycle, bicycle, or like vehicle, having a brake on the front wheel, comprising

a suspension device connected to permit relative movement between the frame of the vehicle and the axle of the front wheel,

means for converting friction force from any substantial braking of the front wheel into an approximately proportional hydraulic force, and

means for applying the hydraulic force to the suspension device so as to oppose and at least largely counterbalance the inertial force thereto resulting from the braking action, and thus to at least largely eliminate diving by the front end of the vehicle when the brake is applied.

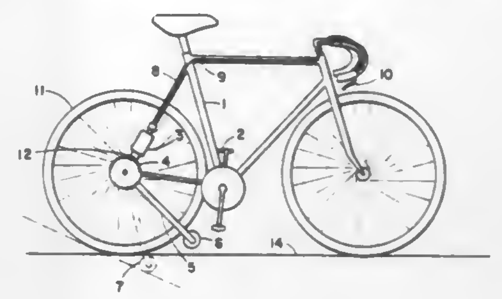
4,367,883
WHEELIE SUPPORT

Ray C. Anderson, 7605 S. Quebec, Tulsa, Okla. 74136
Continuation-in-part of Ser. No. 191,124, Sep. 26, 1980. This application Oct. 20, 1980, Ser. No. 198,846
Int. Cl.^{3} B62H *1/10*
U.S. Cl. 280—301 **3 Claims**

1. Apparatus for use with a wheel conveyance such as a bicycle or the like having at least one forward and one rearward wheel for rolling on a support surface in which the vehicle has a frame to which the forward and rearward wheels are rotatably supported, the apparatus providing means of adding stability to the vehicle when the front wheel is raised from the support surface, comprising:

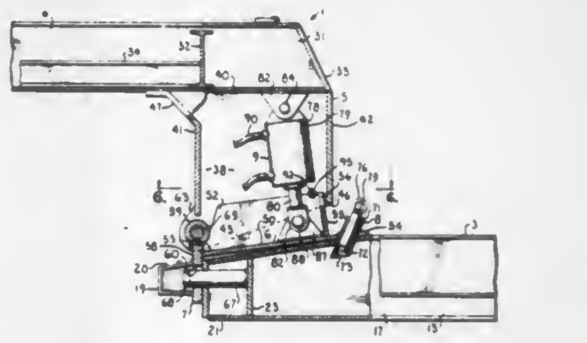
a structural member affixed to said frame and extending in the plane of and forwardly of the vehicle rear wheel; and

a third wheel rotatably supported at the outer end of said structural member, the third wheel being normally positioned above the support surface and arranged to engage the support surface by means controllable by the operator when the vehicle frame is pivoted to raise the front wheel from the support surface, the third wheel being between said rear wheel and said front wheel, enabling the user to balance the vehicle, at least for a limited period of time, on the rear wheel and the third wheel.



4,367,884
REMOVABLE GOOSENECK FOR TRAILERS

Howard L. Johnson, 7500 NW. 108th St., Kansas City, Mo. 64154, and David A. Kramer, 3101 Sante Fe, Independence, Mo. 64055
Filed Dec. 15, 1980, Ser. No. 216,511
Int. Cl.^{3} B62D *53/06*
U.S. Cl. 280—423 B **1 Claim**



1. A gooseneck structure detachably connecting a tractor and trailer, said trailer including an inclined front portion adapted for engagement with said gooseneck structure, said gooseneck structure comprising:

(a) an elongate, generally horizontally extending beam member having forward and rearward portions with said forward portion including means for connection to a fifth wheel of said tractor;

(b) an upstanding frame member having front, rear and opposite side walls, top and bottom portions, and providing an enclosure; said top portions affixed to rearward portions of said beam member so that said frame member depends therefrom with said bottom portions positioned adjacent said trailer, said frame member rear wall having a lower edge portion; said frame member side walls having aligned apertures therethrough;

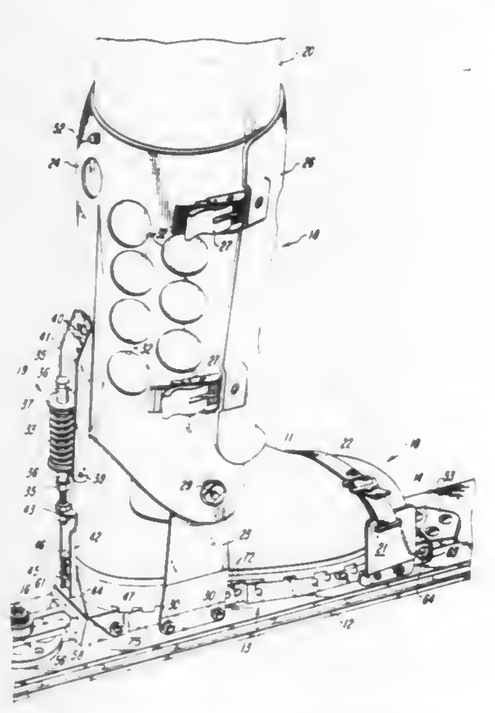
(c) a foot member comprising a substantially vertically oriented planar member located at said bottom portions and having front and rear end portions, said foot having upwardly extending side walls oriented substantially parallel with said frame member side walls, said foot side walls including a notch on an upper edge thereof near a rear portion thereof, said notches and frame member side wall apertures alignable;

(d) a pivot connecting said foot member front end portion to said frame member adjacent said front walls and providing vertical pivoting movement of said foot member relative

to said frame member, said rear portion extending past said frame member rear wall;
- (e) coordinating guide pin and link means detachably connecting said front end portion to said trailer at a first location;
- (f) coordinating locking pin and bushing means positively locking and detachably connecting said rear end portion to said trailer at a second location spaced longitudinally from said first location for preventing vertical separation of said rear end portion from said trailer;
- (g) a power fluid ram having upper and lower ends respectively pivotally connected to said foot member at a position between said front and rear end portions and to said beam member between said front and rear walls and within said enclosure; whereby said ram is retractable to swing said foot member upwardly and tilt said trailer downwardly for detachment of said foot member therefrom and extensible to swing said foot member downwardly and tilt said trailer upwardly for drafting, said foot member rear portion pivoting into a position adjacent said rear wall edge when said ram is retracted;
- (h) a removable stop pin extending between said frame member and said foot member for limiting upward swinging of said foot member and downward tilting of said trailer, said pin selectively and manually insertable through said frame member side wall apertures and engageable with said foot side wall notches when said foot member is in a position for drafting thereby retaining said trailer at a desired ride height for drafting without usage of hydraulic rams; and
- (i) said frame member rear wall edge engageable with said foot member rear end portion when said power ram is retracted, said frame member rear wall edge comprising a stop member limiting the upward pivoting movement of said foot thereby orienting said foot member in an inclined position commensurate with the trailer front portion inclined portion for attachment thereto.

4,367,885
SKI BINDING

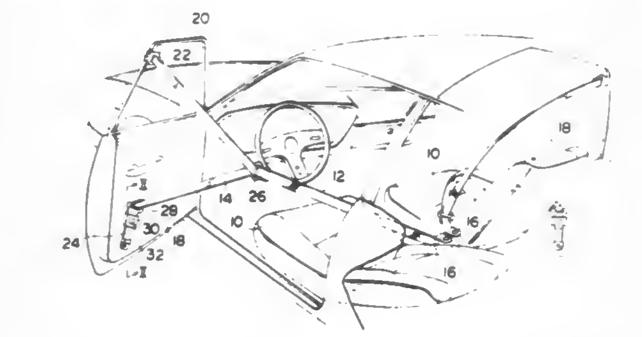
Paul C. Ramer, Golden, Colo., assignor to Alpine Research, Inc., Golden, Colo.
Filed Apr. 11, 1980, Ser. No. 139,252
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—614 **20 Claims**



14. A ski binding for releasably connecting a skier's leg and associated footwear to a ski comprising in combination:
- a toe piece mounted on said ski including laterally extending pin means;
- a boot plate releasably connected to said ski, said boot plate being rotatably connected to said pin means, whereby rotation of said boot plate relative to the toe piece is provided about an axis transverse to said ski;
- a heel piece mounted on said ski;
- said heel piece being releasably connectable to said boot plate to thereby selectively permit rotation of said boot plate relative to said toe piece;
- a leg cast which surrounds and retains the lower leg of the skier; strut means interconnecting said leg cast and said boot plate and releasably connected to the leg cast and to the boot plate; and
- a pair of generally vertically extending braces fixedly connected to either side of said boot plate and pivotally connected to said leg cast at the ankle of the skier whereby said leg cast can pivot about a second axis transverse to said ski passing through the ankle of the skier.

4,367,886
WEBBING SUPPORTING STRUCTURE

Kozo Hamada, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jan. 15, 1981, Ser. No. 225,358
Claims priority, application Japan, Mar. 5, 1980, 55-28744[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **4 Claims**

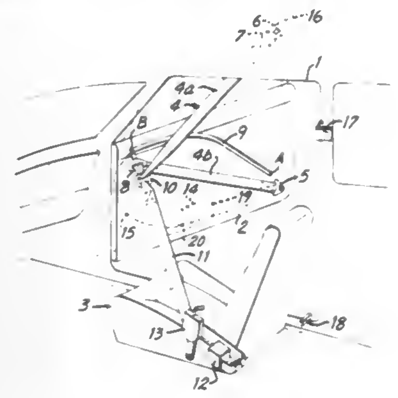


1. A webbing supporting structure for use in a seatbelt system for automatically fastening webbings to an occupant upon his entering a vehicle, comprising:
- (a) an outer webbing secured at one end thereof to the upper portion of a door,
- (b) an inner webbing movably connected to an intermediate portion of said outer webbing and windable upon a retractor,
- (c) a rigid anchor plate connected with the other end of said outer webbing, said anchor plate being pivotably supported on a base connected to a lower rear portion of the door, said anchor plate being pivotably supported on said base about a substantially horizontal shaft extending along the inner surface of the door,
- (d) a wire connected at one end thereof with the intermediate portion of said rigid anchor plate and extending into the door through an opening in an inner surface of the door,
- (e) a spring interposed between the other end of said wire and a vehicle body, a first tensile force of said spring at the time when the door is open being larger than an opposite force at the intermediate portion of said anchor plate caused by a winding force of said retractor and a second tensile force of said spring at the time when the door is closed being smaller than the opposite force,

whereby when the door is opened, said first tensile force of said spring allows said anchor plate to approach the door so as to facilitate the actions of the occupant entering or leaving the vehicle, and when the door is closed, said anchor plate moves away from the door by the winding force of said retractor so as to restrain the occupant.

4,367,887
AUTOMATIC PASSIVE SAFETY SEAT BELT SYSTEM FOR A VEHICLE

Juichiro Takada, 3-12-1 Shinmachi, Setagayaku, Tokyo, Japan
Filed Nov. 25, 1980, Ser. No. 210,257
Claims priority, application Japan, Nov. 30, 1979, 54-164949[U]
Int. Cl.³ B60R *21/00*
U.S. Cl. 280—803 **1 Claim**

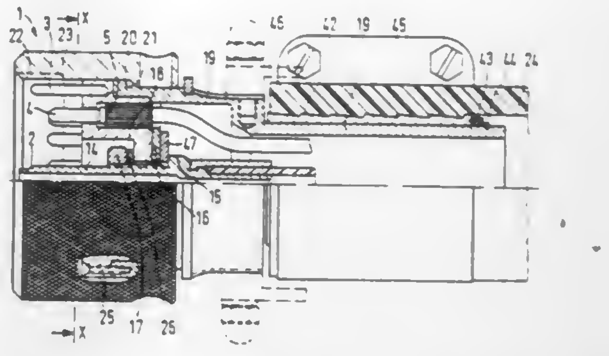


1. A passive safety seat belt system for a vehicle having a restraint position wherein the passenger of the vehicle is restrained from movement within the vehicle and a release position wherein the passenger is not restrained from movement, the door of the vehicle being closed in the restraint position and open in the release position, comprising:
- a direct current electric motor with first and second brushes positioned diametrically opposed on the commutator;
- a third brush positioned adjacent said second brush and contacting the commutator;
- means for connecting said first and second brushes only with a source of current to energize said motor such that it produces a first torque output in a forward direction to transfer the belt system from the restraint position to the release position; and
- means for connecting said first and third brushes only with a source of current to energize said motor such that it produces second torque smaller than said first torque and in a reverse direction to transfer the belt system from the release position to the restraint position;
- whereby the time for transfer of the belt system from the release position to the restraint position is substantially equal to the time for transfer from the restraint position to the release position.

4,367,888
PLUG COUPLER FOR SEVERAL HOSE CONNECTIONS

Siegfried Leverberg, Bremenkampstrasse 77, D-4200 Oberhausen 14; Manfred Hofmann, Geleitstrasse 17, D-6053 Obertshausen, and Helmuth Hoffmann, Albert-Einstein-Strasse 5, D-5060 Bergisch Gladbach 1, all of Fed. Rep. of Germany
Filed May 28, 1980, Ser. No. 154,013
Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922186
Int. Cl.³ F16L *39/02*
U.S. Cl. 285—28 **11 Claims**

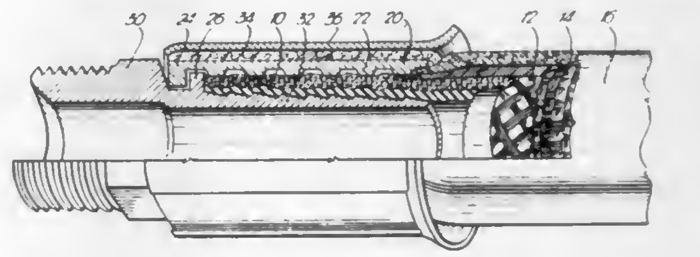
1. A hose coupling device for multiple hose connections requiring a tightly fitted hose fitting comprising:
- a plug portion having a support means with a plurality of bores;
- hose fitting means disposed within said plurality of bores;
- hose fitting pins extending from said hose fittings, and guide pin means;
- a socket portion consisting of a flange adaptor section and a spacer section;
- said flange adaptor section comprising
  - a flange adaptor means having a plurality of bores containing replaceable gasket means positioned in a groove in each of said plurality of bores, and
  - a releasable plate means connected to said flange adaptor means with a clamping bolt having a central bore receiving said guide pin means;
- said releasable plate means comprising a shoulder means releasably holding said releasable plate means to said flange adaptor means, a lock washer means cooperating with a groove in said clamping bolt, and a plurality of



bores registering with said plurality of bores in said flange adaptor means for receiving said hose fitting pins;
- said spacer section having a shell means with a plurality of bores for registering with said flange adaptor section bores and means connecting said spacer section bores to said releasable plate means.

4,367,889
FIRE GUARDED BLOWOUT PREVENTER HOSE

Philip J. Redl, Sherwood Park, Canada
Continuation-in-part of Ser. No. 44,735, Jun. 1, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,474
Claims priority, application Canada, Dec. 28, 1978, 318706
Int. Cl.³ F16L *39/02*
U.S. Cl. 285—149 **7 Claims**



1. A fireproof blowout preventer hose for oil well drilling rigs, comprising an inner tube suitable for conducting hydraulic fluid, said inner tube having a covering of:
- (a) at least one layer of high tensile material;
- (b) a moisture-proof bonding layer covering the high tensile material;
- (c) a layer of fireproof material;
- (d) an exterior cover layer;

and a coupling comprising cooperating inner and outer coaxial members adapted to retain at least the inner tube and the tensile layer therebetween, the outer member of the coupling being enveloped by a layer of fire-resistant insulating material retained by a non-combustible impact resistant shell.

4,367,890
TURBINE SET WITH A GENERATOR FEEDING A NETWORK OF CONSTANT FREQUENCY

Franz Spirk, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 2, 1981, Ser. No. 230,329
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3005375; Sep. 26, 1980, 3037147
Int. Cl.³ H02P *13/20*
U.S. Cl. 290—52 **11 Claims**

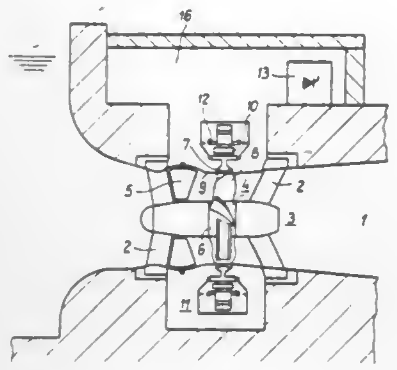
1. In a turbine set for supplying electric power to a distribu-

tion network operating at a fixed network frequency of 50 or 60 Hz comprising:

a turbine traversed by water and comprising a shaft and fixed blades;

a generator having a rotor and a stator with windings, said rotor coupled to said shaft; and

a frequency-controllable converter coupling the generator stator winding to the network, the improvement comprising:



(a) said generator adapted to operate at a frequency of less than 20 Hz;

(b) said frequency-controllable converter being a direct converter; and

(c) the speed of rotation of the turbine being continuously controllable to obtain optimum efficiency at the power being delivered.

4,367,891
INDUSTRIAL ROBOT WITH A GRIPPING MECHANISM

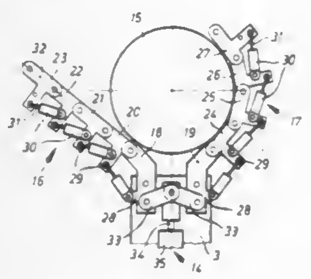
Gerd Wauer; Dietmar Becker, and Rubi Schönthaler, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,622

Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823584

Int. Cl.³ B25B *1/00, 1/24, 5/16*

U.S. Cl. 294—88 **4 Claims**



1. A gripping mechanism, for an industrial robot, for gripping workpieces of diverse configuration comprising at least two gripping fingers pivotally mounted on the robot, each of said gripping fingers having a plurality of workpiece engagement members movable thereon, means for moving said gripping fingers between an open position out of engagement with a workpiece and an engagement position in which said fingers grip a workpiece, means acting on each of said workpiece engagement members for moving each of said workpiece engagement members of each finger into adjusted positions in which said finger conforms to the configuration of the workpiece to be gripped, clamping means for locking each of said workpiece engagement members of each finger relative to each other in the adjusted positions, said moving means being operable to move each of said gripping fingers with said workpiece engagement members locked in said adjusted positions, and wherein each of said gripping fingers comprises a series of said workpiece engagement members successively hinged together, and said means acting on each of said workpiece engagement members comprises a fluid pressure operated piston and cylinder connected between adjacent engagement members to pivot said engagement members relatively to engage around the workpiece to be gripped.

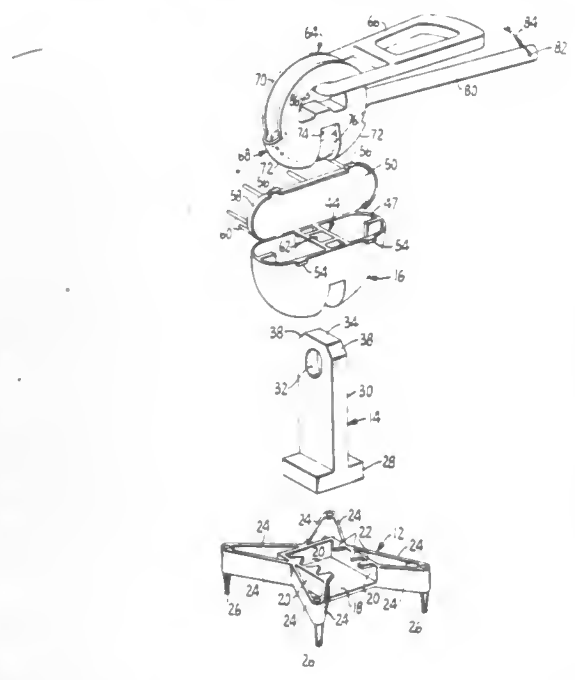
4,367,892
LIFT SYSTEM FOR TILT-UP WALLS

Neil L. Holt, Foster City, Calif., assignor to The Burke Company, San Mateo, Calif.

Filed Oct. 23, 1980, Ser. No. 199,944

Int. Cl.³ B66C *1/36, 1/66*

U.S. Cl. 294—89 **2 Claims**



1. Apparatus for putting up a tilt-up wall section comprising a hoisting cable, a shackle connected to the cable, a ring clutch interconnecting the shackle with an anchor emplaced in the wall section, the ring clutch comprising a ring having a split therein and an arcuate locking bolt rotatable relative to said ring between a locked condition extending across the split and a released condition removed from the split, said bolt having an elongated lever arm extending generally parallel to the wall section during lifting and in the direction of the upper end thereof, a release cable attached to the distal end of the lever arm to remotely operate the lever arm by rotating it outwardly and downwardly to a predetermined degree relative to the wall section to rotate the bolt to the released condition and disconnect the ring clutch from the anchor, and hoisting cable-controlled means to selectively block or allow rotation of the lever arm to said predetermined degree, said means being operated responsive to the application of lifting force to the hoisting cable to block rotation of the lever arm upon the application of lifting force to the hoisting cable and release the arm for rotation upon slacking off of the hoisting cable.

4,367,893
GRIPPING DEVICE

Arne Berg, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Jan. 14, 1981, Ser. No. 224,904

Claims priority, application Sweden, Jan. 17, 1980, 8000382

Int. Cl.³ B25J *15/00*

U.S. Cl. 294—106 **8 Claims**

1. A gripping device for manipulating objects, comprising:

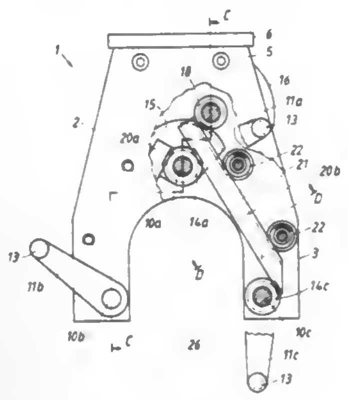
a support member;

first, second and third shafts rotatably journaled in said support member and carrying respective gear wheels and gripping arms rotatable with the respective shaft and gear wheels;

a first rack member interconnected with the gear wheels of said first and second shafts;

a second rack member interconnected with the gear wheels of said first and third shafts; and

a drive motor connected to rotate said first shaft such that rotation thereof causes movement of said first and second rack members and commensurate rotation of said second and third shafts by means of the respective gear wheels carried thereon to synchronously rotate the gripping arms to grasp and ungrasp an object.



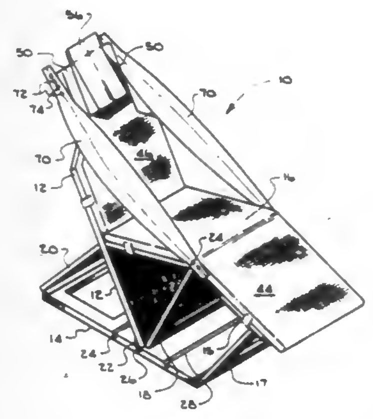
4,367,894
FOLDABLE DENTAL CHAIR

John L. Manuel, 960 Alexander Dr., Haysville, Kans. 67060

Filed Oct. 31, 1980, Ser. No. 202,643

Int. Cl.³ A47C *4/00*

U.S. Cl. 297—19 **10 Claims**



1. A foldable dental examining chair comprising:

a planar base member which supports the overall chair including adjustment means horizontally spaced on the base member;

a planar backrest member having disengageable attachment means at its lower end for engaging the adjustment means;

a backrest support panel pivotally attached at one end approximate the rear end of the base member and at the opposite end pivoted to the backrest;

a planar seat member removably attached to the front side of the backrest approximate its midpoint;

a seat support panel pivotally attached at one end to the front of the seat member and pivotally attached at the opposite end to the backrest, forming a rigid triangle with the seat and backrest, the attachment means on the backrest is engageable with various notches allowing the backrest and seat to be tilted toward the horizontal while at the same time moved forward so that the head of the patient in the various positions of the chair remains in the approximately same relative horizontal position.

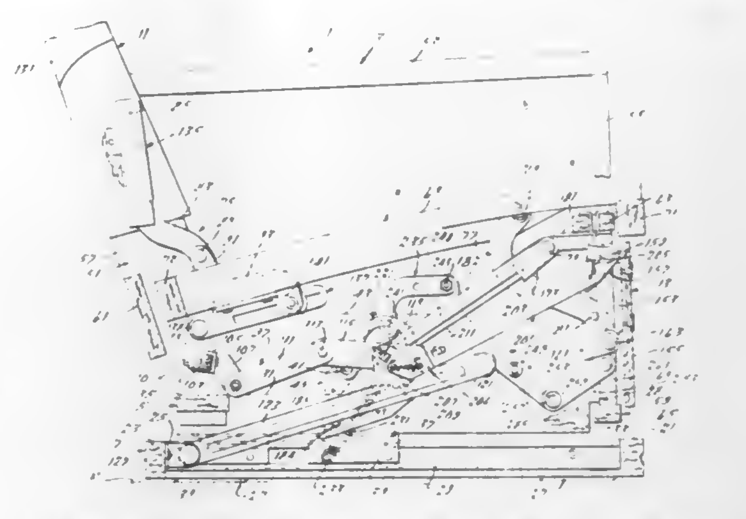
4,367,895
RECLINABLE CHAIR

William Pacitti, Monroe, and Harold P. Ruble, Deerfield, both of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Filed May 29, 1980, Ser. No. 154,374

Int. Cl.³ A47C *1/02;* **A61G** *15/00*

U.S. Cl. 297—85 **31 Claims**



1. A chair comprising base means, a chair frame, pivot means to tiltably mount said frame on said base means for pivotal tilting about a horizontal axis, a leg rest mounted on the chair frame for movement between a retracted position and an elevated position as well as intermediate positions, manually operated actuating means on the chair frame for moving the leg rest to said positions, tilt means acting between the chair frame and the base means for tilting the chair frame by pivoting it about said axis, and means operatively connecting the actuating means to the tilt means for simultaneously operating the tilt means to pivot the chair frame about said axis during movement of the leg rest and for holding the chair frame in a tilted position determined by and corresponding to the position of the leg rest.

4,367,896
ARMATURE FOR BICYCLE SADDLES

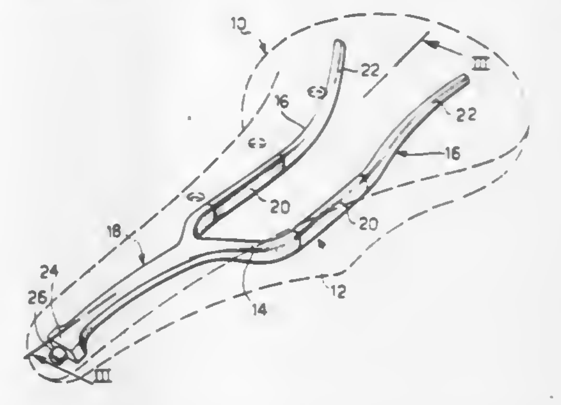
Mario Nieddu, Valdellatorre, Italy, assignor to Cinelli Cino & C. S.r.l., Milan, Italy

Filed Dec. 2, 1980, Ser. No. 212,165

Claims priority, application Italy, Dec. 6, 1979, 53785/79[U]

Int. Cl.³ B62J *1/00*

U.S. Cl. 297—195 **11 Claims**



1. An armature for supporting a shell of a bicycle saddle from a clamp carried by a saddle support pipe, said armature consisting of a single die-forged piece of light alloy, said single piece having a general shape similar to that of a fork with a yoke portion, a pair of symmetrical prongs extending in one direction each from a respective opposite end of the yoke portion, and a stem portion extending from the middle of the yoke portion in a direction opposite to said one direction and in a general plane of symmetry of the prongs, each of said prongs

having a respective rectilinear fastening portion extending from the yoke and a respective tail portion extending from the clamping portion, said rectilinear fastening portions being parallel to each other, so as to define a general base plane which is perpendicular to said plane of symmetry, and being adapted to be clamped in said clamp, said tail portions diverging from each other and having free ends which are adapted to support a rear portion of the saddle shell, and said stem portion having a free end which is adapted to support a front portion of the saddle shell.

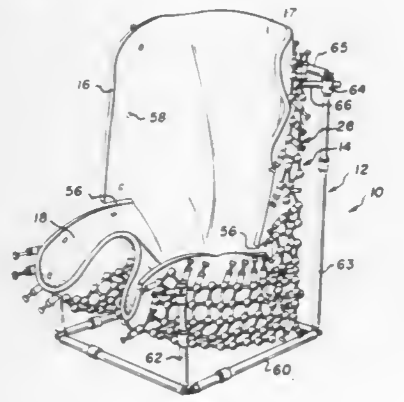
4,367,897
ADJUSTABLE SEAT FOR THE HANDICAPPED

Steven J. Cousins, 27 Stag Leys, Ashtead, Surrey, England (KT21 2TF)

Filed Dec. 29, 1980, Ser. No. 220,697

Int. Cl.³ A47C ***3/00***

U.S. Cl. 297—284 **7 Claims**



1. An adjustable seat comprising a support frame, a shapeable matrix mounted on the support frame and being formed of a multiplicity of modular units arranged in longitudinal and transverse rows, said modular units having passageways extending therethrough and contact surfaces surrounding open ends of said passageways, flexible members extending through the passageways of the modular units of each row to marginal edges of the shapeable matrix, anchor means securing corresponding ends of the flexible members to marginal edges of the shapeable matrix, and tension-applying devices on marginal edges of the shapeable matrix for tensioning the flexible members whereby the contact surfaces of adjoining modular units are frictional drawn together initially at a pressure allowing the shapeable matrix to be contoured to fit and properly brace selected parts of the body of a seated occupant and subsequently at a greater pressure thereby maintaining the shapeable matrix in its contoured condition.

4,367,898
EXCAVATING MACHINES FOR TUNNELING WITH TEMPLATE FIXED TO BOOM

Terence Oven, and Robert H. Higgs, both of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

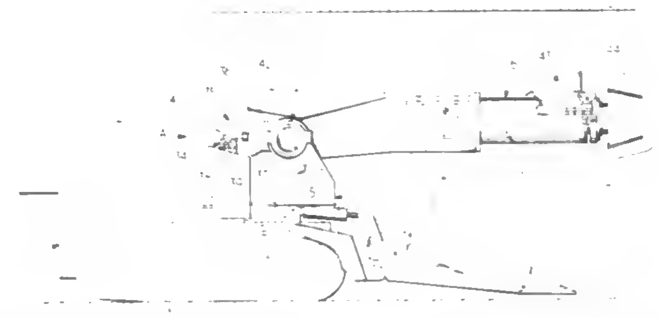
Filed Dec. 29, 1980, Ser. No. 221,364

Claims priority, application United Kingdom, Jan. 25, 1980, 8002606

Int. Cl.³ E21D ***9/10***

U.S. Cl. 299—1 **10 Claims**

1. An excavating machine for excavating rock or mineral to extend an underground roadway or tunnel, comprising a carriage moveable along the roadway or tunnel, a support assembly mounted on the carriage, a cutter-carrying boom pivotally supported on the support assembly, ram means for controlling pivotal movement of the boom, a control panel including means for controlling pivotal movement of the boom, an indication mechanism including a cutter-position indicator for indicating the position of the cutter, said indicator being mounted on either the support assembly or the carriage so as to be fixed relative to said boom; a template adjacent the indicator and defining a reduced scale profile of the roadway or tunnel cross-section, the template being mounted for movement with the boom so that the template moves in relation to the indicator.



4,367,899
HOLDER ASSEMBLIES FOR SENSITIZED CUTTER TOOLS ON MINING MACHINES

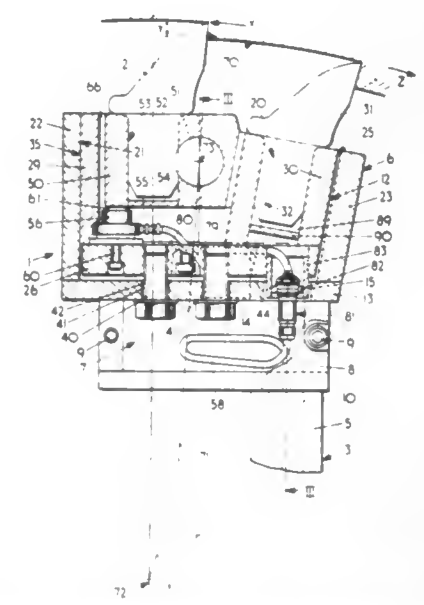
Raymond A. Whittaker; Raymond Lukaszewicz, and John A. Ford, all of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Jan. 9, 1981, Ser. No. 223,799

Claims priority, application United Kingdom, Jan. 11, 1980, 8001019

Int. Cl.³ E21C ***35/08***

U.S. Cl. 299—1 **8 Claims**



1. A sensitized cutter tool assembly for mounting on a rotary cutter head of a mining machine, the cutter being mounted on a drive shaft of the mining machine for rotation about the shaft axis, the sensitized cutter tool assembly comprising a sensitized cutter tool for sensing cutting reaction, a holder adapted to hold the sensitized cutter tool, a pivotal mounting pivotally supporting the holder with respect to the cutter head, and sensor means arranged for sensing the cutting reaction on the sensitized cutter tool, said cutting reaction tending to urge the holder to pivot about the pivotal mounting, the pivotal axis of the pivotal mounting positioned substantially to lie on a line extending between the rotational axis of the cutter head and the cutting margin of the sensitized cutter tool.

4,367,900
MINERAL MINING INSTALLATION WITH ELECTRONIC CONTROL

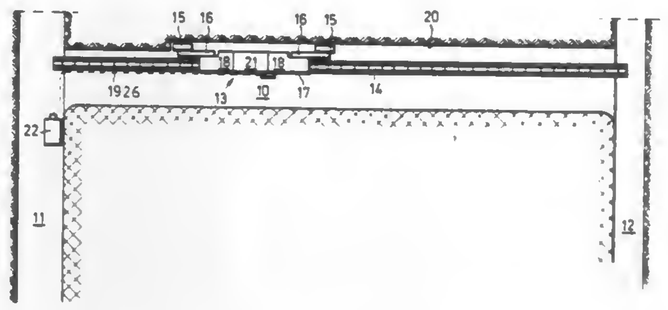
Thomas Trümper, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,358

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003910

Int. Cl.³ E21C ***29/00***

U.S. Cl. 299—1 **11 Claims**



1. In a mineral mining installation comprising a winning machine with a main body equipped with at least one rotary cutting means, first drive means carried on the body for driving the cutting means, and second drive means carried on the body for moving the machine; the improvement comprising: the second drive means is a three-phase a.c. motor and an electronic control system remote from the machine controls the second drive means to vary the speed thereof in dependence on the operation of the cutting means.

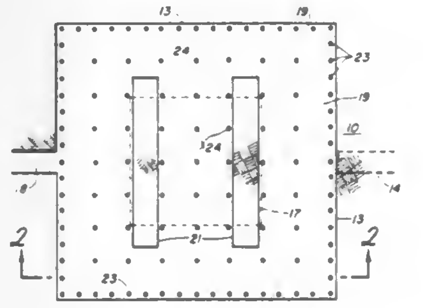
4,367,901
METHOD FOR FORMING AN IN SITU OIL SHALE RETORT

Chang Y. Cha, Golden, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Oct. 28, 1980, Ser. No. 201,631

Int. Cl.³ E21C ***41/10***

U.S. Cl. 299—2 **18 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, the retort having boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale comprising the steps of:

(a) excavating formation from within the retort site for forming at least one void extending horizontally across the retort site, leaving zones of unfragmented formation above and below such a void;

(b) drilling a first group of substantially parallel shot holes and a second group of substantially parallel shot holes into at least one of the zones of unfragmented formation within the retort site, the first group of shot holes being adjacent at least one of the boundaries of the retort site, the distance between adjacent shot holes in the first group of shot holes being less than the distance between adjacent shot holes in the second group of shot holes;

(c) placing explosive charges in the first and second group of shot holes;

(d) detonating the explosive charges in the first group of shot holes to propagate a crack extending between adjacent shot holes in the first group of shot holes and thereafter detonating the explosive charges in the second group of shot holes to explosively expand the zone of unfragmented formation towards the void for forming a fragmented permeable mass of formation particles in the retort;

(e) establishing a retorting zone in an upper portion of the fragmented mass;

(f) introducng a retorting gas into the fragmented mass for sustaining the retoring zone and for advancing the retorting zone through the fragmented mass; and,

(g) withdrawing liquid and gaseous products of retorting from a lower portion of the fragmented mass on the advancing side of the retorting zone.

4,367,902
TOOL FOR HYDROMECHANICAL OR HYDRAULIC MINING OR FOR CUTTING MINERAL OR BITUMINOUS MATERIALS

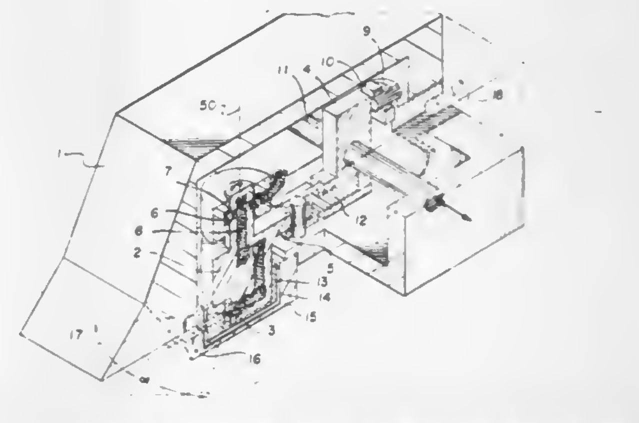
Karl H. Schwarting, Voerde; Heinrich Goris, Hamminkeln; Roland Günther, Wesel; Joachim Holz, Dortmund, and Kurt Ogorek, Oberhausen, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsberg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,559

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005486

Int. Cl.³ E21C ***27/18, 25/60***

U.S. Cl. 299—42 **16 Claims**



1. A tool for cutting a material along a path with a liquid jet directed onto the material comprising a housing having an interior chamber, said housing having an opening communicating with said chamber, a nozzle body, means for mounting said nozzle body to said housing through said opening for swiveling motion about a swivel axis, said nozzle body having a first portion including a cylindrical stem symmetrically disposed about the swivel axis within said chamber and a second portion extending through said opening including a nozzle having a nozzle bore for discharging the liquid jet, drive means operatively connected to said first portion for swiveling said nozzle body about the swivel axis, and means defining a fixed circular channel about said stem, said stem having a lengthwise bore therein which is symmetrical with the swivel axis and in communication with said nozzle bore and at least one radial bore radially extending through said stem to establish fluid communication between said circular channel and said lengthwise bore.

4,367,903

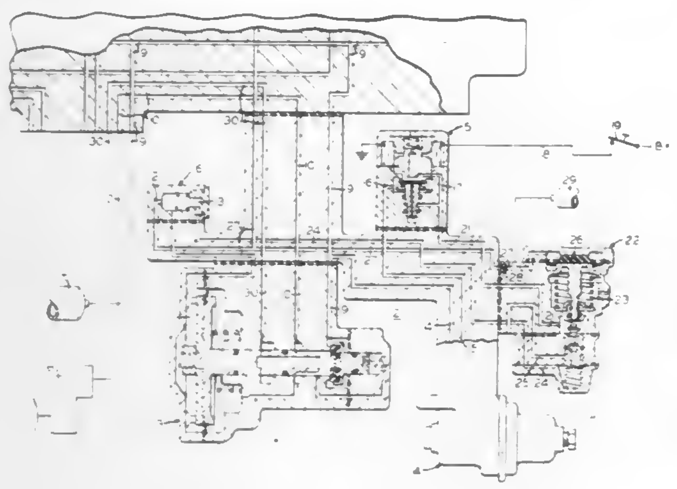
SYSTEM FOR AUTOMATICALLY DELAYING APPLICATION OF A SNOW BRAKE FOR A RAILWAY VEHICLE

Robert J. Worbois, North Huntingdon, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Oct. 27, 1980, Ser. No. 200,744

Int. Cl.³ B60T *15/46*

U.S. Cl. 303—13 **7 Claims**



1. A brake control system for controlling brake apparatus to apply and release the brakes of a railway vehicle comprising:

(a) means for providing a first brake control pressure in accordance with the degree of brake desired during a normal brake application;

(b) means for providing a second brake control pressure at a predetermined level to provide a light brake application during release of said normal brake application, said predetermined level of said second brake control pressure being less than said first brake control pressure;

(c) relay valve means subject to said first and second brake control pressures for effecting operation of said brake apparatus;

(d) control valve means for connecting the higher one of said first and second brake control pressures to said relay valve means; and

(e) timing means for delaying operation of said control valve means so as to withhold said connection of said second brake control pressure to said relay valve means for a predetermined time following release of said first brake control pressure, thereby permitting operation of said brake apparatus to a brake release position prior to said light brake application becoming effective.

4,367,904

ROTARY DRILL BIT WITH CONICAL ROTARY CUTTERS

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugallagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

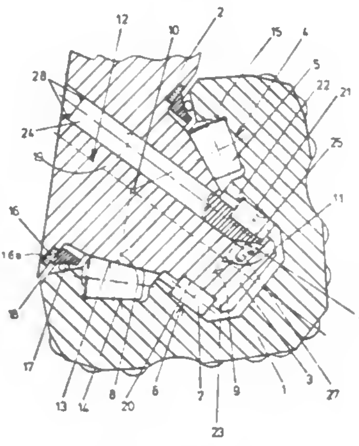
Filed Mar. 5, 1981, Ser. No. 240,993

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 8007104[U]

Int. Cl.³ E21B *10/20;* **F16C** *19/00*

U.S. Cl. 384—95 **8 Claims**

1. In a rotary drill bit assembly, comprising a drill bit body, at least one trunnion and a rotary cutter rotatably supported on the trunnion by bearing means including at least one inner roller bearing, the rollers of the inner roller bearings running in a deep radial bearing race groove in the trunnion and a deep radial bearing race groove formed in the bore of the rotary cutter and a filling opening extending generally axially in the trunnion between the inner bearing race grooves, characterized in that the outer bearing facing the drill bit body comprises a tapered roller bearing including a plurality of tapered rollers and wherein the filling opening for the rolling elements of the inner bearing is arranged radially inside the inner bearing race of the tapered rollers in the trunnion.



4,367,905

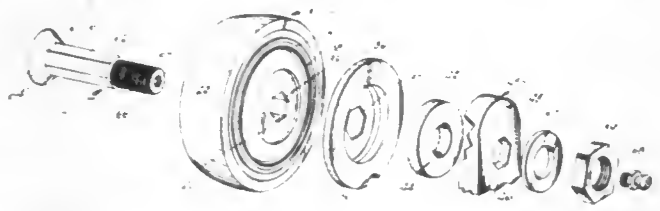
WHEELED SUPPORT ASSEMBLY FOR CONVEYORS WITH LOCKING AND FASTENING FEATURE

Randal W. Nauta, Wyoming, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Nov. 19, 1980, Ser. No. 208,285

Int. Cl.³ F16C *33/80, 43/04*

U.S. Cl. 308—182 **35 Claims**



1. In a wheeled support assembly for conveyors including a plurality of rolling elements, outer race means and inner race means for supporting said rolling elements in a space therebetween to allow rotation of said outer race means with respect to said inner race means, shield means adjacent at least one side of said race means for covering said space between said race means and shielding said rolling elements to resist their contamination with foreign matter, support means for supporting an object to be transported on said assembly, and shaft means for securing together and supporting said inner race means, shield means and support means, the improvement comprising:

said shaft means having a non-circular outer circumference; sand inner race means, shield means and support means each including a non-circular aperture therethrough corresponding in shape to said shaft means; said shaft means extending through said respective apertures to simultaneously lock said inner race means, shield means and support means against rotation with respect to one another and said shaft means; retaining means spaced along said shaft means for holding said inner race means, shield means and support means together on said shaft means;

at least a portion of said shield means abutting against said one side of said inner race means;

said assembly also including a spacing member intermediate said support means and said portion of said shield means; said retaining means tightly securing said support means against said spacer and said spacer against said portion of said shield means;

said retaining means including a head at one end of said shaft means; said shaft means having a threaded portion at the opposite end from said head, said head abutting said inner race in opposition to said one side, said threaded portion of said shaft means projecting beyond said support means; said retaining means also including a threaded fastener received on said threaded portion.

4,367,906

PULL-OUT GUIDE FOR DRAWERS

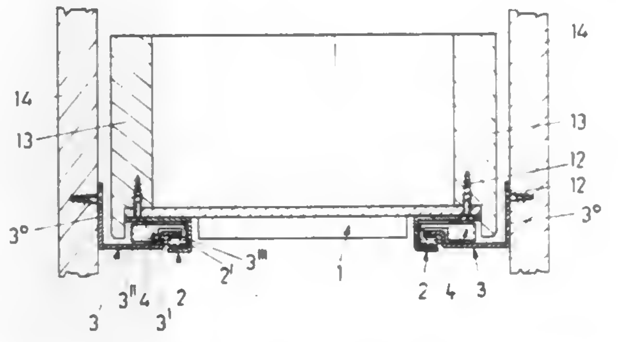
Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Sep. 18, 1980, Ser. No. 188,601

Claims priority, application Austria, Sep. 27, 1979, 6330/79

Int. Cl.³ F16C *21/00*

U.S. Cl. 312—330 R **6 Claims**



1. A guide assembly for use on each of opposite sides of a drawer in an article of furniture of the type wherein the drawer is slidably insertable into and removable from a furniture body, said assembly comprising:

a pull-out rail adapted to be mounted on the bottom of a drawer;

a supporting rail adapted to be mounted on a side portion of an article of furniture, said supporting rail including a vertical flange and first and second horizontal flanges extending from opposite sides of said vertical flange;

means for transferring the load of the drawer to the article of furniture, said means comprising a roller carriage mounted between said pull-out and supporting rails and carrying a plurality of supporting rollers arranged laterally of each other and lying substantially in a horizontal plane;

said plurality of rollers including first rollers positioned laterally of a first side of said vertical flange and contacting said first horizontal flange at a first surface of said supporting rail; and

said plurality of rollers further including second rollers positioned laterally of a second side of said vertical flange and resting adjacent said second horizontal flange at a second surface of said supporting rail.

4,367,907

CIRCUIT MONITORING JACK

Josef J. Buck, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Aug. 4, 1980, Ser. No. 175,353

Int. Cl.³ H01R *29/00*

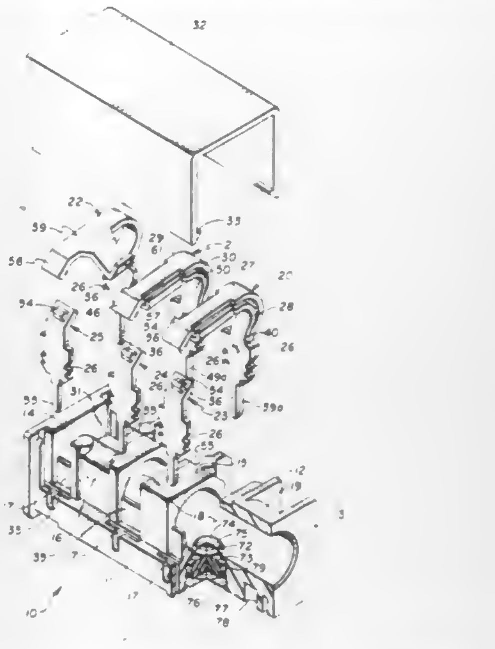
U.S. Cl. 339—113 R **27 Claims**

1. An electrical jack comprising:

an elongated housing having a generally cylindrical opening therein for insertion of a plug member having first and second electrical contact portions;

at least one contact assembly mounted in said housing and including a first contact member having a portion extending transversely across said cylindrical opening and a second contact member adapted for selective electrical contact with said first contact member, said first contact member including a first contact element movable between a first position in which said first contact element and said second contact member are electrically engaged and a second position in which said first contact element and said second contact member are electrically disengaged and a second contact element disposed generally radially inwardly of said first contact element and electrically connected therewith, said second contact element being adapted for selective electrical engagement with the first and second contact portions of the plug member, and being movable in a generally radial direction between first and second positions as a result of such engagement with the first and second contact portions of the plug member; and

means for moving said first contact element between its first and second positions in response to movement of said second contact element between its first and second positions, respectively.



4,367,908

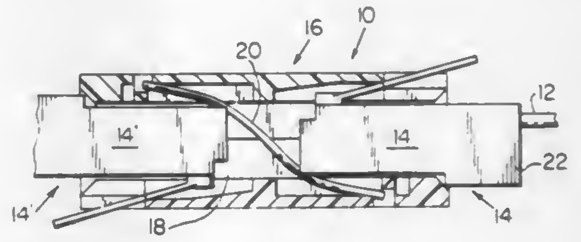
ELECTRICAL CONNECTOR COUPLING

James J. Johnston, Old Saybrook, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jun. 5, 1980, Ser. No. 156,786

Int. Cl.³ H01R *13/514*

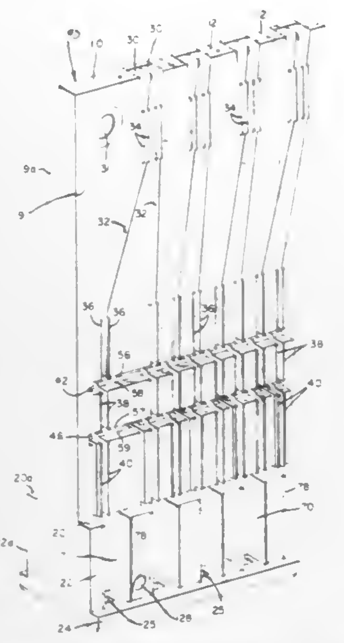
U.S. Cl. 339—154 A **16 Claims**



1. A coupling member for joining two electrical cable connectors in electrically conducting relation to each other, each of the connectors having a plurality of electrical terminals externally exposed at an end thereof, said coupling member comprising an axially elongated housing having an axially extending bore therethrough for receiving the two electrical connectors in opposite ends thereof, a plurality of resilient elongated parallel electrical contacts disposed within said housing and extending generally longitudinally of said housing and diagonally across said bore, means securing the opposite ends of said one electrical contact within said housing for limited movement relative to said housing, and means for securing each of said connectors within an associated end portion of said bore with the terminals thereof in registry with said contacts to bias each of the terminals into and maintain it in electrically contacting engagement with an associated one of said contacts.

4,367,909
RIBBON CABLE CONNECTOR

Walter C. Shatto, Jr., Harrisburg, Pa., and Walter M. Young, Largo, Fla., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 28,952, Apr. 11, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,049
Int. Cl.^{3} H01R *13/00*
U.S. Cl. 339—176 MF **5 Claims**



1. A multi-contact electrical connector of the type having two rows of electrical contact terminals and intended to be installed on the end portion of a flat multi-conductor cable, said connector comprising a dielectric body having a conductor receiving end, a mating end, and oppositely facing first and second sidewalls extending from said conductor receiving end to said mating end, the improvement comprising:

a plurality of terminal receiving cavities in said oppositely directed sidewalls, each said cavity having one of said terminals therein,

a plurality of entries in said conductor receiving end, some of said entries communicating with said first sidewall and other of said entries communicating with said second sidewalls, all entries having a conductor receiving portion which lies along a common straight line extending the length of the conductor receiving end of the dielectric body, said straight line defining the center line of a straight path, said path having a greater width than the thickness of said conductors, whereby said conductors can be moved into the entries in a coplanar array,

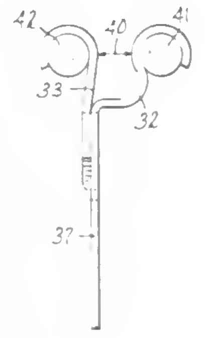
a plurality of guide grooves in said oppositely directed sidewalls, each said guide groove communicating between one of said entries and one of said terminal receiving cavities, whereby,

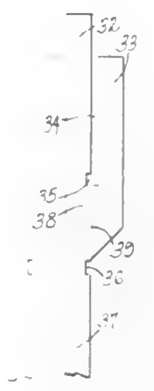
upon moving each conductor in said multi-conductor cable into one of said entries some of said conductors will be biased to said first sidewall and other of said conductors will be biased to said second sidewall, and upon aligning said conductors into said conductor guide grooves, each said conductor will communicate with a terminal receiving cavity for termination to an electrical terminal therein.

4,367,910
MINI-TERMINAL

Jack Seidler, 59-40 15th St., Flushing, N.Y. 11359
Filed Feb. 2, 1981, Ser. No. 230,907
Int. Cl.^{3} H01R *5/04*
U.S. Cl. 339—275 B **11 Claims**

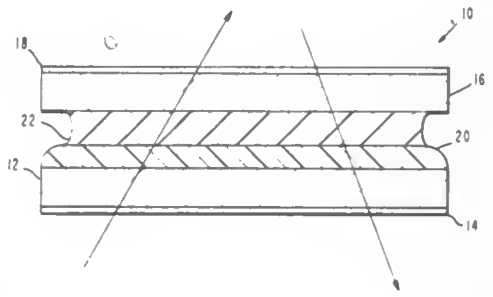
1. A terminal clip for securement to a contact pad on a circuit bearing chip comprising an elongated clip body portion having a free end and a stem end, said body portion being cut longitudinally from the direction of the free end along at least one cut line to define at least two substantially parallel fingers, said body being folded along at least one fold line which is an extension across the body portion of said at least one cut line, said fingers being bent out of the plane of the body portion into positions defining a gap adapted to receive an edge portion of a circuit bearing chip and at least one finger being provided with a solder mass.





4,367,911
METHOD AND ASSEMBLY FOR HOLOGRAPHIC EXPOSURE

Andrejs Graube, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jul. 14, 1980, Ser. No. 167,882
Int. Cl.^{3} G03H *1/02*
U.S. Cl. 350—3.61 **16 Claims**



1. An assembly for exposure of a photosensitive material, said assembly comprising:

a rigid base element;

a photosensitive material layer mounted on said base element;

a rigid cover element above said photosensitive material layer, at least one of said elements being substantially optically transparent; and

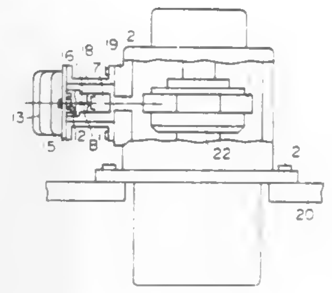
a solid synthetic polymer composition material between said photosensitive material layer and said cover element to form a rigid assembly.

2. The assembly of claim 1 wherein said substantially transparent rigid element is glass, having an anti-reflective coating thereon on the side away from said photosensitive material layer.

3. The assembly of claim 1 wherein both of said rigid elements are made of substantially optically transparent glass having an anti-reflective coating thereon on the side opposite said photosensitive layer.

4,367,912
LIGHT DEFLECTING APPARATUS

Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 24, 1980, Ser. No. 132,880
Claims priority, application Japan, Mar. 29, 1979, 54-37391
Int. Cl.^{3} G02B *27/17*
U.S. Cl. 350—6.8 **17 Claims**



1. A light deflecting apparatus for deflecting a light beam to scan over a predetermined scanned surface, comprising:

a mirror for deflecting the light beam;

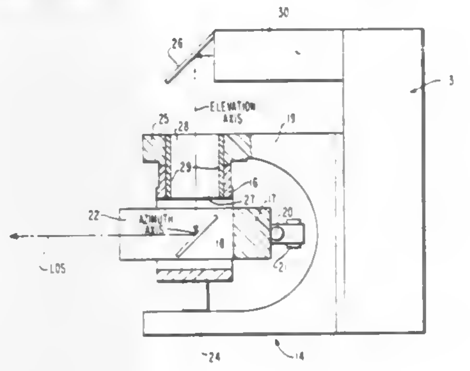
a case enclosing said mirror and being attached to a base plate;

a laser oscillator attached to said case in spaced-apart relationship with the base plate for generating the light beam; and

a lens for forming an image of the light beam on said scanned surface.

4,367,913
INERTIALLY DAMPENED HELIOSTAT ASSEMBLY

Dale R. Logan, Bowie, and John J. Buckley, Catonsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 29, 1981, Ser. No. 268,546
Int. Cl.^{3} G02B *23/00*
U.S. Cl. 350—500 **5 Claims**



1. A heliostat device for an electro-optical system, comprising

a base having a pair of spaced parallel extending arms, each of said arms having adjacent their outer ends a bearing surface for pivotally supporting an elevation gimbal between said arms, one of said bearing surfaces being annular with a central opening through its associated arm;

a housing attached to said base inwardly of the outer ends of the arms;

a first reflecting surface fixedly attached to said housing in a position to reflect a line of sight extending substantially axially through the bearing opening;

an elevation gimbal having bearing surfaces spaced to fit in the bearing surfaces in the arms to pivot about a horizontal axis in elevation substantially coincident to the line of sight, one of said bearing surfaces having an opening to align with the central opening in the associated bearing surface of the arm, said elevation gimbal being annular in configuration;

an azimuth gimbal attached to the elevation gimbal to pivot about a vertical azimuth axis, said azimuth gimbal being annular in configuration;

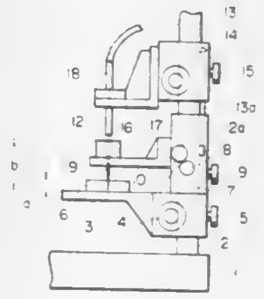
a second reflecting surface attached to the azimuth gimbal to pivot about an axis substantially coincident to the azimuth axis, and to intersect and redirect the line of sight;

a half angle drive assembly responsive to relative turning movement between said elevation gimbal and said azimuth gimbal about said azimuth axis in the same direction as the elevation gimbal azimuth movement but to one half the angular extent; and

dampening means fastened to said half-angle drive assembly to minimize the effect of vibration of the heliostat members on the line of sight.

4,367,914
MICROSCOPE EQUIPPED WITH A MICRO MANIPULATOR

Shizuo Mukasa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1980, Ser. No. 210,530
Claims priority, application Japan, Nov. 29, 1979, 54/164294[U]
Int. Cl.^{3} G02B *21/32*
U.S. Cl. 350—530 **3 Claims**



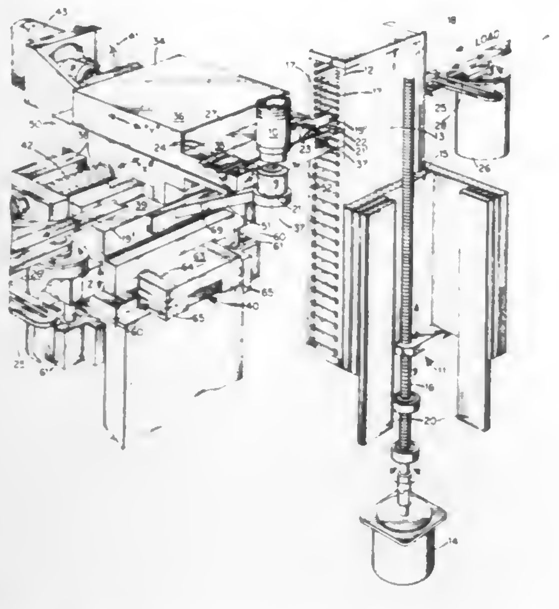
1. A microscope including a base and being equipped with a micro manipulator comprising a pipe for setting a needle detachably, a pipe holder assembly for holding said pipe, and a condenser lens assembly located below said pipe holder assembly and having a run-through slot allowing said needle to pass therethrough, a lower support erected on a base of said microscope and an upper support fixed to said condenser lens assembly, said condenser lens assembly being shiftably and rotatably mounted on said lower support, and said pipe holder assembly being shiftably and rotatably mounted on said upper support.

4,367,915
AUTOMATIC MICROSCOPE SLIDE

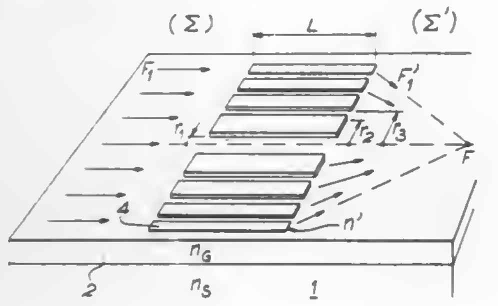
Michael P. Georges, P.O. Box 800, Norwood, Mass. 02062
Continuation of Ser. No. 920,157, Jun. 29, 1978, Pat. No. 4,248,498, which is a continuation of Ser. No. 746,617, Dec. 1, 1976, abandoned. This application Jan. 25, 1981, Ser. No. 228,762
The portion of the term of this patent subsequent to Feb. 3, 1997, has been disclaimed.
Int. Cl.^{3} G02B *21/26*
U.S. Cl. 350—530 **12 Claims**

1. A bio-medical microscope specimen slide positioning apparatus adapted for use in automatic sequential examination of a group of microscope specimen slides and comprising:

a storage magazine for storing a plurality of said microscope specimen slides; means for said magazine operable for indexing a specimen slide to a specimen slide exit or entry position; specimen slide transfer means positioned relative to said storage magazine for removing and transporting from said magazine said specimen slide located in said magazine and positioned at said specimen slide exit or entry position; a microscope specimen slide stage for receiving a specimen slide from said magazine; means for positioning and retaining said specimen slide on said specimen slide stage; translation means for moving and positioning said stage with a specimen slide supported thereon in a geometric plane; and means for mounting to the apparatus a microscope optical viewing system in a disposition adjacent to said retained specimen slide such that by operation of said translation means said specimen slide can be moved about and positioned in the optical axis of said optical viewing system for optically examining the specimen on said specimen slide; said specimen slide transfer means including means positioned relative to said stage for removing said specimen slide from said stage after microscope examination.



4,367,916
FRESNEL LENS FOR INTEGRATED OPTICS
Patrick Mottier, and Serge Valette, both of Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Jun. 23, 1980, Ser. No. 162,162
Claims priority, application France, Jun. 22, 1979, 79 16081
Int. Cl.^{3} G02B *5/172, 1/00*
U.S. Cl. 350—96.12 **14 Claims**

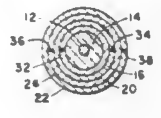


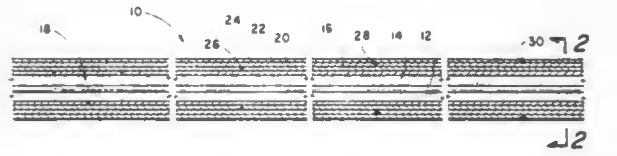
1. A phase displaced Fresnel lens for integrated optics, the lens having an optical axis, comprising a waveguide and arranged in symmetrical fashion on each side of the optical axis of the lens, a number p of overlayers disposed on the surface of said waveguide propagating a wave in accordance with a given propagation mode, the overlayer of order m from the axis having a width

$$l_m = \sqrt{(m+1)\lambda f}$$

and a distance from the axis of $r_m = \sqrt{m\lambda f}$ in which f is the focal length of the lens, m is a parameter taking successively the different values of the natural sequence of integers between 1 to p and λ is the wavelength utilized, said overlayers of even or odd rate in the direction perpendicular to the movement of the light having a thickness w greater than the value for which the effective index of the subjacent part of the waveguide saturates, the phase displacement π of the luminous vibration at the level of said overlayers of even or odd rate resulting solely from the choice of the length L of each of said overlayers in the direction of progression of the light.

4,367,917
MULTIPLE SHEATH CABLE AND METHOD OF MANUFACTURE
Stanley J. Gray, 8502 E. 121st St., Bixby, Okla. 74008
Division of Ser. No. 112,933, Jan. 17, 1980, Pat. No. 4,317,003. This application Jan. 8, 1981, Ser. No. 223,244
Int. Cl.^{3} G02B *5/14*
U.S. Cl. 350—96.23 **5 Claims**





1. A multiple sheath cable comprising at least one elongated fiber optic conductor element surrounded by insulation material, a first tubular metal sheath tightly surrounding said insulation material and conductor element, said metal sheath comprising a plurality of elongated segments butt-welded to form spaced splice joints, said joints having diameter substantially equal to the diameter of the tubular sheath, at least one subsequent tubular metal sheath tightly surrounding said first tubular metal sheath and comprising a plurality of elongated segments butt-welded to form spaced splice joints, none of said second or subsequent splice joints being superimposed over the splice joint of the next preceding sheath.

4,367,918
PLASTIC CLAD OPTICAL FIBERS
Douglas A. Pinnow, Cheshire, Conn., assignor to Times Fiber Communications, Inc., Wallingford, Conn.
Filed Jan. 22, 1980, Ser. No. 114,196
Int. Cl.^{3} G02B *5/172*
U.S. Cl. 350—96.30 **17 Claims**

1. A plastic clad optical fiber comprising:

(i) a core of a given refractive index comprised of silica and at least one dopant in an amount which is sufficient to achieve a refractive index substantially throughout the core which is at least 0.5% greater than the refractive index of silica; and,

(ii) a cladding surrounding said core comprised of a silicone resin having a refractive index less than the refractive index of silica;

said fiber being capable of functioning in a temperature range of −40° C. to −50° C. without significant loss of waveguiding ability.

4,367,919
DURABLE GLASS ELEMENTS
Chi F. Tung, and Benjamin T. Fellows, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 101,646, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 922,533, Jul. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 820,809, Aug. 1, 1977, abandoned. This application Mar. 19, 1981, Ser. No. 245,369
Int. Cl.^{3} C03C *3/08;* **G02B** *5/28*
U.S. Cl. 350—105 **14 Claims**

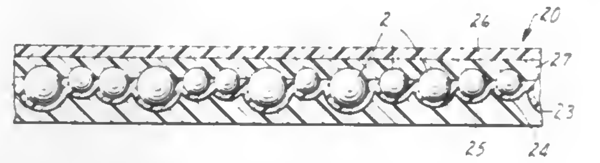
1. Durable visibly transparent clear microspheres less than about 2 millimeters in diameter, containing no more than about 5 weight-percent scattered crystallinity, and adapted for use as a reflective element in a pavement marking, said microspheres being formed from glass that consists essentially of ingredients as listed in the following table, in which percentages are given by weight:

B_2O_3	5-20
TiO_2	20-40
BaO and/or SrO	10-35
Alkali-metal oxide selected from Na_2O and K_2O	0-15
SiO_2	25-40
All other ingredients	0-15;

said glass being essentially free of CaO, and containing no more than 10 weight-percent ZnO; and said glass having an index of refraction between 1.6 and 1.9, and exhibiting a crush resistance of at least about 3500 kilograms per square centimeter.

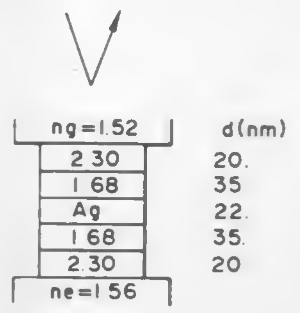
7. Pavement marking tape comprising a backing and a layer of microspheres of claim 1, 2, 4, 5, or 6 carried on the backing.

4,367,920
RETROFLECTIVE SHEETING
Chi F. Tung, and James C. Coderre, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 80,434, Oct. 1, 1979, abandoned. This application Jun. 19, 1981, Ser. No. 275,275
Int. Cl.^{3} G02B *5/128*
U.S. Cl. 350—105 **19 Claims**



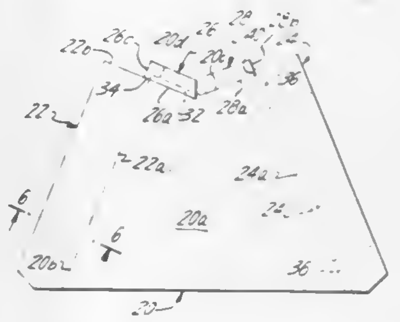
1. Component sheet material useful in combination with a transparent layer applied in full contact with the front surface of the sheet material to complete a wet-or-dry retroreflective sheeting that is retroreflective at its front surface only, said sheet material being wound upon itself in a storage roll and comprising a binder layer and a monolayer of transparent microspheres partially embedded in and partially exposed above the binder layer, whereby the exposed portions of the microspheres become embedded in the transparent layer upon application of the layer to the sheet material; the microspheres being present in an amount sufficient to cover at least 75 percent of the area of the binder layer, being exposed above the binder layer by on the average less than 50 percent of their diameter, and being arranged with their front surfaces in substantial alignment, whereby the completed retroreflective sheeting exhibits a three-quarter-brightness angle of at least 35°; and silver versions of the completed retroreflective sheeting exhibit a retroreflective brightness at an incidence angle of −4° and divergence angle of 0.2° of at least 100 candella per square meter of sheeting per lux of incident light.

4,367,921
LOW POLARIZATION BEAM SPLITTER
Mitsuharu Sawamua, Yokohama, and Susumu Ito, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1980, Ser. No. 174,002
Claims priority, application Japan, Aug. 10, 1979, 54-102492
Int. Cl.^{3} G02B *5/28, 27/10*
U.S. Cl. 350—164 **9 Claims**



1. A beam splitter comprising:
- a transparent substrate plate;
- a first thin filmlayer of a dielectric substance laid on said substrate and comprising a plural number of component layers having different refractive indexes, at least one said component layer having a refractive index less than 1.8, and the sum of the optical film thickness of said component layers being about λ/4, wherein λ is a wavelength between 350 nm and 700 nm;
- a metallic thin film layer laid on said first thin film layer; and
- a second thin film layer of a dielectric substance laid on said metallic thin film layer.

4,367,922
PENTAREFLECTORS AND THEIR MANUFACTURE
Morton S. Lipkins, 3 Nemeth St., Malverne, N.Y. 11565
Filed Sep. 17, 1980, Ser. No. 188,225
Int. Cl.^{3} G02B *5/08*
U.S. Cl. 350—301 **7 Claims**



1. A pentareflector, including a base plate having an essentially flat reference surface, first and second reflector plates having respective optically flat reflecting surfaces that converge at 45° in relation to each other, each reflecting surface being disposed at 90° to said reference surface of said base plate, each said reflector plate extending upward from the upper surface of the base plate and meeting said base plate at a respective joint wherein a said surface of one of the plates of each joint abuts an edge surface of the other plate of that joint and is united thereto by bonding material confined to a zone that is narrow compared to the thickness of the plates, and a pair of unifying plates, each unifying plate being bonded to a respective one of said reflecting plates and to said base plate.

4,367,923
LIQUID CRYSTAL DISPLAY UNIT FOR AN AUTOMOTIVE VEHICLE

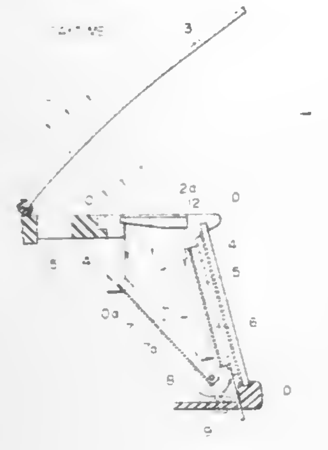
Masao Ishikawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 31, 1980, Ser. No. 173,883

Claims priority, application Japan, Aug. 1, 1979, 54-97379

Int. Cl.^{3} G02F *1/133*

U.S. Cl. 350—345 **6 Claims**



1. A liquid crystal display unit for an automotive vehicle, comprising:
(a) a liquid crystal display device having front and back sides and disposed within the vehicle so as to be viewed from the front side thereof;
(b) a light source located at the back side of said liquid crystal device, said light source turning on depending on whether the vehicle headlights are illuminated;
(c) a lens for collecting incident light rays from outside of the vehicle; and
(d) a means for selectively introducing light rays into the back side of said liquid crystal display device from said light source, said introducing means comprising a transparent member provided with a reflective backing layer and being supported so as to be movable between a daytime illumination position in which the incident light rays from said collecting lens are introduced into the back side of said liquid crystal display device by the reflective backing layer and a nighttime illumination position in which the light rays emitted from said light source are alternatively introduced into the back side of said crystal display device by said reflective backing layer.

4,367,924
CHIRAL SMECTIC C OR H LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE

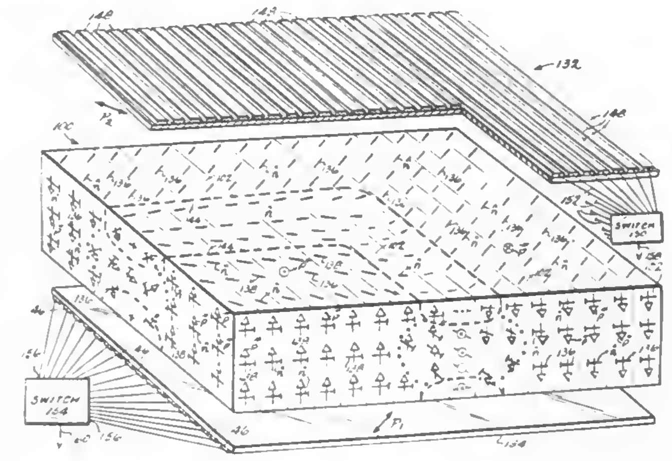
Noel A. Clark, 3106 Kittrell Ct., Boulder, Colo. 80303, and Sven T. Lagerwall, 30 Snackwagen, Goteborg, Sweden

Filed Jan. 8, 1980, Ser. No. 110,451

Int. Cl.^{3} G02F *1/13, 1/133*

U.S. Cl. 350—334 **24 Claims**

1. A liquid crystal electro-optical device comprising:
a quantity of chiral, at least one of smectic C and smectic H, liquid crystal having a plurality of adjacently disposed layers each comprised of a plurality of molecules, each molecule having a long axis;
first and second means, perpendicular to and contiguous with said layers, for aligning the long axes of said molecules adjacent to said first and second means parallel to said first and second means, said molecules of said layers in a bulk of said liquid crystal forming helixes having axes perpendicular to said layers, the distance between said first and second means being less than the distance at which said helixes form in the absence of an electric field, said first and second means causing said long axes to assume one of a first and second stable orientation;
means for applying an electric field to at least a portion of said layers, said electric field being parallel to said layers and perpendicular to said first and second means, and for reversing the direction of said electric field, the strength of said electric field being sufficient to shift the long axis of molecules in said portion of said layers from said first orientation to said second orientation upon application of said electric field in a direction reversed from the direction of said electric field previously applied; and
means for processing light passing through said liquid crytstal so that light passing through portions of said liquid crystal having said first orientation can be distinguished from light passing through portions of said liquid crystal having said second orientation.



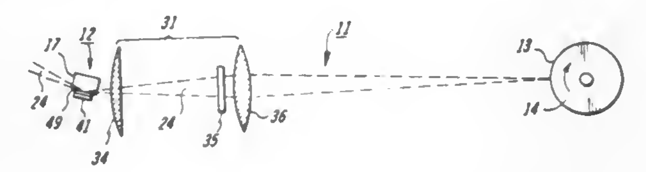
4,367,925
INTEGRATED ELECTRONICS FOR PROXIMITY COUPLED ELECTRO-OPTIC DEVICES

Robert A. Sprague, Saratoga, and William D. Turner, San Marino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 188,171

Int. Cl.^{3} G02F *1/01*

U.S. Cl. 350—355 **9 Claims**



1. In an electro-optic device including
an electro-optic element,
a plurality of electrodes intimately coupled to said electro-optic element, and
means coupled to said electrodes for applying voltages thereto, wherebyelectric fields are created within said electro-optic element;
the improvement comprising
an integrated circuit containing electronics for driving at least one of said electrodes,
a conductive layer deposited on said integrated circuit, said conductive layer making electrical connections to said electronics and being patterned to define at least said one electrode, and
means engaged with said electro-optic element and with said integrated circuit for maintaining the electrode defined by said conductive layer within a small gap distance of said electro-optic element, thereby proximity coupling said fields into said electro-optic element.

4,367,926
LIGHT BEAM INTENSITY STABILIZING METHOD

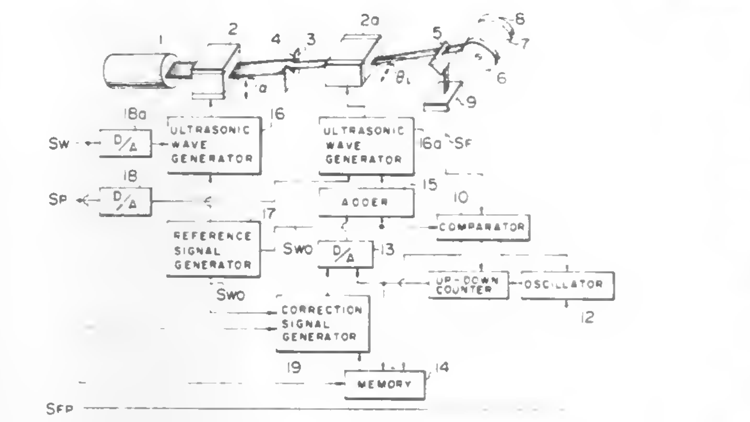
Tetsuo Hohki, Ibaraki, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Jun. 13, 1980, Ser. No. 159,389

Claims priority, application Japan, Jun. 20, 1979, 54-76684

Int. Cl.^{3} H04B *9/00*

U.S. Cl. 350—358 **10 Claims**



1. A method for stabilizing the intensity of a light beam emitted by a light source and deflected by an acoustooptical deflector element which is controlled by a control signal, comprising the steps of:
(a) detecting the intensity of the light beam;
(b) comparing the light beam intensity detected with a predetermined reference light intensity;
(c) detecting the difference between the light beam intensity and the reference light intensity;
(d) storing a correction signal, corresponding to the difference detected into a memory; and
(e) controlling the control signal by the correction signal read out of the memory so that the intensity of the light beam through the acoustooptical deflector element may be maintained to a certain level.

4,367,927
ZOOM LENS SYSTEM

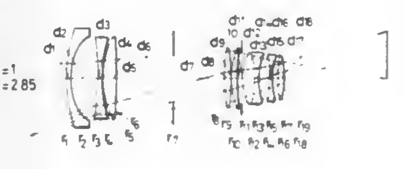
Toru Fujii, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

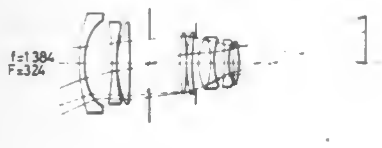
Continuation of Ser. No. 924,439, Jul. 13, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,576

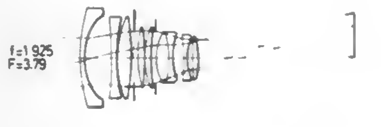
Claims priority, application Japan, Jul. 23, 1977, 52-87881

Int. Cl.^{3} G02B *15/14*

U.S. Cl. 350—426 **3 Claims**







1. A retrofocus type zoom lens comprising movable lens groups including a front negative focusing lens group and a rear positive imaging variable-magnification lens group, an aperture stop arranged in said rear positive lens group, and a flare stop arranged between said front negative lens group and said rear positive lens group, said movable lens groups being arranged so as to be displaced along the optical axis for zooming, said flare stop being arranged so as to be displaced in conjunction with zooming operation but independently of the displacements of said lens groups and arranged to eliminate the coma flare at the intermediate field angle, arranged so as to be positioned at the intersecting point of axial marginal pencil and lower pencil of the maximum field angle and have as its semidiameter a length between the optical axis and intersecting point and interrupt only a part of lower pencil of the intermediate field angle to eliminate the flare at the wide position and arranged so as to have such magnitude as touching the axial marginal pencil and interrupt a part of both lower pencils of the maximum and intermediate field angles to eliminate the flare at the tele position.

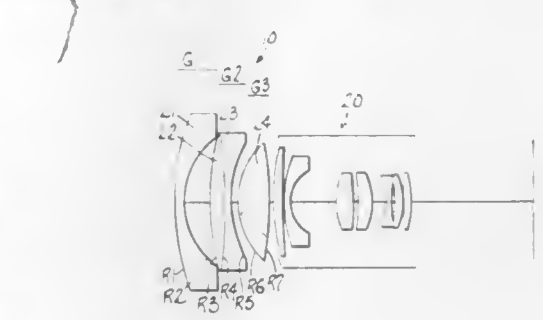
4,367,928
WIDE ANGLE LENS ATTACHMENT

Melvyn H. Kreitzer, Cincinnati, Ohio, and Muh-fa Chen, Daytona Beach, Fla., assignors to Vivitar Corporation, Santa Monica, Calif.

Filed Apr. 11, 1980, Ser. No. 139,346

Int. Cl.^{3} G02B *13/22*

U.S. Cl. 350—453 **9 Claims**



1. An afocal reversed telescopic lens adapted to be used with a retrofocus prime lens to provide an increased field angle of the combined lenses upon axial alignment with the prime lens at the object end thereof, said lens comprising from the object end: a first negative group consisting of a meniscus element convex to the object, a second group in the form of a negative doublet including a positive element convex to the object, and a third positive group having convex object and image side surfaces.

4,367,929
FRAME FOR EYEGLASSES WITH INCLINABLE LENSES

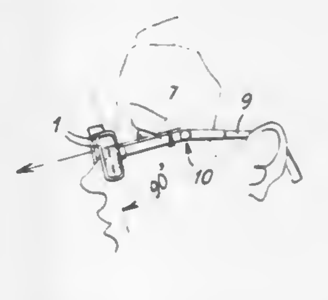
Umberto Fortini, Via F. Caracciolo 18, Florence, Italy

Filed May 21, 1980, Ser. No. 151,837

Claims priority, application Italy, May 25, 1979, 11669/79[U]

Int. Cl.^{3} G02C *5/14, 5/08*

U.S. Cl. 351—119 **4 Claims**



1. A frame for eyeglasses comprising a front part for the lenses to the ends of which there are articulated, along two principal articulations parallel to each other, two arms adapted to be swung against the front part and to be raised from same for use on the ears, characterized by the fact that each of the

arms has a transverse articulation along a geometric axis transverse to the head and common to the two arms when the frame is mounted on the face in order to permit an inclination of the front part and therefore of the lenses along said transverse axis; the transverse articulations having a disc of relatively elastic material disposed between the portions of the two arms and pin means pivotally joining the portions of the arms and compressing said disc to hold the portions of the arms frictionally together in order to maintain the inclination imposed between them and thus on the front part.

4,367,930

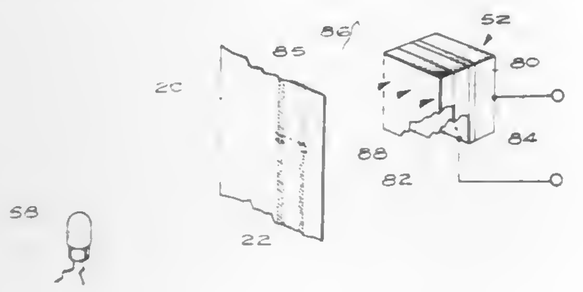
SOUND REPRODUCTION METHOD AND APPARATUS

Frederick J. Kolb, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,497

Int. Cl.^{3} G03B *31/02*

U.S. Cl. 352—27 **15 Claims**



1. Optical sound reproduction apparatus for producing sound-related signals from radiation modulated by an optical sound track, the sound track including areas of density preferentially absorptive in a visible region of the spectrum, said apparatus comprising:

means for illuminating said optical sound track with radiation within said visible region of the spectrum to thereby provide radiation that is modulated by the density areas in the optical sound track;

means for converting at least a portion of said modulated radiation in said visible region into modulated radiation nearer to the infrared region of the spectrum; and

photoreceptive means preferentially responsive to said modulated radiation nearer to the infrared region of the spectrum for generating signals representative of the density areas in the optical sound track.

4,367,931

ELECTROMAGNETICALLY DRIVEN DIAPHRAGM DEVICE

Tohru Kawai, Kawasaki, and Makoto Masunaga, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,742

Claims priority, application Japan, Sep. 17, 1979, 54-119047

Int. Cl.^{3} G03B *7/095, 9/07*

U.S. Cl. 354—23 D **7 Claims**

1. An electromagnetically operated diaphragm device for a lens assembly comprising:

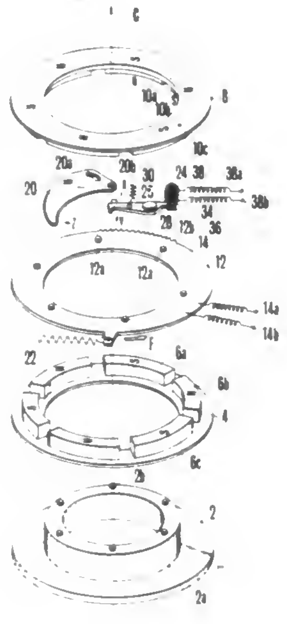
(A) an electromagnetic unit including:

(a) two sets each having a plurality of magnet members arranged circularly around an optical axis within said lens assembly, the members in each set having poles, the poles of one set facing opposite poles of the other set;

(b) a rotary member arranged in a space between said two circles of magnet members and carrying a coil having portions extending in directions relative to the magnet members to produce rotary movement of the rotary member in response to current through the coil; and

(c) diaphragm blades positioned between said magnet members and said rotary member, said diaphragm blades being pivoted on said rotary member and forming a variable aperture depending upon the position of rotation of said rotary member; and

(B) diaphragm blade stopping means for stopping movement of said diaphragm blades due to the rotation of said rotary member, said diaphragm blade stopping means stopping said rotary member from further rotation so that the size of the aperture opening defined by said diaphragm blades is adjusted to a given value.



4,367,932

EXPOSURE CONTROL SYSTEM

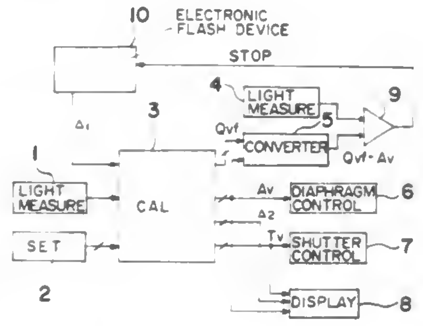
Norio Ishikawa, Osaka; Nobuyuki Taniguchi, Sakai, and Yoshio Yuasa, Kawachinagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 21, 1980, Ser. No. 199,211

Claims priority, application Japan, Oct. 23, 1979, 54-137210; Jan. 8, 1980, 55-1203; Jan. 9, 1980, 55-1548

Int. Cl.^{3} G03B *7/097, 7/16*

U.S. Cl. 354—23 D **37 Claims**



1. An exposure control system for a photography operation under an ambient light and a flash light, said system comprising:

first means for controlling an exposure time;

second means for controlling an aperture size;

third means for controlling an amount of flash light to be emitted;

means for measuring an intensity of the ambient light;

means for setting a film sensitivity and two of the exposure time, the aperture size and the flash light amount to govern the corresponding two of the three control means;

means for calculating the other of the exposure time, aperture size and the flash light amount in response to said measuring means and said setting means; and

means for governing the other of said controlling means in response to said calculating means.

4,367,933

AUDIBLE INDICATION DEVICE FOR CAMERAS

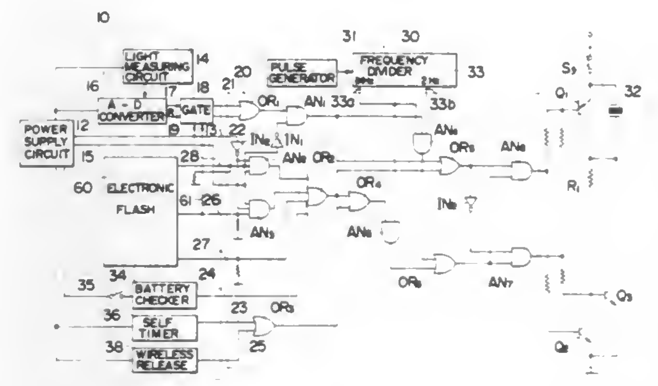
Masayoshi Sahara, Sennan, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1980, Ser. No. 211,906

Claims priority, application Japan, Dec. 6, 1979, 54-169416[U]

Int. Cl.^{3} G03B *15/05, 17/18;* G08B *23/00*

U.S. Cl. 354—23 D **9 Claims**



1. An audible indication device for a camera comprising:

a sound generator for generating sound;

means for driving said sound generator;

a first signal generator for generating a first indication signal representative of information to be recognized in the proximity of the indication device;

a second signal generator for generating a second indication signal representative of information to be recognized remotely from the indication device; and

sound control means connected to said first and second signal generator for determining which signal generator generates a signal and said driving means including means to change the volume of the sound to be generated by said sound generator in accordance with the output of said sound control means such that the sound generated by said sound generator differs depending on which indication signal is generated.

4,367,934

CAMERA WITH AN AUTOMATIC FOCUSING DEVICE

Tooru Matsui, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

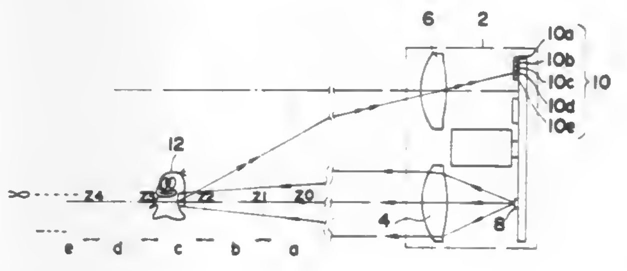
PCT No. PCT/JP81/00002, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/02067, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 7, 1981, Ser. No. 285,114

Claims priority, application Japan, Jan. 9, 1980, 55-1265[U]

Int. Cl.^{3} G03B *3/10, 13/20*

U.S. Cl. 354—25 **4 Claims**



1. In a camera with an automatic focusing device which detects a distance to a target object by a plurality of light receiving elements receiving a light projected from a light source towards the target object and reflected from the target object, and which can vary the distance being focused by a picture taking optical system, said camera comprising:

change-over means for setting said picture taking optical system selectively to an ordinary photography condition wherein the distance to be focused thereby is variable within a given range, and to a close-up photography condition wherein the distance to be focused is fixed to a value outside of said given range;

first light emission control means for actuating a light emitting element light source to emit a light pulse only once;

second light emission control means for actuating said light emitting element to successively emit light pulses;

a detector means for detecting the output of each of said light receiving elements;

a focusing means capable of changing, in response to the output of said detector means, the distance to be focused by said picture taking optical system; and

an indication means for indicating, in response to the output of said detector means, that said target object is at the position corresponding to the given fixed distance to be focused by said picture taking optical system, said automatic focusing device being constructed such that said first light emission control means and said focusing means are operable with said picture taking optical system being set to said ordinary photography condition by said change-over means, and said second light emission control means and said indicator means are operable with said optical system being set to said close-up photography condition.

4,367,935

CAMERA EQUIPPED WITH AN AUTOMATIC FOCUS ADJUSTING DEVICE

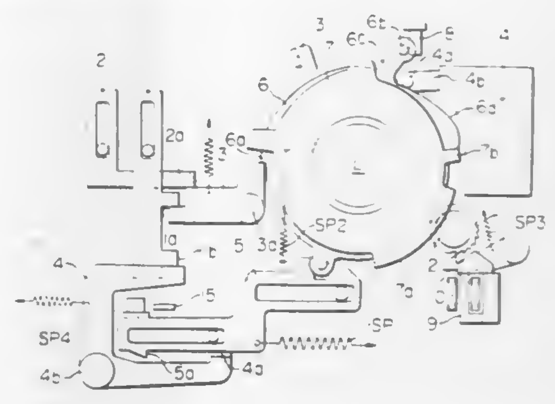
Takao Kuge, and Takeshi Ohta, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Continuation of Ser. No. 974,110, Dec. 27, 1978, abandoned. This application Dec. 30, 1980, Ser. No. 221,921

Claims priority, application Japan, Dec. 29, 1977, 52-160883

Int. Cl.^{3} G03B *7/08*

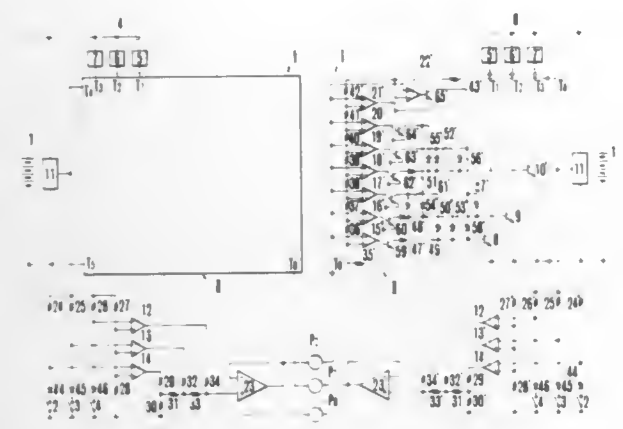
U.S. Cl. 354—25 **4 Claims**



1. A camera equipped with an automatic focus adjusting device including ranging means, said camera comprising: mean (6) adapted to trigger a shutter release means (13) which moves in accordance with focusing operations of said camera, said shutter release means (13) being disposed on the moving path of said trigger means (6), an actuating member (1) adapted to actuate said shutter release means (13), and stop means (4) adapted to temporarily and forcedly stop said trigger means (6) at a position before said trigger means (6) reaches said shutter release means (13), and said actuating member (1), stop means (4) and trigger means (6) being arranged in such a fashion that, after the completion of each focusing operation, said stop means (4) is released, said trigger means (6) is caused again to move toward said shutter release means (13) and the shutter is finally released by said shutter release means (13).

4,367,936
SWITCHING CONTROL SYSTEM

Toshikazu Ichiyanagi, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 105,033, Dec. 19, 1979, Pat. No. 4,320,518. This application Jun. 16, 1981, Ser. No. 274,304
Claims priority, application Japan, Dec. 28, 1978, 53-165845
Int. Cl.³ G03B *1/00*
U.S. Cl. 354—173 **9 Claims**

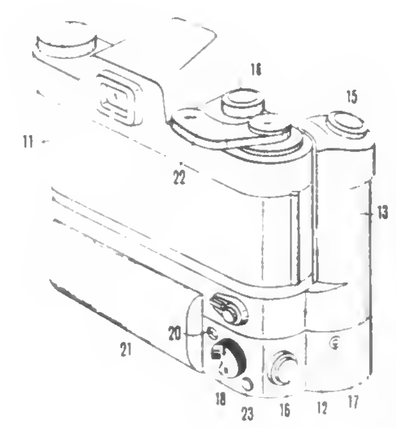


1. A switching control system comprising:
a plurality of operation switch members disposed within a first device, each of said switch members being arranged to be operated to perform a switching action independently of other switch members;
voltage generating means disposed within said first device, said means being arranged to generate a plurality of different voltage levels in accordance with combinations of the switching actions performed by said plurality of operation switch members;
electrical connection means for introducing the output of said voltage generating means to a control circuit disposed within a second device, said electrical connection means being a contact and/or a lead wire;
a plurality of switching means disposed within said second device, each of said switching means being arranged to actuate one of the circuit means corresponding thereto, said circuit means being disposed also within said second device; and
said control circuit disposed within said second device, said control circuit being arranged to receive the output voltage of said voltage generating means through said electrical connection means and said control circuit being arranged to selectively actuate one or more than one of said plurality of switching means in accordance with the voltage received.

4,367,937
MOTOR DRIVEN CAMERA

Yukio Mashimo, Tokyo, and Tomonori Iwashita, Huchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 888,469, Mar. 20, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,334
Claims priority, application Japan, Mar. 24, 1977, 52-32492; Apr. 11, 1977, 52-41094
Int. Cl.³ G03B *1/18, 7/26*
U.S. Cl. 354—173 **9 Claims**

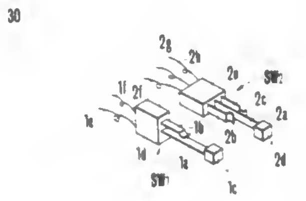
6. A camera with an electric drive device comprising:
first power source means for producing a voltage;
an exposure control circuit connected to the first power source means;
first switch means for switching between a closed position and an open position, said first switch means supplying power from the first power source means to the exposure control circuit when said first switch means is closed and inhibiting power when said first switch means is opened;
second switch means for switching the exposure control circuit off when it is opened and switching the exposure control circuit on when it is closed;
second power source means for supplying a higher voltage than the first power source means;
an electric driving control circuit connected to the second power source means;
accumulating means for charging from the first power source means when the first switch means is opened and for discharging when the first switch means is closed;
a first transistor for being turned on by the discharge of the accumulating means;



a second transistor for being turned on by the turning-on of the first transistor, said second transistor forming a self-holding circuit together with the first transistor, and
a third transistor having a base for receiving the output of the second transistor, having an emitter connected to the second switch means, having a collector connected to the electric driving control circuit, for turning on when the second switch means is closed and for turning off when the second switch means is opened, so as to control the operation of the electric drive control circuit.

4,367,938
ELECTROMAGNETICALLY DRIVEN SHUTTER

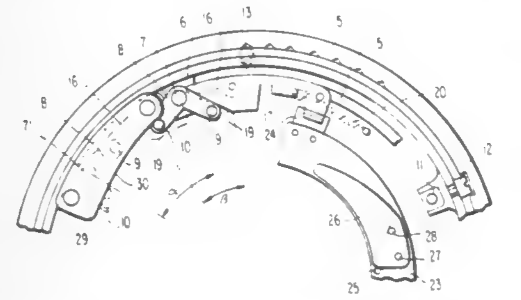
Syozo Yoshida, Machida, and Syuichiro Saito, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Japan
Continuation of Ser. No. 213,918, Dec. 8, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,013
Claims priority, application Japan, Dec. 7, 1979, 54-169606
Int. Cl.³ G03B *9/62*
U.S. Cl. 354—234 **8 Claims**



1. An electromagnetically driven shutter including:
(a) at least one shutter blade member; a photographic light path is opened and closed by the displacement of said member;
(b) an electromagnetic drive member; said member comprises a permanent magnet and a conductor member provided in the magnetic field of said permanent magnet;
(c) a current supply control circuit; said circuit performs supply of a predetermined amount of current to the above-described conductor member in a predetermined direction, whereby an electromagnetic force of predetermined magnitude is exerted between the permanent magnet and the conductor member in the above-described electromagnetic drive member, causing the shutter blade member to move across the photographic light path at a predetermined speed; and
(d) means for detecting the relation between the running direction and the gravity direction of the shutter blade member;
wherein the amount of current supplied to the above-described conductor member is controlled by the current supply control circuit in accordance with the signal produced from said posture detecting means, whereby, as the relationship between the direction of the movement of the shutter blade and the direction of the gravity changes, even when the load on the electromagnetic drive member is increased or decreased, the driving torque of said electromagnetic drive member is increased or decreased in a direction to compensate this so that the speed of movement of the above-described shutter blade is maintained to the predetermined speed.

4,367,939
AUTOMATIC APERTURE PRESETTING DEVICE

Zenichi Okura, Ichikawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 24, 1981, Ser. No. 276,743
Claims priority, application Japan, Jul. 15, 1980, 55-99388[U]
Int. Cl.³ G03B *9/07*
U.S. Cl. 354—272 **4 Claims**

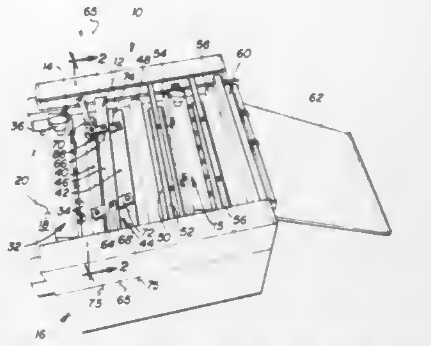


1. An automatic aperture presetting device for a camera lens comprising: a preset ring which is rotatable around an optical axis of said lens; a crank-shaped lever pivotally mounted on said preset ring, said crank-shaped lever having first and second arms; a stationary lens barrel; a cam mounted on said stationary lens barrel; an aperture operation ring adapted to be driven from a camera body side for setting an automatic aperture value corresponding to a set position of said preset ring, a stop member being formed integrally with said aperture operation ring; wherein an end of said first arm of said lever is in abutment with an edge of said cam mounted on said stationary lens barrel and an end of said second arm is operatively coupled to said stop member.

4,367,940
CHEMICAL APPLICATION AND DEVELOPER APPARATUS FOR LITHOGRAPHIC PLATE PROCESSOR

Milam E. Mart, P.O. Box 29, Carrollton, Tex. 75006
Filed Jun. 16, 1980, Ser. No. 159,639
Int. Cl.³ G03D *5/06*
U.S. Cl. 354—317 **18 Claims**

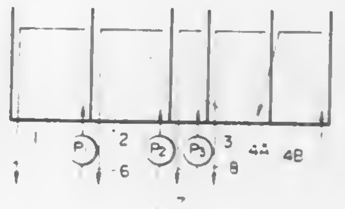
1. A developer apparatus for use in a lithographic plate processor comprising:
a pair of rectangularly shaped developer spreading members positioned on opposite sides of a predetermined line extending generally transverse to the direction of motion of a lithographic plate traveling through the processor, the length of each spreading member in the transverse direction being slightly less than the width of the lithographic plate in the transverse direction, each spreading member further positioned for engagement with the exposed surface of the lithographic plate;
a plurality of cross piecs for mounting said spreading members on the processor so that the medial axis of each spreading member in its elongate direction is parallel said predetermined line, said plurality of cross pieces permitting said spreading members to pivot about axes centered on said predetermined line and on a line parallel said predetermined line at a distance at least equivalent to the separation between the medial axis of each spreading member and said predetermined line so that said spreading members may oscillate over the exposed surface of the lithographic plate to uniformly spread developer thereon, said plurality of cross pieces forming parallel linkages; and



means to oscillate said spreading members in both directions about a central position where the spreading members are most distant from said predetermined line so that a portion of each spreading member extends over the edge of the lithographic plate at the limits of oscillation.

4,367,941
APPARATUS FOR SILVER RECOVERY DURING PHOTOGRAPHIC PROCESSING

Kazushige Uenaka; Shinichi Kashiwagi; Toshiro Tahara; Kazuo Shirasu, all of Minami-ashigara; Yoshio Usui, Tokyo; Akira Abe, Tokyo; Fumio Nakagawa, Tokyo, and Tetsuya Masuda, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 148,608, May 12, 1980, Pat. No. 4,343,892. This application Aug. 5, 1981, Ser. No. 290,042
Claims priority, application Japan, May 11, 1979, 54-58300
Int. Cl.³ G03D *3/02*
U.S. Cl. 354—324 **4 Claims**



1. An apparatus for recovering silver during photographic processing by collecting a silver-containing photographic processing fluid carried by photographic materials transported from a processing tank containing a silver-containing processing fluid, said apparatus comprising a silver recovery tank interposed between the processing tank containing said silver-containing processing fluid and a water wash tank, wherein said processing tank and said silver recovery tank are each provided with an independently regulated replenishing fluid supply pump and an overflow pipe, whereby said tanks may be provided with replenishing fluid and drained of excess fluid, wherein said replenishing fluid supplied to said silver recovery tank is determined by the amount of said photographic materials introduced to said processing tank.

4,367,942
XEROGRAPHIC COPYING MACHINE

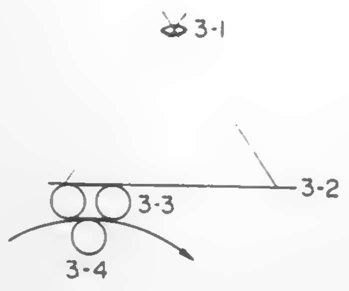
Shuichi Ohtsuka, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 25, 1981, Ser. No. 247,491

Claims priority, application Japan, Mar. 26, 1980, 55-38407

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 R **8 Claims**



1. A xerographic copying machine comprising:

a stationary exposure optical system for projecting an optical image to be copied;

a xerographic photosensitive element having a photosensitive surface;

means for moving said photosensitive element in a plane parallel to a plane in which said optical image is formed while simultaneously moving said photosensitive surface of said element in such a manner that the relative linear velocity of a point on said surface of said photosensitive element and said optical image projected by said optical system in a plane parallel to said plane in which said image is formed is substantially zero; and

an image transferring mechanism confronting said surface of said photosensitive element for conveying an image transfer medium in such a manner that the relative linear velocity of said image transfer medium and a point on said surface of said photosensitive element in a plane parallel to said plane in which said image is formed is substantially zero to transfer an image formed on said surface of said photosensitive element to said image transfer medium, said photosensitive element comprises an endless belt having a photosensitive surface.

4,367,943
APPARATUS FOR PROVIDING RECORDING COMPENSATION FOR ROTATING DRUM SPEED FLUCTUATIONS IN AN INFORMATION RECORDING APPARATUS

Hiroya Nakamura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,630

Claims priority, application Japan, Mar. 21, 1980, 55/34729; Apr. 25, 1980, 55/54371

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 R **1 Claim**

1. An apparatus for recording information on a recording member, comprising:

a movable image forming member;

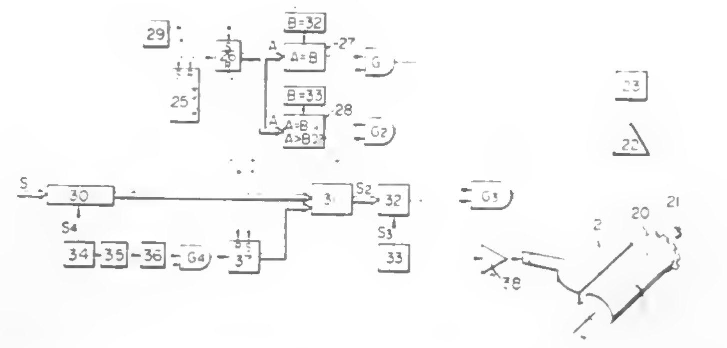
a character generator for generating character signals corresponding to information sequentially input thereto;

means for forming an electrostatic latent image on said image forming member in accordance with the character signals generated by said character generator, said image forming means being operable to form images on said image forming member by line-by-line scanning of said member with the character signals;

means for generating a train of pulses related in number to the number of lines of information to be recorded on the recording medium as said image forming member moves a predetermined distance;

means for causing said character generator to generate a character signal each time it receives a pulse from said pulse generating means; and

means for continuing to supply the last scanning portion of said character signals from said character generator to said image forming means when said last scanning portion of the character signals is completed earlier in time than the arrival of the trailing edge of a corresponding one of said pulses at said means for causing the generation of a character signal, and for preventing the supply of said last scanning portion of said character signals from said character generator to said image forming means when said last scanning portion of the character signals is not completed by the time of arrival of the trailing edge of a corresponding one of said pulses at said means for causing the generation of a character signal.



4,367,944
CHARGING POTENTIAL CONTROL MEANS FOR ELECTROPHOTOGRAPHIC COPIERS

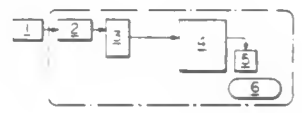
Hiroshi Kuru, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

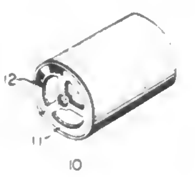
Filed Feb. 13, 1981, Ser. No. 234,410

Claims priority, application Japan, Feb. 19, 1980, 55-20497[U]

Int. Cl.^{3} G03G *15/00, 15/02*

U.S. Cl. 355—14 CH **3 Claims**





1. In a copying apparatus in which an electrostatic latent image is formed on a photosensitive member on whose surface an electric potential has been generated, the improvement comprising means applying an electric charge to the surface of the photosensitive member, means forming an indicia on said member representing the optimum charging potential characteristics of the photosensitive substance on said member, and means controlling said electric charge in accordance with said indicia.

4,367,945
SLIT EXPOSURE OPTICAL SYSTEM FOR AN ELECTROPHOTOGRAPHIC COPYING APPARATUS

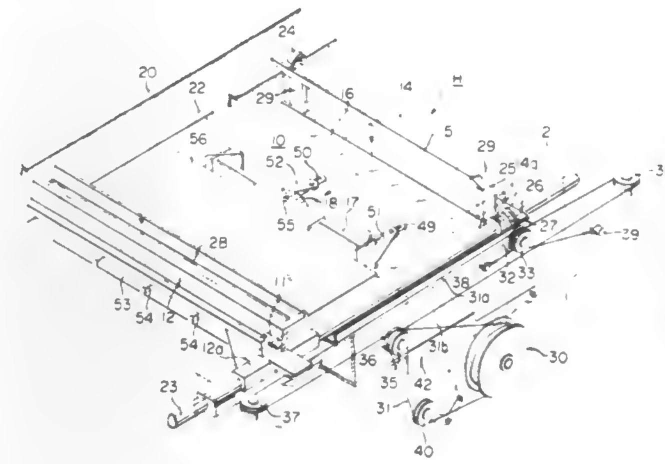
Tadashi Abe, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,559

Claims priority, application Japan, Apr. 30, 1980, 55-58207

Int. Cl.^{3} G03B *27/48, 27/50, 27/70*

U.S. Cl. 355—51 **2 Claims**



1. A slit exposure optical system for an electrophotographic copying apparatus comprising a first movable carriage equipped with a light source and a first mirror, a projection lens, a second movable carriage equipped with a second mirror guiding light reflected from said first mirror to said projection lens, a wire sheave device to reciprocate said first and second movable carriages toward and away from one another, compressible elastic means between said carriages to absorb the impact energy between the two at their final step of movement toward one another, said wire sheave device including a drum, a wire actuated thereby to drive said second movable carriage at a speed over that of said first movable carriage, and means interconnecting said wire to said carriages to effect elongation of the same and thereby absorb the impactive force caused by their stoppage.

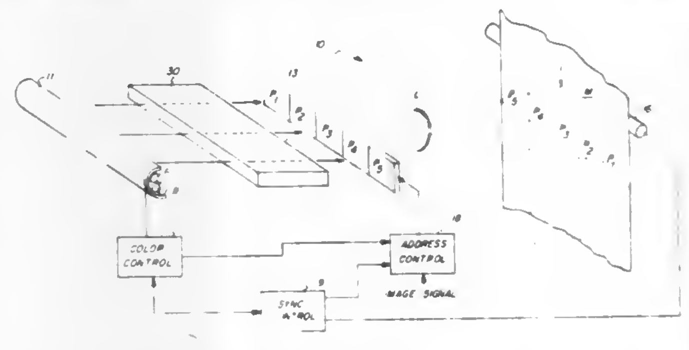
4,367,946
LIGHT VALVE IMAGING APPARATUS HAVING IMPROVED OPTICAL CONFIGURATION

Jerry R. Varner, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,089

Int. Cl.^{3} G03B *27/72*

U.S. Cl. 355—71 **6 Claims**



1. In electronic imaging apparatus having a linear imaging zone and including: (1) a linear light valve array having a plurality of electro-optic pixel portions with light ingress surfaces, (2) illuminating means for directing illumination toward said imaging zone via said light valve array generally uniformly from a linear region parallel to said array and said imaging zone and (3) addressing means for applying discrete electric fields to pixel portions of said light valve array in accordance with an image pattern, the improvement comprising light regulating means, located in alignment between said illuminating means and said light valve array and including a linear light baffle aligned in generally parallel relation with said illuminating means and having walls defining a plurality of light passages with their respective axes substantially normal to the ingress surfaces of said light valve array for passing light from said illuminating means that is directed substantially normal to the ingress surface of said light valve array and blocking light from said illuminating means that is not directed substantially normal to said ingress surface.

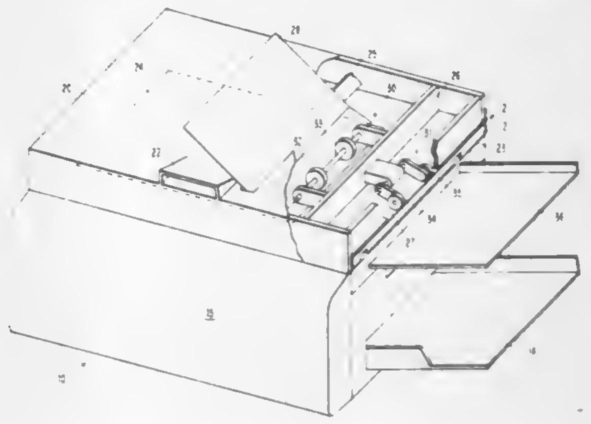
4,367,947
DOCUMENT FEEDER FOR MOVING BED MACHINES SUCH AS COPIERS

Nelson K. Arter, Longmont; William C. Dodt, Broomfield, and Charles A. Farel, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1981, Ser. No. 265,518

Int. Cl.^{3} G03B *27/62*

U.S. Cl. 355—75 **22 Claims**



1. In a machine such as a copier having a carriage which moves in a reciprocal manner so that a surface thereof passes over a station where an operation is performed relative to a document or the like, a document feeder comprising:

means forming a nip with said carriage surface and for applying a force at said nip in a normal direction towards said carriage surface, and

guide means positioned for directing the leading edge of a document into said nip between said nip forming means and said carriage surface so that movement of said carriage causes a document at said nip to be held against said carriage surface by said normal force and to be carried by said carriage across said station.

4,367,948
SURFACE POTENTIAL ELECTROMETER AND IMAGE FORMING APPARATUS USING THE SAME

Koji Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,885

Claims priority, application Japan, Apr. 24, 1979, 54-51141; Apr. 28, 1979, 54-52632; Apr. 28, 1979, 54-52633; May 8, 1979, 54-56536; Jun. 25, 1979, 54-79860; Jul. 10, 1979, 54-87118

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—14 D **59 Claims**

1. An image forming apparatus, comprising:

a recording member;

means for forming an electrostatic latent image on said recording member;

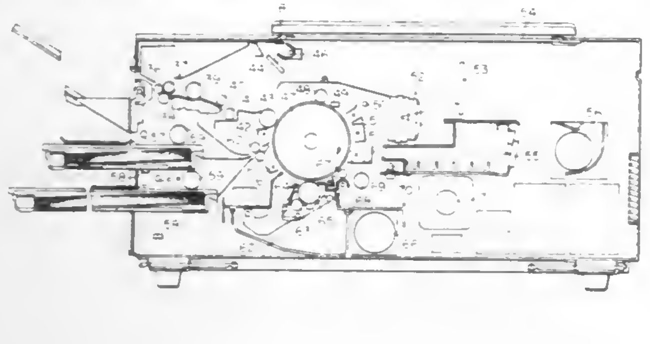
means for developing said electrostatic latent image;

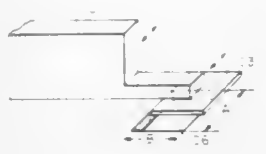
detecting means for detecting the surface potential of said recording member;

control means for controlling said latent image forming means or developing means in response to the output from said detecting means;

support means for supporting said recording member and said surface potential detecting means; and

connecting means for electrically connecting said detecting means and said control means, said connecting means being removably mounted on said support means, and the electrical connection between said detecting means and said control means being made or broken according to whether said detecting means is attached to or detached from said supporting means.





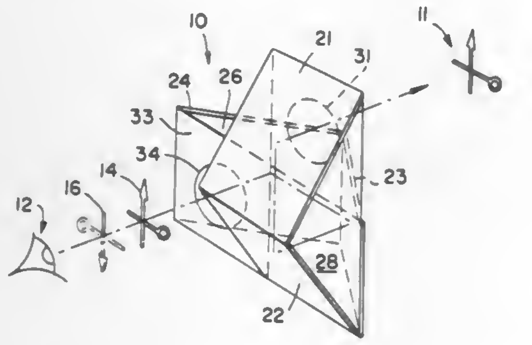
4,367,949
AIMING METHOD AND MEANS

Gordon R. Lavering, 4111 Skymont Dr., Belmont, Calif. 94002

Filed Jun. 2, 1980, Ser. No. 155,414

Int. Cl.³ G01C ***3/00***

U.S. Cl. 356—144 **11 Claims**



1. An aiming device comprising:

a. first aperture means providing a first normal upright field of view;

b. second aperture means providing a second normal upright field of view, said first and said second aperture means being fixedly mounted with respect to each other with said first and said second fields of view in mutually overlapping relationship; and

c. means superimposing said second field of view on said first field of view in inverted and reversed relation thereto comprising a hollow first porro-prism having a partial mirror as one of its reflective surfaces and a second porro-prism mounted at right angles to said hollow first porro-prism with one reflective surface of said second porro-prism in opposition to the other reflective surface of said hollow first porro-prism, said partial mirror of said hollow first porro-prism being in opposition to said first aperture means and said second aperture means being in opposition to the free reflective surface of said second porro-prism.

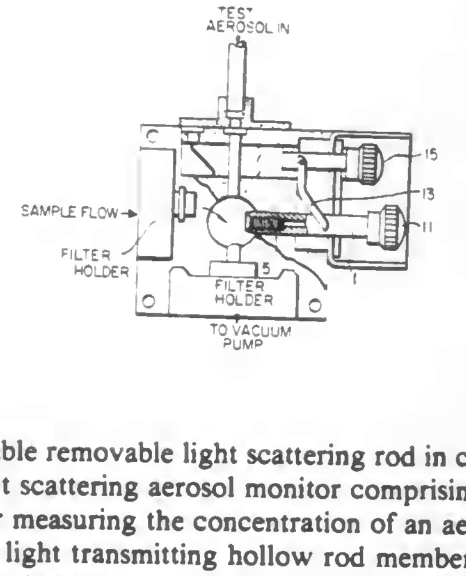
4,367,950
COMBINED AEROSOL MONITOR AND CALIBRATEABLE LIGHT RAY SCATTERING REFERENCE ROD

Jerry J. Klug, Rosemount, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 219,704

Int. Cl.³ G01N ***21/53***

U.S. Cl. 356—338 **2 Claims**



1. An adjustable removable light scattering rod in combination with a light scattering aerosol monitor comprising:

a monitor for measuring the concentration of an aerosol;

an elongated light transmitting hollow rod member having an internal threaded portion at least along part of the hollow interior wall thereof, said rod being removably mounted in the monitor and capable of being movable when mounted to intersect the aerosol concentration being monitored; and

a movable calibration light intensity reducing slug with external threads thereon and complementary shaped to engage the threads of the rod member, said slug being mounted in the rod and axially adjustable with respect to the rod by moving its threads with respect to those of the rod whereby the slug and rod can be calibrated against a known sample aerosol concentration for the monitor which calibration can be used as a field check at a later time for the monitor.

4,367,951
PROCESS AND APPARATUS FOR THE SURFACE ANALYSIS OF FLEXIBLE MATERIALS

Fritz Hammon, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,794

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001881

Int. Cl.³ G01B ***9/02***

U.S. Cl. 356—357 **5 Claims**

1. A process for the analysis of the surface character of a web of flexible material, said process comprising:

placing the surface portion to be examined against a reflecting reference surface,

directing a light beam at an angle onto said surface portion such that the light beam is reflected partially from said surface portion and partially from the reference surface,

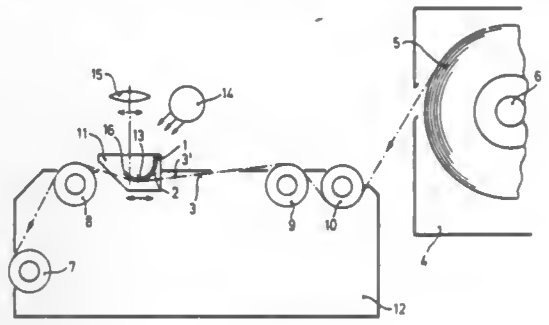
superposing the resulting partial beams so that a pattern of interference bands corresponding to the surface profile of said portion is formed,

evaluating the interference pattern on the basis of the interference band spacings and the wave length of the incident light,

advancing the web of material so that said surface portion extends, at a location outside the range of said reference surface, in a plane inclined to the optical axis at an angle of from 80 to 45 degrees,

examining the surface portion in said location with the direction of incidence of the light beam selected so that the incident light beam is reflected in the direction of the optical axis from a predetermined surface element which is anti-parallel to said plane, and

determining from such examination the overall pattern of the surface profile, using the brightness distribution of the observed surface field to distinguish protrusions from recesses on said surface.



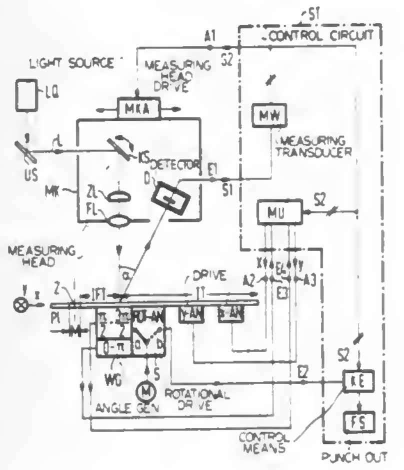
4,367,952
CENTERING DEVICE FOR THE MANUFACTURE OF A CENTER HOLE IN DISKS

Harald Ahrens, and Dieter Schulz, both of Hanover, Fed. Rep. of Germany, assignors to Polygram GmbH, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,686

Int. Cl.³ G01B ***11/00***

U.S. Cl. 356—400 **10 Claims**



1. A centering device for the manufacture of a center hole in disks having spiral informational tracks at an information portion surrounding an information-free center portion, comprising: a measuring head means for emission of a light beam onto an x-y disk plane surface of the disk and which further includes a detector means for reception of radiation occurring through use of a light diffraction characteristic at the informational tracks; displacement means for displacing the measuring head means and the disk to be centered relative to one another in planes which are mutually parallel; said measuring head means focusing the light beam in a substantially perpendicular beam direction onto the surface of the disk; rotating means for rotating the disk in the x-y disk plane; said displacement means displacing the measuring head means relative to the disk in a radial direction in such manner that the light beam is precisely situated on a boundary between the information portion and the information free portion during a full disk revolution; and control circuit means connecting to said measuring head means, displacement means, and rotating means for movement control of the displacement means and rotating means and identification of a center of the disk.

4,367,953
APPARATUS FOR THE CONTINUOUS PREPARATION OF STARCH MILK

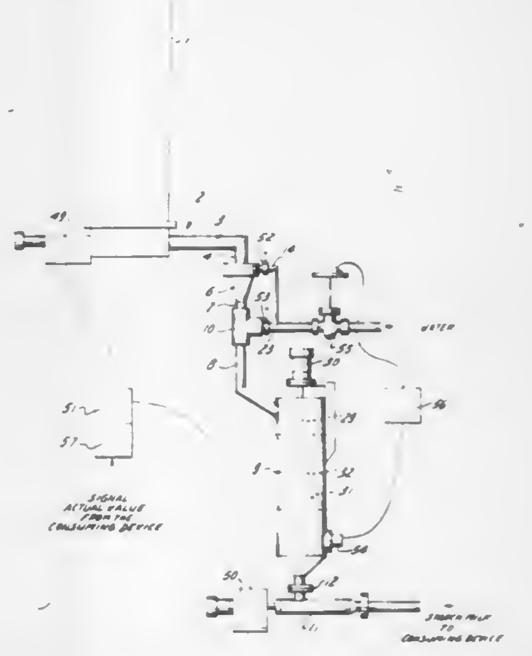
Gerhard Hinz, Kranenburg-Nutterden, and Joseph Dinessen, 4193 Kranenburg-Frasselt, both of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 6, 1980, Ser. No. 204,407

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945361

Int. Cl.³ B01F ***15/02***

U.S. Cl. 366—132 **21 Claims**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7
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WATER
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32
31
SIGNAL ACTUAL VALUE FROM THE CONSUMING DEVICE
54
50
12
11
STARCH MILK TO CONSUMING DEVICE

1. An apparatus for the continuous preparation of starch milk, which apparatus comprises:

- (1) a dosing means for supplying dry starch from a storage source through a downward outlet opening,
- (2) an homogenizing unit adapted to receive said starch, and further comprising:
  - (a) an upper in-flow hopper having
    - (i) an annular upper member, p2 (ii) a hopper member depending from said annular upper member and disposed vertically below said outlet of said dosing means, said hopper member having a conical interior surface tapering inwardly from said annular upper member to a lower opening; and,
    - (iii) a flushing means in communication with said annular upper member and adapted to provide a continuous film of water onto the interior surface of said hopper,
  - (b) a fall pipe section in communication with the lower opening of said hopper member and extending generally downward,
  - (c) a lower section disposed at the lower terminus of said fall pipe and directly in communication therewith, which lower section comprises:
    - (i) a homogenizing tank, capable of holding a quantity of prepared starch milk
    - (ii) an agitating means disposed within said homogenizing tank and capable of keeping stored starch milk in a state of agitation,
    - (iii) means to indicate the levels of starch milk in said tank, and
    - (iv) an outlet adapted to provide prepared starch milk to a consuming device.

4,367,954
DEVELOPING DEVICE FOR COPIER

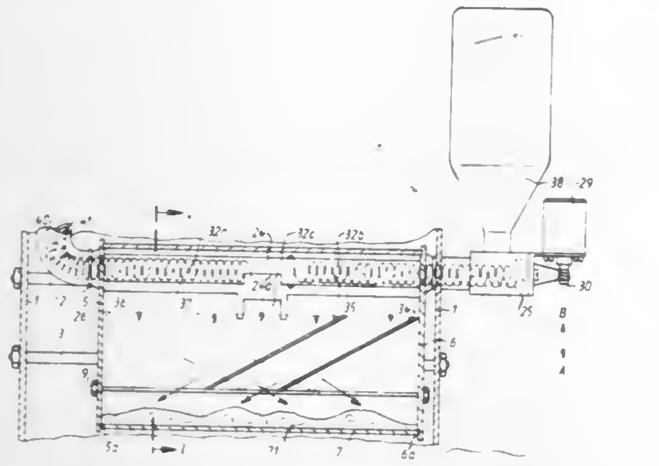
Alfred Ganz, Gröbenzell; Karl Hartwig, Unterhaching; Christoph Jung, Munich; Günther Schnall, Eching; Erich Schlick, Unterschleissheim, and Jürgen Vossnacke, Hohenschäftlarn, all of Fed. Rep. of Germany, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jan. 9, 1981, Ser. No. 223,722

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010647

Int. Cl.^{3} B01F *15/02*

U.S. Cl. 366—156 **8 Claims**



1. In a developer device for electrostatic copiers, in which toner is circulated during the developing operation, a combination comprising an elongated housing; means forming two mixing channels extending lengthwise of said housing; means for gravity-discharging toner at a predetermined location in said housing substantially midway of the elongation of said channels; and guide surfaces for the discharged toner arranged in said channels and inclined lengthwise of the same and relative to the direction of gravity discharge of the toner, each of said channels comprising a pair of said guide surfaces which are both inclined in one and the same direction, one guide surface of each pair extending from the region of an outer end of the first quarter of the length of the respective channel to the vicinity of a juncture between the second and third quarters of the length, and the other guide surface of the pair extending from the vicinity of a juncture between the first and second quarters of the length to the vicinity of a juncture between the third and fourth quarters of the length of the respective channel.

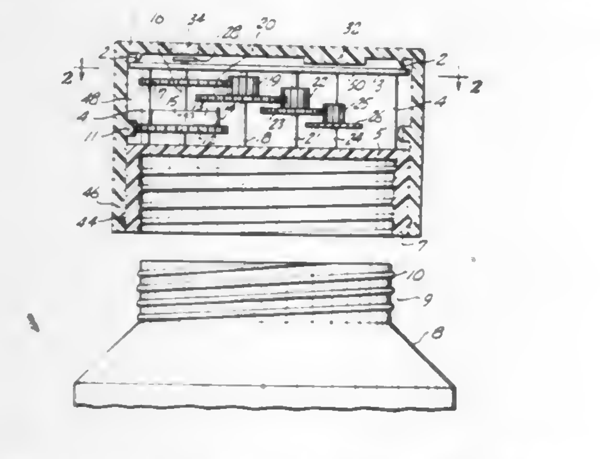
4,367,955
MEDICAMENT CONTAINER WITH TIMER TOP

Donald H. Ballew, 1908 W. Yakima, Yakima, Wash. 98902

Filed May 13, 1980, Ser. No. 149,492

Int. Cl.^{3} G04B *47/00*

U.S. Cl. 368—10 **3 Claims**



1. A timing and alarm device for signalling a medicine user at the prescribed time for self-administration of medicine from a medicine container, comprising:

- a medicine container means having attachment means thereon for receiving and holding a cap;
- a cap for said container means having a timing and alarm signalling means therein, said timing and alarm signalling means being activated to time then signal a predetermined elapsed time by means initiated by relative rotation between said container and said cap; said cap having winding means pivotally mounted on a first shaft means, said winding means operatively connected to a timer mainspring means and mounted in said cap for engagement with said container means, whereby rotation of said cap with respect to said container means applies torque to wind said mainspring for operating said timer and alarm signalling means.

4,367,956
CLOCKWORK OF AN ELECTRIC QUARTZ CLOCK

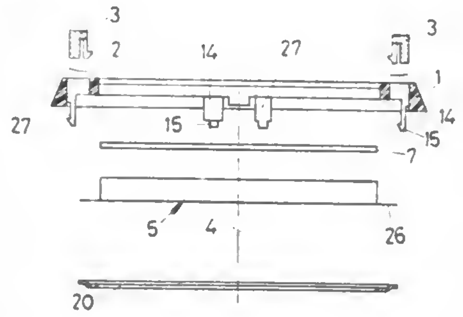
Friedrich Windstey, Gerichtsgasse 1/5/7, A-1210 Wien, Austria

Filed Aug. 21, 1980, Ser. No. 180,086

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024702

Int. Cl.^{3} G04B *29/00;* **H04M** *1/21*

U.S. Cl. 368—88 **10 Claims**



1. An electric quartz clock comprising:

- a clockwork having a generally cylindrical body provided with a flat contact ring encompassing a rear part of said body;
- a housing surrounding said clockwork and having a front cover provided with a viewing window, said housing being provided with a plurality of peripherally spaced rearwardly extending detents having inwardly pointing catches releasably engaging an outer rim of said contact ring for holding said clockwork centered in said housing;
- coupling means on an inner rim of said contact ring releasably connecting same with said clockwork;
- a plurality of pushbuttons disposed in a peripheral zone of said front cover overlying said contact ring; and
- a plurality of resilient contact members connected to said clockwork and disposed above said contact ring for depression by respective pushbuttons into conductive engagement therewith to close respective control circuits.

4,367,957
TIME-LAPSE INDICATOR OR THE LIKE

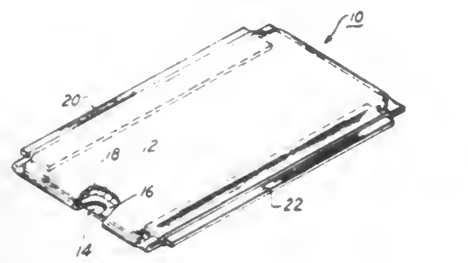
Robert F. Bradley, New Buffalo, Mich., assignor to Micro-Circuits Company, New Buffalo, Mich.

Division of Ser. No. 928,788, Jul. 28, 1978, Pat. No. 4,206,838. This application Dec. 6, 1979, Ser. No. 100,840

Int. Cl.^{3} G01D *11/00;* **G07F** *1/06;* **G04F** *8/00*

U.S. Cl. 368—114 **16 Claims**

1. A mechanism for activating a time-lapse indicator utilizing electrical or magnetic characteristics and having a layer containing fluid material with numerous discrete particles and a layer of absorbent material in close proximity to said first layer, separated therefrom by a frangible layer: said activating mechanism including a means for flexing said frangible layer to cause said layer to break into numerous pieces, thereby releasing the liquid in said fluid material to be absorbed by said absorbent material and thereby changing said characteristics of one of said layers, and means for feeding the indicator to said flexing means when the operation of the indicator is to be initiated.



4,367,958
CORRECTION SIGNAL GENERATING SYSTEM FOR AN ELECTRONIC TIMEPIECE

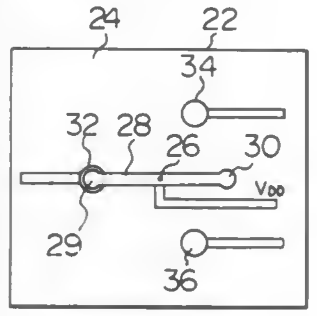
Hisashi Kawahara; Tadashi Hanaoka, and Masamichi Yamauchi, all of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,066

Claims priority, application Japan, Jul. 17, 1979, 54-90808; Aug. 31, 1979, 54-111295

Int. Cl.^{3} G04C *9/00*

U.S. Cl. 368—188 **7 Claims**



1. A correction signal generating system for an electronic timepiece having a rotatable crown, comprising;

- a correction switch having a switch rotor comprising a plurality of movable contacts fixedly attached to said switch rotor concentrically about the axis of rotation thereof, disposed at equidistant angular spacings from one another such as to be rotated by said switch rotor within a common plane of rotation which is normal to said axis of rotation of the switch rotor, said correction switch further comprising a plurality of fixed contacts disposed concentrically about said axis of rotation of the switch rotor at equidistant angular distances from one another within a common plane which is normal to said axis of rotation, said fixed contacts being positioned to be successively contacted by said movable contacts as said switch rotor is rotated, the number of said fixed contacts and the number of said movable contacts being selected such as to have no common divisor other than one therebetween, said switch rotor being coupled to said crown to be rotated thereby;
- an electrical power source connected to said switch for generating a switching signal from each of said fixed contacts in response to contact therewith by one of said movable contacts;
- a switch bounce prevention circuit comprising a plurality of latch circuits, with each of said latch circuits being coupled to a corresponding one of said fixed contacts such as to be placed in a set condition and to thereby produce an output signal, in response to one of said switching signals appearing on said corresponding one of the fixed contacts, each of said latch circuits being further coupled to all of said fixed contacts other than said corresponding one of the fixed contacts such as to be place in a reset condition, thereby inhibiting generation of said output signal, in response to a switching signal appearing on any of said fixed contacts other than said corresponding one of the fixed contacts; and
- a direction detection circuit coupled to receive said output signals from said switch bounce prevention circuit, and responsive to generation of said output signals in a first predetermined sequence due to said crown being rotated in a first direction of rotation for producing a first correction signal, said first correction signal being operative to advance time information which is displayed by said electronic timepiece, and further responsive to generation of said output signals from the switch bounce prevention circuit in a second predetermined sequence, due to said crown being rotated in a second direction of rotation, for generating a second correction signal, said second correction signal being operative to retard said time information displayed by said electronic timepiece.

4,367,959
PSEUDO-ANALOG DISPLAY DEVICE

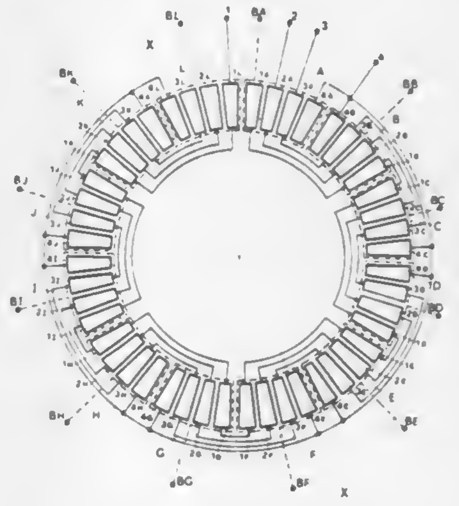
Fridolin Wiget, Neuchatel, Switzerland, assignor to Ebauches, S.A., Switzerland

Filed Sep. 5, 1980, Ser. No. 184,316

Claims priority, application Switzerland, Sep. 7, 1979, 8071/79

Int. Cl.^{3} G04C *17/02;* **G09F** *9/00*

U.S. Cl. 368—240 **1 Claim**



1. In an electronic time piece, the improvement of a display device including a first ring of only forty-eight electrodes arranged in twelve groups of four electrodes each, the first, the second, the third, and the fourth electrode in each group being respectively connected to the fourth, the third, the second and the first electrode in both the adjacent groups, a second ring of twelve counter-electrodes disposed each in a facing relationship with one of said groups of four electrodes, and a display medium disposed between said first and said second ring.

4,367,960
WATCH CASE ASSEMBLY

Theodore E. Lisnow, Sands Point, N.Y., assignor to Lisnow & Weiss Co, Inc., Long Island City, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,239

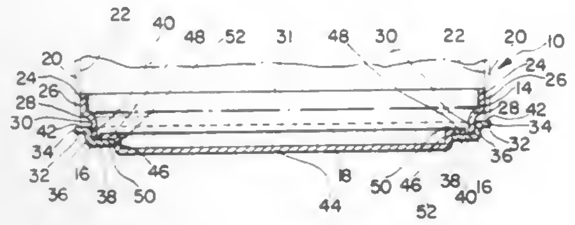
Int. Cl.^{3} G04B *37/00*

U.S. Cl. 368—309 **7 Claims**

1. A watch case assembly comprising:

a. a main casing of substantially ring-like configuration open at the bottom and having peripheral side walls which define an open center chamber;
b. a movement retaining ring snuggly received within said side walls adjacent the bottom end thereof;
c. a rear wall retaining ring attached to the bottom portion of said movement ring having an outwardly extending flange portion in engagement with the rear portion of said main

casing and an inwardly extending flange portion which extends inwardly of said movement ring; and



d. a rear wall attached to said inward flange portion extending across the open bottom of said assembly.

4,367,961

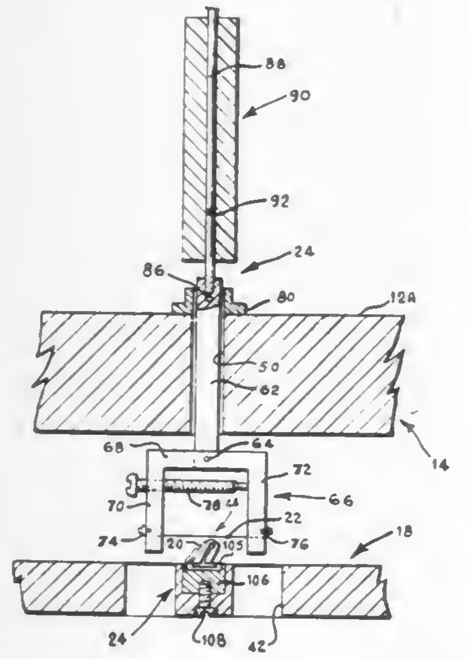
THERMAL MEASURING APPARATUS FOR ELASTOMERS

Warren R. Griffin, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 30, 1980, Ser. No. 221,185

Int. Cl.^{3} G01N *3/24, 3/18*

U.S. Cl. 374—46 **20 Claims**



1. An apparatus for measuring the tear strength of an elastomer specimen comprising a housing; means situated within said housing for fixedly supporting said elastomer specimen; means situated within said housing in operable relationship to said elastomer specimen for applying a predetermined amount of force to said elastomer specimen, said force applying means including a movable element, a thin wire secured to one end of said movable element, and means secured to the other end of said movable element for applying a preselected amount of load on said movable element; means operably connected to said housing for controlling the temperature of said elastomer specimen; and means connected to said force applying means for determining the resistance of said elastomer specimen to the application of said predetermined force whereby upon the application of said load on said movable element said thin wire is capable of passing through said elastomer specimen and said tear strength of said elastomer can be measured with respect to a variation in the temperature of said elastomer specimen.

4,367,962

MOSAIC PRINTING HEAD

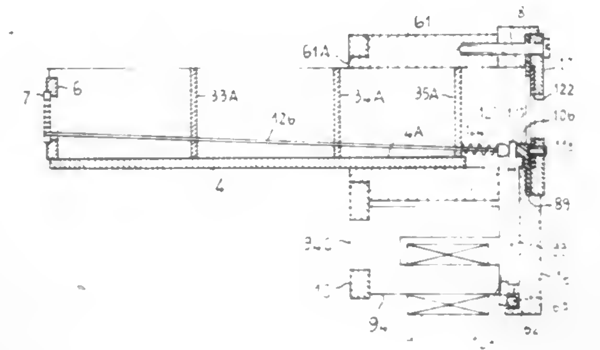
Angelo Gaboardi, Pregnana Milanese, Italy, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 3, 1981, Ser. No. 240,042

Claims priority, application Italy, Feb. 18, 1980, 20717 A/80

Int. Cl.^{3} B41J *3/12*

U.S. Cl. 400—124 **2 Claims**



1. A mosaic printing head adapted to be mounted on a printing carriage for providing an impression against a platen, including a needle guiding assembly having a plurality of needles and an electromagnet assembly:

said electromagnet assembly comprising a plurality of electromagnetic structures radially distributed on a circular segment of a supporting ring member, each of said plurality of electromagnetic structures including a pole piece and an armature;

said armature having a lever arm acting on one of said plurality of needles to drive said needle towards the platen;

armature adjusting means, said armature adjusting means including an armature retainer, a resilient ring and an adjusting disc;

said retainer, said resilient ring and said adjusting disc cooperating to secure each of said armatures in a preferred rest position;

said adjusting disc for adjusting the rest position of each of said armature housing a plurality of adjusting screws, one for each armature, said resilient ring been interposed between said armature retainer and said adjusting disc;

said resilient ring including a plurality of inner projections, each one of said projections being in contact with one of said lever arm on one side and being adjusted in position by one of said adjusting screws from the opposite side, and wherein said projections have a thickness greater than the thickness of said resilient ring and act as a damping element for said armature, whereby the rest position of said armatures is individually defined and adjusted by said adjusting screws, through said projections, and rebound of said armature is dampened by said projections of said resilient ring.

4,367,963

REFILLABLE TYPEWRITER RIBBON CARTRIDGE

James R. Daughters, San Leandro, Calif., assignor to Wordex, San Leandro, Calif.

Filed Jul. 21, 1980, Ser. No. 170,495

Int. Cl.^{3} B41J *33/14*

U.S. Cl. 400—208 **21 Claims**

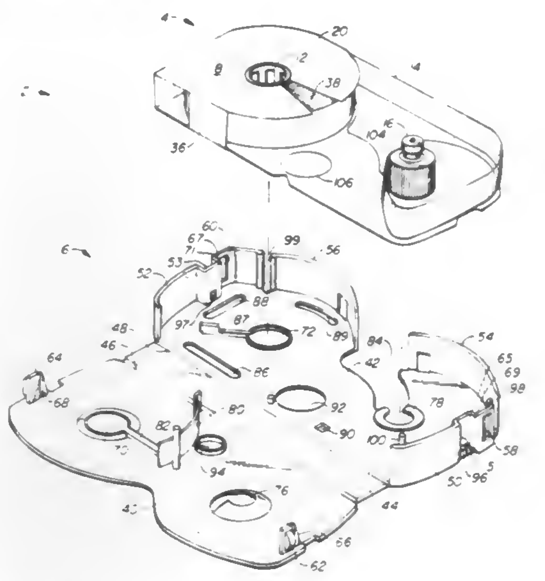
1. A protective carton for enclosing a typewriter ribbon spirally wound in a pancake about a supply hub, said carton and pancake being configured to be enclosed within a rechargeable typewriter ribbon cartridge adapted to admit said carton, said cartridge having a frame, a top surface and a bottom surface, said carton comprising:

a first section defining a lower surface, said lower surface to rest adjacent the bottom surface of said cartridge;

a second section defining an upper surface;

a third section including means for connecting said lower and upper surfaces to define a space for enclosing said ribbon pancake therein;

said third section defining at least one opening for passage of said ribbon from said ribbon pancake out of and back into said carton; and



said upper and lower surfaces having apertures for registry about the ends of said supply hub so that said spirally wound ribbon may rotate within said space as said ribbon is taken from said ribbon pancake through said opening, whereby an ink ribbon may be replaced in the cartridge.

4,367,964

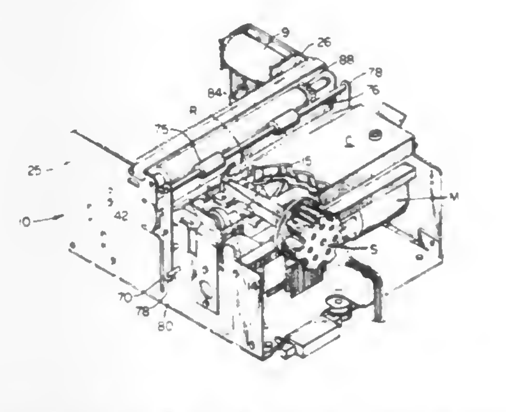
SERIAL IMPACT CALCULATOR PRINTER WITH DUAL FEED AND VALIDATION MECHANISM

Dean H. Cranston, Riverton, Wyo., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 19, 1980, Ser. No. 179,491

Int. Cl.^{3} B41J *11/50*

U.S. Cl. 400—605 **20 Claims**



1. In a printer having a frame upon which is mounted a pair of record media advancing rollers having external surfaces engageable with one another to form a guide path for advancement of a record medium therebetween and into position for impression of characters thereon by a print head, the improvement comprising:

incremental drive means associated with one of said record medium drive rollers including a ratchet member mounted on said one recording medium drive roller and indexing means having a pivotal feed pawl of generally U-shaped configuration, said feed pawl defining a drive arm and limit arm movable into engagement with circumferentially spaced teeth on said ratchet member, said indexing means including means normally urging said drive arm and limit arm into engagement with said ratchet member, releasing means selectively energizable to advance said drive arm and limit arm away from engagement with said ratchet member, said indexing means operative when said releasing means is de-energized to move said drive arm into engagement with one of said ratchet teeth to advance said one record medium advancing roller a limited distance prior to engagement by said limit arm with a circumferentially spaced tooth on said ratchet member to prevent further advancement of said one record medium advancing rollers.

4,367,965

CASING FOR LIPSTICK OR BALL POINT PEN REFILLS

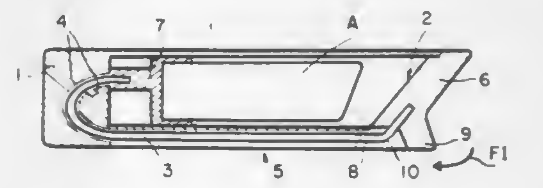
Francois X. Speitel, Chateau des Landes, and Robert F. M. Speitel, Challes-Parigne l'Eveque, both of France, assignors to Teleplastics Industries Company, Parigne l'Eveque, France

Filed Dec. 29, 1980, Ser. No. 221,012

Claims priority, application France, Dec. 27, 1979, 79 31727; Sep. 15, 1980, 80 19813

Int. Cl.^{3} A45D *40/06*

U.S. Cl. 401—60 **4 Claims**



1. A container comprising an elongated body with an opening in the terminal face for the passage of the contents therein, a slot along a longitudinal lateral side of said body, said slot ending in said opening through a rounded part and merging in the internal chamber of said body, guide means forming grooves in the lateral sides of said slot, a flexible element sliding in said guide means forming grooves and attached at its one end within said internal chamber to the contents which is slidingly guided in said chamber and at its other end to an actuation push button which can slide outside of the body along said slot and over said opening so as to cover said opening, second guide means forming grooves in the lateral sides near the bottom of said slot ending in grooves on the lateral sides of the opening parallel to said slot through a rounded part, a sliding block slidingly mounted in said second guide means forming grooves, fastening means joining said sliding block and said push button and means biasing said push button toward said sliding block.

4,367,966

ERASABLE INK FOR BALL POINT PENS COMPRISING TRIFLUOROETHYLENE AND VINYL ACETATE POLYMERS

Raymond S. Williams, Boulder City, Nev., and Paul C. Fisher, 711 Yucca St., Boulder City, Nev. 89005, assignors to Paul C. Fisher, Boulder City, Nev.

Filed Nov. 12, 1981, Ser. No. 320,443

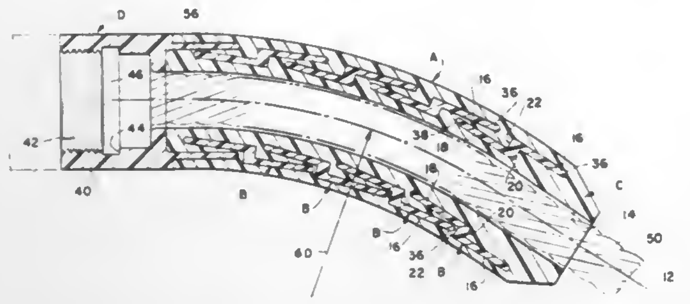
Int. Cl.^{3} B43K *7/00, 7/10;* **C08K** *5/02*

U.S. Cl. 401—190 **2 Claims**

1. In combination, a ball point writing instrument containing an ink capable of depositing a visible trace by writing with its ball on paper, said ink comprising at least 10% by weight of an elastomer selected from the group consisting of polyvinyl acetate homopolymer since polyvinylacetate is generic to ethylene and vinyl acetate copolymer and applicant has support for the term by generic term-Vinac-generic Trade Name term and intented polymer, a copolymer of ethylene and vinyl acetate and mixtures thereof, and at least about 10% by weight of trichloroethylene.

4,367,967
BENDING STRAIN RELIEF WITH BEND RESTRICTING CAPABILITY

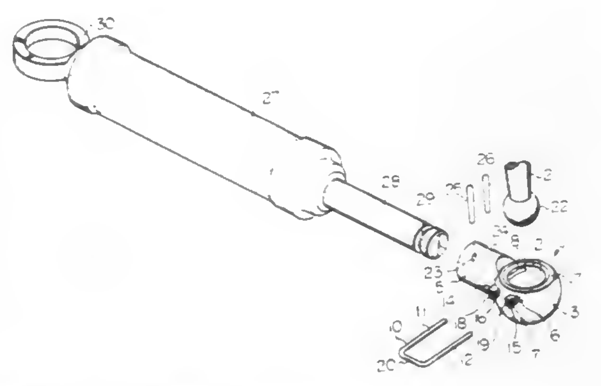
Frank Albert, Jr., Parma, Ohio, assignor to Preformed Line Marine, Inc., Cleveland, Ohio
Filed Jun. 3, 1981, Ser. No. 269,848
Int. Cl.^{3} H01R *13/56;* **F16L** *57/00*
U.S. Cl. 403—41 **6 Claims**



1. A bending strain relief comprising:
- an elongated tubular member having a longitudinal axis and including a plurality of substantially rigid identical commonly oriented sleeve members encapsulated within deformable elastomeric material, said sleeve members being positioned one after another along said axis out of engagement with one another and being connected together by said elastomeric material,
- each said sleeve member having opposite large and small diameter cylindrical end portions, said small diameter end portion having an outer cylindrical surface and a circular small diameter terminal end, said large diameter portion having an inner cylindrical surface and a circular large diameter terminal end,
- said sleeve members having said large and small diameter end portions longitudinally overlapping one another in radially-spaced relationship,
- each outer surface having an outward circular portion of a first fixed diameter immediately adjacent its terminal end, and an axially spaced inward circular portion of said first fixed diameter axially spaced inwardly from said outward circular portion,
- each inner surface having an outward circular portion of a second fixed diameter immediately adjacent its terminal end, and radially aligned with said inward circular portion of said outer surface of the overlapping adjacent sleeve member, and an inward circular portion of said second fixed diameter axially spaced inwardly of its terminal end and radially aligned with said outward circular portion of said outer surface of the overlapping adjacent sleeve member;
- abutment means including the relationship between said fixed diameters, the radial spacing between said inner and outer surfaces and the axial spacing between circular portions of respective surfaces that determines the degree of longitudinal overlap between said large and small diameter end portions;
- said abutment means providing and limiting relative angular movement only up to 20°, about a pivot axis perpendicularly intersecting said axis, between two adjacent sleeve members until precluded by first substantial abutment between said outward circular portion of said outer surface of one sleeve and said inward circular portion of said inner surface of the adjacent sleeve and second substantial abutment between said outward circular portion of said inner surface of the adjacent sleeve and said inward circular portion of said outer surface of said one sleeve;
- said first and second substantial abutments being diametrically opposite each other and being spaced a substantial axial distance; and
- said elastomeric material being within said radial spacing so that during said relative angular movement said elastomeric material is elastically deformed and elastically flows away from said first and second abutments and constitutes spring means for biasing said tubular member to reduce any relative angular movement between adjacent sleeve members.

4,367,968
BALL JOINT

Kunio Ishida, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan
Filed Oct. 23, 1980, Ser. No. 200,063
Claims priority, application Japan, Oct. 29, 1979, 54/149933[U]
Int. Cl.^{3} F16 *3/00;* **F16C** *11/00;* **F16D** *1/12*
U.S. Cl. 403—122 **4 Claims**

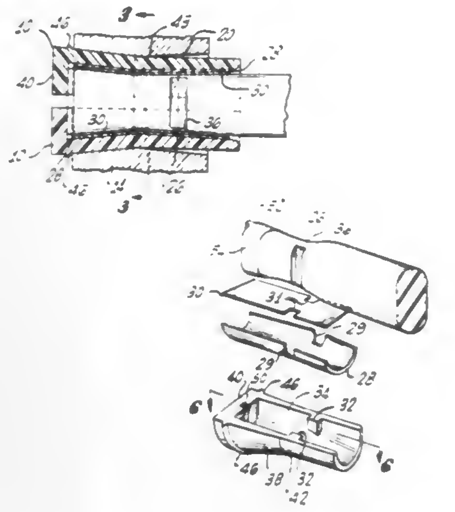


1. A ball joint comprising:
- a ball member having a spherical end;
- a socket member formed of a synthetic resin material and having a recess;
- said spherical end being received in said recess such that said ball member is rockable with respect to said socket member;
- a generally U-shaped pin member having two generally parallel legs joined by a central portion;
- said legs of said pin member being inserted through respective openings in said socket member, with center portions of said legs engaging the exterior of said spherical end, thereby retaining said spherical end within said recess; and
- projection means formed integrally with said socket member on the exterior thereof for retaining said pin member in the inserted position thereof, said projection means including resilient means defining an opening portion resiliently receiving therein said central portion of said pin member when said legs of said pin member are inserted into said openings in said socket member.

4,367,969
BUSHING FOR ATTACHING FIBERGLASS TOOL HANDLES

Joseph A. Carmien, P.O. Box 1165, Sun Valley, Calif. 91352
Filed Aug. 31, 1979, Ser. No. 71,177
Int. Cl.^{3} B25G *3/00;* **F16B** *9/00;* **F16L** *41/00*
U.S. Cl. 403—253 **1 Claim**

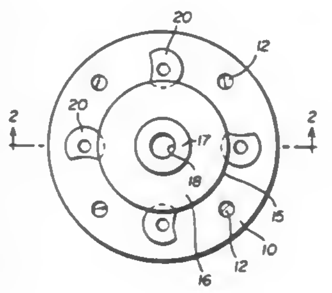
1. In a tool joint connecting a tool head to a tool handle in which the tool head being attached has a double tapered opening therethrough with side walls tapering inwardly from the top and bottom thereof, and further including a bushing comprised of a plurality of sections having a combined outwardly tapered exterior formed substantially complementarily to the upper tapered portion of said tool head opening and to fitted therein; the improvement comprising:
- a tongue portion of said tool handle to which said tool head is to be attached having a double tapered external surface forming a generally hourglass shape;
- said bushing including a double tapered interior surface formed substantially complementarily to said hourglass shaped tongue portion of said tool handle and said bushing is fitted thereon and co-operates, therewith, said upper tapered portion of said tool head opening coacting said outwardly tapered exterior of and forcing said bushing, said double tapered interior of said bushing into intimate contact with said hourglass shaped tongue portion of said tool handle, thereby preventing relative axial movement of said bushing along said tool handle; and



- means projecting from said tool handle for engaging a cooperating means on said bushing to prevent relative rotation of said bushing with respect to said tool handle about the longitudinal axis of said tool handle.

4,367,970
DIE INSERT LOCK SCREWS

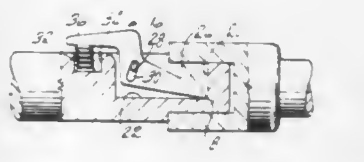
Louis J. Franz, 313 Crane Ave., Royal Oak, Mich. 48067
Division of Ser. No. 82,140, Oct. 5, 1979, Pat. No. 4,288,902.
This application Mar. 25, 1981, Ser. No. 247,327
Int. Cl.^{3} F16B *21/02;* **F16D** *1/00*
U.S. Cl. 403—323 **1 Claim**

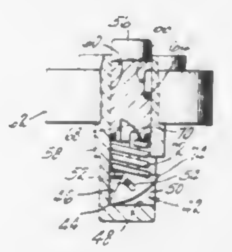


1. In a retainer having a wall surface forming a socket, said socket being generally circular and said wall surface being generally cylindrical in shape, said retainer including a number of spaced apart threaded openings and a number of notched head lock screws of the type used for releasably locking a die part insert within said retainer socket, and each lock screw having a threaded shank for threadedly engaging within one of said threaded openings formed in the retainer and each lock screw having a head which normally partially overlaps the socket for engaging within a groove formed in the die part insert for locking the insert within the socket, and with the peripheral edge of each screw head having a circumferentially elongated notch of a size for alignment within the wall defining the socket and the corresponding adjacent insert surface for thereby releasing the engagement between the head and the insert groove so that the insert may be removed from the retainer, the improvement comprising:
- each said notch being normally arranged with one end thereof at the retainer socket forming wall surface and extending lengthwise approximately perpendicularly of such wall surface when the respective screw is tightened within the threaded opening to where the base of the screw head is tightly in engagement with the seating surface formed by the exposed retainer surface surrounding the entry to the threaded opening, and wherein each of the elongated screw head notches are approximately radially aligned relative to the socket wall when their heads are tightened against their respective retainer seating surfaces;
- wherein the distance between the bottom surface of each screw head and a pre-selected point on the crest of a thread remote from said bottom surface in the plane which includes the center of a respective notch being equal to the distance between a correspondingly pre-selected point on the root of the thread of the threaded hole and the seating surface in the plane which includes a radius of the socket, with the two planes being 90° out of phase when the bottom surface of the screw is tightened against its respective seating surface, and being in phase alignment when the screw head is loosened and turned to align the notch with the retainer socket forming wall surface; and
- whereby a partial turn of each screw in the thread loosening direction aligns the socket with the insert surface for unlocking, and tightening the screw provides the maximum face to face contact between the base of the head and the adjacent seating surface.

4,367,971
SOCKET RETAINERS

Alfred S. Coren, 113 Hunnewell St., Needham, Mass. 02192
Filed Jun. 15, 1981, Ser. No. 273,757
Int. Cl.^{3} B25G *3/00;* **F16B** *7/18;* **F16D** *1/00;* **F16L** *15/00*
U.S. Cl. 403—330 **7 Claims**





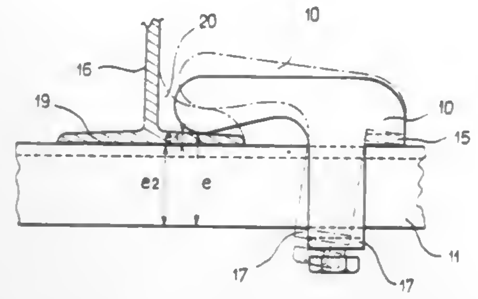
1. A joint for coupling two members comprising a female member formed with a polygonal cavity, a stud having a cross-section complementary to that of the cavity, means defining a longitudinal recess in the stud, a locking lever fitted to the recess, the lever having a forward end pivoted on an abutment in the recess and an intermediate pawl enggaging the cavity at a point rearwardly from the abutment and a resilient means urging the pawl into engagement with the cavity.

4,367,972
ATTACHMENT ARRANGEMENT

Raymond Panthout, 7 allee Mouille-Boeuf, 92290 Chatenay Malabry, France
Filed Apr. 9, 1979, Ser. No. 28,530
Int. Cl.^{3} F16B *2/02*
U.S. Cl. 403—387 **12 Claims**

1. Attachment arrangement for connecting a bar- or beam-shaped member to the flange of an I-beam or the like, the arrangement comprising
- a retaining bracket for receiving the bar to be attached and provided with means for clamping the bracket to one side of the bar and with a bearing surface at which the arrangement bears against the opposite side of the bar, and
- an extension defining a bearing area cooperating with the flange of the I-beam which adjoins said opposite side of the bar, the clamping means having a surface which

clamps against the bar and which is located at an intermediate point along the length of the bar between the bearing surface against the bar and the bearing area against the flange of the I-beam.



4,367,973
STRUCTURAL STRAP TIE

Tyrell T. Gilb, Berkeley, and Alfred D. Commins, Livermore, both of Calif., assignors to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed Apr. 13, 1981, Ser. No. 253,679

Int. Cl.^{3} B25G *3/00;* F16D *1/00;* F16G *11/00*

U.S. Cl. 403—405 **4 Claims**

1. A metal strap tie **1** for joining nailable timber members comprising:
   - a. a mid-portion **2** having a length substantially greater than its width and substantially free of fastener openings providing a structural member for providing substantial resistance to tension forces;
   - b. a leading outboard portion **3** forming a patterned edge and forming a series of leading nail holding areas **4** and alternating leading cutout areas **6** integral with said mid-portion;
   - c. a trailing outboard portion **7** forming a patterned edge and forming a series of trailing nail holding areas **8** and alternating trailing cutout areas **9** integral with the opposite side of said mid-portion;
   - d. said leading nail holding areas **4** are positioned so that they are generally transversely opposed to said trailing cut-out areas **9**;
   - e. nail openings **11** formed in substantially all of said nail holding areas; and
   - f. said nail openings are positioned so that projection lines **12** joining said nail openings form substantially equilateral triangles.

4,367,974
SURFACE DRAINAGE SYSTEM AND COVER MEMBER FOR USE THEREIN

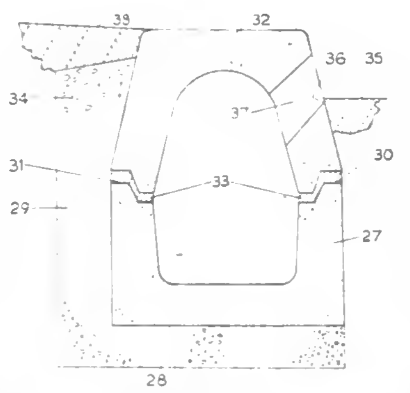
Neill S. Beanland, Garforth, England, assignor to West Yorkshire Metropolitan County Council, Wakefield, England

Filed Jan. 30, 1981, Ser. No. 230,364

Int. Cl.^{3} E01C *11/22*

U.S. Cl. 404—5 **13 Claims**

8. A surface drainage system comprising in combination open-ended channel section concrete base members each having a base wall and two opposite side walls between which the channel is defined, the base members being designed to be laid end-to-end in longitudinal alignment, and concrete cover members each being of inverted channel section and, as seen in cross-section, having a top wall and two opposite, symmetrical side walls which diverge from the top to the bottom of the cover member, the inner surface of the top wall and the diverging inner surfaces of the side walls defining respectively the top and sides of the channel, the channel having an open bottom and ends and being of uniform cross-section throughout the length of the cover member, and the cover member having at least one opening extending at a downward inclination through a side wall thereof from the outer surface to the inner surface of the side wall, the transverse cross-sectional area of the opening increasing from the outer surface to the inner surface of the side wall, the intersection of the opening with the outer surface of the side wall having a lowermost part that is no closer to the bottom than to the top of the cover member and the whole of the opening intersecting the inner surface of the side wall to open into the respective side of the channel, the cover members being laid above the base members and combining therewith to form an enclosed drainage channel.



4,367,975
TRAFFIC BARRIERS

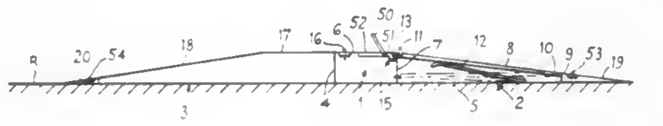
Paul D. Tyers, Watford, England, assignor to Controlec Limited, Rickmansworth, England

Continuation-in-part of Ser. No. 96,674, Nov. 23, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,839

Claims priority, application United Kingdom, Nov. 23, 1978, 45810/78

Int. Cl.^{3} E01F *13/00*

U.S. Cl. 404—6 **21 Claims**



12. A traffic barrier for controlling a flow of vehicles, comprising in combination:
   - (a) a step-like obstruction adapted to resist the advance of a vehicle, said step-like obstruction having a top and abutment means;
   - (b) a platform disposed in advance of said step-like obstruction and having a leading edge remote from said obstruction and a trailing edge adjacent said abutment means of said obstruction;
   - (c) hinge means mounting said platform for rocking movement between a lowered position and a raised position in which said trailing edge of said platform is adjacent said top of said step-like obstruction;
   - (d) means urging said platform into said raised position;
   - (e) said platform being depressible into said lowered position by a vehicle advancing over said platform from said leading to said trailing edge thereof, whereby said abutment means of said step-like obstruction is presented to said vehicle to resist advance thereof;
   - (f) latch means movable between a release position and a locking position in which said latch means locks said platform in said raised position, whereby to permit a vehicle to advance over said platform and said step-like obstruction; and

   - (g) control means to control said latch means in response to advance of a vehicle relative to the barrier.

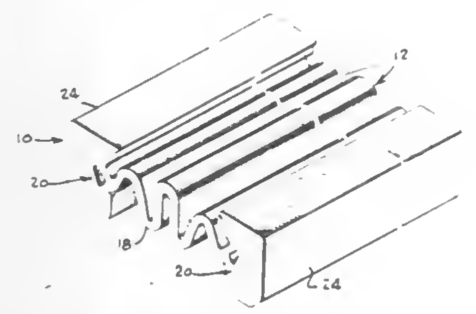
4,367,976
EXPANSION JOINT SEALING STRIP ASSEMBLY FOR ROADWAYS, BRIDGES AND THE LIKE

William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.

Filed Jun. 30, 1980, Ser. No. 164,013

Int. Cl.^{3} E01C *11/04*

U.S. Cl. 404—68 **22 Claims**



17. An expansion joint seal assembly for sealing a roadway gap and the like, comprising a pair of spaced apart elongated anchoring channel extrusion members to be secured in structural slab portions oppositely bounding the gap, each of the anchoring channel members including a generally rectangular cross-section channel-shaped body having an anchoring cavity extending the length thereof opening toward the gap shaped to define a constricted entrance throat portion opening to the gap through a front face of the channel member and communicating with a transversely enlarged, rearwardly spaced inner retaining chamber portion, the constricted throat portion being bounded below by a rounded toe formation, the retaining chamber portion having a generally oval vertically elongated cross-sectional configuration whose major axis lies in an inclined plane declining in downwardly convergent relation forming a small acute angle with a vertical center plane of the gap and providing a flat back wall paralleling said inclined plane between opposed concave recessed troughs forming the upper and lower bounding surfaces of the retaining chamber, an elongated resilient sealing strip member for sealing the gap between said anchoring channel members including an intermediate diaphragm web portion bounded along each longitudinal edge by enlarged anchoring bead formations of like cross-section, the web portion having a folded cross-sectional configuration providing distortable fold portions for maintaining sealing of the gap while accommodating expansion and contraction of the width thereof, and said anchoring bead formations each forming substantially a hollow triangle in cross-section comprising a generally flat back wall portion forming one side of the triangle and bottom and front wall portions forming the other sides of the triangle and generally converging toward the center of the gap, said back wall portion joining upper and lower convex salient promontories whose exterior surfaces conform in cross-section to the surfaces of said recessed troughs and back wall to intimately interfit in said retaining chamber portion and anchor the sealing strip therein, and said bottom wall portion having a shallow concave trough therein receiving said lower rounded toe formation in nested relation therein as a fulcrum about which the bead formation pivots to insert the bead formation into the anchoring cavity, said anchoring bead formations including a rib-like, generally planiform tab formation extending the length thereof projecting toward the vertical midplane of said web portion in upwardly converging relation along a plane forming a slightly sharper angle with said vertical midplane than the plane of said ramp surface whereby said tab formation is flexibly stressed downwardly somewhat from its normal elastic memory position to lie flat against said ramp surface when the bead formations are seated fully in said anchoring cavities.

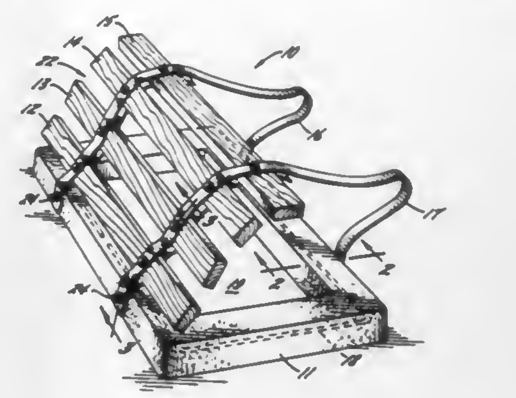
4,367,977
SHORE EROSION PREVENTION MODULES

Cecil F. Schaaf, and Craig R. Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658

Filed Nov. 12, 1980, Ser. No. 206,144

Int. Cl.^{3} E02B *3/04*

U.S. Cl. 405—25 **4 Claims**



1. A barrier module adapted to be submerged in a body of water near a shoreline which is to be protected against wave-induced erosion, comprising:
   - a base having a specific gravity substantially greater than water and adapted to lie on the bottom of the body of water;
   - an apertured barrier connected to the seaward side of said base and having buoyant means for normally causing said barrier to extend generally vertically upwardly from said base in a plane parallel to the shoreline when submerged in calm water, flexible strap means connected to the upper edge of said barrier and to the shoreward side of said base to limit the distance which said barrier can be displaced in a seaward direction relative to said base, said barrier being flexible and swingable relative to said base about a horizontal axis parallel to the shoreline and located substantially at the connection of said barrier to the seaward side of said base, under the combined control of water currents and said buoyant means and said strap means;
   - said apertured barrier yielding shorewardly and downwardly about said connection to the seaward side of said base when subjected to shorewardly directed water flow to present relatively little resistance to said flow, but said strap means controlling the position of said upper edge of said barrier during seawardly directed water flow so that seaward water pressure against said barrier causes said barrier to assume a pocket-like shape which is concave on its shoreward side to thereby create relatively high resistance to seaward water flow to retard such flow sufficiently to cause water borne sand to be deposited in the vicinity of said base.

4,367,978
DEVICE FOR PREVENTING BEACH EROSION

Cecil Schaaf, and Craig Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658

Filed Sep. 15, 1980, Ser. No. 186,941

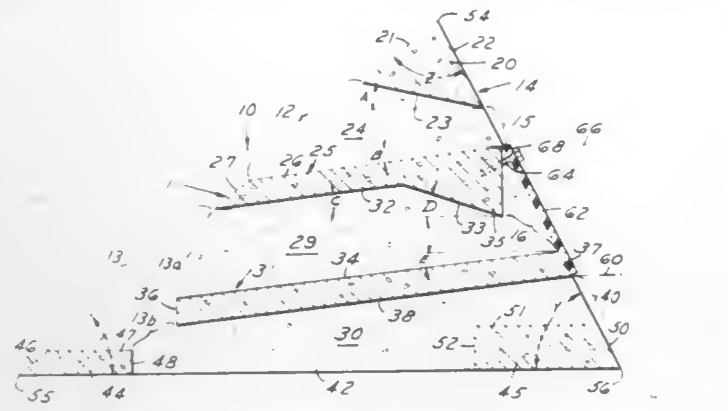
Int. Cl.^{3} E02B *3/04*

U.S. Cl. 405—30 **15 Claims**

1. An off-shore erosion protection device for positioning in a substantially submerged manner on a surf area floor along a water shoreline comprising:
   - a prism-shaped module having a bottom wall, side walls and oppositely inclined upwardly converging front and rear walls, said front and rear walls adapted to generally face in seaward and landward directions, respectively;
   - at least one flow control passage extending through said module interconnecting front and rear wall openings, respectively;
   - said passage when submerged defining hydrostatic pressure-

loaded upper and lower opposed surfaces, such that the effective projected area of said lower pressure surface exceeds the effective projected area of said upper pressure surface, wherein the differential area establishes a downwardly acting resultant hydrostatic pressure force on said module to assist the module gravitational force in retaining said module at a fixed location on the surf area floor;

said passage lower surface being sloped upwardly at a prede-

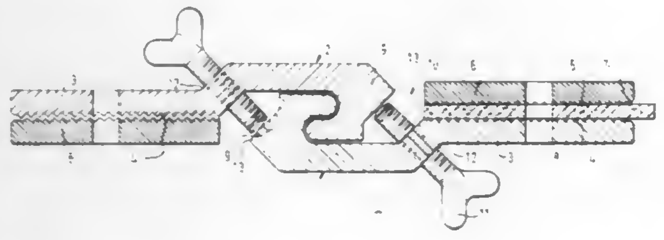


termined defined angle to the horizontal in the direction from said front to rear walls, whereby the cross-sectional area of said passage converges toward said rear wall;

said passage characterized in that its sloped lower surface is adapted to respond to impacting forces of incoming waves, whereby resultant downward dynamic force components on the lower surface assist the module gravitational force in retaining said module at a fixed location on the surf area floor.

4,367,979
CONNECTOR DEVICE

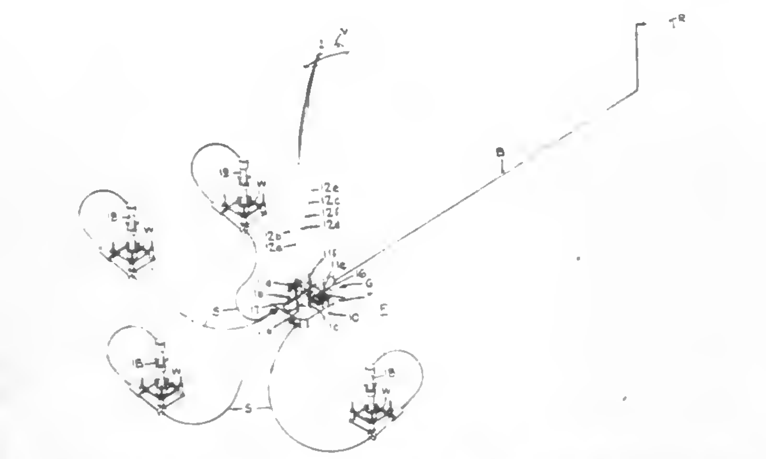
Donald L. Milligan, Wirral, England, assignor to Hoyle Marine Limited, Wallasey, England
Filed Oct. 9, 1980, Ser. No. 195,890
Claims priority, application United Kingdom, Oct. 9, 1979, 7934937
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—70 12 Claims



1. A connector device for joining the ends of an oil boom length or section to another length or section, comprising two connector members with each member having a portion securable to the end of an oil boom section and, extending from said portion, an interconnecting channel portion shaped and dimensioned so as to co-operate with the oppositely arranged interconnecting channel portion of the other connector member such that when the channel portions are pulled in opposite, outward directions, the channel portions interengage, and such that to disengage the channel portions of two members, the connector members have to execute a parallel or substantially parallel relative displacement with respect to each other with said securable portions moving towards each other before disengagement of the channel portions is possible, and securing or locking means locatable at an angle to said parallel displacement so as to extend into a space into which one of the interengaged channel portions moves after said parallel displacement and disengagement so as to prevent said parallel displacement and thereby interlock the two members, said securing means being also releasable to permit separation of said two members by said parallel displacement.

4,367,980
METHOD AND APPARATUS FOR COMPLETING DIVERLESS SUBSEA LARGE DIAMETER FLOWLINE CONNECTIONS

Thomas J. Ames, Houston, and Glen H. Cuiper, Spring, both of Tex., assignors to FMC Corporation, Chicago, Ill.
Filed Aug. 5, 1980, Ser. No. 175,621
Claims priority, application United Kingdom, Sep. 29, 1979, 7933859
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—169 14 Claims



1. Apparatus for connecting a large diameter flowline bundle to a plurality of smaller flowlines, said apparatus comprising:

a first connector mounted on one end of said large flowline bundle, said first connector having a plurality of connector hubs each connected to said large flowline bundle;

a pull-in cable;

means for connecting said pull-in cable to the geometric center of said first connector;

a plurality of small connectors each mounted on one end of a corresponding one of said smaller flowlines;

means for moving said pull-in cable and said first connector into a fixed position adjacent said small connectors;

means for connecting each of said small connectors in precise axial alignment with the corresponding one of said connector hubs; and

means for sealing each of said small connectors in a fluid-tight relationship with a corresponding one of said connector hubs.

4,367,981
FLUID PRESSURE-TENSIONED SLIP JOINT FOR DRILLING RISER

Maurice S. Shapiro, Oxnard, Calif., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jun. 29, 1981, Ser. No. 278,810
Int. Cl.³ E02D *21/00;* **E21B** *7/128*
U.S. Cl. 405—195 3 Claims

1. A slip joint for a drilling riser, including,

a first portion of the drilling riser,

a second portion of the drilling riser comprising a sleeve which is sized in diameter to telescope within the first riser portion,

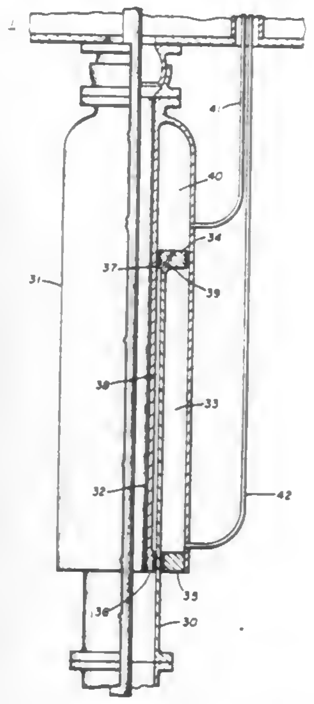
a first seal body mounted on the end of the sleeve of the second riser portion engaging the internal wall of the first riser portion to contain drilling fluid flowing within the telescoped riser portions,

a barrel member connected to the external surface of the second riser portion and extending over the telescoped end of the first riser portion,

a second seal body mounted on the end of the barrel and extending radially into sliding and sealing engagement with the external surface of the first riser portion,

a third seal body mounted on the end of the first riser portion and extending radially into sliding/sealing engagement with the internal wall of the barrel member to form a first fluid pressure chamber with the second seal body in the annulus between the barrel member and the external surface of the first riser portion and a second chamber formed with the first seal body and the third seal body in the annulus between the barrel member and the external surface of the sleeve of the second riser portion,

a first supply of fluid pressure connected to the first chamber

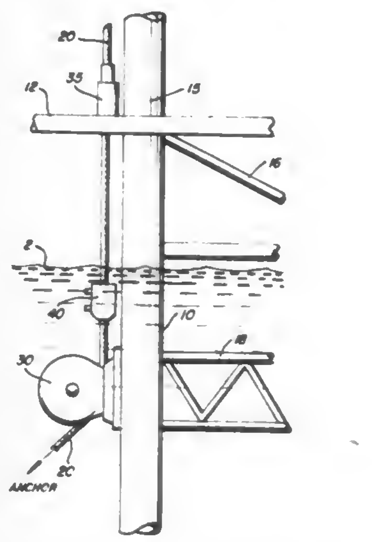


through the wall of the barrel to generate the force on the second seal body directed to provide a tensioning force on the first riser portion,

and a second supply of fluid pressure connected to the second chamber through the wall of the barrel to generate the pressure sufficient to exclude drilling fluid from passing between the seal surfaces of the first seal body and the internal wall of the first riser portion.

4,367,982
SAFETY DEVICE FOR ANCHORED MARINE STRUCTURE

Jack L. Hubbard, deceased, late of Dallas, Tex. (by Bonny J. Hubbard, administrator), assignor to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 4, 1980, Ser. No. 183,917
Int. Cl.³ E02D *21/00*
U.S. Cl. 405—202 7 Claims



1. A marine structure for placement in a body of water comprising

a plurality of guy lines radially disposed around the structure for maintaining the structure in predetermined position above the marine bottom;

means for anchoring the guy lines at spaced locations on the marine bottom;

a plurality of underwater guide means operatively connected to receive a guy line in sliding relationship, said guide means being mounted on the marine structure at radially spaced points;

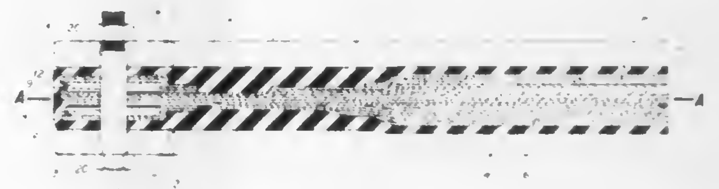
a plurality of above water guy line attachment means disposed to receive the guy lines from corresponding guide means; and

fixed braking means mounted on each of the guy lines between the guide means and attachment means for contacting its respective guide means to prevent loss of the guy lines in the event of a severing of the line above water,

each of said braking means being located above its respective guide means a sufficient distance to permit lateral excursion of said marine structure in extreme environmental conditions without contacting its respective guide means.

4,367,983
LEG CLOSURE

Steven G. Streich, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Dec. 29, 1980, Ser. No. 221,125
Int. Cl.³ E02D *5/52*
U.S. Cl. 405—227 11 Claims



1. In combination, a closure and an annular closure retaining means retaining said closure therein for closing the bore of a tubular support member of a marine platform located in a body of water or other similar structure located in a fluid environment, wherein said closure comprises:

circular flexible member means having a peripheral portion and an inner portion;

annular reinforcing member means located in the peripheral portion of the circular flexible member means; and

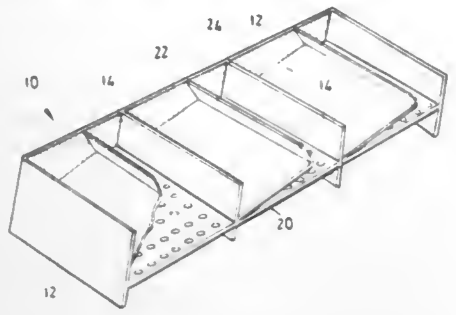
reinforcing means having a peripheral portion and an inner portion contained within the circular flexible member means, the reinforcing means comprising at least one layer of reinforcing means, each layer of reinforcing means comprising a plurality of strip means, each strip means comprising a strip of fabric having longitudinal threads and one or more fill threads, being secured to adjacent strip means and to the annular reinforcing member means and having the longitudinal threads therein generally extending along radial lines of a horizontal plane of said closure such that when said closure is subjected to loading by the hydrostatic pressure of said water or fluid the longitudinal threads are subjected to substantially uniform loading.

4,367,984
STABILIZATION OF PARTICULATE MATERIAL

Frederick D. Cartwright, 506 Lake Club Apartments, Lake Rd., Germiston, Transvaal, South Africa
Filed Jun. 9, 1980, Ser. No. 157,309
Claims priority, application South Africa, Jun. 13, 1979, 79/2917
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—258 5 Claims

1. Apparatus for use in stabilizing a surface layer of a body of particulate material comprising a horizontally-extending surface wall structure which extends along the top surface of

said surface layer and which is constructed to permit liquid to flow vertically into said surface layer, and a vertically-extending wall structure which is formed by upper wall portions and lower wall portions, said upper wall portions forming a open-topped compartment positioned above said surface wall structure and adapted to receive liquid from above and to prevent the liquid from flowing a substantial distance horizontally, whereby the liquid is held in said compartment while it passes through said surface wall structure into said surface layer, said lower wall portions extending into said surface layer and diverting liquid downwardly in said surface layer.



4,367,985
METHOD OF SEALING SALINA EXCAVATIONS

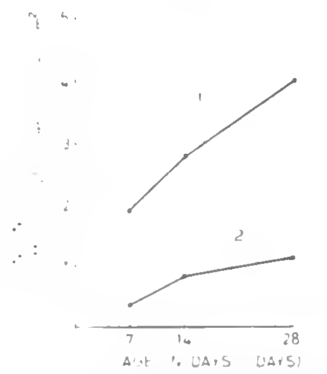
Jerzy Tomaszewski; Andrzej Chmarzynski, and Rafal Nowakowski, all of Torun, Poland, assignors to Uniwersytet Mikolaja Kopernika, Torun, Poland
Filed Oct. 25, 1979, Ser. No. 88,279
Claims priority, application Poland, Oct. 17, 1978, 210332; Mar. 15, 1979, 214184
Int. Cl.^{3} E02D *3/12*
U.S. Cl. 405—264 **8 Claims**

1. In a method of sealing salina excavations, wherein salting out substances are introduced into the effluent from rock mass salt rifts, said salting out substances being selected from the group consisting of inorganic salts, organic solvents, and mixtures thereof, the improvement comprising the steps of: sampling said effluent; adjusting said salting out substances in quantity and quality to the effluent properties, said properties being determined with regard to the complete chemical analysis of said effluent and the solubility isotherm of said effluent in a given system, and adjusting to such a degree of supersaturation which will allow maximization of the linear speed of overgrowth of the wall of the rift by crystals identical with or isostructural with the salts forming the rock mass; and then introducing the suspension of the effluent thus adjusted with the salting out substance into the rifts to control the rate of crystallization to achieve uniform sealing of said rifts.

4,367,986
METHOD FOR IMPROVING THE STRENGTH OF A WATER-SATURATED SOFT SOIL

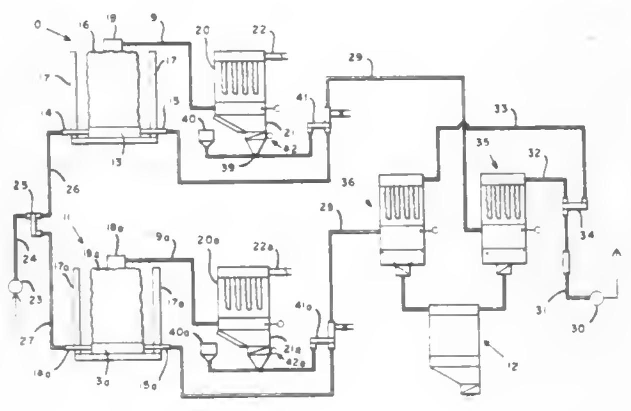
Hajime Miyoshi, Koganei; Ikuo Okabayashi, Yamato, and Etsuo Asanagi, Kashiwa, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Kanagawa, Japan
Division of Ser. No. 115,491, Jan. 25, 1980, Pat. No. 4,299,516. This application Oct. 8, 1981, Ser. No. 309,766
Claims priority, application Japan, Jan. 29, 1979, 54-8915
Int. Cl.^{3} C09K *17/00;* **E02D** *3/12*
U.S. Cl. 405—266 **3 Claims**

1. A method for improving the strength of a water-saturated soft soil, which comprises admixing the soft soil with an ingredient A comprising gypsum and an ingredient B comprising a mixture of 40–55% by weight of a Portland cement and 60–45% by weight of a water-granulated iron blast furnace slag, the slag having a particle size almost the same as or less than that of the cement, the ratio by weight of the ingredient A to the ingredient B being within the range from 10/90 to 30/70, and the soft soil being admixed with the ingredient A simultaneously with the ingredient B.



4,367,987
DISPENSING SYSTEM FOR POROUS FLOOR CONTAINERS

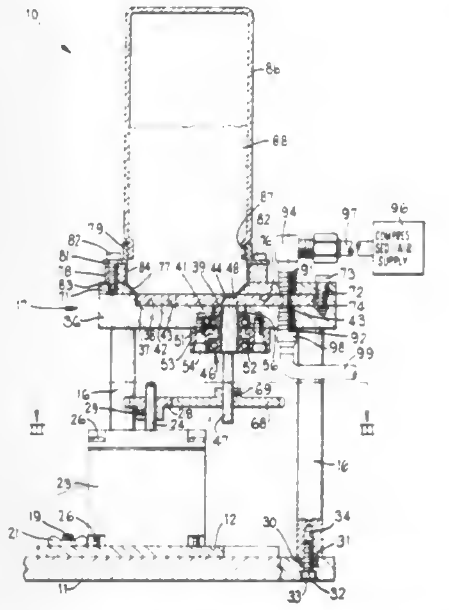
Armon J. Walters, 39 Haverhill Rd., Trumbull, Conn. 06611
Filed Nov. 3, 1980, Ser. No. 203,015
Int. Cl.^{3} B65G *53/66, 53/40*
U.S. Cl. 406—15 **24 Claims**



1. Pneumatic scaling system for aerating and conveying predetermined amounts of a dry solid particulate material from a supply container to one or more receiving containers and for controlling all of the air in said system to prevent the discharge of any solid particulate material into the atmosphere, comprising a closed fluidized bed supply container for solid particulate material, said container having a porous floor, an air inlet for introducing fluidizing air beneath said floor, a fluidized material outlet above said floor and an air vent outlet above the level of said particulate material, blower means for supplying a continuous flow of fluidizing air to said inlet and through said porous floor to fluidize the particulate material within said supply container, a vacuum delivery conduit connected to said fluidized material outlet and terminating at a filter means adapted to separate all of the solid particulate material from the conveying air and to release the filtered conveying air while directing all of the solid particulate material to one or more receiving container(s), valve means in said vacuum delivery conduit for closing said vacuum delivery conduit, an external material recovery conduit connected to said air vent outlet of the supply container to convey all of the vented solid particulate material and vent air from said supply container to said vacuum delivery conduit at a point beyond said valve means and thence to said filter means, valve means in said material recovery conduit for closing said material recovery conduit, secondary air inlet means for introducing external air through said material recovery conduit and said vacuum delivery conduit to purge the contents thereof to said filter means, and an adjustable scaling means adapted to sense the weight loss of the supply container and cause deactivation of the blower means and closing of said valve means in said vacuum delivery conduit and opening of said air inlet means to purge said vacuum delivery conduit and said material recovery conduit to said filter means when a predetermined weight of solid particulate material has been fed from said supply container.

4,367,988
DUST GENERATOR

Basil K. J. Leong, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Oct. 8, 1980, Ser. No. 195,224
Int. Cl.^{3} B65G *53/46*
U.S. Cl. 406—63 **5 Claims**



1. An apparatus for delivering a selected amount of dust-contaminated gas comprising:

a base structure having support means with a substantially horizontal support surface;
plate means supported upon said surface for rotation about a central axis perpendicular to said surface, said plate means having a plurality of transverse openings arranged in a circle concentric with said central axis;
cover means secured to said support means for enclosing a substantial portion of said plate means;
means defining a hopper opening through said cover means arranged for communication with said transverse openings in said plate means;
hopper means mounted upon said cover means and communicating with said hopper opening to define with said cover means and said support means an airtight dust chamber;
drive means mounted upon said support means and connected to said plate means for rotating same;
substantially coaxial openings through said support means and said cover means arranged for successive alignment with each of said transverse openings as said plate means is rotated, said coaxial opening in said cover means being connected to a source of gas under pressure;
a leakage space provided between said plate means and said cover means extending laterally from said coaxial opening in said cover means to the bottom of said hopper means for passing the gas from said cover means into said hopper means when said coaxial openings are not aligned with any of said transverse openings in said plate means so as to agitate the dust in said hopper means, said central axis of said plate means being offset from the center of said hopper opening laterally towards said substantial coaxial openings in said support means and cover means, said central axis of said plate means still lying laterally within the perimeter of said hopper opening, such that said leakage space extends substantially the full radial distance on said rotatable plate means from said concentric circle substantially to said central axis.

4,367,989
PORTABLE GOLD COLLECTION APPARATUS

Terry G. Smith, 124 McKiernan Dr., Folsom, Calif. 95630
Filed Nov. 21, 1980, Ser. No. 209,051
Int. Cl.^{3} B65G *53/14*
U.S. Cl. 406—153 **11 Claims**

1. An apparatus for collecting particulate material including gold or the like comprising, in combination:

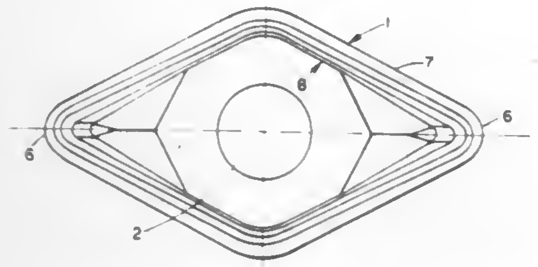
a container for said particulate material having an inlet,
a conduit having a central bore connected at one end to said container inlet,
air blowing means having an outlet and adapted to be supported on the body of a user,
a duct connected at one end in communication with said outlet of said air blowing means, the other end of said duct connected in communication with said conduit central bore for directing air blowing means into said conduit central bore towards said conduit one end to provide a jet pump action,
and a nozzle having an inlet on the other end of said conduit for sucking said particulate material into said conduit central bore by said jet pump action including deflector means in said conduit central bore downstream of said duct other end for radially deflecting the stream of particulate material flowing in said central bore to thereby reduce the cross-sectional area of said stream and increase the velocity of said stream flowing towards said container wherein said deflector means comprises a segmental plate mounted on the lower portion of the inner wall of said conduit within said central bore,
said segmental plate having a side face inclined towards said conduit one end for directing said stream of particulate material towards the upper portion of said conduit inner wall,
said segmental plate having a top edge defining a chord of a circle.

4,367,990
CUTTING INSERT

Reuven Porat, Nahriya, and Elizer Nessel, Haifa, both of Israel, assignors to Iscar Ltd., Nahariya, Israel
Filed Jul. 14, 1980, Ser. No. 168,904
Claims priority, application Israel, Aug. 8, 1979, 58006
Int. Cl.^{3} B26D *1/00*
U.S. Cl. 407—114 **4 Claims**

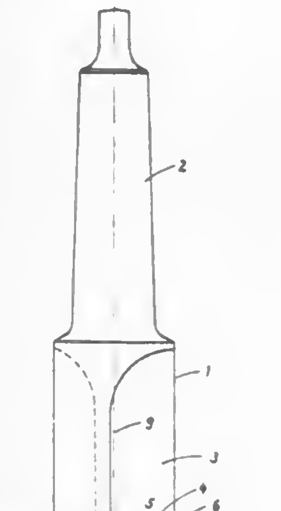
1. A disposable cutting insert having an upper and a substantially planar base face; side walls adjoining said faces; at least one cutting edge formed at an intersection of the upper face and a side wall; at least one cutting corner formed at an intersection of an adjacent pair of side walls; a chip control structure formed in said upper face extending along the cutting edge from the cutting corner for at least an effective cutting length of the cutting edge; a land surface spacing said control structure from the cutting edge; said control structure comprising first and second descending surfaces respectively extending in the direction of said cutting edge; a first chip deflector surface between said descending surfaces and merging therewith; one or more further chip deflector surfaces extending between said

second descending surface and a central portion of said upper face; said land descending and deflector surfaces having, in general, a substantially downwardly directed slope with respect to the base face in the direction of the cutting edge and from the cutting corner at least over said effective cutting length said land and first descending surfaces increasing in width from said cutting corner and at least along said effective cutting length; said first descending surface sloping with respect to said land surface by an angle which decreases from said cutting corner along said effective cutting length; said chip control structure constituting a stepped cavity of which said land surface is the rim and said central portion the base such that along every radial section line directed centrally through and in the direction of said central portion no surface is directed upwardly with respect to a preceding surface whilst along every section line directed normally with respect to said cutting edge and at least over the effective cutting length at least one further deflector surface slopes upwardly with respect to or is substantially parallel to the base surface.



4,367,991
BORING TOOL

Werner Gräfe, Reutlingen, and Paul Held, Sonnenbühl-Willmandingen, both of Fed. Rep. of Germany, assignors to Montanwerke Walter GmbH, Tübingen, Fed. Rep. of Germany
Continuation of Ser. No. 13,989, Feb. 22, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,532
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834083
Int. Cl.^{3} B23B ***51/00***
U.S. Cl. 408—224 **18 Claims**



1. Boring tool to cut a hole in a workpiece having a tool body (1, 2) having a longitudinal central axis (9);

at least two radially staggered recesses (4) at the end face of the tool body;

a cutter bit (5) located in each recess (4) at the end face of the tool body, said cutter bits having positive axial angles (γ_a) with respect to said axis and each being located at different radial distances from the central axis (9);

said cutter bits (5) being, in plan view, generally square or parallelogram-shaped defining sides and corners and of truncated pyramidal shape, having main cutting edge (7) along sides of the large base of the truncated pyramid;

and means (6) to removably secure said cutter bits to the tool body and to permit presentation, selectively, of different cutting edges to a workpiece in accordance with the position of the cutter bits on the tool body;

wherein

at least the radially innermost cutter bit is formed with auxiliary cutting edges (10, 10*a*, 10*b*) at the corners adjacent the main cutting edges and connecting said main cutting edges at an obtuse angle with respect to said main cutting edges; wherein:

said radially innermost cutter bit is located on the body with the radially inner auxiliary cutting edge (10, 10*a*, 10*b*) intersecting said central axis (9);

wherein said cutter bits (5) are positioned on the tool body in radially overlapped position such that the main cutting edges (7) thereof will form with the central axis (9) of the tool, and taken in the direction of the cut or feed of the tool, lead angles (β_1, β_2) of less than 90° to locate the auxiliary cutting edges (10, 10*a*, 10*b*) at the radially outer corners of the respective bits axially in advance of the radially inner corners of the respective bit, and such that at least a portion of the radially outer auxiliary cutting edge (10, 10*a*, 10*b*) of a radially inner bit is located axially in advance of the main cutting edge (7) of the next radially outer bit at the radial position of said radially outer auxiliary cutting edge,

so that the main edges of said bits will cut shallow conical surfaces in the workpiece, the outer auxiliary cutting edges (10, 10*a*, 10*b*) will cut stepped grooves concentric with said central axis (9) and the radially inward auxiliary cutting edge of the radially innermost cutter bit will additionally cut across the central axis,

the overlap position of said cutter bits on the tool body (1) relieving the auxiliary cutting edges at the radially inner corner of the outer cutter bit or bits from cutting action due to removal of workpiece material at the respective radial position by the radially outer portion of the main cutting edge and the adjacent radially outer auxiliary cutting edge (10, 10*a*, 10*b*) of the adjacent radially inner cutter bit;

wherein the cutting action of the radially innermost cutter bit effects cutting into the workpiece with its main cutting edge in accordance with the cutting edge lead angle (β_1, β_2) and its radial position on the tool body,

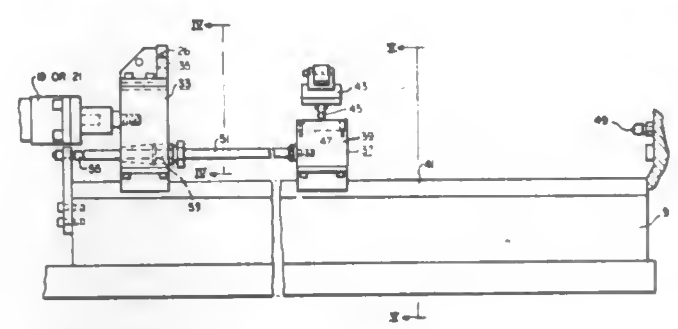
the auxiliary cutting edge (10, 10*a*, 10*b*) at the radially outer corner of the innermost cutter bit, of which at least a portion is positioned axially in advance of, and radially outwardly with respect to, the auxiliary cutting edge of the radially inner corner of the adjacent radially outer cutter bit, cuts said stepped groove concentric with said control axis (9) to provide for self-centering of the tool within the bore; and wherein

the cutting action of a cutter bit adjacent a radially inner cutter bit effects cutting of the workpiece with its main cutting edge in accordance with its cutting edge lead angle (β_1, β_2) and its radial position on the tool body,

and the auxiliary cutting edge (10, 10*a*, 10*b*) of the radially outer corner of said radially outer cutter bit and being positioned axially in advance of the auxiliary cutting edge at the radially inner corner thereof additionally cuts a stepped groove concentric with said central axis to further enhance and support said self-centering of the tool.

4,367,992
BROACHING MACHINE

Daniel P. Soroka, Franklin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 7, 1980, Ser. No. 175,975
Int. Cl.^{3} B23D ***41/04***
U.S. Cl. 409—264 **4 Claims**



1. A support system for a broach utilized in apparatus for broaching holes in a workpiece, said support system comprising:

a pulling head which attaches to a leading end of the broach and is utilized to pull the broach through the workpiece;

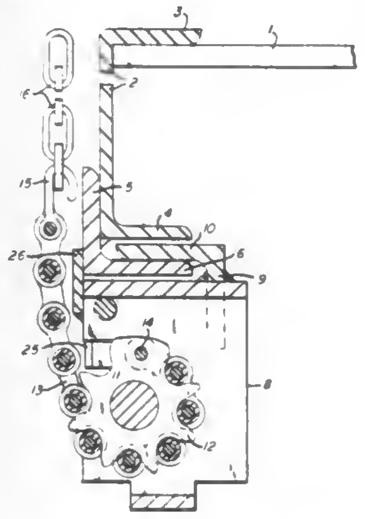
a trailing end support which supports the trailing end of the broach and is slidably disposed in the broaching apparatus;

an intermediate support, which supports the broach intermediate its ends and which is slidably disposed in the broaching apparatus;

said intermediate support having a bridge portion slidably disposed thereon and means for moving said bridge portion downwardly as the intermediate support approaches the workpiece to allow the broach to slide thereover without contacting the intermediate support.

4,367,993
TRUCK LOAD BINDER TIGHTENER

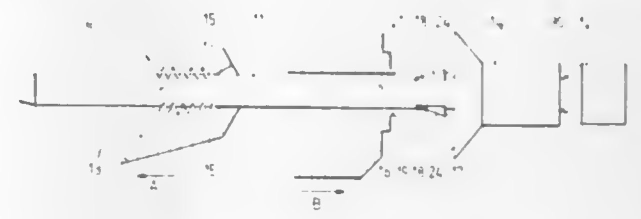
William M. Meigs, 121 S. Drive, Pittsburgh, Pa. 15238
Filed Oct. 6, 1980, Ser. No. 194,760
Int. Cl.^{3} B60P ***7/008***
U.S. Cl. 410—103 **10 Claims**



1. The combination with a truck bed having a side rail extending along the bed and provided at its bottom with a flange projecting inwardly beneath the bed, of a load binder tightener comprising a housing having spaced parallel side walls, a bracket secured to the housing and extending above it, the bracket extending outwardly in overlapping engagement with the upper surface of said rail flange, means secured to the housing for limiting movement thereof inwardly to prevent removal of said bracket from said rail flange, a shaft rotatably mounted in said housing side walls and projecting from at least one of said side walls and formed to receive a tool for turning the shaft, a sprocket rigidly mounted on the shaft between said side walls, a ratchet rigidly mounted on said shaft, a pawl pivotally connected to said housing and engaging the ratchet, a sprocket chain engaging the sprocket, whereby the chain can be wound on the sprocket when said shaft is rotated, a second rail above said first-mentioned rail and having at its bottom an inwardly projecting flange spaced above said first-mentioned flange, said first-mentioned rail being an angle bar with a vertical flange secured to the outer side of said second rail, and said bracket extending outwardly between said spaced inwardly projecting rail flanges.

4,367,994
BLIND FASTENER AND METHOD OF MANUFACTURE THEREOF

Albert C. Francis, Stevenage, and Frederick A. Summerlin, St. Albans, both of England, assignors to AERPAT A.G., Zug, Switzerland
Filed Aug. 4, 1980, Ser. No. 175,037
Claims priority, application United Kingdom, Aug. 14, 1979, 7928346
Int. Cl.^{3} F16B ***19/10***
U.S. Cl. 411—43 **9 Claims**



1. A blind fastener comprising a stem and a shell;

the stem having an enlarged head at one end and a pulling portion at the other end;

the shell including a first bore, the portion of the stem between the head and the pulling portion thereof extending through said first bore;

the fastener being adapted to be installed by relative movement between gripping means which grip the pulling portion of the stem and a nose having a second bore which surrounds the stem, so that the nose is advanced towards the shell and supports it at one end whilst the stem head is pulled into its other end to form a blind head;

the stem having at least one outward deformation at a position between the shell and pulling portion to retain the shell on the stem, said stem having a radius at the maximum radial height of said deformation which is greater than the radius of said first bore and greater than the radius of said second bore;

wherein said outward deformation has a relatively shallow sloping profile increasing progressively in the radial direction towards the enlarged head;

whereby while the fastener is being installed as aforesaid, the nose can move past the deformation by engaging the aforesaid relatively shallow sloping profile and pushing the deformation in towards the stem without carrying material away from the deformation to contaminate the shell.

4,367,995
QUICK-ACTING EXPANSIBLE FASTENER

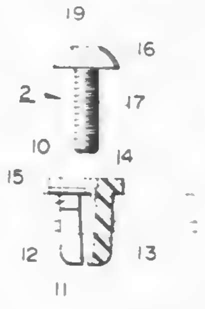
Akira Mizusawa, Fujisawa, and Yoshiaki Notoya, Zushi, both of Japan, assignors to Nifco Inc., Yokohama, Japan
Filed Jul. 2, 1980, Ser. No. 165,401
Claims priority, application Japan, Jul. 6, 1979, 54-85043
Int. Cl.^{3} F16B ***13/06***
U.S. Cl. 411—57 **8 Claims**

1. A fastening device for fastening two objects together each respectively having an aperture therethrough, the apertures being concentrically aligned, said device comprising:

a female member of a flexible synthetic resin and having a body at one end thereof with a flange extending laterally therefrom and a leg, said leg being connected to one side of said body and having a free end longitudinally outwardly extending therefrom for being fitted into the apertures whereby said flange abuts one of the objects;

said female member having a bore therethrough longitudinally extending through said body and said leg;

said leg having at least one elongated groove through the peripheral wall thereof and longitudinally extending in the longitudinal direction of said leg and the peripheral wall of said bore in said body having at least one radially inwardly extending circumferentially discontinuous ridge integral with and of the same material as said body and having portions in diametrically opposite surfaces of said bore, and the inner surface of said bore in said leg being entirely smooth, for, when a shank having a larger diameter than said bore is inserted therein, having said ridge flex in the longitudinal direction of said bore and having said leg free end radially expand thereby securing the shank within said bore;



a male member made of a synthetic resin and having a head and a shank, said shank being connected to a first side of said head and having a free end longitudinally outwardly extending therefrom for, when an axial force is exerted on said head, being axially thrust into said bore and radially expanding said leg free end and for having said head first side abut said flange thereby fastening the two objects together between said flange one end and said leg free end; and

the circumferential surface of said shank having threads integral with and the same material as the shank for, when said shank is axially thrust into said bore, flexing in the longitudinal direction of said bore and, when said shank is secured within said bore and said head abuts said body and said flange, having said threads threadably engaging with said at least one ridge for, when said male member is rotated in one direction, threadably disengaging said male member from said female member thereby axially removing said shank from said bore.

4,367,996

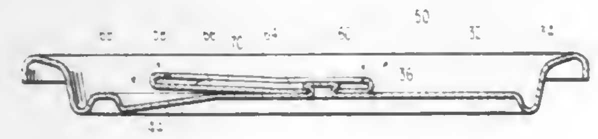
TAB OPENER END CLOSURE ASSEMBLY METHOD

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1981, Ser. No. 233,570

Int. Cl.^{3} B21D *51/00*

U.S. Cl. 413—14 **5 Claims**



1. Manufacturing method for an easy-open sheet metal endwall closure for a container, comprising

(A) providing a sheet metal endwall blank,

(B) fabricating such endwall blank for use as an easy-open endwall closure including the steps of

forming such blank to present a substantially planar panel,

scoring such panel to define a severable portion to be moved from the plane of such panel upon opening of a container, and

forming a rivet button in the panel for use in securing a tab opener to such panel,

(C) providing a sheet metal tab opener blank,

(D) fabricating such tab opener blank for use as a tab opener having an elongated configuration with a working portion and a handle portion at longitudinally opposite ends, including the steps of

folding over peripheral edge portions of such tab opener blank to form a double thickness of sheet metal with rounded edge at least around such handle portion and extending longitudinally along a major portion of the side edges of the tab opener blank toward such working end,

such edge metal being folded over in a direction to be disposed outwardly when assembled on an end closure with raw edge metal accessible after assembly,

and

forming an aperture near the working end of the tab opener for placement over a rivet button,

(E) placing such tab opener aperture over such rivet button in the panel portion of the end closure such that the folded-over edge metal of the fabricated tab opener is disposed outwardly, to provide for repair of such edge metal, when such end closure is prepared for assembly on a container,

(F) converting such rivet button to a rivet to secure the fabricated tab opener to the fabricated end closure, and then

(G) applying protective coating to such end closure including repair of such raw edge sheet metal at the periphery of such tab opener.

4,367,997

DEVICE FOR CREATING BATCHES OF FLAT WORKPIECES SUCH AS BOX BLANKS

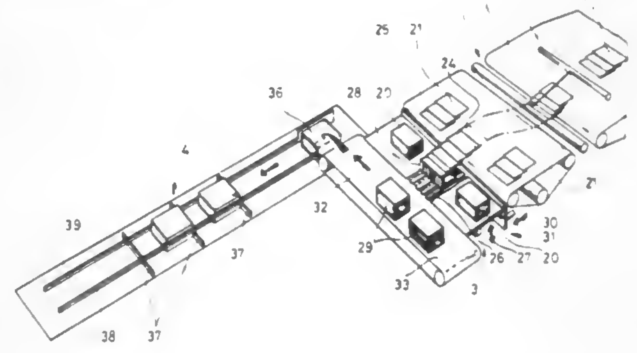
Hermann Schweingruber, Sullens, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Oct. 2, 1980, Ser. No. 193,022

Claims priority, application Switzerland, Oct. 9, 1979, 9072/79

Int. Cl.^{3} B65H *31/30*

U.S. Cl. 414—38 **9 Claims**



1. A device for creating batches of flat workpieces especially box blanks comprising conveyor means for transporting the box blanks in at least one stream of staggered blanks in a transport direction, said conveyor means enabling adequate staggering of the box blanks in each stream; means for braking and separating the blanks in each stream of box blanks; means for removing box blanks having contingent flaws from the conveyor means; piling means for forming piles of box blanks from the stream of blanks in the conveyor means; removing means for removing the piles of box blanks created in said piling means; means for creating batches of box blanks from said piles; and means for transferring said piles of box blanks in an aligned fashion to said means for creating batches; said conveyor means including several conveyors assembled one after another in the transport direction in a frame; said means for removing box blanks with contingent flaws including the last conveyor of said conveyor means in the transport direction being constructed to be pivoted around a drive roller from a conveyor position to a reject position and a reject receiving belt extending cross-wise to the transport direction being arranged adjacent said last conveyor to receive blanks as the conveyor is pivoted to the reject position; the means for braking and separating comprises a lower roll arranged between a pair of conveyors in said conveyor means, said lower roll being carried on a cradle mounted in said frame for movement along said transport direction, an upper pressure roller, means for moving the upper pressure roller from a position above said lower roll to a position pressing a blank therebetween, means for rotating the lower roll in one direction including a clutch, second means for rotating the lower roll in a direction opposite to the one direction of rotation, said second means being actuated by movement of said cradle in said frame in a direction opposite to the transport direction; said piling means including a front stop being mounted for adjustment in both a vertical direction and the transport direction, and means for determining the height of the blanks in the piling means; said means for removing the piles of box blanks including a removable belt and a pusher for pushing said piles from said piling means onto the removal belt, said pusher means being actuated in response to the means for determining a predetermined height of said piles, said means for transferring the piles from the means for removing the piles to the means creating batches, aligning each of said piles and including means for rotating the piles through at least 90° in the plane of the blank and means for rotating the pile to stand on the edges of the blank, and said means for creating batches including a conveyor chain for moving the piles while standing on edge and joggers for shifting the piles into a delivery stations as batches of box blanks standing on edge.

4,367,998

MANIPULATORS

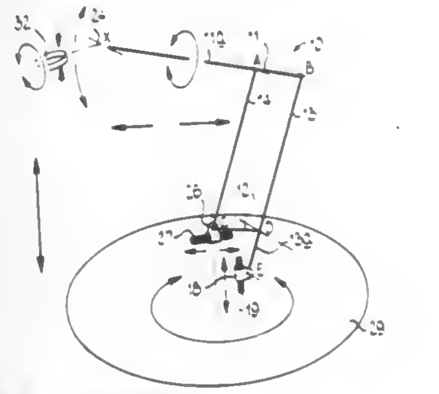
Roy Causer, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 5, 1980, Ser. No. 184,304

Claims priority, application United Kingdom, Sep. 13, 1979, 7931801

Int. Cl.^{3} B25J *3/02*

U.S. Cl. 414—4 **7 Claims**



1. A manipulator comprising,

(a) a slave assembly comprising,

(i) first and second relatively short links, the first link being longer than the second link;

(ii) third and fourth relatively long links, the fourth link being longer than the third link, the first link and the second link each being pivotally connected to the third link and to the fourth link to form a four bar chain linkage, the pivotal connections being positioned so that the linkage has opposing members of equal length between pivots and in parallel relationship;

(iii) a portion of the first link extending away from the linkage at the pivotal connection of the first link with the third link;

(iv) a portion of the fourth link extending away from the linkage at the pivotal connection of the fourth link with the second link;

(v) two lead screw means extending in mutually perpendicular relationship in a common plane that includes the four bar chain linkage;

(vi) two nut means, one for each lead screw means, one said nut means being pivotally connected to the extending portion of the fourth link, the other said nut means being pivotally connected to the pivotal connection of the second link with the third link;

(vii) a member for connection to a jaw mechanism and pivotally connected to the extending portion of the first link, the pivotal connections of the jaw connection member and of the extending portion of the fourth link, and the pivotal connection of the second link with the third link, being arranged to lie in a common straight line; and

(viii) two electric stepping motors, one for each lead screw means, for rotating said lead screw means;

(b) a master assembly comprising an electric control means for controlling the electric stepping motors, and

(c) electric connection means for connecting the electric control means to the electric stepping motors.

4,367,999

APPARATUS FOR THE AUTOMATIC DISCHARGE OF PANELS FROM A MACHINING LINE

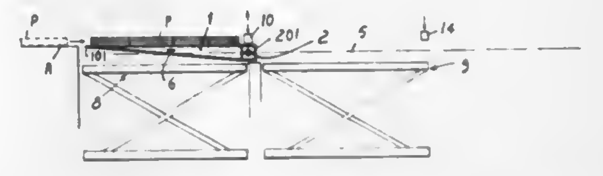
Gino Benuzzi, Bologna, Italy, assignor to Giben Implanti S.p.A., Pianoro, Italy

Filed Oct. 10, 1980, Ser. No. 195,820

Claims priority, application Italy, Oct. 12, 1979, 12771 A/79

Int. Cl.^{3} B65H *29/48*

U.S. Cl. 414—51 **4 Claims**



1. Apparatus for the automatic discharge in a horizontal transfer direction of panels from a workpiece support (A) at the end of a machining line, comprising

(a) first and second support tables (**8, 9**) movable upwardly and downwardly and sequentially arranged in said horizontal transfer direction;

(b) a tilting table (**1**) mounted for to-and-fro movement with respect to said workpiece support in said horizontal transfer direction, said tilting table having a single discharge edge (**101**) facing said workpiece support;

(c) said tilting table being tiltable about an horizontal axis transverse to said transfer direction, from a loading position in which the upper surface of said tilting table is substantially coplanar with said workpiece support, to a discharge position in which said upper surface is inclined downwardly and said discharge edge is adjacent to the effective upper surface of a said support table disposed beneath said tilting table;

(d) abutment means (**10, 14**) comprising a horizontal bar arranged transversely to said transfer direction cooperating with said upper surface of said tilting table to prevent panels on said tilting table from following its transfer direction movement, whereby said panels are caused to be discharged over said discharge edge onto a said support table disposed beneath said tilting table, a said abutment means being provided above the end of each of said first and second support tables which is downstream with respect to said workpiece support; and

(e) actuating means (12) for causing the lifting of said first abutment bar to a height sufficient to permit the passage therebeneath of said tilting table when loaded with panels to be discharged onto said second support table.

4,368,000

BALE WAGONS

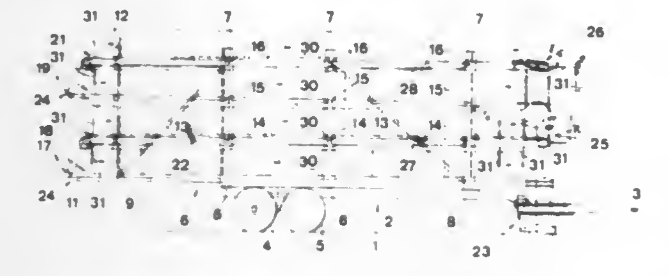
Adrianus Naaktgeboren, and Marc G. Vansteelant, both of Zedelgem, Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 1, 1980, Ser. No. 165,160

Claims priority, application United Kingdom, Jul. 4, 1979, 7923323

Int. Cl.^{3} A01D *87/12*

U.S. Cl. 414—111 **29 Claims**



1. In a bale wagon having:
- (a) a mobile main frame having a predetermined width and length;
- (b) bale pick-up means forming a subframe mounted to the main frame at one side of the bale wagon, said bale pick-up means being movable between an operative and an inoperative position transversely of the bale wagon such that at least part of the pick-up means is contained in the inoperative position within the width of the bale wagon so as to reduce the overall width of the bale wagon for transport purposes;
- (c) bale elevator means mounted to the subframe operable to lift a bale from the ground upon being engaged thereby;
- (d) conveyor means connected to the main frame effective to receive bales from the elevator means, the conveyor means further comprising at least a first conveyor means and a second conveyor means operable to handle a bale successively imparting a first direction of movement and a second direction of movement thereto so that said directions of movement lie in different planes inclined relative to and intersecting each other.

4,368,001

MACHINE, PARTICULARLY FOR LOADING AND UNLOADING CERAMIC MATERIAL ON TO AND FROM STAKE TRUCKS

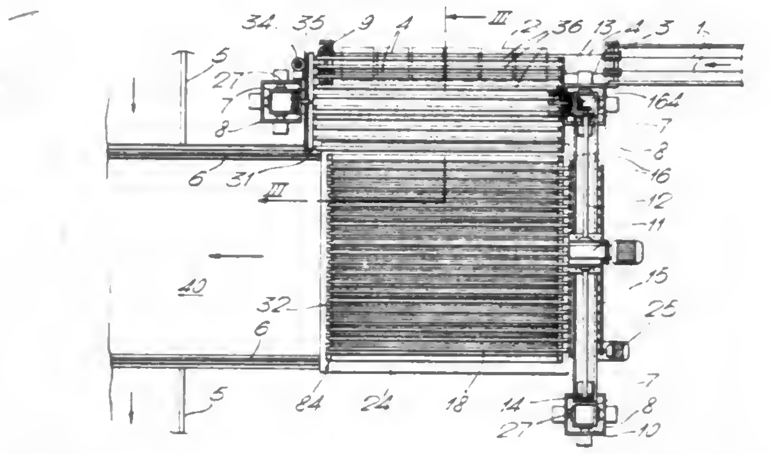
Dario Carraroli, Modena, Italy, assignor to Carfer S.r.l., Modena, Italy

Filed Oct. 24, 1980, Ser. No. 200,601

Int. Cl.^{3} B65G *67/02, 39/02*

U.S. Cl. 414—331 **6 Claims**

1. Ceramic material loading and unloading apparatus for loading and unloading a plurality of lines of ceramic material articles onto and from stake trucks having horizontal support rails, said apparatus comprising, a flat horizontal roller table composed of a plurality of spaced apart coplanar rollers, means supporting said rollers of said table for simultaneous movement vertically, motor means for rotating said rollers to feed a line of ceramic articles transversely across said table, means for feeding lines of aligned ceramic material articles onto said first table, comprising, a second horizontal roller table beside and generally coplanar with said first table and composed of a plurality of spaced apart rollers parallel to the rollers of the first table, motor means for rotating said rollers of said second table to advance a line of ceramic material articles transversely to said first table, the rollers of said second table having an effective length essentially the same as the rollers of the first table, means supporting the rollers of said second table for simultaneous vertical movement with the rollers of the first table, feed means for feeding a line of ceramic articles onto said second table, said feed means comprising, a pair of spaced apart V-belts parallel with the rollers of said second table, means for supporting said V-belts, means for moving said second table and said support means for said V-belts vertically relative to each other between a first position in which an uppermost surface of the V-belts is above the rollers and ceramic articles can be conveyed on the V-belts to a position above the rollers, and a second position in which the uppermost surface of the V-belts is below the uppermost surface of the rollers to deposit the ceramic articles onto the rollers of the second table, motor means for driving said V-belts to convey a line of ceramic articles to a position above the rollers of the second table, means for feeding a line of ceramic articles to said V-belts and comprising, a conveyor having an end pivotally connected to the support means for the V-belts and generally aligned with the V-belts, and means for driving said conveyor to feed ceramic articles one by one to said V-belts.



4,368,002

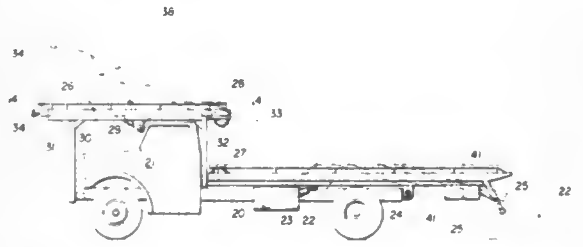
CAR CARRIER

Andrew Kryzyosiak, Jr., Chambersburg, Pa., assignor to Jerr-Dan Corporation, Greencastle, Pa.

Filed Mar. 2, 1981, Ser. No. 239,446

Int. Cl.^{3} B60P *3/008, 1/014*

U.S. Cl. 414—494 **8 Claims**



1. In a car carrier of the type which includes an above-cab tiltable car support platform, a cable winch attached in underslung relation to the rearward end portion of such platform behind the cab, a cable guide sheave, means mounting said cable guide sheave for swivel movement to the forward end of the platform on an axis parallel with the longitudinal axis of the platform, a winch cable leading forwardly from the winch beneath the platform and around the sheave and then upwardly and rearwardly for attachment to a car being winched onto said platform, and said sheave and winch both movable with said tiltable support platform whereby the arrangement assuring the same attitude between said sheave and winch at all times and a constant cable lead distance at all times between the load and the winch and also assuring a proper cable fleet angle which is maintained constant.

4,368,003

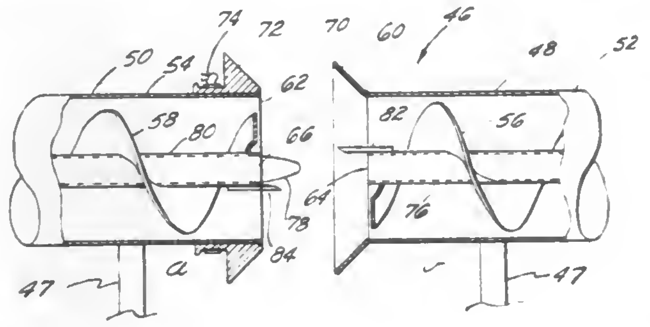
FOLDABLE FARM IMPLEMENT WITH SINGLE PORT HOPPER-FEEDING AUGER

John T. MacDonald, R.R. #2, Box 1634, Paulding, Ohio 45879

Filed Nov. 28, 1980, Ser. No. 211,074

Int. Cl.^{3} A01B *65/02;* **B60P** *1/40*

U.S. Cl. 414—523 **6 Claims**



1. In combination, a foldable farm implement and hopper-feeding auger comprising an elongated hopper-supporting frame in three separable sections in end-to-end relation, a draw bar secured to and transversely extending from the central of said sections, first means pivotally connecting the opposite ends of said central section to the adjacent ends of the outboard sections, respectively whereby said outboard sections may be pivoted between a first position in which said three sections are aligned and a second position in which said outboard sections are generally parallel to said draw bar, a plurality of hoppers carried by said sections, an elongated tubular conveyor in two separable length portions carried by said two outboard sections, respectively, said length portions being disposed above said hoppers in feeding relation thereto and extending parallel to said frame sections when said outboard sections are in said first position, said conveyor portions including two tubular elements which receive two rotary augers, respectively, the adjacent ends of said tubular elements being joined and said augers drivably connected to rotate in unison when said outboard sections are in said first position and said tubular elements being separated and said augers disconnected when said outboard sections are in said second position, said tubular elements having material-discharge openings in register with said hoppers, respectively, and second means on the outboard end of one conveyor length portion only for introducing flowable granular material into said conveyor which conveys such material through both length portions to said hoppers, respectively, when said outboard sections are in said first position.

4,368,004

APPARATUS FOR PREVENTING A TURBINE FROM EXCEEDING A PREDETERMINED VALUE OF A MONITORED PHYSICAL MAGNITUDE

Andre Lapart, Le Blanc Mesnil, France, assignor to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

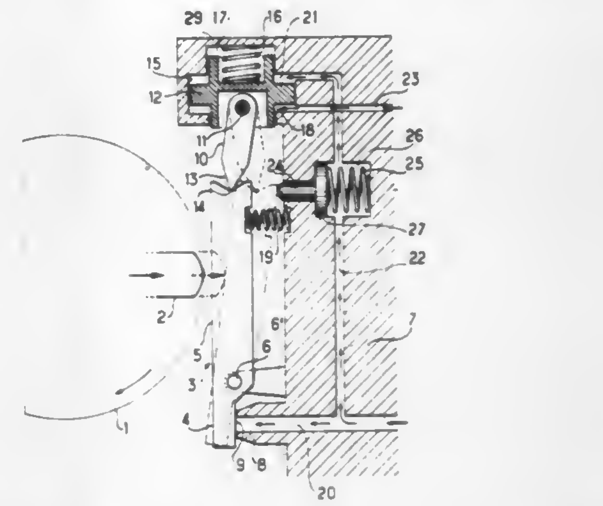
Filed Oct. 27, 1980, Ser. No. 200,624

Claims priority, application France, Oct. 25, 1979, 79 26488

Int. Cl.^{3} F01B *17/06*

U.S. Cl. 415—39 **9 Claims**

1. An apparatus for preventing a turbine from exceeding a predetermined value of a monitored physical magnitude, said apparatus including: a stationary frame, a stop, monitoring means, an over-center toggle lever pivotally mounted on a pivot point on said stationary frame, said lever being capable of occupying either one of two stable positions, one of which is a cocked position in which it abuts against said stop, said cocked position corresponding to normal operation of the turbine, the other position being a tripped position which corresponds to abnormal operation of the turbine, said toggle lever being tripped to the tripped position when said monitoring means detect that the predetermined value of said physical magnitude has been exceeded, said tripped position of the lever causing turbine admission units to close, said apparatus also including; a piston guided within a cylinder, a connecting rod having one end pivotally mounted to an end of the toggle lever which is remote from the pivot point of the toggle lever on the frame, and the other end of the connecting rod being pivotally mounted on said piston guided in said cylinder, a spring permanently subjecting said piston to a compression force directed towards the connecting rod and the toggle lever, the toggle lever when in the cocked position forming an angle of about 180° with the connecting rod, said frame and apparatus assembly being resilient so that in the event of the piston seizing in the cylinder, the toggle lever can still be moved to the tripped position and said apparatus includes closing control means actuated by the toggle lever itself when it moves from the cocked position to the tripped position, even when the piston is seized, for controlling the closing off of fluid admission units to said turbine.



4,368,005

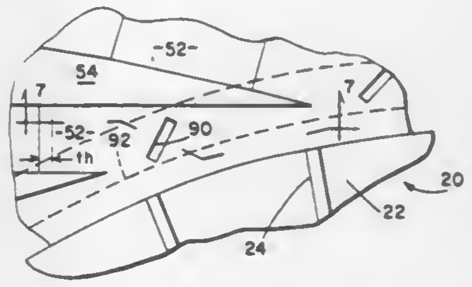
ROTARY COMPRESSORS

John T. Exley, Milford; Charles Kuintzle, Jr., Monroe, and David L. Tate, Stratford, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Division of Ser. No. 795,058, May 9, 1977, Pat. No. 4,164,845, which is a continuation-in-part of Ser. No. 515,115, Oct. 16, 1974, abandoned. This application Nov. 16, 1978, Ser. No. 961,317

Int. Cl.^{3} F04D *29/44*

U.S. Cl. 415—207 **4 Claims**



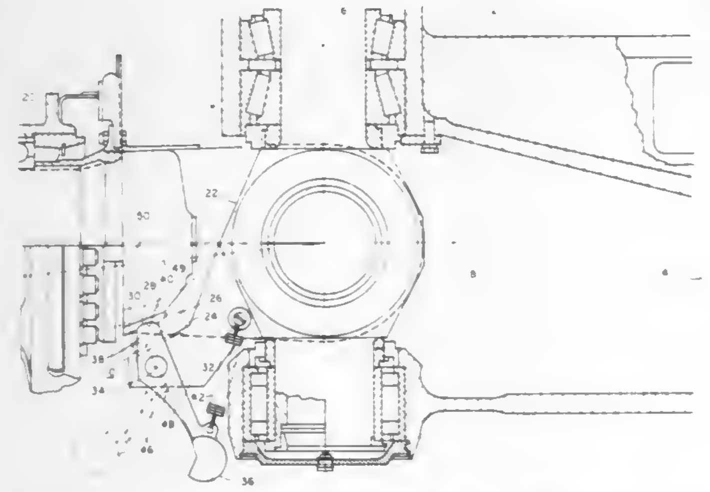
1. A compressor stage for pressurizing compressible fluids, comprising:

a bladed radial flow impeller;

an annular radial flow diffuser having its inner periphery closely surrounding the discharge end of said impeller, said diffuser including a vaneless annular entrance space for receiving the fluid discharged from said impeller, said entrance space being formed by first and second spaced apart walls, said diffuser also including a plurality of intersecting passageways extending outwardly from said annular entrance space in a tangential direction from the inner periphery of said diffuser, said passageways being formed by wedge-shaped vanes symmetrically disposed between said spaced apart walls, each of said passageways having a convergent entrance portion followed by a throat section of constant cross section downstream of which is an area of expanding cross section extending toward the exhaust end of each of said passageways; and

flow equalizing means for stabilizing the flow of fluid through said diffuser passageways, said flow-equalizing means including elongated transverse slots formed in the first spaced apart wall of the diffuser, said slot being located in the throat section of each of said passageways and extending along a line of equal pressure within said passageway, each of said slots communicating with a closed common manifold constructed in said first diffuser wall, whereby fluid flowing both into and out of said manifold via the slots serves to equalize the pressure in all of said passageway throat sections.

4,368,006
DROOP STOP FOR FULLY ARTICULATED ROTOR
Donald L. Ferris, Newtown, and Robert C. Rybicki, Trumbull, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 7, 1980, Ser. No. 176,151
Int. Cl.^{3} B64C *27/40*
U.S. Cl. 416—140 **1 Claim**

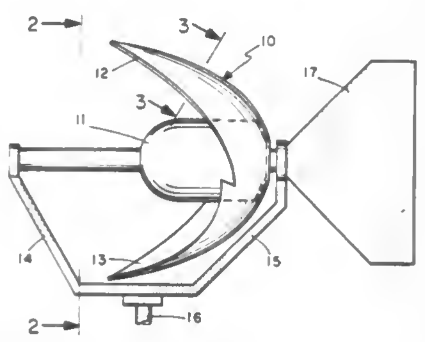


1. In a droop stop mechanism for a fully articulated rotary wing aircraft of the type having a rotor drive shaft, a hub rotatable by said shaft, and a blade pivoted in said hub for flapping movement about a flapping axis; said mechanism including a vertical hinge rotatable with said shaft and having an abutment beneath said blade, a spindle pad fixedly mounted at the root of said blade above said abutment, and a pendulum member pivotally connected as a point intermediate its ends on said vertical hinge in position to rotate by action of centrifugal force, said pendulum member having a fly weight on its lower end and a bearing surface on its upper cam end, said mechanism further including a tension spring connected at one of its ends to said vertical hinge and at the other of its ends to the lower end of said pendulum member, the improvement includes:

said blade mounted spindle pad having three contact surfaces comprising: a first generally flat surface acting as the dynamic stop; a generally cylindrical surface acting as the static stop; a second generally flat surface acting as a disengage means, wherein said second surface is contiguous with said generally cylindrical surface of said spindle pad with said cylindrical surface located relatively inboard; and

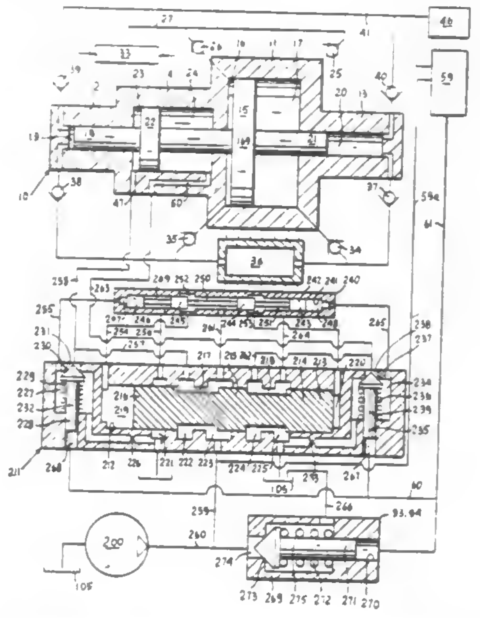
a hub mounted pendulum member having two contact surfaces; a dynamic surface and a static surface; said dynamic surface being flat and in alignment to contact said first flat surface of said spindle pad, said static surface being generally cylindrical and in alignment to contact said generally cylindrical surface of said spindle pad with said two generally cylindrical surfaces having the radial center thereof the pivot point of said pendulum member wherein the transition point of said second flat surface and said generally cylindrical of said spindle pad is located to form angle with the line to the pivot point of said pendulum member and a line normal to said second flat surface of said spindle pad; and said angle having tangent thereof exceeding coefficient of friction of the droop stop contacting members.

4,368,007
FLUID DRIVEN TURBINE
Walter K. Ely, 2445 Raymond Ave., Ramona, Calif. 92065
Filed Oct. 10, 1980, Ser. No. 196,130
Int. Cl.^{3} F03D *1/06*
U.S. Cl. 416—238 **5 Claims**



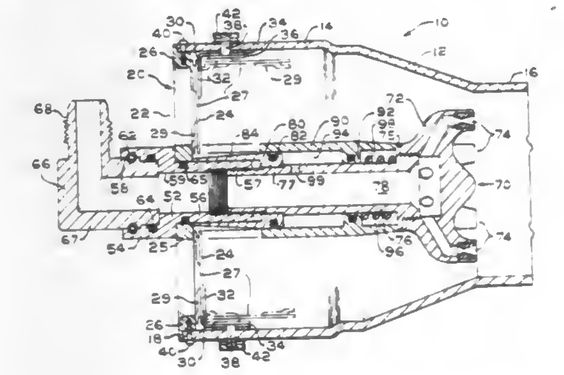
1. A fluid turbine rotor comprising:
a central hub having a generally spheroid configuration mounted for rotation about an axis;
a plurality of forwardly curved self supporting wind blades having a base and an outer tip and mounted at said base on said hub,
said wind blades each having a relatively wide base tapering down substantially to a point at the outer tip, each blade curving and extending forwardly along said axis with increase in radius from said base to said point at said outer tip with said tip positioned forward of said base with said tip pointing substantially parallel to said axis.

4,368,008
RECIPROCATING CONTROLS OF A GAS COMPRESSOR USING FREE FLOATING HYDRAULICALLY DRIVEN PISTON
Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022
Filed Feb. 10, 1981, Ser. No. 233,218
Int. Cl.^{3} F04B *49/00, 3/00, 17/00*
U.S. Cl. 417—46 **10 Claims**



1. A double acting compressor drive system comprising a free floating piston assembly having at least one gas compression piston means provided with compressed gas outlet means, and hydraulic drive means having first and second chambers and hydraulic piston means operable to transmit a reciprocating motion to said gas compression piston means, a pump having a discharge outlet, exhaust means, control valve means operable to sequentially connect said first and said second chamber with said discharge outlet and said exhaust means at the end of each compression stroke, and relief valve means interposed between said pump and said exhaust means having means operable to maintain a relatively constant pressure differential between pressure in said discharge outlet and pressure in said compressed gas outlet means once said pressure in said discharge outlet exceeds pressure in said compressed gas outlet means by the amount of said relatively constant pressure differential.

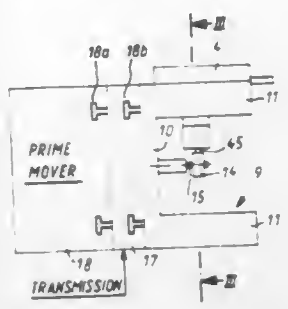
4,368,009
ASPIRATOR
John F. Heimovics, Jr., Akron, and Peter P. Seabase, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Aug. 15, 1980, Ser. No. 178,430
Int. Cl.^{3} F04F *5/48*
U.S. Cl. 417—191 **8 Claims**



1. An aspirator for inflating a flexible, inflatable product such as a raft, evacuation slide or the like comprising a housing, a nozzle assembly disposed within said housing, means for introducing gas under pressure into said nozzle assembly, an air inlet at the end of said housing, a valve assembly controlling said inlet comprising valve member movable in the downstream direction and into said housing to open said inlet and in the upstream direction to close said inlet, a locking device disposed within said housing adjacent said nozzle assembly, means within said housing and downstream of said locking device to bias said locking device into engagement with said valve members, and means within said housing and downstream of said locking device, responsive to gas under pressure introduced to said nozzle assembly, to move said locking device out of engagement with said valve members.

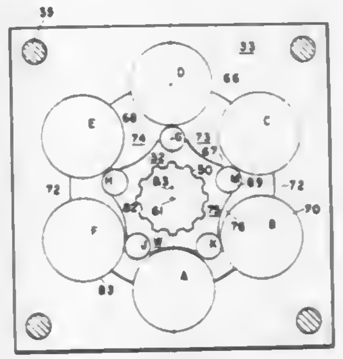
4,368,010
APPARATUS FOR ADMITTING LIQUID TO THE VESSELS OF DEVELOPING MACHINES FOR PHOTOSENSITIVE MATERIAL
Walter Kohlbauer, Kaufbeuren, and Günter Schirk, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jul. 25, 1980, Ser. No. 172,393
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931050; Jul. 31, 1979, 7921875[U]
Int. Cl.^{3} F04B *27/02;* **F16J** *11/02;* **F01B** *1/06*
U.S. Cl. 417—271 **22 Claims**

1. Fluid conveying apparatus, particularly for conveying several discrete fluid streams comprising:
(a) a support;
(b) at least one pumping unit mounted on said support, said unit including a housing having a pumping chamber, and said housing further having a fluid inlet and a fluid outlet which communicate with said chamber, said unit also including a reciprocable pumping element for pumping fluid through said chamber;
(c) drive means connected with said support and having a rotary cam directly engaging said element to move the latter in response to operation of said drive means;
(d) a plurality of first coupling means on said support for engaging a corresponding plurality of pumping units; and



(e) second coupling means on said housing cooperating with a selected one of said first coupling means to removably mount said unit on said support, said second coupling means and said selected first coupling means together defining a connection of the tongue-and-groove type.

4,368,011
CYLINDRICAL TOOTH SET HAVING A CONCAVE SOCKET AND A CYLINDRICAL TOOTH ENGAGING EACH OTHER ON THE TRANSVERSE LINE OF ECCENTRICITY
George V. Woodling, 22077 Lake Rd., Rocky River, Ohio 44116
Filed Oct. 14, 1980, Ser. No. 196,740
Int. Cl.^{3} F01C *1/113;* **F16H** *1/28, 55/10*
U.S. Cl. 418—61 B **10 Claims**



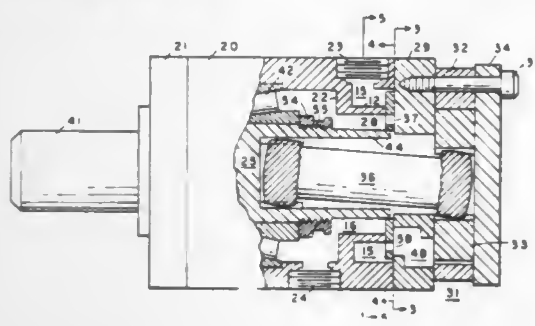
1. A cylindrical tooth set comprising an axleless rotor tooth member having a longitudinal rotor axis, a stator tooth member surrounding said rotor tooth member and having a longitudinal stator axis substantially parallel to said rotor axis, said rotor axis and said stator axis being mutually spaced apart from each other and defining a transverse line of eccentricity passing therethrough, said axleless rotary tooth member being internally unsupportable, the longitudinal axis of one of said tooth members being disposed to move in an orbital cycle about the longitudinal axis of the other of said tooth members, said rotor tooth member having an outer face, said outer face having said rotor axis as a center, said stator tooth member having an inner face, said inner face having said stator axis as a center, said rotor tooth member having mounted therein a plurality of rotor cylindrical teeth projecting outwardly from said outer face thereof, all of said rotor teeth having substantially the same rotor tooth diameter and being spaced apart one from the other in a circumferential direction, said stator tooth member having mounted therein a plurality of stator cylindrical teeth projecting inwardly from said inner face thereof, said rotor teeth being one less in number than the number of said stator teeth, all of said stator teeth having substantially the same stator tooth diameter and being spaced apart one from the

other in a circumferential direction, said rotor and stator teeth being disposed to intermesh with each other and form expandable and contractable fluid chambers therebetween, said rotor tooth member defining a plurality of rotor body portions between the rotor teeth thereof, all of said rotor body portions having substantially the same circumferential width and respectively being provided with a longitudinal concave socket, one of said concave sockets being referred to as a middle concave socket and one of said plurality of cylindrical stator teeth being referred to as a middle stator tooth, said middle concave socket and said middle stator tooth being disposed to provide a concave-to-convex contact relationship therebetween, said middle stator tooth in said contact relationship defining an individual stator tooth axis, said concave socket in said relationship defining an individual socket axis, said transverse line of eccentricity passing through said individual stator tooth axis and said individual socket axis, said concave sockets respectively defining a socket diameter greater than the diameter of said stator teeth.

4,368,012

FLUID PRESSURE ASSEMBLY HAVING A VALVE DISK MEMBER WITH IDENTICAL FLAT SIDES

George V. Woodling, 22077 Lake Rd., Rocky River, Ohio 44116
Continuation of Ser. No. 58,788, Jul. 19, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,856
Int. Cl.^{3} F01C *1/10;* F03C *2/08;* F04C *2/10*
U.S. Cl. 418—61 B **2 Claims**

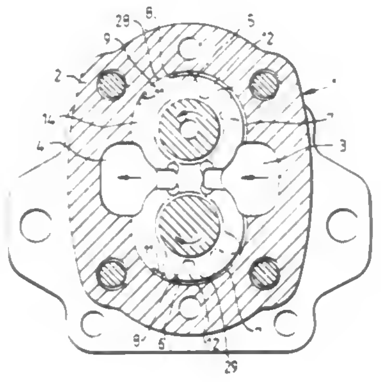


1. In a fluid pressure assembly including outer and inner relatively rotatable body members forming expandable and contractable piston chambers and including oppositely pressurized fluid ports whereby when one is pressurized the other is at an exhaust pressure, said body members each having a body axis, said body axis of one of said rotatable body members being referred to as a reference axis, a fluid valve mechanism for commutatively connecting said piston chambers in fluid communication with said fluid ports and including a reference body encompassing said reference axis, a rotary valve member rotatable about said reference axis, a stationary valve member having a stationary valve face axially spaced from said reference body, said stationary valve member being positioned on said reference axis between said rotary valve member and said piston chambers and being provided with a plurality of fluid conducting openings arranged in a ring about said reference axis and in constant fluid communication with said piston chambers, said rotary valve member being disposed between said stationary valve face and said reference body and having a central drive socket, a load shaft driven by said inner rotatable body member, said load shaft including a shaft extension axially extending into said central drive socket of said rotary valve member and defining a non-rotatable drive connection therewith for driving same, said rotary valve member comprising a round wafer body having identical flat wafer sides, said wafer body having an axial width extending from said stationary valve face to said reference body, one of said wafer sides being referred to as a valve side sealingly engaging said stationary valve face and defining therewith a commutating interface valve having a large interface area, the other of said wafer sides being referred to as a ring side including a ring seal portion sealingly engaging said reference body and defining therewith an interface fluid seal having a small interface area as compared to that of said commutating interface valve, said ring side of said wafer body having a radially extending outer ring part exposed to fluid pressure in one of said fluid ports and a radially extending inner ring part exposed to fluid pressure in the other of said fluid ports, said wafer body having an outer and an inner series of commutating fluid conducting spaces extending transversely therethrough, said outer series extending transversely from said outer ring part to said valve side and being arranged in an outer ring about said reference axis, said inner series extending transversely from said inner ring part to said valve side and being arranged in an inner ring about said reference axis, said outer and inner series of fluid conducting spaces being alternately disposed in a circumferential direction with respect to each other and being adapted to connect commutatively said fluid ports to said fluid conducting openings in said stationary valve face, said ring seal portion comprising a circular blank surface disposed radially between said outer and inner series of said fluid conducting spaces, said fluid conducting spaces in each of said series being one less in number than the number of said fluid conducting openings in said stationary valve face, each of said fluid conducting spaces being defined by a fluid conducting transverse wall extending through said wafer body, said transverse wall being aligned in a direction perpendicular to said identical sides of said wafer body to facilitate ease of manufacture of said wafer body on a production basis.

4,368,013

GEAR MOTOR WITH FLUID PRESSURE GROOVE AND RECESS TO FACILITATE STARTING

Graham J. Toogood, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England
Filed Jun. 10, 1980, Ser. No. 158,152
Claims priority, application United Kingdom, Jun. 19, 1979, 7921351
Int. Cl.^{3} F01C *1/18, 21/12;* F03C *2/08*
U.S. Cl. 418—74 **10 Claims**

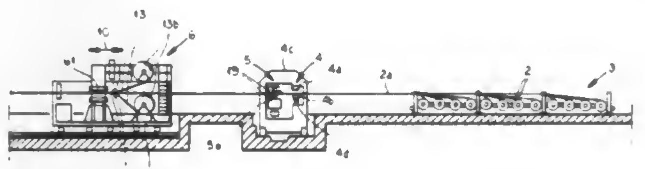


1. A fluid-pressure-operable gear motor including a casing, having an inlet port and an outlet port, at least two intermeshing rotors of toothed form housed for rotation in said casing, means for conducting pressure fluid derived from said inlet port as far as a predetermined position in a face disposed adjacent, and engaged by, a side of one of said rotors, and a recess, which is formed in said face, which is disposed intermediate said predetermined position and said outlet port and which is open only to the intertooth spaces of said one rotor which successively pass said recess during operation of the motor, the pitch of the rotor teeth and the distance between said recess and said predetermined position being such as to ensure that when the motor is at a predetermined minimum torque condition a tooth of said one rotor is in registry with said recess and the following tooth of said one rotor is adjacent said means so that for facilitating starting of the motor when fluid under high pressure is directed into said inlet port some of that fluid can gain access to said recess by way of said means and an intertooth space of said one rotor through which said means and said recess are in communication.

4,368,014

APPARATUS FOR PRODUCING VULCANIZED BELTS WITH STEEL REINFORCEMENT

Winfried Moitzfeld, Krefeld, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany
Filed Oct. 2, 1981, Ser. No. 307,947
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037611
Int. Cl.^{3} B29C *17/02;* B29D *29/02;* B29H *7/22*
U.S. Cl. 425—28 B **4 Claims**



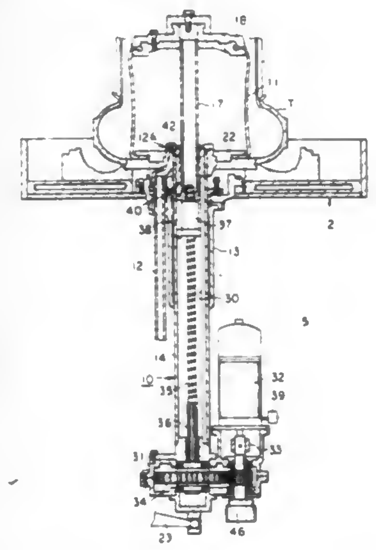
1. In an apparatus for the fabrication of steel-wire reinforced belts of vulcanizable material along a belt-fabrication path, said apparatus comprising in succession along said path, a reel frame form with a plurality of individual wire reels for delivering respective reinforcing wires to said path, a wire clamp engageable with said wires to retain the same, a wire tensioning device engageable with said wires to traction same, a layer-applying station for applying at least one layer of vulcanizable material to said wires, a vulcanizing press receiving a composite formed by said material and said wires to press the same into a belt, traction clamping means for drawing said belt from said press and displacing said wires along said path from said reel frame, and a take-up coil for receiving said belt from said traction clamp,

- the improvement wherein said wire clamp is disposed directly ahead of said frame on each of said reels is provided with a slip clutch and means for driving an input side of said slip clutch in a sense opposite the sense of rotation of said reel by said traction clamp, thereby eliminating slack in said wires.

4,368,015

TIRE VULCANIZER

Masakatsu Kawahara, Amagasakishi; Itaru Amano; Kazuhiko Nakagawa, both of Kobe; Yasuhiko Fujieda, Akashi; Kashiro Ureshino, and Mitsunori Asada, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Aug. 21, 1981, Ser. No. 295,146
Claims priority, application Japan, Aug. 23, 1980, 55-116807; Aug. 23, 1980, 55-116808; Aug. 23, 1980, 55-116809; Nov. 22, 1980, 55-165493
Int. Cl.^{3} B79H *5/02*
U.S. Cl. 425—29 **11 Claims**



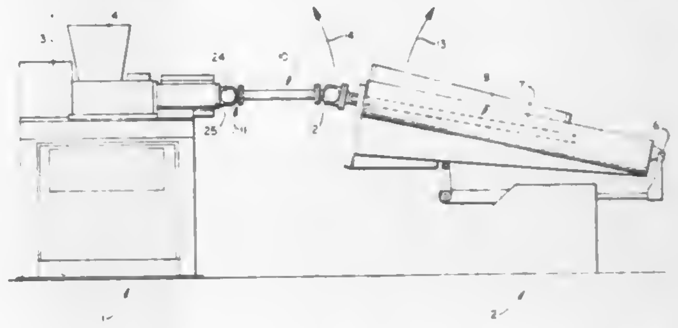
1. A tire vulcanizer including a mutually closable upper and lower mold unit and a horizontally expandable elastic mold, and adapted to cure a green tire to be inserted within a hollow spacing defined by said upper and lower mold units while shaping the inner configuration of the green tire by virtue of said elastic mold and a heating and inflating medium to be charged into said hollow spacing, said vulcanizer comprising:

- a lower ring for holding the lower extremity of said elastic mold;
- an upper ring for holding the upper extremity of said elastic mold and capable of moving vertically relative to said lower ring;
- a cylinder coupled in a vertically displaceable fashion with said lower ring;
- means for vertically displacing said upper ring wherein said means further comprises rotary means disposed within said cylinder having a ball screw shaft, a nut cylinder threaded on said ball screw shaft, means for converting rotary motion of said rotary means to rectilinear motion, means for revolving said ball screw shaft, and means for stopping the rotation of said ball screw shaft; and
- control means for deactivating said stopping means in association with motion to lower said upper mold unit after the completion of the vulcanization and shaping of said green tire.

4,368,016

APPARATUS FOR FEEDING A CANDY FILLING FORCED OUT OF A CONVEYOR INTO A ROD FORMING APPARATUS

Roland Zoller, Karlsruhe, Fed. Rep. of Germany, assignor to Wiesert, Loser & Sohn GmbH & Co., Karlsruhe, Fed. Rep. of Germany
Filed Feb. 27, 1981, Ser. No. 238,986
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 8022820[U]
Int. Cl.^{3} A23G *3/10, 3/12, 3/22;* B29F *3/02*
U.S. Cl. 425—94 **27 Claims**

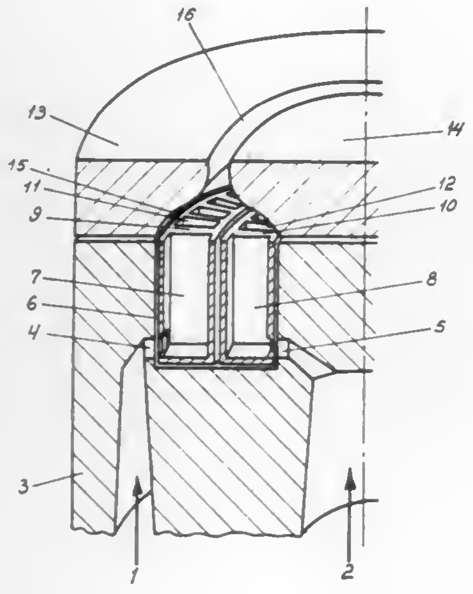


1. An apparatus for feeding a hard candy filling forced out of a conveyor means into a rod forming means having conical rollers for forming a candy composition into a final shape, comprising:

- (1) tube means for feeding said hard candy filling into said rod forming means to a space between said conical rollers;
- (2) rigid pipe means disposed between an outlet of said conveyor means and an inlet of said tube means, said rigid pipe means being able to withstand the pressures produced in the conveyor means to pass the hard candy filling through the tube means and into said rod forming means; and
- (3) mounting means hingedly mounting respective ends of said pipe means to the conveyor means and the tube means.

4,368,017
APPARATUS FOR FILM EXTRUSION COMPRISING ROTARY DIE PARTS

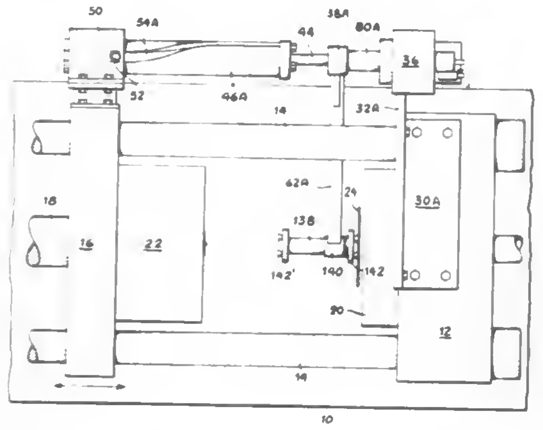
Ole-Bendt Rasmussen, 7, Topstykket, 3460 Birkeroed, Denmark
Division of Ser. No. 803,896, Jul. 6, 1977, abandoned, which is a division of Ser. No. 592,273, Jul. 1, 1975, Pat. No. 4,039,364. This application Aug. 13, 1980, Ser. No. 177,808
Claims priority, application United Kingdom, Jul. 5, 1974, 29807/74; Dec. 11, 1974, 53644/74
Int. Cl.^{3} B29D *7/04*
U.S. Cl. 425—131.1 3 Claims



1. Apparatus suitable for forming a laminate by coextrusion comprising a circular coextrusion die having an exit slot, separate passage-defining means in said die upstream of said slot for feeding towards the slot at least two separate and distinct concentric tubular layer-form streams of at least one molten polymeric material, means for rotating said separate passages and the streams therein relative to one another in the die and for simultaneously melt stretching each stream substantially in one direction, which intersects with the direction of the other stream, further passage-defining means in said die intermediate each first mentioned passage-defining means for feeding between said two concentric tubular streams and concentric therewith at least one separate generally tubular stream of a polymeric material different from each polymeric material of said concentric tubular streams, separate generally annular polymeric material-delivering means for each of said respective polymeric materials arranged in concentric relationship for communication with the respective passage-forming means, means for uniting the streams in a common passage in the die prior to their immergence from the exit slot, and means for solidifying the united stream with their intersecting stretching directions intact, said further passage-defining means including two substantially annular branches for generating two separate tubular streams of said different polymeric material, each said branch merging with the adjacent side of a separate one of said first-mentioned separate passage-defining means upstream of said common passage, whereby each of said streams of different polymeric material is joined with one of said first tubular streams to form a composite sandwich-like stream therewith, which composite sandwich-like stream undergoes melt-stretching as a whole combined with rotation relative to the other composite stream.

4,368,018
TRANSPORTER FOR INJECTION-MOLDED PARTS OR INSERTS THEREFOR

Herbert Rees, Willowdale, and Klaus B. Fritzsche, Aurora, both of Canada, assignors to Husky Injection Molding Systems Inc., Bolton, Canada
Filed Oct. 14, 1981, Ser. No. 311,452
Int. Cl.^{3} B29C *7/00;* B29F *1/14*
U.S. Cl. 425—138 11 Claims



1. In an injection-molding machine including a pair of relatively reciprocable platens carrying respective mold portions, a transporter for transferring articles between at least one of said mold portions and an external location, and drive means synchronized with the relative displacement of said platens for inserting said transporter between said mold portions in a mold-open position and removing said transporter during a mold-closing stroke to said external location,

the improvement wherein said drive means comprises:
- a structure rigid with one of said platens;
- a shaft journaled on said structure, said shaft extending in the direction of selective platen reciprocation toward the other of said platens;
- a rotary member on said structure coaxial with said shaft and positively connected with said transporter;
- a rotary cam on an end of said shaft remote from said one of said platens, said cam having a cylindrical surface with a generally helicoidal cam track engaged by a cam follower rigid with said other of said platens whereby said shaft is rotated in one sense during a mold-closing stroke and in the opposite sense during a mold-opening stroke, said cam track terminating in two axially extending extremities holding said shaft stationary in a final phase of each of said strokes; and

clutch means on said structure selectively operable to couple said rotary member to said shaft for moving said transporter in a plane transverse to said shaft away from the path of said platens toward said external location during a mold-closing stroke and toward said path during a mold-opening stroke.

4,368,019
COMPACT DOUGH DIVIDER AND FORMING MACHINE

Daniel T. Thompson, 1141 Napoli Dr., Pacific Palisades, Calif. 90272
Continuation-in-part of Ser. No. 183,187, Sep. 2, 1980, Pat. No. 4,336,010. This application Oct. 1, 1981, Ser. No. 307,508
Int. Cl.^{3} A21C *11/10, 7/06;* B29C *15/00*
U.S. Cl. 425—141 33 Claims

1. A dough batch receiving, shaping, dividing and forming machine for making dough bodies of predetermined size and configuration from an initially unshaped batch of dough in a continuous manner, said machine comprising:

An infeed conveyor for receiving a batch of unshaped dough and conveying it to a preshaping location;

a pair of top and bottom preshaping and dough advancing means for preshaping said batch into a uniform height and width and advancing said batch from between said width shaping means to a divider location;

dough divider means at said divider location for receiving said dough batch in a preshaped configuration, shaping it to a generally retangular cross section strip of dough and advancing the strip to a cut-off location;

dough cut-off means at said cut-off location for dividing said strip into generally rectangular cross-section parts of determinable length, separating such parts in sequence from said strip and delivering them individually to a forming location; and

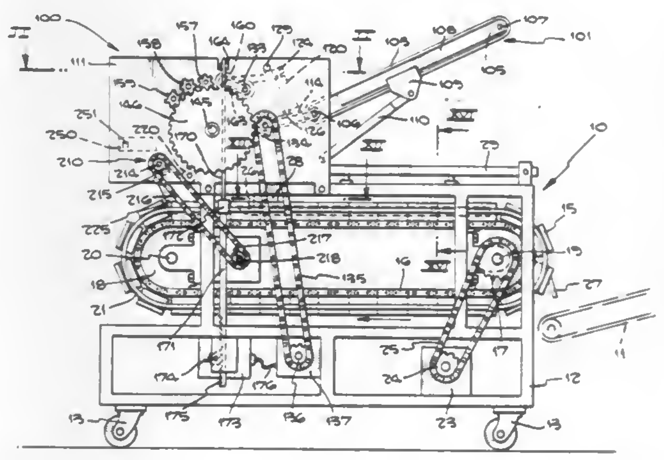
dough forming means at said forming location for receiving individual dough parts of generally rectangular cross section and forming them into a desired configuration such as toroidal,

drive means for operating said dough divider means in an intermittent dough advancing manner to advance said strip, in a intermittent motion manner to said cut-off location,

said drive means being a variable drive means for operating said infeed conveyor and said top and bottom preshaping and dough advancing means at selectably varying speeds of dough batch advancement,

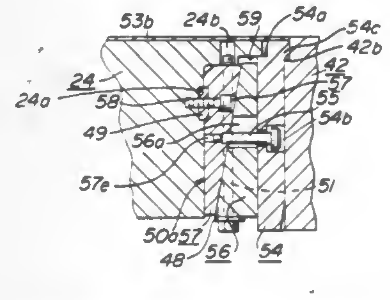
said variable drive means including dough batch engaging and height sensor means for sensing the height of the said dough batch after it leaves said top and bottom preshaping and dough advancing means in preshaped configuration and as it enters said divider means; and

means for operating said variable drive means to speed up or slow down the advancement of said dough batch infeed by said conveyor means and dough advancing means in response to the height of said preshaped configuration of dough batch sensed by said sensor means.



4,368,020
MOLD BOX WEDGING ASSEMBLY

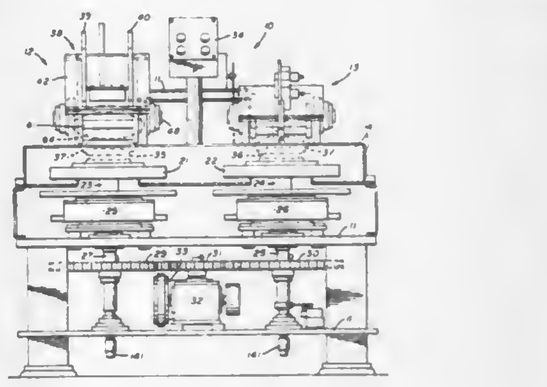
Leonard Brown, Levittown, and Guenter R. Goebel, Grampian, both of Pa., assignors to Crossley Machine Company, Inc., Trenton, N.J.
Filed Mar. 3, 1981, Ser. No. 239,898
Int. Cl.^{3} B28B *17/00*
U.S. Cl. 425—195 14 Claims



1. A wedging assembly for demountably fixing a mold box or the like within an opening in a surrounding casing member, comprising:
- (a) an outer wedge adapted to be fixed to one wall of said opening, said outer wedge having a vertically angled surface facing inwardly, and
- (b) an inner wedge disposed with a vertically angled outward surface in contact with said angled surface of said outer wedge, said inner wedge being arranged for adjustment to a predetermined vertical position, said inner and outer wedges each having at least one substantially vertical passageway capable of at least partial alignment, and
- (c) adjustable securing means passing through said vertical passageway in said inner wedge and engaging said vertical passageway of said outer wedge for limiting movement of said inner wedge downward beyond a predetermined point and for moving said inner wedge vertically.

4,368,021
OVAL DISH FORMING METHOD AND MACHINE

George Ryckman, deceased, late of East Liverpool, Ohio (by Margaret V. Ryckman, executrix), assignor to Service (Engineers) Limited, Stoke-on-Trent, England
Continuation-in-part of Ser. No. 29,288, Apr. 4, 1979, Pat. No. 4,286,938. This application Mar. 2, 1981, Ser. No. 239,639
Claims priority, application United Kingdom, Apr. 10, 1980, 8011908
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.^{3} B28B *1/02, 1/29*
U.S. Cl. 425—265 19 Claims



1. A machine for forming oval flatware in the manufacture of ceramic ware comprising first and second mould supports, mechanism for rotating each of the mould supports eccentrically beneath a roller shaping tool for the shaping of a piece of clay on an oval mould on the mould support, a first tool supporting head associated with the first mould support and carrying a rotatable roller tool in the form of a spreading tool, a second tool supporting head associated with the second mould support and carrying a rotatable roller tool in the form of a finishihg tool, and tool advancing means operable to bring the roller tools on their tool supporting heads into engagement with pieces of clay on moulds positioned on the eccentrically rotating mould supports, whereby in use of the machine a clay piece can initially undergo a spreading and initial shaping operation by the action of the spreading tool whilst the mould is eccentrically rotated by the first mould support, and then undergo a final shaping operation by the action of the finishing tool whilst the mould is eccentrically rotated by the second mould support.

4,368,022

FEEDING APPARATUS IN PRESSING MACHINE

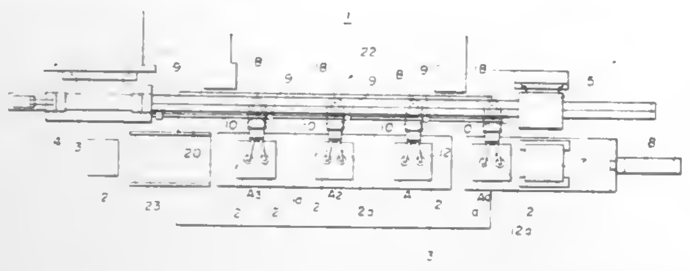
Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Aug. 12, 1981, Ser. No. 292,216

Claims priority, application Japan, May 26, 1981, 56-76215

Int. Cl.³ B30B *7/00*

U.S. Cl. 425—343 **1 Claim**



1. A feeding apparatus in pressing machine which performs sequential predetermined pressing operations on a workpiece at two or more working positions spaced by given intervals, which includes a holder means provided in such a manner that it can be reciprocated between adjacent working positions a suction means that is held by said holder means and which stops applying suction to the workpiece at one of said working positions, and a pivoting mechanism for pivoting said holder means at said working position and retracting said holder means to a position where it does not interfere with the pressing operation of said pressing machine, the workpiece under suction of the suction means at one working position being sent to the next working position by the movement of the holder means and retracted to said non-interfering position by pivoting said holder means after said suction means stops applying suction to the workpiece and before the pressing machine starts to operate.

4,368,023

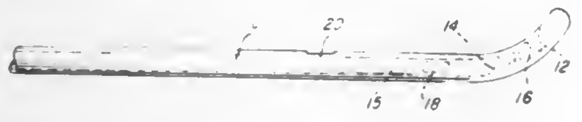
APPARATUS FOR MAKING COUDE CATHETERS

Richard E. Hannah, Spring Grove, and Steffen Lyons, Grayslake, both of Ill., assignors to Baxter Travenol Laboratories Inc., Deerfield, Ill.

Division of Ser. No. 51,331, Jun. 27, 1979, Pat. No. 4,292,270. This application Feb. 4, 1981, Ser. No. 231,208

Int. Cl.³ B29C *1/02*

U.S. Cl. 425—392 **2 Claims**



1. In a system for preparing elbowed-end catheters, a die which defines a closed-end, hollow tube made of thermally and electrically conductive material and adapted to snugly receive an end of said catheter, said closed end of said hollow tube die defining curved surface means for shaping and closing said catheter end, means for heating the hollow tubular die, said die also including an enlarged sleeve positioned remotely from the closed end of said die, and means for providing a coolant medium to said sleeve, said hollow tubular die defining an elbowed curve, whereby flexible thermoplastic tubing which has an end sealed within said die simultaneously acquires an elbowed end upon heating in the die at a temperature above the plastic melting temperature thereof.

4,368,024

FORMING MACHINES

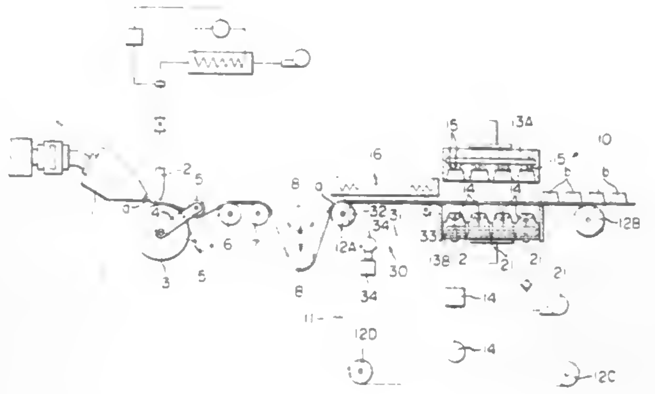
Kazuo Asano, Nagoya, Japan, assignor to Kabushiki Kaisha Asano Kenkyusho, Nagoya, Japan

Filed Oct. 23, 1981, Ser. No. 314,157

Claims priority, application Japan, Oct. 31, 1980, 55/153986

Int. Cl.³ A23G *3/00*

U.S. Cl. 425—397 **4 Claims**



1. In a forming machine comprising a molding zone where upper and lower die boxes are arranged so as to be relatively movable between the separated position for receiving softened thermoplastic material sheet therebetween and the closed position for molding, a waiting zone where the plastic sheet of the length substantially corresponding to the longitudinal dimension of the die box is waiting when the die boxes are closed so as to be fed to the molding zone when the die boxes are separated, and a pair of endless chains each provided with a plurality clamps therealong so as to grasp said plastic sheet along the opposite edges thereof for intermittently feeding from said waiting zone to said molding zone and taking the plastic sheet on which articles are formed out of said molding zone for trimming, an improvement comprising a plurality of longitudinally extended supporter means so as to support the plastic sheet in the waiting zone, the number of which is less by one than the number of dies arranged transversely in the die box so that each of the longitudinal lines striated by said supporter means in the plastic sheet along the reverse side thereof may pass between the adjacent two dies in the molding zone.

4,368,025

EXTRUSION DEVICE FOR PRODUCING HONEYCOMB STRUCTURES

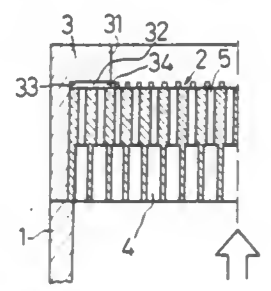
Junichiro Naito, Toyokawa; Shinichi Yamamoto, Takahama; Zituo Suzuki, Aichi, and Mitsuru Asano, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 214,984, Dec. 10, 1980, and Ser. No. 222,068, Jan. 2, 1981. This application Jan. 21, 1981, Ser. No. 226,772

Claims priority, application Japan, Jan. 21, 1980, 55-5505

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—462 **5 Claims**



1. An extrusion device for producing honeycomb structures, comprising:

a die provided with a large number of disconnected feed passageways which are formed on an extrudable material inlet side thereof in the axial direction thereof, and having a large number of interconnected grid-shaped extrusion slots which are formed on an extrudable material outlet side of said die in said axial direction and communicated with said feed passageways; and

an annular die mask having a radially inner circular surface extending in said axial direction for defining the outermost peripheral surface of each said honeycomb structure,

said die mask further having a radially extending annular end wall which at its radially inner peripheral edge connects to and extends radially outwardly from said circular surface and covers a predetermined number of said extrusion slots around the peripheral portion of said die on said extrudable material outlet side thereof;

said die mask being provided with a plurality of disconnected openings which are formed at predetermined intervals in the said radially inner peripheral edge of said end wall and communicated with the said extrusion slots that are covered by said die mask for supplying at least part of the extrudable material which is extruded through said covered extrusion slots radially inwardly to aid in forming the outer periphery of the extruded honeycomb structure.

4,368,026

CENTERING DEVICE FOR SHAPING TOOLS OF EXTRUSION PRESSES

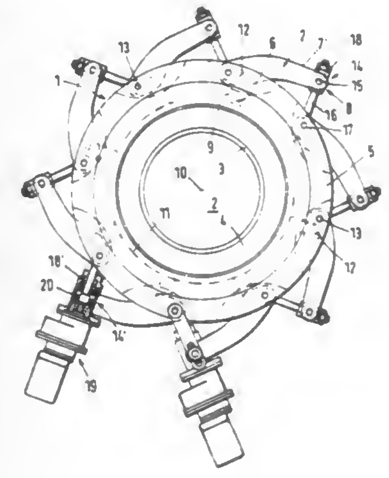
Eduard J. Budel, Al Zwolle, Netherlands; Heinrich Fehrmann, Haren, Fed. Rep. of Germany, and Johan de Kok, Ex Hardenberg, Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Filed Jan. 19, 1981, Ser. No. 226,498

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001705

Int. Cl.³ B29D *23/04;* **B29F** *3/04*

U.S. Cl. 425—466 **10 Claims**



1. A centering device for shaping tools for extrusion presses, wherein an outer mandrel together with an inner mandrel defines a through gap for plastic extrusion material, comprising a plurality of centering members supported on the outer mandrel, and being distributed about the periphery thereof in a radial plane, means rendering said centering members adjustable in a radial direction, and members being constructed in the form of push rods guided for radial displacement, each push rod (6, 106) having an individually adjustable drive and adjustable lever (7,107) pivotally supported on the outer mandrel and being actuable by means of a tightening device, (8,108) and forming a transmission gear for applying the tightening force, each adjustable lever being in direct engagement with its push rod in the region between its pivot bearing (13,113) and the point of action of its tightening device so that the pivotal axes of the adjustable levers (7,107) are aligned parallel to the longitudinal central axis (10,110) of the shaping tool.

4,368,027

DEVICE FOR MANUFACTURE OF HOLLOW ARTICLES

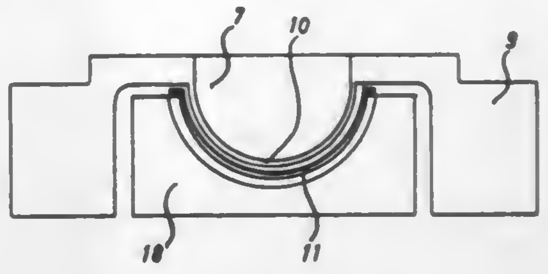
Michel Lorge, Brussels, and Roger Houba, Gembloux, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Division of Ser. No. 557,376, Mar. 11, 1975, Pat. No. 4,049,761. This application Jun. 24, 1977, Ser. No. 809,944

Claims priority, application France, Mar. 11, 1975, 74 09380

Int. Cl.³ B29D *23/00*

U.S. Cl. 425—527 **4 Claims**



1. Device for carrying out a pre-blowing operation comprising: at least one pre-blowing mold formed of two half-molds which can be joined together along a closure plane to define a cavity having a protruding base of hemispherical shape; an elongated blade, having a semicircular cross section and a diameter corresponding to that of the base of the cavity, mounted at the base of one of said half-molds; and means operatively associated with said blade for causing said blade to travel periodically adjacent the base of the cavity of said mold and perpendicularly to, and past, the closure plane of said mold.

4,368,028

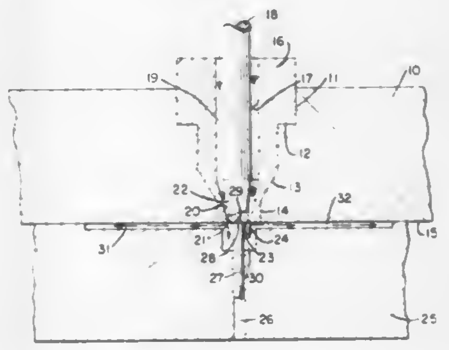
ANNULAR FLOW PLASTIC EXTRUSION NOZZLE OR GATE

Anthony J. Grish, and Thomas A. Grish, both of P.O. Box 248, St. John, Ind. 46373

Filed Feb. 2, 1981, Ser. No. 239,519

Int. Cl.³ B29F *1/03*

U.S. Cl. 425—569 **2 Claims**



1. An annular flow plastic extrusion nozzle and mold for molding rotary members of uniform density and rotary balance, comprising first and second mold elements joining on a parting line, a nozzle housing in said first element, a bore in said housing opening on said parting line, a torpedo in said bore and annularly spaced therefrom, a taper in said bore adjacent said parting line, a corresponding taper on said torpedo, a flat end surface for said torpedo on said parting line, an annular nozzle between said taper of said bore and said taper of said torpedo opening on said parting line, mold cavities in said second mold element receiving plastic from said annular nozzle, a centered bore in said second mold element adapted to receive an axle pin, a male portion on an end of said pin, a female portion in said flat end of said torpedo receiving said male portion and centering said axle when said mold elements are joined.

4,368,029

HETEROGENEOUS FLAMELESS HYDROCARBON COMBUSTION CONTACT CATALYST, METHOD OF MAKING SAME AND METHOD FOR COMBUSTION OF HYDROCARBONS

Alain Lacroix, Lyons, France, assignor to Societe Lyonnaise des Applications Catalytiques, Rillieux, France

Filed Jun. 3, 1981, Ser. No. 269,816

Claims priority, application France, Jun. 4, 1980, 80 12701

Int. Cl.³ F23D *13/00;* **B01J** *23/10, 23/34, 23/86*

U.S. Cl. 431—7 **7 Claims**

1. A catalyst mass for the flameless combustion of hydrocarbons comprising a compact texture catalyst support and a catalyser on said support consisting of at least one component capable of heterogeneous catalysis of hydrocarbon combustion and an effective amount of the manganese oxide Mn_3O_4, said catalyser being constituted by platinum, chromium oxide Cr_2O_3, cobalt oxide Co_2O_3 and the manganese oxide Mn_3O_4, the platinum being present in a weight ratio to the support of 0.0024 to 0.0075 and each of the oxides being present in a weight ratio to the support of the order of 0.03, the support being constituted by silico-aluminous fibers.

4,368,030

CIGARETTE LIGHTER PROVIDED WITH A DEVICE FOR SIGNALLING THE NUMBER OF LIGHTINGS EFFECTED AND THE TIME INTERVAL BETWEEN TWO SUBSEQUENT LIGHTINGS

Laura Benedetti, Lungadige Catena 3, Verona, Italy

Filed Feb. 17, 1981, Ser. No. 234,718

Claims priority, application Italy, Feb. 18, 1980, 19978 A/80

Int. Cl.³ F23D *5/12*

U.S. Cl. 431—13 **2 Claims**

1. A cigarette lighter characterized by the fact of providing a pulse counter actioned by shutting the lighter cap and linked to a display, and providing as well a timer, also linked to a display, and means for automatically setting said timer to zero when the figure shown by said counter moves one unit forward at the shutting of the cap.

4,368,031

STATIONARY FLAME SCANNER FOR TILTING BURNER

Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 14, 1980, Ser. No. 167,976

Int. Cl.³ F23N *5/08*

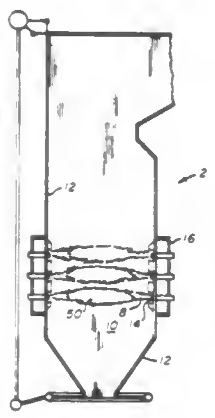
U.S. Cl. 431—79 **5 Claims**

1. In a vapor generator having a furnace of generally rectangular cross section enclosed by walls formed of vapor generating tubes, a plurality of burners mounted in the furnace walls and operative to discharge a stream of fuel into the furnace, means operative to ignite the various streams of fuel discharging into the furnace thereby forming a plurality of individual flames with one flame emanating from each burner, and means operatively associated with the burners for altering the angle of discharge with respect to the horizontal of the stream of fuel discharging from the burners; a flame monitoring system having a plurality of flame scanner assemblies commensurate in number with the plurality of burners with one flame scanner assembly associated with each burner for monitoring the individual flames emanating from the burners; each flame scanner assembly comprising:

a. a scanner sensor module located outside of the furnace where it is not exposed to direct radiation from the flame emanating from the burner with which the flame scanner assembly is associated;

b. a scanner head stationarily mounted in a port in the furnace wall adjacent said associated burner;

c. a plurality of at least three light transmission tubes stationarily mounted within said scanner head so as to sight transversely across the flame emanating from said associated burner, at least one of said light transmission tubes stationarily mounted within said scanner head to sight upwardly at an acute angle into the furnace, at least one of said light transmission tubes stationarily mounted within said scanner head to sight horizontally into the furnace, and at least one of said light transmission tubes stationarily mounted within said scanner head to sight downwardly at an acute angle into the furnace, said light transmission tubes extending from said scanner head to said scanner sensor module thereby providing a path through which light radiation generated by the flame passes to said scanner sensor module; and



d. a cooling sleeve enclosing said light transmission tubes, said cooling sleeve providing a conduit through which cooling air may be passed over said light transmission tubes and through said scanner head into the furnace.

4,368,032

LIQUID FUEL COMBUSTION APPARATUS

Hiroyuki Araya, Fuji; Toshihiko Saito, Yokohama; Katsuyoshi Kumazawa, Yokohama; Moriyoshi Sakamoto, Yokohama, and Mitoshi Koyama, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1980, Ser. No. 165,036

Claims priority, application Japan, Jul. 6, 1979, 54-85561

Int. Cl.³ F23D *5/04*

U.S. Cl. 431—118 **4 Claims**

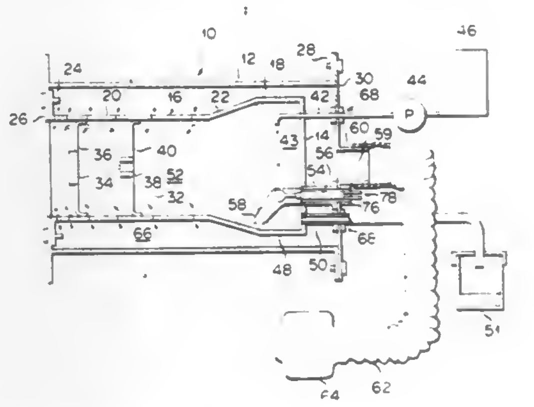
1. A liquid fuel combustion apparatus comprising:

a combustion cylinder having a first cylindrical wall portion, a second cylindrical wall portion which has a diameter smaller than that of said first cylindrical wall portion and arranged coaxially with said first cylindrical wall portion, a connecting wall portion which is arranged coaxially with said first and second cylindrical wall portions and is connected to said first and second cylindrical wall portion, and an end wall which has a flat plate like shape, intersects with the longitudinal axis of said first cylindrical wall portion at a substantially right angle and blocks one end of said first cylindrical wall portion opposite said connecting wall portion;

a fuel reservoir defined by the lower portions of said end wall, said first cylindrical wall portion and said connecting wall portion;

a housing disposed outside of said combustion cylinder, said housing being arranged coaxially with said combustion cylinder in a spaced-apart relation to said combustion cylinder to create a space therebetween, said housing including an end wall which is fixed to said housing, said end wall of said housing having a flat plate like shape, and being arranged parallel with said end wall of said combustion cylinder, so as to face each other;

air supply means disposed outside of said housing and having a flexible duct which is connected to said end wall of said housing so as to supply air into said space located between said housing and said combustion cylinder;



air passage means in said second cylindrical wall portion to supply air from said space between said housing and said combustion cylinder to said combustion cylinder;

a liquid fuel supply pipe supported by said end walls of said housing and combustion cylinder so as to supply liquid fuel to said fuel reservoir;

an overflow pipe supported by said end walls of said housing and combustion cylinder so as to discharge, toward the outside of said housing, a fuel portion exceeding a predetermined amount of liquid fuel which is supplied into said fuel reservoir;

ignition means supported by said end walls of said housing and combustion cylinder so as to ignite the liquid fuel stored in said fuel reservoir.

4,368,033

APPARATUS AND METHOD FOR ADJUSTING PALLET-MOUNTED SAGGERS

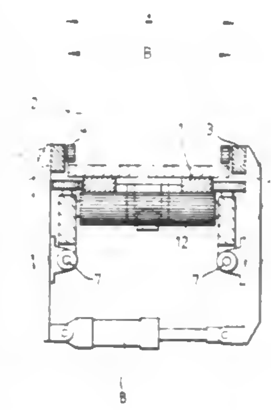
Walter Muller, Krumbach, Fed. Rep. of Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed May 26, 1981, Ser. No. 267,339

Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020120

Int. Cl.³ F21C *9/00;* **F27D** *5/00;* **B65G** *47/26*

U.S. Cl. 432—6 **12 Claims**



12. Method for adjusting the relative positions of plural saggers disposed in-line on a common pallet, said method comprising:

positioning plural members spaced apart from one another at predetermined intervals into simultaneous positive engagement paths with respectively corresponding ones of said saggers, said members being relatively fixed with respect to each other; and

producing relative movement between said common pallet and said members while they are continuously positioned into said positive engagement paths whereby said members are caused to engage their respectively associated saggers and substantially simultaneously adjust them on said pallet into a desired spaced relationship.

4,368,034

HEATING CONTROL METHOD FOR CONTINUOUSLY HEATING FURNACE

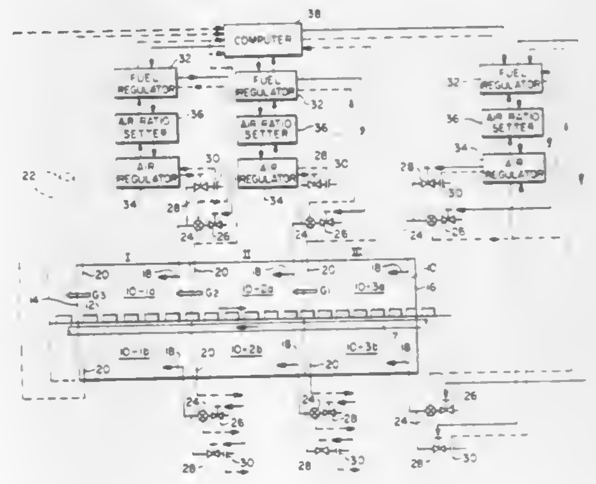
Yoshinori Wakamiya, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,666

Claims priority, application Japan, Jun. 4, 1980, 55-75902

Int. Cl.³ F27D *3/00;* **F27B** *9/40;* **C21B** *7/24*

U.S. Cl. 432—11 **1 Claim**



1. For use with a continuously heated furnace divided into a plurality of control zones, wherein each of said plurality of zones has: a fuel flow rate sensor for sensing the flow rate of a charged fuel, an air flow rate sensor for sensing the flow rate of charged air, and a temperature sensor for sensing the temperature of an exhaust gas at a predetermined point in time, a control method for heating a plurality of slabs and comprising the steps of:

sensing the charged fuel flow rate and the charged air flow rate and the exhaust gas temperature at a predetermined point in time for each of said control zones;

calculating the heat input to each slab from the equations:

$$V(i) = \frac{(Cpg \cdot Tg(i) - Cpg \cdot Tg(i+1) \cdot}{Hg + Cpf \cdot Tf + u(i) \cdot}$$

$$\frac{\sum_{k=1}^{i+1} [V(k)\{Go + Ao(u(k) - 1)\}] +}{Ao + Cpg \cdot Tg(i)\}Go + Ao \cdot}$$

$$\frac{Q_{Tx(i)} + QL(i) + Qw(i)}{(u(i) - 1)\}}$$

and

$$\begin{aligned} Q_{Tx(i)} = {} & V(i) \cdot [Hg + Cpg \cdot Tf + u(i) \cdot Ao + Cpg \cdot Tg(1) \\ & \{Go + Ao(u(i) - 1)\}] - (Cpg \cdot Tg(i) - Cpg \cdot Tg(i+1)) \cdot \\ & \sum_{k=1}^{i+1} [V(k)\{Go + Ao(u(k) - 1)\}] - QL(i) - Qw(i) \end{aligned}$$

wherein:

V(i)—Calc. flow rate of charged fuel in zone i

V(k)—given flow rate of charged fuel in zone k

Hg—calorific value per unit flow rate of the fuel

Cpf—specific heat of the fuel per unit flow rate
Cpg—specific heat of exhaust gas per unit flow rate
Tf—temperature of fuel
Tg(i)—temperature of exhaust gas at zone i
u(i)—excess air coefficient at zone i
Ao—theoretical amount of air per unit flow rate of fuel
Go—theoretical amount of exhaust gas per unit flow rate of fuel
QL(i)—heat dissipation from furnace body in zone i
Qw(i)—heat dissipation from cooling water in zone i
$Q_{TS(i)}$—heat input to slab at zone i;

calculating the heat content to each slab from the equations:

$$\eta Hj - C_o - C_1 Hsj + C_2 Hsj^2 + C_3 Hsj^3 + C_4 Hsj^4$$

$$Qsj = \eta j Q_{TS(i)} = \frac{\eta Hj Asj}{\sum_{k=1}^{n} \eta Hk \cdot Ask} \cdot Q_{TS(I)}$$

$$Hsj = Hsj^o + Qsj/Voj$$

wherein:

ηHj—rate of apportionment
C_0, C_1, C_2, C_3, C_4—constants
n—number of slabs in zone i
Qsj—heat input to slab j
Hsj—heat content of slab j at present time
Hsj^o—previous heat content of slab j
Voj—volume of slab j
γj—specific weight of slab j;

estimating a heat input to said slabs required up to the next succeeding time point from the difference between said determined heat input and an objective heat input to said slab using the equations:

$$Qs = Vo \cdot \gamma \cdot (Hs\Delta t - Hs)$$

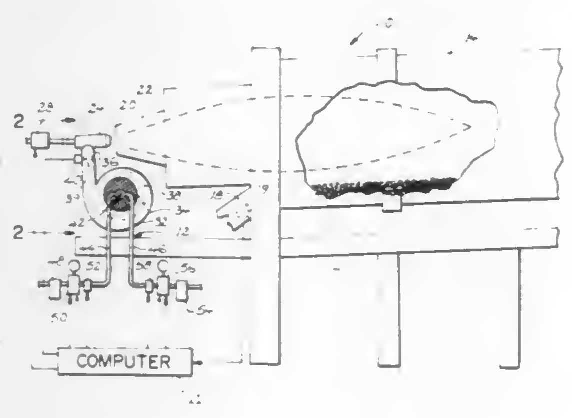
$$Q_{TS(i)} = \sum_{j=1}^{n} Qs(j)$$

wherein Δt is the time internal between the present time and said next succeeding time;
estimating a flow rate of said charged fuel by substituting values in the aforesaid equations;
controlling said flow rate of said charged fuel so as to be equal to said estimated flow rate for each of said zones.

4,368,035
METHOD AND APPARATUS FOR HEATING AGGREGATE

Gerald A. McCartny, 10016 NE. 156th Ave., Vancouver, Wash. 98662, and Calvin E. Curtis, 425-½ N.E. 2nd #3, Camas, Wash. 98607

Filed May 1, 1981, Ser. No. 259,413
Int. Cl.³ F27B *14/00, 15/00;* F23J *7/00*
U.S. Cl. 432—13 **8 Claims**

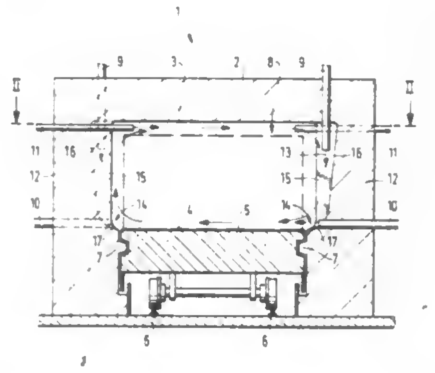


1. Water-feed apparatus in a system used for heating aggregate and the like, where the system includes a combustion chamber for mixing a stream of fuel and a stream of forced air to form a gaseous combustible fuel mixture, and a blower for supplying the chamber with forced air, said apparatus comprising
an atomizing nozzle positioned to inject an atomized water spray producible by the nozzle into the air-flow stream created by the blower,
water-supply means connected to said nozzle for suppyling it with a stream of water, and
gas-supply means connected to said nozzle for supplying it with a stream of pressurized gas for mixing with said water stream in said nozzle to create such spray.

4,368,036
KILN FOR FIRING CERAMIC WORKPIECES

Hermann Kremheller, Nuremberg, Fed. Rep. of Germany, assignor to Ludwig Riedhammer GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,192
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025801
Int. Cl.³ F27B *9/00, 5/04*
U.S. Cl. 432—146 **14 Claims**



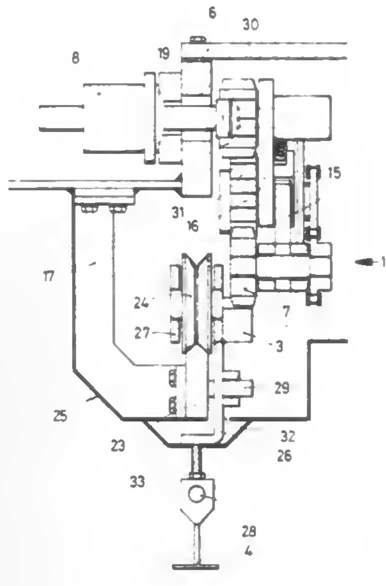
1. In a kiln for firing ceramic workpieces, which kiln is composed of two opposed side walls and a top wall enclosing an elongate kiln chamber, and means for introducing jets of heating or cooling gases into the kiln chamber at locations spaced along the length of the kiln, the improvement wherein: said means comprise at least one element selected from the group consisting of nozzles and high speed burners and are located for directing the jets produced thereby vertically downwardly in the region of said side walls of said kiln; and said kiln further comprises deflector stones disposed at a distance from said means for deflecting the jets and gases within said chamber transversely of the length of said kiln, and additional means for producing horizontally oriented jets disposed in the region of said deflector stones.

4,368,037
CONVEYOR ARRANGEMENT FOR A CONTINUOUS OVEN

Ferdinand Limque, Berg en dal, Netherlands, and Hans Bertrand, Goch, Fed. Rep. of Germany, assignors to Ipsen Industries International GmbH, Kleve, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,271
Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017941
Int. Cl.³ F27D *3/00*
U.S. Cl. 432—239 **14 Claims**

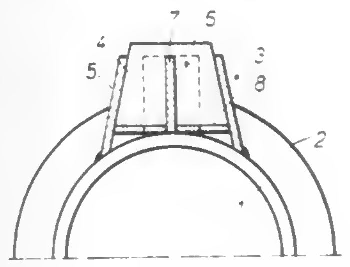
1. Apparatus for conveying a load-carrying frame through an oven casing, said apparatus comprising rail means disposed within the oven casing, said frame comprising rollers adapted to run on said rail means with the frame suspended thereby, means for driving said frame through the oven casing while suspended from said rail means, said driving means comprising a first gear member secured to said frame, a second gear member rotatably supported on the oven casing and adapted to mesh with said first gear member to advance said frame through the oven casing, and motor means disposed externally of the oven casing and connected to rotate said second gear member.



4,368,038
REFRACTORY PADS FOR WALKING BEAM FURNACES

Jean-Marc Bourdon, Neuilly-sur-Seine; Jean-Claude Hugues, Le Thor, and Marc Esnoult, Sorgues, all of France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Filed Apr. 24, 1981, Ser. No. 257,261
Claims priority, application France, May 6, 1980, 80 10072
Int. Cl.³ F27D *5/00, 3/02*
U.S. Cl. 432—253 **8 Claims**



1. A skid pad or lug for walking beam furnaces, comprising a body made of a refractory oxide-based substance and a shell made of a refractory metal alloy surrounding the periphery of the body, and means to prevent detachment of the body and shell from one another.

4,368,039
DISCONNECT FOR NECKSTRAP OR HEADCAP REACTION MEMBER

Maclay M. Armstrong, Seattle, Wash., assignor to Northwest Orthodontics, Inc., Seattle, Wash.

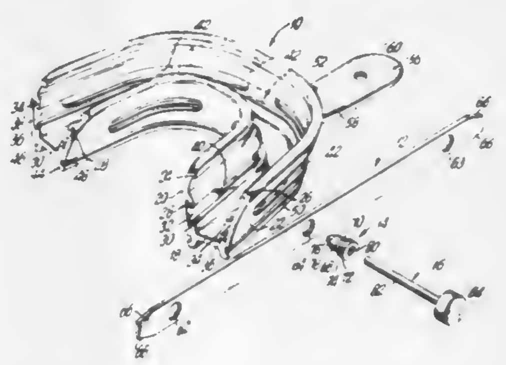
Continuation-in-part of Ser. No. 655,401, Feb. 5, 1976, Pat. No. 4,155,161, which is a continuation-in-part of Ser. No. 613,243, Sep. 15, 1975, abandoned. This application Apr. 25, 1979, Ser. No. 33,111
The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—5 **21 Claims**

1. In an orthodontic appliance including force-reaction means engageable with the wearer's head and/or neck, an orthodontic treatment force-applying device for applying force to a jaw, and resilient force-producing means connected to the force-reaction means and to the force-applying device, the improvement comprising the force-reaction means including a safety connection automatically operable by relative movement of the force-applying device and the force-reaction means which increases the distance between the force-reaction means and the force-applying device beyond a predetermined limit, said connection being operated by such movement to relieve the force-applying device from force exerted by the force-producing means capable of moving the force-applying device an appreciable distance toward the wearer's face after the force-reaction means and the force-applying device have been moved beyond such predetermined limit.

4,368,040
DENTAL IMPRESSION TRAY FOR FORMING A DENTAL PROSTHESIS IN SITU

Bernard Weissman, New York, N.Y., assignor to Ipco Corporation, White Plains, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,341
Int. Cl.³ A61C *9/00*
U.S. Cl. 433—36 **21 Claims**

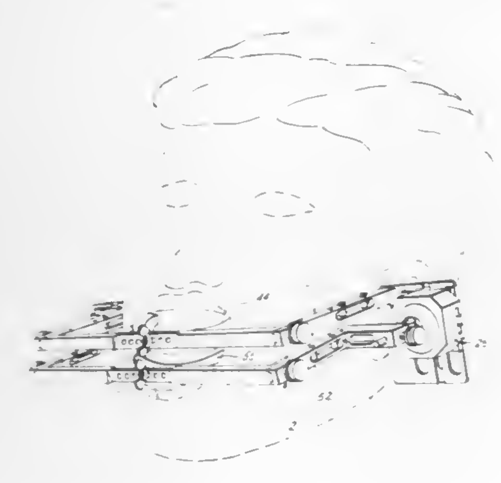


1. A dental impression tray for forming therein a negative impression of a dental area, said tray comprising:
a trough for receiving dental impression material therein;
means on said tray for application of dental restorative material into a mold cavity defined between the negative impression, formed in said trough of said tray, and the dental area after preparation thereof for restoration, so as to form a dental prosthesis, said application means including openings provided in said tray;
valve means insertable in said openings for positioning adjacent to the dental area;
control means for closing said valve means during formation of the negative impression and for opening said valve means for application of the dental restorative material therethrough;
said tray including a base wall and upstanding side walls extending outwardly from one side of said base wall to define said trough, a retaining channel provided along at least one of said side walls, at least one elongated slot provided in said one side wall within said channel; and
a strap member adjustably slidable in said channel to abut said one side wall, and at least one transverse opening provided through said strap member for alignment with said slot, said transverse opening receiving said valve means and positioning it within said slot.

16. A method for forming a dental prosthesis in situ, comprising:

(a) forming a negative impression in a dental impression tray of a dental area to be restored, and removing the dental impression tray thereafter;
(b) performing tooth preparatory work in the dental area to be restored, including removal of portions thereof;
(c) repositioning the dental impression tray having the negative impression therein onto the dental area so as to form a mold cavity between the negative impression in the tray and the prepared dental area;
(d) injecting dental restorative material into the mold cavity thus formed so as to form the dental prosthesis, and
(e) removing the dental impression tray leaving the dental prosthesis in the mouth.

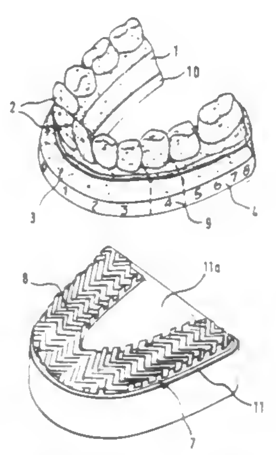
4,368,041
DENTAL SIMULATOR AND METHOD FOR RECORDING JAW MOVEMENTS
Walter G. Roup, 2425 Underwood, #360, Houston, Tex. 77030
Filed Aug. 7, 1980, Ser. No. 176,198
Int. Cl.^{3} A61C *19/04*
U.S. Cl. 433—69 **16 Claims**



1. A dental apparatus for recording and duplicating mandible movements, the maxilla and mandible being articulated at the temporomandibular joint with the maxilla and mandible forming the occlusal plane in the closed position, comprising:
a first frame having two horizontal receptacles mounted to be positioned adjacent the side of the patient's head, said receptacles being adapted to hold a molding material;
a second frame having two horizontal styli disposed thereon, said styli having a portion thereof projecting into said receptacles for indenting the molding material during three-dimensional mandible movements;
means removably mounted on said first and second frames for attaching casts of the patient's maxilla and mandible whereby the casts on said frames may be moved to duplicate the patient's three-dimensional mandible movements; and
means for attaching said receptacles and styli to the patient's maxilla and mandible whereby said receptacles and styli are positioned above the occlusal plane and anterior of the temporomandibular joint.

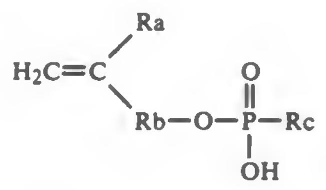
4,368,042
DEVICE FOR USE IN MAKING A DENTAL REPLICA, AND A METHOD OF MAKING A DENTAL REPLICA
John T. Felstead, 86 Collins Meadow, Harlow, Essex, and John C. Gerrard, 5, The Oval, Broxbourne, Hertfordshire, both of England
Filed Jul. 13, 1981, Ser. No. 283,038
Claims priority, application United Kingdom, Jul. 11, 1980, 8022692; Nov. 7, 1980, 8035822
Int. Cl.^{3} A61C *11/00*
U.S. Cl. 433—213 **5 Claims**

1. A device for use in making a dental replica, comprising a plate which is generally jaw-shaped and which has on at least one surface thereof a pattern which comprises a series of parallel zigzag ribs and grooves, said plate having means on one surface for receiving a molded dental replica and being adapted to be separated into individual tooth pieces, and a base having on the upper surface thereof a complementary pattern which comprises a series of parallel zigzag ribs and grooves capable of interlocking with said pattern on the plate to secure said plate or said individual tooth pieces on said base in predetermined locations.



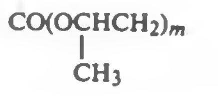
4,368,043
ADHESIVE CEMENTING AGENTS FOR THE HARD TISSUES OF THE HUMAN BODY
Junichi Yamauchi, Kurashiki; Eiichi Masuhara, Bunkyo; Nobuo Nakabayashi, Matsudo; Kyoichiro Shibatani, Kurashiki, and Tooru Wada, Takatsuki, all of Japan, assignors to Kuraray Company, Limited, Okayama, Japan
Division of Ser. No. 936,759, Aug. 25, 1978, Pat. No. 4,259,117, which is a continuation of Ser. No. 778,734, Mar. 17, 1977, abandoned. This application May 14, 1980, Ser. No. 149,770
Claims priority, application Japan, Mar. 17, 1976, 51-30045; Nov. 29, 1976, 51-143807; Nov. 30, 1976, 51-145049
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.
Int. Cl.^{3} A61K *6/02;* **C09K** *3/00*
U.S. Cl. 433—217 **8 Claims**

1. A dental adhesive agent for bonding a dental filling material to the tooth, which comprises: (1) a radical polymerizable monomer selected from the group consisting of an acrylic acid ester, a methacrylic acid ester, styrene and vinylacetate, (2) a curing agent and (3) a compound of formula A in an amount of not less than 2 weight percent based on the radical polymerizable monomer, said formula being:



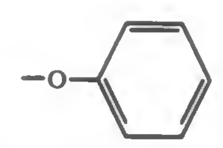
$$H_2C{=}C(R_a)-R_b-O-P({=}O)(OH)-R_c$$

wherein Ra is hydrogen or methyl; Rb is COOY, OCOY, OY, Y, $CO(OCH_2CH_2)_m$,



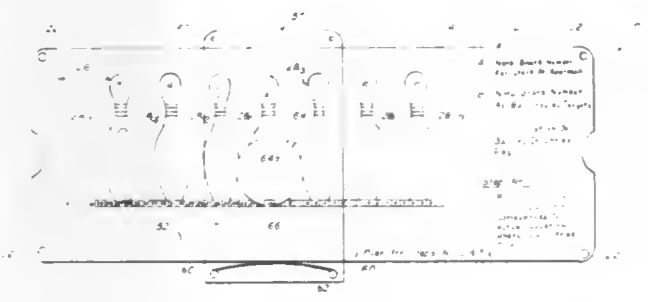
$$CO(OCH(CH_3)CH_2)_m$$

wherein m is an integer of 1 to 5 or $CO(OCH_2CH_2)_l$



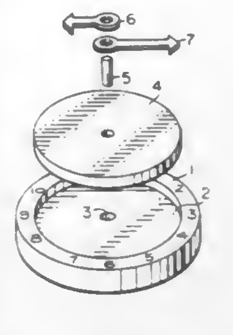
wherein l is an integer of 1 to 3; Y is a hydrocarbon residue containing 1 to 30 carbon atoms, which residue may be substituted by hydroxyl, alkoxy or halogen; Rc is X or OX wherein X is an aromatic or alicyclic hydrocarbon residue containing 1 to 30 carbon atoms, which may be substituted by hydroxyl, halogen, amino or carboxyl.

4,368,044
BOWLER'S APPROACH STARTING LOCATION CALCULATING DEVICE
James F. Martin, 3684 Mill St., Marion, N.Y. 14505
Filed Jan. 18, 1982, Ser. No. 340,054
Int. Cl.^{3} A63B *69/00*
U.S. Cl. 434—249 **7 Claims**



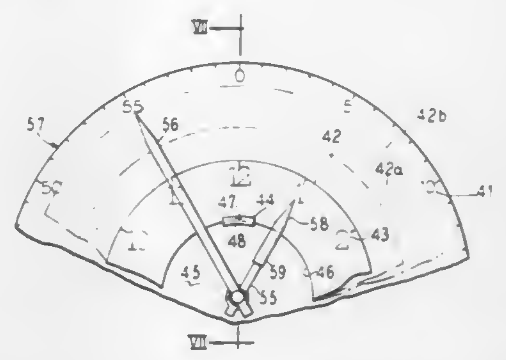
1. A bowling game calculating device for determining the optimum approach starting location of a bowler in a bowling game expressed as a distance from a given location on a standard bowling lane, said device comprising:
a first member, said first member having a first hairline thereon;
a first index on said first member, said first index having indicia corresponding to bowling pin locations expressed in terms of distance from a given location on a standard bowling lane;
a second index on said first member, said second index having indicia corresponding to target marker locations expressed in terms of distance from said given location on a standard bowling lane;
a second member associated with said first member for slidable movement relative thereto;
a scale on said second member, said scale having indicia corresponding to approach starting locations expressed in terms of distance from a given location on a standard bowling lane, said scale associated with said first hairline and said second index; and
a cursor associated with said first and second members for slidable movement relative thereto, said cursor having an indicator and a second hairline thereon, said indicator associated with said first index and said second hairline associated with said scale; whereby when said indicator is aligned with a particular bowling pin location on said first index, and when said second member is moved relative to said first member such that a particular portion of said scale, associated with a particular target marker location of said second index, is aligned with said second hairline, then an optimum approach starting location is found on said scale aligned with said first hairline.

4,368,045
TIME MACHINE/TIME PUZZLE
Susan N. Y. Kuh, 2114 Manoa Rd., Honolulu, HI. 96822
Filed Sep. 10, 1980, Ser. No. 185,961
Int. Cl.^{3} G09B *19/12*
U.S. Cl. 434—304 **1 Claim**



1. An educational device to facilitate teaching and learning how to tell time comprising:
a puzzle including a base and puzzle pieces which fit onto said base,
said base having a representation of a clock face thereon, including the numbers from 1 to 12 signifying the hours,
a recessed circular area on the inside of the numbers on the clock representation,
a plurality of sets of puzzle pieces signifying different lengths of time, a first set comprising a circular piece representing one hour, a second set comprising two semi-circular pieces each representing half an hour, a third set comprising four one-quarter circle pieces each representing a fourth of an hour, a fourth set comprising six one-sixth circle pieces each representing ten minutes, a fifth set comprising twelve one-twelfth circle pieces each representing five minutes and a sixth set comprising a plurality of one-sixtieth segment pieces each representing one minute, at least one piece of each set bearing indicia indicative of the time that it represents,
each set closely conforming to the circular outline of the recessed area of the base when fitted thereinto,
said sets, when laid on top of each other, being identical in circular form,
two pieces shaped to represent the hour and minute hands, respectively, of a real clock, and
a peg adapted to secure the hour and minute hands to the base.

4,368,046
SYSTEM FOR TEACHING TIME RECOGNITION
Herman C. Bernick, 795 Vernon Ave., Glencoe, Ill. 60022
Filed Jul. 22, 1981, Ser. No. 285,841
Int. Cl.^{3} G09B *19/12*
U.S. Cl. 434—304 **2 Claims**



1. Apparatus for teaching time recognition comprising:
(A) a clock drive movement including an hour shaft and coaxial minute shaft driven thereby,
(B) a plurality of clock face means, each one of such clock face means being associatable with said clock drive movement, having an outer circumferentially extending scale

marked in 60 equal increments and having an inner circumferentially extending scale marked in 12 equal increments, said inner scale being radially spaced from said outer scale and having each increment thereof radially alignable with a different one of every five increments of said outer scale, each one of such clock face means of said plurality having a different such radial spacing between such outer scale and such inner scale,

(C) a minute hand associated with said minute shaft and having a length adapted to indicate specific locations along such outer scale, and

(D) hour hand means associatable with said hour shaft and having the capacity to be extended and retracted in length for adopting said hour hand means to indicate respective specific locations along a different prechosen one of said inner scales in said clock face plurality.

4,368,047

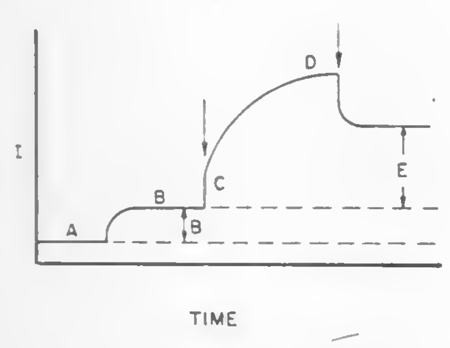
PROCESS FOR CONDUCTING FLUORESCENCE IMMUNOASSAYS WITHOUT ADDED LABELS AND EMPLOYING ATTENUATED INTERNAL REFLECTION

Joseph D. Andrade, and Richard Van Wagenen, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Apr. 27, 1981, Ser. No. 257,838

Int. Cl.^{3} G01N *33/54, 31/06, 21/64*

U.S. Cl. 435—4 **20 Claims**



1. A process for conducting fluorescence immunoassays without labels using internal reflection and wavelengths in the ultraviolet region which comprises directing a beam of light having wavelengths in the ultraviolet region to a solid-liquid interface which (i) has a material X immobilized thereon, and (ii) is in contact with an assay solution containing an unknown Y which contains at least one tyrosine, tryptophan, nucleic acid or other fluorescent group which is activated by wavelengths in the ultraviolet region, X and Y being in the relationship of antibody and antigen in that one has the ability to recognize the particular spatial and polar configuration of the other and is attracted to and bound to such configuration, said beam of ultraviolet light being projected under such conditions that there is internal reflection at the said interface, and then measuring the amount of fluorescence emitted from the surface of the interface, the amount of the fluorescence emission being a function of the amount of the unknown Y being detected.

4,368,048

SHIP S DRIVE SYSTEM

Herbert Wedler, Witten, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,727

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927386

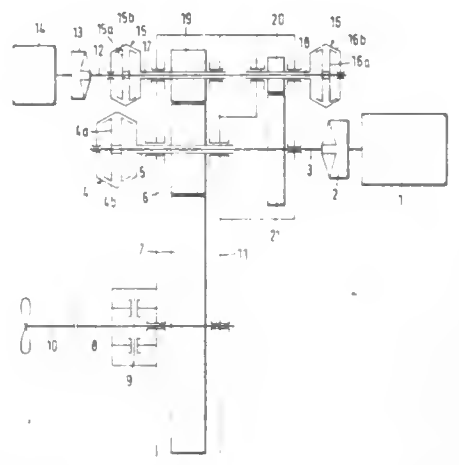
Int. Cl.^{3} F16H *37/06*

U.S. Cl. 440—75 **10 Claims**

4. A ship's drive system for driving a propeller by means of an engine and which includes gear transmission means for coupling the engine to the propeller, the transmission means constituting a driving train which includes a main clutch whose input side is drivingly connected to the engine and whose output side is drivingly connected to the propeller, a device for deriving power from the driving train, comprising:

an auxiliary device with input shaft means;

first means drivingly connected to the driving train on the input side of the main clutch and including first clutch means for selective connection to said input shaft means; and



second means drivingly connected to the driving train on the output side of the main clutch and including second clutch means for selected connection to said input shaft, the driving connection by the main clutch between the engine and the propeller being independent from connect-disconnect states of the first and second clutch means, the first and second clutch means operating mutually exclusively.

4,368,049

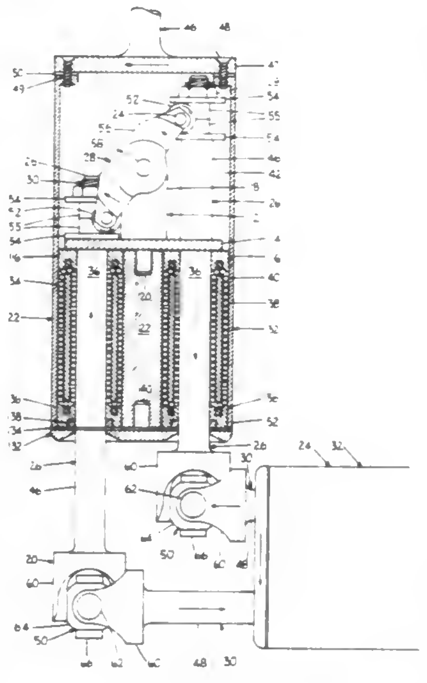
COUPLER ASSEMBLY JOINING A DRIVING SHAFT TO A DRIVEN SHAFT FOR CONSTANT VELOCITY TRANSMISSION

Alfred W. Klomp, Tacoma, Wash., assignor to Exacto Inc., Tacoma, Wash.

Filed Feb. 13, 1980, Ser. No. 120,974

Int. Cl.^{3} F16D *3/28*

U.S. Cl. 464—50 **4 Claims**



1. A coupler assembly to join a driving shaft to a driven shaft for constant velocity transmission of rotary power and/or motion during their relative positioning varying from zero degree in line to ninety degrees angularity as selected throughout a hemisphere of possible radial shaft directions, comprising:

a. a plurality of paired yokes radially and circumferentially spaced about respective longitudinal centers of cylindrical bodies in turn adapted to be joined to a driven shaft and a driven shaft, each yoke having a rod portion partially confined for rotatable, slideable, and/or reciprocal movement through a cylinder formed in a cylindrical body, paired rod portions, and each yoke having a cantilevered extending connectable end, having in turn a pair of opposing confronting arms, each arm having in turn a pin positioned ball for linking interconnection with a like pin positioned ball of a paired yoke;

b. multi-sectioned hubs secured about the respective groupings of like pin positioned balls to respectively interconnect each of the respective pairs of yokes;

c. two cylindrical bodies adapted to be joined to a driving shaft and a driven shaft, each having cylinders radially and circumferentially spaced about the center line to rotatably, slideably, and reciprocally partially receive the rod portions of the yokes and each having a larger interior cylinder to variably surround the projecting ends of the rod portions during movements of the yokes relative to the individual cylindricals;

d. said rod ends having upper and lower rocker restraining means; and,

e. rocker assemblies in said larger interior cylinder, said rocker assemblies frictionally mounted between said upper and said lower rocker restraining means.

4,368,050

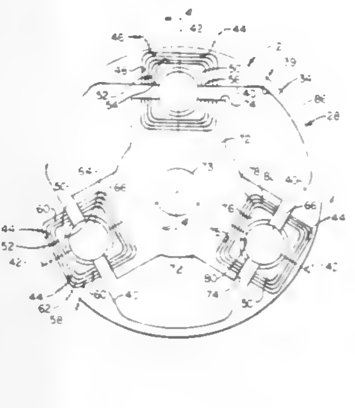
COUPLING

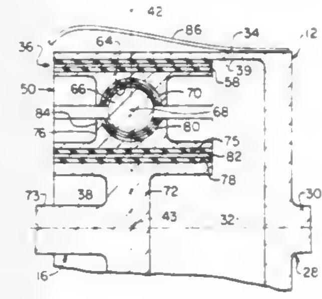
Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Sep. 8, 1980, Ser. No. 185,028

Int. Cl.^{3} F16D *3/52*

U.S. Cl. 464—83 **23 Claims**





1. A coupling device comprising

a driving member mounted for rotation about a first rotation axis;

a driven member mounted for rotation about a second rotation axis;

first means rotatable with said driving member and including a first plurality of grooves;

second means rotatable with said driven member and including a second like plurality of grooves, each groove of said second plurality respectively opposing a respective one of said first plurality;

a like plurality of balls, each disposed in a respective groove of said first plurality and the respective opposing groove of said second plurality so as to operatively couple said driving member to said driven member;

first laminated bearing means including alternating layers of resilient and nonextensible materials disposed between said driving member and said first means;

second laminated bearing means including alternating layers of resilient and nonextensible materials disposed be-tween said driven member and said second means;

said first and second laminated bearing means being capable of carrying in compression torque transmitted from said driving member to said driven member, said first laminated bearing means carrying in shear, relative shearing motion between said driving member and said first means, and said second laminated bearing means carrying in shear relative shearing motion between said driven member and said second means.

4,368,051

METHOD OF AND APPARATUS FOR MAKING HANDLE BAGS BEARING INDICIA

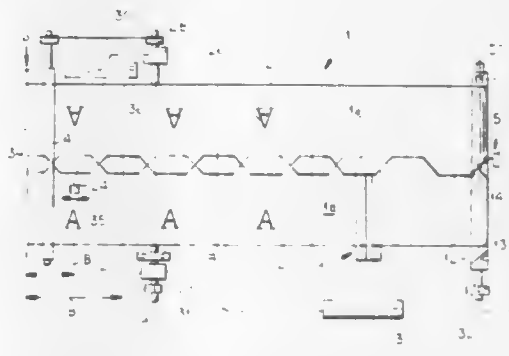
Hans Lehmacher, Im Hummerich, 5216 Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,879

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004244

Int. Cl.^{3} B31B *23/02*

U.S. Cl. 493—11 **8 Claims**



1. A method of making handle bags from an elongated synthetic-resin tube having two longitudinal rows of indicia spaced apart in each row by a bag width and with the indicia of one of said rows staggered equidistant between the indicia of the other row, said method employing an apparatus having:

a cutting drum formed with an endless circumferentially extending and undulating cutting groove, centered on and rotatable about a drum axis, and having a circumference different from said bag width;

a blade engaging radially inwardly in said groove; and

a closable transverse welder; said method comprising the steps of:

advancing said tube in separate transport steps at a feed speed over said drum at said blade and then through said welder;

rotating said drum in separate rotary steps at a peripheral speed different from said feed speed and with the rotary steps starting generally simultaneously with said transport steps, said feed and peripheral speeds being such that said tube is subdivided transversely by said blade into a pair of tube halves having at said drum staggered and interfitting handle flaps spaced longitudinally apart by said bag width;

stopping said rotary steps each time after one full revolution of said drum about said drum axis;

deflecting one of said halves between said drum and said welder through a detour equal to an odd-whole-number multiple of half of said bag width so said flaps of said halves are in exact transverse alignment downstream of said detour;

ending each transport step when the center of the indicia immediately upstream of said welder is spaced from said welder by a distance equal to half of said bag width and generally simultaneously closing said welder on said tube to form bag-edge seams thereon; and opening the closed welder after formation of said seams and generally simultaneously starting the next feed step and the next rotary step.

4,368,052
METHOD AND APPARATUS FOR LINING BULK BOX BLANKS

Thomas C. Bitsky, Oak Lawn, and Joseph R. Wilkus, Tinley Park, both of Ill., assignors to Peerless Metal Industries, Inc., Bridgeview, Ill.

Filed Aug. 18, 1980, Ser. No. 178,751

Int. Cl.^{3} B31B *7/00*

U.S. Cl. 493—96 **30 Claims**

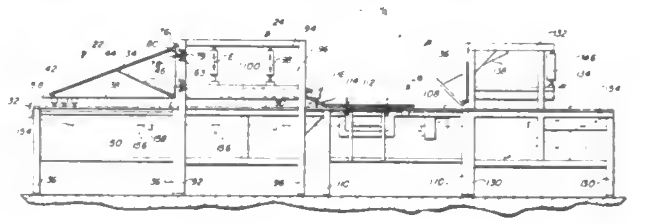
1. An apparatus for lining bulk box blanks comprising:

a glue application station including a surface for supporting said blanks;

means for forwarding said blanks through said apparatus;

a plurality of side by side glue applicators;

means for automatically applying a plurality of discrete glue strips across said blank and control means for preventing application of glue to the blank fold seams;



means for moving said glue applicators across said blank transverse to the direction of forwarding said blank; and

means for securing a liner to said blank and for folding said blank to form an open ended tube.

CHEMICAL

4,368,053
FABRIC CONDITIONING COMPOSITIONS CONTAINING PHTHALOCYANINE SUBSTITUTED WITH QUATERNARY AMMONIUM GROUP-CONTAINING SULPHONAMIDE PHOTOACTIVATOR

Claude Eckhardt, Riedisheim, and Gerd Hölzle, Liestal, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,423

Claims priority, application Switzerland, Feb. 29, 1980, 1624/80

Int. Cl.^{3} D06L *3/00*

U.S. Cl. 8—102 **25 Claims**

1. A fabric conditioning composition containing an aluminium or zinc phthalocyanine as bleach photoactivator which is substituted by a cationic water-solubilising group, and one or more cationic fabric conditioners.

4,368,054
COMPOSITIONS OF NITRO-ANILINES FOR PRODUCING AZO DYES ON FIBERS

Hasso Hertel, Mühlbeim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,971

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1981, 3103712

Int. Cl.^{3} D06P *1/12*

U.S. Cl. 8—527 **8 Claims**

1. Liquid compositions of nitro-aniline compounds which contain

(a) from 20 to 70 weight % of a nitro-aniline compound containing no sulfonic acid and/or carboxylic acid group and having a melting point of below 140° C.;

(b) from 5 to 80 weight % of an oxethylated castor oil of from 25 to 60 mols of ethylene oxide; and

(c) from 5 to 65 weight % of N-methyl-pyrrolidone.

4,368,055
SOLVENT BLEED-FAST, DEEP-SHADE DISPERSE DYED TEXTILE MATERIAL

Gert Motzkus, and Kurt Fohn, both of Charlotte, N.C., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 2, 1981, Ser. No. 307,774

Int. Cl.^{3} C09B *67/00;* D06P *3/82*

U.S. Cl. 8—662 **13 Claims**

1. An improved process for the aqueous disperse dyeing or printing in deep shades of a synthetic hydrophobic textile material impregnated with a solution or dispersion comprising a disperse dyestuff to produce a colored textile material, said process comprising:

(a) aftertreating said colored textile material in an aqueous alkaline solution comprising an alkali metal hydroxide bath at a pH of at least 9.0 and at a temperature of about 150°F. to about 200°F. and at a time of about 30 seconds to about 60 minutes, and thereafter

(b) heat setting said colored textile material by a heat treatment at an elevated temperature.

4,368,056
DIESEL FUEL BY FERMENTATION OF WASTES

Sammy M. Pierce, P.O. Box 84, Hamilton, Ill. 62341, and Morris Wayman, 17 Noel Ave., Toronto, Ontario, Canada (M4G, 1B2)

Filed May 20, 1981, Ser. No. 265,451

Int. Cl.^{3} C10L *1/18*

U.S. Cl. 44—53 **9 Claims**

1. A process for making a diesel fuel which comprises:

fermenting carbohydrate substrate materials in the presence of a culture of butanol forming micro-organisms, to provide an alcohol containing fermented product containing predominant amounts of butanol,

separating the alcohol component of the fermented mixture;

growing glyceride accumulating micro-organisms in a nutrient solution of carbohydrate materials;

extracting the glycerides from the micro-organisms with a portion of the fermentation produced alcohol component;

and thereafter, mixing said fermentation butanol and said micro-organism derived glycerides, to provide a diesel fuel.

4,368,057
METHOD FOR REDUCING AMMONIA CONCENTRATION IN PRE-COMBUSTED FUEL GAS USING NITRIC OXIDE

Ronald D. Matthews, 1708 Westover, Austin, Tex. 78703

Filed Oct. 14, 1980, Ser. No. 196,397

Int. Cl.^{3} C10K *1/00;* C10J *3/54*

U.S. Cl. 48—197 R **21 Claims**

1. A process prior to combustion for selectively converting NH_3 to N_2 in a nitrogenous contaminated gaseous fuel, said process comprising the steps of:

providing a volume of pre-combusted gaseous fuel containing NH_3;

contacting said volume of gaseous fuel with NO; and

reacting said gaseous fuel and NO at a temperature and for a time sufficient to convert a portion of the NH_3 to N_2.

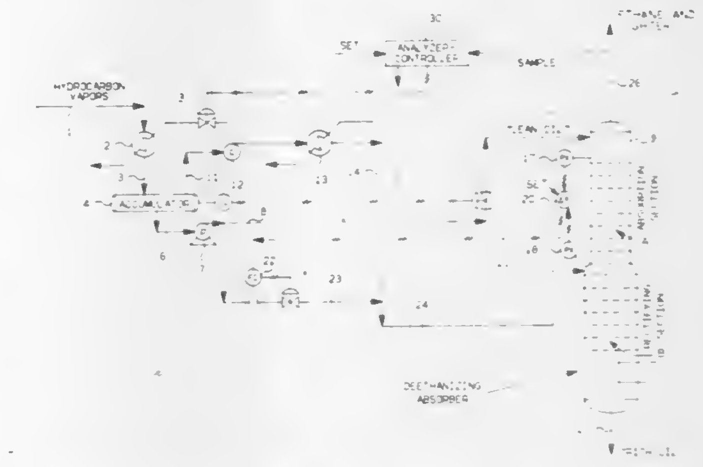
4,368,058
MAXIMIZING FLOW OF ABSORPTION LIQUID IN ABSORPTION METHODS

Ralph P. Crowley, and Max D. Pope, both of Bountiful, Utah, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1980, Ser. No. 173,526

Int. Cl.^{3} B01D *53/14*

U.S. Cl. 55—21 **6 Claims**



1. A method for controlling an absorption column comprising:

(a) subjecting a mixture of vapors to conditions sufficient to condense a portion thereof to produce a lean absorption liquid,

(b) passing said lean absorption liquid to an absorption section of said absorption column,

(c) controlling the flow rate of said lean absorption liquid to said absorption section in response to a difference in pressure between two points at different levels in said absorption section, and

(d) contacting uncondensed vapors of said mixture of vapors with said lean absorption liquid in said absorption section.

6. An apparatus which comprises:

(a) an absorption column comprising an absorption section and a rectifying section,

(b) a lean absorption liquid inlet to said absorption section,

(c) means for condensing a mixture of vapors to produce lean absorption liquid,

(d) means for controlling the flow of said lean absorption liquid to said absorption section in response to a pressure differential between two points at different levels in said absorption section and

(e) means for combining excess lean absorption liquid and uncondensed vapors and for passing said mixture to said rectifying section.

4,368,059

PROCESS OF REMOVING H_2S, CO_2, COS AND MERCAPTANS FROM GASES BY ABSORPTION

Alexander Doerges; Manfred Kriebel, and Johann Schlauer, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,345

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000250

Int. Cl.^{3} B01D *53/14*

U.S. Cl. 55—73 **9 Claims**

1. In a process for removing H_2S, CO_2, COS or mercaptans from a gas containing the same by absorption in an absorbent solution which is circulated between an absorbing zone and a regenerating zone and contains at least one organic base in an organic solvent in which the gaseous constituents to be removed are physically soluble, wherein the absorption is effected under a pressure of 1 to 180 bars and at temperatures of 5° to 80° C., the improvement wherein the absorbent solution used to remove H_2S, CO_2, COS and/or mercaptans from gases which contain the same contains one or more secondary or tertiary amines of the general formula $R_1—NH—R_2$ or $(R_1)_2—N—CH_2—N—(R_2)_2$, wherein R_1 and R_2 mean $CH_3—$ or $—CH_2—CH_3$ or $CH_3—CH—CH_3$ in a total amount of 0.5 to 5.0 moles per liter, and the amine has or the amines have a boiling point between 40° and 110° C. at 1 bar.

4,368,060

GAS SPARGING METHOD

Hiroshi Yanagiako; Toshio Kanai, both of Yokohama; Yoshio Kogawa, Fujisawa; Michihiro Yoshida, Kawasaki; Zenji Mashino, Soka; Shin-ichi Shimizu; Teruo Sugiya, both of Kawasaki, and Masaki Onozaki, Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

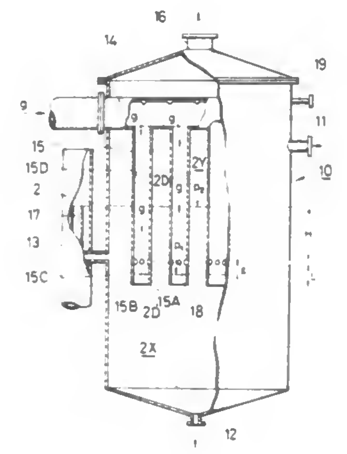
Continuation of Ser. No. 131,369, Mar. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 937,746, Aug. 29, 1978, abandoned. This application Jul. 27, 1981, Ser. No. 287,114

Claims priority, application Japan, Aug. 29, 1977, 52-102635; Oct. 19, 1977, 52-124598

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 55—73 **11 Claims**

1. A gas sparging method comprising introducing an exhaust gas containing SO_2 through a tubular member extend into a vessel, the tubular member having (a) a side wall having only a single peripheral row of openings and (b) an open bottom end, said tubular member extending into a liquid containing a calcium compound, said liquid being contained in the vessel and having a liquid level, the openings in said side wall being below the liquid level, to bring down the level of the liquid in the tubular member to a position below the openings in said side wall, but above the open bottom end of the tubular member, the gas being dispersed in the liquid in the vessel surrounding the tubular member only through the openings in the side wall of the tubular member and without producing sloshing, the distance l between the openings in the side wall of the tubular member and the liquid level in the tubular member below said openings being in a range represented by the formula:



$$10\ \text{mm} < l < (L\text{-}10)\ \text{mm}$$

wherein L is the distance between the openings in the side wall of the tubular member and the open bottom end of the tubular member and is at least 50 mm, the ratio of the total area of said openings to the cross-sectional area of the tubular member at the position of the openings being 0.01 to 2 and the internal equivalent diameter of the tubular member being 20 to 300 mm.

4,368,061

METHOD OF AND APPARATUS FOR MANUFACTURING ETHYLENE

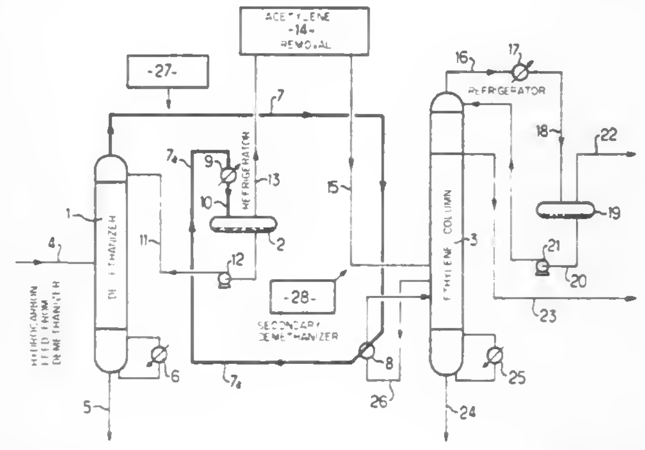
Joëlle Mestrallet, Asnieres; Gerard Heck, Louveciennes, and Victor Kaiser, Maisons Laffitte, all of France, assignors to Compagnie Francaise d'Etudes et de Construction "Technip", Paris, France

Filed Jun. 4, 1980, Ser. No. 156,382

Claims priority, application France, Jun. 6, 1979, 79 14449

Int. Cl.^{3} F25J *3/02*

U.S. Cl. 62—28 **7 Claims**



1. In a method for recovering ethylene from a condensate of ethylene gas comprising the steps of passing said condensate to a de-ethanizer and recovering therefrom in a gaseous condition hydrocarbons containing two carbon atoms, cooling said hydrocarbons to at least partially condense said hydrocarbons, separating the condensed and non-condensed phases, recycling said condensed phase to said de-ethanizer and feeding said non-condensed phase to an ethylene recovery unit having associated therewith a reboiling system for heating fluid taken from said unit prior to recycle of said fluid to said unit, the improvement comprising effecting an additional heat exchange in an additional and intermediate reboiler system associated with said unit, said additional heat exchange being effected between said gaseous hydrocarbons containing two carbons recovered from said de-ethanizer and the recycling liquid from said ethylene recovery unit in said additional and intermediate reboiler system, and wherein the head of the de-ethanizer is operating at a pressure of between about 18 and 33 bars and a temperature between about −5° C. and −25° C., and the head of the ethylene recovery unit is operating at a pressure of between about 15 and 25 bars.

4,368,062

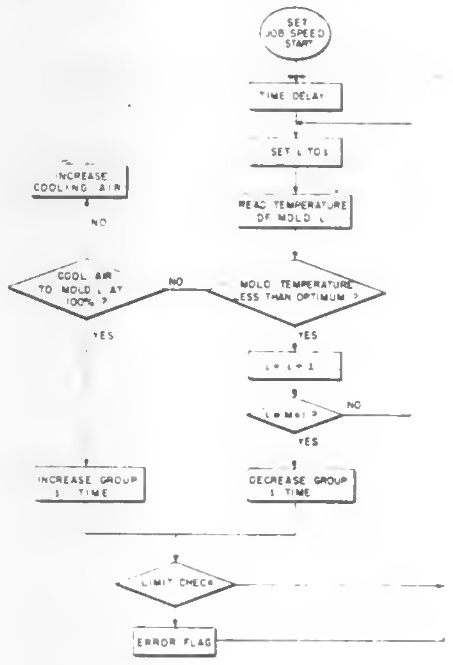
GLASSWARE FORMING SPEED CONTROL SYSTEM

Glenn H. Mapes; Jerome A. Kwiatkowski, and J. David Haynes, all of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Jul. 8, 1981, Ser. No. 281,497

Int. Cl.^{3} C03B *9/40*

U.S. Cl. 65—29 **27 Claims**



1. A speed control system for controlling the rate of operation of a glassware forming system comprising:

means for detecting the temperature of at least one mold of said glassware forming system;

means for comparing said temperature with a predetermined optimum temperature, said optimum temperature being chosen to be the highest desirable temperature at which said at least one mold should operate; and

means responsive to said comparing means for increasing the speed of said glassware forming system when said detected temperature is less than said optimum temperature.

21. In a glassware forming system including a plurality of sections each having molds for forming glassware containers from molten glass, each of said sections operating in an interdependent timed relationship with respect to one another, a speed control method comprising the steps of:

detecting the mean temperature of at least one mold for each of said sections, said mean temperature being an average temperature of said molds over at least a machine cycle;

comparing said detected mean temperature of said at least one mold for each of said sections with a predetermined optimum temperature level, said optimum temperature level being chosen as the highest desirable mean temperature at which said at least one mold for each of said sections should operate; and

varying in response to said comparing step the speed of said glassware forming system a predetermined amount when said detected temperature for each of said one mold for each section is different from said chosen optimum temperature.

4,368,063

METHOD OF FABRICATING A TAPERED TORCH NOZZLE

Herman M. Presby, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1981, Ser. No. 251,259

Int. Cl.^{3} C03B *23/13*

U.S. Cl. 65—42 **3 Claims**

1. A method of fabricating a torch nozzle comprising the steps of:

forming an assembly of coaxially aligned glass tubes (**11**, **12**, **13**, **14**) by placing spacers (**20**, **21**, **22**) between adjacent pairs of tubes (**14-13**, **13-12**, **12-11**);

heating said assembly of tubes (**40**) over a limited region of its length until softened;

pulling said assembly of tubes (**40**) in an axial direction to reduce its diameter along said limited region;

and cutting said tubes at a point (y—y) along its reduced diameter region thereby forming a torch nozzle having a tapered end.

4,368,064

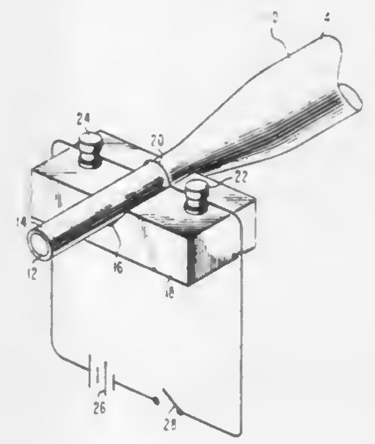
METHOD FOR CLEAVING AN OPTICAL FIBER

Stefan A. Siegel, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,660

Int. Cl.^{3} C03B *33/09*

U.S. Cl. 65—105 **4 Claims**



1. A method for cleaving an optical fiber comprising the steps of

heating the fiber at a point along its length by contacting the fiber with an electrically heated wire; and

contacting the fiber, including the heated portion, with a liquid fluorocarbon, whereby the temperature of the fiber is quenched and the fiber is cleaved.

2. A method according to claim 1 further comprising the step of applying a tensile stress to the fiber during the quenching step.

4,368,065

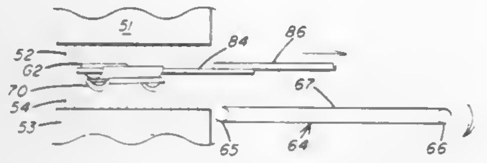
METHOD AND APPARATUS TO REMOVE BENT, TEMPERED GLASS SHEETS FROM A COOLING STATION

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 19, 1981, Ser. No. 322,787

Int. Cl.^{3} C03B *23/035*

U.S. Cl. 65—114 **7 Claims**



1. A method of removing a bent, tempered glass sheet from a cooling station where said glass sheet is engaged against a ring-like member while blasts of tempering medium are applied against the opposite major surfaces of said supported glass sheet from spaced opposed plenum chambers at a rate sufficient to impart at least a partial temper in the glass, characterized by interposing elongated arms between one of said plenum chambers and the major surface of said bent, tempered glass sheet opposite the major surface engaging said ring-like member, causing a net flow of tempering medium to provide sufficient force in a direction such as to disengage said bent, tempered glass sheet from said ring-like member and to engage said bent, tempered glass sheet against said elongated arms, moving said arms beyond said one of said plenum chambers with said bent, tempered glass sheet engaged thereagainst in a downstream direction toward an unloading conveyor, tilting the leading edge of said bent, tempered glass sheet away from said elongated arms to transfer said bent, tempered glass sheet gently from said elongated arms to an upper run of said unloading conveyor while preventing said bent, tempered glass sheet from falling uncontrollably from said elongated arms to avoid impacting said glass sheet sharply onto said upper run.

5. Apparatus for transferring a bent, tempered glass sheet gently from a ring-like member to the upper run of an unloading conveyor comprising a cooling station having an upper plenum chamber and a lower plenum chamber, means to convey said ring-like member supporting said glass sheet through said cooling station between said plenum chambers, means to deliver tempering medium under pressure to said plenum chambers for delivery against the opposite major surfaces of said glass sheet when the latter is supported on said ring-like member, elongated arms adapted for movement along a path at a level between the level of the path taken by said ring-like member and the position occupied by said upper plenum chamber between an upstream position between said plenum chambers and a downstream position downstream of said cooling station, means to provide a net upward force of tempering medium in said upstream position between said plenum chambers when said elongated arms occupy said upstream position to disengage said bent, tempered glass sheet from said ring-like member and to engage said bent, tempered glass sheet against said elongated arms, and means to move said elongated arms to said downstream position with said bent, tempered glass sheet engaged thereagainst, an unloading conveyor located downstream of said cooling station, said unloading conveyor having an upper run occupying a position at a level slightly below the level occupied by said elongated arms, whereby, when said bent, tempered glass sheet moves into said downstream position, it tilts with its leading edge moving downward to transfer gently from engagement with said elongated arms into engagement with said upper run.

4,368,066

1,3-DIOXAN-5-YL-ALKENYLTRIAZOLES, THEIR PREPARATION, THEIR USES IN REGULATING PLANT GROWTH, AND REGULATORS CONTAINING THESE COMPOUNDS

Costin Rentzea, Heidelberg; Karl-Heinz Feuerherd; Bernd Zeeh, both of Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

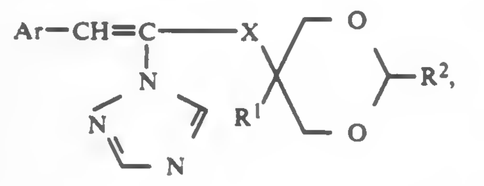
Filed Jul. 1, 1981, Ser. No. 279,585

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026140

Int. Cl.^{3} A01N *43/64;* **C07D** *405/06, 409/06*

U.S. Cl. 71—76 **10 Claims**

1. A 1,3-dioxan-5-yl-alkenyltriazole of the formula



I

where R^1 and R^2 are identical or different and each is hydrogen or alkyl of 1 to 5 carbon atoms, Ar is furanyl, thienyl, biphenylyl or naphthyl, or is phenyl which is unsubstituted or substituted by alkyl, alkoxy or alkenyl, each of 1 to 5 carbon atoms, or by fluorine, chlorine, bromine, iodine, nitro, trifluoromethyl or phenoxy, and X is C═O, —CH(OH)— or —CH(O—COR^3)—, where R^3 is unsubstituted or halogen- or alkoxy-substituted alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms or aryl, and its salts and metal complexes.

4. A process for regulating plant growth which comprises applying to the plants or their habitat an effective growth regulating amount of one or more of the compounds defined in claim 1.

4,368,067

HERBICIDAL SULFONAMIDES

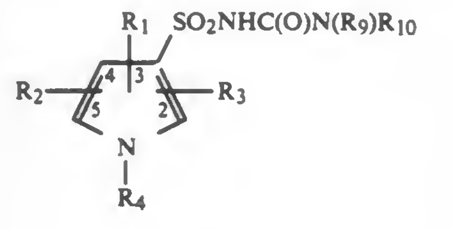
John C. Budzinski, West Chester, Pa., and George Levitt, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 144,856, Apr. 29, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 244,172

Int. Cl.^{3} A01N *43/02;* **C07D** *239/22, 491/04, 251/16*

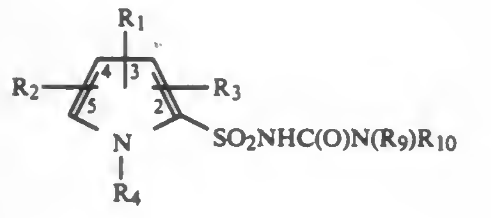
U.S. Cl. 71—92 **36 Claims**

1. A compound of the formula:



(Ia)

or

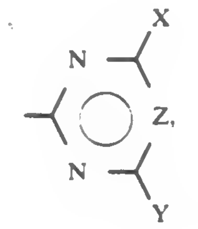


(Ib)

wherein

- R_1 is H, C_1–C_4 alkyl, NO_2, CN, $C(O)CCl_3$, SO_2R_{11}, $C(O)R_5$ or CO_2H;

- R_2 is H or C_1–C_4 alkyl;
- R_3 is H, C_1–C_4 alkyl, Cl or Br;
- R_4 is H, C_1–C_4 alkyl, cyanoethyl, C_5–C_6 cycloalkyl, benzyl, phenyl substituted with Cl or NO_2, or $C(O)R_6$;
- R_5 is C_1–C_4 alkyl or C_1–C_4 alkoxy;
- R_6 is C_1–C_4 alkyl, C_1–C_4 alkoxy, or NR_7R_8;
- R_7 and R_8 are independently C_1–C_2 alkyl;
- R_9 is H, CH_3 or OCH_3;
- R_{11} is C_1–C_4 alkyl;
- R_{10} is



- X is CH_3 or OCH_3;
- Y is H, CH_3, OCH_3, OCH_2CH_3, OCH_2CF_3, Cl, CH_2OCH_3, and
- Z is CH, CCH_3 CCH_2CH_3, CCH_2CH_2Cl, CCl, CBr or CF;

and their agriculturally suitable salts; provided that

(1) when R_4 is $C(O)R_6$, t-butyl or phenyl substituted with Cl or NO_2, then R_1 is H or C_1–C_4 alkyl and R_1, R_2 and R_3 cannot be s-butyl or isopropyl;
(2) R_1, R_2, R_3 and R_{11} cannot be t-butyl;
(3) in Formula Ia, when R_1 is NO_2, then R_1 cannot be in the 5-position;
(4) in Formula Ia, when R_1 is not in the 5-position, R_2 and R_3 are other than H, and R_1 must be other than H unless both R_2 and R_3 are H;
(5) in Formula Ia, R_3 cannot be Cl or Br;
(6) in Formula Ib, R_1 cannot be $C(O)CCl_3$; and
(7) in Formula Ib, when R_3 is Cl or Br, then R_3 is in the 3-position and R_1 is in the 5-position and R_1 cannot be H or C_1–C_4 alkyl.

29. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,368,068

BENZOTRIAZINE DERIVATIVES AS SELECTIVE WEED CONTROL AGENTS

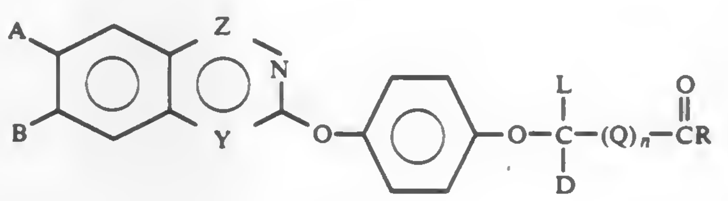
Raymond W. Luckenbaugh, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 15, 1981, Ser. No. 225,188

Int. Cl.^{3} C07D *253/08, 401/12;* **A01N** *43/64;* **C07D** *413/12*

U.S. Cl. 71—93 **15 Claims**

1. A compound of the formula:



wherein

- A is H, Cl, Br, F, CF_3, CH_3 or CH_3O;
- B is H or Cl;
- D is H, CH_3 or CO_2R_8;
- L is H or CH_3;
- Q is —CH═CH—;
- n is 1;
- R is Cl, XR_1, NR_2R_3, OH or OM;
- M is an agriculturally suitable salt;
- R_1 is C_1–C_4 alkyl, benzyl, phenyl, C_5–C_8 cycloalkyl, $—CH_2CH_2OCH_3$, $—CH_2CH_2OCH_2CH_3$, $CH_2CH_2CH_2OCH_3$, C_3–C_4 alkenyl, C_3–C_4 alkynyl, $—N{=}CR_6R_7$ or C_3–C_4 alkenyl or alkynyl optionally substituted with one Cl;
- R_2 is H, C_1–C_4 alkyl, C_5–C_8 cycloalkyl, benzyl, phenyl, $—OCH_3$, C_3–C_4 alkenyl or $—CH_2CH_2NR_4R_5$;
- R_3 is H or C_1–C_4 alkyl; or
- R_2 and R_3 may be taken together to be $—(CH_2)_2—O—(CH_2)_2—$, $—(CH_2)_4—$, $—(CH_2)_5—$, $—(CH_2)_6—$ or $—(CH_2)_2—N—(CH_3)\ (CH_2)_2—$;
- R_4 and R_5 are independently methyl or ethyl;
- R_6 is H or C_1–C_4 alkyl;
- R_7 is H or C_1–C_4 alkyl; or
- R_6 and R_7 may be taken together to be $—(CH_2)_5—$ or $—(CH_2)_4—$;
- R_8 is C_1–C_4 alkyl;
- X is 0 or S; and
- Y and Z are independently N or N→O; provided that:

(a) when D is CO_2R_8, then n is O and L is CH_3;
(b) when R_1 is $—N{=}CR_6R_7$, then X is 0;
(c) R_2 and R_3 together contain no more than 8 carbon atoms;
(d) one of R_6 and R_7 is other than H;
(e) when A is other than Cl, then B is H;
(f) when B is Cl, then L is H, D is CH_3, n is 0, R is XR_1, and X is 0.

11. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,368,069

HERBICIDAL SULFONAMIDES

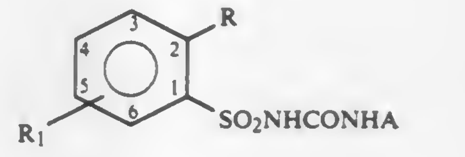
Chi-wan Chen, Silver Spring, Md., and Gregory W. Schwing, Lincoln University, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,346, Jul. 11, 1980, abandoned. This application May 28, 1981, Ser. No. 265,179

Int. Cl.^{3} C07D *251/46, 251/52, 251/18;* **A01N** *43/70*

U.S. Cl. 71—93 **20 Claims**

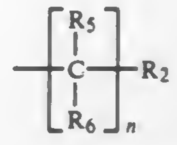
1. A compound selected from



I

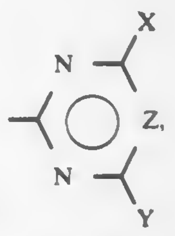
wherein

- R is



$$-\left[\begin{matrix} R_5 \\ | \\ C \\ | \\ R_6 \end{matrix}\right]_n - R_2$$

- R_2 is C_2–C_5 alkenyl, C_5–C_6 cycloalkenyl or C_2–C_3 alkenyl substituted with 1–3 chlorine atoms;
- n is 0 or 1;
- R_1 is H, F, Cl, Br, NO_2, CF_3, C_1–C_4 alkyl, OCF_3 or C_1–C_3 alkoxy;
- R_5 and R_6 are independently H or CH_3;
- A is



- X is H, CH_3, OCH_3, OCH_2CH_3, OCH_2CF_3, CH_2OCH_3 or Cl;

Y is CH_3, OCH_3, OCH_2CH_3, NH_2, $NHCH_3$ or $N(CH_3)_2$;
Z is N

provided that when Z is N and X is Cl, then Y is CH_3.

16. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,368,070
METHOD FOR SCRUBBING THE FLUES AND FOR RECOVERING THE SALTS IN A PROCESS FOR THE PRODUCTION OF SECONDARY ALUMINUM

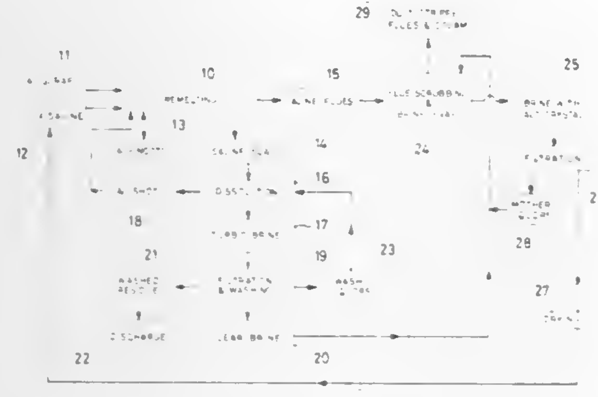
Pierluigi Fracchia, Milan, Italy, assignor to A. Tonolli & C.S.p.A., Milan, Italy

Filed Nov. 17, 1980, Ser. No. 207,723

Claims priority, application Italy, Nov. 27, 1979, 27605 A/79

Int. Cl.³ C22B *21/00*

U.S. Cl. 75—0.5 B **3 Claims**



1. A process for scrubbing flue gases and recovering salts from saline slags removed from an aluminum scrap smelting furnace using a salt flux for the production of secondary aluminum wherein the saline slags withdrawn from the furnace are treated with water to obtain a virtually insoluble residue and a clear brine, said process being characterized in that it comprises the step of feeding said brine as scrubbing liquor into a Venturi scrubber into which the said flue gases are sent separately, said brine being concentrated in the Venturi scrubber by dissolving the salts entrained by said flue gases and by evaporation of the water phase until there is saturation of said brine and precipitation of salt, said salt crystallized from said brine being separated from said brine and fed back to the smelting furnace as a new source of saline flux.

4,368,071
PROCESS FOR THE MANUFACTURE OF DESULFURIZING AGENTS FOR CRUDE IRON OR STEEL MELTS

Albert Braun, Hürth-Burbach; Willi Portz, Erftstadt-Kierdorf; Georg Strauss, Erftstadt-Lechenich, and Hans-Martin Delhey, Duisburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,086

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952686

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—0.5 R **7 Claims**

1. In the process for the manufacture of desulfurizing agents consisting essentially of calcium carbide and calcium oxide for crude iron and steel melts, the improvement which comprises: producing from lime and coke a molten mixture of calcium carbide and calcium oxide having a CaO content varying within the range 20 to 80% by weight, the rest being essentially calcium carbide; allowing the mixture to cool and solidify into a block; rough-crushing the solidified block while it still has an average temperature of more than 400° C. to particles with a size of less than 150 mm; admixing the comminuted mixture, which still has a temperature of at least 400° C., with a quantity of calcium oxide necessary to establish in the resulting mixture a total content of CaO corresponding to the CaO content of up to 90% by weight desired in the end product, and then grinding the mixture with thorough agitation at temperatures below 100° C. to particles with a size of less than 10 mm; contacting the mixture while grinding with a sufficient amount of air or nitrogen having a water content of 5 to 20 g/m^3 (at 1.013 bar and 273.15 K) until 1–6% by weight of water, related to the end product, is chemically bonded by hydrating a quantivalence of CaO to $Ca(OH)_2$.

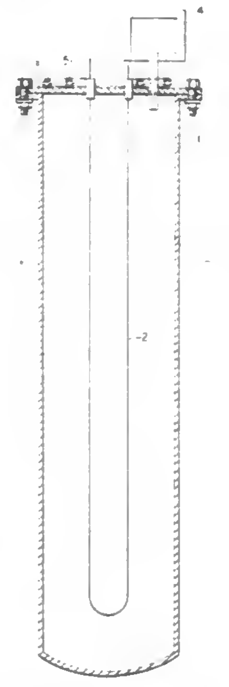
4,368,072
IODIDE CELL VAPOR PRESSURE CONTROL

Mark B. Siddall, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 19,327, Mar. 12, 1979, abandoned. This application May 27, 1981, Ser. No. 267,525

Int. Cl.³ C22B *34/14;* G01N *7/00*

U.S. Cl. 75—84.4 **6 Claims**



1. A method of controlling the vapor pressure in an iodide decomposition cell comprising: directly measuring the vapor pressure in the cell; and adjusting the lid temperature of the cell by controlling the rate of cooling of the lid in response to variations in the vapor pressure.

2. The method of claim 1 wherein the cell is used for the purification of zirconium.

3. The method of claim 1 wherein the cell is used for the purification of hafnium.

4,368,073
USE OF THE SODIUM SALT OF 2-MERCAPTOPYRIDINE-N-OXIDE TO SEPARATE GOLD FROM ACIDIC SOLUTIONS

Sigmund Breister, Hamden, and Joseph R. Reiner, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 115,163, Jan. 24, 1980, Pat. No. 4,269,621. This application Apr. 30, 1981, Ser. No. 258,989

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ C22B *11/04*

U.S. Cl. 75—108 **10 Claims**

6. A process for the selective precipitation and separation of gold from acidic solutions having a pH below about 3 and containing other metals selected from the group consisting of iron, copper, tin, lead, or mixtures thereof, which comprises the steps of:

(a) adding sodium 2-mercaptopyridine-N-oxide to cause at least a portion of said gold in said acidic solution to precipitate from said acidic solution wherein the molar ratio of said added sodium 2-mercaptopyridine-N-oxide to said gold is less than about 1.5:1.0 without any appreciable precipitation of said other metals; and

(b) separating said precipitated gold from said acidic solution and said other metals.

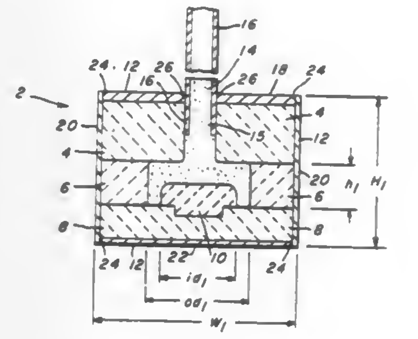
4,368,074
METHOD OF PRODUCING A HIGH TEMPERATURE METAL POWDER COMPONENT

William L. Otto, Jr., Leechburg, and Edward G. Flynn, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 859,086, Dec. 9, 1977, abandoned. This application Jan. 7, 1980, Ser. No. 109,853

Int. Cl.³ B22F *3/00, 3/14*

U.S. Cl. 419—51 **9 Claims**



1. A method of producing a fully dense high temperature metallic component from high temperature metal powder comprising:

filling a centrally located mold cavity with a high temperature metal powder, said cavity having a shape substantially conforming to the dimensional configuration of the component to be formed as measured in the lateral direction, said cavity having a shape uniformly larger than the dimensional configuration of the component to be formed as measured in the vertical direction, said mold composed of a material having substantially the same flow stress throughout, said material able to maintain dimensional stability in a viscoelastic state at a temperature of from approximately 950° to 1300° C., said mold having at least one passageway therethrough leading to said cavity,

heating the filled mold to a temperature greater than half the melting temperature of the powder in degrees centigrade and less than the melting temperature of the powder, while applying a vacuum to the cavity of at least twenty microns of mercury,

closing the mold to provide a vacuum tight seal,

axially compressing the sealed mold while maintaining the mold within the above heated temperature range, said axial compression being in the vertical direction with respect to the cavity dimensions at a pressure of at least 345 megapascals to effect plastic flow of the metal and mold, while restricting the mold about its lateral periphery with respect to the cavity dimensions,

holding said mold in a compressed state for less than five minutes including at least 20 seconds after attaining maximum pressure, and

separating the mold materials from the component.

9. A method of producing a fully dense titanium alloy component having a low thickness to diameter ratio comprising the steps of:

filling a centrally located mold cavity with a titanium alloy powder having a flow stress greater than that of the mold material, said mold being ceramic with a steel shell therearound, said shell having a thickness of at least 0.20 centimeters, with a centrally located die cavity therein, said cavity having a shape substantially conforming to the dimensional configuration of the dimensional configuration of the titanium alloy component to be formed, as measured in the lateral direction, said cavity having a shape uniformly larger than the dimensional configuration of the titanium alloy component to be formed as measured in the vertical direction, said ceramic mold composed of 20–35 parts by weight calcium aluminate, 60–70 parts by weight fused silica, and 3–15 parts by weight zinc borosilicate frit having substantially the same flow stress throughout, said mold material able to maintain dimensional stability in a viscoelastic state at a temperature of approximately 950° to 1300° C., said mold having at least one passageway therethrough leading to said cavity,

heating the filled mold to a temperature greater than half the melting temperature of the titanium alloy powder in degrees centigrade and less than the melting temperature of the titanium alloy powder, while applying a vacuum to the cavity of at least approximately 20 microns of mercury,

closing the mold to provide a vacuum tight seal,

axially compressing the sealed mold while maintaining the mold within the above heating range, said axial compression being in the vertical direction with respect to the cavity dimensions at a pressure of at least 345 megapascals to effect plastic flow of the metal and mold while restricting the mold about its lateral periphery with respect to cavity dimensions,

holding the mold in a compressed state for less than five minutes including at least 20 seconds after attaining maximum pressure, and

separating the mold material from the titanium component.

4,368,075
IRON BLUE PIGMENT, PROCESS FOR MAKING THE SAME AND USE

Everhard Gratzfeld, Wesseling; Eva Clausen; Helmut Reinhardt, both of Cologne, and Hans Schaefer, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 6, 1981, Ser. No. 309,523

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038285

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—20 **9 Claims**

1. Iron blue pigment, characterized by a potassium content of 7.0–9.0% by weight, a sodium content of 0.5–2.0% by weight, a coloring power in accordance with DIN 53 204 and DIN 53 234 of 5–15% above Standard Vossen blue 705 and the following color intervals determined in accordance with DIN 53 204 and DIN 53 234 in conjunction with DIN 6174, in relation to Vossen blue 705 as standard:

ΔL: −0.7 to −1.5;
Δa: −0.5 to +0.3;
Δb: −0.6 to −2.3;
ΔC: +0.5 to +2.0.

4,368,076
INK COMPOSITION

Zenshiro Iijima, Soka, Japan, assignor to Adger Kogyo Co., Ltd., Saitama, Japan

PCT No. PCT/JP79/00004, § 371 Date Sep. 6, 1980, § 102(e) Date Sep. 5, 1980, PCT Pub. No. W080/01387, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 6, 1979, Ser. No. 252,975

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—22 **13 Claims**

1. An ink composition comprising:
a liquid vehicle including water;
a source of cobalt ion and thiocyanate ion; and
a polyalkylene glycol having a molecular weight of 100–1000.

13. An ink composition having moderate viscosity consisting essentially of

- a source of cobalt ion and a source of thiocyanate ion having a concentration of less than 30 percent,
- a liquid vehicle including water, and
- a polyalkylene glycol as a color intensifier, said polyalkylene glycol having a molecular weight of about 100 to 1000.

4,368,077

LATEX COMPOSITIONS AND PRODUCTS MADE THEREFROM

Gary W. Ceska, Coraopolis, Pa., and Gerald W. Burkhart, Parkersburg, W. Va., assignors to Polysar International, S.A., Fribourg, Switzerland

Continuation of Ser. No. 107,487, Dec. 26, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,805

Int. Cl.^{3} C04B *7/356*

U.S. Cl. 106—96 **12 Claims**

1. An improved concrete composition comprising Portland cement, aggregate, water and a latex composition comprising a latex of a polymer containing a wax additive whereby said concrete composition when cured provides increased resistance to penetration by liquids.

4,368,078

PROCESS FOR THE PREPARATION OF VISCOSE AND PROCESS FOR THE SPINNING OF THE VISCOSE THUS OBTAINED

Gianfranco Angelini, Buscate, and Ugo Paoletti, Monza, both of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,109

Claims priority, application Italy, Jun. 15, 1979, 23657 A/79

Int. Cl.^{3} C08L *1/24*

U.S. Cl. 106—164 **12 Claims**

1. A process for the xanthation of alkali-cellulose which comprises reacting alkali-cellulose with an amount of CS_2 which is in excess of the desired xanthate substitution degree, said reaction being carried out at a pressure which increases during the reaction from an initial pressure of about 110 mm Hg to a final pressure of about 400–500 mm Hg and at a temperature which varies from an initial temperature of about 20° C. to a final temperature of about 23°–25° C. and upon achieving the desired xanthate substition removing unreacted CS_2 from the reactor by application of a vacuum.

4,368,079

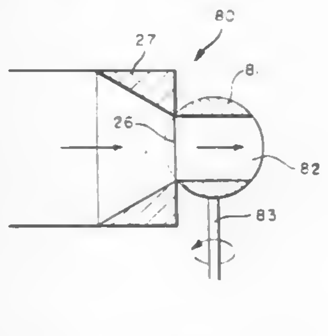
APPARATUS FOR CHEMICAL CONVERSION OF MATERIALS AND PARTICULARLY THE CONVERSION OF CELLULOSE WASTE TO GLUCOSE

Barry A. Rugg, New York, N.Y., and Walter Brenner, Teaneck, N.J., assignors to New York University, New York, N.Y.

Division of Ser. No. 131,340, Mar. 18, 1980, Pat. No. 4,316,747. This application May 18, 1981, Ser. No. 264,245

Int. Cl.^{3} B01J *3/04, 4/00*

U.S. Cl. 127—1 **6 Claims**



1. An apparatus for the conversion of waste cellulose to glucose by dilute acid hydrolysation, comprising: extruding means including a housing having an inlet port receptive of cellulose to be converted, an outlet port, a reaction zone therebetween and twin corotational screws for continuously conveying the cellulose through the reaction zone and to the outlet port; means for continuously injecting dilute sulfuric acid into the reaction zone; means for producing an elevated temperature and pressure within the reaction zone including means for continuously injecting steam or superheated water at elevated pressure into the reaction zone; means for continuously feeding the cellulose to the inlet port; means for at least quasi-continuously discharging the reacted cellulose from the extruding means while maintaining the elevated temperature and pressure within the reaction zone including means for forming a dynamic seal at the upstream end of the reaction zone; valve means disposed downstream of the outlet port for controlling the discharge; and means for cyclically activating said valve means.

4,368,080

METHOD OF REMOVING RUST FROM METALLIC OBJECTS

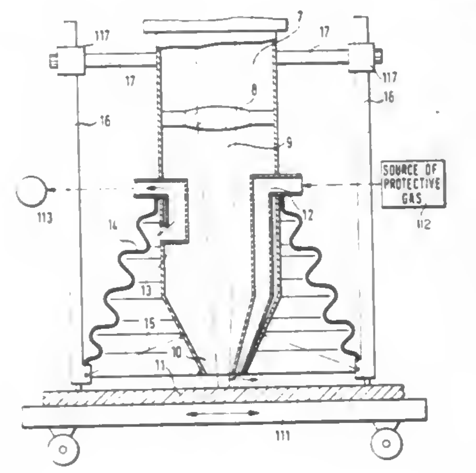
Robert Langen, Quienstrasse 29, D-6600 Saarbrücken, and Rasmus Beck, Nachtigallenstrasse 62, D-6978 Neu Isenburg, both of Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,268

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943107

Int. Cl.^{3} B08B *7/00*

U.S. Cl. 134—1 **10 Claims**



1. A method of removing rust from the surface of an object consisting of oxidizable metal, comprising the step of focusing a laser beam upon the rust to heat the rust to evaporation temperature and to thereby effect evaporation of rust from the surface of said object.

4,368,081

METHOD FOR REMOVING RESIDUAL HYDROGEN PEROXIDE ON A STERILIZED FOOD PACKAGE

Kunio Hata; Kihachiro Oshima; Isao Kano; Norio Matsukura; Hiroaki Umeda; Motoi Matsui; Tetsushi Ashida; Yoichi Nishiguchi, and Nobushige Yasui, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,805

Claims priority, application Japan, Sep. 5, 1980, 55/122351

Int. Cl.^{3} B08B *3/08*

U.S. Cl. 134—2 **4 Claims**

1. In a method for removing residual hydrogen peroxide on packing material for foodstuff sterilized with hydrogen peroxide, the improvement comprising removing said residual hydrogen peroxide on the surface of the packing material for foodstuff by applying to the surface of said packing material an anti-oxidant or reducing agent selected from the group consisting of L-ascorbic acid, stearic acid ester of L-ascorbic acid, sodium salt of L-ascorbic acid, sorbic acid, potassium salt of sorbic acid, sodium salt of sorbic acid, gallic acid isoamylester, gallic acid propylester, dibutylhydroxytoluene, butylhydroxyanisole, α-tocopherol, cysteine, and glutathione of reduced type.

4,368,082

PAINT STRIPPING METHOD

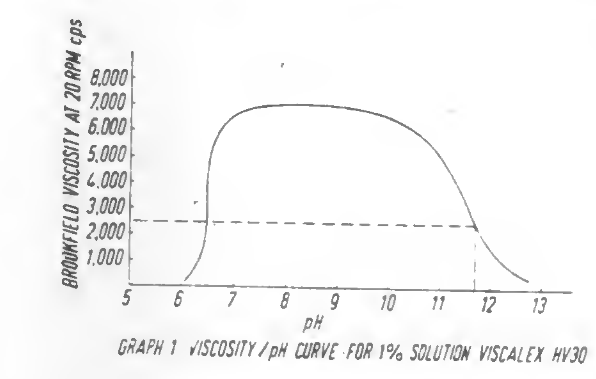
Philip Poels, Sudbury, England, assignor to Strippers Paint Removal Services Ltd., Suffolk, England

Continuation-in-part of Ser. No. 131,317, Mar. 18, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,560

Claims priority, application United Kingdom, May 17, 1979, 7917140

Int. Cl.^{3} B08B *3/08;* **C09D** *9/00*

U.S. Cl. 134—4 **2 Claims**



GRAPH 1 VISCOSITY/pH CURVE FOR 1% SOLUTION VISCALEX HV30

1. A method of stripping paint having free carboxyl groups from a previously painted surface at a single application, which comprises applying to said painted surface a composition comprising an alkali metal hydroxide, a solvent and a polyacrylate thickening agent comprising an aqueous dispersion of from 15 to 45% by weight of a cross-linked carboxylated copolymer of acrylic acid with methacrylate having a pH lower than that of said alkali metal hydroxide in which the viscosity of said agent falls above a predetermined transition pH, said hydroxide being present in said composition in an amount sufficient to adjust the pH of the composition to just above said transition pH, whereby the viscosity of the composition increases as the pH falls in use; and allowing the applied composition to remain in contact with said painted surface for sufficient time to destroy the adhesion of the paint to the painted surface and then rinsing the paint and composition from said substrate.

4,368,083

PROCESS FOR DOPING SEMICONDUCTORS

Michel Bruel, Veurey-Voroize, and Michel Floccari, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 23, 1981, Ser. No. 227,966

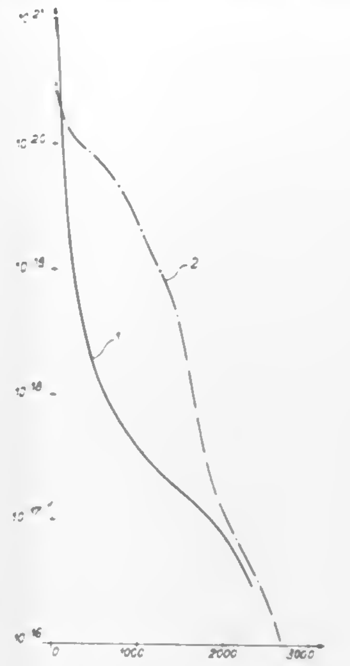
Claims priority, application France, Feb. 1, 1980, 80 02238

Int. Cl.^{3} H01L *21/265, 21/324, 21/263*

U.S. Cl. 148—1.5 **11 Claims**

1. Process for doping semiconductors consisting in implanting dopant particles in a substrate and in rendering them electrically active, so as to modify the physical properties of the substrate, comprising the following successive steps of:

- effecting an implantation by recoil of the dopant particles in the substrate, which consists in depositing on the surface of the substrate a layer of material containing dopant particles, and in bombarding said layer by means of a beam of bombarding particles, so as to cause the dopant particles to penetrate in the substrate;
- eliminating the layer of material deposited on the surface of the substrate;
- effecting transitory annealing, which consists in bringing to the surface, or to the level of the first implanted layers, for a very short length of time, an energy density such that very high temperatures are reached, so as to produce a local liquefaction of the first layers of the substrate.



4,368,084

METHOD FOR PRODUCING COLD ROLLED STEEL SHEETS HAVING A NOTICEABLY EXCELLENT FORMABILITY

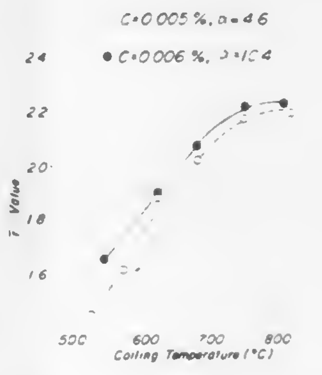
Toshio Irie, Chiba; Susumu Sato, Ichihara, and Osamu Hashimoto, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed May 28, 1981, Ser. No. 267,930

Claims priority, application Japan, May 31, 1980, 55-73179; Jul. 30, 1980, 55-103666

Int. Cl.^{3} C21D *8/06, 9/48*

U.S. Cl. 148—12 C **8 Claims**



1. A method for producing cold rolled steel sheets having a noticeably excellent formability, comprising preparing a steel consisting of not more than 0.008% of C, not more than 0.20% of Si, 0.04–0.30% of Mn, not more than 0.03% of P, 0.01–0.10% of Al, a content of Al being more than $N\% \times 4$, not more than 0.02% of S, not more than 0.01% of N, 0.01–0.07% of Nb, a content of Nb being $C\% \times 3 - \{C\% \times 8 + 0.02\}\%$, and the remainder being substantially Fe, hot rolling the steel at a total reduction of not less than 90%, a rolling speed of not less than 40 m/min in finishing rolling and a finishing temperature of not lower than 830° C., coiling the hot rolled strip at a temperature of 600°–800° C., cold rolling the coiled strip to obtain a cold rolled strip having final gauge and then continuous annealing the cold rolled strip within a temperature range of 700°–900° C. for 10 seconds–5 minutes.

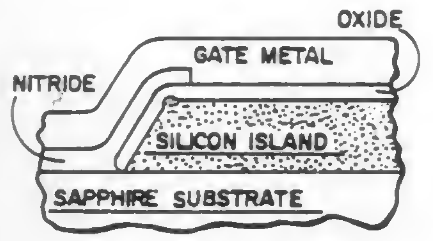
4,368,085
SOS ISLAND EDGE PASSIVATION STRUCTURE

John L. Peel, Sandy, Utah, assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 85,148, Oct. 15, 1979, Pat. No. 4,242,156. This application Jul. 8, 1980, Ser. No. 166,950

Int. Cl.^{3} H01L *27/12*

U.S. Cl. 148—33.3 **1 Claim**



1. A silicon-on-sapphire semiconductor structure comprising:
a sapphire substrate;
a silicon island disposed on said sapphire substrate, having a major surface including an upper first surface and a side second surface separated by an edge;
an oxide layer disposed entirely over said major surface of said silicon island; and
a silicon nitride layer disposed entirely over said side second surface and in part over said upper first surface, the nitride layer extending over a portion of said upper first surface so that said nitride layer covers the edge between said upper first surface and said side second surface.

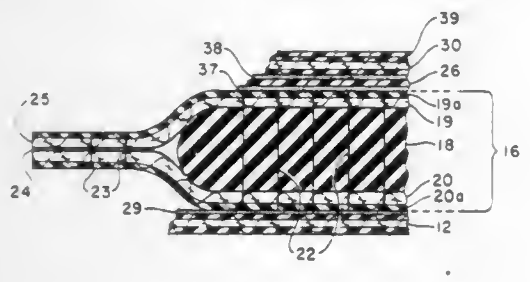
4,368,086
METHOD OF FABRICATING AN AIRCRAFT SELF-SEALING FUEL TANK

Herbert F. Villemain, Cuyahoga Falls, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 133,767, Mar. 25, 1980. This application Oct. 22, 1981, Ser. No. 313,879

Int. Cl.^{3} B32B *31/10, 7/08*

U.S. Cl. 156—93 **2 Claims**



1. The method of constructing a self-sealing fuel tank, comprising:
a. applying an innerliner member to a building form;
b. cementing a plurality of sealant panels to each surface of the innerliner; each of said sealant panels formed by cutting a layer of sealant compound to the desired size and shape, placing said layer of sealant compound between two layers of cloth fabric of the desired sizes and shapes and rubberized on the sides remote from the sealant compound layer, said fabric layers extending beyond the edges of the sealant compound, sewing the cloth fabric and sealant compound layers with substantially parallel rows of stitches, and forming connecting flanges by sewing together the fabric layers extending beyond the sealant compound with circumferential stitches adjacent the edges of the sealant compound layer;
c. cementing the flanges of each panel to the flanges of the adjacent panels;
d. applying a fuel barrier layer to the outer surface of the sealant panels and joints;
e. cementing an outer covering layer to the external surface of the fuel barrier;
f. applying a coating of fuel resistant lacquer to the outer surface of the covering layer;
g. curing the tank for two hours at 260° F. under 60 psig steam pressure; and
h. removing said building form from the cured tank.

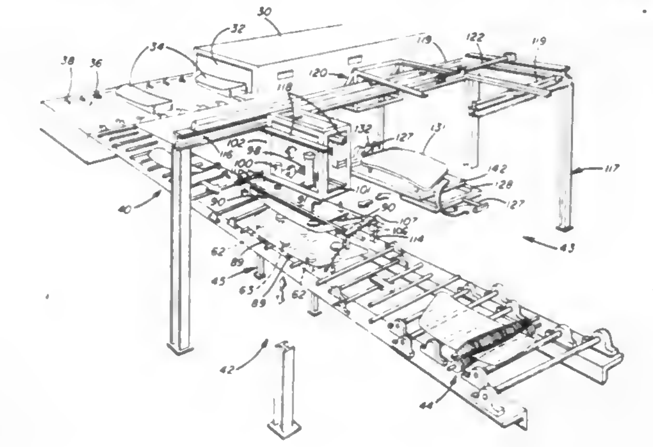
4,368,087
ARRANGEMENT OF VACUUM CUPS TO ASSEMBLE ONE OR MORE BENT GLASS SHEETS WITH A SHEET OF FLEXIBLE INTERLAYER MATERIAL

James L. Valimont, and Joseph D. Kelly, both of Cheswick, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,600

Int. Cl.^{3} B32B *17/00*

U.S. Cl. 156—102 **5 Claims**



1. A method of assembling a subassembly comprising a bent glass sheet of a desired shape and a flexible sheet of interlayer material for lamination into a bent subassembly wherein said flexible sheet of interlayer material is moved into alignment with said bent glass sheet while supported against a rigid supporting surface conforming to said desired shape to bring a surface of said flexible sheet into alignment with a concave surface of said bent glass sheet, moving said flexible sheet of interlayer material into aligned contact with said concave surface, and removing said supporting surface, wherein said bent glass sheet is supported at spaced areas along its convex surface on spaced flexible support members disposed in a curved surface conforming generally to said desired shape and movable in unison toward and away from the convex surface of the bent glass sheet,
said method comprising aligning at least one of said spaced flexible support members to face the central portion of a major surface of said bent glass sheet opposite said concave surface, biasing said at least one of said spaced flexible support members relative to the other flexible support members toward said central portion, thereby temporarily biasing the central portion of said bent glass sheet toward said rigid supporting surface and bringing said sheets together to first engage the central portion of said supported flexible sheet with said bent glass sheet and to gradually increase the area of engagement from said central portion to the edge of said sheets to force air and other vapors from the interfacial surface between said bent glass sheet and said flexible sheet of interlayer material as the area of engagement between said flexible sheet and said bent glass sheet increases outward toward the edge of said sheets, thereby reducing said central portion bias to form a subassembly of said flexible sheet of interlayer material and said bent glass sheet and separating said rigid supporting surface from said flexible sheet of interlayer material when said subassembly is formed.

4,368,088
METHOD OF MANUFACTURING CORRUGATED TUBE

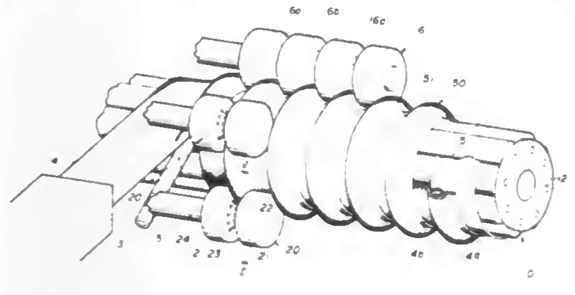
Hiroshi Asakura, Oiso; Masaharu Kusaka, Yokosuka; Mitsuto Hirata, and Akio Machihara, both of Yokohama, all of Japan, assignors to Toyo Kagaku Kabushiki Kaisha, Kamakura, Japan

Filed Dec. 8, 1980, Ser. No. 213,720

Claims priority, application Japan, Dec. 20, 1979, 54/164689

Int. Cl.^{3} B65H *81/00;* **F16L** *11/08*

U.S. Cl. 156—143 **8 Claims**



1. A method of continuously manufacturing a corrugated tube having axially extending spiral convolutions to define a corrugated outer wall configuration in longitudinal cross-section and a smooth inner wall surface along the length of the tube, comprising the steps of arranging in a circular array a plurality of rollers each rotating at the same speed such that an imaginary cylinder is defined about its central axis by said rollers, the longitudinal axes of said rollers being parallel to each other but offset with respect to said central axis: continuously feeding a flat non-reinforced strip of synthetic resin material in a softened state generally perpendicularly to the length of said rollers in such a manner that said strip is helically wrapped around and advanced axially along said imaginary cylinder with portions of adjacent turns of the strip overlapping one on another for welding together; continuously feeding a flexible core member and embedding it between the overlapping portions of adjacent turns of the strip to raise the upper one of said overlapping portions so as to define spiral raised convolutions around the tube, said flexible core member being in the form of a corrugated tube having convolutions therearound to define a corrugated outer wall; and pressing a pressure roller against the overlapping portions of the strip having said flexible core member embedded therein; whereby a corrugated tube is formed having spiral convolutions defined by the embedded flexible core member around the outer periphery of the tube along the length thereof and a smooth inner wall surface.

5. A method of continuously manufacturing a corrugated tube having an outer wall with spiral convolutions and a smooth inner wall comprising the steps of:
arranging in a circular array a plurality of rollers extending parallel to each other to define a cylindrical contour, said rollers rotating in the same direction at the same speed;
continuously feeding a flat strip of a synthetic resin material in a softened state to said rollers forming the cylindrical contour at an angle so that said strip is helically wrapped around the rollers to advance axially therealong to thereby overlap adjacent turns of the strip one on another;
continuously feeding a flexible core member onto said flat strip so that when the succeeding turn of said flat strip is overlapped on the previous turn of said flat strip, the flexible core member is embedded between the overlapped turns of said flat strip, one longitudinal edge portion of the flat strip disposed on the core member being located adjacent to the core member of the previous turn and the other longitudinal edge portion of the flat strip extending beyond the previous turn of the flat strip to directly contact with the rollers to form a part of the smooth inner wall; and
pressing said flat strip onto at least one of the rollers forming the cylindrical contour to abut the flat strip onto at least both the previous turn of the flat strip and the core member disposed on the previous turn so that the abutting portion is bonded together and the smooth inner wall is formed; said pressing said flat strip at least including a first pressing stage for pressing said one longitudinal edge portion of the flat strip located adjacent to the core member of the previous turn onto the previous turn of the flat strip to connect said edge portion to the previous flat strip, shaping said convolutions into smooth configuration without depressions by forcibly attracting with a suction force the convolutions away from the rollers forming the cylindrical contour while the flat strip and the core member are still soft before hardening, and a second pressing stage for pressing said overlapped turns of said flat strip containing said edge portion of the flat strip in said first pressing stage and the core member located therebetween, so that the flat strip can be located on and bonded over the previous turn of the flat strip and the core member.

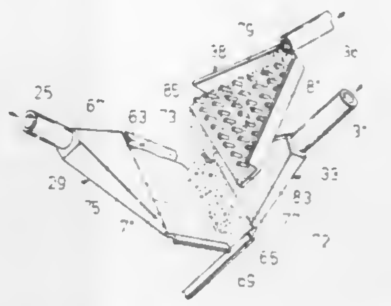
4,368,089
METHOD AND APPARATUS FOR MANUFACTURING DENTIFRICE CONTAINING DISPERSED SPECKLES

John F. Smith, New Providence, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,308

Int. Cl.^{3} B29B *5/00;* **B29C** *19/00*

U.S. Cl. 156—243 **17 Claims**



1. A method for manufacturing a dentifrice containing dispersed discrete speckles therein which comprises producing a plurality of ribbon shaped streams of a gel or paste dental composition which constitutes a major proportion of a dentifrice, producing a stream of speckles to be distributed throughout the dentifrice, directing said stream of speckles onto a surface of at least one of the streams of gel or paste dental composition and controlling the relative feed rates and the proportions of the gel or paste dental composition and the speckles to be dispersed therein so that when the stream of speckles contacts the stream of gel or paste the speckles are insufficient to cover the ribbon surface presented to the curtain, so that the speckles adhere to the gel or paste ribbon, and bringing together at least two of the plurality of streams of the dental composition so that major surfaces thereof adhere together and sandwich the speckles between them.

4,368,090
METHOD OF USING COPOLYETHER ESTER AMIDES AS THERMOPLASTIC ADHESIVES FOR HEAT SEALING TEXTILES

Salih Mumcu, and Rainer Feldmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,717

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949064

Int. Cl.^{3} B32B *31/12, 7/14*

U.S. Cl. 156—283 **8 Claims**

1. In the powder dot process for heat sealing textiles comprising:
applying a layer of isolated spots of heat sealable adhesive to one side of a textile substrate; and

securing said textile substrate to a textile upper fabric with heat and pressure applied to said heat sealable adhesive, the improvement comprising said heat sealable adhesive comprising copolyether ester amide block copolymers having melting points between about 85° and 140° C. produced from:

(A) polyamide forming compounds having melting points between about 90° and 150° C. comprising not less than 30% by weight lauryllactam and other polyamide forming compounds selected from the group consisting of omega-aminocarboxylic acids, equivalent amounts of aliphatic dicarboxylic acids and diamines and mixtures thereof; and

(B) polyether ester forming compounds comprising aliphatic dicarboxylic acids and polyalkylene oxide diols;

wherein the weight ratio of A to B is from about 93/7 to 35/65.

4,368,091

METHOD FOR PROVIDING THE INNER SURFACE OF A PIPE WITH A FLEXIBLE TUBULAR LINING MATERIAL THROUGH A LIQUID RESIN UNDER PRESSURE

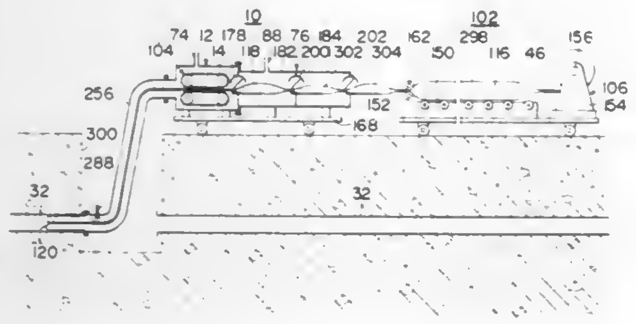
Hisao Ontsuga, Tokyo; Akio Morinaga, Fujisawa, and Akira Morita, Osaka, all of Japan, assignors to Tokyo Gas Co. Ltd., Tokyo and Ashimori Industry Co., Ltd., Osaka, both of, Japan

Filed Dec. 28, 1979, Ser. No. 107,870

Claims priority, application Japan, Dec. 29, 1978, 53-162093; Sep. 20, 1979, 54-121415

Int. Cl.^{3} B29C *17/07*

U.S. Cl. 156—287 **13 Claims**



1. A method for providing the inner surface of a pipe with a flexible tubular lining material through a liquid resin under pressure which comprises annularly fixing one end of a flexible tubular lining material, applying fluid pressure to th rear of the annularly fixed position of said flexible tubular lining material, turning said tubular lining material inside out at a turning point formed in rear of said fixed position while allowing said turning point to advance within a pipe and attaching the evaginated tubular lining material onto the inner surface of said pipe under said fluid pressure, characterized by forming a reservoir of a liquid resin enclosed in the interior of the unevaginated portion of said tubular lining material in rear of said annularly fixed portion while applying external fluid pressure to the portions of said tubular lining material where said reservoir is formed, passing said tubular lining material through said reservoir to apply said liquid resin onto the inner surface of said tubular lining material, squeezing said tubular lining material to adjust the amount of said liquid resin applied, supplying said tubular lining material to said turning point where said tubular lining material is evaginated and attaching the evaginated tubular lining material under said fluid pressure onto the inner surface of said pipe through said liquid resin wherein (A) a step for forming a liquid resin pool containing a substantial part of said liquid resin in the interior portion of said tubular lining material in rear of said reservoir and inhibiting, in a first position between said reservoir and said liquid resin pool, the forward movement toward said reservoir of said liquid resin attached to the inner surface of said tubular lining material passing through said liquid resin pool while forming a first advanced liquid resin pool in rear of said first position and (B) another step for inhibiting, in a second position between said first position and said liquid resin pool, the forward movement toward said first position of said liquid resin attached to the inner surface of said tubular lining material passing through said liquid resin pool while allowing said liquid resin in said first advanced liquid resin pool to advance to said reservoir, are repeated to supply said liquid resin in said liquid resin pool intermittently to said reservoir.

13. A method for providing the inner surface of a pipe with a flexible tubular lining material through a liquid resin under pressure which comprises annularly fixing one end of a flexible tubular lining material, applying fluid pressure to the rear of the annularly fixed position of said flexible tubular lining material, turning said tubular lining material inside out at a turning point formed in rer of said fixed position while allowing said turning point to advance within a pipe and attaching the evaginated tubular lining material onto the inner surface of said pipe under said fluid pressure, characterized by forming a reservoir of a liquid resin enclosed in the interior of the unevaginated portion of said tubular lining material in rear of said annularly fixed portion while applying external fluid pressure to the portion of said tubular lining material where said reservoir is formed, passing said tubular lining material through said reservoir to apply said liquid resin onto the inner surface of said tubular lining material, squeezing said tubular lining material to adjust the amount of said liquid resin applied, supplying said tubular lining material to said turning point where said tubular lining material is evaginated and attaching the evaginated tubular lining material under said fluid pressure onto the inner surface of said pipe through said liquid resin wherein the amount of said liquid resin applied onto the inner surface of said tubular lining material is adjusted by regulating the fluid pressure applied externally to the portion of said tubular lining material where said reservoir is formed in relation to the fluid pressure applied to the portion of said tubular lining material in rear of said turning point.

4,368,092

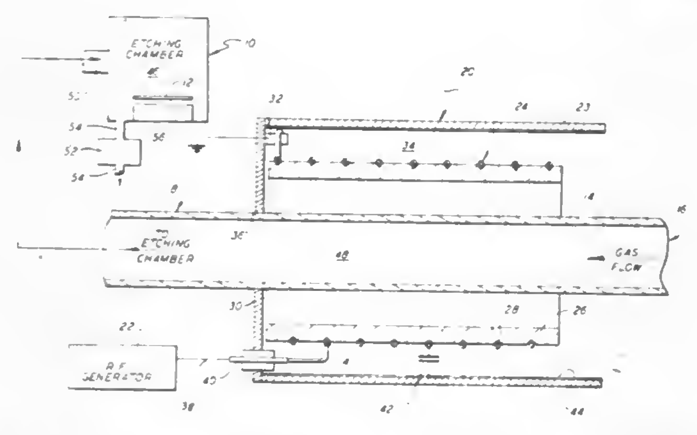
APPARATUS FOR THE ETCHING FOR SEMICONDUCTOR DEVICES

George N. Steinberg, and Alan R. Reinberg, both of Westport, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 250,364, Apr. 2, 1981. This application Aug. 5, 1981, Ser. No. 290,270

Int. Cl.^{3} C23F *1/00;* **C23C** *15/00*

U.S. Cl. 156—345 **7 Claims**



1. Apparatus for etching semiconductor devices comprising, in combination:

an etching chamber adapted to contain the semiconductor device to be etched;

an electrodeless etching plasma forming chamber having an inlet connected to a source of continuously flowable etching gas and having an outlet connected to said etching chamber in fluid flow communication;

a helical inductive resonator coupler for coupling a source of R.F. electrical power into said electrodeless plasma forming chamber for continuously forming etching plasma from the etching gas flowing therethrough, said helical inductive resonator coupler comprising:

a grounded hollow cylinder of electrically conductive material with a grounded base member at one end thereof;

a helically coiled wire conductor concentrically mounted within the cylinder and spaced from the inner walls thereof;

means for mounting said plasma forming chamber substantially concentrically within the coil;

the end of the coil toward said base member being grounded, and

electrical coupling means for applying to the coil a source of R.F. electrical power that is sufficient to maintain a discharge in said plasma forming chamber mounted within the coil, said coupling means applying power into the coil at a position near, but spaced from, the grounded end thereof, said position being selected such that, when said plasma forming chamber is in operation by the R.F. power being applied to the coil, the impedance of said plasma forming chamber and coupling means at said position substantially matches the impedance of said R.F. power source, whereby when said R.F. power is applied to the coil, and before a discharge is ignited in said plasma forming chamber, a voltage maximum occurs at the end of the coil remote from said grounded end and creates a potential extending through the portion of said plasma chamber between said end remote from the grounded end and said base member for ionizing the gas in said plasma forming chamber.

4,368,093

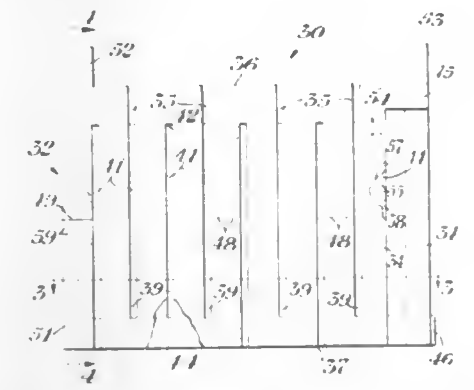
HEATING ELEMENTS FOR THERMOPLASTIC LAMINATION

Robert A. Hay, II, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1981, Ser. No. 236,958

Int. Cl.^{3} B65C *1/00*

U.S. Cl. 156—443 **16 Claims**



1. An apparatus for the thermal bonding of synthetic resinous bodies wherein the apparatus provides a heated platen to be disposed between adjacent bodies to be joined, means for moving said platen relative to the bodies to be joined, means to heat the platen to a temperature sufficient to heat plastify adjacent surfaces of the bodies to be joined, and means to contact said heated surfaces which on cooling provide a bond between adjacent foam bodies, the improvement which comprises an improved heating platen, the heating platen being of laminar construction and generally planar configuration, the heating platen comprising a first electrically conductive lamina and a second electrically conductive lamina, the first and second lamina being affixed to each other in generally face to face relationship; the first and second lamina having a first electrical terminal and a second common electrical terminal, the first and second lamina each defining a plurality of slots wherein the first and second lamina are joined at a plurality of locations to provide mutual mechanical reinforcing to minimize bending of the platen under service conditions with the further limitation that the platen comprises two generally like heating elements joined together along a centrally located line and electrically insulated from each other except at the centrally located line and electrical feed terminals.

4,368,094

PRODUCTION OF CORRUGATED CARDBOARD

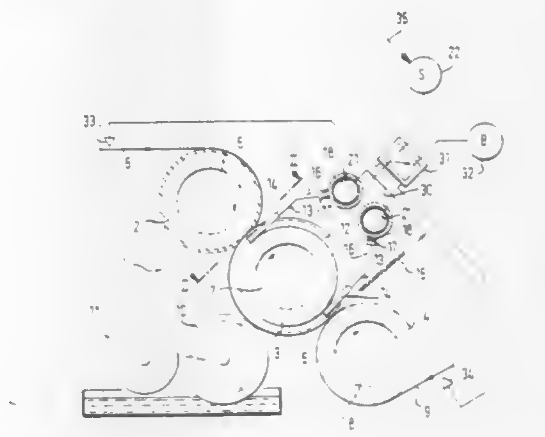
Johann Mayer, Am Bergl 7, 8475 Saltendorf; Johann Maier, Döberlstrasse 16, 8480 Welden; Hans Mosburger, Hüttenwerk 10, 8481 Weiherhammer, and Michael Erl, Elchstrasse 18, 8481 Ullersricht, all of Fed. Rep. of Germany

Filed Oct. 9, 1980, Ser. No. 195,520

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952563

Int. Cl.^{3} B31F *1/20, 1/00*

U.S. Cl. 156—462 **15 Claims**



1. Apparatus for the production of corrugated cardboard typically having a coverlining on at least one side, comprising an upper, longitudinally grooved roll; a lower, longitudinally grooved roll additionally having a plurality of outwardly open annular grooves distributed along its length, said annular grooves being connected to a suction source through respective nozzles held by carriers; said nozzles being arranged in pairs with the nozzles in each pair generally opposing one another in respective regions of web entry upon and exit from said lower grooved roll, said nozzles in each pair positioned in conforming fit into the same annular groove, wherein said annulr grooves have a width of about 3 mm or less, and further comprising a blower interruptedly connected by control means to at least the outermost of said nozzles fitted into those of said annular grooves which are located most adjacently to respective ends of said lower grooved roll.

4,368,095

HEATING DEVICE FOR BLANK-SHAPING APPARATUS

Helmut Gross, and Hermann Hauck, both of Hochheim, Fed. Rep. of Germany, assignors to AB Akerlund & Rausing, Sweden

PCT No. PCT/SE80/00061, § 371 Date Nov. 3, 1980, § 102(e) Date Oct. 27, 1980, PCT Pub. No. WO80/01776, PCT Pub. Date Sep. 4, 1980

PCT Filed Mar. 3, 1980, Ser. No. 201,403

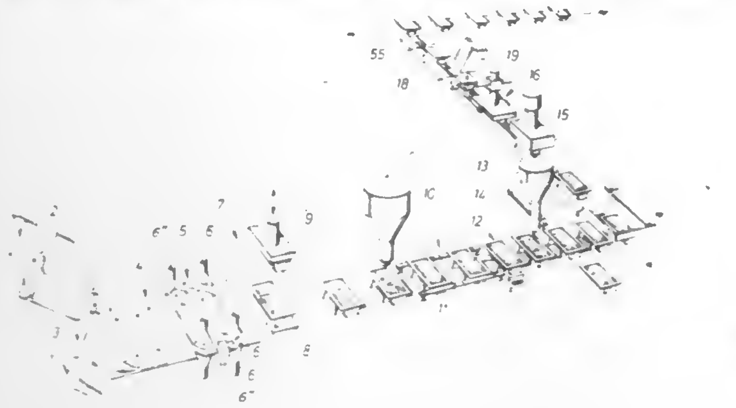
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2908396

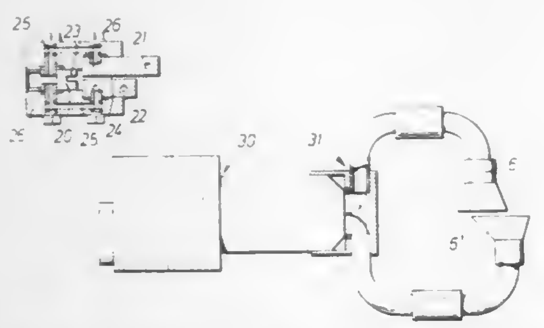
Int. Cl.^{3} B32B *31/00;* **C09J** *5/02*

U.S. Cl. 156—497 **10 Claims**

1. Apparatus for heating a synthetic coating disposed on two opposite surfaces of a rectangularly-shaped cardboard blank to a temperature sufficiently high to soften the synthetic coating, comprising heating means for heating the synthetic coating, said heating means including a plurality of jets, at least one of said jets being arranged so as to discharge hot air towards one of the two opposite surfaces of the cardboard blank in the direction of a corner thereof and at least another one of said jets being arranged so as to discharge hot air towards the other of the two opposite surfaces of the cardboard blank in the direction of a corner thereof, and inhibiting means for inhibit-

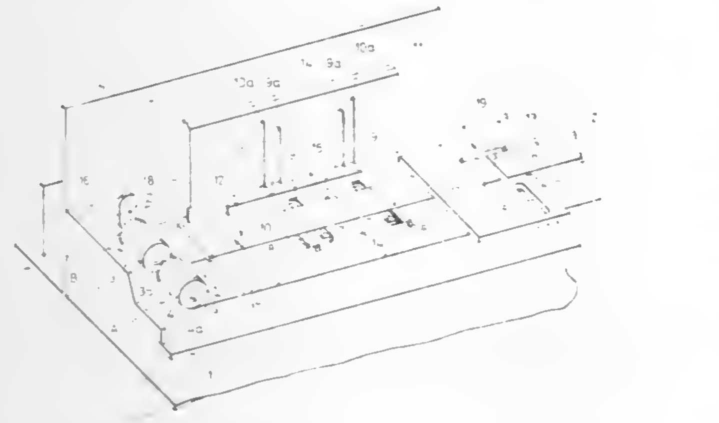
ing heat transferred from the synthetic coating to the cardboard blank from raising the temperature of a predetermined inner portion of the cardboard blank beyond a selected value, which if exceeded could detrimentally affect the cardboard blank, said inhibiting means including a first cooling member positioned alongside a peripheral edge of the cardboard blank and adjacent the synthetic coating disposed on said one surface of the cardboard blank and a second cooling member positioned alongside a peripheral edge of the cardboard blank and adjacent the synthetic coating disposed on said other surface of the cardboard blank, each of said first and second cooling members having conveying means for conveying coolant through said first and second cooling members.





4,368,096
PHOTOGRAPHIC FILM SPLICER

Kazuhiko Kobayashi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 25, 1981, Ser. No. 296,022
Claims priority, application Japan, Aug. 29, 1980, 55-119207
Int. Cl.³ B65H *21/02*
U.S. Cl. 156—502 **7 Claims**



1. A photographic film splicer for splicing the rear edge of a preceding film with the front edge of a succeeding film, each of said films being in the form of a roll having its rear edge fastened to a respective spool, and each of said films having its front and rear edges cut when removed from said respective spool, the improvement comprising:

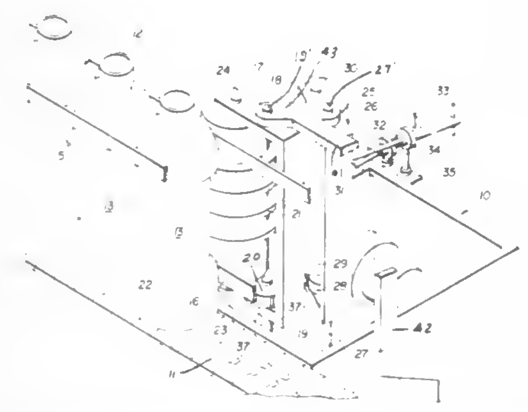
a first film handling station including cutting means for cutting the front edge of said succeeding film while said succeeding film extends from its respective spool in a first direction;

a second film handling station positioned in parallel to said first film handling station and including second cutting means for cutting the rear edge of said preceding film, and further including splicing means for splicing said preceding and succeeding films; and

transverse film shifting means for moving said succeeding film transversely of said first direction from said first film handling station to said second film handling station.

4,368,097
ADJUSTABLE GLUE APPLICATOR ROLLS FOR CONTAINER LABELING MACHINE

Henry W. Clowe, 3600 Old Canton Rd., Jackson, Miss. 39216
Filed Sep. 3, 1981, Ser. No. 299,077
Int. Cl.³ B05C *1/06*
U.S. Cl. 156—578 **7 Claims**



1. In a glue pot assembly for a container labeling machine of the type wherein upright containers having recessed and non-recessed labeling areas of substantially different diameters are moved in succession past a gluing station, a glue pot fixedly disposed at the gluing station, glue applicator and fountain rolls on the glue pot and having spaced parallel upright axes, separate yokes rotatably supporting the glue applicator and fountain rolls for independent adjustment horizontally relative to each other and relative to the labeling areas of the containers, spaced parallel upright axis drive shafts on the glue pot also forming pivot elements for the yokes, separate and independent drive gearing for the glue applicator and fountain rolls including two driving gears on said drive shafts coaxial with the yoke pivot axes, the drive shafts having their parallel upright axes spaced from the rotational axes of the glue applicator and fountain rolls on said yokes, and independently operable adjusting screw shafts for the yokes on the glue pot across the pivot axes of the yokes and having swiveled connections with the yokes and with the glue pot, whereby the glue applicator and fountain rolls can be swung with the yokes independently on the pivot axes of the yokes while being continuously driven in rotation through usbstantial arcs of movement sufficient to maintain engagement of the glue applicator roll with either the recessed or non-recessed labeling areas of containers.

4,368,098
EPITAXIAL COMPOSITE AND METHOD OF MAKING

Harold M. Manasevit, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Continuation of Ser. No. 385,028, Aug. 2, 1973, abandoned, which is a continuation of Ser. No. 64,835, Oct. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 705,213, Feb. 13, 1968, abandoned. This application Apr. 7, 1978, Ser. No. 894,367
Int. Cl.³ C30B *25/02, 25/10, 25/18;* H01L *21/205*
U.S. Cl. 156—606 **72 Claims**

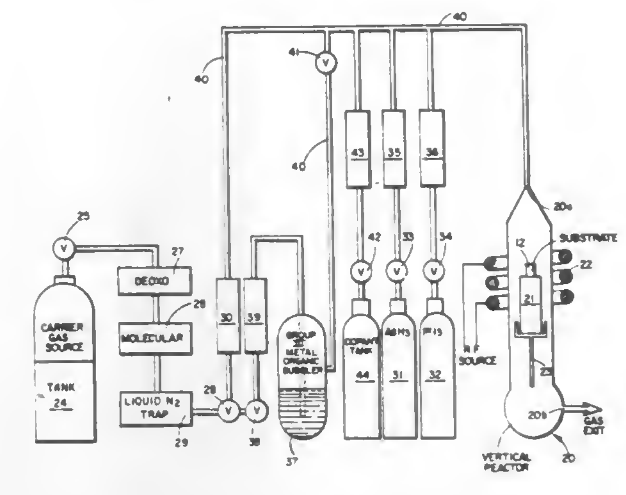
1. An organo-metallic process for producing an epitaxial film of Group III-V semiconductor disposed on a single crystal substrate, said process employing an open reactor and comprising the steps of:

heating said substrate in said open reactor,

introducing into said open reactor a fist material containing a hydride or halide-free alkyl compound of at least one Group V constituent of said semiconductor, and, as a second material, at least one halide-free alkyl compound containing at least one of the Group III constituents of said semiconductor,

and

exhausting said open reactor to pressure not greater than one atmosphere.



4,368,099
DEVELOPMENT OF GERMANIUM SELENIDE PHOTORESIST

Paul G. Huggett, Zurich, and Klaus Frick, Herrliberg, both of Switzerland, assignors to RCA Corporation, New York, N.Y.
Filed Feb. 5, 1982, Ser. No. 346,180
Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—628 **7 Claims**

1. In a method of forming a pattern in a resist layer of germanium selenide on a substrate comprising:

(a) coating the germanium selenide layer with a photosensitive silver-containing material;

(b) irradiating a portion of the silver-containing coating to provide a corresponding silver-doped portion of the germanium selenide layer;

(c) removing the non-irradiated portion of the silver-containing coating; and

(d) plasma etching the germanium selenide layer with an etchant gas to remove that portion not doped with silver,

the improvement comprising utilizing as the etchant gas in step (d) sulfur hexafluoride.

4,368,100
PROCESS FOR PRODUCING A SPRAY-DRIED AGGLOMERATED SOLUBLE COFFEE PRODUCT

Richard R. Pyves, Pointe Claire, and James W. Jeffery, Agincourt, both of Canada, assignors to General Foods Inc., Toronto, Canada
Continuation-in-part of Ser. No. 51,642, Jun. 25, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 239,946
Claims priority, application Canada, Jun. 28, 1978, 306392
Int. Cl.³ B01D *1/18*
U.S. Cl. 159—48.1 **9 Claims**

1. A process for producing a spray dried agglomerated soluble coffee product which comprises:

(a) providing an aqueous soluble coffee extract having flow rate fluctuations which are controlled to uniformly cycle between set maximum and minimum flow rates;

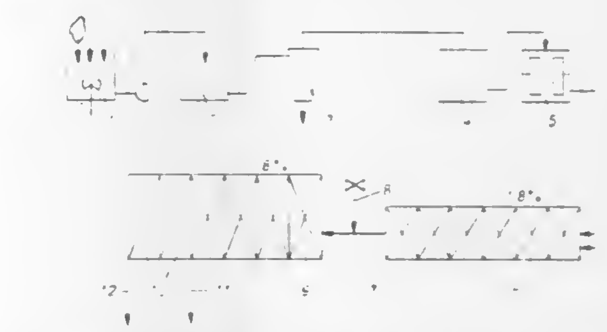
(b) combining an inert gas at substantially constant pressure with said extract, said inert gas having a flow rate which is directly out of phase with said extract flow rate;

(c) feeding the combination of said extract and inert gas through a spray nozzle in a drying tower thereby producing a spray of extract from the nozzle of minimum droplet size and a spray angle of maximum area of coverage when the extract flow rate is at its maximum and a spray of extract from the nozzle of maximum droplet size and a spray pattern having a significantly smaller conical spray angle when the flow rate is at its minimum; and

(d) producing coffee agglomerates when smaller coffee droplets impact larger coffee droplets in the drying tower.

4,368,101
METHOD AND APPARATUS FOR THE PRODUCTION OF A SUSPENSION OF FIBROUS MATERIAL MADE FROM WASTE-PAPER

Theodor Bähr, and Lothar Pfalzer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany
Filed Nov. 20, 1980, Ser. No. 208,789
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947862
Int. Cl.³ D21B *1/32;* B21C *5/02*
U.S. Cl. 162—4 **7 Claims**



1. A method for producing a fibrous suspension from waste-paper, comprising:

dissolving the waste-paper for forming a suspension of waste-paper, cleaning the resulting pulp suspension, stain removal of the cleaned pulp suspension, and flotation of the pulp suspension, said flotation comprising:

floating pulp suspension of a relatively thicker first consistency serially through a first series of flotation cells;

thinning the pulp suspension, by the addition of thinning liquid medium, to a

second thinner consistency thinner than the first consistency, and

floating the now thinner consistency pulp suspension serially through at least one further series of flotation cells.

4. Apparatus for producing a suspension of fibrous material from waste-paper comprising;

means for dissolving the waste-paper into a fibrous pulp suspension, cleaning means for cleaning the fibrous pulp suspension, a stain removal device for the cleaned pulp suspension, and flotation means for following the stain removal device;

the flotation means comprising;

a first series of flotation cells, arranged so that the pulp suspension is serially floated in each cell of the first series for a respective time interval;

two separate series of second flotation cells, and each of the separate series of second flotation cells following and being connected to the end of the first series of flotation cells, whereby the flow of pulp suspension from the first series of cells is divided among the separate series of second flotation cells; each of the second series of flotation cells being arranged so that the pulp suspension is serially floated in each of the cells of each of the second series for a respective time interval;

means for delivering a thinning liquid medium to the pulp suspension between the first and each of the second series of flotation cells for thinning the consistency of the pulp suspension for causing the pulp suspension to have a thinner consistency in each of the second series of cells than in the first series of cells.

4,368,102
APPARATUS FOR REGULATING PULP DENSITY

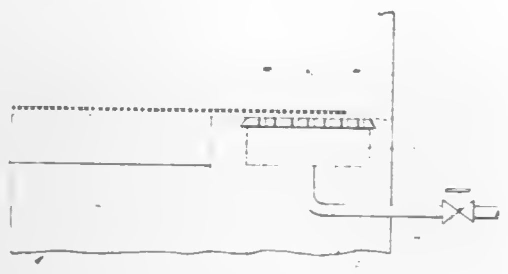
Ernst Schöffmann, and Alexander Czernuch, both of Reutlingen, Fed. Rep. of Germany, assignors to Bruderhaus Maschinen GmbH, Reutlingen, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,405

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946778

Int. Cl.^{3} D21F *1/08, 1/48*

U.S. Cl. 162—258 **4 Claims**



1. Apparatus for regulating pulp density in a machine which forms a continuous web from a fibrous suspension, comprising:

a moving screen having lateral edges and moving in a direction through the machine;

dewatering boxes over which the moving screen moves, said dewatering boxes having side walls which contain at least one chamber arranged below at least one lateral edge of the moving screen;

at least one perforated plate arranged between the moving screen and the chamber, said perforated plate forming an upper wall of the chamber and including water discharge openings therethrough, said perforated plate forming an element of a support surface for the moving screen and said perforated plate further being disposed beneath the at least one lateral edge of the moving screen;

at least one water supply line communicating through a bottom wall of said chamber; and

means for regulating the water discharge of said water supply line into said chamber.

4,368,103
COAL CARBONIZATION AND/OR GASIFICATION PLANT

Klaus Weinzierl, Dortmund, and Kurt Tippmer, Recklinghausen, both of Fed. Rep. of Germany, assignors to Vereinigte Elektrizitats-Werke Westfalen AG and Firma Carl Still GmbH & Co. KG, both of, Fed. Rep. of Germany

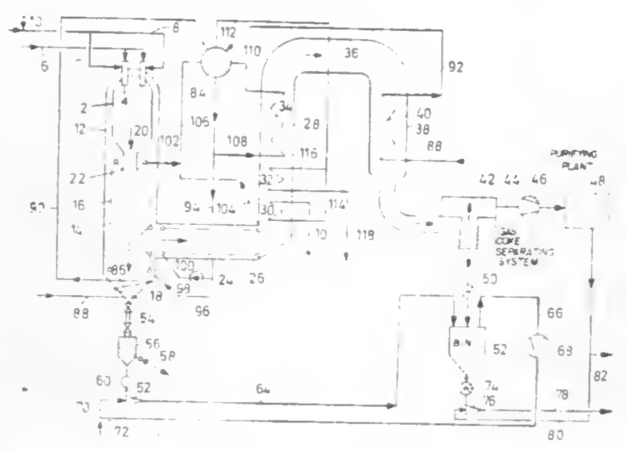
Filed Apr. 28, 1980, Ser. No. 144,017

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918859

Int. Cl.^{3} C10B *49/12;* **C10J** *3/52, 3/84, 3/86*

U.S. Cl. 202—99 **8 Claims**

1. In a plant for coal carbonization or gasification, or both, of the type having a vessel with reaction compartment, at least one burner at the top of the reaction compartment for the partial combustion of finely-ground coal at a temperature above the ash-melting temperature to produce a product of gas, and solid components composed of coke dust and slag or ashes, the burner being operable to issue a current of the gas and solid components into the reaction compartment, the compartment having a bottom opening for the discharge of gas-coke dust from the compartment, and means for separating the product gas from the solid components, the improvement comprising said vessel having a lower chamber in said vessel underneath said compartment adjacent to the opening, said vessel having a vertical wall portion with a heating surface surrounding said lower chamber, wherein said heating surface is a radiation heating surface, and a slag trap adapted to trap slag arranged in the bottom of said chamber, an uncooled refractory lining said reaction compartment and wherein said reaction compartment is substantially cylindrical with a height-diameter ratio of 2:1 to 3:1 and at least two burners with oppositely directed spirals are arranged at the top of said reaction compartment, said burners being operative to pass the current of gas and solid components therefrom such that any radial components of the gas-solid current issuing from the burners cancel each other out, said heating surface being a radiation heating surface further comprising deflection means for passing product gas and coke dust from said chamber, said deflection means communicating with said chamber between a bottom part of said heating surface and said slag trap, a nozzle-shaped outlet member at said bottom opening, and a conical transition between said reaction compartment and the outlet member, having an angle of 20 to 40 degrees, the ratio of the cross-section of said chamber to the cross-section of the reaction compartment outlet ranging from 1.5:1 to 5·1, the ratio of the reaction compartment diameter to the burner outlet diameter ranging from 5-1 to 2-1, said bottom opening having a cross-section dimension of about a quarter to a third of the cross-section of the reaction compartment, and said compartment having a length sufficient to provide a residence time of the gas-solid current of one to two seconds.



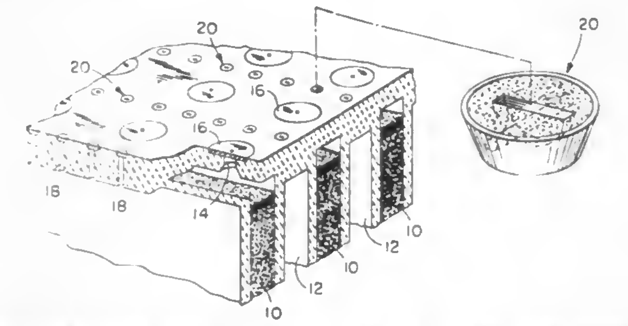
4,368,104
INSPECTION HOLE COVER FOR COKE OVEN

William L. Winter, 10404 S. Highland Rd., Garfield Heights, Ohio 44125

Continuation-in-part of Ser. No. 76,340, Sep. 17, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,372

Int. Cl.^{3} C10B *25/00, 25/24*

U.S. Cl. 202—248 **14 Claims**



1. An inspection hole cover for coking ovens comprising a bowl-shape metal shell having relatively low magnetic properties, said shell having a base and an annular sidewall tapering outwardly from said base, said shell being open at its upper end, and a high temperature resistant, non-magnetic insulating filler in said shell.

4,368,105
ELECTROLYTIC SOLUTION FOR KARL FISCHER COULOMETRIC TITRATION

Kaname Muroi, Machida, and Hiroko Fujino, Yamato, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Japan

Filed Jan. 21, 1981, Ser. No. 226,732

Claims priority, application Japan, Feb. 12, 1980, 55-15735

Int. Cl.^{3} G01N *27/44*

U.S. Cl. 204—1 T **9 Claims**

1. An electrolytic solution for Karl Fischer coulometric titration the major proportion being comprised of chloroform and an alkylene carbonate, as solvent, and the remainder being iodine or an iodide, sulfur dioxide, pyridine and a small amount of an alcohol.

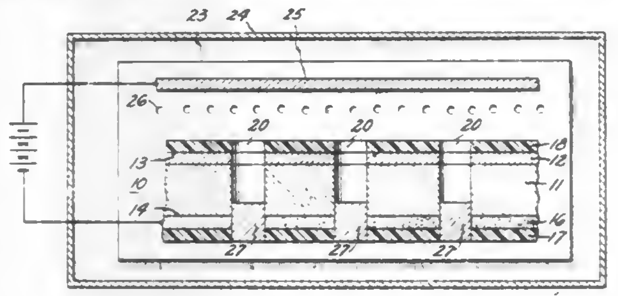
4,368,106
IMPLANTATION OF ELECTRICAL FEED-THROUGH CONDUCTORS

Thomas R. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 200,770, Oct. 27, 1980, abandoned. This application Jul. 21, 1981, Ser. No. 285,656

Int. Cl.^{3} C25D *5/02, 7/04*

U.S. Cl. 204—15 **22 Claims**



1. A process for implanting solid, dense, metallic feed-through conductors comprising the steps of:

(a) providing a body, said body having top and bottom major opposed surfaces substantially parallel to each other, an outer peripheral edge area interconnecting said major surfaces, and a plurality of holes therethrough, one of said major surfaces being overlaid by at least a thin film of a conducting metal, said metal being one selected from the group consisting of gold, copper, nickel, chromium, and mixtures and alloys thereof;

(b) positioning said body in a tank parallel to an anode such that said thin film on said major surface faces away from said anode and a space is formed between said body and said anode, the metal of said anode being the same as the metal of said solid, dense, metallic feed-through conductors to be implanted;

(c) surrounding said body and said anode with an electroforming solution, said electroforming solution having therein at least the metal of said solid, dense, metallic feed-through conductors to be implanted;

(d) initiating a flow of bubbles of an inert gas in said space between said body and said anode;

(e) establishing a flow of direct current through said solution, between said anode and said thin film;

(f) forming a solid film bridge of metal across the bottoms of said holes; and

(g) growing solid, dense, metallic implants in said holes from said solid film bridge at the bottoms of said holes to the tops of said holes.

4,368,107
METHOD OF SURFACE TREATMENT OF POROUS MATERIAL

Masatsugu Maejima; Koichi Saruwatari, and Kazuo Isawa, all of Tokyo, Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272.658

Claims priority, application Japan, Jun. 16, 1980, 55-81051

Int. Cl.^{3} C25D *5/00, 5/34, 5/48, 5/50*

U.S. Cl. 204—24 **32 Claims**

1. A method of the surface treatment of a porous material which comprises the step of electrolyzing the porous material in an electrolytic bath composed of an aqueous solution of at least one salt selected from the group consisting of alkali metal thiotungstate, alkali metal thioantimonate, alkali metal thiostannate, alkali metal thiocuprate, alkali metal thioarsenate, alkali metal thioaurate, alkali metal thioplatinate, alkali metal thioniobate, alkali metal thiovanadate, alkaline earth metal thiotungstate, alkaline earth metal thioantimonate, alkaline earth metal thiostannate, alkaline earth metal thiocuprate, alkaline earth metal thioarsenate, alkaline earth metal thioaurate, alkaline earth metal thioplatinate, alkaline earth metal thioniobate, alkaline earth metal thiovanadate, ammonium thiotungstate, ammonium thioantimonate, ammonium thiostannate, ammonium thiocuprate, ammonium thioarsenate, ammonium thioaurate, ammonium thioplatinate, ammonium thioniobate and ammonium thiovanadate, to thereby impregnate the porous material with the metallic sulfide.

4,368,108
PROCESS FOR ELECTROLYTIC RECOVERY OF GALLIUM OR GALLIUM AND VANADIUM FROM ALKALINE LIQUORS RESULTING FROM ALUMINA PRODUCTION

Georgy M. Rubinshtein, ulitsa Uralskaya, 51, kv. 3, Kamensk-Uralsky; Sergei P. Yatsenko, ulitsa Lunacharskogo, 182, kv. 65; Valery N. Diev, ulitsa Malysheva, 135, kv. 6, both of Sverdlovsk; Tatyana M. Zlokazova, ulitsa Musy Dzhalilya, 15, korpus 1, kv. 323, Moscow; Eduard S. Fomin, ulitsa Isetskaya, 7, kv. 12, Kamensk-Uralsky; Ruslan N. Moskov, ulitsa Tsvilinga, 2, kv. 4; Anastasia D. Grigorieva, ulitsa Minometchikov, 38, kv. 22, both of Sverdlovsk; Ivan V. Davydov, Nalichnaya ulitsa, 40, korpus 2, kv. 148, Leningrad; Evgeny N. Starkov, ulitsa Uralskaya, 51, kv. 4, Kamensk-Uralsky; Vladimir I. Ovsyannikov, ulitsa Belinskogo, 8, kv. 26, Kamensk-Uralsky; Arnold F. Eremeev, ulitsa Stroitelei, 22, kv. 6, Kamensk-Uralsky, and Vladimir N. Lavrenchuk, ulitsa Oktyabrskaya, 75, kv. 6, Kamensk-Uralsky, all of U.S.S.R.

PCT No. PCT/SU79/00033, § 371 Date Jan. 23, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. WO80/02701, PCT Pub. Date Dec. 11, 1980

PCT Filed May 29, 1979, Ser. No. 232,035

Int. Cl.^{3} C25C *1/24*

U.S. Cl. 204—43 R **14 Claims**

1. A process for electrolytic recovery of gallium or gallium and vanadium from alkaline liquors resulting from the production of alumina by electrolysis on solid electrodes, comprising introducing a metal into said alkaline liquor in an amount of about 1 to 10 times by weight relative to the weight of gallium in said liquor and then subjecting said alkaline liquor containing said metal to electrolysis at a cathodic current density of from about 200 to 1,000 A/m.^{2}, a voltage of from about 3.4 to 4.5 V, and a temperature of from about 28° to 37° C., wherein the metal preliminarily introduced into the alkaline liquor is effective to form upon electrolysis of said alkaline liquor, an alloy with gallium which is not passivated under the conditions of electrolysis.

4,368,109

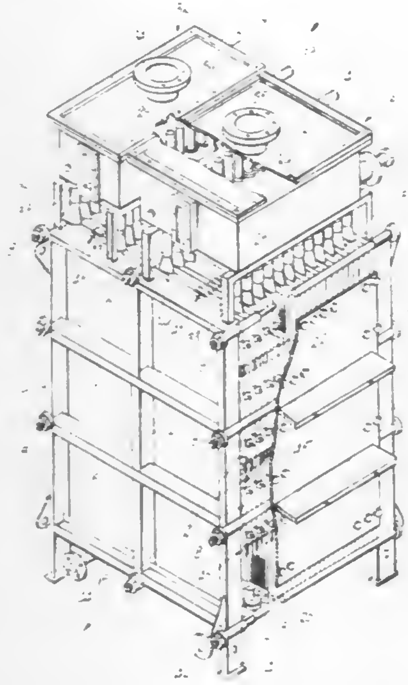
ELECTROLYTIC CELL WITH INTER-ELECTRODE SPACER MEANS

James M. Ford, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 204,127, Nov. 5, 1980. This application Jan. 2, 1981, Ser. No. 222,096

Int. Cl.^{3} C25B *9/00, 11/00, 13/08*

U.S. Cl. 204—253 **22 Claims**



1. In an electrolytic cell having a plurality of adjacently positioned electrodes in which electrolyte fluid is contained comprising at least:

(a) a first frame having a first generally planar side and an opposing second generally planar side to which are respectively connected a first generally planar electrode face and a second generally planar electrode face, at least the opposing second side defining a first plane, the first side and opposing second side further being connected by a first end portion defining the exterior of the first frame;

(b) a second frame having a first generally planar side and an opposing second generally planar side to which are respectively connected a third generally planar electrode face and a fourth generally planar electrode face, at least the first side defining a second plane adjacent the first plane and being generally parallel thereto, the first side and opposing second side further being connected to a second end portion defining the exterior of the second frame;

(c) separator means for separating the first frame from the second frame having a first surface adjacent the second electrode face and an opposing second surface adjacent the third electrode face;

(d) first sealing means contacting the second side of the first frame and the first surface of the separator means, the first sealing means having a contactable surface of a first predetermined surface area in contact with the separator means;

(e) second sealing means contacting the first side of the second frame and the second surface of the separator means having a first contactable surface with a first predetermined surface area adjacent the first side of the second frame and a second contactable surface with a second predetermined surface area contacting the separator means, the second predetermined surface area being less than the first predetermined surface area of the first sealing means;

(f) at least a first outrigger block fastened to the exterior of the first frame and at least a second outrigger block fastened to the exterior of the second frame;

(g) spacer means of predetermined thickness positioned against and retained by the at least first and second outrigger blocks between the first plane and the second plane removably connected to the first frame and the second frame thereby defining a uniform gap equal to the predetermined thickness of the spacer means; and

(h) clamping means for pressing the frames together against the sealing means and the separator means so that the first frame is separated from the second frame by a distance that is no less than the uniform gap to form a substantially fluid-tight seal between the frames.

4,368,110

SUBSTITUTED COBALT OXIDE SPINELS

Donald L. Caldwell, and Mark J. Hazelrigg, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1981, Ser. No. 247,430

Int. Cl.^{3} C25B *11/06*

U.S. Cl. 204—290 F **10 Claims**

1. An electrically-conductive composite comprising an electrically-conductive substrate having, on at least a portion thereof, a conductive spinel coating, said coating comprising

a metal cation substituted cobalt oxide spinel structure conforming substantially to the empirical formula $M_xZ_yCo_{3-(x+y)}O_4$,

where M represents at least one metal of the Groups consisting of IB, IIA, and IIB of the Periodic Table,

where Z represents at least one other metal of the Groups consisting of IB, IIA, and IIB of the periodic table,

where x is an integer greater than zero, but less than 1,

where y is an integer greater than zero, but less than 1,

where the sum of x and y is greater than zero, but not greater than 1,

and where the amounts of M, Z, and Co are sufficient to substantially satisfy the valence requirements of oxygen in the spinel structure.

4,368,111

OIL RECOVERY FROM TAR SANDS

James M. Siefkin, and Dwight D. Boesiger, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 17, 1980, Ser. No. 217,350

Int. Cl.^{3} C10G *1/04*

U.S. Cl. 208—11 LE **4 Claims**

1. A process for the extraction and recovery of oil from oil wet tar sands comprising:

(a) introducing an oil wet tar sand, a surfactant, said surfactant being an inorganic polymeric complex having the general structural formula—$[M'M''(NH—H)_xM'')]_n$ wherein M′ represents an alkali metal, M″ represents one or more non-alkaline metals of Group I–VIII of the Periodic Table, x represents the total valence of M′ and M″ and n represents the numbers of repeating units in the inorganic polymeric complex, and a fluid selected from the group consisting of at least one of water, steam, air or mixtures thereof into a fluidization zone;

(b) introducing at least one of air, steam or a combination thereof into said fluidization zone so as to establish vigorous fluidization conditions in said fluidization zone thereby forming a multiphase mixture therein comprising a solid phase consisting essentially of sand particles, at least one liquid phase which is one of oil or water, and an oil containing froth phase;

(c) withdrawing said multiphase mixture from said fluidization zone;

(d) introducing said multiphase mixture into a separation zone wherein said multiphase mixture is separated into a sand phase and an oil containing liquid phase;

(e) separating said oil containing liquid phase into an oil phase and an aqueous phase; and

(f) recovering said oil phase as a product of the process.

4,368,112

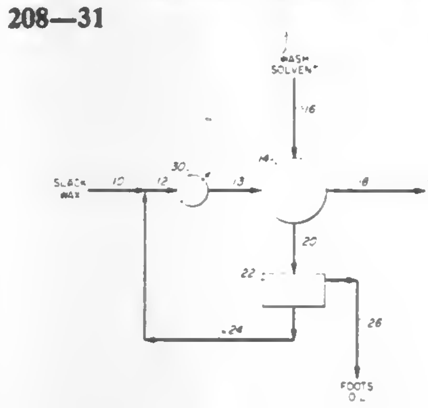
SOLVENT RECOVERY FROM FOOTS OIL USING MODIFIED REGENERATED CELLULOSE MEMBRANES

John A. Thompson, Wyoming; David H. Shaw, Camlachie, both of Canada, and David A. Gudelis, Chatham, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 109,300, Jan. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 973,967, Dec. 28, 1978, abandoned. This application May 13, 1981, Ser. No. 263,115

Int. Cl.^{3} C10G *73/08*

U.S. Cl. 208—31 **25 Claims**



1. A process comprising:

(a) warming up a mixture of foots oil containing slack wax and solvent to dissolve at least a portion of the foots oil to form a slurry comprising solid particles of wax and a solution of foots oil and solvent;

(b) passing said warm slurry to solid-liquid separation means to separate the solid particles of wax from the foots oil solution; and

(c) contacting at least a portion of said foots oil solution, under pressure, with one side of at least one semi-permeable membrane made from regenerated cellulose film to form a permeate richer in said solvent than said mixture and a retentate leaner in said solvent than said solvent than said mixture, wherein said semipermeable membrane is prepared from a water-containing hydrophilic regenerated cellulose membrane by sequentially permeating through said water-containing membrane, under a differential pressure across the membrane, a series of solvents of decreasing polarity wherein adjacent solvents in the series exhibit bulk liquid-liquid miscibility with each other and wherein the last solvent exhibits bulk liquid-liquid miscibility with the dewaxing solvent to be permeated through the membrane.

4,368,113

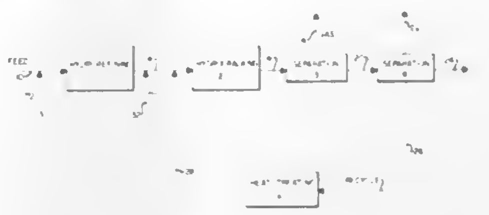
HYDROCARBON HYDROCRACKING PROCESS

William E. Winter; Mafer E. Tunison, and David W. Staubs, all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 31, 1981, Ser. No. 297,721

Int. Cl.^{3} C10G *45/02, 69/00*

U.S. Cl. 208—89 **9 Claims**



1. In a hydrocracking process wherein a heavy hydrocarbonaceous feed is contacted with an added hydrogen-containing gas in the presence of a hydrocracking catalyst at hydrocracking conditions in a hydrocracking zone to produce a hydrocracked oil product, separating from said hydrocracked oil product a heavy hydrocarbonaceous bottoms fraction and recycling at least a portion of said heavy hydrocarbonaceous bottoms fraction to said hydrocracking zone, the improvement which comprises: prior to said recycling step, heat-treating said portion of said heavy hydrocarbonaceous bottoms fraction in a heat-treating zone in the absence of added hydrogen and in the absence of a catalyst at conditions below which significant cracking of said portion of bottoms fraction occurs, said conditions including a temperature in the range of about 500° to about 720° F., for a period of time of at least 0.25 hour.

4,368,114

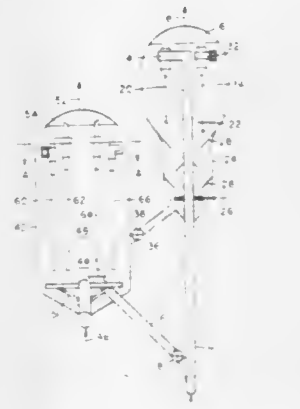
OCTANE AND TOTAL YIELD IMPROVEMENT IN CATALYTIC CRACKING

Arthur W. Chester, Cherry Hill; William E. Cormier, Jr., Clarksboro, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 100,585, Dec. 5, 1979, Pat. No. 4,309,279, which is a continuation-in-part of Ser. No. 50,588, Jun. 1, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,851

Int. Cl.^{3} C10G *11/05*

U.S. Cl. 208—120 **16 Claims**



1. In a process for catalytic cracking of petroleum fractions in the presence of a conventional cracking catalyst comprising at least about 5 weight percent of a catalytically active component and under cracking conditions, the improvement wherein separate additive catalyst comprising a zeolite characterized by a Constraint Index of from about 1 to about 12 and a silica to alumina mole ratio greater than about 12 is added to said conventional cracking catalyst in the cracking process in an amount which provides the zeolite component of said separate additive catalyst at from about 0.01 weight percent to about 1.0 weight percent of the conventional cracking catalyst in the cracking process.

4,368,115

CATALYSTS COMPRISING LAYERED CHALCOGENIDES OF GROUP IVB-GROUP VIIB PREPARED BY A LOW TEMPERATURE NONAQUEOUS PRECIPITATE TECHNIQUE

Russell R. Chianelli, North Branch; Theresa A. Pecoraro, Middletown, both of N.J., and Martin B. Dines, Santa Ana, Calif., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 973,715, Dec. 26, 1978, abandoned, which is a continuation of Ser. No. 797,012, May 16, 1977, abandoned. This application Mar. 11, 1981, Ser. No. 242,640

Int. Cl.³ C10G *45/08*

U.S. Cl. 208—215 **85 Claims**

1. In a process for the hydrodesulfurization of hydrocarbon feed streams wherein said hydrocarbon feedstreams are contacted with a catalyst at a temperature and pressure and in the presence of hydrogen or a hydrogen donor solvent and under conditions sufficient to effect the hydrodesulfurization of the hydrocarbon feedstream, the improvement comprising using as the catalyst a layered material of the formula MX_y wherein M is a transition metal selected from the groups consisting of Group IVb, Vb, VIb, VIIb metals, X is a chalcogen selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof and y is a number ranging from about 1.5 to about 3 which material is prepared by reacting neat a Group IVb to VIIb metal salt, with a source of sulfide, selenide, or telluride ions, said source being selected from the group consisting of Li_2X, Na_2X, K_2X, NaHX, LiHX, KHX, $(NH_4)HX$, $(NH_4)_2X$, $(RNH_3)_2X$, $(RR'NH_2)_2X$, $(RR'R''NH)_2X$ wherein R, R' and R'' are the same or different C_1–C_{20} alkyl group and C_6–C_{20} aryl group, and X is the chalcogen selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof, said reaction being conducted at a temperature of from −78° to 400° C. for a time sufficient for reaction to occur.

4,368,116

POLYHYDROXY FATTY ACIDS COLLECTOR-FROTHERS

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Filed Mar. 9, 1981, Ser. No. 241,560

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166 **1 Claim**

1. In concentrating by froth flotation of metallic ores selected from the group of oxide ores mixed with gangue minerals selected from the group of silica, silicates, and the like acid minerals which includes the subjecting of said ore material when finely ground to froth flotation process; the step of adding to the mineral slurry an amount of the order of 0.1 kg to 0.5 kg per ton of ore treated potassium salts of polyhydroxy fatty acids; said polyhydroxy fatty acids selected from the class consisting of 2 to 4 hydroxyl groups designated as: dihydroxystearic acid, trihydroxystearic acid, tetrahydroxystearic acid, dihydroxyoleic acid, tetrahydroxyoleic acid; said acids are applied in froth flotation process as potassium salts; being collector-frothers said potassium salts of said polyhydroxy fatty acids exhibit coarse-grain flotation of oxide minerals augmenting the non-responsiveness of gangue minerals, thus producing high grade concentrates of responsive metallic oxide minerals.

4,368,117

PROCESS FOR THE SELECTIVE FROTH-FLOTATION OF SULFIDIC, OXIDIC AND SALT-TYPE MINERALS

Väinö V. H. Hintikka, Vanha Ulvila, Finland, assignor to Outokumpu Oy, Helsinki, Finland

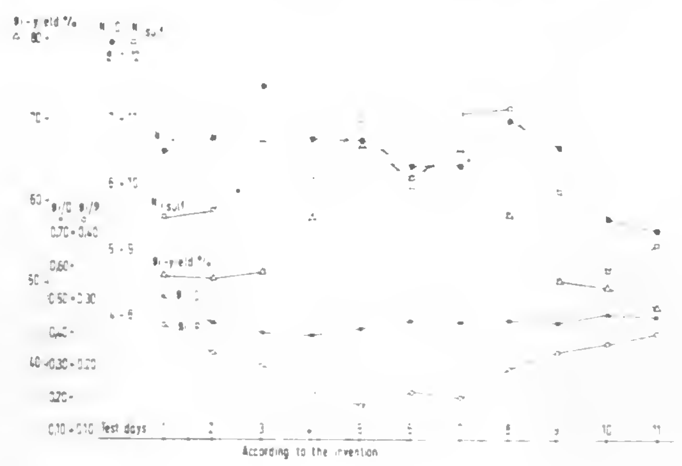
Continuation of Ser. No. 49,908, Jun. 19, 1979, abandoned. This application Feb. 18, 1981, Ser. No. 235,610

Claims priority, application Finland, Jun. 22, 1978, 781017

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—167 **5 Claims**

1. A process for the selective froth-flotation of sulfidic minerals from silicate minerals with an anionic collector agent, comprising first wet-grinding the minerals to flotation fineness to obtain a slurry of the minerals; and then conditioning and froth-flotating the slurry in acidic conditions by using as the anionic collector a xanthate or thiophosphate, and comprising using in addition to the anionic collector agent at least one additional chemical selected from the group comprising ethoxylated alklyl phenols, ethoxylated alkyl amines, ethoxylated carboxyclic acids and ethoxylated fatty alcohols, said ethoxylated compounds being longer chained than hexyl ethoxylates, to passivate active silicate mineral surfaces or weaken the hydrophobia of undesirable minerals to which the collector agent has already adhered.



4,368,118

BLOOD-AIR SEPARATOR AND FILTER

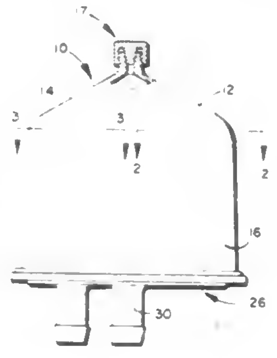
George G. Siposs, 2855 Velasco Lane, Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 109,801, Jan. 7, 1980, Pat. No. 4,344,777. This application Sep. 15, 1980, Ser. No. 186,976

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ B01D *19/00*

U.S. Cl. 210—136 **27 Claims**



1. An arterial block-gas separator and filter comprising:

a hollow body, said hollow body having an inlet and an outlet;

a stationary upwardly divergent flow control member within said body and connected to receive flow through said inlet for causing a reduction in flow velocity as the arterial blood flows upward in said upwardly divergent flow control member to fill said hollow body with arterial blood to a level above said upwardly divergent flow control member;

blood flow direction control means above said divergent flow control member comprising spirally and circumferentially directed vanes for receiving arterial blood therefrom and to radially and circumferentially direct arterial blood flow within the arterial blood substantially filling said body;

a chamber within said body above said blood flow direction control means to receive gas separated from the blood flow;

a blood filter member having an inlet side and an outlet side, said blood filter member being positioned within said hollow body so that its inlet side is towards said chamber and its inlet side receives blood which has already passed through said blood flow direction control means; and

an outlet from said body below said flow direction control means to receive blood from the outlet side of said filter and to discharge arterial blood with reduced gas content from said separator.

4,368,119

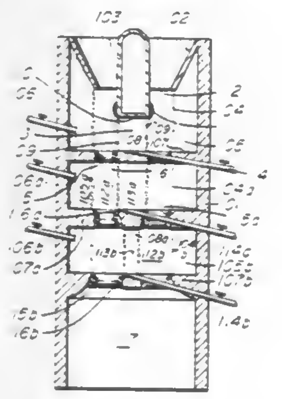
APPARATUS FOR CONTINUOUS TREATMENT OF MIXTURES

Gerald E. Wilson, London, Canada, assignor to Carpools Environmental Protection Services Limited, London, Canada

Filed Feb. 19, 1981, Ser. No. 235,825

Int. Cl.³ B01D *29/36*

U.S. Cl. 210—137 **12 Claims**



1. Apparatus for continuous treatment of a mixture comprising a fluid component and a solid particulate component, wherein a portion of the fluid component is to be separated from the particulate component by subjecting said mixture to a filtering effect, said apparatus comprising, in combination:

(a) a generally tubular housing having an inlet end portion and an outlet end portion for inlet and discharge, respectively, of said mixture;

(b) inner core means generally coaxial with and disposed centrally of said housing and defining within said housing a generally annular space axially aligned within said inlet and outlet end portions;

(c) a fluid permeable first outer core means generally axial with said housing and subdividing said generally annular space into a generally annular passage adjacent to said inner core means, and an annular chamber disposed between said outer core means and said housing and remote from said inner core means;

(d) said inner core means comprising a solid core portion generally impermeable by the fluid, and a permeable core portion defining a central chamber coextensive with and disposed downstream of said solid core portion, said solid core portion being disposed at said inlet end portion and including a convexly rounded tip section at an upstream end thereof;

(e) first filtrate discharge means adapted to selectively communicate said central chamber with the exterior of said housing;

(f) first partition means disposed at a downstream end of the central chamber and forming an end wall thereof, and second partition means disposed at a downstream end of said generally annular chamber;

(g) inlet deflector means at the inlet end portion and arranged to direct an incoming flow of the mixture to be directed into said annular passage and towards the solid core portion; and

(h) throttling means near said outlet end portion for controlling the speed of flow of said mixture through said annular passage by selectively controlling the cross-sectional area thereof at the outlet end portion.

4,368,120

EFFLUENT TREATMENT SYSTEM

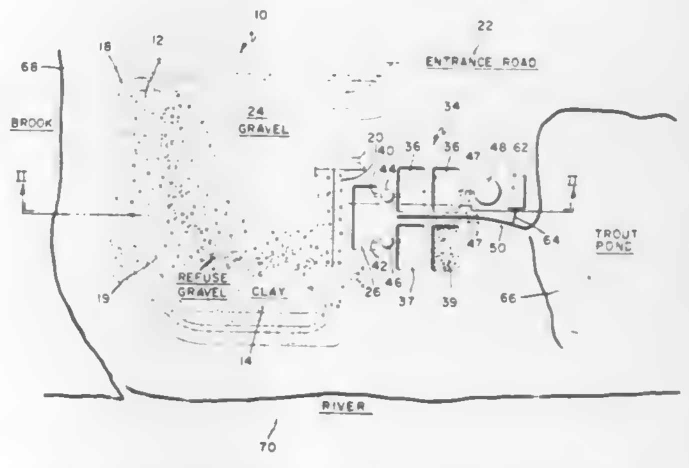
Leonard P. Martone, Worcester Rd., Barre, Mass. 01005, and Ronald L. Lavigne, Petersham, Mass., assignors to Leonard P. Martone, Barre, Mass.

Division of Ser. No. 108,418, Dec. 31, 1979, Pat. No. 4,276,164, which is a continuation of Ser. No. 936,824, Aug. 25, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 233,024

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.³ C02F *9/00*

U.S. Cl. 210—170 **7 Claims**



1. System for treating leachate effluent from refuse, comprising:

(a) a refuse basin for the reception of refuse material,

(b) a layer of substantially water-impervious material covering the inside contours of the basin,

(c) a water-impervious catch basin adjacent the refuse basin and located at a lower level than the refuse basin,

(d) means forming part of said refuse basin for allowing leachate to drain from the refuse basin to the catch basin, the means for allowing leachate to drain from the refuse basin to the catch basin including a dike along one side of the refuse basin in direct contact with the refuse in the basin and flow means joining the dike to the catch basin,

(e) water impervious first and second lagoons for effecting a treatment of refuse leachate,

(f) flow control means for selectively conveying leachate accumulated in said catch basin to said first and second lagoons, whereby a quantity of leachate may be treated in one of said lagoons while leachate is being conveyed to the other of said lagoons, and

(g) flow control means for transferring treated leachate from each lagoon to a disposal area, wherein the layers for the refuse basin, the catch basin, and the lagoons consist of an earthen material containing a substantial amount of clay.

4,368,121

DAM SPILLWAY

Jury N. Vasiliev, ploschad Vosstania, 1, kv. 60, and Evgeny P. Gladkov, 2 Sinichkina ulitsa, 22, kv. 1, both of Moscow, U.S.S.R.

Filed Feb. 10, 1981, Ser. No. 233,198

Claims priority, application U.S.S.R., Jul. 9, 1979, 2792944

Int. Cl.³ C02F *1/24*

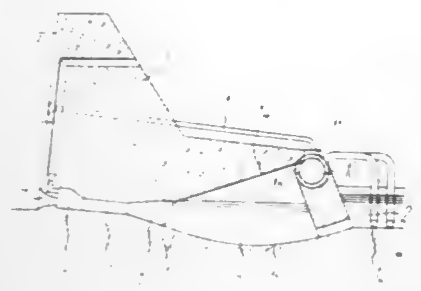
U.S. Cl. 210—170 **4 Claims**

1. A dam spillway comprising:

a forebay and an afterbay for receiving water from said forebay;

a means for compressing the atmospheric air by the passing water which includes ports for the inlet of water, a forechamber communicating with the atmosphere via air conduits, a mixing chamber and a diffuser; and

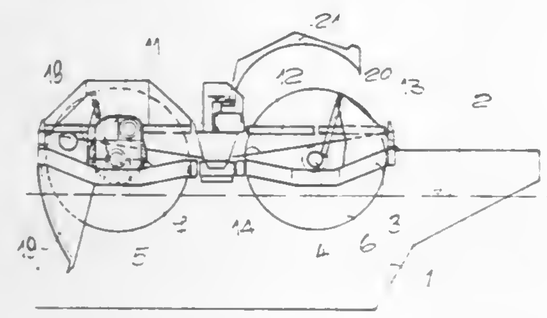
a floatation chamber connected to said means for compressing the atmospheric air by the passing water which includes a froth separating cavity in said floatation chamber, inlet and outlet portions of said froth separating cavity, said inlet portion being connected to said means for compressing the atmospheric air by the passing water, a lower wall of said froth separating cavity having the contour of a smooth concave curve; a froth remover in said floatation chamber arranged in the upper portion of said froth separating cavity and placed substantially above the water level in said afterbay in the form of a tubular member having a longitudinal slot therein facing the interior of said froth separating cavity; an assembly of water sprinkling froth suppressing sprayers in said floatation chamber fluidly communicating with said forebay and secured on said froth remover; perforated air ducts in said floatation chamber arranged in said afterbay and connected to the upper portion of said froth remover adjacent to said sprayer assembly.



4,368,122

SYSTEM FOR SEPARATING AND COLLECTING OILY MATERIALS FROM WATER EXPANSES

Giancarlo Ravagnan, Via Euganea, 33, Padova, Italy
Filed Sep. 30, 1980, Ser. No. 192,567
Claims priority, application Italy, Oct. 11, 1979, 41621 A/79
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 **10 Claims**

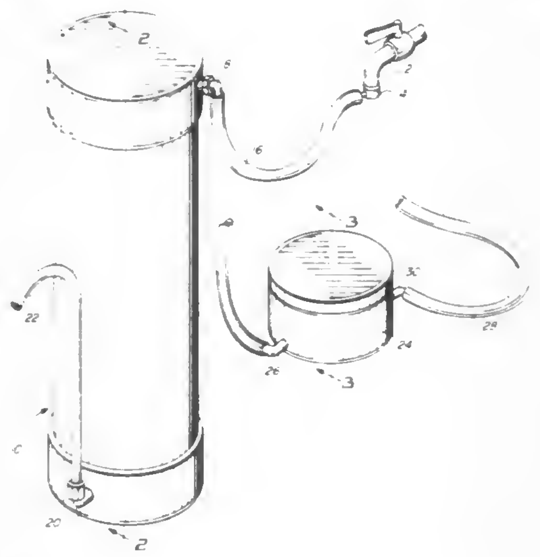


1. A system for separating and collecting oily materials from water expanses, including a frame, at least one axis of rotation supported on said frame, a plurality of rotatory disks arranged side by side on said at least one axis of rotation, said disks being adapted for operation partially immersed in the water and having each at least one pair of wiper members set to work in a controllable manner, at least one of said wiper members acting to recover the material adhered to a respective disk, means being further provided for adjusting the relative working positions of said axes of rotation, and wherein according to the improvement the system further comprises a controlling mechanism for opening and closing said wiper members with respect to the respective disk member thereby to alternatively clear said wiper members away from the disk surface and alternatively press said wiper members against said disk surface, said controlling mechanism comprising a power cylinder assembly and a transmission mechanism for transmitting the motion generated by said power cylinder assembly to said wiper members and cause selectively the opening and closing thereof, with respect to said disk surface, said transmission mechanism comprising for each wiper member a pivot pin supported on said frame and extending parallel to the respective disk member, and a lever mechanism connected to said pivot pin for imparting an angular rotation to said pivot pin thereby to selectively press said wiper members against said disk surface and respectively clear away said wiper member from said disk surface.

4,368,123

REGENERATIVE COUNTER TOP WATER CONDITIONER

Bedford F. Stanley, 4901 E. Sunrise Dr., No. 1614, Tucson, Ariz. 85718
Filed Aug. 31, 1981, Ser. No. 298,231
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ C02F *1/42*
U.S. Cl. 210—269 **5 Claims**

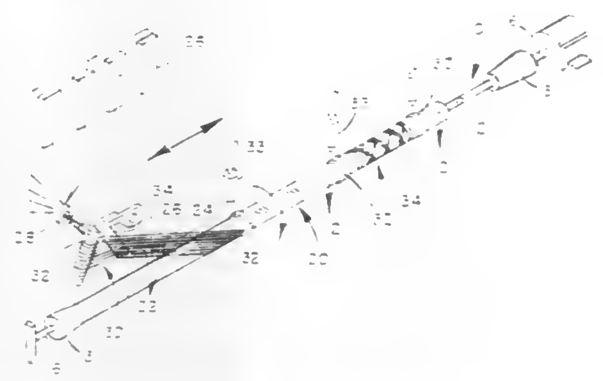


1. A regenerative portable water conditioner for counter top use, said water conditioner comprising in combination:
- (a) a container having an inlet pipe for receiving water to be conditioned, a pressure reducing nozzle connectable to a conventional faucet and flexible tubing interconnecting said nozzle with said inlet pipe and a discharge pipe for discharging conditioned water; and a spigot for directly discharging the conditioned water into a vessel for immediate use;
- (b) an inlet compartment for receiving water from said inlet pipe, said inlet compartment being defined by a top cap;
- (c) a first compartment downstream of said inlet compartment, said first compartment including a quantity of activated charcoal;
- (d) filter means disposed intermediate said top cap and said first compartment for filtering the water flowing into said first compartment;
- (e) a second compartment downstream of said first compartment;
- (f) a cylinder for defining the walls of said first and second compartments, said cylinder having one end sealingly connected to said top cap;
- (g) a quantity of regenerative anion exchange resins and a quantity of regenerative cation exchange resins disposed within said second compartment for softening and dealkalizing the water flowing through said second compartment;
- (h) first screen means for segregating said first and second compartments;
- (i) an outlet compartment for receiving the water from said second compartment and directing the water to said discharge pipe said outlet compartment being defined by a bottom cap sealingly connected to another end of said cylinder; and
- (j) second screen means for segregating said second compartment from said outlet compartment.

4,368,124

METHOD OF WINDING A MASS TRANSFER DEVICE AND PRODUCT

Robert C. Brumfield, P.O. Dr. CC, 42 Lakeshore Ter., Incline Village, Nev. 89450
Continuation-in-part of Ser. No. 28,238, Apr. 9, 1979, abandoned, and a continuation-in-part of Ser. No. 117,207, Jan. 31, 1980, abandoned. This application Jan. 2, 1981, Ser. No. 221,999
Int. Cl.³ B01D *13/04;* B65H *81/00*
U.S. Cl. 210—321.3 **16 Claims**



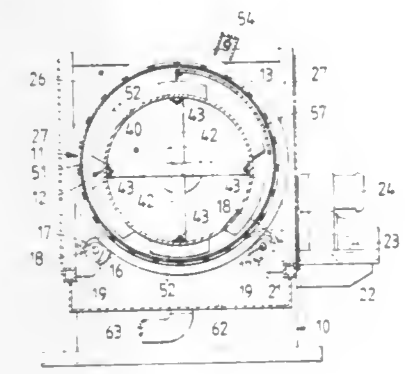
1. In a dialysis cartridge made by winding hollow groups of one or more parallel tubular fiber membranes onto a mandrel in a criss-cross pattern, the improvement comprising at least one relatively stiff, generally solid fiber positioned to lie in said winding alongside with, and generally parallel to, each said group of hollow fibers without being twisted therewith, said generally solid fiber is at least 80 percent as thick as said hollow fiber such that said hollow fibers lie without substantial pinching.

6. The method of supporting and spacing easily deformable semipermeable filaments wound on a mandrel in a criss-cross pattern to form a mass transfer device, comprising the step of concurrently winding onto said mandrel, parallel to each other in a plane generally tangential to said mandrel, and without twisting them together, at least one of said easily deformable filaments and at least one relatively stiff filament; said relatively stiff filament is at least 80 percent as thick as said semipermeable filament such that said semipermeable filaments lie without substantial pinching.

4,368,125

APPARATUS FOR EXTRACTING LIQUID FROM A SUSPENSION

James D. Murray, Birmingham, Ala., assignor to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany
Filed Aug. 3, 1981, Ser. No. 289,805
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—403 **11 Claims**



1. Apparatus for extracting liquid from a suspension comprising:
- (a) a filter media covered concentrator drum mounted for rotation about a generally horizontal axis,
- (b) an inner drum mounted for rotation about a horizontal axis within and in spaced relation to the inner surface of said concentrator drum and defining a suspension transition chamber therebetween,
- (c) means for rotating said concentrator drum and said inner drum in opposite directions,
- (d) means for introducing said suspension into said concentrator drum at one end of said transition chamber,
- (e) angularly disposed vanes carried by the outer surface of said inner drum in position to convey said suspension from said one end of said transition chamber to the other end thereof and concomitantly turn and lift said suspension to an elevation spaced below the top of said transition chamber so that said suspension reaches a maximum elevation and falls back before reaching said top of said transition chamber to increase the surface area of said suspension exposed to said filter media and provide a minimum barrier of solids previously separated from liquid,
- (f) means for cleaning said filter media while it is moving at an elevation above said maximum elevation of said suspension in said transition chamber, and
- (g) means for discharging said suspension adjacent said other end of said transition chamber.

4,368,126

METHOD OF REMOVING MOISTURE FROM HYDRAULIC SYSTEMS

Constandi A. Audeh, Princeton, N.J., and Joseph J. Dickert, Jr., Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 32,078, Apr. 23, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,120
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—663 **7 Claims**

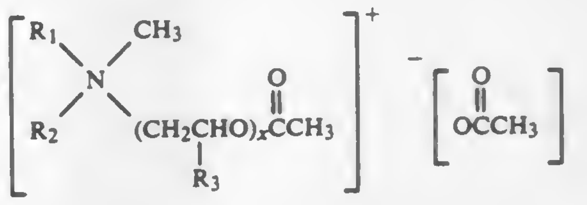
1. A method for effecting the removal of moisture and water from a closed hydraulic system wherein said system contains a master and a slave cylinder and is normally susceptible to corrosion in the presence of water comprising contacting the hydraulic fluid therein with a dessicant placed in the reservoir and at locations in the lines between said master and slave cylinders so as to provide contact between hydraulic fluid and dessicant whereby substantially all of said water contained therein is removed.

4,368,127

FABRIC SOFTENING COMPOUNDS AND METHOD

James M. Richmond, Naperville, Ill., assignor to Akzona Incorporated, Asheville, N.C.
Division of Ser. No. 54,341, Jul. 2, 1979. This application Jun. 30, 1980, Ser. No. 164,705
Int. Cl.³ D06M *13/46*
U.S. Cl. 252—8.8 **5 Claims**

1. A method for softening textiles comprising contacting said textiles with an effective amount of a compound of the formula



$$\left[R_1R_2N(CH_3)(CH_2\underset{\underset{R_3}{|}}{C}HO)_x\overset{\overset{O}{\|}}{C}CH_3 \right]^{+} \; {}^{-}\left[O\overset{\overset{O}{\|}}{C}CH_3 \right]$$

wherein R_1 and R_2 are independently selected from the group consisting of alkyl and alkenyl groups containing from about 8 to about 22 carbon atoms, R_3 is selected from the group consisting of hydrogen and methyl, and x is an integer from 1 to about 20.

4,368,128

TRICYCLIC ALCOHOLS, ETHERS AND ESTERS, PROCESS FOR PREPARING SAME AND USE THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF CONSUMABLE MATERIALS

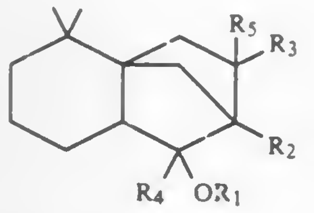
Kenneth K. Light, North Ogden, Utah; Joseph A. McGhie, Montclair, N.J.; Futoshi Fujioka, Wanamassa, N.J., and Takao Yoshida, West Long Branch, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,649, Nov. 13, 1980. This application Oct. 13, 1981, Ser. No. 311,141

Int. Cl.^{3} D06M *13/18, 13/20*

U.S. Cl. 252—8.9 **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfumed article selected from the group consisting of a solid or liquid anionic, cationic, nonionic or zwitterionic detergents; fabric softener compositions and fabric softener articles comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, a fabric softener composition or a component of a fabric softener article an aroma augmenting or enhancing quantity of at least one tricyclic compound having the structure:



wherein R_1 represents hydrogen, methyl or acetyl and wherein R_2, R_3, R_4 and R_5 are the same or different and each represent hydrogen, methyl or ethyl.

4,368,129

MULTIFUNCTIONAL LUBRICANT ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,217

Int. Cl.^{3} C10M *1/46;* **C07F** *5/02, 9/02*

U.S. Cl. 252—32.7 E **15 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease or other solid lubricant prepared therefrom and a minor effective amount of a multifunctional additive consisting of the metal salt of a partially borated, partially phosphosulfurized hydroxyl-containing ester derived from a polyol.

4,368,130

PROCESS OF PREPARING GREASE COMPOSITION

James T. Gragson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 30,965, Apr. 17, 1979, Pat. No. 4,261,840. This application Oct. 20, 1980, Ser. No. 198,518

Int. Cl.^{3} C10M *1/40*

U.S. Cl. 252—33.4 **9 Claims**

1. Process for preparing a grease composition comprising:

(a) preparing a mixture of:

(aa) an alkaline earth metal petroleum sulfonate obtained from an oil base stock having a viscosity in the range of 180 to 230 SUS at 99° C. and a viscosity index of at least 85,

(bb) an alkaline earth metal oxide or hydroxide,

(cc) an alcohol,

(dd) a lower molecular weight sulfonic acid derivative selected from the group consisting of:

derivatives corresponding to the formula RSO_3M, where M is hydrogen, ammonium, or an alkali metal and R is phenyl or alkyl substituted phenyl, said alkyl having 1 to 24 carbon atoms, and

alkali metal and ammonium salts of a petroleum sulfonic acid having an average number of carbon atoms of 6 to 30,

(ee) a lubricating oil, and

(ff) with the further proviso that the lower molecular weight sulfonic acid derivative is employed in a quantity in the range of 2 to 25 parts by weight based on 100 parts by weight of the alkaline earth metal petroleum sulfonate, and

(b) contacting the mixture with carbon dioxide optionally in the presence of a solvent

(c) removing said alcohol, solvent when employed and any water from the mixture and recovering said grease composition.

4,368,131

COMPOSITION FOR USE IN A MAGNETICALLY FLUIDIZED BED

Ronald E. Rosenweig, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 943,384, Sep. 18, 1978, abandoned. This application Dec. 19, 1980, Ser. No. 218,087

Int. Cl.^{3} B01J *21/04, 35/02*

U.S. Cl. 252—62.55 **11 Claims**

1. As a composition of matter, a particulate material which can be oriented within, and formed into a magnetically stabilized fluidized bed to provide high magnetization at a low applied field which comprises particles of geometrically elongate shape which have a major axis at least 1.2 times the length of the minor axis, the particles being of average diameter (minor axis) ranging from about 10 μm to about 4000 μm and contain a nonferromagnetic component, composited with a single elongated ferromagnetic component, the ferromagnetic component being multidomain, having dimensions of at least 1 μm in all directions, and having a length:diameter (L/D) ratio of at least 2 but not more than 17.3, the nonferromagnetic component, being comprised of alumina within which the ferromagnetic component is dispersed as an inclusion within the interior of the composite particles and aligned with the major axis of said particles, the ferromagnetic component constituting at least 0.5%, but not more than $3/2(L/D)^2$, of the total volume of each particle, where the L/D ratio is the ratio of the longest dimension of the ferromagnetic component relative to the shortest dimension, and the particles can, in said magnetically stabitized fluidized bed rotate, or turn to line up the long dimesion of the ferromagnetic component parallel to the direction of the field and a short dimension perpendicular to the direction of the field, wherein a catalytically effective amount of a catalytically active metal is dispersed on the surface of the composite particles and the composite particles are catalytically active.

4,368,132

COMPOSITION FOR USE IN A MAGNETICALLY FLUIDIZED BED

Robert L. Seiver, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 943,552, Sep. 18, 1978, abandoned. This application Dec. 19, 1980, Ser. No. 218,038

Int. Cl.^{3} B01J *21/00, 23/00, 35/02*

U.S. Cl. 252—62.55 **9 Claims**

1. As a composition of matter, particulate material which can be oriented within, and formed into a magnetically stabilized fluidized bed to provide an effective demagnetization coefficient of from about 0.0027 to about 0.174, which comprises particles containing a non-ferromagnetic refractory, porous inorganic oxide component composited with a single elongated ferromagnetic component, the ferromagnetic component being multidomain, having dimensions of at least 1 μm in all directions and a length:diameter (L/D) ratio of at least 2 but not more than 17.3, said ferromagnetic component being present in the composite particles as an inclusion within a matrix formed by said nonferromagnetic component, and constituting at least 0.5%, but not more than $3/2(L/D)^2$ of the total volume of each particle, where L/D is the ratio of the longest dimension of the ferromagnetic component relative to the shortest dimension, and the particles can, in said magnetically stabilized fluidized bed rotate, or turn to line up the long dimension of a ferromagnetic component parallel to the direction of the field and a short dimension perpendicular to the direction of the field, wherein a catalytically effective amount of a catalytically active metal is dispersed on the surface of the composite particles, and the composite particles are catalytically active.

4,368,133

AQUEOUS SYSTEMS CONTAINING NITROGEN-CONTAINING, PHOSPHOROUS-FREE CARBOXYLIC SOLUBILIZER/SURFACTANT ADDITIVES

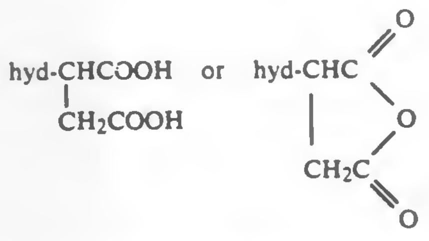
John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 26,384, Apr. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 948,460, Oct. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 946,294, Sep. 27, 1978, abandoned. This application Feb. 25, 1981, Ser. No. 238,394

Int. Cl.^{3} C10M *1/08, 1/06, 3/04*

U.S. Cl. 252—75 **38 Claims**

1. A composition comprising a continuous aqueous phase and the combination of (A) at least one nitrogen-containing, phosphorous-free carboxylic solubilizer and (B) at least one surfactant in said aqueous phase, said solubilizer (A) being made by the reaction of (A)(I) at least one acylating agent represented by the formula:



wherein hyd is a hydrocarbon-based substituent of about 30 to about 500 carbon atoms with (A)(II) at least one (a) N-(hydroxyl-substituted hydrocarbyl) amine, (b) hydroxyl-substituted poly(hydrocarbyloxy) analog of said amine or (c) mixtures of (a) and (b), the ratio of components (A)(II) to (A)(I) being in the range of about 0.5 to about 3 moles of component (A)(II) per equivalent of component (A)(I).

4,368,134

METHOD FOR RETARDING GELATION OF BICARBONATE-CARBONATE-ZEOLITE-SILICATE CRUTCHER SLURRIES

James A. Kaeser, Somerset, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 157,568, Jun. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 128,574, Mar. 10, 1980, Pat. No. 4,294,718. This application Feb. 13, 1981, Ser. No. 234,564

Int. Cl.^{3} C11D *3/04, 3/12, 11/02, 17/06*

U.S. Cl. 252—140 **21 Claims**

1. A method of retarding or preventing gelation of a miscible and pumpable crutcher slurry containing from about 40 to 70% of solids and 60 to 30% of water, of which solids content, on a 100% solids basis, about 20 to 45% is sodium bicarbonate, about 10 to 30% is sodium carbonate, about 5 to 25% is sodium silicate of $Na_2O:SiO_2$ ratio within the range of 1:1.4 to 1:3, and about 10 to 65% is zeolite, with the ratio of sodium bicarbonate:sodium carbonate being within the range of about 1:1 to 4:1, the ratio of sodium carbonate:sodium silicate being within the range of about 1:2.5 to 5:1, the ratio of sodium bicarbonate:-sodium silicate being within the range of about 1:1 to 8:1 and the ratio of zeolite:silicate being within the range of about 1:2 to 10:1, which comprises preparing a crutcher slurry of the desired composition containing, on a slurry basis, from 0.1 to 2% of a citric material selected from the group consisting of citric acid, water soluble citrate and mixtures thereof, and from 0.1 to 1.4% of magnesium sulfate, with the total of such citric material and magnesium sulfate, in combination, being gelation retarding and at least 0.4% of the slurry, and mixing such composition in a crutcher during preparation thereof.

4,368,135

ANISOTROPIC COMPOUNDS WITH NEGATIVE OR POSITIVE DC-ANISOTROPY AND LOW OPTICAL ANISOTROPY

Maged A. Osman, Zurich, Switzerland, assignor to BBC, Brown, Boveri & Company, Ltd., Baden, Switzerland

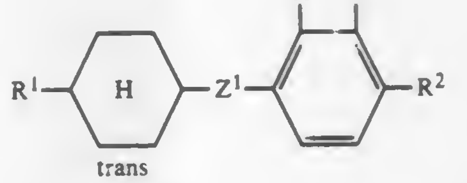
Filed Jun. 30, 1980, Ser. No. 164,692

Claims priority, application Switzerland, Jul. 18, 1979, 6671/79

Int. Cl.^{3} C09K *3/34;* **C07C** *121/75*

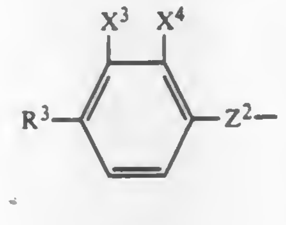
U.S. Cl. 252—299.63 **15 Claims**

1. An anisotropic compound with negative or positive DC-anisotropy and an optical anisotropy $\Delta n \leqq 0.2$ having the formula (1):

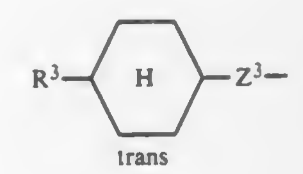


(1)

in which R^1 and R^2 are independently hydrogen, alkyl having 1 to 12 carbon atoms, alkoxy having 1 to 12 carbon atoms or one of R^1 and R^2 can represent a cyclical fragment of formulae (1a) or (1b):



(1a)



(1b)

wherein one of the bridges Z^1, Z^2 and Z^3 in each formula is carboxyl or oxycarbonyl and the other, when present, is a covalent bond, R^3 is hydrogen, alkyl of 1 to 12 carbon atoms or alkoxy of 1 to 12 carbon atoms, and X^1 and X^4 are independently hydrogen, halogen, nitrile or nitro, wherein at least two of X^1 to X^4 are not hydrogen.

4,368,136

AQUEOUS GEL COMPOSITION FOR TEMPORARY STABILIZATION OF SUBTERRANEAN WELL FORMATION

Joseph R. Murphey, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Division of Ser. No. 840,083, Oct. 6, 1977, Pat. No. 4,199,484. This application Mar. 17, 1980, Ser. No. 130,887

Int. Cl.^{3} B01J *13/00;* **C09K** *3/00;* **E21B** *43/26*

U.S. Cl. 252—316 **5 Claims**

1. An aqueous gel composition comprising a water soluble neutral polysaccharide polymer containing an easily oxidized component and a breaker comprising an organic C_2–C_{18} alkyl tertiary hydroperoxide with cupric ion and a mixture of surfac-

tants present in the aqueous gel at a temperature and concentration above the cloud point said mixture comprising at least one surfactant of the amine quaternary type which are normally liquid, synthetic or naturally occurring surfactants which can contain alkyl, aryl, hetero and unsaturated radicals or groups which contain about 8–18 carbon atoms per radical and at least one non-cationic water misicible surfactant.

4,368,137
POLYMERS OF OXYALKYLATED PIPERAZINES AND USES THEREOF
Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, St. Louis, Mo.
Filed May 18, 1981, Ser. No. 264,722
Int. Cl.^{3} C08G *65/34*
U.S. Cl. 252—344 16 Claims

1. A composition of matter comprising oxyalkylated piperazine polymerized by dehydration, or the salts or quaternaries thereof.

4,368,138
WATER SOLUBLE THYMIDINE DERIVATIVE
Israel Marcus, 25 Washington St., Jerusalem, Israel
Filed Jan. 8, 1980, Ser. No. 110,397
Claims priority, application United Kingdom, Jan. 10, 1979, 7900893
Int. Cl.^{3} B01F *3/18;* A01N *31/14;* A61K *31/70, 31/505*
U.S. Cl. 252—363.5 19 Claims

1. A solubilized thymidine product having increased solubility in aqueous media comprising thymidine and an amount of a solubilizing agent effective to increase the thymidine solubility in aqueous media, the thymidine solubilizing agent being selected from the group consisting of salicylic acid, its derivatives and salts and esters thereof.

13. A method of increasing the solubility of thymidine in aqueous solutions comprising treating thymidine with a thymidine solubilizing agent in an amount effective to increase the aqueous solubility of the thymidine above its normal aqueous solubility and up to at least 0.1 grams thymidine per ml. of water, the thymidine solubilizing agent being selected from the group consisting of salicylic acid, its derivatives and salts and esters thereof.

4,368,139
NONDUSTING FREE-FLOWING SOLID PARTICULATE POLYVALENT METAL CARBOXYLIC ACID SALT COMPOSITIONS AND PROCESS FOR PREPARING THE SAME
Mark W. Pollock, Teaneck, N.J., and George A. Seubert, Jr., Massapequa Park, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.
Filed Feb. 17, 1981, Ser. No. 235,337
Int. Cl.^{3} C09K *3/00*
U.S. Cl. 252—384 10 Claims

1. Nondusting free-flowing solid particulate polyvalent metal carboxylic acid salt compositions comprising at least one solid particulate polyvalent metal carboxylic acid salt in dusting particulate form, and a liquid epoxy fatty acid ester having a viscosity at 25° C. within the range from about 100 to about 2000 cps in an amount within the range from about 3% to about 20% by weight of the salt composition sufficient to render the particulate salt composition substantially nondusting while maintaining the salt composition free-flowing non-caking and non-tacky.

4,368,140
HALOGENATION PROCESS IN THE PRESENCE OF CYANOQUINONE CATALYST
Robert J. Crawford, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 814,963, Jul. 12, 1977, Pat. No. 4,148,811. This application Feb. 23, 1979, Ser. No. 14,527
Int. Cl.^{3} C07C *1/66*
U.S. Cl. 252—426 4 Claims

1. A catalyst system, comprising: a cyanoquinone material selected from tetracyanoquinodimethane and derivatives thereof, and an acidic auxiliary agent selected from PCl_3, PCl_5, PBr_3, thionyl chloride, sulfuryl chloride, oxalyl chloride, sulfonyl chloride, acetyl chloride, phosgene, fluorosulfonic acid, chlorosulfonic acid, and trifluoromethane sulfonic acid.

4,368,141
OLEFIN DISPROPORTIONATION AND CATALYST THEREFOR
Semyon Kukes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jun. 24, 1981, Ser. No. 276,777
Int. Cl.^{3} B01J *27/02;* C07C *5/25*
U.S. Cl. 252—439 16 Claims

1. A method of preparing a disproportionation catalyst comprising admixing elemental sulfur with a catalyst consisting essentially of a refractory oxide containing a metal oxide selected from the group consisting of molybdenum oxide and tungsten oxide and activating the catalyst by heating in the presence of an inert gas.

14. A process for the disproportionation of olefins comprising contacting said olefins under suitable reaction conditions with a catalytic amount of a catalyst composition prepared in accordance with a method of claims 1–12.

4,368,142
METHANATION CATALYST
Dieter Frohning, and Gerhard Horn, both of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Dec. 29, 1980, Ser. No. 220,381
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952683
Int. Cl.^{3} B01J *21/12, 21/04, 21/10, 23/76*
U.S. Cl. 252—455 R 17 Claims

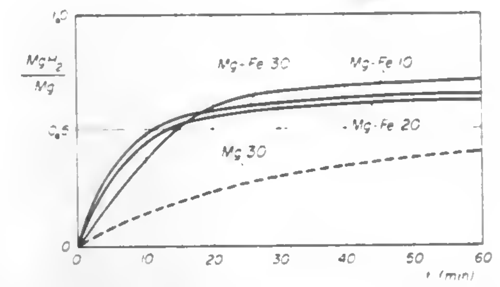
1. A methanation catalyst comprising cobalt, nickel and magnesium, disposed on a carrier.

3. A methanation catalyst according to claim 1, wherein the said carrier comprises aluminum oxide, an aluminum oxide-silicon oxide combination, aluminum silicate, a mixed oxide of aluminum oxide and silicon-dioxide or silicon dioxide.

4,368,143
COMPOSITION FOR THE STORAGE OF HYDROGEN AND METHOD OF MAKING THE COMPOSITION
Olivier de Pous, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland
Filed Nov. 9, 1979, Ser. No. 92,657
Claims priority, application Switzerland, Nov. 14, 1978, 11673/78
Int. Cl.^{3} C01B *6/24*
U.S. Cl. 252—457 9 Claims

1. A composition for the storage of hydrogen which consists of a pulverulent intimate mixture of magnesium powder and between 1 and 20% by volume thereof of a separator-agent powder inert to hydrogen and magnesium under hydrogen absorption and desorption conditions, said separator-agent powder being uniformly distributed in said mixture, being physically stable and inhibiting agglomeration of the magnesium powder over a succession of absorption/desorption cycles whereby the magnesium powder is converted to magnesium hydride and hydrogen is released upon thermal decomposition of the hydride respectively.

5. A process for producing a magnesium-based composition adapted to absorb hydrogen under predetermined absorption conditions and form magnesium hydride and adapted, upon thermal decomposition of said magnesium hydride, to release gaseous hydrogen, said process consisting of the steps of conjointly grinding magnesium powder and a powder of a separator agent inert to hydrogen and magnesium, physically stable under said conditions and adapted to prevent agglomeration of the magnesium powder during absorption/desorption cycling of the composition.

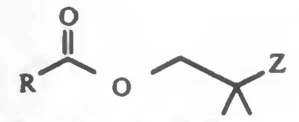


4,368,144
SILVER CATALYST FOR PRODUCTION OF ETHYLENE OXIDE
Masashi Mitsuhata, Yokohama; Fumio Watanabe, Kawasaki, and Toshihiko Kumazawa, Yokohama, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan
Filed Dec. 22, 1980, Ser. No. 218,700
Int. Cl.^{3} B01J *21/04, 23/04*
U.S. Cl. 252—463 8 Claims

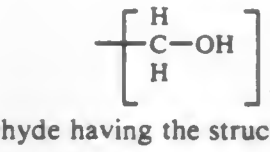
1. A silver catalyst for the production of ethylene oxide, comprising a granular α-alumina carrier having a sodium content of not more than 0.07% by weight and a specific surface area within the range of from 0.5 to 5 m^2/g, a finely divided metallic silver deposited on said carrier in an amount within the range of from 5 to 25% by weight based on the total catalyst, and at least one member selected from the group consisting of alkali metals of Atomic Numbers 19 to 55 and alkali metal compounds, said at least one member being in an amount within the range of from 0.001 to 0.05 gram equivalent weight per kilogram of the total catalyst.

4,368,145
PERFUME USE FOR OXOALKYL ESTERS
Michael Licciardello, Farmingdale; Richard M. Boden, Monmouth Beach; Hugh Watkins, Lincroft, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.
Filed Oct. 1, 1981, Ser. No. 307,366
Int. Cl.^{3} A61K *7/46*
U.S. Cl. 252—522 R 5 Claims

1. A process for augmenting or enhancing the aroma of a perfume or cologne comprising the step of adding to a perfume composition or a cologne base an aroma augmenting or enhancing quantity of at least one oxoalkyl ester defined according to the structure:

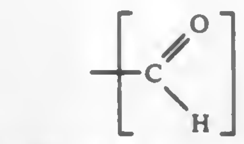


wherein Z is a moiety selected from the group consisting of carbinol having the structure:



$$\left[-\overset{H}{\underset{H}{C}}-OH\right]$$

and carboxyaldehyde having the structure:



and R is selected from the group consisting of 3-heptanyl and phenyl.

4,368,146
LIGHT DUTY HAND DISHWASHING LIQUID DETERGENT COMPOSITION
Michael P. Aronson, Valley Cottage, N.Y.; Edilia A. Larrauri, West New York, and Zahera J. Hussain, Wyckoff, both of N.J., assignors to Lever Brothers Company, New York, N.Y.
Continuation of Ser. No. 172,809, Jul. 28, 1980, abandoned, which is a continuation of Ser. No. 83,026, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 2,924, Jan. 12, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,434
Int. Cl.^{3} C11D *1/83, 3/28*
U.S. Cl. 252—542 24 Claims

1. A method for cleaning kitchen utensils comprising treating said utensils with a liquid detergent composition containing:

(a) from about 1% to about 50% by weight of an anionic surfactant compound, nonionic surfactant compound, or mixtures thereof;
(b) from about 0.1% to about 10% by weight of a polyvinylpyrrolidone having a molecular weight equal to or greater than 40,000, a copolymer of N-vinylpyrrolidone and dimethylaminoethyl methacrylate having a molecular weight from about 40,000 to about 1,500,000, or mixtures thereof; and
(c) from 0 to about 5% by weight of an alkali metal salt of casein.

4,368,147
LIQUID DETERGENT OF CONTROLLED VISCOSITY
Jack T. Inamorato, Westfield, and William Chirash, New Providence, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 62,456, Jul. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 35,490, May 3, 1979, abandoned, which is a continuation of Ser. No. 762,217, Jan. 24, 1977, abandoned, which is a continuation of Ser. No. 511,760, Oct. 3, 1974, abandoned. This application Jun. 2, 1981, Ser. No. 269,917
Int. Cl.^{3} C11D *1/831, 1/72*
U.S. Cl. 252—545 9 Claims

1. A liquid detergent having a viscosity in the range of 40 to 120 centipoises at 24° C. and which is fluid at 7° C. which consists essentially of, by weight, from 10% to 60% of a water-soluble C_2–C_3 alkoxylated C_{10}–C_{18} alkanol nonionic detergent; 4% to to 12% of a C_2–C_3 alkanol, the proportion of alcohol being such that the physical properties of the liquid detergent would be unsatisfactory in the absence of a viscosity control and gel prevention agent; 1% to 6% of sodium or potassium formate as a viscosity control and gel prevention agent and 22 to 84.5% of water.

4,368,148

PROTEIN PP$_9$, PROCESS FOR ITS ENRICHMENT AND ITS ISOLATION AND ITS USE

Hans Bohn, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,089

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3013724

Int. Cl.^{3} A61K *35/50, 39/395,* **C07G** *7/00*

U.S. Cl. 260—112 B **3 Claims**

1. An isolated, concentrated tissue protein, PP$_9$, obtained by fractionating an extract of human organs or a solution obtained from such an extract, said tissue protein having:

(a) a content of carbohydrates of 5.57±1.35% consisting of 4.9±1.0% of hexoses, 0.1±0.1% of hexosamines, 0.07±0.05% of fucose, and 0.5±0.20 of neuraminic acid;

(b) a sedimentation coefficient $S_{20,w}$ of 3.2±0.2 S;

(c) a molecular weight of 35,100±3,800 determined in an ultracentrifuge;

(d) a molecular weight of 40,000±4,000 determined in a polyacrylamide gel containing sodium dodecyl sulfate;

(e) an extinction coefficient $E_{1\,cm}^{1\%}$ (280 nm) of 14.6±1.0;

(f) an electrophoretic mobility in the range of the β_1-globulins;

(g) an isoelectric point in a pH range of 5.0–6.8; and

(h) an amino acid analysis of

	Mol %	Variation coefficient (%)
Lysine	8.04	3.49
Histidine	2.58	5.06
Arginine	3.49	1.8
Aspartic acid	10.30	10.45
Threonine	4.29	9.82
Serine	5.7	10.77
Glutamic acid	11.18	2.15
Proline	6.17	13.61
Glycine	5.50	0.79
Alanine	5.69	1.11
Cystine/2	2.29	4.38
Valine	7.12	2.58
Methionine	1.47	9.64
Isoleucine	5.28	5.28
Leucine	10.55	3.23
Tyrosine	3.95	9.68
Phenylalanine	3.87	5.48
Tryptophan	2.36	0.69

4,368,149

PROTEIN HYBRID HAVING CYTOTOXICITY AND PROCESS FOR THE PREPARATION THEREOF

Yasuhiko Masuho, Hino, and Takeshi Hara, Hachioji, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 16, 1981, Ser. No. 331,342

Claims priority, application Japan, Dec. 22, 1980, 55-180553

Int. Cl.^{3} A61K *39/44;* **C07G** *7/00*

U.S. Cl. 260—112 B **7 Claims**

1. A protein hybrid having cytotoxicity prepared by covalently bonding an immunoglobulin, or its fragment, which is capable of binding selectively to an antigen produced by a cell to be killed, to a protein which is obtained from *Momordica charantia* and capable of inhibiting protein synthesis.

4,368,150

METHOD FOR PROTECTING GUANIDINO GROUP AND RESTORING THE SAME

Masahiko Fujino, Takarazuka, and Osamu Nishimura, Toyonaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

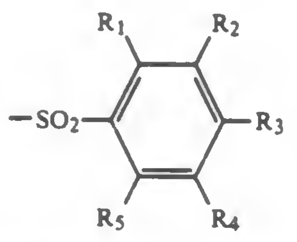
Filed Feb. 11, 1981, Ser. No. 233,641

Claims priority, application Japan, Feb. 12, 1980, 55-16456; Nov. 4, 1980, 55-154919; Jan. 5, 1981, 56-560

Int. Cl.^{3} C07C *103/52, 147/13*

U.S. Cl. 260—112.5 R **10 Claims**

1. In a method of producing a peptide containing a guanidino group which comprises protecting the guanidino group of a guanidino-containing starting compound with a protecting group, subjecting the protected compound to a peptide synthesis reaction and removing the protective group with an acid, the improvement wherein the protecting group is a substituted benzenesulfonyl group of the formula



wherein R$_1$, R$_3$ and R$_5$ are methyl or methoxy, and R$_2$ and R$_4$ are hydrogen or methyl, provided that (1) when R$_3$ is methyl, all of R$_1$, R$_2$, R$_4$ and R$_5$ are methyl, (2) when R$_3$ is methoxy and R$_2$ and R$_4$ are both hydrogen, R$_1$ and R$_5$ are both methoxy and (3) when R$_3$ is methoxy R$_1$ and R$_5$ are both methyl, R$_2$ is hydrogen or methyl and R$_4$ is hydrogen or methyl.

4,368,151

7S AND 11S VEGETABLE PROTEIN FRACTIONATION AND ISOLATION

Paulette A. Howard; William F. Lehnhardt, and Frank T. Orthoefer, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Aug. 10, 1981, Ser. No. 291,670

Int. Cl.^{3} A23J *1/14*

U.S. Cl. 260—123.5 **13 Claims**

1. A method for fractionating and recovering an enriched 11S protein fraction from a crude vegetable portein aqueous solution which contains, on a total protein weight basis, water-soluble 7S protein and water-soluble 11S protein as the major protein components of said solution, said method comprising:

(A) providing to said solution a sufficient amount of:
  (i) from about 0.05 mM to about 5.0 mM sulfite ion; and
  (ii) water-soluble salt to provide an ionic solution strength ranging from about 0.0005u. to about 0.2u;

(B) precipitating at least a major weight of said 11S protein from said solution within the pH 5.3–6.3 range; and

(C) recovering the precipitated 11S protein from said solution.

4,368,152

CONTROL OF RESIDUAL SOLVENT IN PROTEINACEOUS MATERIALS

Richard W. Oughton, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 28, 1981, Ser. No. 258,385

Claims priority, application Canada, May 15, 1980, 352013

Int. Cl.^{3} A23J *1/14*

U.S. Cl. 260—123.5 **12 Claims**

1. An improvement in the process for control of the amount of residual solvent in comminuted proteinaceous material selected from the group consisting of soya beans and rapeseed, in which the comminuted proteinaceous material is admixed with a hydrocarbon solvent for oil in the material and at least a fraction of the proteinaceous material is separated from the solvent and treated for removal of residual solvent, in which the improvement is characterized by:

(a) maintaining the temperature of the admixture of proteinaceous material and solvent in the range of 0°–35° C.; and

(b) controlling the period of time of contact of solvent and proteinaceous material to a minimum practical time needed to de-oil the material and to accomplish any separation of the material into fractions and the period of time of treatment for removal of residual solvent to a range of 5 to 500 minutes, whereby separation of a product having a level of residual solvent less than 60 ppm may be effected.

4,368,153

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 2-(2-PYRIDYLAZO)-4,5-BIS(TERTIARY AMINO)PHENOL BLACK DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

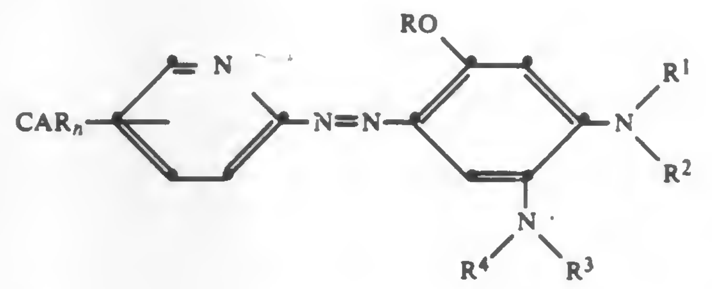
Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,612, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 354,985

Int. Cl.^{3} C09B *45/00, 29/22, 29/36, 31/14*

U.S. Cl. 260—156 **15 Claims**

1. A nondiffusible compound having a releasable black dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety or CAR;

(b) R^1 and R^2 each independently represents an alkyl group of 1 to about 6 carbon atoms, CAR, or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(c) R^3 and R^4 each independently represents an alkyl group of 1 to about 6 carbon atoms, CAR, or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible black dye moiety or precursor thereof under alkaline conditions; and

(e) n is 0, 1 or 2, with the proviso that when n is 0, then at least one of R, R^1, R^2, R^3, or R^4 is CAR.

4,368,154

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE BRIDGED AZOAMINOPHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

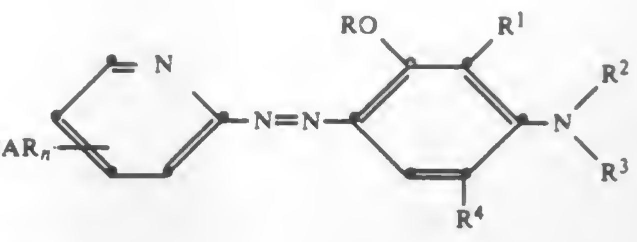
Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,613, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 355,028

Int. Cl.^{3} C09B *45/00, 29/22, 29/36, 31/14*

U.S. Cl. 260—156 **14 Claims**

1. A nondiffusible compound having a releasable magenta dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety or CAR;

(b) R^1 represents hydrogen;

(c) R^2 represents an alkyl group of 1 to about 6 carbon atoms or CAR; or R^1 and R^2 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(d) R^3 represents an alkyl group of 1 to about 6 carbon atoms or CAR;

(e) R^4 represents hydrogen; or R^3 and R^4 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

with the proviso that at least one of said 5- or 6-membered heterocyclic rings of (c) or (e) is present in said compound;

(f) CAR represents a ballasted carrier moiety capable of releasing said diffusible magenta dye moiety or precursor thereof under alkaline conditions; and

(g) n is 0, 1 or 2, with the proviso that when n is 0, then at least one of R, R^2 or R^3 is CAR.

4,368,155

MONOAZO COMPOUNDS DERIVED FROM META-AMINO-BENZOIC ACID ANILIDES AND ACETOACETYLAMINO-BENZIMIDAZOLONE

Klaus Hunger, and Manfred Pesenacker, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

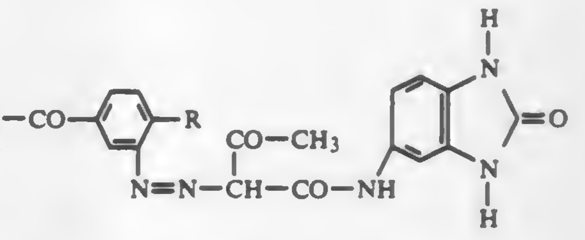
Division of Ser. No. 86,125, Oct. 18, 1979, Pat. No. 4,302,388. This application May 4, 1981, Ser. No. 259,965

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845946

Int. Cl.^{3} C09B *29/01, 29/32;* **D06P** *1/44*

U.S. Cl. 260—157 **1 Claim**

1. A compound of the formula



wherein R is methoxy and X is carbamoyl or acetamino.

4,368,156

PREPARATION OF 4-HALOAZETIDIN-2-ONES FROM 4-SULFINOAZETIDIN-2-ONES

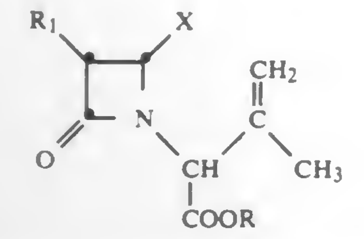
Wayne A. Spitzer, Indianapolis; Stjepan Kukolja, Carmel; Theodore Goodson, Jr., Indianapolis, all of Ind., and Steven R. Lammert, Decatur, Ill., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 9, 1981, Ser. No. 241,872

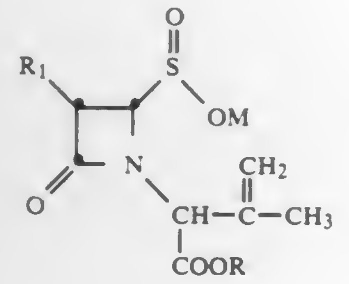
Int. Cl.^{3} C07D *205/08;* **C07B** *9/00;* **C07D** *403/04, 401/04*

U.S. Cl. 260—239 A **21 Claims**

1. A process for preparing a 4-haloazetidinone of the formula

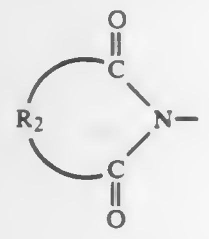


which comprises reacting in an inert solvent at a temperature between about −20° C. and about 45° C. a 4-sulfinoazetidinone of the formula



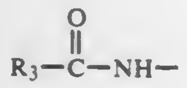
with at least one molar equivalent of an N-X or O-X positive halogen reagent, where in the above formulas M is hydrogen, sodium or potassium, X is chloro, bromo, or iodo; R is a carboxy-protecting group; and R_1 is

(1) an imido group of the formula



wherein R_2 is C_2–C_4 alkenylene or 1,2-phenylene;

(2) an amido group of the formula



$$R_3-\overset{\overset{O}{\|}}{C}-NH-$$

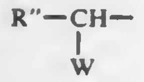
wherein R_3 is

- (a) hydrogen, C_1–C_4 alkyl, halomethyl, cyanomethyl, benzyloxy, p-nitrobenzyloxy, t-butyloxy, 2,2,2-trichloroethoxy, or p-methoxybenzyloxy;
- (b) the group R′, wherein R′ is phenyl or phenyl substituted by 1 or 2 halogens, protected hydroxy, nitro, cyano, C_1–C_4 alkyl, or C_1–C_4 alkoxy;
- (c) a group of the formula

$$R''-(Q)_m-CH_2-$$

wherein R″ is R′ as defined above, 1,4-cyclohexadienyl, thienyl or furyl; m is 0 or 1; and Q is O or S; with the limitation that when m is 1, R″ is R′;

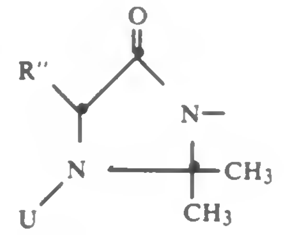
- (d) a group of the formula



$$R''-\underset{\underset{W}{|}}{CH}-$$

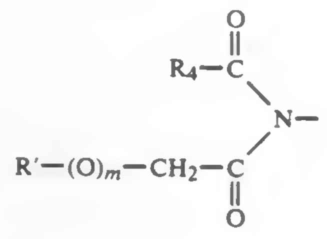
wherein R″ is as defined above, and W is protected hydroxy, protected carboxy, or protected amino;

(3) an imidazolidinyl group of the formula



wherein R″ is as defined above and U is nitroso or acetyl; or R_1 is

(4) an imido group of the formula



wherein R′ is as defined above, m is 0 or 1, and R_4 is C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, or 2,2,2-trichloroethoxy.

4,368,157
INTERMEDIATES TO PRODUCE IMIDAZODIAZEPINES

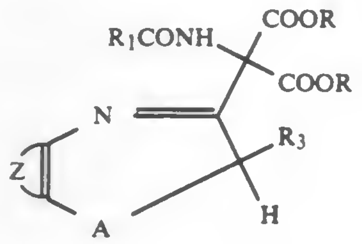
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,944

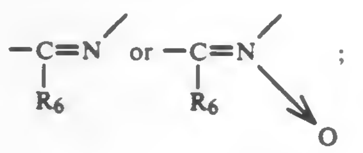
Int. Cl.³ C07D *487/04, 495/04, 243/16, 401/04*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula

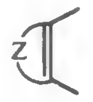


wherein R is lower alkyl; A is

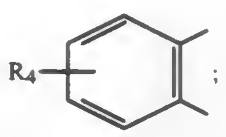


$$-\underset{\underset{R_6}{|}}{C}=N\diagup \quad \text{or} \quad -\underset{\underset{R_6}{|}}{C}=N\diagup\!\!\searrow O \quad ;$$

R^3 is selected from the group consisting of hydrogen and lower alkyl; R^6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo and nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; R^4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono-or di-lower alkyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, alkoxy lower alkyl, mono-halo or mono-nitro substituted phenyl, pyridyl, aralkyl; and



is selected from the group consisting of



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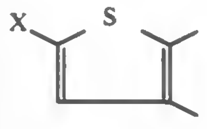
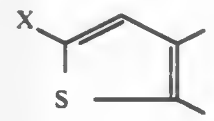


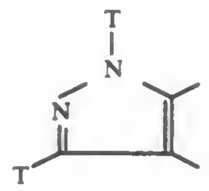
;

wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

and



wherein T is hydrogen or lower alkyl.

4,368,158
INTERMEDIATES TO PRODUCE IMIDAZODIAZEPINES

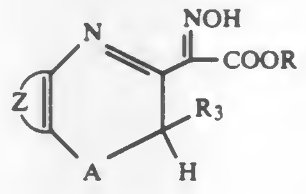
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,947

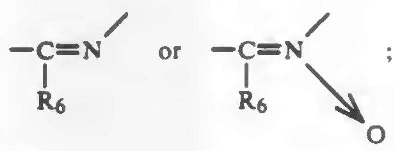
Int. Cl.³ C07D *487/04, 495/04, 243/16, 401/04*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula

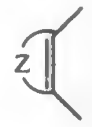


wherein R is lower alkyl; A is

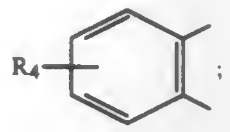


$$-\underset{\underset{R_6}{|}}{C}=N\diagup \quad \text{or} \quad -\underset{\underset{R_6}{|}}{C}=N\diagup\!\!\searrow O \quad ;$$

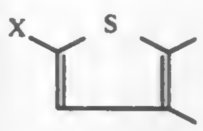
R_3 is selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono-or di-lower alkyl substituted amino, hydroxy lower alkyl and lower alkanoyl; and



is selected from the group consisting of

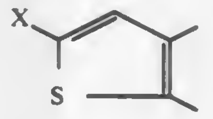


;



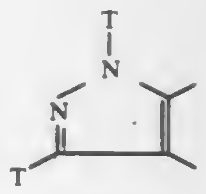
;

wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

and



wherein T is hydrogen or lower alkyl.

4,368,159
INTERMEDIATES TO PRODUCE IMIDAZODIAZEPINES

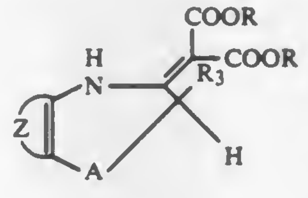
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 13, 1981, Ser. No. 243,409

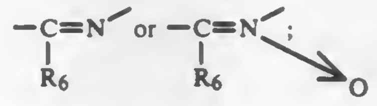
Int. Cl.³ C07D *487/04, 495/04, 243/16, 401/04*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula

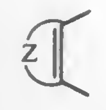


wherein R is lower alkyl; A is

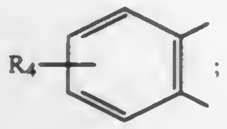


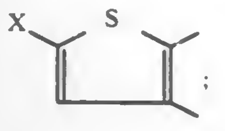
$$-\underset{\underset{R_6}{|}}{C}=N\diagup \quad \text{or} \quad -\underset{\underset{R_6}{|}}{C}=N\diagup\!\!\searrow O \; ;$$

R_3 is selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono or di-lower alkyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; and

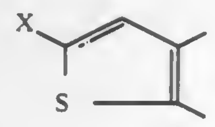


is selected from the group consisting of

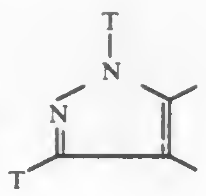
 ;

 ;

wherein X is chlorine, bromine, iodine or hydrogen



and



wherein X is chlorine, bromine, iodine or hydrogen

wherein T is hydrogen or lower alkyl.

4,368,160
PROCESS FOR PREPARING 17α-HYDROXY-PREGN-4-EN-3,20-DIONE DERIVATIVES

Anna Boór née Mezei; József Tóth; Tamas Szen; László Gabor; Piroska Major née Fastner, and Sandor Holly, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

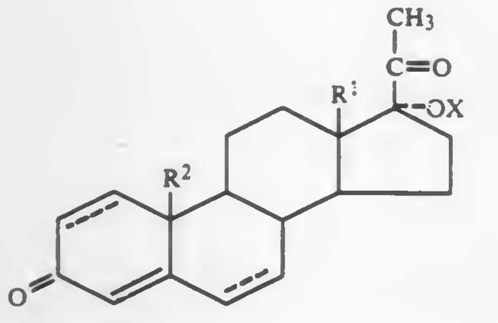
Filed Apr. 2, 1982, Ser. No. 365,015

Claims priority, application Hungary, Apr. 16, 1981, 989

Int. Cl.^{3} C07J *5/00*

U.S. Cl. 260—397.4 **13 Claims**

1. A process for preparing pregnane derivatives of formula I,



(I)

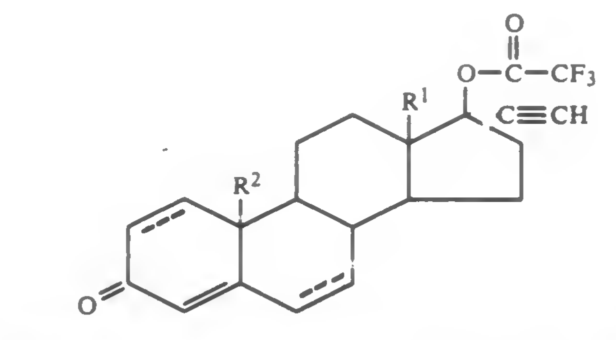
wherein

R^1 stands for a methyl or an ethyl group,

R^2 represents a hydrogen atom or a methyl group and

X is a hydrogen atom or a formyl or acetyl group, and the bond indicated by a dotted and a continuous line stands for a single or a double bond between the two neighbouring carbon atoms,

comprising the step of reacting a trifluoroacetate ester of formula II,



(II)

wherein R^1 and R^2 are as defined above, with formic or acetic acid in the presence of a catalytic amount of a mercury salt in a dipolar proton-free or basic solvent.

4,368,161
AGENT FOR IMPROVING CHROMA AND BRIGHTNESS OF PIGMENTS

Seigo Iwamoto, Tokyo, and Eiichi Saito, Hachioji both of Japan, assignors to Nihonshikizai Kogyo Co., Ltd., Tokyo and Takeda Chemical Industries, Ltd., Osaka both of, Japan

Division of Ser. No. 127,981, Mar. 6, 1980, Pat. No. 4,327,017. This application Apr. 10, 1981, Ser. No. 253,145

Claims priority, application Japan, Mar. 8, 1979, 54-27481

Int. Cl.^{3} C07F *5/06*

U.S. Cl. 260—448 R **1 Claim**

1. An agent for improving the chroma and brightness of pigments, which consists of a product from the reaction of a basic polyaluminium salt with an amino-acid based anionic surfactant represented by the formulas: $RCON(CH_3)CH_2COONa$ or $RCON(CH_3)CH_2CH_2COONa$, wherein R is a straight-chain or branched-chain alkyl group having a carbon atom number of 12 to 18.

4,368,162
PROCESS FOR PRODUCING AMINOMETHYLPHOSPHONIC ACID

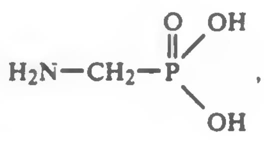
Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,048

Int. Cl.^{3} C07C *9/38*

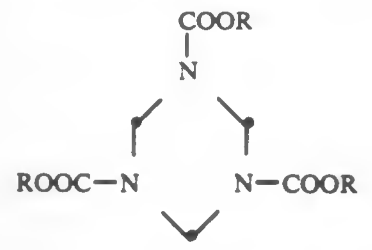
U.S. Cl. 260—502.5 G **13 Claims**

1. A process for producing aminomethylphosphonic acid of the formula I



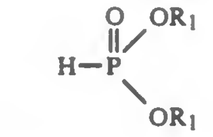
$$H_2N{-}CH_2{-}P(=O)(OH)(OH) \quad (I)$$

which process comprises reacting a hexahydro-1,3,5-triazine-N,N′,N″-tris-carboxylic acid ester of the formula II



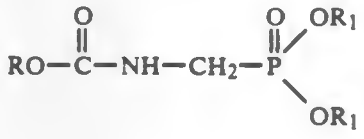
(II)

wherein R is an alkyl group having 1 to 4 carbon atoms, or a phenyl group, at a temperature of 90°–150° C. in the presence of a Lewis acid as catalyst, with an ester of the phosphorous acid of the formula III



$$H{-}P(=O)(OR_1)(OR_1) \quad (III)$$

wherein R$_1$ is an alkyl group having 1 to 5 carbon atoms, a phenyl group, a benzyl group, the 2-cyanoethyl group or the 2,2,2-trichloroethyl group, to give an N-carboxyaminomethylphosphonic acid derivative of the formula IV



$$RO{-}C(=O){-}NH{-}CH_2{-}P(=O)(OR_1)(OR_1) \quad (IV)$$

wherein R and R$_1$ have the meanings defined above, and subsequently hydrolysing this derivative in an aqueous medium, in the presence of a strong acid, to obtain aminomethylphosphonic acid.

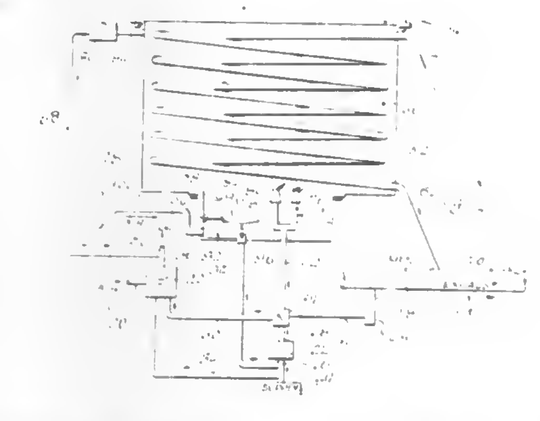
4,368,163
APPARATUS FOR VAPORIZING FUEL FOR ENGINE IN CONJUNCTION WITH CARBURETOR

Ray M. Covey, Jr., 9700 Trinidad, El Paso, Tex. 79925

Filed Jul. 1, 1981, Ser. No. 279,619

Int. Cl.^{3} F02M *31/14*

U.S. Cl. 261—39 R **7 Claims**



1. Apparatus for retrofitting to a self contained automotive vehicle including the following components in its original construction—an engine, a carburetor for controlling the flow of liquid fuel to the engine and including a throttle, an inlet fuel line from a supply to the carburetor and an outlet fuel line from the carburetor to the engine, a manual control for controlling the carburetor throttle, a heat system including a circuit having a liquid coolant for cooling the engine, and an exhaust pipe leading from the engine,

said apparatus comprising the following components mounted in and attached to the vehicle and removable therefrom substantially without altering the physical construction or operability of the engine according to its original design and construction,

a vaporizer chamber including a generally enclosed housing,

a tubing coil in the housing having inlet and outlet terminals extending through the housing and into the heat system for impelling a stream of heated fluid through the coil,

a vaporizer fuel line leading from the fuel supply to the vaporizer chamber,

A vapor feed line leading from the vaporizer chamber to the outlet line from the carburetor,

a second throttle in the vapor feed line,

means interconnecting the throttles and operable, in response to actuation of said manual control, for operating said second throttle simultaneously with the carburetor throttle and in the same opening/closing sense, and

a feed valve for controlling the flow of fuel from the supply to the carburetor and the vaporizer tank selectively.

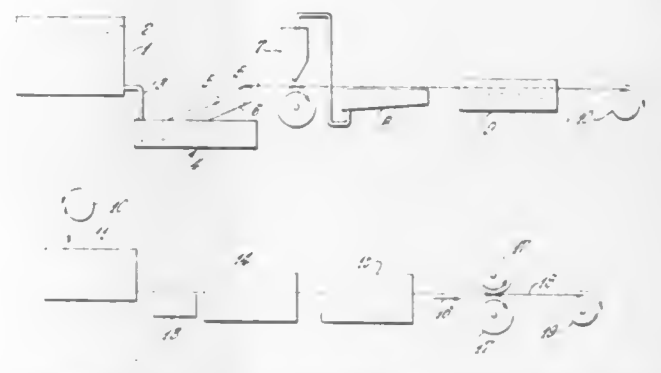
4,368,164
GLASS FIBER COMPOUNDING IN GASKETS AS ASBESTOS REPLACEMENT

Clarence W. Charon, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 192,653, Oct. 1, 1980, abandoned. This application Oct. 29, 1981, Ser. No. 316,270

Int. Cl.^{3} B29H *9/02*

U.S. Cl. 264—37 **10 Claims**



1. A method of producing a glass-fiber containing rubber-based composite which comprises:

(a) forming a sheet of glass fibers;

(b) saturating said sheet with a rubber emulsion to form a glass sheet held together by a rubber bond;

(c) dissolving said rubber bond in a rubber-containing solvent to form a rubber matrix containing solvent and having said glass fibers dispersed therein; and,

(d) removing solvent from said rubber matrix to form a glass fiber containing rubber-based composite.

4,368,165
ROLL PRESS AND METHOD OF REGULATION OF THE THROUGHPUT OF A ROLL PRESS

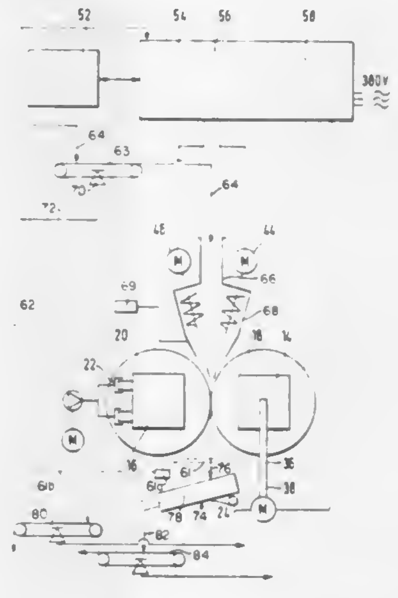
Hans-Georg Bergendahl, Bochum-Weitmar, Fed. Rep. of Germany, assignor to Maschinenfabrik Koppern GmbH & Co. KG, Hattingen, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 215,990

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950072

Int. Cl.^{3} B29C *3/02, 3/06, 15/00*

U.S. Cl. 264—40.4 **14 Claims**



1. A method of regulating the operation of a roll press of the type having a pair of cooperating side-by-side press rollers, a

variable speed drive motor for rotating said press rollers, a variable rate feed device which feeds material to said rollers and means for evaluating the degree of loading of said rollers comprising:

- (a) operating said press under a first control mode wherein;
  - (1) when said press is at a loading which is equal to the nominal loading thereof, the speed of said rollers is increased until the actual loading of said press is less than said nominal loading;
  - (2) when said press is at a loading which is less than the nominal loading thereof, the rate of said feed device is increased in an attempt to increase the loading of said press to the nominal loading thereof;
  - (3) if after increasing the rate of said feed device a predetermined amount the loading of said press is still less than the nominal loading thereof, the control of said press is effected by;
- (b) operating said press under a second mode wherein;
  - (1) when the loading of said press is less than the nominal loading thereof, the speed of the rollers is reduced until the loading of said press equals the nominal loading thereof;
  - (2) when the loading of said press equals the nominal loading thereof, the rate of said feed device is reduced until the loading of said press is less than the nominal loading thereof and the operation of said press is returned to said first control mode.

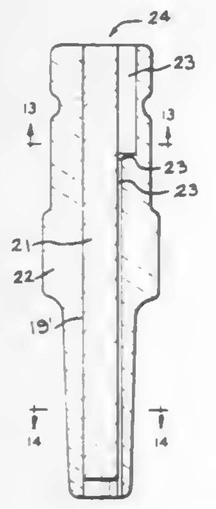
4,368,166
METHOD FOR THE PRODUCTION OF A CERAMIC INSULATOR

Jonathan W. Hinton, Birmingham; Frederick J. Powell, East Detroit, and Robert W. Matz, Troy, all of Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Continuation of Ser. No. 85,505, Oct. 17, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,935

Int. Cl.^{3} C04B *37/00*

U.S. Cl. 264—61 **2 Claims**



1. A method for producing a ceramic insulator having at least two internal slots extending longitudinally of the insulator, said method consisting of the steps of pressing ceramic batch around a contoured arbor having at least two longitudinally extending fins to form an outer piece having a bore with grooves therein corresponding to the fins, removing the arbor from and contouring the outer piece to a desired external shape, pressing ceramic batch to form an inner piece, contouring the inner piece to fit within the bore of the outer piece, positioning the inner piece within the bore of the outer piece and firing both pieces, whereby the contoured surface of the inner piece closes the grooves in the bore of the outer piece to form slots extending longitudinally within the ceramic insulator.

4,368,167
METHOD OF MAKING AN ELECTRODE

Aldo S. Berchielli, Westerly, R.I., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Mar. 5, 1981, Ser. No. 240,683

Int. Cl.^{3} H01M *4/54*

U.S. Cl. 264—104 **5 Claims**

1. An improved method of making a silver chloride and copper chloride-containing electrode, said method comprising the steps of:

- a. forming a minimum melting point eutectic of silver chloride and cuprous chloride;
- b. heating said eutectic to above the melting point thereof, then cooling, solidifying and powdering said eutectic;
- c. uniformly mixing said eutectic together with additional particulate cuprous chloride to reduce the concentration of silver chloride of the resulting mixture to about 1-10 percent by weight; and,
- d. forming the resulting mixture into an improved strong electrode.

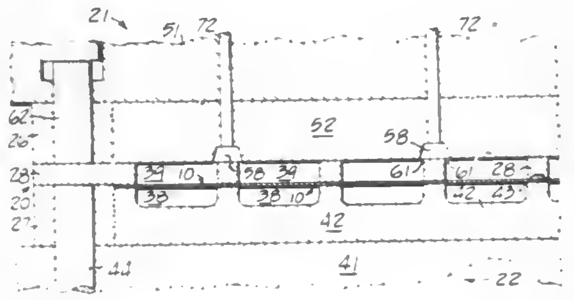
4,368,168
METHOD FOR ENCAPSULATING ELECTRICAL COMPONENTS

Dusan Slepcevic, 1240A Mountain View-Alviso Rd., Sunnyvale, Calif. 94086

Division of Ser. No. 925,295, Jul. 17, 1978, Pat. No. 4,332,537. This application Dec. 6, 1980, Ser. No. 194,593

Int. Cl.^{3} B29C *6/00, 7/00;* **B29D** *3/00*

U.S. Cl. 264—272.14 **12 Claims**



1. The method of encapsulating electrical components by use of a cavity plate means having spaced-apart outer surfaces and openings therethrough from one outer surface to the other, said electrical components having electrical leads attached thereto and extending therefrom, said method comprising:

- (a) placing first and second mold plates in opposition to each other,
- (b) moving said cavity plate means laterally relative to both said first and second mold plates and positioning said cavity plate means between mold surfaces of first and second mold plates with one of said outer surfaces of said cavity plate means being against the mold surface of said first mold plate,
- (c) injecting fluid plastic at a point between said mold surface of said first mold plate and said one outer surface of said cavity plate means and forcing said injected fluid plastic to flow between said mold surface of said first mold plate and said one outer surface of said cavity plate means from the point of injection to said openings of said openings of said cavity plate means,
- (d) holding said electrical components and electrical leads with said electrical components being spaced from said mold surface of said first mold plate and in registration with said openings of said cavity plate means and with said electrical leads being maintained out of contact with said fluid plastic prior to entry of said fluid plastic into said openings,
- (e) allowing said plastic to harden,
- (f) separating said cavity plate means from said first mold plate after said plastic has hardened and then removing said cavity plate means from between said first and second mold plates,
- (g) subsequently removing said electrical components from said cavity plate means.

4,368,169
PYROCHEMICAL PROCESSES FOR THE DECOMPOSITION OF WATER

Ralph H. Kummler, Birmingham; Charles B. Leffert, Troy; Robert G. Ozarski, Detroit; Robert A. Piccirelli, Grosse Pointe Woods, and Theodor Teichmann, Ann Arbor, all of Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Apr. 16, 1975, Ser. No. 568,661

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—148 **3 Claims**

1. A process for decomposition of a stable compound comprising:

- a. injecting carbon dioxide and a metal M having an associated metal oxide M_xO_y into the central reaction chamber of a nuclear fusion reactor, said metal oxide having a decomposing temperature which is less than the boiling temperature of said metal and being chemically more stable than is said carbon oxide,
- b. causing a D-T nuclear fusion reaction within said chamber releasing heat and radiation such that said metal oxide and carbon monoxide are formed pyrochemically, and
- c. separating said carbon monoxide from said metal oxide,
- d. injecting said metal oxide obtained in step (c) into said central reaction chamber and causing a D-T nuclear fusion reaction within said chamber releasing heat and radiation such that said metal and oxygen are formed from said metal oxide, and
- e. Separating said oxygen from said metal to obtain the starting metal.

4,368,170
METHOD OF OPERATING NUCLEAR REACTORS

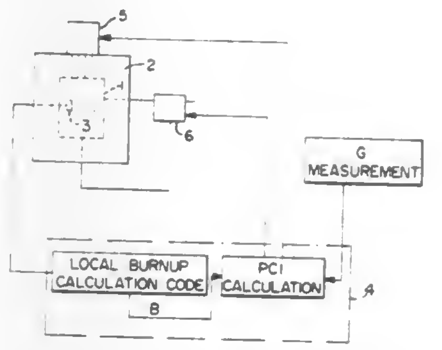
Masaomi Oguma, and Masao Ishida, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,588

Claims priority, application Japan, Mar. 4, 1977, 52/22616

Int. Cl.^{3} G21C *7/36*

U.S. Cl. 376—216 **6 Claims**



1. A method of operating a nuclear reactor which comprises a plurality of fuel elements each having a cladding and fuel pellets stacked in the cladding therein, control rods, and recirculation system for cooling the core by recirculation of coolant, comprising the steps of detecting burnup of the fuel element; determining the upper limit of a linear heat generation rate of the fuel element at which the reactor can raise its power by the withdrawal of the control rod, referring to the burnup detected and an amount of the diametral gap between the cladding and the pellets; and withdrawing the control rod to raise the power of the reactor within the upper limit of the linear heat generating rate.

4,368,171
METHOD OF CONTROLLING OPERATION OF NUCLEAR REACTOR

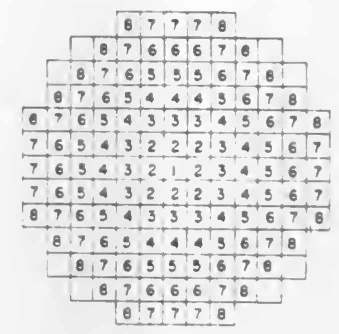
Hiromi Maruyama; Masayuki Izumi; Sadao Uchikawa, and Renzo Takeda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 936,921, Aug. 25, 1978. This application Nov. 25, 1980, Ser. No. 210,168

Claims priority, application Japan, Aug. 26, 1977, 52-101557

Int. Cl.^{3} G21C *7/08*

U.S. Cl. 376—217 **8 Claims**



1. A method of operating a boiling water nuclear reactor having a core with a flattened axial power distribution by virtue of the fuel distribution and a plurality of control rods insertable into the core, comprising the steps of grouping the control rods into a plurality of groups including at least a first group consisting of one control rod which is located at the center of the core, a second group consisting of the nearest eight control rods which surround the control rod of the first group, a third group consisting of twelve control rods which are located adjacent to and outside of the control rods of the second group, a fourth group consisting of sixteen control rods which are located adjacent to and outside the control rods of the third group, a fifth group consisting of twenty control rods which are located adjacent to and outside of the control rods of the fourth group, and a sixth group consisting of twenty-four control rods which are located adjacent to and outside of the control rods of the fifth group, and operating the core with control rod patterns of only deep control rods during the operation period of the core other than when less than six inserted control rods are required for achieving the critical state of the core, the step of operating the core with only deep control rods including forming each deep control rod pattern with control rods which are selected from only alternate ones of the plurality of said groups and disposed in a symmetrical arrangement with respect to the center of the core, and deeply inserting the selected control rods into the core to a depth of at least ⅔ of the core, all other control rods which are not selected being completely withdrawn and only the movement of the control rods achieving a radial flattened power distribution.

4,368,172
HEAT RESISTANT CAST ALLOY

Makoto Takahashi, and Junichi Sugitani, both of Hirakata, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,450

Claims priority, application Japan, May 31, 1979, 54-68385

Int. Cl.^{3} C22C *30/00*

U.S. Cl. 420—584 **4 Claims**

1. A heat resistant cast alloy consisting of 0.35~0.6% C, 1.58~2.5% Si, 0.3~0.9% Mn, 24~28% Cr, 30~38% Ni, 2~6% W, 0.07~0.3% N, $P<0.04\%$ and $S<0.04\%$, balance substantially Fe, as represented on the weight basis.

4,368,173
REACTOR FOR OXICHLORINATION OF ETHYLENE AND PROCESS THEREFOR

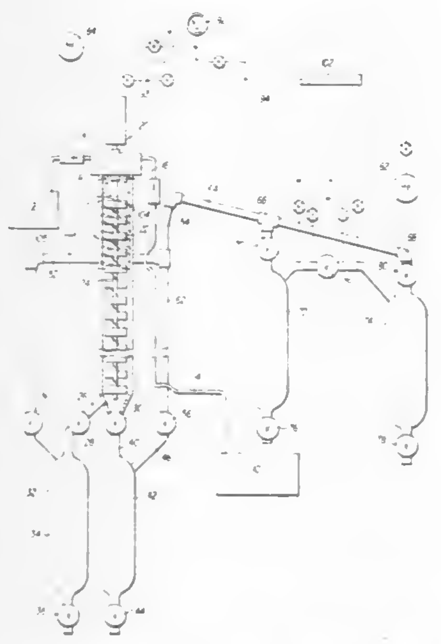
Humberto D. Jimenez, Mexico City, and Emilio W. Mora, Puebla, both of Mexico, assignors to Instituto Mexicano del Petroleo, Mexico
Filed Sep. 11, 1980, Ser. No. 186,159
Claims priority, application Mexico, Sep. 12, 1979, 179250
Int. Cl.^{3} B01J *8/06*
U.S. Cl. 422—197 **7 Claims**

1. An improved multitubular heat exchanger type reactor to carry out the oxichlorination of ethylene to obtain preferably 1,2 dichloro ethane comprising:

a calender reactor including a casing and a system of vertical tubes;
a first mirror joined to the upper ends of the vertical tubes;
a second mirror joined to the lower ends of the vertical tubes;
a degasifying chamber formed as an upper dome attached to the upper portion of the casing;
a distributing chamber for the reactants, said chamber being formed as a lower dome or feeding header attached to the lower portion of the casing;
at least one diffusing element for the reaction gases individually coupled to the inside of at least one reaction tube, wherein each said diffusing element comprises a ferrule including a metallic cylindrical ferrule sleeve, a horizontal annular stainless metallic plate attached to the upper edge of said cylindrical sleeve, a tubular element affixed to the circular inner surface of said annular plate, a movable tubular element adjustably mounted inside said tubular element, and a ferrule cap mounted on said tubular element;
a holder for said ferrule attached to the lower end of the calender tubes; and
a metallic granule catalyst bed located on the cylindrical plate of the ferrule.

4,368,174
APPARATUS FOR A CONTINUOUS DOWN-FLOW ZEOLITE PRODUCTION

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 29, 1980, Ser. No. 220,556
Int. Cl.^{3} F28D *21/00*
U.S. Cl. 422—208 **9 Claims**



1. An apparatus for preparing crystalline zeolite materials on a continuous-stream basis comprising

a substantially vertically-oriented reactor means,
a stirring means inside said reactor means, said stirring means being operatively associated with said reactor means,
a heating means surrounding said reactor means,
at least one reactants entrance means in the upper portion of said reactor means for continuously introducing reactants into said reactor means,
a product exit means in the lower portion of said reactor means for continuously removing crystalline zeolite product from said reactor means comprised of
a first product exit means connected to a first crystalline zeolite product collecting means by a conduit containing a first valve means, and
a second product exit means connected to a second crystalline zeolite product collecting means by a conduit containing a second valve means, and
pressurizing means for pressurizing said reactor means with an inert gas.

4,368,175
ION EXCHANGE ENRICHMENT OF URANIUM ISOTOPES

Tetsuya Miyake, Kawasaki; Kunihiko Takeda, Yokohama, and Hatsuki Onitsuka, Fujisawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jun. 5, 1980, Ser. No. 156,727
Claims priority, application Japan, Jun. 22, 1979, 54-78069
Int. Cl.^{3} C01G *43/00*
U.S. Cl. 423—7 **6 Claims**

1. In a process for the enrichment of one isotope in a mixture of uranium isotopes by passing a solution of the mixture in a solvent through an anion exchanger thereby forming on the anion exchanger a boundary (A) between a uranium adsorption zone and an adjacent reducing agent zone and/or a boundary (B) between a uranium adsorption zone and an adjacent oxidizing agent zone, the uranium adsorption zone advancing through the anion exchanger, effecting reduction at the boundary (A) and/or effecting oxidation at the boundary (B), thereby effecting enrichment adjacent said boundary, and separating a fraction enriched in one of said isotopes, the improvement which comprises using as the solvent medium a composition comprising (a) a solvent having a dielectric constant of at least 80 at 20° C., (b) hydrochloric acid and (c) at least one of hydrobromic acid and sulfuric acid, the solvent medium having a hydrogen ion concentration of about 0.1 M/l to about 10 M/l, a total chlorine ion concentration of about 0.1 M/l to about 12 M/l, at least one of bromine and sulfate ion being present in about 0.01 M/l to about 10 M/l and the other being present in from zero up to 10 M/l, and passing the materials through the ion exchanger at a rate such that the migration velocity of the uranium adsorption zone through the ion exchanger is at least about 1 cm per minute.

4,368,176
DESULFURIZING ROAST OF PYRITE BEARING POLYMETALLIC RAW MATERIAL

Dzhantore N. Abishev, ulitsa Michurina, 21/3, kv. 44; Evnei A. Buketov, ulitsa Lenina, 36, kv. 3, both of Karaganda; Aigul T. Shindauletova, ulitsa Kirova, 135, kv. 5, Alma-Ata; Nazymkul Baltynova, prospekt Sovetsky, 52-a, kv. 40, Karaganda; Ida N. Babskaya, bulvar Mira, 47, kv. 57, Karaganda; Abubakir K. Kobzhasov, prospekt Sovetsky, 75, kv. 12, Karaganda; Vitaly P. Malyshev, ulitsa Botanicheskaya, 14, kv. 52, Karaganda; Ivan K. Bauer, ulitsa Botanicheskaya, 14, kv. 30, Karaganda; Murat M. Mukhamedinov, rudoupravlenie "Maikainzoloto", Pavlodarskaya oblast, poselok Maikain; Temirkhan A. Kusainov, ulitsa Dzerzhinskogo, 63, Karaganda; Kasken N. Orazalina, ulitsa Dzhambula, 129, kv. 12, Karaganda, and Eslambek A. Buketov, Karagailinsky GOK, poselok Karagaily Karagandinskoi oblasti, all of U.S.S.R.
PCT No. PCT/SU79/00063, § 371 Date Mar. 31, 1981, § 102(e) Date Nov. 24, 1980, PCT Pub. No. WO81/00418, PCT Pub. Date Feb. 19, 1981
PCT Filed Jul. 31, 1979, Ser. No. 224,521
Int. Cl.^{3} C22B *1/02*
U.S. Cl. 423—25 **5 Claims**

3. A method for treating a pyrite bearing polymetallic material comprising ferrous, non-ferrous, rare and noble metals, which comprises: heating said material in a walled vessel without air access at a temperature of about 700° to 800° C. for about 1 to 2 hours; cooling the heated material at a rate of 2 to 4 degrees per minute, thereby effecting a transition of copper sulfides contained in the polymetallic material from cubic diamagnetic chalcopyrite into its tetragonal modification, followed by a two stage magnetic separation, wherein in the first stage iron sulfides are separated at a magnetic field intensity of about 1000 to 2000 oersteds, and in the second stage copper sulfides are separated at a magnetic field intensity of about 4500 to 6000 oersteds.

4,368,177
PROCESS OF PRODUCING QUICKLIME BY CALCINING IN A ROTARY KILN

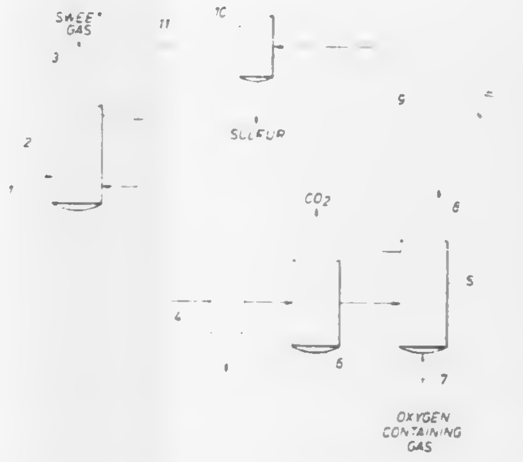
Wolfram Schnabel, Hattersheim; Gerhard Reuter, München-Aschheim, and Herbert Lausch, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Apr. 2, 1981, Ser. No. 250,490
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012866
Int. Cl.^{3} C01F *11/04, 11/06*
U.S. Cl. 423—175 **7 Claims**

1. In a process for producing quicklime by a calcining treatment with a hot gas in a rotary kiln, wherein solid carbonaceous fuel for producing hot gas is fed into the charging end of the rotary kiln and an oxygen-containing gas is blown through nozzle blocks into the charge disposed over nozzle blocks in the heating-up zone beginning at the point where ignitable particles of the solid fuel first appear, the improvement wherein:

(a) an oxygen-containing gas is blown through nozzle blocks into the charge disposed over nozzle blocks in that region of the heating-up zone which begins with the appearance of ignitable particles of the solid fuels and which ends where the temperature in the charge does not rise further, said heating-up zone comprising 40–70% of the length of the kiln;
(b) oxygen-containing gases are blown through nozzle blocks into the charge disposed over nozzle blocks in a calcining zone which succeeds said heating-up zone and at such a rate that the temperature in the charge is held constant and for as long as the temperature remains constant, said calcining zone comprising 30 to 60% of the length of the kiln;
(c) oxygen-containing gases are blown into the free kiln space where the kiln atmosphere contains combustible gaseous constituents, and
(d) the rates at which oxygen-containing gases are blown into the free kiln space are so controlled that the exhaust gas is virtually free from combustible gaseous constituents.

4,368,178
PROCESS FOR THE REMOVAL OF H_2S AND CO_2 FROM GASEOUS STREAMS

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed May 26, 1981, Ser. No. 267,181
Int. Cl.^{3} B01D *53/34;* **C01B** *17/04*
U.S. Cl. 423—226 **24 Claims**



1. A process for the removal of H_2S and CO_2 from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contact zone with a lean CO_2-selective liquid absorbent mixture comprising diethylene glycol monoethyl ether and an effective amount of the Fe(III) chelate of nitrilotriacetic acid, and producing a sweet gaseous stream and a liquid absorbent admixture containing absorbed CO_2, solid sulfur, and Fe(II) chelate of nitrilotriacetic acid,
(b) removing sulfur from said absorbent admixture, and leaving a solution containing absorbed CO_2 and Fe(II) chelate of nitrilotriacetic acid,
(c) stripping the solution containing absorbed CO_2 and said Fe(II) chelate, and regenerating Fe(III) chelate of nitrilotriacetic acid in said solution with oxygen, producing a lean CO_2-selective absorbent solution containing the Fe(III) chelate of nitrilotriacetic acid, and
(d) returning lean CO_2-selective absorbent solution containing Fe(III) chelate of nitrilotriacetic acid to the contacting zone.

4,368,179
PROCESS FOR THE OXIDATION OF ALKALI METAL PHOSPHITES

Günther Shimmel; Gero Heymer, both of Erftstadt, and Hasso Scott, Kerpen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Nov. 24, 1980, Ser. No. 209,845
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948219
Int. Cl.^{3} C01B *15/16, 25/26*
U.S. Cl. 423—315 **3 Claims**

1. A process for oxidizing alkali metal phosphites in the form of solutions or suspensions containing the phosphorus in its trivalent oxidation state, which comprises spray-drying the said solutions or suspensions being essentially free of oxidizing agents other than air at a temperature between 400° and 500° C. in a flame zone within a tower and in the presence of an excess of air, with the resultant formation of trialkali metal phosphate admixed with alkali metal hydroxide as the product, said phos-

phate containing phosphorus in its pentavalent oxidation state, said solutions or suspensions being substantially phosphate free, having an alkali metal:P atomic ratio of at least about 3.5, and containing more than 50% by weight of the phosphorus in its trivalent oxidation state, prior to oxidation.

4,368,180

METHOD FOR PRODUCING POWDER OF α-SILICON NITRIDE

Hiroshi Inoue, Saitama; Katsutoshi Komeya, Kanagawa, and Akihiko Tsuge, Yokohama all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 250,175, Apr. 2, 1981, abandoned, Division of Ser. No. 121,095, Feb. 13, 1980, Pat. No. 4,264,565. This application Aug. 17, 1981, Ser. No. 293,305

Claims priority, application Japan, Feb. 19, 1979, 54-17188

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.^{3} C01B *21/068*

U.S. Cl. 423—344 **14 Claims**

1. A method for producing powder of α-silicon nitride which comprises the steps of:

adding 0.1 to 2 parts by weight of carbon and 0.005 to 1 part by weight of at least one silicon compound selected from the group consisting of Si_3N_4, SiC and Si_2ON_2 to 1 part by weight, when converted to SiO_2, of a liquid alkylchlorosilane that forms a precipitate and HCl by hydrolysis which precipitate is convertible to SiO_2 at a baking temperature of 1300° to 1550° C.;

hydrolyzing the resultant mixture;

washing the mixture to separate a solid component; and

baking the solid component at a temperature of 1300° to 1550° C. in an atmosphere mainly consisting of a nitrogen gas or a gas of a nitrogen compound to effect formation of α-silicon nitride.

4,368,181

METHOD OF PRODUCING β-SILICON CARBIDE

Hiroshige Suzuki, 39-9, Kitasenzoku 2-chome, Ota-ku, Tokyo 145, and Teizo Hase, Kawasaki, both of Japan, assignors to Hiroshige Suzuki, Tokyo, Japan

PCT No. PCT/JP80/00305, § 371 Date Aug. 5, 1981, § 102(e) Date Aug. 5, 1981, PCT Pub. No. WO81/01699, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 12, 1980, Ser. No. 293,218

Claims priority, application Japan, Dec. 14, 1979, 54/161641

Int. Cl.^{3} C01B *31/36*

U.S. Cl. 423—345 **4 Claims**

1. A method of producing β-silicon carbide, comprising mixing carbonaceous powder having a particle size of not larger than 60 μm with silica powder having a particle size of not larger than 150 μm in a mixing ratio of the molar ratio of carbon to silica of 3 to produce a raw materiial mixture; heating continuously the raw material mixture in a reaction system having a high temperature zone and a low temperature zone such that the raw material mixture is heated at a low temperature and then at a high temperature in the first half of the reaction and then at a low temperature in the second half of the reaction in this order; condensing silicon monoxide, which is formed together with SiC in the reaction system, in the low temperature zones in the first and second halves in the reaction system to capture and recover the silicon monoxide in the reaction product without escaping of the silicon monoxide from the reaction system; stirring, mixing and pulverizing the recovered product during the reaction or after the reaction to contact again unreacted carbon and silica with the above recovered silicon monoxide and to react them; and repeating the above described operation until the reaction is substantially completed.

4,368,182

CARBON BLACK PRODUCTION

King L. Mills, and Paul J. Cheng, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 15, 1981, Ser. No. 263,949

Int. Cl.^{3} C01B *31/02;* **C09C** *1/48*

U.S. Cl. 423—450 **2 Claims**

1. A start-up procedure for a carbon black furnace reactor which yield an effluent and in which a carbon black is produced from a suitable feedstock which comprises admixing a low Btu off-gas having a heating value ranging from about 50 to about 150 Btu/SCF with a high Btu fuel having a heating value of at least about 600 Btu/SCR, injecting the mixture thus obtained along with combustion-supporting air into the combustion section of a precombustion zone of a carbon black furnace and therein creating a vortex flow of hot combustion gases at a temperature of about 2700° to 3000° F. suitable for initiating the production of carbon black, injecting into said vortex flow of hot combustion gases of desired temperature thus produced a carbon black producing feedstock and when said feedstock by partial combustion of the same is maintaining the desired carbon black forming temperature in said zone phasing out or discontinuing the flow of said high Btu fuel in a manner that substantially only the low Btu off-gas is used as fuel gas said combustion supporting air and said low BTU off-gas being indirectly, separately heat exchanged with said effluent.

4,368,183

PROCESS OF PRODUCING CONCENTRATED SULFURIC ACID

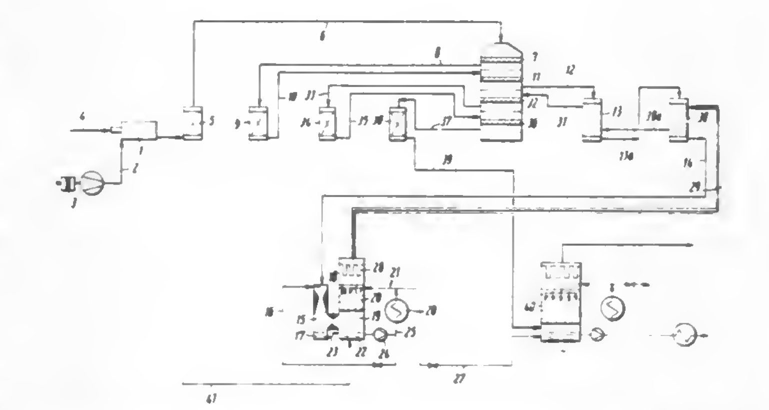
Karl-Heinz Dörr, Mainz; Hugo Grimm, Miltenberg; Ulrich Sander, Friedrichsdorf; Robert Peichl, Kelheim, and Franz Maier, Mark Schwaben, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Sudchemie Aktiengesellschaft, Munich, both of, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,285

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945021

Int. Cl.^{3} C01B *17/82, 17/76*

U.S. Cl. 423—522 **6 Claims**



1. A process for producing concentrated sulfuric acid by a catalytic reaction of SO_2 to SO_3 which consists essentially of:

(a) treating a hot humid SO_2-containing gas in which the H_2O to SO_2 ratio is less than 1 without drying the SO_2-containing gas by a process consisting essentially of feeding it into a first contacting stage containing a catalyst and therein converting SO_2 to SO_3;

(b) withdrawing reaction gas from said first contacting stage whose vapor content is maintained at an H_2O/SO_3 mol ratio below 1;

(c) cooling the reaction gas from the first contacting stage by indirect heat exchange to such an extent that the temperature of the walls of the heat exchanger is above the dew point temperature of the reaction gas;

(d) passing the so-cooled indirect heat exchanged reaction gas for direct heat exchange cooling into a condensing stage comprising a venturi by passing said reaction gas into said venturi co-currently with sprayed sulfuric acid having a concentration of 98.0 to 100 percent and a temperature of at least 95° C. whereby sulfuric acid vapor is condensed and SO_3 is absorbed;

(e) withdrawing residual unabsorbed SO_3 containing gas from said condensing stage at a temperature at or above 120° C. and up to 170° C.;

(f) passing said residual unabsorbed SO_3 containing gas into a succeeding absorption stage comprising a packing layer and passing said gas upwardly through said packing layer while trickling sulfuric acid having a concentration of 98 to 100 percent and a temperature of 70° to 120° C. through said packing layer;

(g) withdrawing dry, SO_3-free gas from said succeeding absorption stage at or slightly above the temperature of said sulfuric acid fed onto said packing layer;

(h) passing said dry, SO_3-free gas through an indirect heat exchanger whereby to heat the same;

(i) passing the so-heated dry, SO_3-free gas into a second contacting stage containing a catalyst and therein converting SO_2 in said gas to SO_3; and

(j) controlling the concentration of sulfuric acid by a supply of water to the sulfuric acid supplied to the condensation and/or succeeding absorption stage.

4,368,184

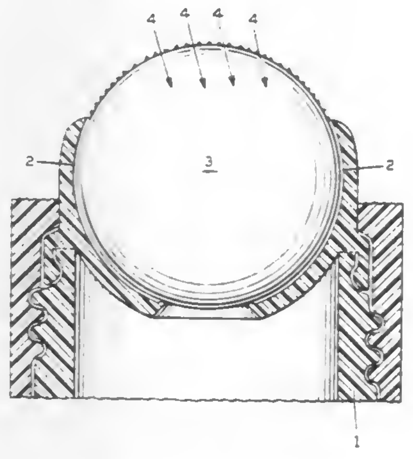
METHOD FOR THE APPLICATION OF ANTIPERSPIRANT POWDER COMPOSITIONS

Jacob Drucker, Holmdel, and Frank Shea, Cranbury, both of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 853,097, Nov. 21, 1977, abandoned. This application Jul. 15, 1980, Ser. No. 169,160

Int. Cl.^{3} A61K *7/34;* **A45D** *33/12*

U.S. Cl. 424—66 **4 Claims**



1. A method for applying loose, free-flowing antiperspirant powder compositions to the skin which comprises dispensing a loose, free-flowing powder from a ball-top container adapted to dispense said loose, free-flowing powder to the body surface by rolling movement of the ball or roller along such surface, wherein said container is a dispenser having an open end, a generally spherical or cylindrical, comparatively rough-surfaced or textured dispensing ball or roller, wherein said surface contains filamentous structures in a density of 1000 to about 4000/in^2 and from about 0.007 to about 0.01 inches in length, adapted to fit partially within the open end of the container, means for rotatably supporting the ball partially within the open end of the container which cooperates with the dispensing ball or roller to retain it in assembly on the dispenser.

4,368,185

MOLDED, STORAGE STABLE SUPPOSITORY BASE COMPOSITION OF SPECIFIED AMOUNTS OF POLYETHYLENE GLYCOL, FATTY ACID TRIGLYCERIDE AND ALKYLENE OXIDE DERIVATIVE

Mitsuo Mizuno, Yokosuka; Akinori Suginaka, Kamakura; Masahiko Fujii, Tokyo, and Shinichi Akimoto, Machida, all of Japan, assignors to Nippon Oil and Fats Company, Ltd., Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,581

Claims priority, application Japan, Oct. 26, 1979, 54-138562

Int. Cl.^{3} A61K *9/02, 31/765, 31/75, 47/00*

U.S. Cl. 424—78 **6 Claims**

1. A molded, storage-stable suppository, stable in a temperature range of from 5° C. to 70° C., comprising a composition which is:

about 40% by weight of a polyethylene glycol having an average molecular weight of about 9000;

about 40% by weight of triglycerides of fatty acids comprising alkyl groups which are about 50% by weight of C12, 23 by weight of C14, 14% by weight of C16 and 13% by weight of C18 alkyl groups; and

about 20% by weight of $Y((C_3H_6O)_{35}\ (C_2H_4O)_{100}\ H)_2$ wherein Y is propylene glycol residue.

4,368,186

METHODS AND COMPOSITIONS FOR INTRAVAGINAL CONTRACEPTION

Brian H. Vickery, Cupertino; Shabbir Anik, and Richard E. Jones, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 7, 1981, Ser. No. 261,411

Int. Cl.^{3} A61K *31/74, 31/415*

U.S. Cl. 424—78 **22 Claims**

1. A contraceptive gel composition for intravaginal application, which consists essentially of:

(a) a contraceptively effective amount of a sperm function inhibitor;

(b) between about 10% and 30% by weight of a polyoxyethylene—polyoxypropylene block copolymer, having an average molecular weight between about 5,000 and 15,500; and

(c) water, and, optionally, other non-toxic pharmaceutically acceptable excipients.

4,368,187

SENSITIVE-SKIN CARE REGIME

Merlyn G. Flom, Noblesville; Anne M. Herrold, Brownsburg; Joe O. Martin, Martinsville; Anton A. Mentlik, Noblesville, and Patricia P. Warrick, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,658

Int. Cl.^{3} A61K *31/78, 47/00*

U.S. Cl. 424—81 **1 Claim**

1. A method of decreasing the sensitivity of sensitive skin without causing skin irritation which comprises applying to the skin in a regime:

(a) a cleanser formulation consisting essentially of, in percent by weight:

Ingredients	Percent
propylene glycol	6.00
magnesium aluminum silicate	1.00
sodium carboxymethyl cellulose	0.10
glyoxyldiureide	0.50
polyoxyethylene (10) soya or tall oil sterols	2.50
polyoxyethylene (3) myristyl ether myristate	15.00
squalane (2,6,10,15,19,23-hexamethyltetracosane)	12.00
polydimethylcyclosiloxane	12.00

-continued

Ingredients	Percent
stearyl alcohol (1-octadecanol)	1.50
cetyl alcohol (1-hexadecanol)	3.00
glyceryl monostearate and polyoxyethylene (100) monostearate	2.00
preservative	q.s.
deionized eater	q.s. to 100%

(b) a toner formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.10
glycerin	2.00
glyoxyldiureide 0.30	
acetylated polyethylene (10)	
lanolin alcohol	1.00
cetyl/stearyl 2-ethylhexanoate	1.00
98% triethanolamine	0.10
preservative	q.s.
deionized water	q.s. to 100%

(c) a moisturizer formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.20
glyoxyldiureide	0.50
polyoxyethylene (20) sorbitan fatty acid ester	2.00
cetyl alcohol (1-hexadecanol)	2.00
glyceryl monostearate	1.25
sorbitan trioleate	5.00
polyphenylmethylsiloxane	2.50
2-ethylhexyl p-dimethylaminobenzoate	2.00
lavandin	0.0032
rosemary	0.0066
thyme	0.0102
98% triethanolamine	0.20
squalane (2,6,10,15,19,23-hexamethyl tetracosane)	1.50
avocado oil	2.50
light mineral oil	7.00
di(2-ethylhexyl)adipate	0.625
2-ethylhexyl stearate	1.025
2-ethylhexyl palmitate	0.850
preservative	q.s.
deionized water	q.s. to 100%

and

(d) a cream formulation consisting essentially of, in percent by weight:

Ingredient	Percent
white beeswax	2.00
distilled lanolin alcohols	0.50
white petrolatum	2.00
triglyceryl diisostearate	5.50
squalane (2,6,1,0,15,19,23-hexamethyltetracosane)	5.00
light mineral oil	6.00
isopropyl myristate	5.00
polyethylene homopolymer (1500 m. wt., density 0.91 g/cc)	3.00
polysimethylcyclosiloxane	3.00
quaternary bentonite (Bentone. No. 38)	0.40
70% sorbitol solution	5.00
glyoxydiureide	0.50
preservative	q.s.
deionized water	q.s. to 100%

4,368,188
COSMETIC TONER FORMULATION

Joe O. Martin, Martinsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,656

Int. Cl.³ A61K *31/78, 47/00*

U.S. Cl. 424—81 **1 Claim**

1. A cosmetic toner formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.10
glycerin	2.00
glyoxyldiureide	0.30
acetylated polyoxyethylene (10) lanolin alcohol	1.00
cetyl/stearyl 2-ethylhexanoate	1.00
98% triethanolamine	0.10
preservative	q.s.
deionized water	q.s. to 100%

4,368,189
COSMETIC MOISTURIZER FORMULATION

Anton A. Mentlik, Noblesville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,655

Int. Cl.³ A61K *31/78, 7/44*

U.S. Cl. 424—81 **1 Claim**

1. A cosmetic moisturizer formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.20
glyoxyldiureide	0.50
polyoxyethylene (20) sorbitan fatty acid ester	2.00
cetyl alcohol (1-hexadecanol)	2.00
glyceryl monostearate	1.25
sorbitan trioleate	5.00
polyphenylmethylsiloxane	2.50
2-ethylhexyl p-dimethylaminobenzoate	2.00
lavandin	0.0032
rosemary	0.0066
thyme	0.0102
98% triethanolamine	0.20
squalane (2,6,10,15,19,23-hexamethyl tetracosane)	1.50
avocado oil	2.50
light mineral oil	7.00
di(2-ethylhexyl)adipate	0.625
2-ethylhexyl stearate	1.025
2-ethylhexyl palmitate	0.850
preservative	q.s.
deionized water	q.s. to 100%.

4,368,190
IMMUNOLOGICALLY ACTIVE DIPEPTIDYL 4-O-,6-O-ACYL-2-AMINO-2-DEOXY-D-GLUCOSE DERIVATIVES AND METHODS FOR THEIR PREPARATION

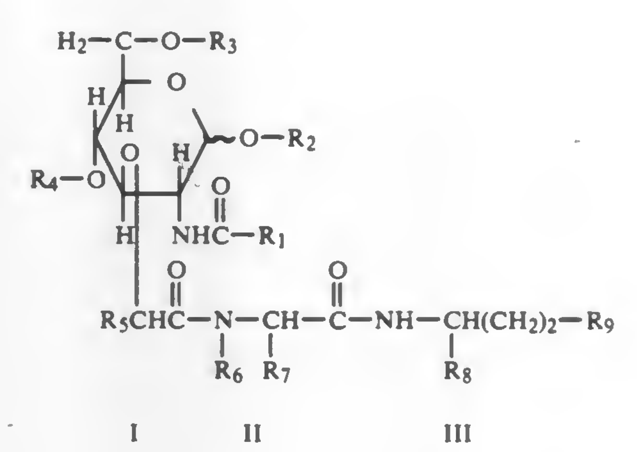
Tsung-Ying Shen, Westfield; Philippe L. Durette, New Providence; Conrad P. Dorn, Jr., Plainfield; James B. Doherty, New Milford, and Richard T. Dean, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 17, 1980, Ser. No. 141,227

Int. Cl.³ A61K *37/02, 39/00;* **C07C** *103/52*

U.S. Cl. 424—88 **34 Claims**

1. Dipeptidyl 4-O, 6-O-2-amino-2-deoxy-D-glucoses of the general structural formula:

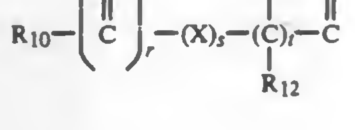


wherein

R₁ is $C_{1\text{-}7}$ alkyl; $C_{1\text{-}7}$ alkyl substituted by hydroxy, mercapto, alkoxy of 1–3 carbons, alkyl mercapto of 1–3 carbons, hydroxy or mercapto esterified by an acid of 1–4 carbon atoms, halogen, carboxyl, or carboxyl functionally modified by esterification with a lower alcohol of 1–3 carbons or by amidation; phenyl; or phenyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cycloalkyldioxy of 5–7 carbon atoms, amino, or trifluoromethyl;

R_2 is hydrogen; $C_{1\text{-}7}$ alkyl; $C_{1\text{-}7}$ alkyl substitued by hydroxy, mercapto, alkoxy of 1–3 carbons, alkyl mercapto of 1–3 carbons, hydroxy mercapto esterified by an acid of 1–4 carbon atoms, halogen, carboxyl, or carboxyl functionally modified by esterification with a lower alcohol of 1–3 carbons or by amidation; phenyl; phenyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cycloalkyldioxy of 5–7 carbon atoms, amino, or trifluoromethyl; phenyl $C_{1\text{-}4}$ alkyl; or phenyl $C_{1\text{-}4}$ alkyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cycloalkyldioxy of 5–7 carbon atoms, amino, or trifluoromethyl;

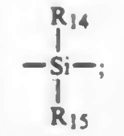
R_3 and R_4 may be the same or different and are each independently hydrogen, provided that R_3 and R_4 may not both be hydrogen; or



$$R_{10}-\left(\begin{matrix}O\\ \|\\ C\end{matrix}\right)_r-(X)_s-\left(\begin{matrix}R_{11}\\ |\\ C\\ |\\ R_{12}\end{matrix}\right)_t-\begin{matrix}O\\ \|\\ C\end{matrix}$$

where

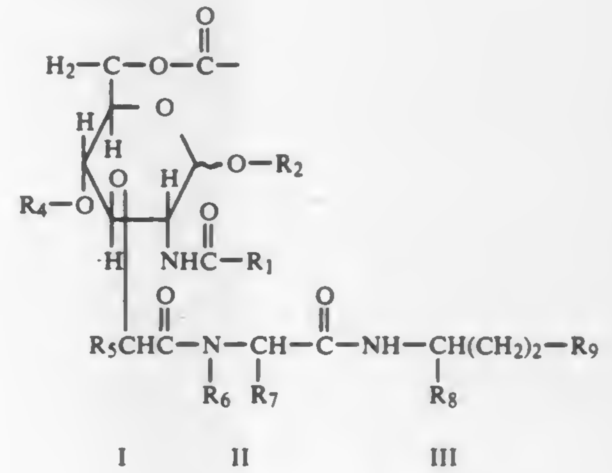
X is —O—; —S—; or



$$-\begin{matrix}R_{14}\\ |\\ Si\\ |\\ R_{15}\end{matrix}-;$$

R_{10} is hydrogen; $C_{1\text{-}30}$ alkyl; $C_{2\text{-}30}$ alkenyl; $C_{1\text{-}30}$ alkoxy; phenyl; $C_{1\text{-}20}$ alkylsulfonyl; or cholesteryl;

R_{11}, R_{12}, R_{14}, and R_{15} may be the same or different and are each independently hydrogen; $C_{1\text{-}20}$ alkyl; $C_{1\text{-}20}$ alkylcarbonyloxy; amino; benzyl; $C_{1\text{-}20}$ alkoxymethyl; $C_{1\text{-}20}$ alkylamido; or



r is 0 or 1; s is 0 or 1; and t is 0 to 20; provided that s may only be 0 when both r and t are greater than 0 or when r is 0 and R_{10} is phenyl; substituted phenyl; 1-adamantyl or heterocycle selected from the group consisting of 2- or 3-furyl, 2- or 3-thienyl, 2- or 3-pyrrolidinyl, 2-, 3- or 4-pyridyl, and 1-tetrazolyl, said heterocycle optionally substituted with $C_{1\text{-}20}$ alkyl-carbonyl; and where R_3 or R_4 is other than hydrogen, the other of R_3 or R_4 may additionally be $C_{1\text{-}4}$ alkylcarbonyl; provided further that when r and s are each 0 and R_{11} and R_{12} are each hydrogen, R_{10} is not hydrogen or alkyl;

R_5 is hydrogen or $C_{1\text{-}10}$ alkyl;

R_6 is hydrogen or R_6 and R_7 taken together are $—(CH_2)_3—$;

R_7 is hydrogen; $C_{1\text{-}7}$ alkyl; hydroxymethyl; mercaptomethyl; benzyl; or parahydroxybenzyl;

R_8 and R_9 may be the same or different and are each independently COOR, or CONR'R'', where R is hydrogen or $C_{1\text{-}7}$ alkyl, and R' and R'' are hydrogen or $C_{1\text{-}3}$ alkyl; when R_5 is $C_{1\text{-}10}$ alkyl, the stereochemistry at asymmetric center I is D or L;

when R7 is other than hydrogen, the stereochemistry at asymmetric center II is L; and the stereochemistry at asymmetric center III is D; and acid addition and quaternary salts thereof.

33. A vaccine against bacterial, viral, or parasitic infections or against various tissue antigens of normal or pathogenic origin comprising a compound of claim **1** in an amount effective to impart an immunostimulatory response.

34. A composition comprising a compound of claim **1** in an amount effective to impart an immunostimulatory response and a physiologically acceptable medium.

4,368,191

VACCINE AND METHOD PROPHYLAXIS AND TREATMENT OF TRICHOPHYTOSIS CAUSED BY PATHOGENIC ORGANISM TRICHOPHYTON MENTAGROPHTYES AND METHOD FOR PREPARING SAME

Arutjun K. Sarkisov, Begovaya alleya, 3, kv. 126, and Lev I. Nikiforov, Semenovsky val, 12, kv. 46, both of Moscow, U.S.S.R.

Filed Jun. 4, 1979, Ser. No. 45,384

Claims priority, application U.S.S.R., Jun. 7, 1978, 2618901; Jun. 7, 1978, 2618902

Int. Cl.^{3} A61K *39/00*

U.S. Cl. 424—88 **11 Claims**

1. A vaccine for prophylaxis and treatment of trichophytosis in fur-bearing animals caused by the pathogenic organism Trichophyton mentagrophytes comprising:

a suspension of microconidia of the strain No. 135/1963 of the Trichophyton mentagrophytes species in a physiological solution with a pH of from 6.2 to 7.0 in an amount of from 15 to 25 min of microconidia per 1 ml of the physiological solution including 8–25 million of viable microconidia.

4,368,192

PEPTIDES

Erich Wünsch, Tutzing, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Apr. 29, 1980, Ser. No. 145,500

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917603; Oct. 25, 1979, 2943132

Int. Cl.^{3} A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **4 Claims**

1. Pancreozymin-cholecystokinin active nonapeptides having a modified carboxyl terminated sequence of pancreozymin-cholecystokinin 25–33 wherein the modification consists essentially of: the amino acid group 25 selected from arginine, homoarginine, norarginine, N_ϵ, N_ϵ-dialkyllysine, N_δ, N_δ-dialkylornithine, which carries a stability-enhancing strongly basic group; the amino acid group 28 selected from threonine, serine or hydroxy proline, which exhibits a hydrophilic character similar to that of hydroxyamino acid groups; and the amino acid group 31 selected from norleucine, leucine, norvaline or α-amino butyric acid, which exhibits a strongly hydrophobic character similar to that of amino acid groups having an aliphatic side chain, wherein the total polarity character of the resulting peptide provided by amino acid groups 25 and 28 is similar to that of pancreozymin-cholecystokinin.

4,368,193

PROCESS FOR TREATING MALARIA

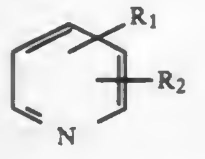
Alexander D. Argoudelis, and David W. Stroman, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 20, 1981, Ser. No. 255,541

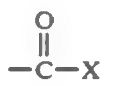
Int. Cl.^{3} A61K *31/70*

U.S. Cl. 424—180 **31 Claims**

1. A process for treating malaria comprising the administration of an effective antimalarial amount of the 3-(5′-ribonucleotide) of a compound having the formula



wherein R_1, which can be singly or multiply substituted in any position of the pyridine ring not already substituted by R_2, is selected from the group consisting of hydrogen, alkyl and substituted alkyl wherein the alkyl portion is from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl and substituted cycloalkyl, substituted oxygen, substituted nitrogen, halogen, phenyl, and substituted phenyl, $-(CH_2.)_n-OH$, $-(CH_2)_n-NR_4R_5$, and isomeric forms thereof, wherein n is an integer of from 1 to 8, inclusive, R_4 and R_5 are H or alkyl of from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof; wherein R_2, which can be singly substituted in any position of the pyridine ring not already substituted by R_1, is



$$-\overset{\overset{\displaystyle O}{\|}}{C}-X$$

and X is the amino function of a compound selected from the group consisting of 7(S)-halo-methyl 1-thio-α-lincosaminide and 7(R)-halo-methyl 1-thio-α-lincosaminide; or the pharmaceutically acceptable salts thereof, to a mammal hosting a malarial parasite.

4,368,194

PHARMACOLOGICALLY ACTIVE AMINE BORANES

Bernard F. Spielvogel; Andrew T. McPhail, both of Durham, and Iris H. Hall, Chapel Hill, all of N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 68,356, Aug. 21, 1979, Pat. No. 4,312,989. This application Jul. 17, 1981, Ser. No. 284,279

Int. Cl.^{3} A61U *31/69*

U.S. Cl. 424—185 **21 Claims**

1. The method of treating an animal which has inflammation in order to inhibit the inflammation process, by administering to said animal a therapeutically effective amount of an amine borane selected from the following:

$$R_3N.BH_2X \qquad \text{I}$$

Where X is selected from the group consisting of H, CN, $CONR^1R^2$, COOH, halogen, and $COOR^3$,
R is alkyl having 1 to 4 carbon atoms;
R^1 and R^2 can be the same or different and are H or alkyl; and
R^3 is alkyl;

$$H_3N.BH_2X \text{ or } RNH_2.BH_2X \text{ or } R_2NH.BH_2X \qquad \text{II}$$

where X is selected from the group consisting of H, CN, and halogen; and
R is alkyl having 1 to 4 carbon atoms;

$$\text{amine}.BH_2X \qquad \text{III}$$

where X is selected from the group consisting of H, CN, and COOH; and
amine is selected from the group consisting of morpholine, N-methylmorpholine, pyridine, and cyanoethyldimethylamine; and

$$(CH_2NY_2.BH_2X)_2 \qquad \text{IV}$$

where X is selected from the group consisting of CN, $CONR^1R^2$, and COOH;
R^1 and R^2 can be the same or different and are H or alkyl; and
Y is hydrogen or alkyl having 1 to 4 carbon atoms.

4,368,195

METHOD FOR THE EXTRACTION OF SILYMARIN FROM PLANTS

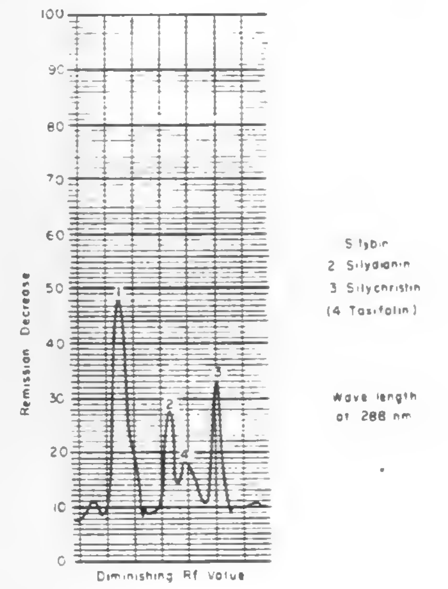
Rolf Madaus, Kön-Brück; Klaus Görler, Bensberg-Refrath, and Werner Molls, Odenthal-Schmeisig, all of Fed. Rep. of Germany, assignors to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 191,722, Sep. 29, 1980, abandoned. This application May 26, 1981, Ser. No. 267,232

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2914330

Int. Cl.^{3} A61K *35/78*

U.S. Cl. 424—195 **4 Claims**



1. An improved method for the extraction of silymarin from the fruits of Silybum marianum, the method being the type wherein a large part of the oil is removed from the fruits by cold pressing, the compressed mass is broken up, and the pressed residue extracted to obtain silymarin, the improvement comprising steps of

extracting the broken up compressed mass with anhydrous ethyl acetate to remove the silymarin therefrom;
evaporating the ethyl acetate to leave a fatted residue;
defatting the residue;
extracting a methanolic solution of the defatted residue with a chlorine-substituted lower alkane, with the addition of water;
extracting the chlorine-substituted solvent with a methanol-water solution;
combining all of the methanolic solutions and evaporating the solvent to leave a product residue;
suspending the product residue in a small amount of methanol; pouring the suspended residue into water;
separating the methanol-water mixture from the material in suspension and drying the material in suspension to yield the desired product.

4,368,196

PHOSPHORIC ACID ESTERS, AND THEIR USE FOR COMBATING PESTS

Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

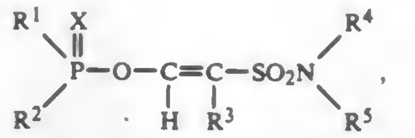
Filed May 29, 1981, Ser. No. 268,378

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020897

Int. Cl.^{3} A01N *43/76, 43/84;* **C07F** *9/165, 9/65*

U.S. Cl. 424—200 **4 Claims**

1. A phosphoric acid ester of the formula



where R^1 is alkoxy of a maximum of 4 carbon atoms or phenyl, R^2 is alkyl or a maximum of 3 carbon atoms, alkoxy or alkylthio of a maximum of 4 carbon atoms, or alkylamino or dialkylamino, each alkyl being of a maximum of 4 carbon atoms R^3 is methyl, ethyl, hydrogen or chlorine, R^4 and R^5 are phenyl or alkyl of a maximum of 4 carbon atoms, or are, together with the nitrogen atom, a 5- to 7-membered heterocycle selected from the group consisting of pyrrolidine, morpholine, or oxazolidine and X is oxygen or sulfur, with the proviso that R^1 is not phenyl when R^2 is alkyl.

2. A pesticide comprising a pesticidally effective amount of at least one compound as set forth in claim 1 and a solid or liquid carrier.

4,368,197

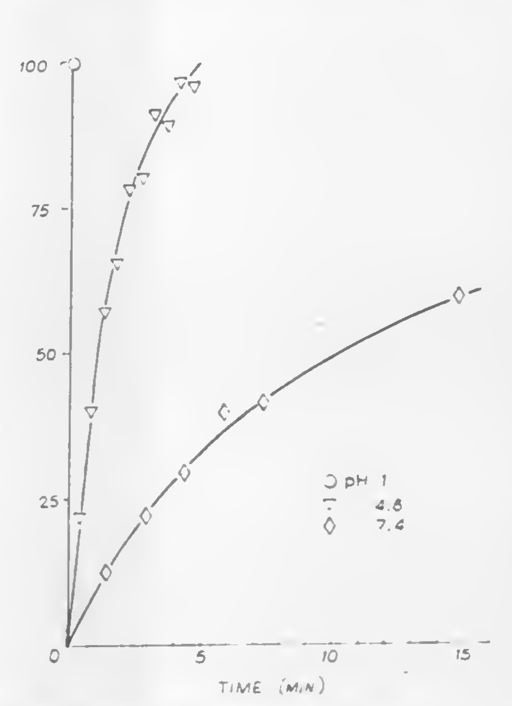
ZINC AMINOPHYLLINE AND ITS USE IN THE TREATMENT OF BRONCHOSPASMS

Eli Shefter, Williamsville; Francis X. Smith, Webster, and Mark J. Gardner, Kenmore, all of N.Y., assignors to Research Corporation, New York, N.Y.

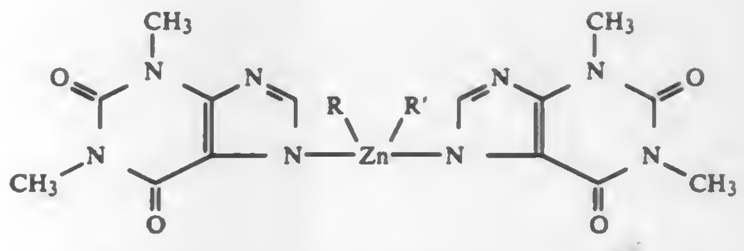
Continuation of Ser. No. 13,266, Feb. 21, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,861

Int. Cl.^{3} A61K *31/555;* **C07F** *3/06, 9/66*

U.S. Cl. 424—245 **6 Claims**



1. A compound represented by the formula



wherein R and R′ are each a primary monoamine or ammonia or taken together are a lower alkyl primary diamine having from 2 to 6 carbon atoms.

4. A pharmaceutical suspension suitable for oral administration containing an amount of the zinc complex of aminophylline which can be used to effectively treat bronchospasms and pharmaceutically acceptable oral suspension adjuvants and excipients.

4,368,198
CEPHALOSPORINS

Hirotada Yamada; Takenari Nakagome, both of Nishinomiya, and Toshiaki Komatsu, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

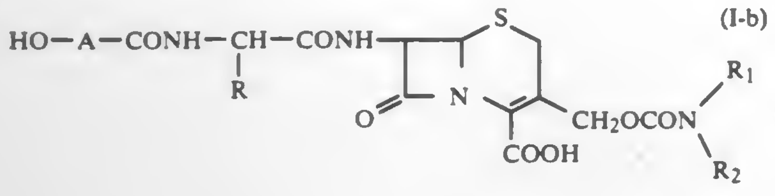
Division of Ser. No. 773,729, Mar. 2, 1977, Pat. No. 4,165,373. This application Mar. 7, 1979, Ser. No. 18,212

Claims priority, application Japan, Mar. 3, 1976, 51-23482; Mar. 3, 1976, 51-23483; Mar. 3, 1976, 51-23484; Mar. 3, 1976, 51-23485

Int. Cl.^{3} C07D *501/20;* **A61K** *31/545*

U.S. Cl. 424—246 **25 Claims**

1. A compound of the formula (I-b):



(I-b)

wherein A is a divalent heteroaromatic ring selected from the group consisting of a naphthyridine ring, a pyridopyrimidine ring and a pyridine ring, each of which can be unsubstituted or substituted with a (C_1-C_4)alkyl group or a (C_1-C_4)alkylthio group; R is a phenyl group which can be unsubstituted or substituted with one or two substituents selected from the group consisting of a hydroxy group, an amino group and a chlorine atom; R_1 and R_2, which can be the same or different, each is a hydrogen atom or a (C_1-C_4)alkyl group.

4,368,199
NOVEL DERIVATIVES OF 3,4,5-TRIMETHOXY CINNAMOYL PIPERAZINE, THEIR SALTS, THE PROCESS FOR PREPARING THE SAME AND THEIR APPLICATION IN THERAPEUTICS

Jean-Francois R. Ancher, Rueil Malmaison; Alain P. Lacour, La Varenne; Gerard H. Moinet, Orsay, and Jacky A. Tisne-Versailles, Le Pecq, all of France, assignors to Delalande S.A., Courbevoie, France

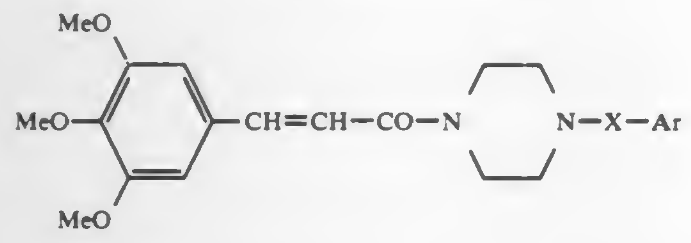
Filed Jan. 16, 1981, Ser. No. 225,588

Claims priority, application France, Jan. 21, 1980, 80 01242; Jan. 7, 1981, 81 00178

Int. Cl.^{3} C07D *241/02*

U.S. Cl. 424—250 **20 Claims**

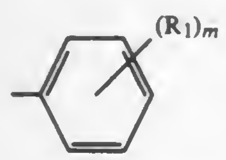
1. A compound having the formula



(I)

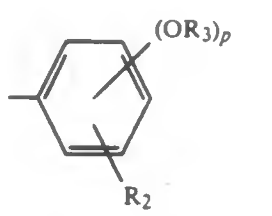
in which

(A) —X— represents either —$(CH_2)_n$— in which n is 1,2 or 3, or —CH_2—CO—, these two chains being bonded to the piperazine nucleus by their respective CH_2 group, and Ar represents:



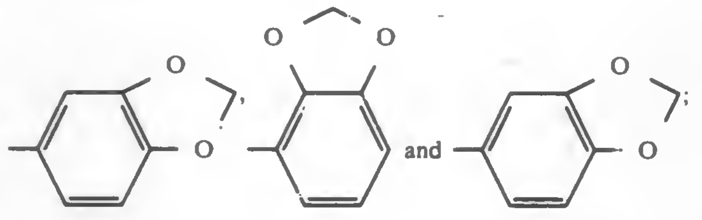
(1)

in which m is 1 or 2, and when m is 1, R_1 is hydrogen, halogen, alkyl, amino, nitro, alkylcarbonylamino, alkylsulfonylamino or alkylaminocarbonylamino wherein the respective alkyls each have from 1 to 5 carbon atoms, and when m is 2, R_1 is hydrogen, halogen or alkyl having from 1 to 5 carbon atoms;

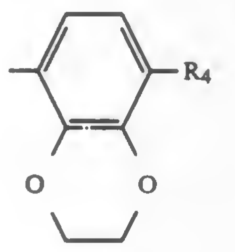


(2)

in which the set (R_2, R_3, p) has any one of the following values: (H,H, 1 or 2), (H, alkyl from 1 to 5 C, 1 or 2), (OH, H, 2), (OH, alkyl from 1 to 5 C, 1 or 2), (alkoxy having 1 to 5 C, H, 2), (alkoxy having 1 to 5 C, alkyl from 1 to 5 C, 2), (H, alkylcarbonyl from 2 to 5 C, 1 or 2);



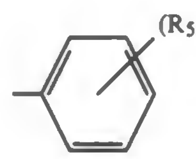
(3)



(4)

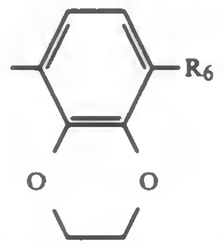
in which R_4 is hydroxy or alkoxy having 1 to 5 carbon atoms; or (5) naphthyl; or

(B) —X— represents —CH_2—CH_2—CO—, bonded to the piperazine nucleus by the CH_2 group, and Ar represents:



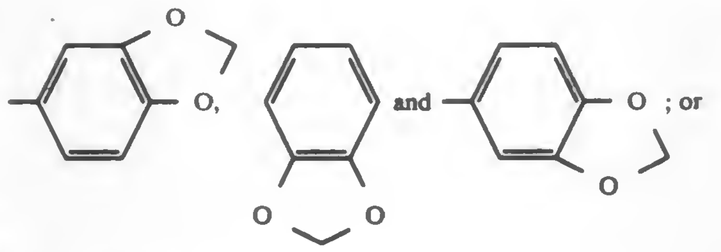
(1)

in which R_5 is hydrogen, chlorine, alkyl having 1 to 5 carbon atoms or an alkoxy having 1 to 5 carbon atoms, and q is 1,2 or 3;



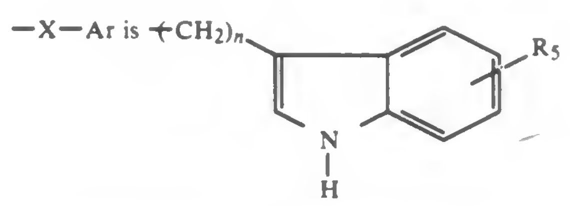
(2)

in which R_6 is alkyl having 1 to 5 carbon atoms or alkoxy having 1 to 5 carbon atoms;



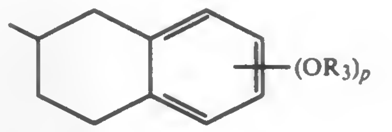
(3)

(4) naphthyl nucleus; or



(C)

in which n and R_5 have the same meanings as defined above, or



in which p is 1 or 2 and R_3 is hydrogen, alkyl group having 1 to 5 carbon atoms or alkylcarbonyl having 2 to 5 carbon atoms, and pharmacologically acceptable salts thereof.

4,368,200
HETEROCYCLIC DERIVATIVES OF (4-PHENYL-PIPERAZINE-1-YL-ARYLOXYMETHYL-1,3-DIOXOLAN-2-YL)-METHYL-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

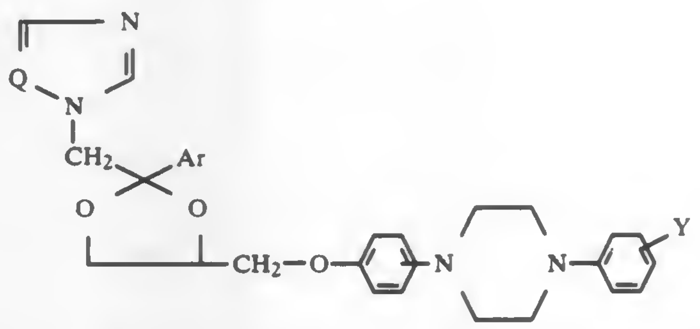
Jan Heeres, Vosselaar, and Leo J. J. Backx, Arendonk, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 20,383, Mar. 14, 1979, Pat. No. 4,267,179, which is a continuation-in-part of Ser. No. 919,333, Jun. 23, 1978, abandoned. This application Jan. 14, 1981, Ser. No. 224,992

Int. Cl.^{3} A61K *31/495;* **C07D** *405/14*

U.S. Cl. 424—250 **7 Claims**

7. A composition for combatting the growth of a microorganism selected from the group consisting of fungus and bacterium comprising an inert carrier material and as an active ingredient an effective antifungal or antibacterial amount of a compound selected from the group consisting of an azole derivative having the formula



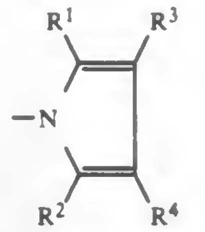
and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is a member selected from the group consisting of CH and N;

Ar is a member selected from the group consisting of phenyl, thienyl, halothienyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and

the radical Y is a member selected from the group consisting of

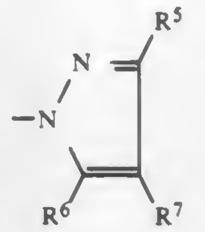
a 1H-pyrrol-1-yl radical of the formula



(a)

wherein R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

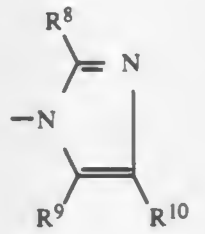
a 1H-pyrazol-1-yl radical of the formula



(b)

wherein R^5, R^6 and R^7 are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

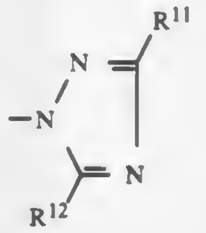
a 1H-imidazol-1-yl radical of the formula



(c)

wherein R^8 is selected from the group consisting of hydrogen, mercapto, lower alkylthio and aryl lower alkylthio, and R^9 and R^{10} are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

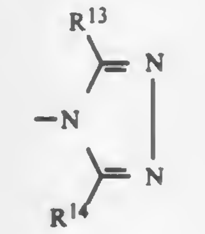
a 1H-1,2,4-triazol-1-yl radical of the formula



(d)

wherein either of R^{11} and R^{12} is selected from the group consisting of hydrogen, hydroxy, mercapto, lower alkylthio and aryl-lower alkylthio, the remaining being selected from the group consisting of hydrogen, lower alkyl and aryl-lower alkyl;

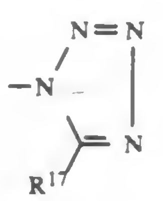
a 4H-1,2,4-triazol-4-yl radical of the formula



(e)

wherein R^{13} is selected from the group consisting of hydrogen, mercapto, hydroxy, lower alkylthio and aryl lower alkylthio, and R^{14} is selected from the group consisting of hydrogen, lower alkyl, aryl and arylllower alkyl;

a 1H-1,2,3,4-tetrazol-1-yl radical of the formula



(g)

wherein R^{17} is selected from the group consisting of hydrogen, mercapto, lower alkyl, aryl and aryl lower alkyl;
wherein said aryl as used in the foregoing definition is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl.

4,368,201

TETRAHYDRONAPHTHOXAZOLES

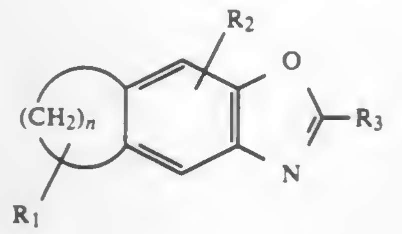
Fu-chih Huang, Boonton, N.J., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Jul. 20, 1981, Ser. No. 285,216

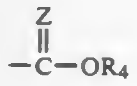
Int. Cl.³ C07D ***263/60, 277/84;*** **A61K** ***31/425***

U.S. Cl. 424—272 **12 Claims**

1. A compound useful as an antiallergic agent of the structure



and salts thereof;
wherein
n is 3, 4, or 5
R_1 is hydrogen or C_1-C_6 alkyl,
R_2 is hydrogen, C_1-C_6 alkyl, hydroxyl, C_1-C_6 alkoxy, cyano, phenyl, carboxyl, tetrazole, or halogen,
R_3 is tetrazole, carboxamide or



$$-\overset{\overset{Z}{\|}}{C}-OR_4$$

wherein
Z is oxygen, sulfur, or NH and
R_4 is H, alkali metal, ammonium, C_1-C_6 alkyl, C_1-C_6 alkoxy C_1-C_6 alkyl, C_6 aryl, or C_6 aryl C_1-C_6 alkyl.

4,368,202

COMBATING FUNGI WITH PYRAZOLE-SUBSTITUTED OXIMINO-CYANO-ACETAMIDE DERIVATIVES

Wilhelm Brandes, Leichlingen, and Werner Daum, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

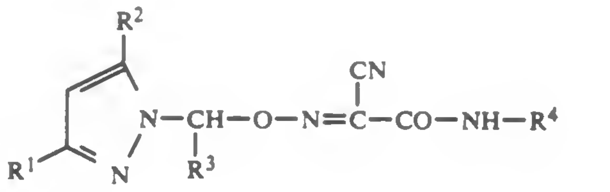
Filed Oct. 20, 1981, Ser. No. 313,110

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3041998

Int. Cl.³ A01N ***43/56;*** **C07D** ***231/12***

U.S. Cl. 424—273 P **11 Claims**

1. A pyrazole-substituted oximino-cyano-acetamide derivative of the formula



in which
R^1 and R^2 each independently is hydrogen or alkyl with up to 3 carbon atoms,
R^3 is hydrogen, alkyl with up to 6 carbon atoms or halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms,
R^4 is hydrogen or the group CO—NH—R^5, and
R^5 is hydrogen or alkyl with up to 8 carbon atoms optionally substituted by at least one substituent selected from cyano, hydroxy-carbonyl and aminocarbonyl groups and alkoxy-carbonyl groups with up to 4 carbon atoms in the alkyl part.

10. A method of combating fungi or microbes comprising applying to the fungi or microbes, or to a habitat thereof, a fungicidally or microbicidally effective amount of a compound according to claim 1.

4,368,203

ANTIBIOTICS AND DERIVATIVES THEREOF HAVING β-LACTAMASE INHIBITORY ACTIVITY AND PRODUCTION THEREOF

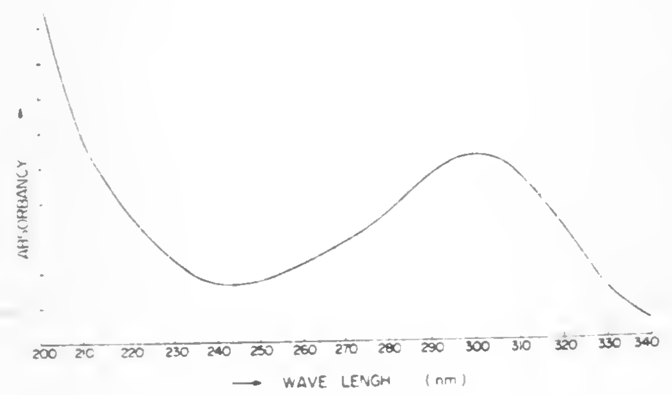
Kazuhiko Okamura, Yamato; Shoji Hirata, Miyagi; Yasushi Okumura; Yasuo Fukagawa, both of Kamakura; Yasutaka Shimauchi, Ninomiya; Tomoyuki Ishikura, Chigasaki; Kageaki Kouno, Tokyo, all of Japan, and Joseph Lein, Fayetteville, N.Y., assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,854

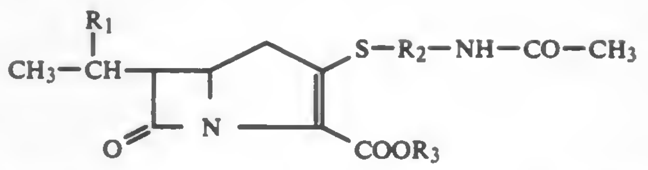
Claims priority, application Japan, Oct. 13, 1977, 52-121857; Dec. 29, 1977, 52-160424

Int. Cl.³ C07D ***487/04;*** **A61K** ***31/40***

U.S. Cl. 424—274 **9 Claims**



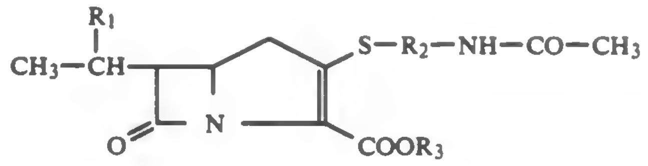
1. A compound of the formula



(I)

wherein R_1 is CH_3 and R_2 is $—CH_2—CH_2—$ or R_1 is H and R_2 is $—CH{=}CH—$; and R_3 represents hydrogen, lower alkyl or triphenylmethyl,
or a salt of a compound of formula (I) wherein R_3 is hydrogen.

8. A pharmaceutical preparation having an antimicrobial activity containing an antimicrobially effective amount of a compound of the formula



(I)

wherein R_1 is CH_3 and R_2 is $—CH_2—CH_2—$ or R_1 is H and R_2 is $—CH{=}CH—$; and R_3 represents hydrogen, lower alkyl or triphenylmethyl,
or a pharmaceutically acceptable salt of a compound of formula (I) wherein R_3 is hydrogen and a pharmaceutically acceptable carrier therefor.

4,368,204

NUTRITION COMPOSITION FOR PEDIATRICS

Hiroshi Sato; Shohei Ogoshi, both of Chiba, and Goro Inoue, Tokushima, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,256

Claims priority, application Japan, Feb. 8, 1980, 55-14428

Int. Cl.³ A61K ***31/40, 31/195***

U.S. Cl. 424—274 **9 Claims**

1. A nutritional composition comprising: amino acids, wherein the following amino acids are present in the indicated amounts:

Amino Acid	% by Weight of Total Amino Acids
L-isoleucine	4.50 to 6.08
L-leucine	8.70 to 11.78
L-lysine	6.58 to 8.90
L-methionine	1.38 to 1.86
L-cysteine	1.87 to 2.53
L-phenylalanine	2.69 to 3.63
L-tyrosine	3.79 to 5.13
L-threonine	4.30 to 5.82
L-tryptophan	1.62 to 2.19
L-valine	4.65 to 6.29
L-histidine	2.43 to 3.29
L-alanine	8.32 to 11.26
L-arginine	6.00 to 8.12
L-aspartic acid	3.62 to 4.90
L-glutamic acid	6.47 to 8.76
glycine	1.96 to 2.66
L-proline	8.46 to 11.44
L-serine	7.66 to 10.36
Total	100

4,368,205

4-HETEROCYCLIC-SUBSTITUTED-2-INDANYL ALCOHOLS AND INSECTICIDAL ESTER DERIVATIVES

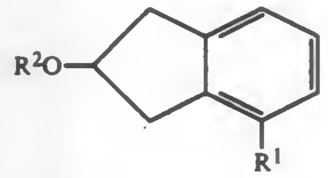
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 202,813, Oct. 31, 1980, Pat. No. 4,346,251, which is a continuation-in-part of Ser. No. 42,372, May 24, 1979, Pat. No. 4,263,319. This application Sep. 17, 1981, Ser. No. 303,292

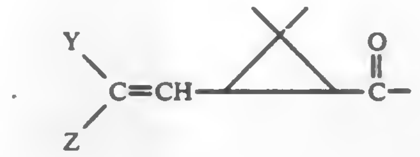
Int. Cl.³ A01N ***43/36, 43/02;*** **C07D** ***207/12, 333/24***

U.S. Cl. 424—274 **13 Claims**

1. A compound of the formula



in which R^1 is a heterocyclic radical selected from furanyl, thienyl, pyridyl, pyrimidyl, oxazolyl, pyrrolyl, isoxazolyl, thiazolyl, and isothiazolyl, and R^2 is 2,2,3,3-tetramethylcyclopropanecarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, 1-(4-ethoxyphenyl)-2,2-dichlorocyclopropanecarbonyl, or a group of the formula



wherein Y and Z, the same or different, are hydrogen, halogen, lower alkyl, perhalo(lower)alkyl, phenyl which may be substituted with halogen or lower alkyl, or phenylthio which may be substituted with halogen or lower alkyl, with the proviso that one of Y and Z is other than hydrogen.

4,368,206

METHOD FOR TREATING ALCOHOLISM AND ELIMINATING AND PREVENTING ALCOHOL INTOXICATION

Emanuel Revici, 1111 Park Ave., New York, N.Y. 10028

Continuation-in-part of Ser. No. 917,956, Jun. 22, 1978, abandoned, which is a continuation of Ser. No. 724,367, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 546,712, Feb. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,169, Mar. 11, 1974, abandoned. This application Dec. 21, 1979, Ser. No. 106,129

Int. Cl.³ A61K ***31/23***

U.S. Cl. 424—312 **25 Claims**

1. A method for treating the manifestations of alcoholism or alcohol intoxication by aiding in the control of the craving for alcohol, or by aiding in the control of alcohol withdrawal symptoms, or by aiding in the control of alcohol intoxication in a human, which comprises internally administering to a human in need thereof an oxidized composition produced by the process comprising oxidizing, at a temperature of between about 110° C. and about 150° C., a liquid composition containing at least one fatty acid or fatty ester having allylic unsaturation of the type

$$—CH{=}CH—CH_2—CH{=}CH—$$

and/or

$$—CH{=}CH—CH{=}CH—CH_2—$$

for a period of time sufficient to produce a peroxide titer substantially greater than the peroxide titer of the liquid composition prior to oxidation, in a non-toxic amount sufficient to aid in the control of the craving for alcohol, or to aid in the control of alcohol withdrawal symptoms, or to aid in the control of alcohol intoxication in said person.

4,368,207

HIGHER ALCOHOL TOXICANTS EFFECTIVE AGAINST INSECTS

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Continuation of Ser. No. 802,014, May 31, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,707

Int. Cl.³ A01N ***31/00***

U.S. Cl. 424—343 **19 Claims**

1. A method of controlling mites which comprises applying to a human or animal host in need of such control, an effective toxic amount of at least one monohydric alcohol of 4–18 carbon atoms whose logarithm of the partition coefficient between n-octanol and water (log P) is at least 0.61.

4,368,208

WATER-SOLUBLE CURCUMIN COMPLEX

John L. Schranz, Palos Hills, Ill., assignor to McCormick & Company, Inc., Hunt Valley, Md.
Filed Apr. 13, 1981, Ser. No. 253,731
Int. Cl.³ A23L *1/272, 1/275, 1/04*
U.S. Cl. 426—250 **15 Claims**

1. A method for preparing a water-soluble curcumin-gelatin coloring agent for foods comprising dissolving a curcumin-containing component and gelatin in a solvent comprising acetic acid, said curcumin-containing component being present in an amount such that the said coloring agent contains a maximum of about 15 weight percent curcumin, on a dry basis, based on the total weight of curcumin and gelatin, said solvent containing a maximum of about 25 weight percent water and said dissolving operation being carried out at a temperature less than the initial denaturing temperature of gelatin in said solvent.

4,368,209

DOUGH MIXING FOR FARINACEOUS FOODSTUFF PRODUCTION

David Tomlinson, Bolton, England, assignor to Tweedy of Burnley Limited, Burnley, England
Filed Mar. 26, 1980, Ser. No. 134,180
Int. Cl.³ A21D *13/08;* **A21C** *1/00*
U.S. Cl. 426—504 **8 Claims**

1. A method of mixing dough for use in the production of bread having a specific volume of about 4.5 to 7.0 cubic centimeters per gram and wherein energy added during mixing is sufficient to substantially determine the cell structure of the finished product, the dough, not being a sponge, requiring substantially no fermentation in bulk, comprising the steps of: mechanically mixing the dough in a batch; imparting energy to the dough by said mixing step in a quantity in excess of 15 watt hours per kilogram of total dough ingredients; initiating and completing said mixing step in less than 7 minutes; controlling the temperature rise in the dough resulting from energy input during said mixing step, by passing a fluid coolant through a jacket surrounding the mixing chamber so that the temperature of the dough after mixing is within the range of 25° C. to 35° C.; adding at least one of the ingredients sugar and fat part way through the mixing process but after at least 25% of the total mixing time in the mixing chamber; and carrying out at least part of the mixing under vacuum conditions.

4,368,210

INSTANT-COOKING DRY MACARONI AND LIKE DRY FOODS

Sanpei Murakami, Osaka; Sadao Kokeguchi, Ibaragi; Hiroshi Takahashi, Suita, and Ken Okada, Osaka, all of Japan, assignors to Kanebo Foods, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 3,934, Jan. 16, 1979, Pat. No. 4,423,690. This application Oct. 27, 1980, Ser. No. 201,192
Claims priority, application Japan, Jan. 19, 1978, 53-4865
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ A23L *1/16*
U.S. Cl. 426—557 **10 Claims**

1. An instant-cooking dry macaroni-type product convertible to a cooked and edible state within a short period of time when immersed in hot water, said product characterized by,

a network of interconnected large-diameter pores communicating between the external surfaces of the product and the internal portions thereof,

consisting essentially of at least one starch-containing component selected from wheat flour or wheat flour mixed with other grain flours, starches or both,

the starch contained therein having an alpha-conversion degree of at least 85% as measured by a diastase enzyme process,

storage stable for a period of at least one year without substantial change in product quality,

discrete, individual macaroni-shaped pieces that are free from substantial portions of the product sticking to adjacent pieces of the product, the product readily converted to a cooked, non-sticky macaroni-shaped type product having good feel, sense and taste when transformed into the edible state.

4,368,211

COMPOSITION FOR AERATED FROZEN DESSERTS CONTAINING UNCOOKED FRUIT PUREE AND METHOD OF PREPARATION

Jon R. Blake, Brooklyn Center; Richard K. Knutson, Corcoran, both of Minn., and Deon L. Strommer, Powell Butte, Oreg., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Nov. 23, 1981, Ser. No. 323,842
Int. Cl.³ A23G *9/02*
U.S. Cl. 426—564 **14 Claims**

1. A non-dairy composition useful in the preparation of an aerated frozen dessert containing whole fruit puree, comprising:

A. from about 25% to 75% by weight of a puree of whole fruit;

B. from about 12% to 28% by weight of a nutritive carbohydrate sweetening agent;

C. sufficient acid-stable whipping agent to enable aeration of the composition to a density ranging from about 0.2 to 0.95 g./cc.;

D. from about 0.05% to 0.5% by weight of an acid-stable polysaccharide gum;

E. from about 1% to 15% of an edible fatty triglyceride;

F. from about 1% to 15% by weight of a malto dextrin bodying agent; and

G. sufficient water to provide the composition with a moisture content of about 45% to 75%.

4,368,212

PROCESS FOR PRODUCING BLAND-TASTING STARCH

Erwin Heckman, Long Beach, N.Y., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.
Filed Dec. 16, 1981, Ser. No. 331,400
Int. Cl.³ A23L *1/195, 1/187*
U.S. Cl. 426—579 **15 Claims**

1. A process for treating starch to remove a cereal or root taste therefrom comprising the steps of stirring a starch having a distinct cereal or root taste in aqueous slurry form with an acid at about pH 3 to 5 for at least about 25 minutes; adding a sufficient amount of an alkaline earth metal oxide to the slurry to bring the pH thereof to 5.5 to 8, and stirring for at least about 15 minutes; filtering the slurry; and drying the resultant treated starch, thereby improving the flavor of said starch.

4,368,213

EMULSION CONCENTRATE FOR PALATABLE POLYESTER BEVERAGE

Edward J. Hollenbach, Brookville, Ind., and Norman B. Howard, Oxford, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 23, 1981, Ser. No. 276,558
Int. Cl.³ A23D *5/00;* **A23L** *2/00;* **A61K** *31/225*
U.S. Cl. 426—590 **16 Claims**

1. A dietary beverage concentrate, comprising an emulsion of:

(a) from about 35% to about 60% of a non-absorbable, non-digestible liquid polyol fatty acid polyester having at least 4 fatty acid ester groups, wherein the polyol is selected from the group consisting of sugars and sugar alcohols containing from 4 to 8 hydroxyl groups and wherein each fatty acid group has from about 8 to about 22 carbon atoms; and

(b) from about 10% to about 50% by weight of the polyol fatty acid polyester of a fatty acid having a melting point of 37° C. or higher, or an ester of such fatty acids;

(c) from about 0.5% to about 3% of a polyglycerol fatty acid emulsifier having an average of from 2 to 10 glycerol units and from 1 to 3 fatty acyl groups of from 14 to 18 carbon atoms per glycerol unit; and

(d) from about 0.5% to about 3% of a fatty acid monoester of an aliphatic diol having from about 3 to about 5 carbon atoms in the diol moiety; and

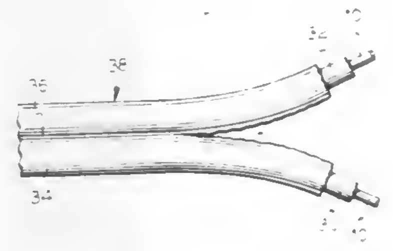
(e) from about 5% to about 15% of a saccharide; and

(f) the balance comprising water and flavorings.

4,368,214

METHOD AND APPARATUS FOR PRODUCING ELECTRICAL CONDUCTORS

Donald J. Gillette, Guilford, Conn., assignor to Electrostatic Equipment Corp., New Haven, Conn.
Filed Jun. 12, 1981, Ser. No. 273,265
Int. Cl.³ B05D *1/06, 7/20*
U.S. Cl. 156—51 **10 Claims**



1. In a method for the production of electrical conductor cable that is adapted for severance along its axis, the steps comprising:

(a) generating a cloud of electrostatically charged particles of a fusible dielectric material;

(b) continuously conveying through or proximate said cloud at least two continuous length conductors along parallel rectilinear paths in closely spaced proximity to one another with a uniform gap therebetween;

(c) maintaining said conductors at an electrical potential effectively opposite to that of said particles to cause said particles to deposit and adhere thereon, the spacing of said conductors and the conditions of coating being such that said particles completely coat said conductors and bridge said gap therebetween; and

(d) fusing and thereafter solidifying said particles to produce a unified exterior coating upon said conductors, including a connecting web portion of reduced cross-section therebetween through which such severance can be effected.

4,368,215

HIGH RESOLUTION MASKING PROCESS FOR MINIMIZING SCATTERING AND LATERAL DEFLECTION IN COLLIMATED ION BEAMS

Robert L. Seliger, Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 990,449, Apr. 27, 1978, which is a continuation-in-part of Ser. No. 893,649, Apr. 5, 1978, abandoned, which is a division of Ser. No. 794,288, May 5, 1977, Pat. No. 4,101,782, which is a continuation of Ser. No. 626,425, Oct. 28, 1975, abandoned. This application Jan. 21, 1981, Ser. No. 227,029
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **2 Claims**

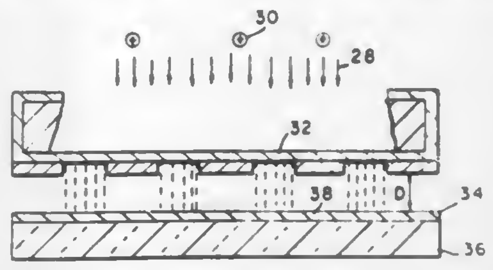
1. A process for projecting an ion beam pattern onto a target layer of ion beam resist while minimizing the scattering and lateral deflection of ion beams defining said pattern, including the steps of:

(a) providing a target layer of ion beam resist material at one chosen location,

(b) providing a single taut hyperthin amorphous membrane of 5000 Angstroms or less in thickness;

(c) providing an ion absorption mask on one surface of said membrane and corresponding to a predetermined pattern in which said ion beam is to be interrupted,

(d) positioning said membrane and said ion absorption mask thereon at a second chosen location remote from the above said target layer of resist and between said target layer of resist and a source of collimated ion beams; and

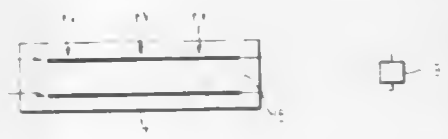


(e) projecting a collimated ion beam toward and substantially perpendicular to the surface of said membrane and through openings therein defined by said ion absorption mask, whereby said thin amorphous membrane introduces a minimum of lateral deflection and scattering into said ion beam relative to its initial direction of motion and thereby enhances the ion beam resolution at said target layer of resist on which said uninterrupted ions impinge.

4,368,216

PROCESS FOR PREPARATION OF SEMICONDUCTOR AND SEMICONDUCTOR PHOTOELECTRODE

Joost Manassen; David Cahen, and Gary Hodes, all of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel
Continuation-in-part of Ser. No. 134,665, Mar. 27, 1980, Pat. No. 4,296,188. This application Jul. 30, 1980, Ser. No. 173,814
Claims priority, application Israel, Aug. 8, 1979, 58003
The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.
Int. Cl.³ B05D *3/02;* **H01M** *6/36*
U.S. Cl. 427—74 **26 Claims**



1. A process for forming an electrode for use in a solar cell comprising:

(a) preparing a slurry of at least one semiconductor starting material used to form said semiconductor in powdered form, a flux and a liquid vehicle;

(b) applying a layer of said slurry to an electrically conductive substrate;

(c) annealing said layer to form said semiconductor electrode by treating said layer of step (b) under conditions of temperature and pressure so as to at least partially dissolve at least a portion of one semiconductor material in said flux; and

(d) inserting said semiconductor photoelectrode in said cell.

4,368,217

PROCESS FOR PROVIDING A POLYTETRAFLUOROETHYLENE COATING ON THE WALLS OF A METAL BODY

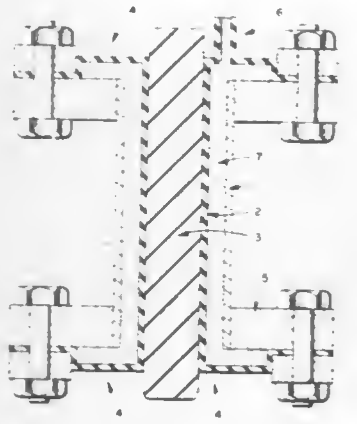
Claude Tournut, Francheville, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed May 21, 1981, Ser. No. 265,788

Claims priority, application France, Jun. 6, 1980, 80 12576

Int. Cl.^{3} B05D *7/22, 3/02, 3/12, 7/24*

U.S. Cl. 427—181 5 Claims



1. A process for providing a coating of polytetrafluoroethylene on the inner walls of a hollow metal body comprising filling with polytetrafluoroethylene the space formed between the inner walls of the hollow metal body and the walls of a flexible membrane removably spaced apart therefrom, compressing the polytetrafluoroethylene by deformation of the membrane under isostatic pressure, removing the membrane, filling the internal cavities of the hollow metal body coated with the compressed polytetrafluoroethylene with a substantially incompressible solid substance having fluid flow characteristics and being thermally stable at the temperatures to which the polytetrafluoroethylene is to be heated, and heating the thus-formed assembly to a temperature above the melting point of the polytetrafluoroethylene for a period of time sufficient for the latter to lose its crystallinity.

4,368,218

METHOD OF MAKING EXPANDABLE THERMOPLASTIC POLYMER BEADS

Kenichi Senda, Akashi; Tatehiko Nishida, Himeji, and Masao Nakagawa, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1980, Ser. No. 131,047

Claims priority, application Japan, Mar. 19, 1979, 54-32680

Int. Cl.^{3} B05D *7/00*

U.S. Cl. 427—222 5 Claims

1. A method of producing expandable thermoplastic polymer beads, comprising the steps of suspending grains of a polymer made from one or more kinds of vinyl monomers, a powdered polyolefine resin, one or more kinds of vinyl monomers and a cross-linking agent into an aqueous medium containing a dispersing agent at a first temperature thereby to cause said vinyl monomer to impregnate said polymer and said resin and cause said resin to adhere to the surface of said grains of said polymer, and thereafter at a temperature higher than said first temperature, melting said resin onto the surface of said grain thereby forming a skin thereabout and concurrently polymerizing the resulting dispersin mixture in the presence of an initiator, thereby polymerising said monomer with said resin ins said skin, wherein a foaming agent is added to said dispersin mixture during or after polymerization, or said foaming agent is absorbed into grains of said polymer prior to start of polymerization.

4,368,219

METHOD AND APPARATUS FOR COATING THE INNER SURFACE OF LONG TUBES OF SMALL DIAMETER

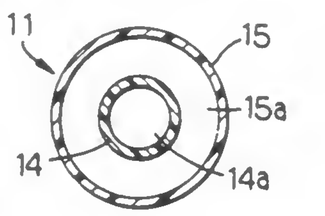
Koji Nagata; Kyuji Sudo; Mamoru Nishikawa, and Kikuji Tachibana, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,220

Claims priority, application Japan, Jun. 13, 1980, 55-80674; Jul. 4, 1980, 55-91913

Int. Cl.^{3} B05D *1/02*

U.S. Cl. 427—236 12 Claims



1. In a method of coating the inner surface of a long tube of a small diameter, which comprises initially threading a spray nozzle through said tube from a first open end thereof until said spray nozzle reaches a second open end, and withdrawing said spray nozzle toward said first open end while spraying paint therefrom onto said inner surface, wherein the improvement comprises:

delivering said paint and pressurized air to said spray nozzle through respective passages of a plurality of mutually independent axial passages defined by a relatively non-elastic outer tube and at least one inner tube concentrically or eccentrically received within said outer tube whereby one said at least one inner tube is interposed between a paint conveying axial passage and a pressurized air conveying passage, said at least one inner tube and said outer tube constituting in combination a multi-tubing supplying hose connected at one end thereof to said spray nozzle, said pressurized air being at an operating pressure greater than that of said paint, one of said at least one inner tube which is interposed between a paint conveying passage and a pressurized air conveying passage of said plurality of axial passages being less rigid than said outer tube and made of elastic material whereby under operating conditions of said supplying hose said paint conveying passage is radially contracted into a smaller volume due to elastic deformation of said elastic material; and

upon termination of delivery of said pressurized air, drawing said paint out of said spray nozzle by means of expansion of said paint conveying passage into an original larger volume, thereby preventing said paint from dripping from said spray nozzle.

4,368,220

PASSIVATION OF RIE PATTERNED AL-BASED ALLOY FILMS BY ETCHING TO REMOVE CONTAMINANTS AND SURFACE OXIDE FOLLOWED BY OXIDATION

Jerome M. Eldridge, Saratoga; Michael H. Lee, San Jose, both of Calif., and Geraldine C. Schwartz, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 278,949

Int. Cl.^{3} H01L *21/283, 21/306*

U.S. Cl. 427—255.4 5 Claims

1. A process for passivating a reactive ion etched aluminum based metallization patterned layer, said layer having an air-formed oxide portion, comprising the steps of:

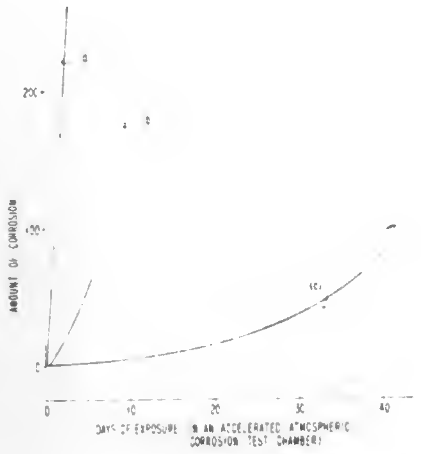
etching surface portions of said metallization layer with a phosphoric-chromic etchant solution to completely strip the oxide portion as well as a relatively small amount of the underlying aluminum patterned layer so as to remove substantially all contaminants; and

oxidizing the exposed surface of said layer in an oxygen atmosphere.

5. A process according to claim 1, including the further steps, following the etching step and prior to the oxidizing step, of:

rinsing the etched surface portions in deionized water at room temperature and then,

drying the etched portions in filtered air or nitrogen at elevated temperature.



4,368,221

PROCESS FOR COATING FIBROUS GLASS WITH AMORPHOUS NICKEL PHOSPHOROUS GLASS METAL

Mihaly Stefan; Zoltan Hegedüs; Terezia Bagi nee Schmidt, all of Budapest; Henrik Dörner; Miklos Kanyo, both of Kecskemet, and Pal Füzesi, Budapest, all of Hungary, assignors to Bacs Megyei Allami Epitöipari Vallalat, Kecskemet and Csepel Müvek Tervezö es Kutato Intezete, Budapest, both of, Hungary

Filed Jun. 29, 1981, Ser. No. 278,608

Claims priority, application Hungary, Jul. 4, 1980, 1677/80

Int. Cl.^{3} C23C *3/02*

U.S. Cl. 427—305 9 Claims

1. A process for coating on a fibrous glass substrate an amorphous glass metal coating consisting essentially of nickel-phosphorus, under conditions free of current, which comprises treating the fibrous glass substrate with an aliphatic alcohol having 1 to 4 carbon atoms, and subsequently with an aqueous solution of Sn Cl_2, in the presence of hydrochloric acid, activating said substrate with a solution of palladium chloride in aqueous hydrochloric acid and keeping it in a bath comprising, as a nickel containing component, nickel ammonium sulfate or a mixture of nickel sulfate and nickel ammonium sulfate, in combination with sodium hypophosphite, an alkali metal salt of at least one organic acid having a low molecular weight, a mineral acid, in an amount sufficient to adjust the pH to 3 to 4, and optionally one or more organic or inorganic metal-deposition regulating agents, at a temperature between 55 degrees Celsius and 70 degrees Celsius.

4,368,222

VAPOR PERMEATION CURABLE COATINGS FOR SURFACE-POROUS SUBSTRATES

James R. Blegen, Worthington, Ohio; Helmut H. Zapfe, Mississauga, Canada, and Eugene L. Bulgozdy, Dublin, Ohio, assignors to Ashland Oil, Inc., Dublin, Ohio

Filed Jun. 5, 1981, Ser. No. 270,896

Int. Cl.^{3} B05D *3/04*

U.S. Cl. 427—340 22 Claims

1. In a method for coating a surface-porous substrate of a fibrous-reinforced molding compound with a film of a curable primer coating composition and curing said film, the improvement which comprises:

(A) applying said film of said coating composition to said substrate, said coating composition comprising:
  (1) an aromatic-hydroxyl functional compound; and
  (2) a multi-isocyanate curing agent; and
(B) exposing said coated substrate to a vaporous tertiary amine catalyst to rapidly cure said applied film at room temperature,

said vaporous catalyst cured film being substantially free of surface imperfections.

4,368,223

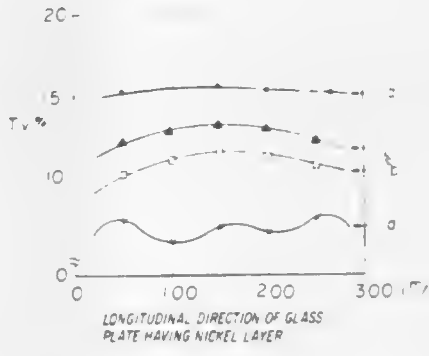
PROCESS FOR PREPARING NICKEL LAYER

Takayuki Kobayashi, and Ryo Tamamura, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 268,837

Int. Cl.^{3} C23C *3/02*

U.S. Cl. 427—443.1 9 Claims



1. In a process for preparing a transparent nickel layer by applying a solution containing a nickel salt and a reducing agent for the reduction of said nickel salt onto a substrate and reducing the nickel salt by a chemical reaction, the improvement comprising:

conducting said chemical reduction with a solution containing from 0.02 to 20 wt % of diethylenetriamine or imidazole based on the amount of said nickel salt which enhances the visible and solar energy transmissivity values of the transparent layer.

4,368,224

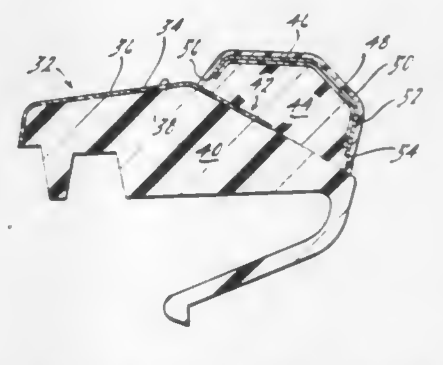
DECORATIVE MOLDING WITH METALLIC APPEARANCE

Norman C. Jackson, Livonia, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 11,083, Feb. 12, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,367

Int. Cl.^{3} B32B *3/30, 7/02*

U.S. Cl. 428—31 17 Claims



7. A decorative and protective molding comprising an extruded elongated body characterized by an irregularly shaped, complex cross-section having at least one channel therein, an elongated, thin layer of extruded, homogeneous, flaked metallic pigment-containing thermoplastic material laminated onto said body, an elongated rigde laminated onto said layer of thermoplastic material, and an elongated reflective, decorative layer laminated onto said ridge.

4,368,225

MOLDING LAMINATE

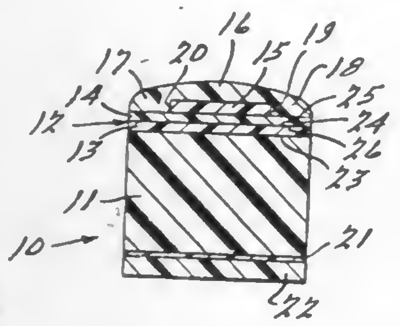
Joel H. Nussbaum, Farmington Hills, Mich., assignor to The Standard Products Co., Cleveland, Ohio

Filed Apr. 3, 1981, Ser. No. 250,879

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.^{3} B32B *31/30;* B60R *13/04*

U.S. Cl. 428—31 8 Claims



1. A laminate construction having an extruded body comprising a first extruded thermoplastic; an outer layer of second extruded thermoplastic incompatible with said first thermoplastic; and a tie sheet sandwiched between and laminated to each of said body and said outer layer; said tie sheet comprising an adhesively secured laminate of a first layer and a second layer, said first layer being heat laminated to said body and comprising a first material compatible with said first thermoplastic, and said second layer being heat laminated to said outer layer and comprising a second material compatible with said second thermoplastic.

4,368,226

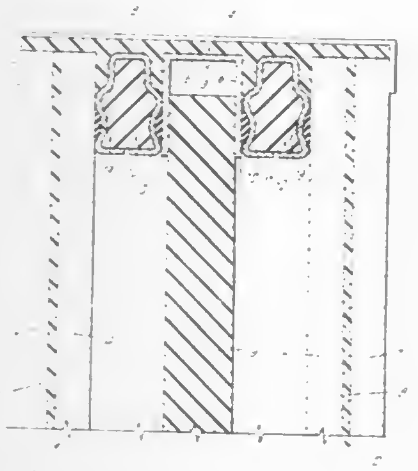
GLASS UNITS

Gasper Mucaria, 1577 E. 21 St., Brooklyn, N.Y. 11210

Filed Aug. 13, 1980, Ser. No. 177,590

Int. Cl.^{3} E06B *3/24*

U.S. Cl. 428—34 5 Claims



1. A glass unit, comprising in combination, first and second sheets of glass, a polycarbonate sheet between said first and second sheets of glass disposed such that each lateral face thereof is substantially parallel to the lateral face of the adjacent first or second glass sheet; means for spacing apart the respective opposing faces of said polycarbonate sheet and said first and second sheets of glass; a substantially u-shaped capping channel comprising a substantially flat base and two flat lateral walls straddling the marginal edge of said polycarbonate sheet each of said lateral walls partially contacting one face of said polycarbonate sheet; the marginal edge of said polycarbanate sheet being spaced apart from said flat base by a given dimension, each of said lateral walls completely contacting one face of said polycarbonate sheet other than in the area of the space formed between said flat base and said marginal edge of said polycarbonate sheet, said means for spacing apart the respective opposing faces of said polycarbonate sheet and said first and second sheets of glass being located in the area of said u-shaped capping channel, said spacing means having hollowed out interiors which communicate with the area between the polycarbonate sheet and adjacent glass sheets by means of a channel, said hollowed out interiors being packed with a dessicant; and framing means for maintaining the spatial relationships of said first and second glass sheets and polycarbonate sheet substantially constant.

4,368,227

SUEDE-LIKE SHEET MATERIALS OF ULTRAFINE FIBERS

Takashi Setsuie; Koji Mimura, both of Otake, and Kiyonobu Okamura, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Continuation of Ser. No. 931,516, Aug. 7, 1978, abandoned, which is a division of Ser. No. 813,354, Jul. 6, 1977, Pat. No. 4,147,574. This application Apr. 4, 1980, Ser. No. 137,431

Claims priority, application Japan, Jul. 12, 1976, 51-82660

Int. Cl.^{3} B32B *33/00*

U.S. Cl. 428—91 12 Claims

12. A suede-like sheet material having a thickness and specific volume of 0.4 to 1.0 mm and 2.0 to 3.5 cm^2/g respectively, comprising: forming a composite layer material by depositing a web consisting of ultrafine fibers of less than 0.5 denier per filament on a base cloth of a knitted fabric or a woven fabric; expelling a fine liquid stream jet under high pressure onto the surface of the ultrafine fiber web thereby substantially integrating ultrafine fibers with the base cloth; and then impregnating the sheet with an elastic polymer in an amount less than 50% based on the total weight of the base cloth and ultrafine fibers.

4,368,228

BITUMEN, ATACTIC POLYPROPYLENE & PROPYLENE/ETHYLENE COPOLYMER COMPOSITIONS AND WATERPROOFING MEMBRANES USING THE SAME

Romolo Gorgati, Bologna, Italy, assignor to Derbigum America Corporation, Kansas City, Mo.

Continuation-in-part of Ser. No. 143,138, Apr. 23, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 273,212

Int. Cl.^{3} B32B *5/12*

U.S. Cl. 428—110 15 Claims

1. A prefabricated waterproofing membrane which comprises a series of superposed reinforcing layers including a fiberglass mat, a polyester mat and a fiberglass net, said layers being impregnated with bitumen mixed with at least one thermoplastic polymer selected from the group consisting of an amorphous copolymer of ethylene/propylene, atactic polypropylene, polyisobutylene and styrene-butadiene-styrene block copolymer, the bitumen polymer mixture having a ring and ball softening point of at least 105° C.

4,368,229

INDICATOR PANEL FIXING ARRANGEMENT

Shoji Ariga, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,951

Claims priority, application Japan, Mar. 10, 1980, 55-31561[U]

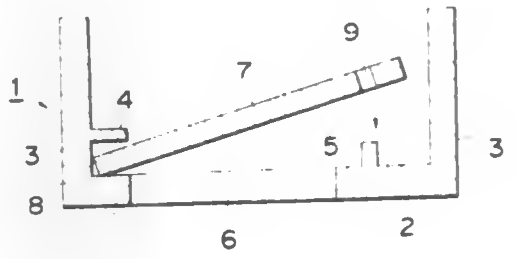
Int. Cl.^{3} G12B *9/10;* E04C *2/38*

U.S. Cl. 428—120 4 Claims

1. An indicator panel fixing arrangement comprising:

an elongated indicator panel having a flat lower surface, said indicator panel having an aperture therethrough at a position near to one end thereof;

a body member supporting said indicator panel, said body member including a base wall portion having a flat upper surface against which rests the flat lower surface of said indicator panel, said base wall portion of said body member having an elongated through opening located between its ends, said through opening defining a window through which said indicator panel is visible, said body member having two sidewalls extending upwardly from said flat upper surface of said base wall portion at the opposite ends thereof, one of said sidewalls having a first guide member extending laterally inwardly from its inner surface, between its upper and lower ends, at a location close to and spaced upwardly from said flat upper surface of said base wall portion and defining therewith a groove, the other end of said indicator panel being inserted in said groove between said first guide member and said flat upper surface of said base wall portion, a second guide member extending upwardly from said flat upper surface of said base wall portion at a location on the opposite end of said through opening from said first guide member, said second guide member being received in said aperture so that said indicator panel is accurately positioned on said body member.



4,368,230

PHOTOMASK

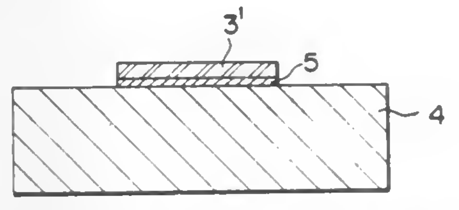
Koichiro Mizukami, and Masatoshi Migitaka, both of Kokubunji, Japan, assignors to VLSI Technology Research Association, Japan

Filed Mar. 5, 1980, Ser. No. 127,319

Claims priority, application Japan, Mar. 28, 1979, 54-35492

Int. Cl.^{3} B32B *3/00*

U.S. Cl. 428—203 13 Claims



1. A photomask suitable for inspecting a pattern formed thereon with electron beams comprising:

a transparent substrate comprised of glass;

a transparent electrically conductive film comprised of metal oxide formed of at least one first metallic element; and

a light shielding film of predetermined pattern provided on said transparent electrically conductive film, said pattern film being comprised of at least one material selected from the group consisting of a second metallic element having an atomic number not smaller than 25 and a composition containing said second metallic element, said first and second metallic elements being different from each other and the ratio of the electron backscattering coefficient of said pattern film to that of said transparent electrically conductive film being equal to or larger than about 1.3

4,368,231

LAMINATED PLASTIC, ITS PRODUCTION AND ITS USE

Karl-Heinz Egert, Hamburg; Joachim Wank, Dormagen-Zons, and Eckart Reese, Dormagen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich and Bayer Aktiengesellschaft-Bayerwerk, Leverkusen, both of, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,366

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010143

Int. Cl.^{3} B32B *27/00;* C09J *3/12*

U.S. Cl. 428—220 12 Claims

1. A laminated plastic sheet having a thickness of 0.05 to 5 mm comprising a layer of a film of aromatic thermoplastic polycarbonate or thermoplastic polyarylsulfone, a layer of a film of a thermoplastic copolymer of 40 to 60 mol % of ethylene, 60 to 40 mol % of tetrafluoroethylene and from 0 to 10 mol %, based on 100 mol % of the sum of ethylene and tetrafluoroethylene, of a completely or partially fluorinated vinyl alkyl ether or of a completely or partially fluorinated vinylalkane, and a layer of a polyurethane adhesive between said film layers to secure the film layers to one another.

4,368,232

GLASS FIBER MAT AND METHOD OF PREPARATION THEREOF

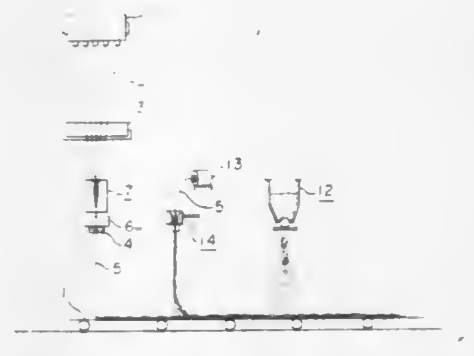
Masayoshi Morioka, Satte, and Sadao Kawashima, Sohwa, both of Japan, assignors to Asahi Fiber Glass Company Limited, Chiyoda, Japan

Filed May 22, 1980, Ser. No. 152,352

Claims priority, application Japan, Jun. 26, 1979, 54-79693

Int. Cl.^{3} B32B *17/04*

U.S. Cl. 428—228 8 Claims



1. A process for preparing a glass fiber mat for fiber reinforced plastic material which comprises:

(a) applying a size to a large number of glass fibers drawn from bushings and collecting the glass fibers into a strand;
(b) bringing the strand from (a) into contact with the surface of a rotating cylinder to throw and pile it as a layer on a moving conveyor in a non-oriented state;
(c) drying by heat another strand which is wound as a cake; and
(d) drawing the dried strand from (c) to pile it in a non-oriented state as a thin layer on the layer obtained in (b).

4,368,233

COATED WOVEN AND NON-WOVEN POLYOLEFIN ARTICLES

Edward Barkis; Robert R. Crummer, both of Marietta, and James M. Joyner, East Point, all of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 62,774, Aug. 1, 1979, Pat. No. 4,255,323, which is a division of Ser. No. 671,068, Mar. 29, 1976, Pat. No. 4,211,692. This application Oct. 6, 1980, Ser. No. 194,475

Int. Cl.^{3} B32B *7/00*

U.S. Cl. 428—245 10 Claims

1. A coated article comprising a substrate selected from the group consisting of woven and nonwoven polyolefin sub-

strates and a coating composition selected from the group consisting of:

- (1) a composition with a shear independent melt viscosity at 190° C. of above about 2.9×10^6 centipoise comprising:
  - (a) about 50–90% by weight of a terpolymer containing reacted ethylene, propylene, and a diene, said terpolymer having a flow rate in the range of about 0.5–1.0 g/10 min., wherein the diene is in a low concentration up to a maximum concentration in percent by weight of about 3% and is a monomer selected from the group consisting of 1,3-butadiene, isoprene, chloroprene, cyclooctadiene-1,5, dicyclopentadiene cyclododecatriene-1,5,9, cyclododecadiene-1,7, cycloheptadiene-1,4, cyclohexadiene-1,4, norbornadiene, methylene-norbornene, methyltetrahydroindene, dimethyl-tetrahydroindene, 6-methylheptadiene-1,5, hexadiene-1,4, 6-methyl-4,7,8,9-tetrahydroindene, and ethylidene-norbornene, and wherein the reacted ethylene and propylene are in a ratio by weight of about 3:1;
  - (b) about 50–10% by weight of a high density polyethylene having a flow rate of about 0.2–30 g/10 min., an unannealed density in the range of about 0.956–0.965, and a weight average molecular weight in a range of about 50,000–200,000;
  - (c) about 0.5–5% by weight of an opacifier;
  - (d) about 0.5–15% by weight of a fire retardant composition comprising at least one polyhalogenated organic compound and antimony trioxide;
  - (e) about 0.5–3% by weight of an ultraviolet light stabilizer for polyolefins;
- (2) a composition having a shear independent melt viscosity at 190° C. of above about 660,000 centipoise comprising:
  - (a) about 30–50% by weight of an ethylene-isobutylacrylate copolymer having a flow rate in the range of about 50–90 g/10 min., a density at 23° C. in the range of about 0.920–0.930, and comprising about 30% by weight of reacted isobutylacrylate;
  - (b) about 10–40% by weight of a terpolymer containing reacted ethylene, propylene, and a diene, said terpolymer having a flow rate in the range of about 0.5–1.0 g/10 min., wherein the diene is in a low concentration up to a maximum concentration in percent by weight of about 3% and is a monomer selected from the group consisting of 1,3-butadiene, isoprene, chloroprene, cyclooctadiene-1,5, dicyclopentadiene, cyclododecatriene-1,5,9, cyclododecadiene-1,7, cycloheptadiene-1,4, cyclohexadiene-1,4, norbornadiene, methylene-norbornene, methyltetrahydroindene, dimethyl-tetrahydroindene, 6-methylheptadiene-1,5, hexadiene-1,4, 6-methyl-4,7,8,9-tetrahydroindene, and ethylidene-norbornene, and wherein the reacted ethylene and propylene are in a ratio by weight of about 3:1;
  - (c) about 10–40% by weight of a high density polyethylene having a flow rate in the range of about 0.2–30 g/10 min., an unannealed density in the range of about 0.956–0.965, and a weight average molecular weight in a range of about 50,000–200,000;
  - (d) about 0.5–5% by weight of an opacifier;
  - (e) about 0.5–15% by weight of a fire retardant composition comprising at least one polyhalogenated organic compound and antimony trioxide;
  - (f) about 0.5—3% by weight of an ultraviolet light stabilizer; and
- (3) a composition having a shear independent melt viscosity at 190° C. of above about 380,000 centipoise comprising:
  - (a) about 30–75% by weight of an olefin polymer blend containing about 40–99% by weight of an ethylene-propylene block copolymer comprising at least about 80% by weight of polymerized propylene said copolymer having a flow rate of about 15–100 dg/min. and about 1–60% by weight of polyethylene having a melt index recovery of at least about 50 and a density greater than about 0.912; and
  - (b) about 70–25% by weight of an ethylene-isobutylacrylate copolymer having a flow rate in the range of about 50–90 g/10 min., a density at 23° C. in the range of about 0.920–0.930, and comprising about 30% by weight of reacted isobutylacrylate.

4,368,234
WOVEN MATERIAL AND LAYERED ASSEMBLY THEREOF

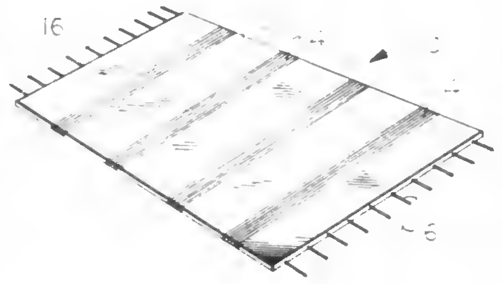
Raymond J. Palmer, Newport Beach, Calif., and Dominique Micheaux, Villette d'Anthon, France, assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 17, 1980, Ser. No. 217,424

Claims priority, application France, Dec. 21, 1979, 79 32135

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—245 **29 Claims**



1. A woven reinforcement material adapted to be formed into layers for producing damage tolerant structural components, which comprises woven alternate strips each formed of a plurality of high modulus fibers and additional strips each formed of a plurality of low modulus fibers, said strips extending in at least one direction in the woven material, the strips of low modulus fibers having a width different from the width of the strips of high modulus fibers.

4,368,235
SILICONE RESIN COATING COMPOSITION

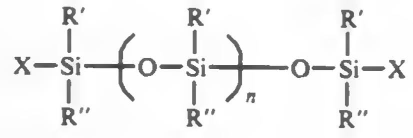
Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Co., Waterford, N.Y.

Division of Ser. No. 113,278, Jan. 18, 1980, Pat. No. 4,324,712, which is a continuation-in-part of Ser. No. 964,910, Nov. 30, 1978. This application Sep. 25, 1981, Ser. No. 305,903

Int. Cl.³ B32B *15/08, 27/08, 27/18, 27/20*

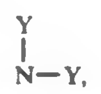
U.S. Cl. 428—412 **12 Claims**

1. A solid substrate having at least one surface coated with an aqueous coating composition comprising a mixture of colloidal silica, a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula R $Si(OH)_3$ wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, and a flexibilizing amount of a linear functionally terminated oligosiloxane having the general formula,



$$X-\underset{R''}{\overset{R'}{Si}}\left(O-\underset{R''}{\overset{R'}{Si}}\right)_n O-\underset{R''}{\overset{R'}{Si}}-X$$

wherein X is selected from the group consisting of hydroxy, alkoxy and



$$\overset{Y}{\overset{|}{N}}-Y,$$

wherein Y is hydrogen or alkyl, R′ and R″ may be the same or different and are selected from the group consisting of alkyl, haloalkyl, cyanoalkyl and alkenyl and n is a number from about 1 to 18, at least 70 weight percent of the silanol being CH_3 $Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica, 30 to 90 weight percent of the partial condensate, and 0.5 to 5 weight percent of said linear functionally terminated oligosiloxane, said composition having a pH of 7.1 to about 7.8.

4,368,236
SILICONE RESIN COATING COMPOSITIONS

Robert B. Frye, Menands, N.Y., assignor to General Electric Co., Waterford, N.Y.

Division of Ser. No. 91,716, Nov. 6, 1979, Pat. No. 4,299,746, which is a continuation-in-part of Ser. No. 964,911, Nov. 30, 1978, Pat. No. 4,277,287. This application Jul. 16, 1981, Ser. No. 283,832

Int. Cl.³ B32B *27/36*

U.S. Cl. 428—412 **11 Claims**

1. A solid substrate having at least one surface coated with an aqueous coating composition comprising in intimate admixture:

- (a) a dispersion of colloidal silica in a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, wherein at least 70 weight percent of the silanol is $CH_3Si(OH)_3$; and
- (b) a small amount of an ultraviolet light absorbing compound, said composition containing 10 to 50 weight percent solids, said solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, and wherein said composition has a pH of from 6.8 to 7.8.

4,368,237
PROCESS FOR PRODUCING MAGNETIC RECORDING DEVICE

Yasuyuki Yamada; Tatsuji Kitamoto, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

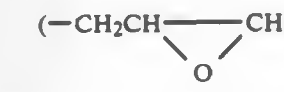
Continuation of Ser. No. 838,790, Sep. 28, 1977, abandoned, and a continuation of Ser. No. 700,369, Jun. 28, 1976, abandoned. This application May 14, 1979, Ser. No. 38,620

Claims priority, application Japan, Jun. 26, 1975, 50/79655

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—413 **20 Claims**

1. A process for producing a magnetic recording material, which comprises separately emulsifying in water at least two components capable of reacting with each other upon mixing, to form at least two separate emulsions, combining the resulting emulsions while maintaining said at least two components in the separated state, coating a magnetic coating composition consisting essentially of a ferromagnetic fine powder, a binder consisting of said at least two components in said combined emulsion, and a coating liquid on a non-magnetic support, drying the coating to form a magnetic recording layer, and curing the resulting magnetic recording layer if drying is insufficient to effect curing thereof, wherein said at least two components contain reactive groups selected from the group consisting of hydroxyl (—OH), carboxyl (—COOH), epoxy



carbonyl (C═O), amino ($—NH_2$), isocyanate (—NCO), or thiocyanate (—NCS), and wherein the molar ratio of reactive groups to react with one another is about 35/65. to 65/35, the amount of binder in the coating composition is 10–70% by weight, as solids content, and is 17–100 parts by weight per 100 parts by weight of the ferromagnetic fine powder.

4,368,238
MAGNETIC RECORDING MEDIA

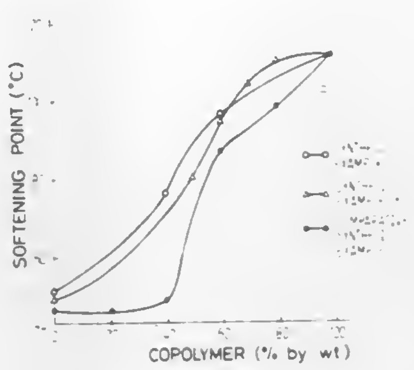
Masashi Somezawa, Sendai; Yoshinobu Ninomiya, Miyagi, and Akira Hashimoto, Tagajyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 24, 1981, Ser. No. 334,255

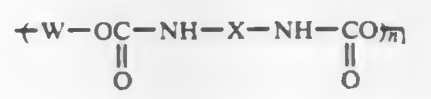
Claims priority, application Japan, Dec. 29, 1980, 55/188035

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—413 **54 Claims**

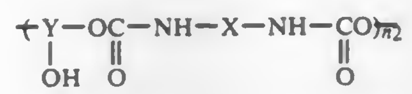


1. A magnetic recording medium comprising a non-magnetic supporting material, magnetic or magnetizable particles or powders, and a thermoplastic polyurethane resin comprising a combination of units represented by formulas (I):



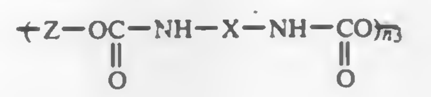
$$-\!\!\left(W-O\underset{\underset{O}{\|}}{C}-NH-X-NH-\underset{\underset{O}{\|}}{C}O\right)_{n_1}$$

(a)



$$-\!\!\left(\underset{\underset{OH}{|}}{Y}-O\underset{\underset{O}{\|}}{C}-NH-X-NH-\underset{\underset{O}{\|}}{C}O\right)_{n_2}$$

(b)

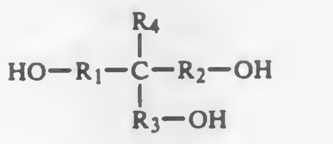


$$-\!\!\left(Z-O\underset{\underset{O}{\|}}{C}-NH-X-NH-\underset{\underset{O}{\|}}{C}O\right)_{n_3}$$

(c)

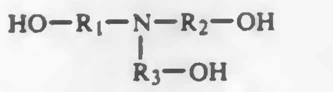
wherein

- W is a residue derived by the elimination of the two hydroxyl groups from a long chain diol (A) having a molecular weight in a range of about 500 to 3,000;
- X is a residue derived by the elimination of the two isocyanate groups from an organic isocyanate (C);
- Y is a residue derived by the elimination of the two hydroxyl groups from the short chain triol (D) having a molecular weight in a range lower than about 500;
- Z is a residue derived by a elimination of the two hydroxyl groups from the short chain diol (B) having a molecular weight in a range of about 50 to 500;
- n_1 and n_2 are each a positive integer; and
- n_3 is 0 or a positive integer;
- said short chain triol (D) being represented by the formula (II):



$$HO-R_1-\underset{\underset{R_3-OH}{|}}{\overset{\overset{R_4}{|}}{C}}-R_2-OH$$

or by the formula (III):



$$HO-R_1-\underset{\underset{R_3-OH}{|}}{N}-R_2-OH$$

wherein

R_1 is a group represented by the formula:

$—CH_2)_m(OCH_2CH_2)_n$

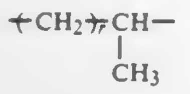
(where m and n are each an integer from 0 to 6, provided that, when one of m and n is 0, the other is an integer other than 0);

R_2 is a group represented by the formula:

$—CH_2)_p(OCH_2CH_2)_q$

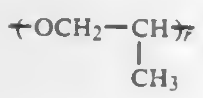
(where p and q are each an integer from 0 to 6, provided that, when one of p and q is 0, the other is an integer other than 0);

R_3 is a group represented by formula:



$$-(CH_2)_r-\underset{\displaystyle CH_3}{\underset{|}{CH}}-$$

(where r is an integer from 0 to 3) or a group represented by formula:



$$-(OCH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}})_r-$$

(where r has the same meaning as above); and

R_4 is a group represented by formula:

$—C_sH_{2s+1}$

(where s is an integer from 0 to 4);

obtainable by the polyaddition reaction of the long chain diol (A), the organic diisocyanate (C) and the short chain triol (D) and, as desired, the short chain diol (B) in the ratios of:

$$b/a \leqq 3 \quad \text{(i)}$$

$$1 < c/(a+b) < 3 \quad \text{(ii)}$$

$$\tfrac{1}{2} \leqq [c-(a+b)]/d < 1 \quad \text{(iii)}$$

(wherein

a is a molar number of the long chain diol (A);

b is a molar number of the short chain diol (B);

c is a molar number of the organic diisocyanate (C); and

d is a molar number of the short chain triol (D)).

4,368,239

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima; Kunio Kobayashi, and Yoshiaki Hisagen, all of Tagajyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 174,870

Claims priority, application Japan, Aug. 6, 1979, 54-100143

Int. Cl.³ G11B *5/72*

U.S. Cl. 428—421 **17 Claims**

1. In a magnetic recording medium of the type in which a magnetic recording layer composed of finely divided magnetizable pigment dispersed in a binder is formed on a major surface of a flexible, non-magnetic substrate, wherein the improvement comprises:

a plurality of molecular chains selected from the group consisting of an aliphatic hydrocarbon group containing 7 to 21 carbon atoms and an aliphatic fluorocarbon containing 3 to 15 carbon atoms having a lubricating property are strongly bonded to a surface of the magnetic recording medium by irradiation of the molecular chains and the magnetic recording medium,

whereby free radical reactions strongly bond the lubricating molecular chains to said surface of the magnetic recording medium.

4,368,240

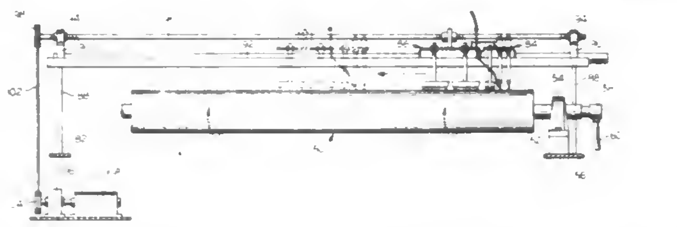
HIGH GLOSS RUBBER ROLL

Jan P. Nauta, and Jacob J. Kos, both of Plainville, Conn., assignors to Nauta Roll Corporation, Kensington, Conn.

Filed Jul. 27, 1981, Ser. No. 287,222

Int. Cl.³ B32B *9/04;* **B05D** *3/12, 3/02;* **B05C** *11/00*

U.S. Cl. 428—447 **28 Claims**



13. In a method for producing a skin of high uniformity and smoothness on the surface of a cylindrical roller, the steps comprising:

a. rotating a cylindrical roller, having a uniform outer surface, at a controlled rate about a substantially horizontal axis;

b. effecting the tandem translational movement of a pair of distributor elements at a controlled rate along said roller surface while rotating said roller and while accurately maintaining a preselected spacing of each of said distributor elements from said roller surface, both of said elements being in close proximity to said surface with the more forward one thereof being spaced slightly further therefrom than the more rearward one thereof;

c. substantially continuously depositing upon said surface, at a point ahead of said more forward distributor element, a supply of a liquid coating material from which said skin is to be formed, said material being uniformly distributed upon said roller surface by said elements during the relative rotational and translational movement effected therebetween; and

d. curing said material to produce a skin of high uniformity and smoothness on said roller surface.

14. The method of claim **13** wherein said outer surface of said roller is provided by a relatively hard, resiliently deformable synthetic resinous material.

15. The method of claim **14** wherein said resinous material is a silicone rubber.

24. As an article of manufacture, the roller produced in accordance with any of claims **13**, **15**, **17**, **18**, **19**, **20**, or **21**.

4,368,241

ALKOXYSILANES AND METHOD FOR MAKING

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 154,626, May 30, 1980, Pat. No. 4,307,240. This application Aug. 14, 1981, Ser. No. 293,034

Int. Cl.³ B32B *27/18, 27/20;* **C07F** *7/08*

U.S. Cl. 428—447 **1 Claim**

1. An article comprising

(A) a substrate coated with a thermoset acrylic primer

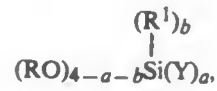
(B) a hard, protective coating thereon comprising an aqueous coating composition which comprises before curing,

(a) a dispersion of a colloidal silica in a solution of the partial condensate of silanol having the formula,

$R^7Si(OH)_3$,

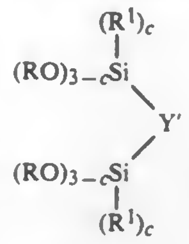
where R^7 is selected from the group consisting of $C_{(1-8)}$ alkyl and $C_{(6-13)}$ aryl, at least 70 weight percent of which is $CH_3Si(OH)_3$, in a mixture of an aliphatic alcohol and water, said dispersion containing from 10 to 50 percent by weight of solids, said solids consisting essentially of 10 to 70% by weight of colloidal silica and 30 to 90% by weight of the partial condensate and

(b) an effective amount of an ultraviolet light absorbing agent comprising a compound having the formula,

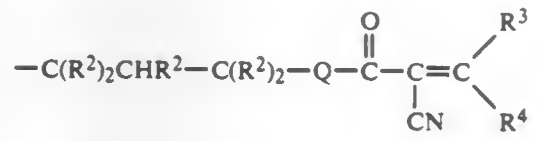


$$(RO)_{4-a-b}\overset{\displaystyle (R^1)_b}{\overset{|}{Si}}(Y)_a,$$

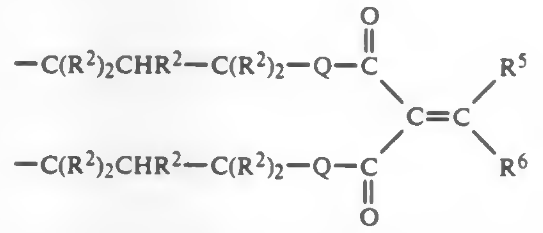
and alkoxysilyl malonates having the formula,



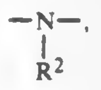
where Y is



and Y' is



R is a $C_{(1-8)}$ alkyl radical, R^1 is selected from R, $C_{(6-13)}$ aryl radicals and halogenated derivatives thereof, R^2 is selected from hydrogen and R radicals, R^3 and R^5 are selected from $C_{(6-13)}$ aryl radicals, R^4 and R^6 are selected from hydrogen, R and R^3 radicals, Q is selected from —O— and



$$-\underset{\displaystyle R^2}{\underset{|}{N}}-,$$

a is an integer equal to 1 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive and the sum of a+b is equal to 1 to 3 inclusive and c is a whole number equal to 0 to 2 inclusive.

4,368,242

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima, Izumi; Masashi Somezawa, Sendai; Minoru Takamizawa, Annaka; Yoshio Inoue, and Hiroshi Yoshioka, both of Annaka, all of Japan, assignors to Sony Corporation and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

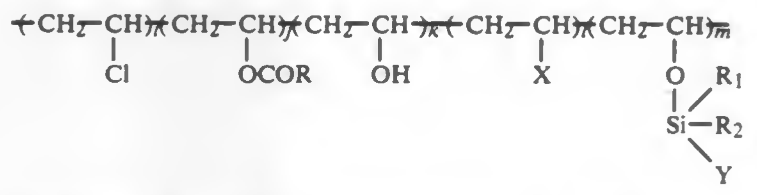
Filed Aug. 24, 1981, Ser. No. 295,390

Claims priority, application Japan, Aug. 23, 1980, 55-116165

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—447 **12 Claims**

1. A magnetic recording medium having a magnetic layer comprising magnetic or magnetizable powders or particles, and a binder comprising at least one compound represented by the following general formula (I):



(wherein R is a methyl or ethyl group, R_1 is an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms or a phenyl group, R_2 is an alkyl group having from 1 to 4 carbon atoms or an alkoxy group having from 1 to 4 carbon atoms, X is a group containing a double bond, Y is a group containing a double bond, i is a number in the range of approximately 200 to 800, j is a number in the range of approximately 10 to 200, k is a number in the range up to approximately 200, l is a number in the range of approximately 3 to 100, and m is a number in the range of approximately 1 to 50).

4,368,243

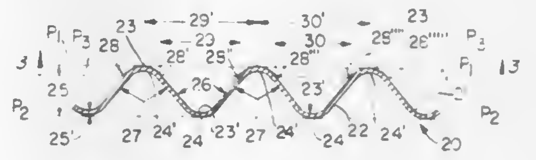
BATTERY SEPARATOR

Dennis D. O'Rell, Boxborough, and Nan J. Liu, Burlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 195,918, Oct. 10, 1980, abandoned, which is a continuation of Ser. No. 51,175, Jun. 22, 1979, Pat. No. 4,228,225. This application Mar. 4, 1981, Ser. No. 240,401

Int. Cl.³ H01M *2/18*

U.S. Cl. 429—147 **21 Claims**



1. A sheet product suitable for use as a separator in an acid battery comprising an acid-stable porous sheet material, said sheet material having first and second faces formed within spaced planes containing said faces and into a plurality of separate continuous open channels on each of said faces, each channel on each face defining a separation between two channels on the other face, each of said channels defining an imaginary median line, at least some portions of at least some of said channels extending laterally with respect to said median line such that the overall channel configuration of said sheet has at least about 20 percent extending laterally beyond the minimum lateral extension for each channel, and said channels being so configured that a tangent to substantially any portion of each of said channels is oriented at an acute angle theta of no greater than 70 degrees with respect to an imaginary vertical line oriented from bottom to top of a battery containing at least one separator formed from said sheet product.

4,368,244

ZINC ELECTRODE FOR USE IN RECHARGEABLE ELECTROCHEMICAL CELLS

Ivan F. Danzig, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 158,484, Jun. 11, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,599

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ H01M *10/30*

U.S. Cl. 429—217 **16 Claims**

1. A zinc electrode for use in rechargeable nickel-zinc electrochemical cells having greatly enhanced cycle life which comprises in admixture Zn, ZnO, HgO and an organic liquid binder produced via the reaction of diacetone acrylamide (DAA) and acrylic acid, which mixture has been formed into a paste and uniformly applied to a suitable current collector, wherein the ZnO component has an average surface area of about 9–10 m^2/gr.

4,368,245

METHOD FOR MAKING MATT DIFFUSION PATTERNS

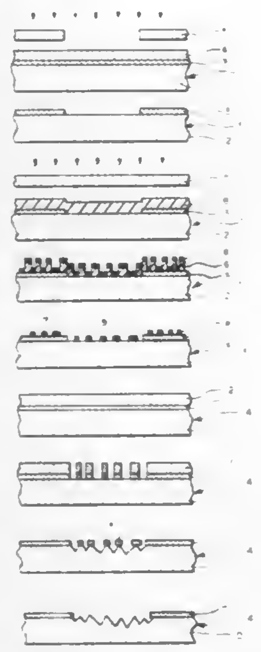
Erich Bayer, Trostberg, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,564

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946235

Int. Cl.³ G03C *5/06*

U.S. Cl. 430—5 **11 Claims**



1. A process for the photolithographic production of a matt diffusion pattern, the process comprising the following steps:

(a) providing a mask substrate having an opaque pattern formed thereon;

(b) applying a mask photoresist layer to a face of the mask substrate over the opaque pattern;

(c) exposing the mask photoresist layer through a matt diffusion plate;

(d) developing the mask photoresist layer to remove portions thereof;

(e) applying an opaque layer to the mask substrate face over the remaining portions of the mark photoresist layer;

(f) removing the remaining portions of the mask photoresist layer together with the overlying portions of the opaque layer to form an exposure mask;

(g) applying an opaque layer to a face of a transparent carrier plate;

(h) applying a carrier plate photoresist layer to the carrier plate opaque layer;

(i) exposing the carrier plate photoresist layer through the exposure mask;

(j) developing the carrier plate photoresist layer to remove portions thereof;

(k) etching the carrier plate opaque layer to remove exposed portions thereof;

(l) removing the remaining portions of the carrier plate photoresist layer; and then

(m) deeply etching the exposed portions of the carrier plate face to underetch and remove at least a portion of the remaining carrier plate opaque layer and thereby to form an optically diffusing patterned region.

9. A process for producing an exposure mask for the photolithographic production of a patterned optical diffuser having an optically diffusing region and an optically non-diffusing region, said process comprising the following steps:

(a) providing an exposure mask substrate having an opaque pattern formed thereon;

(b) applying a photoresist layer to a face of the mask substrate aligned with the opaque pattern;

(c) exposing the photoresist layer through a diffusion matt plate to form a pattern of exposed and unexposed regions on the photoresist layer;

(d) developing the photoresist layer to remove portions thereof and thereby to uncover underlying portions of the mask;

(e) applying an opaque layer over the remaining portions of the photoresist layer and the uncovered underlying portions of the face of the mask substrate; and then

(f) removing the remaining portions of the photoresist layer and the portions of the opaque layer overlying the remaining portions of the photoresist layer, thereby producing a pattern of remaining portions of the opaque layer suitable for photolithographic production of an optical diffusing region.

4,368,246

PHOTOGRAPHIC MATERIALS AND PROCESSES COMPRISING COLOR-FORMING SULFONAMIDODIPHENYLAMINE DYE PRECURSORS AND CORRESPONDING PHENAZINE DYES

Rolf S. Gabrielsen, Webster; Patricia A. Graham, Williamson, and James E. Klijanowicz, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,673

Int. Cl.³ 430 *955;* **G03C** *7/00, 1/40*

U.S. Cl. 430—9 **44 Claims**

1. In a photographic element comprising a support having thereon a photographic silver salt and a dye precursor, the improvement comprising:

as said dye precursor, a color-forming para-sulfonamidodiphenylamine having one to two sulfonamido groups in positions ortho to the —NH— moiety separating the two phenyl groups of the para-sulfonamidodiphenylamine and wherein the para-sulfonamidodiphenylamine, in oxidized form, intramolecularly reacts to produce a sulfonamido substituted phenazine dye.

4,368,247

PHOTOGRAPHIC MATERIALS AND PROCESSES COMPRISING OXOINDOLIZINE AND OXOINDOLIZINIUM COMPOUNDS

George L. Fletcher, Jr., Pittsford, N.Y.; Steven L. Bender, Georgetown, Ill., and Donald H. Wadsworth, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,013

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—17 **30 Claims**

1. In a photographic element comprising a support having thereon a photosensitive cyclopropenone in binder, the improvement comprising:

in reactive association with said cyclopropenone, a pyridine compound that reacts with said cyclopropenone to form an oxoindolizine or oxoindolizinium dye.

4,368,248

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 2-(2-PYRIDYLAZO)-4,5-BIS(TERTIARY AMINO)PHENOL BLACK DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

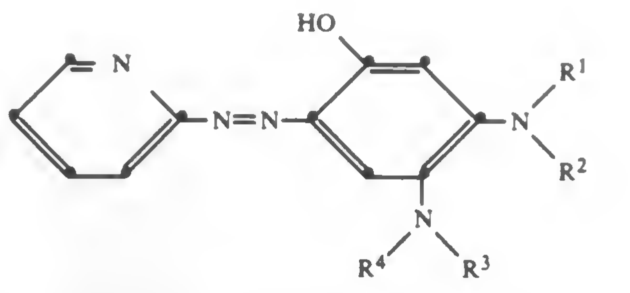
Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,612, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 354,986

Int. Cl.³ C09B *45/00;* **G03C** *1/40*

U.S. Cl. 430—17 **12 Claims**

1. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

(a) R^1 and R^2 each independently represents an alkyl group of 1 to about 6 carbon atoms or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring; and

(b) R^3 and R^4 each independently represents an alkyl group of 1 to about 6 carbon atoms or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring.

4,368,249

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE PYRIDYLAZO(DIALKYLAMINO)PHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

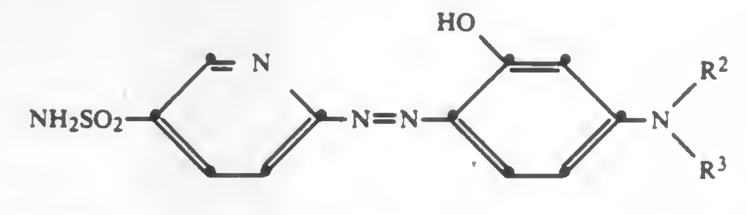
Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,611, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 355,001

Int. Cl.³ G03C *1/40;* **C09B** *45/00*

U.S. Cl. 430—17 **10 Claims**

1. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

R^2 and R^3 each independently represents hydrogen, an alkyl group of 1 to about 6 carbon atoms, or they can be taken together with the nitrogen to which they are attached to form a 5- or 6-membered heterocyclic ring, or one of said R^2 and R^3 can be an aryl group having from 6 to about 10 carbon atoms.

4,368,250

DRY TRANSFER OF ELECTROPHOTOGRAPHIC IMAGES OF AN INTUMESCENT ELECTROSCOPIC THERMOADHESIVE TOWER

Sidney Cooper, Roslyn Harbor, and Ezekiel J. Jacob, Brooklyn, both of N.Y., assignors to Ani-Live Film Service Inc., New York, N.Y.

Division of Ser. No. 799,476, May 23, 1977, Pat. No. 4,216,283. This application Jan. 14, 1980, Ser. No. 112,826

Int. Cl.³ G03G *13/16*

U.S. Cl. 430—109 **3 Claims**

1. An electrophotographic process comprising forming an electrostatic image on a carrier sheet corresponding to information to be recorded, depositing a pattern of a toner composition on said carrier sheet thereby forming a raised pattern of said toner on said carrier sheet corresponding to said electrostatic image, the toner-image thereby formed comprising upper and lower surfaces, said lower surface being adhesive to said carrier sheet with which it is in contact and wherein said upper surface possesses adhesive characteristics whereby said toner-image may be directly transferred to a receptor surface brought into contact with said upper surface, said toner comprising an intumescent electroscopic powder mixture, comprising a thermoadhesive agent comprising microspheres carrying or containing adhesive.

4,368,251

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC LIGHT-SENSITIVE SHEET

Shigetoshi Ono, and Shinsaku Fujita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

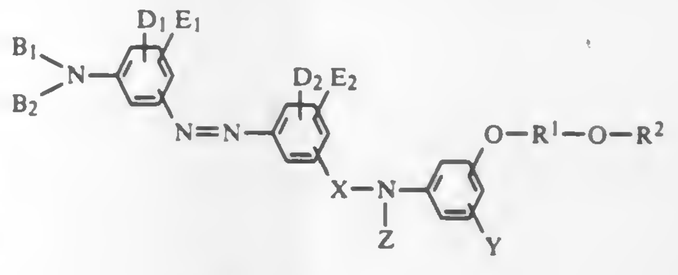
Filed Apr. 16, 1980, Ser. No. 140,933

Claims priority, application Japan, Apr. 17, 1979, 54-46948

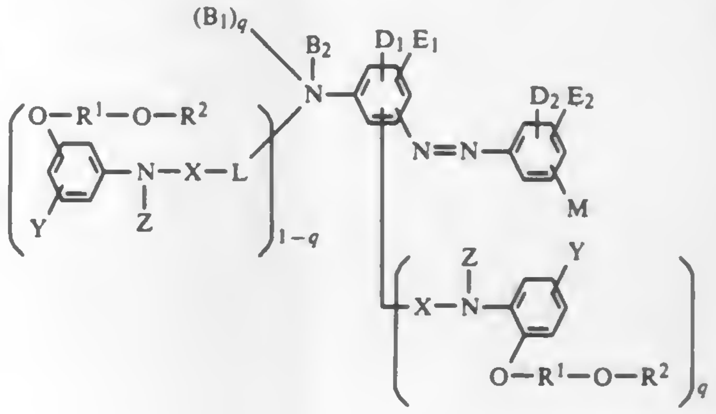
Int. Cl.³ G03C *1/40, 1/10*

U.S. Cl. 430—223 **35 Claims**

1. A photographic light-sensitive sheet containing at least one light-sensitive silver halide emulsion layer, with at least one of said emulsion layers being associated with a compound represented by the following general formula (I) or (II):



(I)



(II)

wherein B_1 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an aralkyl group, or a substituted aralkyl group, B_2 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an aralkyl group, a substituted aralkyl group, an acyl group represented by $—COR^3$ (wherein R^3 represents an alkyl group, a substituted alkyl group, an aralkyl group, a substituted aralkyl group, an aryl group, or a substituted aryl group), an alkylsulfonyl group, a substituted alkylsulfonyl group, an arylsulfonyl group, or a substituted arylsulfonyl group; D_1 and D_2 may be the same or different and each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, or a halogen atom provided that D_2 does not represent an alkoxy-substituted alkoxy group; E_1 and E_2 may be the same or different and each represents a hydrogen atom, a trifluoromethyl group, a cyano group, a carboxylic acid ester group represented by $—COOR^3$, a nitro group, a halogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, an alkylsulfonyl group, a substituted alkylsulfonyl group, an arylsulfonyl group, a substituted arylsulfonyl group, an alkylcarbonyl group, a substituted alkylcarbonyl group, a sulfonamido group represented by $—NHSO_2R^3$, a carbonamido group represented by $—NHCOR^3$, a sulfamoyl group represented by $—SO_2NR^4R^5$ (wherein R^4 represents a hydrogen atom, an alkyl group or a substituted alkyl group, R^5 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aralkyl group, a substituted aralkyl group, an aryl group, or a substituted aryl group, or R^4 and R^5

may combine directly or through an oxygen atom to form a ring), or a carbamoyl group represented by —CONR^{4}R^5, provided that E$_2$ does not represent an alkoxy-substituted alkoxy group; R^1 represents an alkylene group containing two or more carbon atoms; R^2 represents an alkyl group or a substituted alkyl group; Z represents a hydrogen atom, an alkyl group or a substituted alkyl group; X represents a divalent linking group of the formula —T-A)$_n$(J)$_p$ wherein J represents a divalent group selected from a sulfonyl group and a carbonyl group, A represents an alkylene group, an aralkylene group or an arylene group, T represents a divalent oxy group, carbonyl group, carboxyamido group, carbamoyl group, sulfonamido group, sulfamoyl group, sulfinyl group, or sulfonyl group; and n and p each represents 0 or 1; L represents an alkylene group or an arylene group; M represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, a halogen atom, a sulfamoyl group of the formula —SO$_2$NR^{4}R^5, or a carbamoyl group of the formula —CONR^{4}R^5; q represents 1 or 0; and Y represents a diffusibility-controlling moiety.

4,368,252

PRINTED CIRCUIT SUBSTRATE WITH RESISTANCE ELEMENTS

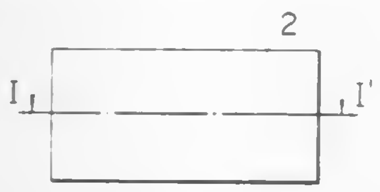
Takeshi Kakuhashi, and Yasufumi Miyake, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 49,023, Jun. 15, 1979, abandoned, which is a division of Ser. No. 884,298, Mar. 7, 1978, Pat. No. 4,204,187. This application Nov. 25, 1981, Ser. No. 325,085

Claims priority, application Japan, Nov. 14, 1977, 52-137155

Int. Cl.^{3} B05D *5/12;* G03C *5/00;* C23F *1/02*

U.S. Cl. 430—312 **3 Claims**



1. A method for forming a printed circuit substrate with resistive elements, which comprises the steps of:
(a) providing a sheet of highly conductive material;
(b) covering both sides of said sheet with layers of photoresistive material;
(c) placing the sheet with photoresistive material layers between a photographic negative for forming a conductor pattern and a photographic negative for forming a resistor pattern;
(d) exposing and developing the photoresistive material so as to expose the surface of the sheet corresponding to the conductor pattern on one side of a said sheet and the surface of the sheet corresponding to the resistor pattern on the other side of said sheet;
(e) plating the two pattern regions with a metallic material stable with an etching solution for corrosion of said sheet to form conductor pattern films at the exposed portions of said sheet on said one side and resistor pattern films at the exposed portions of said sheet of said other side;
(f) removing the remaining photoresistive material layers; and
(g) attaching an insulating support to said second side of said sheet.

4,368,253

IMAGE FORMATION PROCESS

George E. Green, Stapleford, and John S. Waterhouse, Cherry Hinton, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

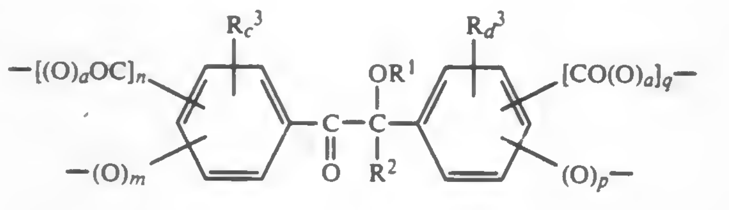
Filed Jan. 19, 1982, Ser. No. 340,670

Claims priority, application United Kingdom, Jan. 28, 1981, 8102847

Int. Cl.^{3} G03C *5/00*

U.S. Cl. 430—326 **16 Claims**

1. A process for the formation of an image which comprises:
(1) exposing imagewise to actinic radiation a photoresist composition comprising:
(a) a film-forming organic material having at least one substituted benzoin group of formula:



I

where:
R^1 denotes a hydrogen atom, an alkyl, cycloalkyl, cycloalkylalkyl, or aralkyl group or a group —(CH$_2$)$_b$X,
R^2 denotes a hydrogen atom or an alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl group,
R^3 denotes a halogen atom or an alkyl, alkoxy, cycloalkyl, cycloalkylalkyl or phenyl group,
X denotes a halogen atom, an alkoxy group, a phenoxy group, a group —COOR^4 or a group —OOCR^4,
R^4 denotes an alkyl group,
a denotes zero or 1,
b denotes an integer of from 1 to 4,
m denotes zero or 1,
n denotes zero or 1, the sum of (m+n) being 1,
p denotes zero or 1,
q denotes zero or 1, the sum of (p+q) being 1,
c denotes zero or an integer of from 1 to 3, and
d denotes zero or an integer of from 1 to 3; and
(b) a compound which is polymerisable under the influence of a free radical catalyst to form a higher molecular weight material which is more soluble in a developer than the composition prior to exposure, so that the solubility of the composition in a developer is increased in the exposed portion; and
(2) treating the composition with a developer to remove the exposed portion.

4,368,254

NON-SILVER LIGHT-SENSITIVE COMPOSITION

Anatoly V. Vannikov, Teply stan, 2 mikroraion, korpus 20, kv. 29; Vadim G. Glotov, ulitsa Melnikova, 27, kv. 53; Antonina D. Grishina, ulitsa Vavilova, 44, korpus 3, kv. 77; Valentina N. Ivanova, ulitsa Geroev Panfilovtsev, 3, korpus 1, kv. 210; Vladimir S. Fedorov, ulitsa 26 Bakinskikh komissarov, 3, korpus 1, kv. 58; Gennady M. Chernov, Bolshaya Cheremushkinskaya ulitsa, 2, korpus 2, kv. 33, and Vladimir E. Kazarinov, Leninsky prospekt, 11, kv. 126, all of Moscow, U.S.S.R.

Continuation of Ser. No. 68,471, Aug. 20, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 230,066

Int. Cl.^{3} G03C *1/52*

U.S. Cl. 430—333 **8 Claims**

1. A non-silver light-sensitive composition consisting of the following components, in percent by weight:

a hydroxyderivative of naphthalene selected from the group consisting of α-naphthol, β-naphthol, 1-naphtholphthalein; aminonaphthol and dihydroxynaphthalene as anti fogging agent	1 to 10
an aromatic amine selected from the group consisting of diphenylbenzlamine, indole and dibenzylaniline as color former	29 to 60
a saturated halogenated hydrocarbon as photoactivator	35 to 29
a polymeric binder	35 to 1.

4. Method of producing images, which comprises exposing to light on a substrate a non-silver light-sensitive composition consisting of, in percent by weight:

a hydroxyderivative of naphthalene selected from the group consisting of α-naphthol, β-naphthol, 1-naphtholphthalein; aminonaphthol and dihydroxynaphthalene as anti fogging agent	1 to 10
an aromatic amine selected from the group consisting of diphenylbenzlamine, indole and dibenzylaniline as color former	29 to 60
a saturated halogenated hydrocarbon as photoactivator	35 to 29
a polymeric binder	35 to 1.

until a latent image is formed, intensifying the thus formed image by exposing the same to visible light with an intensity of 0.1 to 1.0 W/cm^2 for 1-5 minutes, and fixing the resulting image by heat treatment.

4,368,255

METHOD OF PROCESSING MONOCHROME SILVER HALIDE MATERIAL

Thomas G. Borg, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

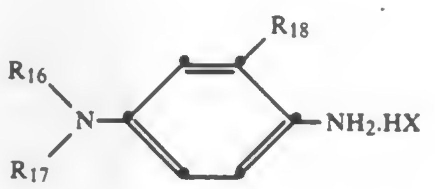
Filed Jul. 15, 1981, Ser. No. 283,420

Claims priority, application United Kingdom, Jul. 16, 1980, 8023175

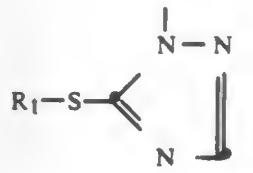
Int. Cl.^{3} G03C *7/00*

U.S. Cl. 430—351 **9 Claims**

1. A method of processing monochrome silver halide material which contains in at least one silver halide layer in addition to the normal image-forming colour coupler or couplers, a development inhibitor releasing compound which method comprises developing the exposed material in a color developing solution which comprises not more than 2.5 g/liter of a paraphenylene diamine colour developing agent of the formula



where R$_{16}$ is alkyl having from 1 to 6 carbon atoms or substituted alkyl, R$_{17}$ is substituted alkyl, R$_{18}$ is hydrogen or alkyl having from 1 to 4 carbon atoms or substituted alkyl, and X is an anion, which colour colour developing agent is able to couple with the colour coupler or couplers and D.I.R. compound present, the D.I. group being an alkyl thiotriazole group of the formula



where R$_1$ is an alkyl group having from 4 to 8 carbon atoms, the process further comprising silver halide fixing, silver image bleaching and washing steps.

4,368,256

PROCESS FOR PRODUCTION OF MASKED POSITIVE COLOR IMAGES BY THE SILVER DYE BLEACH PROCESS AND THE SILVER DYE BLEACH MATERIAL USED IN THIS PROCESS

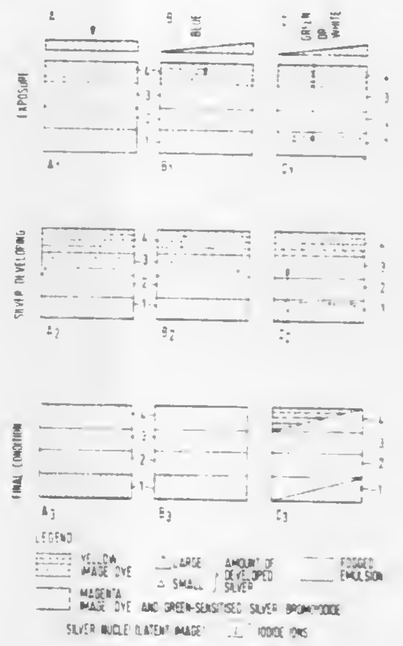
Herbert Mollet, Tentlingen, and Dieter Wyrsch, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 13, 1981, Ser. No. 282,687

Claims priority, application Switzerland, Jul. 22, 1980, 5588/80

Int. Cl.^{3} G03C *7/04*

U.S. Cl. 430—359 **21 Claims**



1. A process for the production of masked positive colour images by the silver dye bleach process, by exposure of a photographic material for the silver dye bleach process, silver developing, dye bleaching, silver bleaching and fixing, the silver bleaching being optionally carried out simultaneously with the dye bleaching and/or the fixing, in a single processing bath, in which process the photographic material contains
(a) in at least one layer, at least one first dye from which at least one undesired secondary colour density is to be compensated,
(b) in the layer(s) (a) and/or in a layer adjacent to this layer, (in each case) one iodide-containing silver halide emulsion associated with this dye (these dyes),
(c) in at least one other layer, at least (in each case) one second dye, the main colour density of which corresponds to the secondary colour density (densities), to be compensated, of the first dye(s),
(d) in the layer(s) (c) and/or in a layer adjacent thereto, an iodide-free silver halide emulsion associated with this dye (these dyes), or, in comparison with the emulsions mentioned under (b) a silver halide emulsion of low iodide content, and
(e) in the layer(s) (c) and/or in at least one other layer which is adjacent to the layer(s) (c) and which is separated from one or more layers (a) by at least one intermediate layer, a core-shell emulsion which is free of iodide or has a low iodide content, the particles of which emulsion consist of a surface-fogged silver halide core and of an unfogged silver halide shell enclosing the latter, it being possible for this emulsion to be developed spontaneously up to the maximum density by the action of a developer, and optionally a developing retarder, and the developing is carried out in a developer solution which is free of silver-complexing agents.

4,368,257

METHOD FOR FORMING A CYAN DYE IMAGE

Yasushi Usagawa, Hino; Wataru Fujimatsu, Hachioji; Osamu Sasaki, Hino, and Katsumi Matsuura, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 14, 1981, Ser. No. 225,137

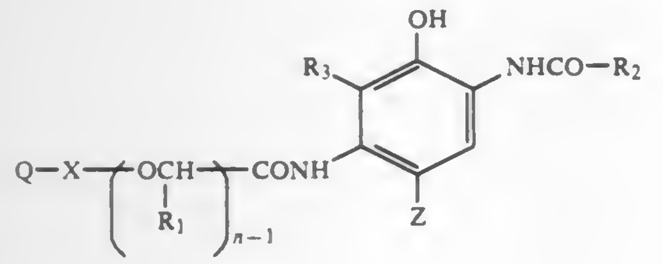
Claims priority, application Japan, Jan. 14, 1980, 55-2755

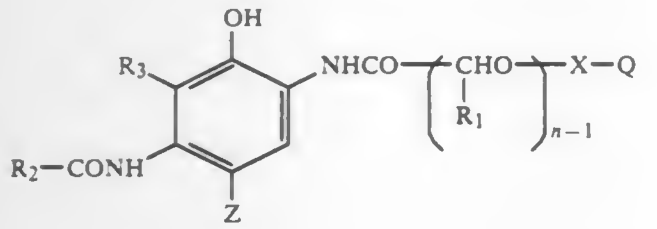
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

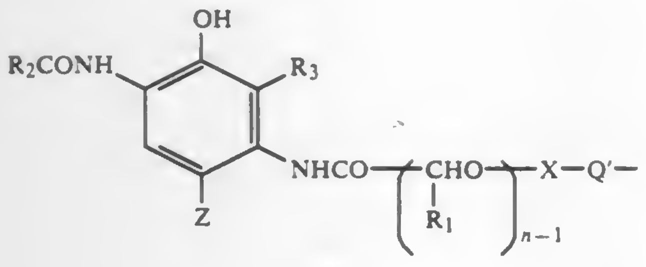
Int. Cl.^{3} G03C *7/00*

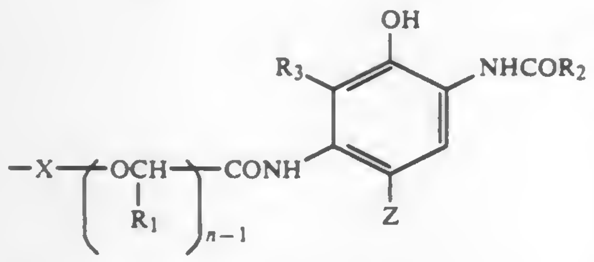
U.S. Cl. 430—384 **8 Claims**

1. A method for forming a cyan dye image comprising developing an imagewisely exposed silver halide emulsion layer coated on a support with an aromatic primary amine developing agent in the presence of a cyan coupler represented by the formula [I], [II] or [III]:

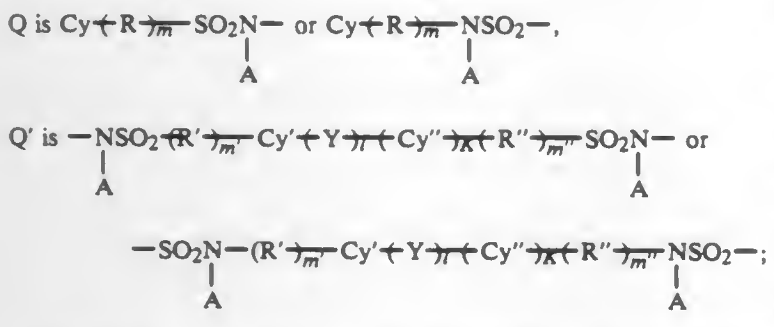

[I]


[II]


[III]



(Wherein, R_1 is hydrogen atom, or alkyl having 1 to 20 numbers of carbon; R_2 is alkyl, aryl, or hetero ring; R_3 is hydrogen, or halogen; X is arylene or alkylene; Z is coupling off group; and n is 1 or 2.);



Q is $\text{Cy}(\text{R})_m\text{SO}_2\underset{\substack{|\\ \text{A}}}{\text{N}}-$ or $\text{Cy}(\text{R})_m\underset{\substack{|\\ \text{A}}}{\text{N}}\text{SO}_2-$,

Q' is $-\underset{\substack{|\\ \text{A}}}{\text{N}}\text{SO}_2(\text{R}')_{m'}\text{Cy}'(\text{Y})_l(\text{Cy}'')_K(\text{R}'')_{m''}\text{SO}_2\underset{\substack{|\\ \text{A}}}{\text{N}}-$ or

$-\text{SO}_2\underset{\substack{|\\ \text{A}}}{\text{N}}-(\text{R}')_{m'}\text{Cy}'(\text{Y})_l(\text{Cy}'')_K(\text{R}'')_{m''}\underset{\substack{|\\ \text{A}}}{\text{N}}\text{SO}_2-$;

Wherein Cy, Cy' and Cy" are individually cyclic aliphatic, aromatic or heterocyclic group; R, R' and R" are individually alkyl; A is hydrogen, or a monovalent organic group, Y is a divalent organic group, K, l, m, m' m" are individually 0 or 1 with proviso that when m—0, Cy is cyclic aliphatic or heterocyclic group.

4,368,258

PROCESS FOR PREPARING IMPREGNATED POLYMER LATEX COMPOSITIONS

Mitsuto Fujiwhara; Syunji Matsuo; Tsuneo Wada; Naoto Abe; Toyoaki Masukawa; Akio Iijima, and Keiji Oishi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 74,070, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,495, Aug. 10, 1978, abandoned. This application Mar. 11, 1981, Ser. No. 242,580

Claims priority, application Japan, Aug. 17, 1977, 52-98566

Int. Cl.^{3} G03C *1/40, 1/48, 1/10, 1/72*

U.S. Cl. 430—493 **17 Claims**

1. In the process for preparing impregnated polymer latex compositions by impregnating a hydrophobic substance into dispersed polymer particles in an aqueous polymer latex, the improvement comprising impregnating said hydrophobic substance, wherein the impregnation is effected by mixing said hydrophobic substance which is in the solid state, with a water-miscible organic solvent and the aqueous polymer latex comprising a dispersion of said polymer particles in water, said polymer of the polymer latex is prepared from ethene monomers and contains at least one hydrophilic group,

said mixing which effects said impregnation being carried out by one of the following four mixing operations:

(i) forming a suspension of particles of said hydrophobic substance in said aqueous polymer latex and then adding small portions of said water-miscible organic solvent to said suspension;

(ii) adding and mixing particles of said hydrophobic substance, and said water-miscible organic solvent, from different hoppers to said aqueous polymer latex at the same time;

(iii) adding and mixing said aqueous polymer latex, particles of said hydrophobic substance, and said water-miscible organic solvent or in one receptacle at the same time; or

(iv) adding and mixing particles of said hydrophobic substance to a mixture of said aqueous polymer latex and a water-miscible organic solvent;

whereby said solid state hydrophobic substance is gradually dissolved by said water-miscible solvent while said dissolved hydrophobic substance is being impregnated into said dispersed polymer particles, and finally said polymer particles are finely dispersed in a medium comprising water and said water-miscible solvent.

11. The process as claimed in claim **1**, wherein the hydrophobic substance is a hydrophobic photographic additive.

4,368,259

COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING AN EMULSIFIED, HYDROPHILIC COLOR-FORMING COMPOUND

Fritz Nittel, Leverkusen; Hans Langen, Bonn, and Erwin Ranz, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,383

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002201

Int. Cl.^{3} G03C *1/40*

U.S. Cl. 430—546 **6 Claims**

1. A color photographic recording material comprising at least one photosensitive silver halide emulsion layer and, associated therewith, a non-diffusing hydrophilic color-forming compound, wherein the improvement comprises the photosensitive silver halide emulsion layer or a non-photosensitive binder layer adjacent thereto contains a stable dispersion of a solution of a hydrophilic dye producing compound and an aliphatic tertiary hydroxy amine, in which at least two of the aliphatic groups present contain a hydroxyl group, in a hydrophobic oil former.

4,368,260

PHOTOGRAPHIC LIGHT SENSITIVE ELEMENT

Tawara Komamura; Jiro Takahashi, and Ryuichiro Kobayashi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

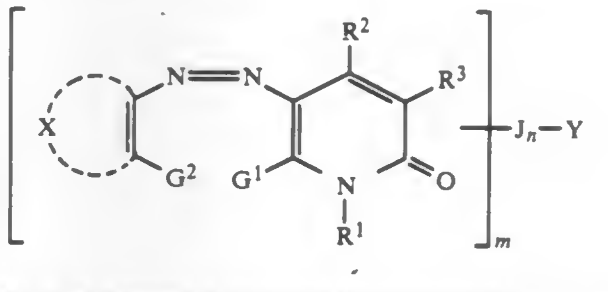
Filed Dec. 23, 1981, Ser. No. 333,900

Claims priority, application Japan, Dec. 27, 1980, 55-188970

Int. Cl.^{3} G03C *1/40, 1/10*

U.S. Cl. 430—562 **4 Claims**

1. A photographic light-sensitive element which comprises on a support a light-sensitive silver halide emulsion layer and having associated therewith a non-diffusible compound capable of, under alkaline condition, releasing a diffusible azo dye, said compound having the formula (1),


(1)

wherein X represents a group of atoms necessary to complete a naphthalene ring or a benzene ring, G^1 represents a hydroxy group, a salt thereof or a hydrolyzable precursor thereof, G^2 represents a carboxy group, a salt thereof or a hydrolyzable precursor thereof, a hydroxy group, a salt thereof or a hydrolyzable precursor thereof, R^1 is a hydrogen atom, an alkyl group or an aryl group, R^2 represents a hydrogen atom, a halogen atom, an alkyl group, a carboxy group, a carbamoyl group or an amino group, each of which group may be substituted, R^3 represents a hydrogen atom, a carboxy group, a carbamoyl group, a cyano group or a trifluoromethyl group, J represents a divalent linking group, Y represents a ballasted carrier moiety capable of releasing said diffusible dye under alkaline condition as a function of development of silver halide, m represents an integer of 1 to 3 and n represents zero or an positive integer not larger than m.

4,368,261

METHOD AND REAGENT FOR THE DETERMINATION OF TRIGLYCERIDES

Sigmar Klose, Berg; Albert Röder, Seeshaupt, and Walter Schneider, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,702

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950381

Int. Cl.^{3} C12Q *1/48, 1/44;* **G01N** *31/00;* **C12Q** *1/32*

U.S. Cl. 435—15 **28 Claims**

1. In a method for the determination of triglycerides which comprises combining sample, lipase, glycerol kinase, adenosine triphosphate, and at least one lipase activator selected from the group consisting of polyethylene oxide ester surfactants, polyethylene oxide ether surfactants, bile acid surfactants, alkyl sulphate surfactants, phenol derivatives, and analine derivatives, under conditions suitable to form glycerol-1-phosphate and adenosine diphosphate and determining the presence or concentration of either glycerol-1-phosphate or adenosine diphosphate, the improvement comprising using a glycerol kinase from *Bacillus stereothermophilis.*

4,368,262

DIAGNOSTIC TEST FOR THE DETECTION OF CANCER

Edsel T. Bucovaz; Walter D. Whybrew, both of Memphis, Tenn., and John C. Morrison, Brandon, Miss., assignors to Research Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,311

Int. Cl.^{3} C12Q *1/38, 1/56*

U.S. Cl. 435—23 **16 Claims**

1. A method of detecting cancer in mammals which comprises precipitating by reversible denaturation at least a portion of the proteins in a serum sample from a mammal and then measuring the rate at which said precipitated proteins are re-solubilized.

4,368,263

PRODUCTION OF CEPHALOSPORINS

Christopher Ball, Barrow-in-Furness; John S. Collins, Ulverston, and Paul F. Hamlyn, Nottingham, all of England, assignors to Glaxo Group Limited, London, England

Filed Apr. 25, 1979, Ser. No. 33,187

Claims priority, application United Kingdom, Apr. 26, 1978, 16528/78

Int. Cl.^{3} C12P *35/00*

U.S. Cl. 435—47 **12 Claims**

1. A method of producing an improved strain of *Acremonium chrysogenum* which comprises submitting parent strains of *Acremonium chrysogenum* to protoplast fusion and nuclear fusion and selecting and propagating said improved strain from the protoplast and nuclear fused progeny or from a mutant thereof.

9. An improved strain of *Acremonium chrysogenum* produced by submitting parent strains of *Acremonium chrysogenum* to protoplast fusion and nuclear fusion and selecting and propagating said improved strain from the protoplast and nuclear fused progeny or from a mutant thereof.

4,368,264

FERMENTATION METHODS OF PREPARING ERGOSTADIENTRIOLS

Fritz W. Zilliken, Remagen, Fed. Rep. of Germany, assignor to Z-L Limited Partnership, Janesville, Wis.

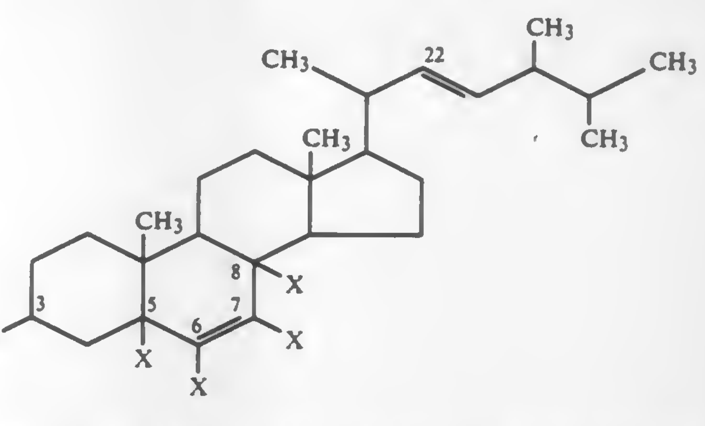
Division of Ser. No. 22,202, Mar. 19, 1979, Pat. No. 4,334,577, which is a continuation-in-part of Ser. No. 804,594, Jun. 8, 1977, Pat. No. 4,157,984. This application Aug. 4, 1980, Ser. No. 175,074

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.^{3} C12P *33/00, 33/16*

U.S. Cl. 435—52 **6 Claims**

1. A method for preparing one or more compounds having the structure:



wherein X may be hydrogen or a hydroxyl group provided that X twice be hydroxyl which comprises fermenting soybeans in presence of fungus *R. oligosporus* or *R. oryzae,* contacting the resulting fermented soybean product with methanol to separate from said fermented soybean product an extract containing said compound or compounds and isolating said compound or compounds from said methanol extract.

4,368,265

CULTURING A STRAIN OF NOCARDIA TO PRODUCE ANTIBIOTIC X-14868A

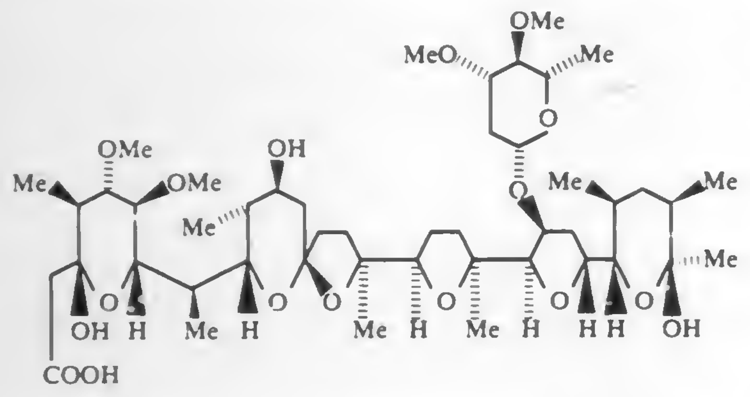
Chao-Min Liu, Cedar Grove; Barbara Prosser, Bloomfield, and John Westley, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 116,696, Jan. 30, 1980, Pat. No. 4,278,663. This application Feb. 23, 1981, Ser. No. 237,544

Int. Cl.^{3} C12P *19/60, 17/18*

U.S. Cl. 435--75 **1 Claim**

1. A process to produce a compound of the formula



which comprises cultivating a strain of Nocardia X-14868 in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic conditions and thereafter isolating antibiotic X-14868A from said solution.

4,368,266

METHOD FOR PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Osamu Tosaka, Tokyo; Yutaka Murakami, Yokosuka; Shigeho Ikeda, and Hiroe Yoshii, both of Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,071

Claims priority, application Japan, Dec. 27, 1979, 54-170927; Jul. 10, 1980, 55-94395

Int. Cl.^{3} C12P *13/14;* **C12N** *1/20;* **C12R** *1/13, 1/15*

U.S. Cl. 435—110 **11 Claims**

1. A method for producing L-glutamic acid by fermentation which comprises aerobically culturing an L-glutamic acid producing mutant of the genus Brevibacterium or Corynebacterium which is deficient in isocitrate lyase and requires acetic acid for growth, and recovering L-glutamic acid accumulated in the resulting culture liquid.

4,368,267

EPOXIDATION OF LOWER α-OLEFINS

Ching-Tsang Hou; Ramesh N. Patel, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 896,467, Apr. 14, 1978, abandoned, and Ser. No. 21,227, Mar. 16, 1979, abandoned, and Ser. No. 24,262, Mar. 27, 1979, abandoned. This application Feb. 6, 1980, Ser. No. 119,096

Int. Cl.^{3} C12P *17/02;* **C12N** *11/02, 1/28, 1/30*

U.S. Cl. 435—123 **42 Claims**

1. A process of epoxidation of a C_2–C_4 alpha-olefin, a C_4–C_5 branched olefin, a C_4–C_5 diene or a vinyl aromatic compound in a reaction medium which comprises: epoxidizing said olefin, diene or vinyl aromatic compound by contacting said olefin, diene or vinyl aromatic compound under aerobic conditions in the presence of cells of a bacterial methylotrophic microorganism, a genetically engineered derivative of said cells, or an oxygenase enzyme preparation prepared from said cells or a genetically engineered derivative thereof, wherein said cells, derivative or enzyme preparation exhibit epoxidase enzyme activity, until at least an isolatable amount of the corresponding epoxide is obtained, wherein said microorganism has been aerobically grown in a nutrient medium containing methane.

4,368,268

DIRECT FERMENTATION OF D-XYLOSE TO ETHANOL BY A XYLOSE-FERMENTING YEAST MUTANT

Cheng-Shung Gong, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed May 15, 1981, Ser. No. 263,925

Int. Cl.^{3} C12D *7/06*

U.S. Cl. 435—161 **18 Claims**

1. A process for the direct fermentation of D-xylose to ethanol which comprises inoculating a medium comprising growth nutrients and D-xylose with a yeast mutant of the strain Candida sp. having an ability to ferment D-xylose to ethanol with a bioconversion yield of at least 80%, permitting the inoculated medium to ferment for a period of time sufficient to achieve a conversion of D-xylose to ethanol of at least 80% and recovering the ethanol so produced as product.

4,368,269

PROCESS FOR PRODUCING FOOD PROTEINS OF FUNGAL ORIGIN OF FROM MULTICELLULAR ORGANISMS FERMENTATION APPARATUS AND PROTEINS SO-PRODUCED

Thadee J. Staron, Noisy le Roi, France, assignor to Institute National de la Recherche Agronomique, Paris, France

Division of Ser. No. 912,017, Jun. 2, 1978, Pat. No. 4,238,567. This application Jun. 2, 1978, Ser. No. 166,393

Claims priority, application France, Jun. 7, 1977, 77 17449

Int. Cl.^{3} C12N *15/00, 1/14*

U.S. Cl. 435—172 **4 Claims**

1. Process for obtaining a new strain *Trichoderma album,* comprising:

(1) inoculating selective media with a naturally-occurring strain *Trichoderma viride,*

(2) incubating each culture under the following conditions:
  (a) at 27° C. for one day,
  (b) at 73° C. for two days in darkness and then for two days in the light,
  (c) at 27° C. for two days;

(3) then exposing to ultraviolet rays (250 nm) the white and vigorous strains derived from each culture effected on the selected media, for two hours at 4° C.;

(4) reinjecting the strains into "STARON" medium, a medium which comprises: glucose 20 g, peptone 1 g, extract of yeast 1 g, corn steep 4 g, NaCl 0.5 g, $MgSO_4.7H_2O$ 10 mg, KH_2PO_4 1g, $FeSO_4$ $7H_2O$ 10 mg, and distilled water to 1 liter;

(5) incubating the resulting cultures for two days at 37° C. and then for two days at 27° C., after having removed, before the reduction in temperature from 37° C. to 27° C., the growing strains;

(6) cultivating said strains in said liquid and stirred "STARON" medium for two days at 27° C.;

(7) making sterile samplings;

(8) mixing in the presence of acridine orange the strains rich in proteins, low in glycosamine and antibiotics;

(9) incubating the resulting strains in "STARON" medium, as described in step (4), for two days at 27° C.;

(10) separating the hyphae; and

(11) incubating the resulting strains for two days at 27° C.; subjecting the strains thus obtained again to the above-defined cycle, steps (1) to (11), to a sufficient number of cycles to obtain a strain possessing the desired characteristics and then recovering said new strain *Trichoderma album.*

4,368,270

PROCESS FOR THE RECOVERY OF ENZYME COAGULANTS

Meyer M. Weber, Milwaukee, and John Shovers, Shorewood, both of Wis., assignors to Midwest Biochemical Corp., Milwaukee, Wis.

Continuation of Ser. No. 124,099, Feb. 25, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 322,010

Int. Cl.^{3} C12N *9/64*

U.S. Cl. 435—226 **12 Claims**

1. A process for the recovery of milk coagulating enzymes from animal organs, comprising the steps of (a) mixing a polar solvent having a surface tension in the range of 18 to 72 dyne cm^{-1} with finely divided animal organs, said organs constituting bovine abomasun, and (b) extracting the organ/polar solvent mixture in a salt solution at a pH in the range of 5.8 to 6.0 to provide an extract containing milk-coagulating enzymes, said salt being present in a concentration from about 2% to about 5% by weight and being water soluble and edible and capable of maintaining said pH in said range when used in said concentration.

4,368,271

PRODUCTION OF MICROBIAL CELLS FROM METHANOL

Yoshiharu Miura, 8-28, Katagiri-cho, Ibaraki-shi, Osaka 567, Japan; Mitsuo Okazaki, Kawanishi, Japan; Setsuo Komemushi, Osaka, Japan; Tenji Sakata, Suita, Japan; Satoshi Shiroza, and Satoshi Obana, both of Ibaraki, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha and Yoshiharu Miura, both of Osaka, Japan

PCT No. PCT/JP78/00047, § 371 Date Aug. 9, 1980, § 102(e) Date Jul. 30, 1980, PCT Pub. No. WO80/01158, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 9, 1978, Ser. No. 212,082

Int. Cl.^{3} C12N *1/32, 1/20;* **C12R** *1/20*

U.S. Cl. 435—247 **2 Claims**

1. A process for producing microbial cells which comprises cultivating the bacterium *Flavobacterium tosaensis* DS-1 (FERM-P No. 4058) in a culture medium containing methanol as a major carbon source, and recovering the microbial cells from the culture broth.

2. A process for producing microbial cells which comprises cultivating the bacterium *Flavobacterium methanolicola* DS-16 (FERM-P No. 4098) in a culture medium containing methanol as a major carbon source, and recovering the microbial cells from the culture broth.

4,368,272

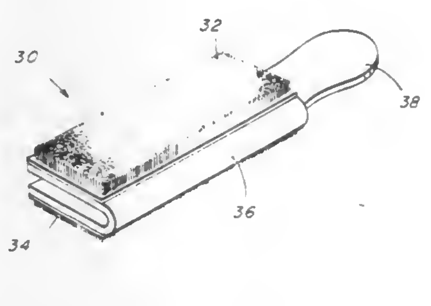
DEVICE FOR IDENTIFYING AND LOCATING DENTAL MICROORGANISMS

Shelby Kashket, Chestnut Hill, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Mar. 12, 1980, Ser. No. 129,682

Int. Cl.^{3} C12M *1/32;* **C12Q** *1/24;* **C12M** *1/26;* **A46B** *1/00*

U.S. Cl. 435—293 **2 Claims**



1. A dental flora-replica device particularly for use in occlusal teeth surfaces, which device is used for identifying and locating the sites of cariogenic or other microorganisms on the occlusal surfaces of teeth, which device comprises:

(a) a flexible, thin strip of sheet material having a front and a back surface;

(b) the front surface comprising first and second, separate, spaced-apart, elongated, generally parallel strips of sterile, velvet-like surfaces composed of a material to retain microorganisms, when the occlusal surfaces of opposing teeth are pressed against each of the velvet-like surfaces;

(c) hinge means so that the first and second surfaces may be placed in an opposing relationship and in contact with occlusal teeth of a patient;

(d) the back surface marked to locate the site of the designated occlusal teeth whose microorganisms are to be identified and located; and

(e) a removable masking-tape means secured over the first and second velvet-like surfaces, to protect the sterile first and second surfaces prior to use, whereby in use the occlusal, dental replica device may be folded, with the first and second velvet-like surfaces extending outwardly from the top and bottom to contact the occlusal teeth, and, thereafter, the device placed in an open, flat position for application to a bacteriological identification means to identify the microorganisms retained on the first and second velvet-like surfaces.

4,368,273

PROCESS FOR THE UTILIZATION IN THE CERAMICS INDUSTRY OF RED MUD FROM ALUMINA PLANTS

Ferenc Puskas, Budapest, Hungary, assignor to Chemokomplex Vegyipari Gep-es Berendezes Export-Import Vallalat, Budapest, Hungary

Continuation of Ser. No. 101,173, Dec. 7, 1979, abandoned, which is a continuation of Ser. No. 969,404, Dec. 14, 1978, abandoned, which is a continuation of Ser. No. 834,580, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 667,860, Sep. 19, 1976, abandoned. This application Nov. 19, 1980, Ser. No. 208,269

Int. Cl.^{3} C04B *35/00*

U.S. Cl. 501—155 **7 Claims**

1. In a process for manufacturing of ceramics wherein a starting mixture is formed into a green ceramic product and is subsequently fired to produce the finished ceramic product, the improvement which comprises preparing said starting mixture by mixing ingredients consisting essentially of from 51–90% dry weight basis of red mud and at least one silicate containing waste material from mining or manufacturing operations wherein the silicate content of said waste material is selected from the group consisting of at least one member of the group of inosilicates, masosilicates, tectosilicates, primary volcanic silicate rock material, surface volcanic silicate rock material, silicate residue material from oil shale processing, and loess, and said step of firing is carried out between 950 and 1,250 degrees centigrade, until the mixture is converted into a water-insoluble spinel or other double oxide ceramic product.

4,368,274

METHOD FOR REMOVING ALUMINUM FROM POLYETHYLENE TERAPHTHALATE (PET) BOTTLE SCRAP

Paul T. Scott, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1981, Ser. No. 323,434

Int. Cl.^{3} B08B *3/08*

U.S. Cl. 521—48 **2 Claims**

1. In a method for removing aluminum from PET bottle scrap flakes, the improvement which comprises:

(a) mixing the scrap flakes with a solution containing a chemical that reacts with aluminum, the chemical being at a sufficient concentration and in contact with the scrap at a sufficient temperature and for a sufficient time to completely dissolve the aluminum in the scrap into the solution; then

(b) decanting off the solution with the aluminum dissolved in it, so as to leave behind PET flake; and finally

(c) washing the PET flake.

4,368,275

ISOCYANURATE-VINYL ALCOHOL-VINYL ESTER CHROMATOGRAPHIC PACKING

Yuzo Yanagihara; Kohji Noguchi, and Makoto Honda, all of Kawasaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1981, Ser. No. 272,230

Claims priority, application Japan, Jun. 25, 1980, 55/85243; Dec. 26, 1980, 55/183703

Int. Cl.^{3} C08F *8/12*

U.S. Cl. 521—52 **24 Claims**

1. A porous packing for high speed liquid chromatography comprising homogeneously porous crosslinked copplymer granules essentially consisting of (I) units of vinyl alcohol, (II) units of at least one vinyl ester of a carboxylic acid and (III) units of at least one crosslinking monomer having an isocyanurate ring, the ratio of the units (I) to the units (II) in the copolymer being within the range satisfying the following equation:

$$\text{about } 0.4 \leqq a/(a+b) \leqq \text{about } 0.8$$

wherein

a and b are molar ratios of the units (I) and (II), respectively, in the total units (I), (II) and (III) of the copolymer.

4,368,276

NOVEL OLEFIN POLYMER COMPOSITIONS AND FOAMED ARTICLES PREPARED THEREFROM HAVING IMPROVED ELEVATED TEMPERATURE DIMENSIONAL STABILITY

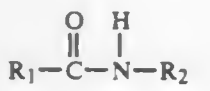
Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 267,207, May 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 154,333, May 29, 1980, abandoned. This application May 6, 1982, Ser. No. 375,606

Int. Cl.^{3} C08V *9/14*

U.S. Cl. 521—79 **24 Claims**

1. An expandable olefin polymer composition comprising an olefin polymer, a volatile organic blowing agent and from about 0.15 to about 10 weight percent based upon the weight of said olefin polymer of an N-substituted fatty acid amide of the Formula:



$$R_1-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-R_2$$

wherein R_1 represents an alkyl group of from about 11 to about 17 carbon atoms and R_2 represents an alkyl group of from about 12 to about 18 carbon atoms, said N-substituted fatty acid amide being selected from the group consisting of N-lauryl lauric acid amide, N-lauryl myristamide, N-myristyl myristamide, N-palmityl myristamide, N-lauryl palmitamide, N-myristyl palmitamide, N-palmityl palmitamide, N-palmityl stearamide and N-stearyl stearamide; said N-substituted fatty acid amide being employed in an amount sufficient to prevent a freshly prepared foam made from such composition from shrinking by more than 10% from its initial foamed volume when subjected to prolonged exposure to atmospheric pressure air at 150° F.

4,368,277

POROUS OPEN-CELL FILLED REACTIVE MATERIAL

Stanislav V. Burinsky, ulitsa Bukharestskaya, 45, kv. 55; Leonard A. Volf, ulitsa Novosibirskaya, 18, kv. 45, and Sasho P. Alexandrov, ulitsa Sadovaya, 54, kv. 511, all of Leningrad, U.S.S.R.

Filed May 2, 1980, Ser. No. 145,971

Claims priority, application U.S.S.R., Mar. 5, 1979, 2762583

Int. Cl.^{3} C08J *9/00*

U.S. Cl. 521—84 **5 Claims**

1. A porous open-cell filled reactive material comprising a polymeric matrix selected from the group consisting of foamed polyvinylformal, foamed polyurethane, and a reactive filler consisting of finely divided reactive oxidation-reduction fibers in an amount of from 10 to 80% by mass of the final material, wherein the oxidation-reduction fibers are selected from the group consisting of polyvinyl alcohol, polyacrylonitrile, cellulose-regenerated and acetate-cellulose fibers with covalently bonded oxidizing-reducing agents selected from the group consisting of polyhydric phenols, anthraquinones, naphthaquinones, oligomeric condensation products thereof with aldehydes, phenothiazine dyestuffs, and compounds having sulphohydryl groups.

4,368,278

PROCESS FOR THE PRODUCTION OF POLYURETHANES USING CYCLIC N-HYDROXYALKYL-SUBSTITUTED COMPOUNDS CONTAINING AMIDINE GROUPS AS CATALYSTS

Werner Rasshofer, Cologne; Gerhard Grögler, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

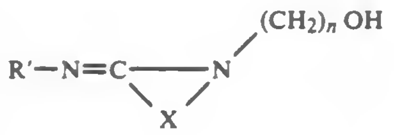
Filed Apr. 3, 1981, Ser. No. 251,011

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015440

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—115 **10 Claims**

1. A process for the production of a polyurethane comprising reacting a polyisocyanate and a compound having at least two isocyanate-reactive hydrogen atoms and a molecular weight of from 400 to 10,000 in the presence of a catalyst wherein the catalyst is a compound corresponding to the general formula:



wherein

R′ represents hydrogen, C_1–C_{12} alkyl or C_6–C_{10} aryl groups;

n represents an integer of from 1 to 6; and

X represents a divalent radical.

4,368,279

METHOD FOR MECHANICALLY FOAMING SILICONE COMPOSITIONS

Frank J. Modic, and Bruce E. Boudreau, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,598

Int. Cl.^{3} C08J *9/30*

U.S. Cl. 521—122 **7 Claims**

1. In a method for producing a silicone foam composition wherein said silicone is a curable silicone elastomer comprised of a crosslinkable polydiorganosiloxane base polymer having a viscosity of from 100 to 200,000 centipoise at 25° C., a cross-linking agent and an amount of curing catalyst effective for promoting a cross-linking cure reaction between said polydiorganosiloxane base polymers and said crosslinking agent thereby providing an elastomeric silicone composition, the improvement which consists essentially of:

mechanically beating an inert gas into a mixture of said curable silicone elastomer to foam said silicone elastomer; gelling said curable silicone elastomer under a vacuum of at least 600 mm Hg for at least 60 seconds in the substantial absence of either an external or in situ blowing agent thereby setting-up a foam of said curable silicone elastomer; curing said foam of said silicone elastomer at a temperature of at least 20° C., thereby providing a cured silicone elastomer foam.

4,368,280

PARTIALLY CROSS-LINKABLE COMPOSITIONS AND PROCESS FOR PREPARING PARTIALLY CROSS-LINKED THERMOPLASTIC ELASTOMERS

Hiroshi Yui; Tetsuji Kakizaki; Yashinori Nishiya, and Shinji Horie, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,623

Int. Cl.^{3} C08L *23/26*

U.S. Cl. 523—211 **11 Claims**

1. A partially cross-linkable composition, comprising:

(a) 100 parts by weight of a monoolefin copolymer rubber which is an essentially amorphous random copolymer of at least two monoolefins, and optionally at least one copolymerizable polyene, prepared by copolymerizing said monomers in the presence of a Ziegler-Natta catalyst;

(b) from 10 to 900 parts by weight of a substantially crystalline thermoplastic solid resin obtained by homopolymerizing an α-olefin or copolymerizing an α-olefin with at least one other olefin or other ethylenically unsaturated monomer; and

(c) from 0.1 to 40 parts by weight of a cross-linking agent, which composition is obtained by suspending a granular composition of a particle size ranging from 1 to 7 mm and essentially consisting of the monoolefin copolymer rubber (a) and the polyolefin resin (b) in an aqueous medium and impregnating the suspended granular composition with the cross-linking agent (c) under conditions which result in essentially no decomposition of the cross-linking agent.

4,368,281

PRINTED CIRCUITS

Charles R. Brummett, Harrisburg; J. A. Crumley, Enola; Ray N. Shaak, Lebanon, all of Pa., and Dewey R. Whitaker, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 15, 1980, Ser. No. 187,102

Int. Cl.^{3} C08K *5/56;* **C09D** *11/10;* **B41M** *1/00*

U.S. Cl. 523—458 **12 Claims**

1. An ink for printing of electronic circuits on a substrate comprising: a substrate compatible polymer base resin adhesive of a polyester, a polyimide, polyimide-amide, poly-parabanic acid, polycarbonate, polysulfones, polyamine, cellulose triacetate, polyepoxides, or polyurethane, a filler from 0 to about 16%, by weight, based on total solids content of the ink, and from about 5 to about 16%, by weight, based on total solids content of ink, a coordination complex of a metal of a formula LmZXn, wherein L is a ligand or unsaturated organic group, Z is palladium, platinum, nickel or copper metal base of the complex, X is halide, alkyl group, or bidentate ligand and m and n are integers wherein m is from 1 to 4 and n is from 0 to 3, a halogenated alkyl compound of 2 to 4 carbon atoms as a solvent for said ink, said ink having a viscosity of 80 to 2000 cps.

4,368,282

CARPET BACKING ADHESIVE

John Bogdany, Fort Oglethorp, Ga., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 17, 1981, Ser. No. 276,102

Int. Cl.^{3} C08L *25/18;* **C09J** *3/12*

U.S. Cl. 524—58 **2 Claims**

1. In a carboxylated styrene butadiene copolymer latex based carpet backing adhesive, free of starch, the improvement comprising extending said adhesive without significant loss of tuft lock by including as an additional component of said adhesive from 1 to 30 parts by weight, based on the adhesive solids content, of a water soluble corn syrup.

4,368,283

REINFORCED RESIN COMPOSITION

Kazuo Kishida; Isao Sasaki, and Hiroshi Mori, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,016

Claims priority, application Japan, Jul. 15, 1980, 55-96355

Int. Cl.^{3} C08K *5/15*

U.S. Cl. 524—109 **12 Claims**

1. A reinforced resin composition consisting essentially of:

(a) at least 30% by weight of a linear homopolymer of ethylene terephthalate, a copolymer of ethylene terephthalate with a minor amount of another monomer copolymerizable therewith, or a blend of said homopolymer or said copolymer,

(b) about 5 to 60% by weight of a glass fiber,

(c) about 0.03 to 5% by weight of at least one salt of an organic carboxylic acid with a metal of Groups Ia or IIa of the Periodic Table, and

(d) about 0.1 to 20% by weight of at least one sorbitan derivative which is an ester of an organic carboxylic acid and sorbitol or a polyalkylene glycol adduct thereof, the total amount of components (a) through (d) being 100% by weight.

4,368,284

POLYVINYL CHLORIDE COMPOSITE MATERIAL

Yoshihisa Tawada, Takatsuki; Minoru Ushioda, Amagasaki; Tetsuro Yamamoto, and Itaru Hatano, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,810

Claims priority, application Japan, Dec. 19, 1978, 53-1508155; Dec. 21, 1978, 53-159065

Int. Cl.^{3} C08K *3/34*

U.S. Cl. 524—230 **6 Claims**

1. A polyvinyl chloride composite material comprising polyvinyl chloride and talc, wherein 85 percent by weight or more of said talc has a particle size of not more than 10 microns and said composite material contains a member, in an amount of from 0.1 to 30 parts by weight per 100 parts by weight of said talc, selected from the group consisting of an amide compound of the formula R^1CONHR^2, wherein R_1 is an aliphatic hydrocarbon and R^2 is an aliphatic moiety, and a polyamide having a softening point or a melting point of not higher than 200° C.

4,368,285

FAST CRYSTALLIZING POLYETHYLENE TEREPHTHALATE CONTAINING NEOPENTYL DIBENZOATE

Ernest A. Coleman, Kinnelon, N.J., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Dec. 7, 1981, Ser. No. 327,852

Int. Cl.^{3} C08K *9/00, 10/00*

U.S. Cl. 524—293 **6 Claims**

1. A composition comprising polyethylene terephthalate and neopentyl dibenzoate.

4,368,286

THERMOPLASTIC POLYESTER RESIN COMPOSITION WHICH IS QUICKLY CRYSTALLIZABLE

Masahiro Hayashi; Tamotsu Yoshimura, both of Machida; Seiichi Mukai; Masaharu Shikama, both of Kawasaki; Hideto Kusumoto, Machida, and Hideki Yamanouchi, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,875

Claims priority, application Japan, Apr. 1, 1980, 55-42250

Int. Cl.³ C08G *63/02;* **C08K** *5/09*

U.S. Cl. 524—394 **9 Claims**

1. A thermoplastic resin composition which is quickly crystallizable and comprises 0.1 to 10 wt. parts of an alkali metal salt of higher fatty acid having carbon atoms of at least 26 obtained by an addition of a fatty acid to α-olefin having carbon atoms of at least 23 per 100 wt. parts of a thermoplastic polyester.

4,368,287

EMULSIFIER AND COMPOSITIONS COMPRISING SAME

Shinichi Ishikura, Kyoto; Keizou Ishii, Hyogo; Kazunori Kanda, Osaka, and Ryuzo Mizuguchi, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

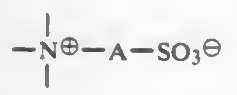
Filed Jul. 15, 1981, Ser. No. 283,743

Claims priority, application Japan, Jul. 15, 1980, 55-97190; Jul. 15, 1980, 55-97191; Jul. 15, 1980, 55-97192

Int. Cl.³ C08L *67/00*

U.S. Cl. 524—513 **7 Claims**

1. An acrylic resin emulsion which comprises an aqueous medium and particles of an acrylic resin emulsified and dispersed therein by the use of the emulsifier comprising as an essential component a polyester comprising in the molecule an amino-sulfonic acid type amphoionic group of the formula:



$$-\overset{|}{\underset{|}{N}}{}^{\oplus}-A-SO_3^{\ominus}$$

wherein A is a straight or branched C_1–C_6 alkylene group, a phenylene group or a substituted phenylene group.

4,368,288

FAST CRYSTALLIZING POLYESTER COMPOSITIONS

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 159,919, Jun. 16, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 298,282

Claims priority, application United Kingdom, Sep. 21, 1979, 7932818; Dec. 12, 1979, 7942879; Jan. 11, 1980, 8001009; Mar. 12, 1980, 8008300

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—539 **12 Claims**

1. A fast crystallising polyester composition obtained by reacting a polyester which is a block copolyester containing the repeating polymeric segments A and B, wherein

A is a polymeric segment of ethylene terephthalate units and B is a polymeric segment having a glass-transition temperature of less than 0° C.

the concentration of the segments of A being at least 90 mole % and the concentration of the segments of B being between 0.05 and 10 mole % of the block copolyester, with an ionisable metal salt of an organic compound having at least one acidic proton and at least one aromatic ring in which the ionisable metal salt is one which, when present in polyethylene terephthalate at a concentration of 1% by weight, will:

(a) give a difference in the crystallisation peak temperatures (ΔT=Tc–Tn) of at least 100° C. measured by differential scanning calorimetry on heating (Tn) and on cooling (Tc) using heating and cooling rates of 10° C./minute, and

(b) has a melt degradation value (K value) measured in polyethylene terephthalate according to the method given in Makromol Chem 179, 2201–2209 (1978) of less than 60.

12. A polyester composition according to claim 1 containing from 5 to 80% by weight of the composition of a particulate or fibrous filler.

4,368,289

COATING COMPOSITIONS OF POLYMERS OF VINYL OXAZOLINE DRYING OIL ESTERS MADE BY AN IMPROVED PROCESS

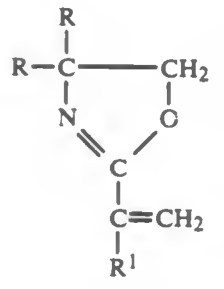
Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 211,584, Dec. 1, 1980, Pat. No. 4,340,741. This application Dec. 9, 1981, Ser. No. 328,845

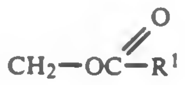
Int. Cl.³ C08L *1/10, 1/14;* **C09D** *3/74*

U.S. Cl. 524—598 **9 Claims**

1. A coating composition comprising 5–60% by weight of a polymer of polymerized ethylenically unsaturated monomers and a vinyl oxazoline drying oil ester and 40–95% by weight of a liquid; wherein the vinyl oxazoline drying oil ester is prepared by a process which comprises reacting at about 150°–225° C., in the presence of solvent, drying oil fatty acids with tris(hydroxymethyl) amino methane to form an intermediate, said intermediate being further reacted at about 175°–190° C. with a formaldehyde alcohol solution to form a solution of a vinyl oxazoline drying oil ester wherein at least 60% of the esters have vinyl groups and said esters are of the formula



where R is



$$CH_2-OC\overset{O}{\overset{/\!/}{}}-R^1$$

and R^1 is the residue of a drying oil fatty acid;

the improvement used therewith comprises the use of at least 3 moles of formaldehyde to one mole of intermediate and about 1–5% by weight, based on the weight of the intermediate, of methanol and adding after the reaction with formaldehyde about 5–25% by weight, based on the weight of the ester solution, of an alcohol having 1–6 carbon atoms, a ketone or a mixture of said alcohol and ketone.

4,368,290

ORGANOPOLYSILOXANE-POLYETHER-VINYL GRAFT COPOLYMERS

Heinrich Alberts; Hans Friemann; Hans-Heinrich Moretto, all of Cologne, and Hans Sattlegger, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,043

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947963

Int. Cl.³ C08L *51/08, 83/10*

U.S. Cl. 525—29 **9 Claims**

1. A room temperature curable graft copolymer comprising (I) as a first polymer an organopolysiloxane with OH functional groups, (II) as a second polymer a polyether, and (III) units of vinyl monomer which have been polymerized in the presence of mixtures of the first and second polymers which polymers are thereafter linked via vinyl polymer bridges.

4,368,291

PROCESS FOR THE MULTI-STAGE POLYMERIZATION OF ETHENE

Albert Frese, and Fritz Baxmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,814

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803281

Int. Cl.³ C08F *2/34, 10/02*

U.S. Cl. 525—53 **11 Claims**

1. A low pressure process for polymerizing ethene, using a Ziegler mixed catalyst, comprising (a) a titanium compound, a vanadium compound or a mixture thereof, and (b) an organoaluminum compound or a mixture thereof, in multi-stages, comprising:

polymerizing ethene in a first polymerizing stage in the liquid phase in suspension using a dispersion medium of a C_3- to C_6-hydrocarbon up to a catalytic yield of at least 25 kg of polymer per gram of Ti or V catalyst or per gram of Ti catalyst and V catalyst if both are present;

polymerizing, in a last polymerization stage, in the gas phase; and optionally, polymerizing in intermediate stages; all liquid stages preceding the gas stages;

wherein, the polymer-containing dispersion medium resulting from the last liquid stage is directly introduced into the first gas stage.

4,368,292

THERMOPLASTIC MOULDING COMPOSITIONS OF COGRAFT POLYMERS OF CELLULOSE ESTERS

Heinrich Alberts, Cologne, Fed. Rep. of Germany; Winfried Fischer, Tokyo, Japan, and Christian Leuschke, Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,100

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048696

Int. Cl.³ C08L *51/00, 1/10*

U.S. Cl. 525—54.23 **5 Claims**

1. Thermoplastic moulding compositions consisting of

(1) 1–99% by weight of a graft substrate composed of
  (a) 1–99% by weight of a (meth)acrylic acid C_1–C_{18}-alkyl ester homo- or copolymer, and
  (b) 99–1% by weight of a cellulose ester of one or more aliphatic C_1–C_5 carboxylic acids, and
(2) 99–1% by weight polymerized units of
  (a) 100–80% by weight of vinyl esters and/or alkyl esters of acrylic and/or methacrylic acid, and
  (b) 0–20% by weight of C_2–C_4-α-olefins,

at least part of the (meth)acrylic acid ester polymer and of the cellulose ester being bridged together through polymerized units of the graft monomers, and the sum of components (1)–(2) and of components (a) and (b) being in each case 100% by weight.

4,368,293

POLYPHENYLENE ETHER COMPOSITIONS

Izumi Yamashita, Chiba, and Kunio Fukuda, Chigasaki, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,808

Claims priority, application Japan, Sep. 9, 1980, 55-124017

Int. Cl.³ C08L *51/08, 61/04*

U.S. Cl. 525—68 **6 Claims**

1. A polyphenylene ether composition which comprises:

(a) 80–20 weight parts of polyphenylene ether resin, and
(b) 20–80 weight parts of a rubber-reinforced polystyrene wherein 5–25 weight % of polybutadiene having 18–35% of 1,2-vinyl-structure is dispersed forming discontinuous elastomer phase.

4,368,294

PROCESS FOR PREPARING ORGANOPOLYSILOXANE MODIFIED ORGANIC POLYMERS

Bernward Deubzer, Burghausen, Fed. Rep. of Germany; Josef Esterbauer, Unterweizberg, Austria; Christian Solbrig, Mehring-Od, and Volker Frey, Burghuasen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,226

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008138

Int. Cl.³ C08L *83/06*

U.S. Cl. 525—100 **3 Claims**

1. A process for preparing organopolysiloxane modified organic polymers which comprises reacting at an elevated temperature a mixture containing an organic polymer free of silicon atoms and having C-bonded hydroxyl groups with an organopolysiloxane containing groups selected from the class consisting of Si-bonded hydroxyl groups, alkyl groups which are bonded to silicon via oxygen and mixtures thereof in the presence of water which is in excess of that formed during the reaction.

4,368,295

FILMS FROM COMPOSITIONS OF POLYESTERS AND OLEFINE POLYMERS

Alan B. Newton, Welwyn Garden City; Eric Nield, Watton-At-Stone, and Vir B. Singh, Kimpton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 22, 1981, Ser. No. 276,249

Claims priority, application United Kingdom, Jul. 17, 1980, 8023364

Int. Cl.³ C08L *23/30, 67/02, 23/02*

U.S. Cl. 525—166 **9 Claims**

1. An opaque or translucent biaxially oriented film made from a composition which comprises at least one linear polyester and 0.5 to 100% by weight based on the weight of polyester of at least one olefine polymer, wherein said composition contains at least one carboxylated polyolefine in an amount of 0.05 to 50% by weight based on the weight of olefine polymer.

4,368,296

FREE-FLOWING SINTERING POWDERS WHICH HAVE IMPROVED PROPERTIES AND ARE BASED ON TETRAFLUOROETHYLENE POLYMERS, AND A PROCESS FOR THEIR MANUFACTURE

Jürgen Kuhls, and Robert Hartwimmer, both of Burghausen/-Salzach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,465

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949908

Int. Cl.³ C08J *3/12;* **C08F** *214/26, 114/26*

U.S. Cl. 525—276 **7 Claims**

1. Sinterable polymer powder consisting of 98.5 to 100% by weight of polymerized tetrafluoroethylene units and 1.5 to 0% by weight of polymerized units of at least one perfluorinated monomer in which one fluorine atom can be replaced by chlorine and which can be copolymerized with tetrafluoroethylene, which polymer powder combines the following properties: specific surface area of 5 to 11 m^2/g; standardized specific gravity of less than 2.2; flow time of less than 3.1 seconds/25 g; bulk density of 750 to 860 g/l; particle stability of 2.7 to 5 seconds/50 g; moldability index of less than 11 and deformation under load of less than 14%.

4,368,297

PAINT CONTAINING A SILYL GROUP CONTAINING VINYL RESIN, AND A METHOD OF MANUFACTURING THE SAME WITH ETHYL SILICATE AND CURING CATALYST

Yasushi Kato; Hisao Furukawa, and Naotami Ando, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

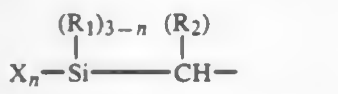
Filed Jun. 29, 1981, Ser. No. 278,183

Claims priority, application Japan, Jul. 11, 1980, 55-95481

Int. Cl.^{3} C08F *8/42;* C09D *3/72*

U.S. Cl. 525—342 **5 Claims**

1. A paint comprising a mixture of ethyl silicate; a catalyst of a metal salt of a carboxylic acid; and a silyl group containing vinyl resin having a main chain comprising substantially vinyl polymer, said resin having in each molecule at least one silyl group bonded to a hydrolyzable group, said resin containing 0.1 to 20% by weight of maleic anhydride by copolymerization, and having a molecular weight of 1,000 to 30,000, wherein said sily group is represented by the formula



$$X_n-\overset{(R_1)_{3-n}}{\overset{|}{Si}}-\overset{(R_2)}{\overset{|}{CH}}-$$

wherein X represents said hydrolyzable group, (R_1) and (R_2) each represents a hydrogen atom, or an alkyl, aryl or aralkyl group having 1 to 10 carbon atoms, and n is an integer of 1,2 or 3.

4,368,298

PROCESS FOR PRODUCING NOVOLAK-TYPE EPOXY RESIN

Kiyoaki Okayama, 66-15, Sasagawa 8-chome, Yokkaichi-shi, Mie-ken, and Makoto Nishizuka, 1665, Kubo-cho, Matsusaka-shi, Mie-ken, both of Japan

Filed Feb. 13, 1981, Ser. No. 234,548

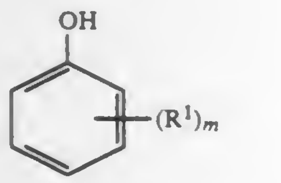
Claims priority, application Japan, Feb. 20, 1980, 55-18979

Int. Cl.^{3} C08G *8/10, 8/28*

U.S. Cl. 525—480 **7 Claims**

1. A process for producing a novolak-type epoxy resin, which comprises:

reacting (a) a halohydrin ether of a phenol compound of the formula



wherein R^1 represents alkyl having 1 to 9 carbon atoms which may be substituted by amino or N-alkylamino; hydroxyl; amino; amido; carboxyl; or halogen, and m represents zero or an integer of 1 to 4, provided that when m is 2 or more, the R^1 groups may be identical or different, with (b) an aldehyde compound, in the presence of an acid catalyst, the mole ratio of the aldehyde compound to the halohydrin ether being within the range of from 0.1 to 3, the equivalent ratio of the acid catalyst to the halohydrin ether being within the range of from 0.01 to 1.0, and

treating the resultant halohydrin etherified novolak with at least one cyclizing agent selected from the group consisting of sodium hydroxide and potassium hydroxide, the amount of the cyclizing agent being within the range of from 0.9 to 1.5 moles per mole of hydrogen in the halohydrin etherified novolak, to form an epoxy ring.

4,368,299

EPOXY RESIN COMPOSITIONS

Katsuyoshi Watanabe, Nara; Makoto Andoh, Suita; Yasuhisa Saito, Toyonaka; Yasuteru Maeda, Ibaraki, and Yoshiya Fukuyama, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 23, 1981, Ser. No. 285,979

Claims priority, application Japan, Aug. 7, 1980, 55-108960; Aug. 7, 1980, 55-108961; Jan. 20, 1981, 56-7578

Int. Cl.^{3} C08L *61/12, 63/00*

U.S. Cl. 525—481 **7 Claims**

1. A composition comprising an epoxy resin having at least two epoxy groups in the molecule and a hardener selected from the group consisting of (1) a resorcinol novolak having an unreacted resorcinol content of 10% by weight or less, (2) a mixed novolak of a resorcinol novolak and a monohydric phenol novolak having a total unreacted resorcinol and monohydric phenol content of 8% by weight or less wherein the mixed novolak has a resorcinol novolak content of 10% by weight or more, and (3) a resorcinol/monohydric phenol polycondensation novolak having a polycondensed resorcinol content of 30 mole % or more and a total unreacted resorcinol and monohydric phenol content of 8% by weight or less, wherein the weight ratio of the epoxy resin to the hardener is such that a ratio of the number of phenolic hydroxyl groups present in the hardener to that of the epoxy groups present in the epoxy resin ranges from 0.5:1 to 1.5:1.

4,368,300

PHOTOSETTING COMPOSITION CONTAINING MODIFIED EPOXY RESINS AND AN OLIGOESTER DIACRYLATE COMPOUND

Tsunetomo Nakano; Kazuaki Nishio; Hiroshi Watanabe, and Hiroshi Yasuno, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Dec. 3, 1981, Ser. No. 326,841

Claims priority, application Japan, Dec. 12, 1980, 55-174509

Int. Cl.^{3} C08L *63/00*

U.S. Cl. 525—531 **26 Claims**

1. A photosetting composition comprising:

A. 100 parts by weight of a first epoxy component comprising at least one unsaturated acid-modified epoxy compound which has been prepared by the modification reaction of a bisphenol type epoxy resin with an unsaturated acid compound having at least one acryloyl radical;

B. 30 to 400 parts by weight of an oligoester component comprising at least one oligoester diacrylate compound which has been prepared by the reaction of acrylic acid with an oligoester of an aromatic polycarboxylic acid with an organic dihydroxyl compound and which has a molecular weight of 420 or more and is in the form of a liquid at room temperature;

C. 50 to 1200 parts by weight of a photopolymerizable monomeric component comprising at least one photopolymerizable acrylate type monomeric compound having a molecular weight of 100 to 400 and being in the form of a liquid at room temperature;

D. 5 to 400 parts by weight of a second epoxy component comprising at least one epoxy compound selected from the group consisting of (1) bisphenol type epoxy resins having a softening point of from 50° C. to 150° C. and (2) saturated carboxylic acid-modified epoxy compounds which have been prepared by the modification reaction of bisphenol type epoxy resins with saturated hydrocarbon carboxylic acids and which have a softening point of 50° C. to 150° C., and;

E. a photopolymerization initiator in an amount of 0.5% to 15% based on the entire weight of said photosetting composition.

4,368,301

SOLUBILIZED CHROMIUM SALT IN POLYMERIZATION CATALYST

Gil R. Hawley, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 103,686, Dec. 14, 1979, Pat. No. 4,333,860. This application Aug. 28, 1981, Ser. No. 297,455

Int. Cl.^{3} C08F *4/24*

U.S. Cl. 526—100 **13 Claims**

1. A process comprising:

contacting a chromium-containing salt, which is insoluble in nonaqueous solvents which do not easily rehydrate silica, with a solubilizing agent thus converting it to a chromium-containing complex having charged ions which is soluble in said nonaqueous solvents;

impregnating a particulate support with the thus solubilized chromium-containing complex dissolved in a nonaqueous solvent which does not easily rehydrate silica;

activating said thus impregnated support by heating same in an oxygen ambient at a temperature sufficient to oxidize at least a portion of said chromium to produce a catalyst;

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with said catalyst under polymerization conditions; and

recovering a polymer.

4,368,302

POLYMERIZATION PROCESS AND PRODUCTS THEREFROM

Gordon W. Downs, Falkirk. Scotland, assignor to BP Chemicals Limited, London, England

Filed Mar. 25, 1980, Ser. No. 133,824

Claims priority, application United Kingdom, Mar. 28, 1979, 7911257

The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.

Int. Cl.^{3} C08F *4/24, 10/02*

U.S. Cl. 526—105 **15 Claims**

1. A process for polymerising ethylene or a mixture of ethylene with up to 40 wt % (based on total monomer) of other 1-olefinic monomer comprising (a) supporting chromium oxide, or a compound calcinable thereto, on a refractory oxide support material, (b) adding one or more tetravalent titanium compounds selected from (1) TiO_2, (2) $TiOCl_2$, (3) titanium acetyl acetonate compounds, (4) alkanolamine titanates and (5) compounds having the general formula $Ti(OR)_mX_n$, wherein $m+n$ is 4, m is zero or an integer from 1 to 4, R is an organic hydrocarbon group and when the titanium compound contains more than one R or Y group the groups may be the same of different (c) heating the product under such conditions that an active polymerisation catalyst is formed, (d) and contacting the monomer with the active polymerisation catalyst in the presence of (6) one or more organometallic compounds having the general formular $MR^2{}_pY_{q-p}$ wherein M is a metal of groups 1A, 2A, 2B or 3A of the Periodic Table (Mendeleef), R^2 is a hydrocarbon group containing 1 to 10 carbon atoms, Y is hydrogen or halogen, q is the valency of M, p is an integer from 1 to q inclusive and when the organometallic compound contains more than one R^2 or Y group they may be the same or different, and (7) a polyene modifier.

4,368,303

TITANIUM IMPREGNATED SILICA-CHROMIUM CATALYSTS

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 118,893, Feb. 6, 1980, Pat. No. 4,294,724. This application May 29, 1981, Ser. No. 268,318

Int. Cl.^{3} C08F *4/02, 4/24*

U.S. Cl. 526—106 **27 Claims**

1. A polymerization process compsiring contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst produced by:

(a) forming a silica hydrogel containing a pore preserving agent selected from (1) organic silicon compounds having the structure R_nSiA_{4-n} wherein n is an integer of 2 or 3, and wherein each R is a saturated or unsaturated hydrocarbon group wherein each R can be the same or different and wherein A is selected from the group consisting of hydroxy radicals, halides and alkoxy radicals in which the alkyl group therein contains from 1 to about 10 carbon atoms, (2) water soluble inorganic acids which are sufficiently ionized to produce a pH of 0 to 3.5, (3) organic acids having an acid strength equal to or greater than that of acetic acid, and (4) anionic, cationic or non-ionic surfactants;

(b) drying said hydrogel by means of air oven drying, spray drying, tray drying, vacuum oven drying or drying under a heat lamp to form a xerogel;

(c) anhydrously incorporating a titanium compound into said xerogel;

(d) wherein chromium is introduced by either coprecipitating same with said silica hydrogel, by combining a water-soluble chromium compound with said hydrogel, or adding anhydrous solution of a chromium compound soluble in non-aqueous solvents to said xerogel; and

(e) after said drying of (b) and after said chromium of (d) is introduced, activating the resulting dried, chromium-containing composition by means of an activation procedure which comprises treatment at an elevated temperature in an atmosphere containing oxygen.

4,368,304

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato, Chibaken; Toshihiro Uwai, Ichiharashi; Tohru Hanari, Ichiharashi; Kazutsune Kikuta, Ichiharashi, and Masazumi Miyajima, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

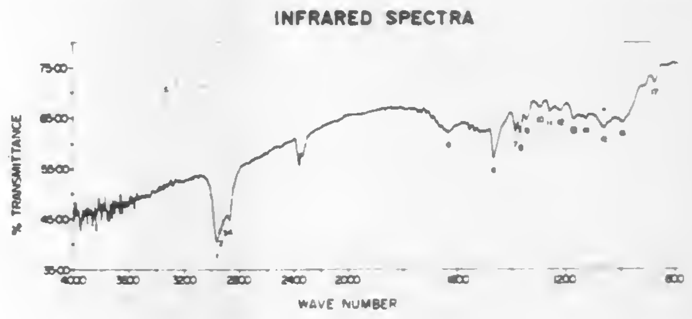
Continuation-in-part of Ser. No. 186,346, Sep. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 147,095, May 7, 1980, abandoned. This application Feb. 4, 1981, Ser. No. 231,394

Claims priority, application Japan, Feb. 5, 1980, 55-12875

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.^{3} C08F *4/64, 10/00*

U.S. Cl. 526—114 **11 Claims**



1. A process for producing α-olefin polymers which comprises:

reacting one mole of an organoaluminum compound with 0.1 to 8 mols of an electron donor in a solvent at a temperature of −20° to 200° C., to obtain a reaction product (I);

reacting this reaction product (I) with $TiCl_4$ at a temperature of 10° to 90° C. in a ratio of the number of Al atoms to that of Ti atoms of 0.05 to 10, and thereafter removing a liquid portion from the resulting material followed by washing to thereby obtain a solid product (II) having no free $TiCl_4$;

reacting 100 g of this solid product (II) with 10 to 1,000 g of an electron donor and 10 to 1,000 g of an electron acceptor at a temperature of 40° C. to 200° C. to obtain a solid product (III); and polymerizing an α-olefin or α-olefins in the presence of a catalyst comprising a combination of said solid product (III) with an organoaluminum compound, said catalyst being a preliminarily activated one obtained by further reacting an α-olefin with said combination.

4,368,305

PROCESS FOR PRODUCING OLEFIN POLYMERS

Toru Tanaka, Komae, and Eiji Tanaka, Kawasaki, both of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP80/00006, § 371 Date Aug. 1, 1980, § 102(e) Date Aug. 1, 1980, PCT Pub. No. WO80/01485, PCT Pub. Date Jul. 24, 1980

PCT Filed Jan. 17, 1980, Ser. No. 213,998

Claims priority, application Japan, Jan. 18, 1979, 54-4307; Feb. 2, 1979, 54-11287

Int. Cl.^{3} C08F *4/64, 10/02*

U.S. Cl. 526—116 **9 Claims**

1. A process for producing olefin polymers having a wide and controllable molecular weight distribution, comprising: polymerizing an olefin in the presence of a catalyst which comprises (A) a solid catalytic component separated from the reaction mixture obtained by reacting (a) an organoaluminum compound with a liquid material obtained by mixing (b) a vanadium compound selected from the group consisting of vanadium halides and oxygen-containing organovanadium compounds, (c) a hafnium compound selected from the group consisting of hafnium halides and oxygen-containing organohafnium compounds, and (d) a titanium compound selected from the group consisting of titanium halides and oxygen-containing organotitanium compounds in the presence or absence of a diluent, the relative amounts of said vanadium, hafnium and titanium in said solid catalyst component meeting the relationships: $0.1 < Hf/Ti < 10$, $0.1 < (Hf+Ti)/V < 100$ and (B) an organoaluminum compound.

4,368,306

PROCESS AND CATALYST FOR THE POLYMERIZATION OF α-OLEFINS

Dieter Kurz, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,538

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025760

Int. Cl.^{3} C08F *4/02, 10/00*

U.S. Cl. 526—125 **17 Claims**

1. An improvement in the process for the polymerization of an at least one α-olefin comprising reacting said α-olefin under elevated temperatures and pressures in the presence of a solid polymerization catalyst consisting essentially of a solid compound containing:

(1) titonium
(2) magnesium,
(3) halogen,
(4) oxygen, and possibly
(5) element(s) of the II and/or III main group(s) of the Mendeleev Periodic Table,

which solid compound is activated with at least one organometallic compound where said metal is from the II and/or III main group(s) of the Mendeleev Periodic Table, and recovering a polymerizate, the improvement consisting of preparing said solid compound prior to activation, by reacting a primary solid containing magnesium and halogen prepared from at least one hydrocarbon-soluble magnesium compound and at least one halogen compound selected from the group consisting of a chlorohydrocarbon having from 1 to 6 carbon atoms of which at least one carbon atom has at least two directly bonded chlorine atoms, a carbon chloride compound having from 1 to 6 carbon atoms, and mixtures thereof, in two successive and separate reacting stages A and B, in either order, where a solid based on magnesium compound(s) is reacted in reaction stage A in suspension in at least on liquid hydrocarbon with:

(i) at least one peroxy compound selected from the group consisting of dialkyl peroxides, alkyl hydroperoxides, and mixtures thereof, and
(ii) at least one halogen-containing titanium compound of the formula:

$X_aTi(OR^4)4-a$

wherein X represents halogen, R^4 is a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and a is 2, 3 or 4,

and, in reaction stage B, a solid based on magnesium compound(s) in suspension in at least one liquid hydrocarbon is reacted with:

(i) at least one halogen-containing titanium compound of the formula:

$X'_bTi(OR^3)_{4-b}$

wherein X' represents halogen, R^3 represents a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and b is 2, 3 or 4, and
(ii) at least one organoaluminum compound,

whereby a polymerizate is recovered having a broad molecular weight distribution.

4,368,307

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE POLYMERS

Gilbert Sielfeld, and Paul Sunder-Plassmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,270

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036101; Sep. 25, 1980, 3036127

Int. Cl.^{3} C08F *2/00*

U.S. Cl. 526—202 **13 Claims**

1. In a process for preparing a vinyl chloride resin by polymerizing vinyl chloride alone or with up to 20% by weight of other polymerizable unsaturated monomers, in an aqueous suspension, in the presence of a monomer-soluble free radical catalyst and a suspension stabilizer which is partially hydrolyzed polyvinyl acetate or cellulose ether, the improvement wherein the polymerization is conducted in the presence of 0.01–0.5% by weight, based on the amount of monomer to be polymerized, of a cosuspension stabilizer which is a copolymer of

(a) 2-n-propyl-Δ^2-oxazoline, 2-isopropyl-Δ^2-oxazoline or both, and
(b) 2-methyl-Δ^2-oxazoline, 2-ethyl-Δ^2-oxazoline or both,

the copolymer having a viscosity number of 35–70 (ml/g), measured at 25° C. in an isopropanol/water mixture (50 vol-% of isopropanol), in a concentration of 0.5% (weight/volume of the solution).

4,368,308

FLUORINE-CONTAINING ELASTOMER HAVING EXCELLENT LOW TEMPERATURE RESISTANCE AND OIL RESISTANCE

Masaaki Yamabe, Machida; Shun-ichi Kodama, Yokohama, and Gen Kojima, Machida, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,543

Claims priority, application Japan, Jul. 8, 1980, 55-92272

Int. Cl.^{3} C08F *216/24*

U.S. Cl. 526—247 **2 Claims**

1. A fluorine-containing elastomer having excellent low temperature resistance and oil resistance which comprises

ethylene units (E) and fluorovinyl ether units (FV) having the formula $CF_2{=}CFOX$ (X represents a C_1–C_9 perfluoro-alkoxyalkyl group which can have one or more ether bond) at a molar ratio of (E) to (FV) of 95:5 to 30:70 and at a total content of (E) and (FV) of at least 70 mole %.

4,368,309

POLYMERS OF VINYL OXAZOLINE DRYING OIL ESTERS MADE BY AN IMPROVED PROCESS

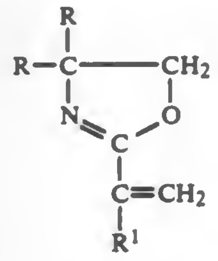
Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 211,584, Dec. 1, 1980, Pat. No. 4,340,741. This application Dec. 9, 1981, Ser. No. 328,844

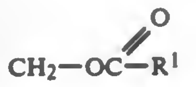
Int. Cl.^{3} C08L *1/10, 1/14;* **C09D** *3/74*

U.S. Cl. 526—258 **8 Claims**

1. A polymer comprising polymerized ethylenically unsaturated monomers and a vinyl oxazoline drying oil ester; wherein the vinyl oxazoline drying oil is prepared by a process which comprises reacting at about 150°–225° C., in the presence of solvent, drying oil fatty acids with tris(hydroxymethyl) amino methane to form an intermediate, said intermediate being further reacted at about 175°–190° C. with a formaldehyde alcohol solution to form a solution of a vinyl oxazoline drying oil ester wherein at least 60% of the esters have vinyl groups and are of the formula



where R is



$$CH_2{-}OC({=}O){-}R^1$$

and R^1 is the residue of a drying oil fatty acid;

the improvement used therewith comprises the use of at least 3 moles of formaldehyde to one mole of intermediate and about 1–5% by weight, based on the weight of the intermediate, of methanol and adding after the reaction with formaldehyde about 5–25% by weight, based on the weight of the ester solution, of an alcohol having 1–6 carbon atoms, a ketone or a mixture of said alcohol and ketone.

4,368,310

METHOD OF POLYMERIZING SHEETS

Ivan R. Leatherman, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 23, 1981, Ser. No. 314,265

Int. Cl.^{3} C08F *18/24*

U.S. Cl. 526—314 **4 Claims**

1. A method of polymerizing aliphatic diol bis(allyl carbonate) monomer to form polymers thereof comprising:

providing a pool of liquid in which the monomers and the polymers to be formed are substantially insoluble;
forming a layer of monomer and initiator atop the pool of liquid; and
thereafter recovering polymer from atop the pool of liquid.

4,368,311

ACCELERATOR FOR HARDENING UNSATURATED RESINS

Klaus Binder, Munich; Wolfgang Edl, Grosshesselohe, and Hansjoachim Twittenhoff, Strasslach, all of Fed. Rep. of Germany, assignors to Peroxid-Chemie GmbH, Hoellriegelskreuth, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,716

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016051

Int. Cl.^{3} C08F *4/00, 4/10, 4/26;* **C08J** *3/24*

U.S. Cl. 526—317 **21 Claims**

1. Accelerator for hardening unsaturated resins, comprising a mixture of at least one ketimine and at least one inorganic or organic cupric or ferric compound.

4,368,312

EMBEDDING MEDIUM SUITABLE FOR THE PREPARATION OF THIN SECTIONS OF EMBEDDED BIOLOGICAL MATERIALS

Eric Carlemalm, Therwil, Switzerland, assignor to Chemische Werke Lowi G.m.b.H., Waldkraiburg, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,025

Int. Cl.^{3} C08F *120/10*

U.S. Cl. 526—323.2 **4 Claims**

1. A method of producing an essentially nonpolar embedding medium, which consists essentially of the step of admixing ethylmethacrylate, n-hexylmethacrylate, triethyleneglycoldimethacrylate and a free radical polymerisation initiator at a ratio by weight of ethylmethacrylate:n-hexylmethacrylate of 3.3 to 5.4:1, a ratio by weight of the combined ethylmethacrylate and n-hexylmethacrylate:triethyleneglycoldimethacrylate of 3.77 to 9.38:1, and the polymerisation initiator being included in the mixture in a small amount of from about 0.1% to about 1% by weight based on the total weight of the resulting embedding medium, the purity of each of the components being at least 90% by weight.

4,368,313

STABILIZATION OF SILANOL HYDROLYSATES OF ORGANOSILANES

Susan E. Hayes, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,340

Int. Cl.^{3} C08G *77/06*

U.S. Cl. 528—14 **34 Claims**

1. A method of stabilizing silanol hydrolysates of organosilanes in an acid medium comprising:

(a) adding a neutralizing agent containing a chelatable metal ion to the acid medium containing a silanol hydrolysate of organosilane to reduce the acidity of the medium to a pH of from about 6.5 to about 7.0;
(b) removing solids from the medium; and
(c) adding a chelate agent to form a chelate with metal in the medium.

4,368,314

CURABLE COMPOSITION COMPRISING SPIRO-ORTHOESTER COMPOUND

Takeshi Endo, Yokohama; Kiyokazu Mizutani, Inasawa, and Takahisa Ogasawara, Tokai, all of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,739

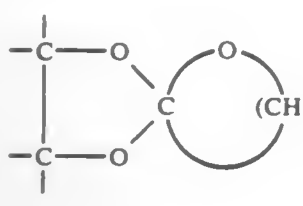
Claims priority, application Japan, Aug. 29, 1980, 55-118283; Oct. 13, 1980, 55-142042

Int. Cl.^{3} C08G *59/26, 63/42*

U.S. Cl. 528—89 **29 Claims**

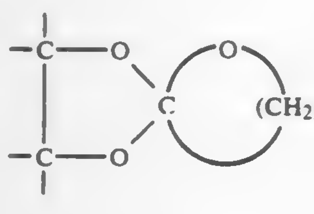
1. A curable composition comprising:

(A) at least one spiro-orthoester compound having at least one spiro-orthoester group represented by the formula:



wherein n is an integer of 3–5,
(B) at least one curing agent selected from the group consisting of organic polybasic acids and their anhydrides.

2. A curable composition comprising:
(A) at least one spiro-orthoester compound having at least one spiro-orthoester group represented by the formula:



wherein n is an integer of 3–5,
(B) at least one curing agent selected from the group consisting of organic polybasic acids and their anhydrides, and
(C) an epoxy compound having at least one epoxy group.

4,368,315
CATALYZED INTERFACIAL POLYCONDENSATION POLYCARBONATE PROCESS

Subhas K. Sikdar, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,144

Int. Cl.^{3} C08G *63/62*

U.S. Cl. 528—198 **11 Claims**

1. An improved interfacial polycondensation polycarbonate process wherein at least one dihydric phenol is reacted with a carbonyl halide in the presence of a polycondensation caralyst, the improvement comprising carrying out the process in accordance with the following process sequence and parameters:
(1) forming an equilibrated substantially uniform agitated two-phase admixture containing
  (i) an organic phase containing an inert solvent and a polycondensation catalyst,
  (ii) an aqueous phase containing dissolved therein an aromatic dihydroxy compound, a strong base, and having a pH of at least about 11, subject to the proviso that,
    (a) the volume ratio of inert organic solvent phase to aqueous phase is within the range of from 0.04:1 to 0.20:1, and
    (b) the mol ratio of base to aromatic dihydroxy compound is at least about 0.25:1,
(2) adding and reacting to carbonyl halide with the aromatic dihydroxy compound to form an aromatic polycarbonate having a M_w of at least about 2000 and an M_w/M_n of less than about 6.0, and
(3) separating and recovering the solid aromatic polycarbonate particulate from the liquid aqueous phase.

4,368,316
PROCESS FOR THE PREPARATION OF HIGH-SOLIDS ROSIN-MODIFIED POLYESTERS

Sudhir L. Laddha, North Bergen, and Theodore Sulzberg, Highland Park, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,659

Int. Cl.^{3} C08G *63/48*

U.S. Cl. 528—295.5 **7 Claims**

1. A process for preparing a 100%-solids polyester which consists of the steps of (1) heating at about 250° to 290° C. (a) a polyol, (b) a monobasic aliphatic carboxylic acid, and (c) rosin or a modified rosin until a product having an acid number of about 1 to 10 is obtained; (2) heating at about 150° to 210° C. the product of step (1) with (d) a polycarboxylic acid or anhydride; and (3) recovering a 100%-solids polyester product having an acid number of about 20 to 90, a hydroxyl number of about 20 to 400, and a molecular weight of about 100 to 1500.

4,368,317
MIXTURES FOR THE PREPARATION OF NITROGEN-CONTAINING POLYADDUCTS

Friedrich Lohse, Oberwil, and Dieter Trachsler, Kaiseraugst, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 11, 1981, Ser. No. 262,571

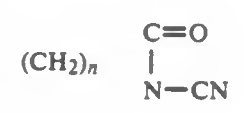
Claims priority, application Switzerland, May 23, 1980, 4055/80

Int. Cl.^{3} C08G *69/14*

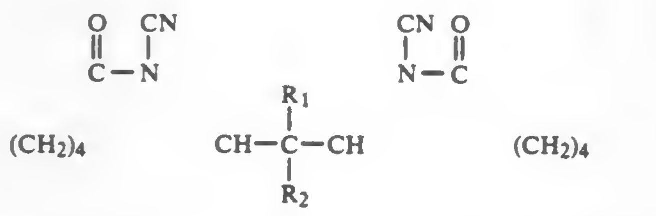
U.S. Cl. 528—323 **9 Claims**

1. A mixture for the preparation of crosslinked nitrogen-containing polyadducts, which mixture contains
(a) a N-cyanolactam of the formula I or II

(I)



(II)



in which n is an integer from 2 to 11, the methylene carbon atoms are unsubstituted or substituted, in total, by one or two methyl or ethyl groups, and R_1 and R_2, independently of one another, are hydrogen or methyl, and
(b) a monomeric or oligomeric organic compound having not less than 2 C atoms and not less than 2 hydroxyl groups.

4,368,318
PREPARATION OF DODECALACTAM POLYMERS WHEREIN MOLTEN MONOMER IS FILTERED PRIOR TO POLYMERIZATION

Marina K. Dobrokhtova, Dubininskaya ulitsa, 6, kv. 93; Bladimir A. Evseev, Kupavinsky Proezd, 4-32; Evgeny S. Artsis, Samotechnaya ulitsa, 17-A-79; Gennady A. Enenshtein, ulitsa Chernyshevskogo, 25, kv. 9; Boris P. Cheburashko, Kashirskoe shosse, 92-3-424; Maria G. Platoshkina, Dorozhnaya ulitsa, 28-1-145, all of Moscow; Vladimir P. Nefedov, ulitsa Ijulskaya, 48-27, Sverdlovsk, and Ljudmila I. Valyshkina, Ryazansky prospekt, 60-141, Moscow, all of U.S.S.R.

Filed Sep. 5, 1980, Ser. No. 184,423

Int. Cl.^{3} C08G *69/16*

U.S. Cl. 528—326 **7 Claims**

1. A method for preparing solid polydodecanamide and copolymers based thereon comprising
melting ω-dodecalactam or a mixture of ω-dodecalactam and polyamide-forming monomer copolymerizable therewith,
filtering the resulting melt through a bed comprising solid oxidized particles of ω-dodecalactam having an elemental oxygen content of from 10 to 24% by weight and,
polymerizing said melt at a temperature of 180° to 320° C. in contact with a polymerization catalyst for ω-dodecalactam.

4,368,319
ELECTRICALLY CONDUCTIVE CYCLIC POLYIMIDES

Jürgen Hocker, Bergisch-Gladbach; Rudolf Merten, Leverkusen, and Hans G. Fitzky, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

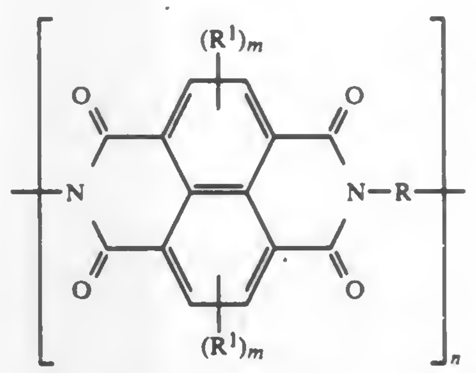
Filed Jan. 2, 1981, Ser. No. 222,084

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000168

Int. Cl.^{3} C08G *69/28, 69/32*

U.S. Cl. 528—353 **2 Claims**

1. A film-forming polymeric cyclic polyimide of the formula



wherein R is a divalent aliphatic group containing an electron donor; R^1 is hydrogen, halogen, —CN, —NO_2, —$COOR^2$, —$N(R^3)_2$ or —OR^4; R^2 is alkyl having 1 to 6 carbon atoms; R^3 and R^4 independently are hydrogen or alkyl having 1 to 6 carbon atoms; m is 1 or 2 and n is an integer of from 10 to 500.

4,368,320
PROCESS FOR THE PRODUCTION OF A HYDROXYL GROUP CONTAINING ϵ-CAPROLACTONE MODIFIED (METH) ACRYLATE RESIN

Werner Aldinger, Freigericht-Horbach; Helmut Anzt, Hanau; Gerhard Morlock, Hanau, and Hans-Peter Schaufler, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,255

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027776

Int. Cl.^{3} C08G *63/08;* **C08F** *218/02*

U.S. Cl. 528—355 **22 Claims**

1. A process for the production of a hydroxyl group containing, ϵ-caprolactone modified, isocyanate cross-linkable acrylate, or methacrylate resin comprising
(1) reacting at least one monoester of acrylic acid or methacrylic acid with an alkanediol having 2 to 4 carbon atoms in the molar ratio of 1.5:1 to 1:3 with ϵ-caprolactone at a temperature between 60° and 130° C. in the presence of 0.005 to 0.15 weight percent based on the weight of the ϵ-caprolactone employed of an organotin compound catalyst for the reaction of a hydroxyl group containing compound with ϵ-caprolactone and
(2) copolymerizing
  (a) 15 to 55 weight percent of the adduct obtained according to (1) with
  (b) 45 to 85 weight percent of a mixture of monomers which is composed of, in each case based on the weight of component (b),
  (b$_1$) 10 to 90 weight percent of at least one ester of methacrylic acid whose homopolymerizate has a glass transition temperature of above 60° C.,
  (b$_2$) 10 to 90 weight percent of at least one ester of acrylic or methacrylic acid whose homopolymerizate has a glass transition temperature of below 60° C.,
  (b$_3$) 0 to 35 weight percent of at least one vinyl aromatic compound and
  (b$_4$) 0 to 10 weight percent of at least one monoester of acrylic or methacrylic acid with an alkanediol having 2 to 4 carbon atoms as a solution in
  (c) 15 to 45 weight percent based on the total weight of components (a), (b), and (c) of at least one solvent for the acrylate or methacrylate resin which solvent is inert to isocyanates, in the presence of at least one catalyst which decomposes thermally into radicals.

4,368,321
ELEVATED, DECLINING PRESSURE DEHYDRATION OF POLY(ARYLENE SULFIDE) PREPOLYMERIZATION MIXTURE

Fred T. Sherk, and Harry B. Hammer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 1, 1981, Ser. No. 298,442

Int. Cl.^{3} C08G *75/14*

U.S. Cl. 528—388 **12 Claims**

1. A method in the preparation of poly(arylene sulfide) for dehydrating pre-polymerization mixtures comprising a reaction mixture of a sulfur source and an organic amide, said method comprising:
(a) contacting a reaction mixture comprising a sulfur source and an organic amide at a first pressure within a range of about 20 psig to about 60 psig and an initial temperature in the range of about 300° F. to about 400° F. for a time sufficient for formation of a complex of the reactants, and subsequently
(b) simultaneously, over a period of time, decreasing said pressure to a second pressure within the range of about 3 to about 25 psig and increasing the temperature to a final temperature, at which, at the second pressure, essentially all water is removed from the mixture.

4,368,322
CHITOSAN-GLUCAN COMPLEX, METHOD FOR ITS PRODUCTION AND END USES

Riccardo Muzzarelli, Ancona-Sap-Anico, Italy, assignor to Anic, S.p.A., Palermo, Italy

Division of Ser. No. 45,002, Jun. 4, 1979, Pat. No. 4,282,351. This application Feb. 23, 1981, Ser. No. 237,082

Claims priority, application Italy, Jun. 14, 1978, 625 A/78

Int. Cl.^{3} C08B *37/08*

U.S. Cl. 536—20 **4 Claims**

1. A chitosan-glucan complex having the infrared spectrum shown in FIG. 1A produced by the process comprising treating a biomass selected from yeast, mold or fungus containing chitin and glucan with a solution of a strong alkali having a concentration of 30 to 50% at a temperature up to the boiling point of said solution.

4,368,323
SUBSTANTIVE WETTING AGENTS FOR ABSORBENT MATERIALS

Richard P. James, Cranbury, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Sep. 21, 1981, Ser. No. 303,752

Int. Cl.^{3} A61F *13/16, 13/20;* **C08B** *11/00*

U.S. Cl. 536—56 **11 Claims**

1. A method for treating an absorbent material having accessible hydroxyl groups to increase wettability comprising reacting said absorbent material with a surfactant having functional end groups selected from the group consisting of primary amine or hydroxyl groups and a diepoxide compound.

4,368,324
SIZING AGENT AND PROCESS FOR THE MANUFACTURE THEREOF

Friedrich J. Bayerlein; Peter P. Habereder, both of Krailling; Maria Denkler, Munich, and Nikolaos Keramaris, Eichenau, all of Fed. Rep. of Germany, assignors to Diamalt Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,487

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016561

Int. Cl.^{3} C08B *37/00;* **D06M** *15/04*

U.S. Cl. 536—114 **12 Claims**

5. A method for preparing a water-soluble sizing agent which comprises hydroxyalkylating and depolymerizing the polysaccharide gum obtained from the seed of *Cassia occidentalis* to obtain a sizing agent having a viscosity of from about 40 to about 10,000 mPas (10% aqueous solution, 80° Brookfield RVT) and a substitution degree of from 0.05 to about 1.0.

4,368,325
PROCESSES FOR PREPARING 3-CEPHEM COMPOUNDS

Ikuo Ueda, Toyonaka, and Masakazu Kobayshi, Ikeda, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

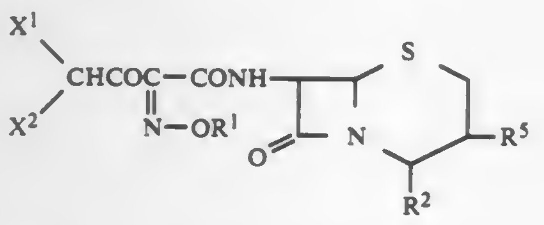
Filed Mar. 4, 1981, Ser. No. 240,469

Claims priority, application Japan, Mar. 6, 1980, 55/29676

Int. Cl.^{3} C07D *501/20*

U.S. Cl. 544—16 **7 Claims**

1. A syn compound of the formula:



(III'')

wherein

R^1 is an aliphatic hydrocarbon group which may have suitable substituent(s),
R^2 is carboxy or protected carboxy,
R^5 is hydrogen or hydroxy,
X^1 and X^2 are each halogen, and
the dotted line represents cepham or cephem nucleus,

or a salt thereof.

4,368,326
SHORT TOTAL SYNTHESIS OF DIHYDROTHEBAINONE, DIHYDROCODEINONE, AND NORDIHYDROCCODEINONE

Kenner C. Rice, 14704 Red Fox Rd., Rockville, Md. 20852

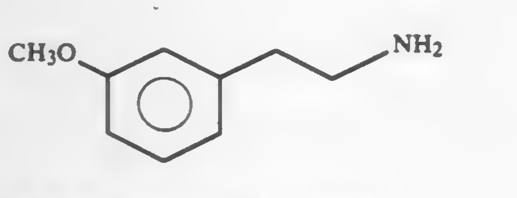
Continuation-in-part of Ser. No. 165,690, Jul. 3, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,221

Int. Cl.^{3} C07D *489/02, 221/28, 217/20*

U.S. Cl. 546—45 **1 Claim**

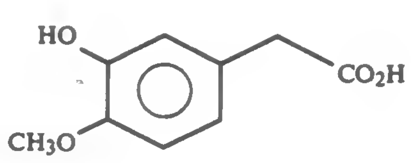
1. A method which comprises

(a) heating a mixture of an amine compound of the formula 4



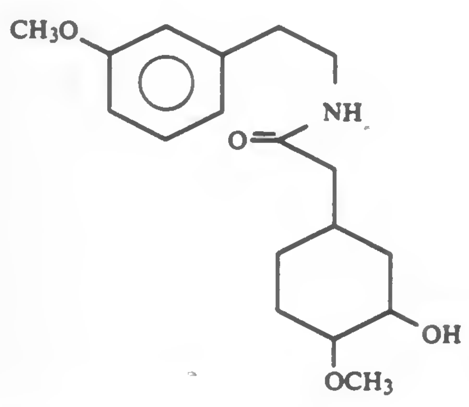
4

and pure acid compound, formula 5



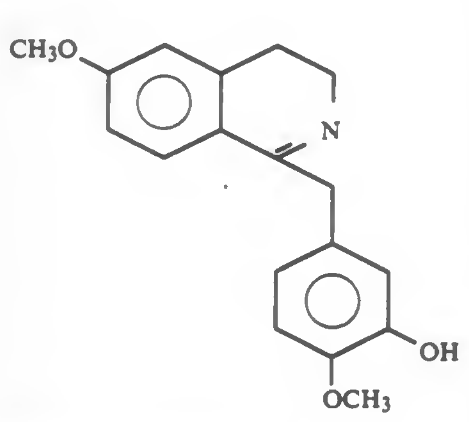
5

at 200° C. for about 2 hours under argon or other inert gas to obtain amide compound 6 of the following formula



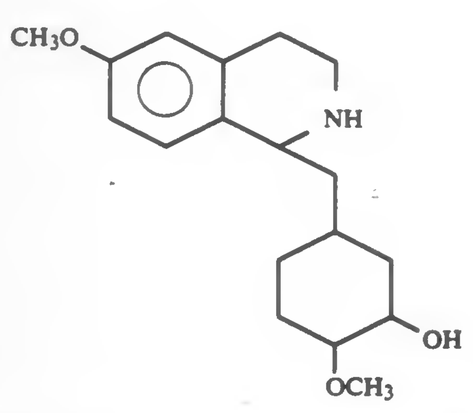
6

(b) contacting compound 6 with phosphorus oxychloride to produce the 1,2-dehydro derivative of compound 7 shown below:



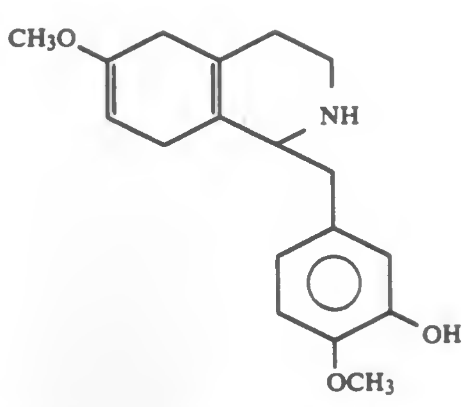
which need not be isolated;

(c) neutralizing the 1,2-dehydro derivative of compound 7 with aqueous ammonia and reducing with sodium cyanoborohydride or sodium borohydride to give the compound tetrahydroisoquinoline 7



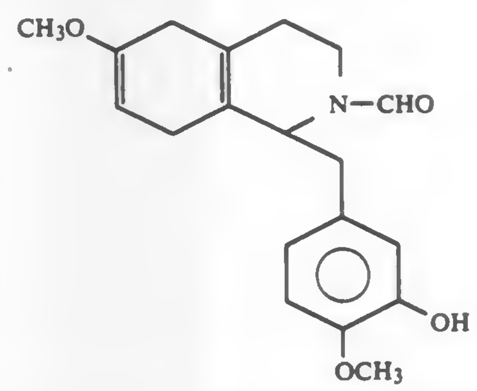
7

(d) treating of 7 with lithium or sodium in liquid ammonia as a reducing agent to give hexahydroisoquinoline, compound 8



8

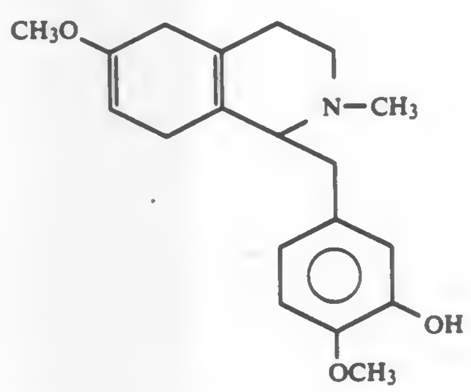
and formylating compound 8 to give 10



10

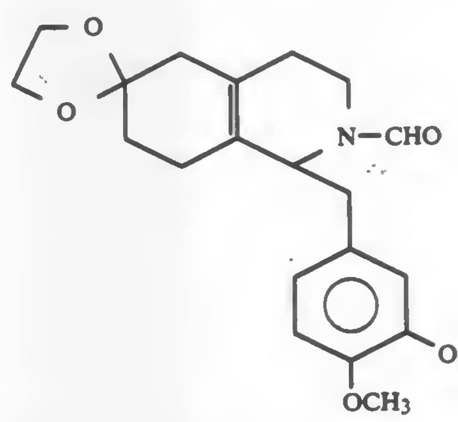
and introducing a protective group for the nitrogen in the subsequent steps of the reaction where the reagent for formylation of 8 to 10 is phenyl formate or chloral;

(e) alternately, N-methylating compound 7 or 8 by treatment with methyl halides or sulfonate to give the N-methyl derivative of 7 or compound 9



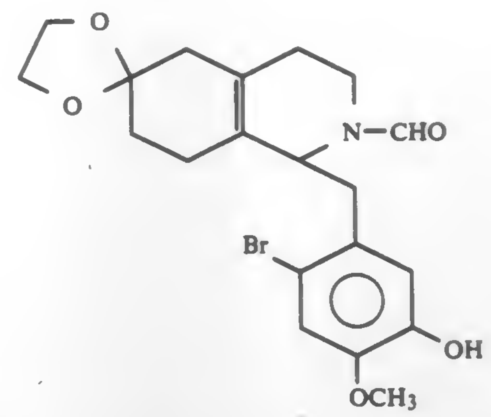
9

(f) contacting compound 10 with ethylene glycol in dry methane sulfonic acid in dry tetrahydrofuran to afford the ketal product, 11



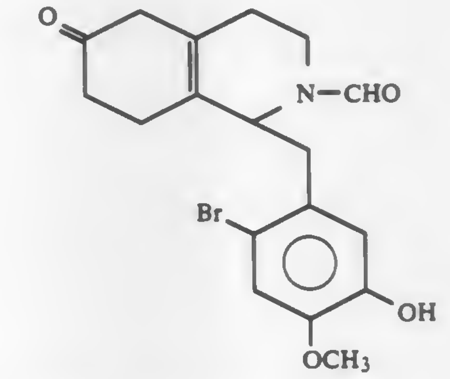
11

(g) brominating of ketal 11 with N-bromoacetamide (NBA) to give bromo ketal 12



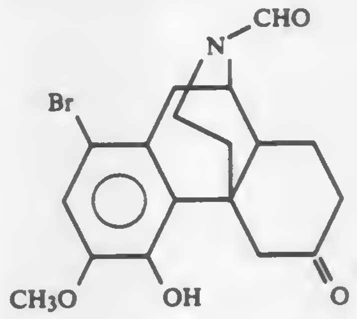
12

(h) deketalizing bromo ketal 12 with aqueous acid such as aqueous formic acid to yield beta, gamma unsaturated ketone 13



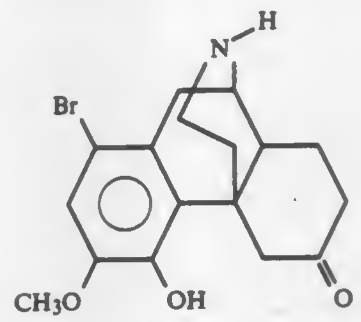
13

(i) treating beta, gamma unsaturated bromo ketone 13 with a super acid alone or with ammonium fluoride HF complex with trifluoromethanesulfonic acid to give 1-bromo-N-formylnordihydrothebainone 17



17

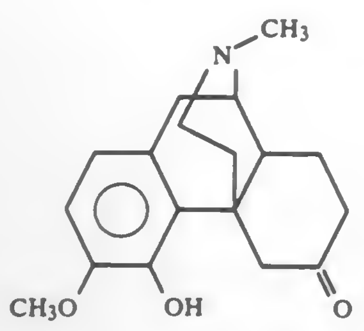
(j) acid hydrolyzing 1-bromo-N-formylnordihydrothebainone 17 with aqueous acid and methanol to give the intermediate 1-bromonordihydrothebainone, compound 18



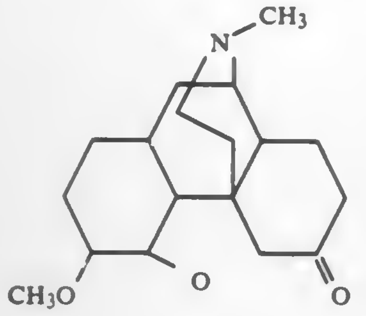
18

(k) converting intermediate 18, 1-bromonordihydrothebainone, to dihydrothebainone 19, a codeine precursor by hydrogenation in the presence of formaldehyde with palladium on carbon catalyst in 2-normal (2 N) acetic acid containing sodium acetate; or

(l) treating intermediate 18 with bromine and acetic acid followed by treating sodium hydroxide to close the oxide bridge and afford as an intermediate 1-bromonordihydrocodeinone which need not be isolated but is hydrogenated in the presence of formaldehyde to give dihydrocodeinone 22, a codeine precursor



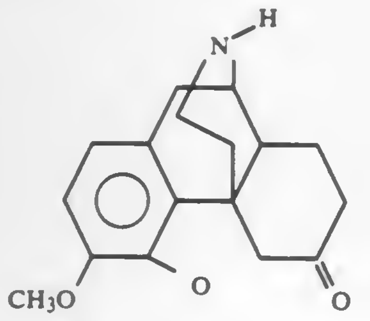
19



22

or

(m) alternately, converting compound 18 into compound 21, nordihydrocodeinone



21

by bromination in acetic acid followed by treating with an aqueous base to close the oxide bridge, and hydrogenating the unisolated intermediate with palladium on carbon catalyst in 2-normal (2 N) acetic acid containing sodium acetate.

4,368,327

PROCESS FOR THE PREPARATION OF 3-(N-ARYLAMINO)-TETRA-HYDROTHIOPHEN-2-ONE DERIVATIVES

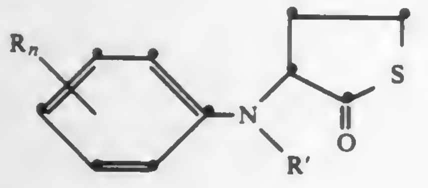
Walter Kunz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 176,821, Aug. 8, 1980, abandoned. This application Jun. 30, 1981, Ser. No. 279,124

Int. Cl.^{3} C07D *233/00, 333/16*

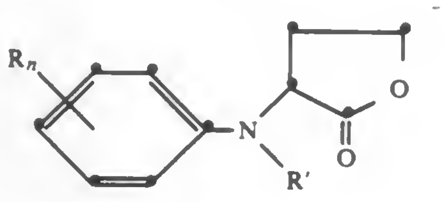
U.S. Cl. 548—262 **11 Claims**

1. A process for the preparation of a 3-(N-arylamino)-tetrahydrothiophen-2-one derivative of the general formula A:



(A)

in which the heterocyclic five-membered ring is unsubstituted or monosubstituted or polysubstituted by C_1–C_4-alkyl, n is an integer from 0 to 5, R signifies a number, of identical or different substituents other than hydrogen, selected from C_1–C_{12}-alkyl, C_1–C_{12}-alkoxy, halogen, nitro, and —CH_2—X—R″, and whereby two substituents R which are adjacent to one another may also form together with the phenyl ring a naphthyl group, and X is oxygen or sulfur and R″ is unsubstituted, monosubstituted or polysubstituted C_1–C_{12}-alkyl, unsubstituted, monosubstituted or polysubstituted phenyl or unsubstituted, monosubstituted or polysubstituted benzyl and in the three cases mentioned the possible substituents independently of one another are selected from the series lower alkyl, lower alkoxy, halogen or nitro, and R′ is hydrogen or the group —CO—R‴, in which R‴ is a non-halogenated aliphatic, heterocyclicaliphatic or heterocyclic radical or in which R″ is an aromatic or araliphatic radical which is unsubstituted or substituted in the aromatic moiety by halogen and in which the heterocyclic structure in each case contains one or more N, O and/or S atoms and an aliphatic chain can be interrupted one or more times by oxygen, sulfur, or nitrogen, and comprises reacting a compound of the formula B:



(B)

in which the possible substituents are as defined under formula A, at temperatures of +15° to +200° C. in an organic solvent with a salt of a thiocarboxylic acid.

4,368,328

PROCESS FOR PREPARING ALKYLTHIOBENZIMIDAZOLES

Sandor Szoke, Budapest; Gyorgy Lugosi, Felso-God; Maria Bakonyi, Budapest; Jeno Ghyczy, Budapest, and Gyorgy Csermely, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

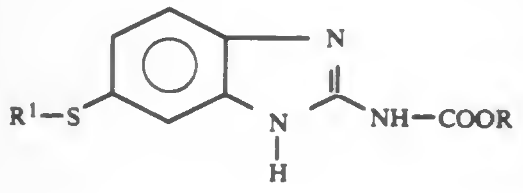
Filed Dec. 3, 1980, Ser. No. 212,628

Claims priority, application Hungary, Apr. 12, 1979, CI 1993

Int. Cl.^{3} C07D *235/04, 233/66*

U.S. Cl. 548—306 **6 Claims**

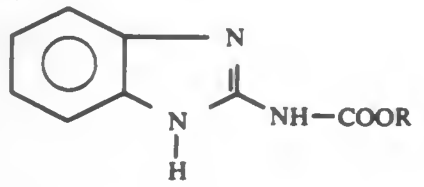
1. A process for the preparation of a compound of the formula (V)



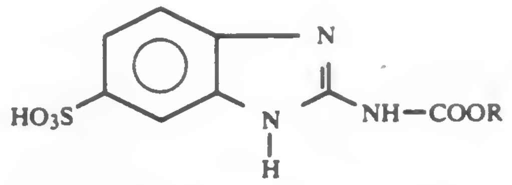
wherein

R and R^1 are each independently C_1 to C_3 alkyl, which comprises the steps of:

(a) sulfonating a compound of the formula (I)

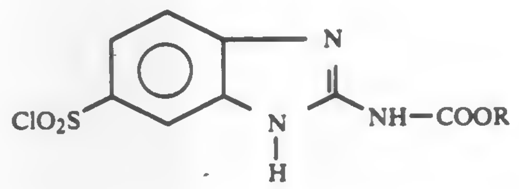


with oleum at 30° to 60° C. to form a compound of the formula (II)

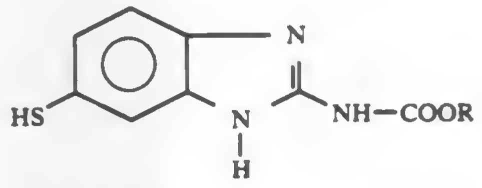


(b) converting the compound of the formula (II) into the sodium salt thereof with aqueous sodium hydroxide;

(c) chlorinating the sodium salt of the formula (II) with a chlorinating agent selected from the group consisting of phosphorus oxychloride, phosphorus pentachloride, and pyrocatechyl phosphorus trichloride to form a compound of the formula (III)



(d) reducing the compound of the formula (III) at a temperature between 0° and 100° C. with a metal or metal salt in an aqueous acidic medium to form a compound of the formula (IV)

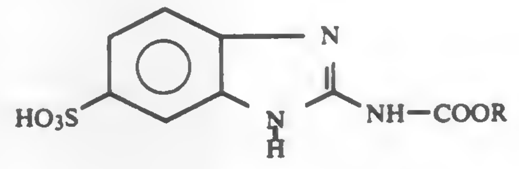


and, (e) alkylating the compound of the formula (IV) with an alkyl halide of the formula (VI)

R^1—Hal

wherein Hal is halogen at room temperature to yield the desired product.

4. A compund of the formula (II)



(II)

wherein R stands for an alkyl group having 1 to 3 carbon atoms, and salts thereof.

4,368,329

PROCESS OF PREPARING THIOPYRYLIUM SENSITIZING DYES

Alan R. Katritzky, Gainesville, Fla.; Basil J. Graphakos, Athens, Greece; Girard A. F. Lhommet, Paris, France, and Kenneth Reynolds, Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

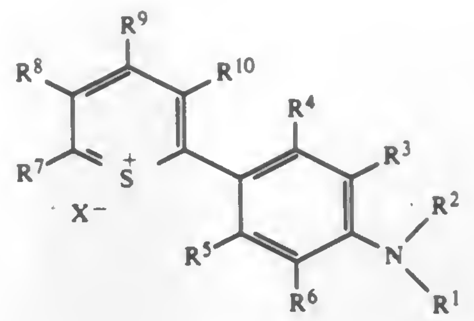
PCT No. PCT/US81/00266, § 371 Date Sep. 14, 1981, § 102(e) Date Sep. 14, 1981

PCT Filed Feb. 27, 1981, Ser. No. 310,906

Int. Cl.^{3} C07D *335/02*

U.S. Cl. 549—13 **8 Claims**

1. A method of preparing a compound of the general formula:



in which:

R^1 and R^2 independently represent a hydrogen atom, an alkyl or substituted alkyl group, an aryl or substituted aryl group, an aralkyl or substituted aralkyl group, a cycloaliphatic or substituted cycloaliphatic group or a heterocyclic or substituted heterocyclic group providing R^1 and R^2 do not both represent cyclic groups of aromatic nature, or R^1 and R^2 together may represent the necessary atoms to complete a non-aromatic heterocyclic ring,

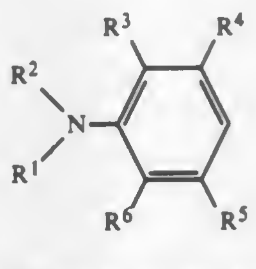
R^3, R^4, R^5 and R^6 independently represent a hydrogen atom or any substituent providing the sum of their σ_p constants has a value of less than ±0.5, or R^3 and R^4 and/or R^5 and R^6 may represent the necessary atoms to complete an alicyclic or aromatic ring, R^3 and R^2 and/or R^1 and R^6 may represent the necessary atoms to complete a non-aromatic heterocyclic ring,

R^7 and R^9 independently represent a hydrogen atom or any carbon linked substituent containing up to 16 carbon atoms,

R^8 and R^{10} independently represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or any two adjacent substituents R^7, R^8, R^9 and R^{10} together may complete an alicyclic or aromatic ring, and

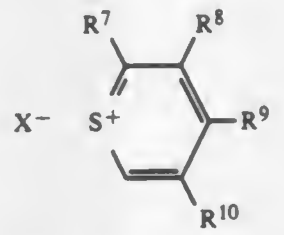
X^- represents an anion,

comprising reacting an amine of the general formula:



(II)

in which R^1 to R^6 are as defined above, with a thiopyrylium salt of the general formula:



(III)

in which X^- and R^7 and R^{10} are as defined above, to yield the desired compound.

4,368,330

DERIVATIVES OF L-ASCORBIC ACID AND D-ERYTHORBIC ACID

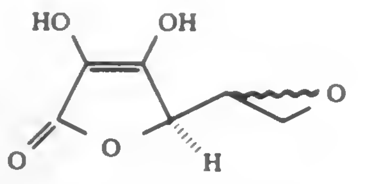
Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,206

Int. Cl.^{3} C07D *407/04*

U.S. Cl. 549—315 **4 Claims**

1. A salt of a compound of the formula

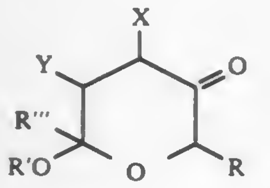


4,368,331

3,4-DIHALO-TETRAHYDROPHYRAN-5-ONE USEFUL AS INTERMEDIATES FOR THE PREPARATION OF GAMMA-PYRONES

Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, East Lyme; Donald E. Kuhla, and Paul D. Weeks, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Nov. 13, 1979, Ser. No. 93,629
Int. Cl.³ C07D *309/22*
U.S. Cl. 549—417 **6 Claims**

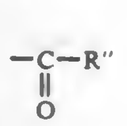
1. A compound of the formula



wherein

R is hydrogen, (C_1-C_4) alkyl, phenyl or benzyl;

R′ is hydrogen, (C_1-C_4) alkyl, or



$$-\underset{\underset{O}{\|}}{C}-R''$$

wherein R″ is methyl, ethyl or phenyl;

R‴ is hydrogen or (C_1-C_4) alkyl;

and X and Y are each chlorine or bromine.

4,368,332

PROSTAGLANDINS

Robert L. Jones, and Norman H. Wilson, both of Edinburgh, Scotland, assignors to National Research Development Corporation, London, England
PCT No. PCT/GB80/00001, § 371 Date Sep. 3, 1980, § 102(e) Date Sep. 3, 1980, PCT Pub. No. WO80/01381, PCT Pub. Date Jul. 10, 1980
PCT Filed Jan. 4, 1980, Ser. No. 205,964
Claims priority, application United Kingdom, Jan. 5, 1979, 7900368
Int. Cl.³ G07C *53/136, 57/26*
U.S. Cl. 560—120 **18 Claims**

1. A compound which is a bicyclo(2,2,1)heptane substituted at the 5-position by a group of the formula $—R^1—COQ$,

where R^1 is selected from the group consisting of C_4-C_8 alkyl;

$—CH_2—CH{=}CH—(CH_2)_m—$, where m is an integer from 1 to 5;

$—CH_2—CH_2—CH{=}CH—(CH_2)_n—$, where n is an integer from 0 to 4;

$—X—(CH_2)_p—$, where p is an integer from 3 to 7;

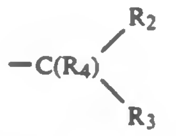
$—CH_2—X—(CH_2)_q—$, where q is an integer from 2 to 6;

$—CH_2—CH_2—X—(CH_2)_m—$; and

$—CH{=}CH—(CH_2)_3—$; wherein X is —O— or —S—;

COQ is carboxy, a physiologically acceptable carboxylate salt, a branched or unbranched C_1-C_5 alkyl ester or $CONHSO_2CH_3$;

and wherein said bicyclo(2,2,1)heptane is substituted at the 6-position by a grouping of the formula:



$$-C(R_4)\begin{matrix}\diagup R_2\\ \diagdown R_3\end{matrix}$$

in which R_4 is selected from the group consisting of unsubstituted C_1-C_{10} branched or unbranched aliphatic hydrocarbon residues and C_1-C_{10} branched or unbranched aliphatic hydrocarbon residues substituted by Ar, —OAr, or SAr, wherein Ar is a phenyl or pyridyl residue which is unsubstituted or substituted by one or more substituents selected from the group consisting of halogen, halogen substituted C_1-C_5 branched or unbranched alkyl groups, sulphonamido groups, amino groups, hydroxy and C_1-C_{10} alkoxy groups;.

R_2 represents hydrogen and R_3 represents a hydroxy group, or R_2 and R_3 together represent the oxygen atom of a carbonyl group.

4,368,333

METHOD FOR THE CHEMICAL UTILIZATION OF COAL BY LIQUID PHASE OXIDATION

Laszlo Kovacs; Galina Moger nee Eremineva; Dezso Gal; Peter Hajdu; Julia Lukacs; Erik Kroo; Istvan Nemes; Andras Nemeth, all of Budapest; Katalin Szabo nee Mogyorosi; Geza Szentgyörgyi, both of Tatabanya; Szilard Riederauer, Budapest, and Janos Szepvölgyi, Tatabanya, all of Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary
Filed Jul. 31, 1981, Ser. No. 288,761
Int. Cl.³ C07C *51/16*
U.S. Cl. 562—407 **5 Claims**

1. A method for the liquid phase oxidation of coal performed with oxygen, wherein the oxidation is performed solely in the presence of a non-aqueous cooxidation partner selected from the group of liquid hydrocarbons and oxygen-containing liquid hydrocarbons.

4,368,334

P-HYDROXYMANDELIC ACID

John R. M. Dales, Littlehampton, England, assignor to Beecham Group Limited, England
PCT No. PCT/GB80/00126, § 371 Date Apr. 9, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. W081/00404, PCT Pub. Date Feb. 19, 1981
PCT Filed Aug. 8, 1980, Ser. No. 233,606
Claims priority, application United Kingdom, Aug. 9, 1979, 7927829
Int. Cl.³ C07C *59/50*
U.S. Cl. 562—470 **10 Claims**

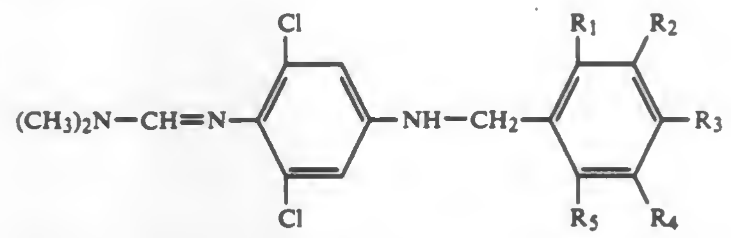
1. A process for the isolation of a solid salt of p-hydroxymandelic acid, which process comprises reacting phenol with glyoxylic acid in the presence of sodium or potassium hydroxide, acidifying to a pH less than 3, extracting the resulting solution with a water-immiscible solvent to provide a solution of p-hydroxymandelic acid and precipitating the salt therefrom.

4,368,335

N′-(2,6-DICHLORO-4-(SUBSTITUTED-BENZYLAMINO)-PHENYL)-N,N-DIMETHYL-FORMAMIDINES

Walter E. Meyer, Suffern, N.Y.; Andrew S. Tomcufcik, Old Tappan, N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stanford, Conn.
Filed Nov. 25, 1981, Ser. No. 325,070
Int. Cl.³ C07C *123/00;* C07D *317/64*
U.S. Cl. 564—245 **9 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 are the same or different and are hydrogen, fluoro, chloro, bromo, methyl, methoxy or trifluoromethyl; R_4 and R_5 are the same or different and are hydrogen, chloro or methoxy; R_3 is hydrogen, methoxy, phenyl, dimethylamino or diethylamino; and R_2 and R_3 taken together is methylenedioxy with the proviso that at least two of R_1, R_2, R_3, R_4 and R_5 are hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

4,368,336

PROCESS FOR FORMYLATING XYLENE MIXTURE

Susumu Fujiyama; Shunichi Matsumoto, and Yuji Takamizawa, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
Filed Feb. 11, 1981, Ser. No. 233,304
Claims priority, application Japan, Feb. 14, 1980, 55/16785
Int. Cl.³ C07C *45/49*
U.S. Cl. 568—428 **3 Claims**

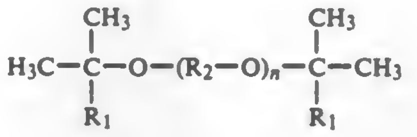
1. A process for formylating a xylene mixture containing at least m-xylene, o-xylene, and ethylbenzene by carbon monoxide in the presence of hydrogen fluoride and boron trifluoride as a catalyst wherein the hydrogen fluoride is used at a molar ratio of 3-8 to the boron trifluoride, which comprises conducting formylation at a molar ratio of boron trifluoride to the sum total of m-xylene and o-xylene in the xylene mixture of not more than 1.5, thereby selectively and correspondingly producing at least 2,4-dimethylbenzaldehyde and 3,4-dimethylbenzaldehyde.

4,368,337

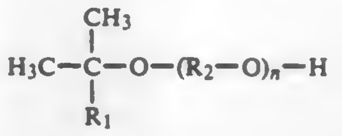
PROCESS FOR CONVERTING GLYCOL DIALKYL ETHER

Kinya Tawara; Hiroki Kamiyama, both of Soka; Shigenori Nakashizu, Satte; Takashi Kaneko, Soka; Tadahiro Wakui, Soka, and Tadashi Matsumoto, Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan
Filed Mar. 30, 1981, Ser. No. 248,913
Claims priority, application Japan, Mar. 28, 1980, 55/40645
Int. Cl.³ C07C *41/01*
U.S. Cl. 568—613 **13 Claims**

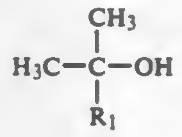
1. A process for converting glycol dialkyl ether without substantial formation of olefin oligomers by reaction with water, comprising reacting a feed glycol di-tertiary alkyl ether represented by structural formula (A) with water using a strongly acidic cation-exchange resin as a catalyst and a reaction temperature of from 40° C. to 150° C. under a pressure of from 1 to 70 kg/cm² (absolute pressure) in a molar ratio of water/feed glycol di-tertiary alkyl ether represented by the structural formula (A) of from 0.05/1 to 60/1, to convert the ether of formula (A) into (1) glycol mono-tertiary alkyl ether represented by the structural formula (B) and tertiary alcohol represented by the structural formula (C) or (2) glycol mono-tertiary alkyl ether represented by the structural formula (B), tertiary alcohol represented by the structural formula (C) and tertiary olefin represented by the structural formula (D); wherein (A), (B), (C), and (D) are as follows:



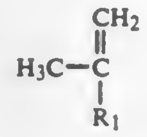
$$H_3C-\overset{\overset{CH_3}{|}}{\underset{\underset{R_1}{|}}{C}}-O-(R_2-O)_n-\overset{\overset{CH_3}{|}}{\underset{\underset{R_1}{|}}{C}}-CH_3 \qquad (A)$$



$$H_3C-\overset{\overset{CH_3}{|}}{\underset{\underset{R_1}{|}}{C}}-O-(R_2-O)_n-H \qquad (B)$$



$$H_3C-\overset{\overset{CH_3}{|}}{\underset{\underset{R_1}{|}}{C}}-OH \qquad (C)$$



$$H_3C-\overset{\overset{CH_2}{\|}}{\underset{\underset{R_1}{|}}{C}} \qquad (D)$$

wherein R_1 represents a methyl group, and ethyl group, or a propyl group, n represents an integer of from 1 to 10, and R_2 represents an alkylene group having from 2 to 14 carbon atoms, and the total number of carbon atoms in the group $—(R_2—O)_n$ is from 2 to 30.

4,368,338

DEGREASER SOLVENT STABILIZATION

Nobuyuki Ishibe, and Jimmie K. Harden nee Ashley, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jun. 18, 1981, Ser. No. 274,893
Int. Cl.³ C07C *21/10, 21/12*
U.S. Cl. 570—109 **6 Claims**

1. A stabilized chlorinated solvent composition consisting essentially of perchloroethylene or trichloroethylene and a stabilizer combination of from about 0.01 to about 0.5% N-methyl pyrrole together with from about 0.1 to about 1% of ethyl acetate, acetonitrile or pyrazine, based on the total weight of solvent and stabilizer combination.

4,368,339

PROCESS FOR THE ISOMERIZATION OF A HALOGENATED TOLUENE

Kuniyuki Tada, Kamakura; Eiichi Minomiya, Odawara, and Takehisa Inoue, Tokyo, all of Japan, assignors to Toray Industries, Incorporated, Japan
Filed Aug. 5, 1981, Ser. No. 290,238
Claims priority, application Japan, Aug. 25, 1980, 55-115898
Int. Cl.³ C07C *17/24*
U.S. Cl. 570—202 **8 Claims**

1. A process for the isomerization of a halogenated toluene characterized by contacting the halogenated toluene with an acid form of zeolite.

4,368,340
PROCESS FOR PRODUCING 1,3,5-TRICHLOROBENZENE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Isao Yokomichi, Moriyama; Itaru Shigehara, Moriyama, and Mikio Miyaji, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,013
Claims priority, application Japan, Dec. 25, 1979, 54-168575
Int. Cl.^{3} C07C *17/12*
U.S. Cl. 570—207 **6 Claims**

1. In a process for producing 1,3,5-trichlorobenzene by chlorinating 1,3,5-trihalobenzene having 1 to 3 bromine atoms and 2 to 0 chlorine atoms, an improvement characterized in that gaseous 1,3,5-halobenzene having 1 to 3 bromine atom and 2 to 0 chlorine atom is brought into contact with chlorine gas at a molar ratio of 0.5 to 3.0 of the stoichiometric amount of chlorine required for said conversion, in a vapor phase at a temperature of 280° to 500° C.

4,368,341
NOVEL COMPOUNDS AND THEIR USE IN ELASTOMER-CONTAINING COMPOSITIONS

Thomas C. Mathis, St. Louis, Mo., and Albert W. Morgan, Collinsville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 187,232, Sep. 15, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 290,621
Int. Cl.^{3} C07C *15/12*
U.S. Cl. 585—25 **9 Claims**

1. A compound consisting of at least 5 hydrocarbon rings including at least one aromatic ring and at least one saturated ring free to rotate independently of at least one aromatic ring in the molecule of said compound, at least one divalent aliphatic radical linking two of said rings, and from zero to about two alkyl substituents on said rings, said compound having a molecular weight between about 400 and about 8000.

4,368,342
BENZENE ALKYLATION PROCESS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,013
Int. Cl.^{3} C07C *2/64*
U.S. Cl. 585—446 **11 Claims**

1. A process for the alkylation of benzene with an alkene which comprises contacting benzene and the alkene at about −20° to about 350° C. with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,368,343
PROCESS FOR PRODUCING HIGH-VACUUM OILS

Izrail L. Kotlyarevsky, ulitsa Zhemchuzhnaya, 10, kv. 3; Ninel I. Myakina, ulitsa Tereshkovoi, 8, kv. 25; Mikhail A. Kamkha, ulitsa Lenina, 18, kv. 67; Ivan M. Ikryanov, ulitsa Rossiiskaya, 17, kv. 87, and Svetlana A. Glyadinskaya, ulitsa Shljuzovaya, 12, kv. 48, all of Novosibirsk, U.S.S.R.

Filed Sep. 18, 1980, Ser. No. 188,546
Int. Cl.^{3} C07C *2/66, 2/70*
U.S. Cl. 585—456 **5 Claims**

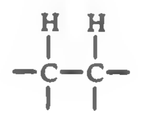
1. A process for producing high-vaccum oils comprising alkylation of condensed and non-condensed aromatic hydrocarbons with compounds selected from the group consisting of normal secondary alkylchlorides containing 8 to 12 carbon atoms, and mixtures of said chlorides; said alkylchlorides having an iodine number of not more than 1, and being taken in a molar ratio to said condensed and non-condensed aromatic hydrocarbons ranging from 2.5:1 to 5:1; conducting the alkylation reaction at a temperature within the range of from 20° to 100° C. in the presence of 2 to 15 mol.% of aluminum chloride based on the amount of the alkylchlorides employed until the evolution of hydrogen chloride ceases, separating the catalyst from the alkylate produced in the reaction, distilling said alkylate under vacuum, collecting the desired fraction with a boiling range of from 220° to 250° C./0.3 mm Hg and recycling the remaining fractions to the alkylation stage.

4,368,344
OXIDATIVE DEHYDROGENATION OF ORGANIC COMPOUNDS WITH A ZINC TITANATE CATALYST

John H. Kolts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 26, 1981, Ser. No. 267,230
Int. Cl.^{3} C07C *5/36, 11/12*
U.S. Cl. 585—624 **13 Claims**

1. A process for the catalytic oxidative dehydrogenation of at least one dehydrogenatable organic compound which has at least one



$$-\underset{|}{\overset{\overset{\textstyle H}{|}}{C}}-\underset{|}{\overset{\overset{\textstyle H}{|}}{C}}-$$

grouping comprising the step of contacting a mixture of free oxygen and said at least one dehydrogenatable organic compound, under suitable oxidative dehydrogenation conditions, with a catalyst composition comprising zinc and titanium wherein said zinc and said titanium are present in said catalyst composition in the form of zinc titanate which is prepared by calcining a mixture of zinc oxide and titanium dioxide in the presence of free oxygen at a temperature in the range of about 650° to about 1050° C.

4,368,345
CATALYST FOR DISPROPORTIONATION OF OLEFINS

Kathleen F. Dickinson, Edinburgh, Scotland, assignor to BP Chemicals Limited, London, England

Filed Dec. 22, 1981, Ser. No. 333,489
Claims priority, application United Kingdom, Jan. 7, 1981, 8100348
Int. Cl.^{3} C07C *6/00*
U.S. Cl. 585—643 **10 Claims**

1. A process for the disproportionation of n-olefins comprising contacting the olefin feed with a catalyst composition comprising molybdenum oxide or tungsten oxide supported on silica characterised in that the catalyst composition is produced by impregnating a silica support with a solution made from a halide of a metal selected from molybdenum and tungsten, removing the solvent by evaporation, and heat treating the impregnated support at an elevated temperature such that (a) the metal is converted to the corresponding oxide and/or an oxy-salt and (b) the halogen content thereof is reduced to less than 0.1% by weight of the total composition.

2. A process according to claim 1 wherein the metal halide used as the source of tungsten is a hexa-halide of tungsten and the source of molybdenum is a molybdenum penta-halide.

4,368,346
OXIDATIVE DEHYDROGENATION OF PARAFFINS WITH A PROMOTED COBALT CATALYST

Alan D. Eastman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 181,515, Aug. 26, 1980, abandoned. This application May 1, 1981, Ser. No. 259,738
Int. Cl.^{3} C07C *5/327*
U.S. Cl. 585—658 **22 Claims**

1. A process for the catalytic oxidative dehydrogenation of a paraffin having from 2 to 5 carbon atoms comprising the step of contacting said paraffin under suitable oxidative dehydrogenation conditions with a catalyst composition comprising cobalt; phosphorus; at least one promoter selected from the group consisting of zinc, titanium, zirconium, niobium, indium, lead and bismuth; at least one alkali metal; at least one halogen selected from the group consisting of chlorine, bromine and iodine; and oxygen; wherein the concentration of said at least one alkali metal is in the range of about 1 to about 10 weight percent calculated as the oxide and based on the weight of said catalyst composition.

4,368,347
PROCESS FOR THE SEPARATION OF METAXYLENE FROM MIXTURES OF AROMATIC HYDROCARBONS

Sergio Carra; Elio Santacesaria; Massimo Morbidelli; Franco Codignola, and Lucio DiFiore, all of Milan, Italy, assignors to Sisas S.p.A., Milan, Italy

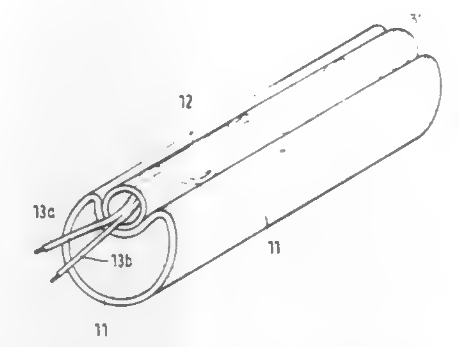
Filed Dec. 8, 1980, Ser. No. 214,286
Claims priority, application Italy, Aug. 7, 1980, 24044 A/80
Int. Cl.^{3} C07C *7/12, 7/14*
U.S. Cl. 585—828 **11 Claims**

1. A process for separating metaxylene from a mixture of aromatic C_8 hydrocarbons consisting of ortho-, meta and paraxylene and ethylbenzene, said process comprising

(1) initially saturating a zeolite Y adsorption bed with vapors of a desorbent, then,
(2) passing said mixture in the vapor phase through a potassium-exchanged adsorption bed of said zeolite Y at a spacial velocity of between 30 and 600 h^{-1} and at a pressure between atmospheric and 2 atmospheres to displace said desorbent, the adsorption bed being maintained at a temperature of between about 145° C. and 250° C., thereby saturating the adsorption bed with the mixture of aromatic C_8 hydrocarbons,
(3) collecting and removing from the saturated adsorption bed, in a desorption phase, (i) a first fraction of metaxylene plus desorbent, and (ii) a second fraction of a mixture of metaxylene, desorbent and an aromatic C_8 hydrocarbon isomer present in the starting mixture and having an affinity for the adsorbent bed second only to the affinity of that of metaxylene, and
(4) recycling the first fraction (i) of metaxylene plus desorbent collected in step (3) to the adsorption bed in step (2).

4,368,348
VACUUM CLEANER HOSE WITH AN ELECTRICAL CONDUCTOR

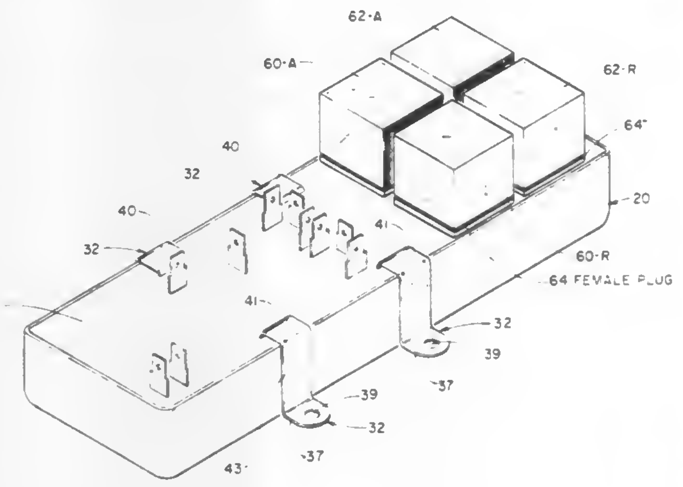
Leo Eichelberger, Rüsselsheim, and Georg Endres, Frankfurt-Nied, both of Fed. Rep. of Germany, assignors to Techno-Chemie Kessler & Co. GmbH, Frankfurt, Fed. Rep. of Germany
Filed Dec. 8, 1980, Ser. No. 213,883
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951630; Nov. 24, 1980, 3044068
Int. Cl.^{3} F16L *11/12;* A47L *9/24*
U.S. Cl. 174—47 **9 Claims**



1. A vacuum cleaner hose, comprising a first flexible hose (**11**) having a given large diameter for forming a first, dust conveying conduit, a portion of the wall of said first flexible hose being radially inwardly indented and forming a single relatively narrow outwardly open channel (**12**) extending along the length of said flexible hose (**11**), a second flexible hose (**31**) located in said narrow channel (**12**) and connected to the outer surface of the wall of said first flexible hose (**11**), said second flexible hose (**31**) having a diameter smaller than said given large diameter of the first flexible hose for providing a second conduit, and electrical conductor means (**13***a*, **13***b*) extending through said second conduit, said electrical conductor means being separated from said first dust conveying conduit.

4,368,349
FLASHER CONTROLLER FOR VEHICLE LIGHTS

Robert P. Donley, 2500 Lane Rd., and Terry Dawson, 1367 Crestview, both of Columbus, Ohio 43221
Filed May 11, 1981, Ser. No. 262,200
The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.
Int. Cl.^{3} H05K *5/00*
U.S. Cl. 174—52 PE **6 Claims**



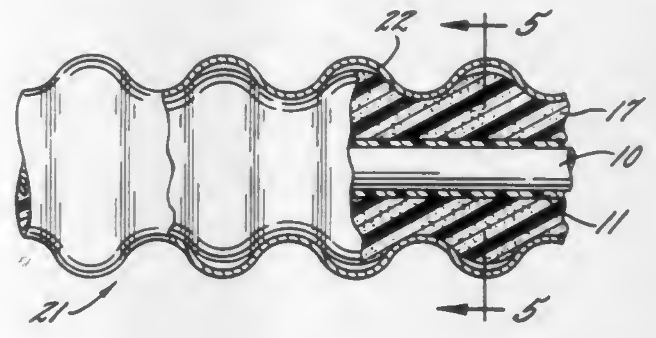
1. A controller for sequentially operating a plurality of vehicle lights comprising, in combination a circuit board housing including spaced sidewalls and a bottom wall forming a cavity; a circuit board positioned in the cavity and including a circuit board ground terminal; an electrically conductive mounting and grounding means including an internal flange forming a second ground terminal engaging said circuit board ground terminal, an intermediate flange extending to the exterior of said cavity, and an external flange extending beyond a side wall and forming a housing supporting mount for connection with a vehicle in grounded relationship therewith; a plurality of upstanding conductors, each of which includes a lower end mounted on the circuit board and an upper end connector for attachment to external circuit elements, said conductors comprising the following:

1. battery conductor,
2. amber light conductors
3. red light conductors
4. start switch conductor,
5. door switch conductor,

and a resinous insulating and sealing material within said cavity in sealed surrounding relationship with said engaging ground terminals and said lower ends of said upstanding conductors.

4,368,350
CORRUGATED COAXIAL CABLE

Robert D. Perelman, Hazel Crest, Ill., assignor to Andrew Corporation, Orland Park, Ill.
Division of Ser. No. 125,859, Feb. 29, 1980, Pat. No. 4,304,713. This application May 28, 1981, Ser. No. 267,901
Int. Cl.^{3} H01B *11/18*
U.S. Cl. 174—102 D **7 Claims**



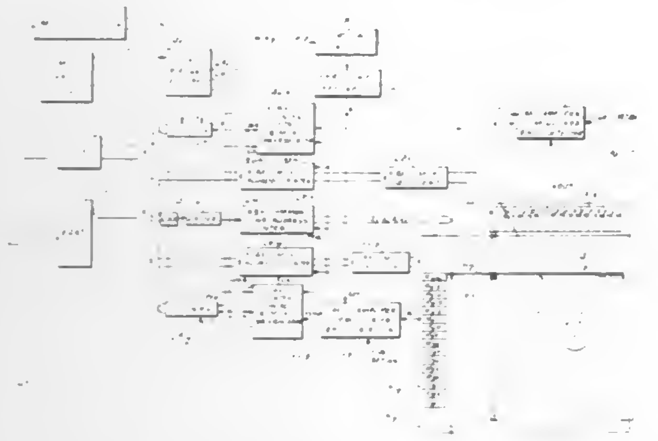
1. A coaxial cable comprising, in combination, an inner conductor, a generally tubular outer conductor coaxially surrounding said inner conductor in spaced relation thereto, and a continuous unitary layer of a foamed fluorinated ethylene-propylene polymer dielectric containing a polytetrafluoroethylene nucleating agent bonded to said inner conductor along the entire length and around the entire circumference of said inner conductor in the space between said inner and outer conductors and engaging at least portions of the inner surface of said outer conductor so as to maintain a fixed spaced relationship between said inner and outer conductors, said foamed dielectric having closed cells with an average cell size on the order of from 10 to 40 mils., a density of less than about 1.0 g/cc., and an insulation loss of less than about 1.8 db/100 ft. at 1000 MHz.

4,368,351
AMPLITUDE MODULATED DIGITIZER

Scott E. Zimmer, Fairfield, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.
Filed Feb. 12, 1981, Ser. No. 233,626
Int. Cl.^{3} G08C *21/00*
U.S. Cl. 178—19 **4 Claims**

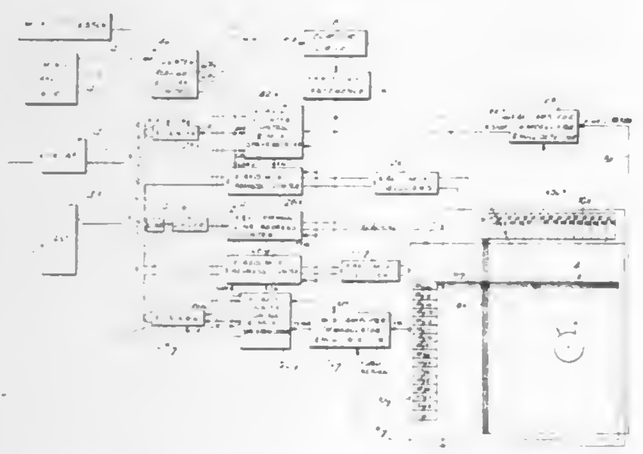
1. In a digitizer having a pointer inductively coupled to a grid of a plurality of elements, means for energizing one of said grid and pointer with an alternating signal, means for sequentially enabling said elements, means for detecting a change in phase of the signal induced in the other of said pointer and grid in response to said alternating signal, and a counter responsive to said phase change detecting means for recording a count proportional to the time between the start of said sequential enabling of said elements and said phase change detection, the improvement wherein said detecting means comprises

an envelope detector having a first input operatively connected to said other of said pointer and grid to receive said induced signal, a second input operatively connected to said energizing means to receive a reference signal having a frequency equal to the frequency of said alternating signal, means multiplying the signals at said two inputs to produce an output having a waveform with an envelope with one polarity when said alternating signal and induced signal are in phase and an opposite polarity when said alternating and induced signals are out of phase, whereby said waveform changes polarities substantially at the time of change of phase of said induced signal, and a zero crossing detector for detecting the time at which the polarity of said waveform changes, to control the count in said counter.



4,368,352
DIGITIZER WITH FLOATING SCAN

Robert Davis, Prospect, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.
Filed Feb. 12, 1981, Ser. No. 233,862
Int. Cl.³ H04N *1/00;* **G08C** *21/00*
U.S. Cl. 178—19 **13 Claims**



1. In a digitizer having a pointer inductively coupled to a grid of parallel conductors, means for energizing one of said grid and pointer with an alternating signal while scanning said grid, means for detecting a change in phase of the signal induced in the other of said pointer and grid during scanning of said grid in response to said alternating signal, and a counter responsive to said energizing means and said phase change detecting means for recording a count proportional to the time between commencement of said scanning and said phase change detection, the improvement which comprises

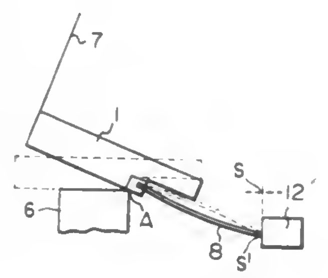
a plurality of grid conductor enabling devices including a first grid conductor enabling device associated with a first grid subsection including an origin conductor and a last grid conductor enabling device associated with a grid subsection displaced from the origin conductor, each enabling device being associated with a subsection of said grid including a plurality of conductors, said grid subsections overlapping to have a plurality of common conductors, each of said grid conductor enabling devices, when actuated, serially enabling each of the grid conductors within its respective subsection for a period of time,

means for causing said grid conductor enabling devices to be sequentially actuated for serially enabling the conductors in their respective grid subsections during an initial measurement cycle until said phase change is detected, and

means responsive to said phase change detecting means during the serial enabling of conductors of any subsection for causing the following initial measurement cycle to commence with the serial enabling of conductors associated with the respective grid subsection and having a predetermined relationship to the conductor being enabled at the time of the detected phase change.

4,368,353
PRINTER HEAD FOR SERIAL DOT PRINTER

Hirokazu Ando; Yasuo Ohmori; Kazumasa Fukushima, all of Tokyo; Mitsuo Iwama, and Tsunematsu Takahashi, both of Yokosuka, all of Japan, assignors to OKI Electric Industry Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan
Filed Mar. 6, 1981, Ser. No. 241,054
Claims priority, application Japan, Mar. 12, 1980, 55-30231
Int. Cl.³ B41J *33/00, 3/12*
U.S. Cl. 178—30 **8 Claims**



1. A printer head for a serial dot matrix printer comprising:

(a) a cylindrical permanent ring magnet which is axially magnetized,

(b) a circular bottom plate covering the bottom of said permanent magnet,

(c) a plurality of electromagnets each having a center core and a coil wound around the core positioned in a circle on said bottom plate so as to be surrounded by said permanent ring magnet,

(d) a plurality of moving bodies equal in number to the number of said electromagnets, each moving body corresponding to one of said electromagnets and having at least an elongated armature overlying the core of said corresponding electromagnet, a leaf spring supporting said armature, and a print needle mounted substantially perpendicular to said elongated armature at an end thereof,

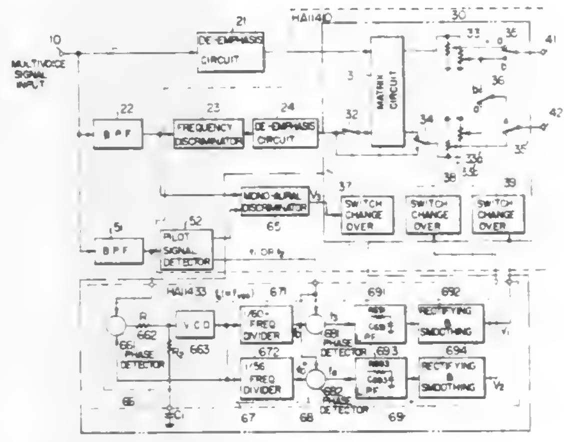
(e) a yoke means for providing a substantially closed magnetic path with said permanent magnet, said bottom plate, each of said electromagnets, and each of said armatures, and supporting each of said plate springs at one end thereof,

(f) each of said moving bodies being rotatably supported on one of the edges of the top of said corresponding core so that the armature rotates around a rotational center at said edge, and the rotating mass of the moving body is distributed on both sides of said center of rotation, with said leaf spring extending in the longitudinal direction of said elongated armature, the extreme end of said leaf spring being fixed to said yoke means at a point S' which is displaced from the extension S of the top of said core, wherein said armature is rotated about said edge on the top of said related core such that said armature is rotated towards said core in the absence of electric power to said coil thereby storing the stress in said spring, and said armature is released upon application of electric power to said coil such that said armature is rotated away from said core by the stress stored in said spring to cause said print needle to strike a paper, and

(g) a cover plate covering the printer head, said cover plate having a guide post at the center of the same for guiding said print needles so that the print needles are aligned on a straight line through the slit at the extreme end of the guide post.

4,368,354
DISCRIMINATOR APPARATUS FOR DETECTING THE PRESENCE OF A SIGNAL BY USING A DIFFERENTIAL BEAT SIGNAL HAVING AN INAUDIBLE FREQUENCY

Makoto Furihata, Tachikawa; Masanori Oguino, and Noboru Sakata, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 17, 1980, Ser. No. 112,815
Claims priority, application Japan, Jan. 19, 1979, 54-3959
Int. Cl.³ H04H *5/00;* **H04N** *7/00*
U.S. Cl. 179—1 GB **5 Claims**



5. A discriminator apparatus comprising:

a first and a second frequency mixer means each supplied with two input signals for producing a zero beat signal;

a first signal supply means for supplying a signal to be detected having a frequency (f_0) to said first and second frequency mixers as one of the input signals thereof;

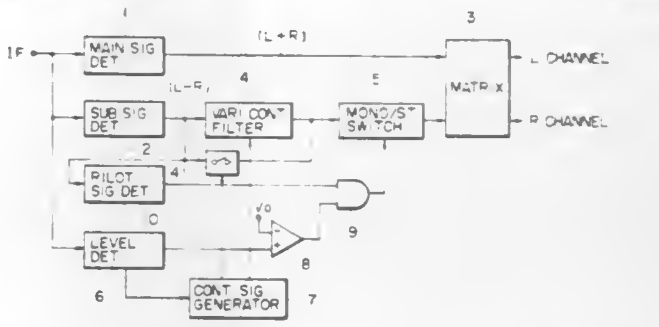
a second signal supply means for supplying a reference signal having the same frequency as said frequency (f_0) but a phase difference of 90° to said first and second frequency mixer means as the other one of the input signals thereof, said second signal supply means comprising a P.L.L. circuit, including a voltage-controlled oscillator receiving a signal of a frequency (f_{01}) and causing oscillation, thereby to produce the oscillator output of a frequency (f_{VCO}), first converter circuit means connected to said P.L.L. circuit for converting the signal of said oscillator frequency (f_{VCO}) into a reference signal having the same frequency as that of the signal to be detected, and second converter circuit means connected to said P.L.L. Circuit for inverting the phase of said oscillator output signal and converting said oscillator output signal into a signal ($-f_{01}'$) of the same frequency as that of the signal to be detected;

a first circuit and a second circuit connected to said first and second mixer means for passing components of not more than about 5 Hz and rectifying said components, thereby to extract said components in the form of d.c. signals; and

an adder connected to said first circuit and said second circuit for adding said d.c. signals therefrom, thereby to detect the presence of the signal (f_0) to be detected by the presence of an output from said adder.

4,368,355
AM STEREOPHONIC SIGNAL RECEIVER WITH ELECTRIC FIELD STRENGTH DETECTION

Toshihito Ichikawa, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jan. 21, 1981, Ser. No. 227,119
Claims priority, application Japan, Jan. 28, 1980, 55-8646
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **7 Claims**



1. An AM stereophonic signal receiver comprising: detecting means operating in response to a received AM stereophonic signal for producing a sum signal representative of the sum of first and second channel signals and a difference signal representative of the difference between said first and second channel signals;

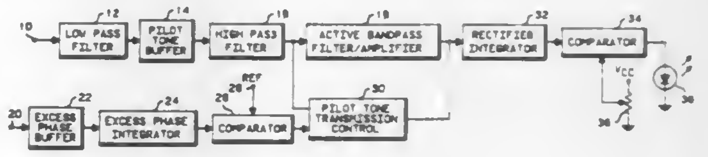
electric field strength detecting means for producing a detection signal when an electric field strength of said received AM stereophonic signal is smaller than a first predetermined value;

a low-pass filter having an input coupled to receive said difference signal, said low-pass filter operating in response to said detection signal to reduce high frequency components in said difference signal; and

matrix circuit means operating in response to said sum signal and an output of said low-pass filter for producing said first and second channel signals.

4,368,356
PILOT TONE DETECTOR UTILIZING PHASE DEVIATION SIGNALS

Lawrence M. Ecklund, Wheaton, and Frank Drong, Jr., Chicago, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.
Filed Mar. 20, 1981, Ser. No. 245,800
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **6 Claims**



1. A pilot tone detector for detecting a predetermined frequency when present in a received AM stereophonic signal and comprising:

a first input means for providing an audio input signal which is proportional to the phase deviation ϕ of the received signal;

a second input means for providing a second input signal which is a function of the magnitude of the phase deviation of the received signal;

filter means coupled to the first input means for providing an output signal essentially limited to the predetermined received frequency;

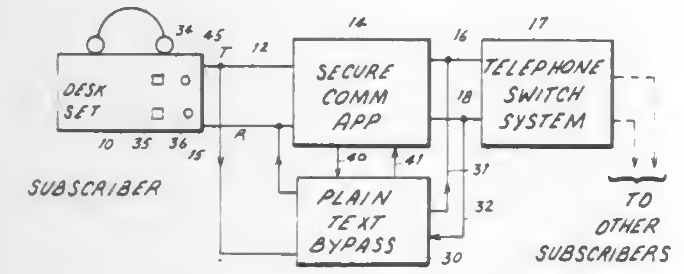
first circuit means coupled to control the output of the filter means in response to a first control signal;

second circuit means coupled to receive the controlled output signal of the filter means for rectifying and inte-

grating said output signal and providing a second controlled output signal in response thereto;
a reference voltage source;
comparator means coupled to receive the second controlled signal and the reference voltage for providing a third controlled signal in response thereto;
an indicator means coupled to the comparator means for being controlled by the third controlled signal; and
third circuit means coupled to the second input means for processing the second input signal for providing the first control signal to the first circuit means.

4,368,357
BYPASS APPARATUS FOR USE IN SECURE COMMUNICATION SYSTEMS

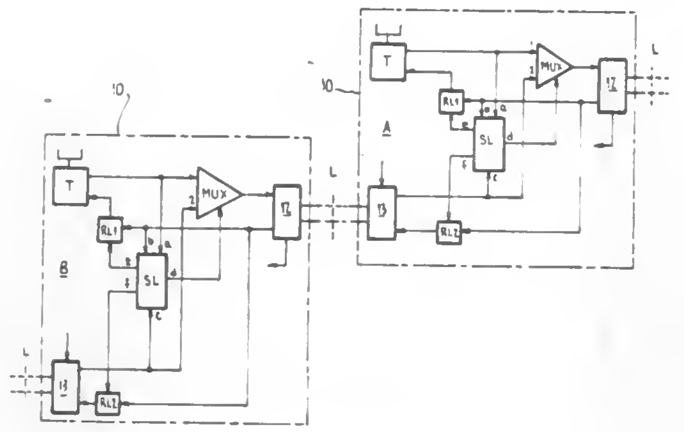
Richard J. Gurak, Summit, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 14, 1980, Ser. No. 206,782
Int. Cl.³ H04M *1/70*
U.S. Cl. 179—1.5 R **10 Claims**



1. In a secure telecommunications system of the type adapted to receive clear text signals and to convert said clear text signals to a scrambled signal at an output indicative of a secure mode for applying said signal to a communications channel to thus provide secure communications between two system subscribers, the combination therewith of apparatus for providing a bypass to enable said clear text to be directly transmitted to said communications channel during a non-secure mode while assuring that said bypass circuit is inoperative during a secure transmission, comprising:
selectively activated gating means adapted to receive said clear text signals at an input and having an output;
means for selectively activating said gating means during a non-secure mode, and for deactivating said gating means during a secure mode,
means for applying a status signal to said gating means to provide at said output a composite signal of said clear text and said status signal, said composite signal having high frequency components and low frequency components;
first means coupled to said output for passing high frequency components indicative of said clear text and for applying said signals to said communications channel during said non-secure mode;
second means coupled to said output for responding to low frequency components to provide a low frequency signal, indicative of said status signal;
monitoring means responsive to said low frequency signal to provide an output when said gating means is activated to provide an indication of such activation, whereby a subscriber is notified during a secure mode when clear text is undesirably coupled to said transmission channel.

4,368,358
LOOP SHARING IN DIGITAL SYSTEMS

Ludwik Herschtal, North Balwyn, Australia, assignor to L. M. Ericsson Pty. Ltd., Broadmeadows, Australia
Filed Jul. 15, 1980, Ser. No. 169,209
Claims priority, application Australia, Jul. 25, 1979, PD9709
Int. Cl.³ H04Q *5/02*
U.S. Cl. 179—17 B **9 Claims**

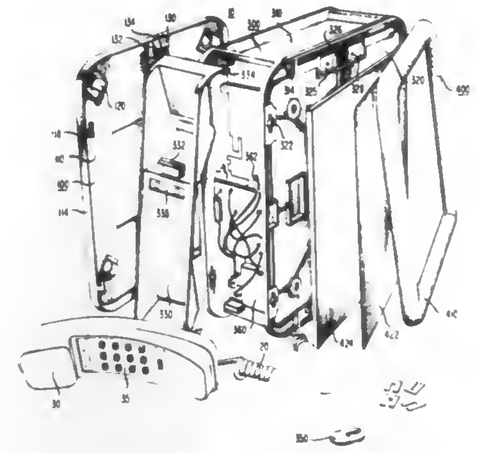


1. A telephone instrument for transmission and reception of digital data, said instrument being adapted for connection into a digital loop sharing telephone system to transmit digital data to and receive digital data from an exchange in the upstream direction through other telephone instruments connected to said loop in said upstream direction, said telephone instrument comprising:
code detector means for detecting a change to an "off-hook" or data sending state in said instrument and for detecting a change to an "off-hook" or data sending state in a similar telephone instrument downstream of said telephone instrument; and
logic circuitry connected to said code detector means, said logic circuitry being responsive to the change detected by said code detector means to latch said telephone instrument to enable data originating from said telephone instrument or data from a telephone instrument downstream thereof to be transmitted only in said upstream direction of said loop depending, respectively, upon whether said telephone instrument or said downstream telephone instrument first changes to an "off-hook" state, only one of said telephone instruments being able to communicate with said upstream exchange after an "off-hook" state is detected.

4,368,359
WALL TELEPHONE STAND

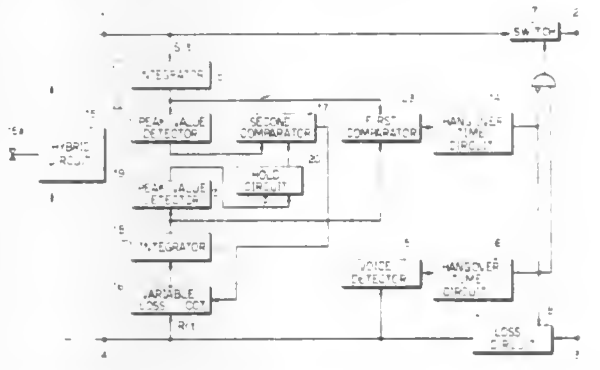
Donald M. Genaro, Haworth, N.J.; Richard G. Klier, Greenfield, Ind.; John N. McGarvey, Drexel Hill, Pa., and Warren R. Tolman, Greenfield, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation of Ser. No. 30,724, Apr. 17, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,669
Int. Cl.³ H04M *1/04*
U.S. Cl. 179—146 R **18 Claims**

1. A wall telephone stand comprising a rear surface adapted to be mounted on a vertical support, a front surface including a message display portion, a cradle adjacent to the message display portion for accommodating a telephone handset, and a storage compartment situated between the front surface and the rear surface, the storage compartment being free of any electrical components and the storage compartment including a tray that is displaceable out from the storage compartment to assist in removing an article from the storage compartment.



4,368,360
ADAPTIVE CONTROL TYPE ECHO SUPPRESSOR

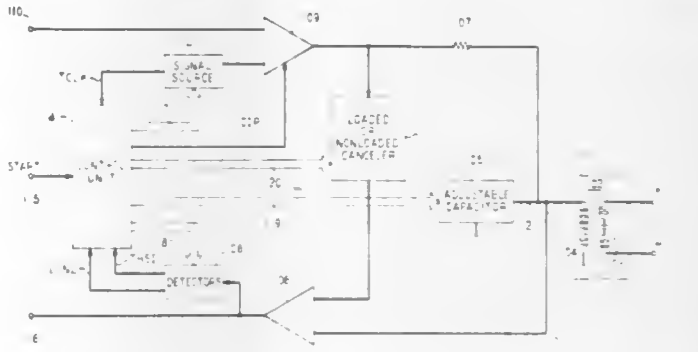
Akira Sato; Masamichi Niiya, both of Tokyo; Masayuki Takeuchi, Hino; Masaru Fukai, Ichikawa, and Sotokichi Shintani, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan
Continuation-in-part of Ser. No. 958,948, Nov. 8, 1978, abandoned. This application May 1, 1980, Ser. No. 145,492
Claims priority, application Japan, Nov. 8, 1977, 52-133107
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **2 Claims**



1. In an adaptive control echo suppressor of the type which includes a first comparator for comparing voice signal levels of sending and receiving paths with each other and which generates a signal to control cutting off the sending path to suppress an echo when the level of the voice signal of the receiving path is higher than the level of the voice signal of the sending path, the receiving path including a fixed loss when the first comparator does not generate the signal, and means responsive to the signal of the first comparator for cutting off the sending path and removing the fixed loss from the receiving path, the improvement comprising: a pair of integrator circuits connected for respectively integrating the voice signals of the sending and receiving paths to produce respective integrated voice signals defining the voice signal levels compared by said first comparator and for applying the integrated voice signals to said first comparator; a second comparator; a variable loss circuit controlled by the output of said second comparator independently of the output of the first comparator; means including said variable loss circuit defining a control signal path loop for applying the voice signal of the receiving path through said variable loss circuit and one of said integrator circuits to said second comparator for comparing the peak of the integrated voice signal of the receiving path with the peak of the integrated voice signal of the sending path to control said variable loss circuit to reduce the output of said second comparator to zero; wherein said pair of integrator circuits have predetermined time constants effective to prevent influence of sending and receiving path noise on the circuit operation; and means for applying an output of said one of said integrator circuits that receives the output of said variable loss circuit as the integrated voice signal of the receiving path applied to said first comparator.

4,368,361
AUTOMATICALLY ADJUSTABLE BIDIRECTIONAL-TO-UNIDIRECTIONAL TRANSMISSION NETWORK

Li-Jin W. Chung, Burlington, N.C.; Ernest P. Moore, Berkeley Heights, N.J.; Glendon R. Porter, Denville, N.J., and Joseph F. Rizzo, Lodi, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jul. 28, 1980, Ser. No. 173,011
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **11 Claims**

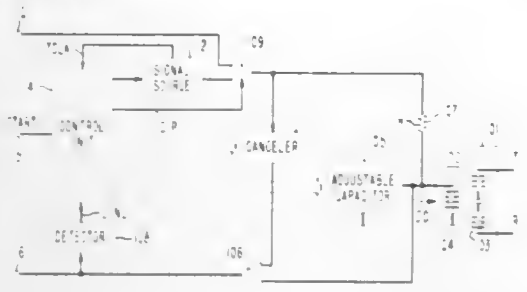


1. A transmission network adapted to couple a unidirectional receive path and a unidirectional transmit path to a bidirectional path including a 2-wire cable comprising:
a canceler including means for generating a correction signal which is substantially a replica of an error signal developed in the network and included as a component of a transmit signal supplied to the transmit path, said correction signal generating means including a plurality of controllably adjustable impedance elements;
controllable signal generating means for supplying predetermined test signals to the receive path;
signal detection means for detecting signal amplitudes on the transmit path;
means for algebraically combining said correction signal with the transmit signal; and
control means for generating control signals to controllably adjust said plurality of impedance elements in said correction signal generating means in a prescribed adjustment sequence, each of said impedance elements being adjusted in said sequence while supplying a corresponding one of said test signals to the receive path to obtain an amplitude null in the transmission path as detected by said detection means, said adjustment sequence including multiple iterative adjustment of predetermined ones of said impedance elements for automatically converging said correction signal generation means to have an optimum transfer function which substantially matches the impedance developed in the network when the bidirectional path is connected thereto so that said correction signal is substantially a replica of the error signal.

4,368,362
AUTOMATIC TELEPHONE LOADED/NONLOADED FACILITY TYPE IDENTIFICATION CIRCUIT

Li-Jin W. Chung, Burlington, N.C.; Ernest P. Moore, Berkeley Heights, N.J.; Glendon R. Porter, Denville, N.J., and Joseph F. Rizzo, Lodi, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 28, 1980, Ser. No. 173,020
Int. Cl.^{3} H04B *3/20*
U.S. Cl. 179—170.2 5 Claims



1. In a transmission network of a type adapted to connect a receive unidirectional transmission path and a transmit unidirectional transmission path to a bidirectional transmission path, apparatus for determining whether the bidirectional transmission path includes either a loaded type 2-wire cable or a nonloaded type 2-wire cable, characterized by,

means for controllably generating and supplying a test signal having a predetermined frequency and amplitude to the receive unidirectional transmission path,

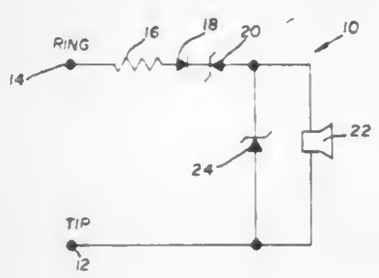
means for detecting the amplitude value of signals on the transmit unidirectional path, and

means for comparing said detected amplitude value with a predetermined threshold value, said comparing means generating a first output signal when said amplitude value is greater than said threshold identifying the bidirectional path as including 2-wire loaded type cable and a second output signal when said amplitude value is less than said threshold identifying the bidirectional path as including 2-wire nonloaded type cable.

4,368,363
AUDIBLE LINE TEST TERMINATION DEVICE

Omprakash G. Ahuja, East Meadow, N.Y., assignor to TII Industries Inc., Copiague, N.Y.

Filed May 11, 1981, Ser. No. 262,450
Int. Cl.^{3} H04M *1/26;* G01R *19/14;* H04B *3/46*
U.S. Cl. 179—175.3 R 7 Claims

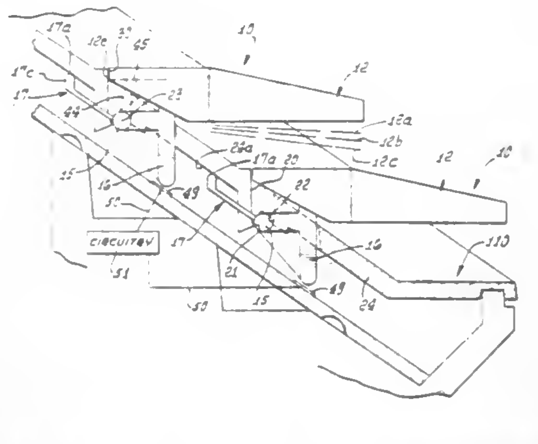


1. A line test termination device for providing a characteristic signature to the telephone central office and an audible signal at the subscriber termination when a continuity test is made on a subscriber line having a pair of electrically conductive paths, comprising; a series current path including a resistance means, a diode means, voltage breakover means and an audio indicator means connected in series, said diode means being poled opposite said voltage breakover means, said current path being connected across said electrically conducting paths.

4,368,364
KEY MECHANISM

H. C. Harbers, Jr., San Marino, Calif., assignor to Load Cells Inc., South El Monte, Calif.

Filed Dec. 3, 1980, Ser. No. 212,574
Int. Cl.^{3} H01H *3/00;* G10C *3/12*
U.S. Cl. 200—6 R 11 Claims



1. In a key device to be carried by housing structure,

(a) a hinge adapted to be supported by said housing structure,

(b) a key tab projecting relatively rearwardly relative to the hinge, and connected with the hinge,

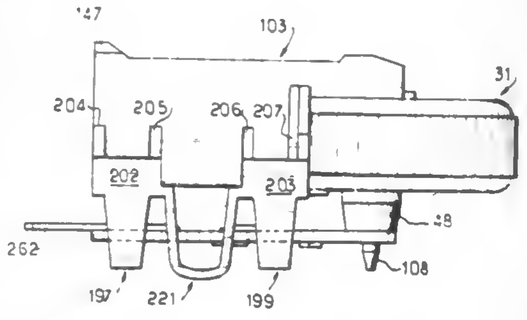
(c) a pusher operatively connected with the hinge to extend downwardly in rearwardly spaced relation to the hinge, for movement toward and engagement with a circuit element,

(d) a spring operatively connected with and projecting forwardly of the hinge below the key tab and confined by the housing structure to be deflected when the key tab is downwardly depressed about the hinge axis, to resist such depression.

4,368,365
SWITCHING DEVICE, NOTABLY FOR THE CONTROL OF AN ELECTRICAL MOTOR IN AN AUTOMOTIVE VEHICLE

Maurice A. Jacquet, Maurepas, France, assignor to Valeo, Paris, France

Filed Oct. 17, 1980, Ser. No. 197,818
Claims priority, application France, Oct. 18, 1979, 79 25949
Int. Cl.^{3} H01H *21/78*
U.S. Cl. 200—11 TW 16 Claims



1. An electrical switching device comprising:

an actuating rotary knob formed as a hollow disc and having parallelly disposed first and second flanges and a knurled side edge interposed therebetween, said first flange having a circular collar projecting outwardly from a surface thereof and bordering an opening formed centrally in said first flange and a plurality of notches formed about the periphery thereof and provided by the intersections of convex circular arcs;

an electrically conductive slider contact attached to said rotary knob;

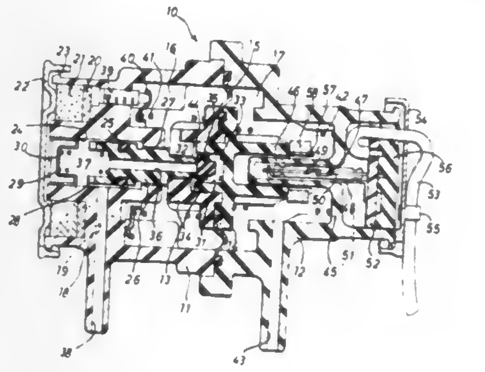
a cage having a bottom portion and walls perpendicularly joined to the bottom portion; said cage bottom portion having a column extending perpendicularly from an inner surface thereof and on which said rotary knob is slidably and rotatably mounted, a circular rib protruding from the inner surface thereof which cooperates with said circular collar of said first flange, and a bridge extending from the inner surface of said cage bottom portion, said bridge including a protrusion and resilient end members joined to said protrusion at a first end of each and joined to said cage bottom portion at a second end of each thereby resiliently supporting said bridge above the inner surface of said cage bottom portion, said protrusion cooperating with said notches formed in the periphery of said first flange; and

a fixed plate to which is attached an electrical circuit which cooperates and is in contact with said slider contact, said fixed circuit plate being mounted on said column so that said rotary knob is interposed between said fixed circuit plate and said cage bottom portion, said fixed circuit plate being positioned in relation to said rotary knob to provide a determined contact pressure between said slider contact and said electrical circuit, said fixed circuit plate being immobilized in position by a snap-in engagement with said cage walls.

4,368,366
PNEUMATICALLY OPERATED DEVICE WITH VALVE AND SWITCH MECHANISMS

Kazuhiko Kitamura; Takao Nonoyama, and Atsuo Okumura, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Toyota and Toyota Jidosha Kogyo Kabushiki Kaisha, Kariya, both of, Japan

Filed Jan. 7, 1981, Ser. No. 223,155
Claims priority, application Japan, Jan. 23, 1980, 55-6579
Int. Cl.^{3} H01H *35/34*
U.S. Cl. 200—83 Q 11 Claims



1. A pneumatically operated device responsive to a signal pressure applied thereto from a source of pneumatic pressure for controlling the atmospheric air applied to a control device and for controlling an electric signal applied to an electric control circuit, said pneumatically operated device comprising:

a housing provided with a first inlet port for connection to said pneumatic pressure source, a second inlet port in open communication with the atmospheric air, and an outlet port for connection to said control device;

a diaphragm assembly assembled within said housing in a fluid tight manner to subdivide the interior of said housing into first and second chambers respectively in open communication with said first and second inlet ports, said diaphragm assembly being integrally provided with a movable member which is moved by the pressure difference between said first and second chambers;

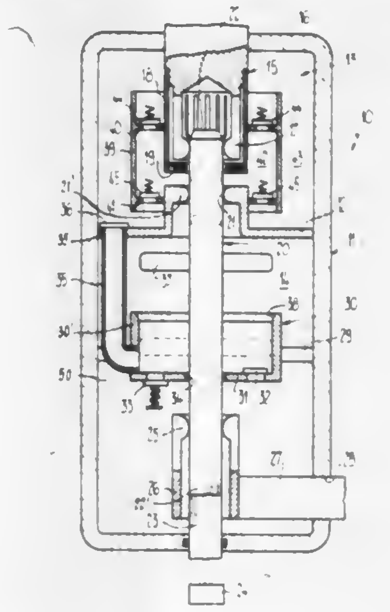
valve means including a valve seat member adjustably threaded into said housing and a valve seat formed on an inner end portion of said valve seat member, said valve seat member having an air passage formed therein to permit the flow of atmospheric air from said second inlet port to said outlet port therethrough, and a valve member cooperating with said movable member to open and close said valve seat in response to the movement of said diaphragm assembly; and

switch means arranged within said housing to be connected to said control circuit and including a pair of contacts one of which is arranged to be operated in response to the movement of said diaphragm assembly.

4,368,367
GAS-BLAST SWITCH

Adrian W. Roth, Aarau, and Hans-Rudolf Wüthrich, Oberentfelden, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Sep. 2, 1980, Ser. No. 183,428
Claims priority, application European Pat. Off., Mar. 10, 1980, 80101206
Int. Cl.^{3} H01H *33/88*
U.S. Cl. 200—148 A 9 Claims



1. A gas-blast switch comprising:

means defining a gas-blast housing containing a switching chamber and an expansion chamber;

a stationary contact element;

a movable contact element;

means for placing said stationary contact element and said movable contact element into and out of engagement with one another within said switching chamber;

a blast nozzle cooperating with said movable contact element and closed by said movable contact element in a cut-on position of said gas-blast switch;

said switching chamber flow communicating by means of said blast nozzle with said expansion chamber;

a pump cylinder stationarily arranged within said expansion chamber;

said pump cylinder including a pressure side;

means including a check valve open in the direction of said switching chamber for connecting said switching chamber with said pressure side of said pump cylinder;

a movable pump piston operatively associated with said pump cylinder;

said movable pump piston pressurizing with a time-delay the pump cylinder during a cut-off stroke of the gas-blast switch;

said pump piston being rigidly connected with said movable contact element; and

the length of said pump cylinder being less than a switching stroke of said movable contact element, so that the pump piston is located externally of the pump cylinder at the region of a cut-off position of said gas-blast switch.

4,368,368

ELECTRICAL SWITCH WITH A VERTICAL PUSH-PIECE

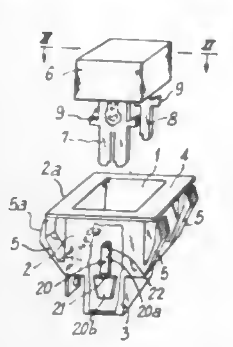
Victor Russenberger, 40 rue de la Source, 94130 Nogent-sur-Marne, France

Filed May 8, 1981, Ser. No. 261,980

Claims priority, application France, May 9, 1980, 80 10364

Int. Cl.³ H01H *13/56*

U.S. Cl. 200—153 J **3 Claims**



1. An electrical switch with vertical push-piece, comprising a main hollow body (1) in which can slide from top to bottom position and from bottom to top position a push-button (6) having a lower portion which supports two lugs (7, 8) maintaining blades (10) carrying mobile terminals (11) cooperating with studs (12) rigidly connected to squarepieces (13) fixed in a bottom portion of the main body (1), means for biasing said push-button in the top position, the lug (7) further carrying laterally a hollow heart-shaped cam (23) in which can circulate a dog (22) fixed at an upper portion of a rock-piece (20) pivotally mounted on a pin (21) rigidly connected to inner wall of the main body (1), thereby allowing opening and closing of at least one electrical circuit by the switch, each of the blades (10) carrying mobile terminals (11) being maintained in an inclined position on hooks (9) rigidly connected to the lugs (7, 8) of the push-button (6) by a spring (15) centered on a finger (16) rigidly connected below the push-button (6), the axis (21) of the rock-piece (20) being placed at center of gravity of said rock-piece, whereby the rock-piece (20) is functional regardless of its attitude.

4,368,369

ELECTRICAL SWITCH

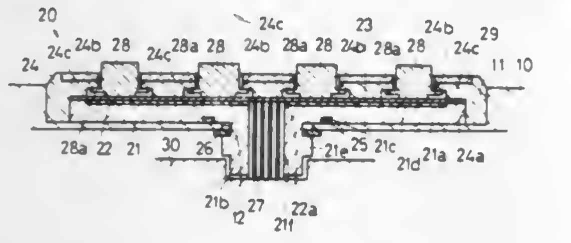
Masataka Matsumoto, and Kouichi Nakajima, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,794

Claims priority, application Japan, Mar. 14, 1980, 55-32404; Mar. 25, 1980, 55-37847; Apr. 8, 1980, 55-45236; Apr. 15, 1980, 55-49793

Int. Cl.³ H01H *13/70, 1/02*

U.S. Cl. 200—264 **5 Claims**



1. An electrical switch comprising a base made of insulating material, a pressure conductive rubber sheet which is normally non-conductive and rendered conductive by compression thereof, said pressure conductive rubber sheet being disposed on said base, an upper sheet of insulating material adjacent said pressure conductive rubber sheet, printed conductive patterns on the lower surface of said upper sheet and in contact with said pressure conductive rubber sheet for forming a plurality of pairs of switch contacts, said conductive patterns comprising terminal portions connected to said switch contacts, said terminal portions being arranged adjacent each other in a central portion of said upper sheet, conductive connecting means provided in said base for connecting said terminal portions to an electric device positioned on an opposide side of said pressure conductive rubber sheet from said upper sheet, said conductive connecting means comprising a plurality of conductive connecting rubbers separated from each other by insulation means, said conductive rubbers being in abutting contact with respective terminal portions and with the electric device, means for applying pressure to said upper sheet for compressing said pressure conductive rubber sheet at portions corresponding to said plurality of pairs of switch contacts, and a cover secured to said base for receiving said upper sheet and said pressure conductive rubber sheet.

5. An electrical switch comprising a base made of insulating material, a pressure conductive rubber sheet which is normally non-conductive and rendered conductive by compression thereof, said pressure conductive rubber sheet being disposed on said base, an upper sheet of insulating material adjacent said pressure conductive rubber sheet, printed conductive patterns on the lower surface of said upper sheet and in contact with said pressure conductive rubber sheet for forming a plurality of switch contacts, printed conductive patterns and terminal portions on said base so as to provide a plurality of pairs of switch contacts on opposite sides of said pressure conductive rubber sheet, said conductive patterns comprising terminal portions connected to said switch contacts, said terminal portions being arranged adjacent each other in a central portion of said upper sheet, conductive connecting means provided in said base for connecting said terminal portions to an electric device positioned on an opposite side of said pressure conductive rubber sheet from said upper sheet, said conductive connecting means comprising a plurality of conductive connecting rubbers separated from each other by insulation means, said conductive rubbers being in abutting contact with respective terminal portions and with the electric device, means for applying pressure to said upper sheet for compressing said pressure conductive rubber sheet at portions corresponding to said plurality of pairs of switch contacts, and a cover secured to said base for receiving said upper sheet and said pressure conductive rubber sheet.

4,368,370

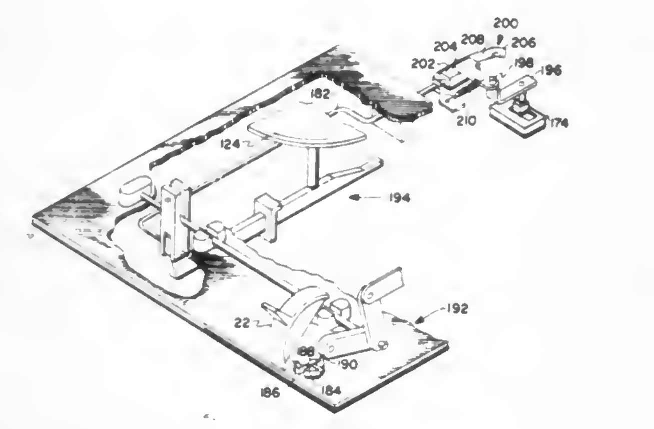
SWITCH ACTUATING APPARATUS FOR VIDEO DISC PLAYER

James D. Fletcher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,708

Int. Cl.³ H01H *3/20*

U.S. Cl. 200—329 **11 Claims**



1. Apparatus comprising:
- (A) an actuated member adapted for motion between a first position and a second position;
- (B) an actuating member subject to disposition at a retracted location, an intermediate location and an advanced location along a path; and
- (C) a leaf spring having one end fixedly secured to said actuating member; said leaf spring further having a detent portion which is spaced from said actuated member when said actuating member is occupying said retracted position thereof; said detent portion releasably capturing said actuated member as said actuating member is advanced to said intermediate location along said path; said capture of said actuated member by said detent portion of said leaf spring causing said actuated member to occupy said first position and said second position in response to disposition of said actuating member at said intermediate location and said advanced location respectively; said leaf spring allowing said actuated member to free from said detent portion as said actuating member is retracted away from said intermediate location; said leaf spring permitting travel of said actuating member between said retracted location and said intermediate location without affecting the position of said actuated member.

4,368,371

PROCESS FOR THE SUBMERGED-ARC WELDING OF LIGHT METALS SUCH AS ALUMINUM AND ALUMINUM ALLOYS

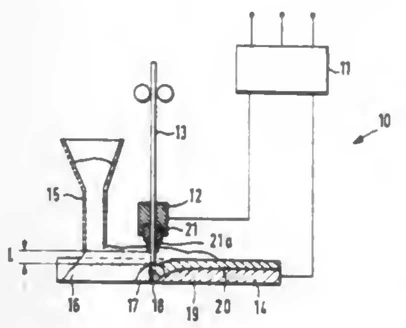
Ulrich Dilthey, Eching; Friedrich Eichhorn, Aachen, both of Fed. Rep. of Germany; Peter Hirsch, Farmington Hills, Mich.; Peter Holbach, Aachen, and Kurt Lettner, Unterschleissheim, both of Fed. Rep. of Germany, assignors to Messer Griesheim, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,546

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936364

Int. Cl.³ B23K *35/365, 9/18*

U.S. Cl. 219—73 **3 Claims**



1. In a process for the submerged arc welding of light metals, such as aluminum and aluminum alloys, especially of aluminum magnesium alloys, the improvement being a sodium-free flux consisting of 20 to 70 percent potassium chloride, 20 to 70 percent of one of calcium chloride and magnesium chloride, 1 to 20 percent of calcium fluoride, 1 to 15 percent of a substance selected from the group consisting of potassium carbonate, calcium carbonate and potassium oxide, and 1 to 20 percent of the low-density filler perlite.

4,368,372

APPARATUS FOR RESISTANCE SEAM WELDING

Gerd Habenicht, Garching, and Fritz Fischer, Neufahrn, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

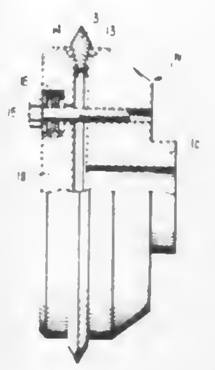
Filed May 13, 1980, Ser. No. 149,538

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919365; Jan. 18, 1980, 3001832

Int. Cl.³ B23K *11/06*

U.S. Cl. 219—84 **21 Claims**

1. An electrode for electrical resistance seam welding apparatus, which electrode is arranged to be in welding engagement with a workpiece to be welded, said electrode comprising: a pressure member maintained out of contact with the workpiece, connected to a welding current supply, and made of a material which is a good electrical and thermal conductor; a contact member in the form of an endless element surrounding said pressure member and mounted to roll against the workpiece and to be pressed against the workpiece by said pressure member to be in welding engagement with the workpiece, said contact member being constituted by a rigid ring of a heat-resistant material selected to not form an alloy with the workpiece material, and being mounted to surround said pressure member; and means mounting said contact member to said pressure member for permitting relative radial movement therebetween caused by differences in thermal expansion between said contact and pressure members, wherein said means mounting said contact member include clamping faces presented by said pressure member and between which said ring is clamped in said pressure member in a manner to have radial mobility sufficient to allow for thermal expansions while assuring efficient electric current and heat transfer between said ring and said pressure member.



4,368,373

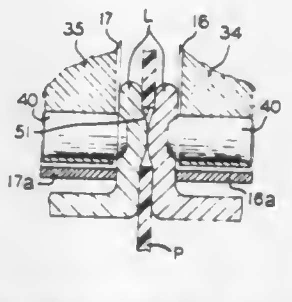
APPARATUS FOR FABRICATING THROUGH-THE-PARTITION BATTERY CONNECTIONS

Carl D. Schultz, Tiffin, and Robert D. Simonton, Fremont, both of Ohio, assignors to Mac Engineering & Equip. Co., Inc., Benton Harbor, Mich.

Filed Aug. 18, 1980, Ser. No. 178,808

Int. Cl.³ B23K *11/33*

U.S. Cl. 219—86.22 **6 Claims**



1. A welding head assemblage for interconnecting the upstanding lugs of plate straps connected to the positive and negative grids of adjacent battery cell units through an aperture provided in a partition separating the cell units from each other, the welding head assemblage comprising: an electrode unit having a pair of opposed high conductivity electrode jaws adapted to fit about the partition and into the adjacent cell units and overlie the upstanding lugs, each jaw having therein an aperture aligned with the partition aperture; means for moving said electrode jaws relatively toward each other for compressing the upstanding lugs against the partition; an extruding jaw movably mounted relative to each said electrode jaw and having a forging plunger adapted to pass through said electrode jaw aperture; means for electrically insulating said extruding jaws from said electrode jaws; means for moving said extruding jaws relatively towards each other and relative to said electrode jaws for extruding a portion of each upstanding lug into the partition aperture and into contact with each other; and means for passing an electric current through said electrode jaws, and without passing current through said extruding jaws, for fusing together the contacting portions of the upstanding lugs and filling the partition aperture so as to form a sealed connection between the cell units of the battery.

4,368,374
VACUUM CHAMBER FOR ELECTRON BEAM BUTT WELDING OF PIPES

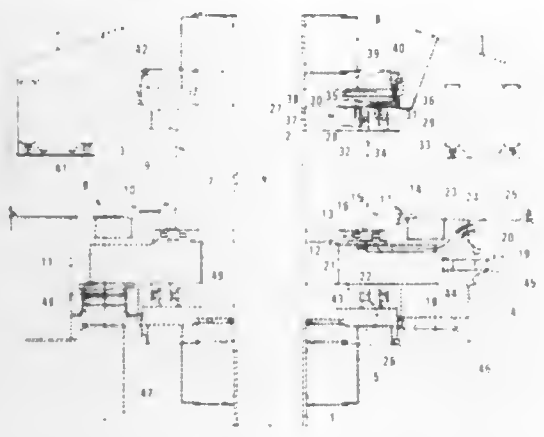
Bruno de Sivry, Paris; Bernard Sudreau, Puteaux; Claude Carsac, St Leu la Foret; Jean-Pierre Hamon, Cergy, and Michel Fuzeau, Parthenay, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Apr. 21, 1981, Ser. No. 256,210

Claims priority, application France, Apr. 25, 1980, 80 09344

Int. Cl.^{3} B23K *15/00*

U.S. Cl. 219—121 EN **11 Claims**



1. A vacuum welding chamber for use in the butt welding by an electron beam of two elongate pipes which extend coaxially in their longitudinal directions at a center of the chamber, comprising: an envelope (**4**) defining a generally cylindrical enclosure (**3**) for housing at least one electron gun and associated equipment (**8**) for supporting, positioning and displacing the electron gun relative to a butt joint to be welded between two pipes, retractable, spaced sealing means (**5,6**) for sealing respectively against each of two elongate pipes (**1,2**) and individually provided at opposite longitudinal ends of said envelope, means (**9,10,11**) dividing said enclosure into two parts including a central cylindrical sub-enclosure (**41**) for receiving the elongate pipes when said sealing means are retracted, and a peripheral cylindrical sub-enclosure (**42**) radially surrounding said central sub-enclosure for containing the electron gun and associated equipment, and a plurality of retractable sealing gasket means (**12,26,27**) individually disposed both longitudinally between said envelope and said dividing means, and within said dividing means for selectively communicating said central and peripheral sub-enclosures with each other or isolating them from each other, whereby said peripheral sub-enclosure may be maintained constantly under vacuum, while said central sub-enclosure may be isolated from said peripheral sub-enclosure by said retractable sealing gasket means between welding operations, and placed in communication with said peripheral sub-enclosure during welding operations.

4,368,375
WELDING TORCH OSCILLATING MECHANICAL APPARATUS

George J. Merrick, Franklin; George E. Cook, Brentwood, and Donald D. Modglin, Nashville, all of Tenn., assignors to The Merrick Corporation, Nashville, Tenn.

Continuation of Ser. No. 120,049, Feb. 11, 1980, abandoned, which is a division of Ser. No. 857,359, Dec. 5, 1977, Pat. No. 4,188,525, which is a division of Ser. No. 54,975, Feb. 3, 1976, Pat. No. 4,145,593. This application Apr. 2, 1982, Ser. No. 365,043

Int. Cl.^{3} B23K *9/12*

U.S. Cl. 219—125.12 **6 Claims**

1. Apparatus for positioning a welding torch in two axes with respect to a weld path, comprising:

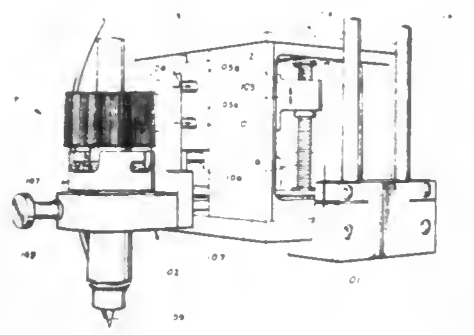
mounting means supported in predetermined relation to the weld path;

first movable means carried by said mounting means and supported for movement along a first axis;

first motive means comprising a stationary portion supported in fixed relation to said first movable means and a second portion selectably operative to position said first movable means along said first axis;

second movable means carried by said first movable means and supported for movement relative to said first movable means along a second axis;

second motive means comprising a stationary portion supported in fixed relation to said first movable means and



said second means and a second portion operative to selectably position said second movable means along said second axis independently of the position of said first movable means along said first axis; and

welding torch support means carried by said second movable means for movement along either of said axes relative to the weld path, whereby the mass of the stationary portion of each motive means is excluded from the mass being positioned by the motive means.

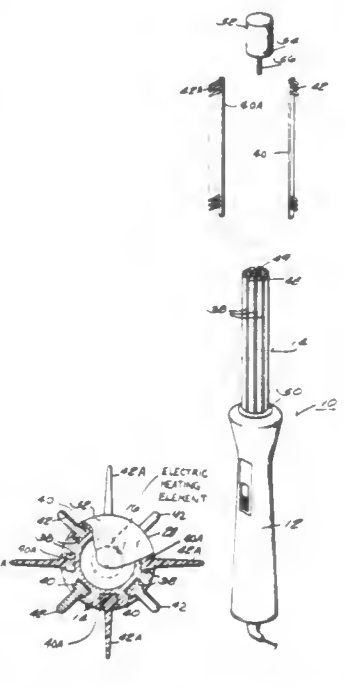
4,368,376
CURLING IRON WITH REMOVABLE GROOMING BARS

Matthew L. Andis, Racine, Wis., assignor to Andis Company, Racine, Wis.

Continuation-in-part of Ser. No. 59,676, Jul. 23, 1979, and Ser. No. 120,511, Feb. 11, 1980. This application Jan. 5, 1981, Ser. No. 222,590

Int. Cl.^{3} A46B *15/00;* **A45D** *24/10, 1/18;* **H05B** *3/02*

U.S. Cl. 219—222 **1 Claim**



1. A curling iron comprising a handle, a housing extending from said handle and including an interiorly located heating element, said housing having a longitudinal axis and an outer peripheral cylindrical surface radially spaced from said longitudinal axis, said outer surface including means defining an even number of longitudinally extending grooves, and support bars located in said grooves and each including therealong a plurality of longitudinally spaced teeth extending radially outwardly from said longitudinal axis with the outer ends of said teeth in said rows being spaced from the outer ends of said teeth in adjacent rows at a distance greater than the spacing between said rows adjacent said outer peripheral surface of said housing, said bars being arranged in alternating first and second series, said bars and said teeth thereon of said first series being fabricated of a material having a first heat transmissibility and said teeth thereof having a first radial extent, and said teeth on said bars of said second series being fabricated of material having a second heat transmissibility lower than said first heat transmissibility and having a second radial extent greater than said first radial extent, and an end member removably attached to said housing and including means extending across said grooves for preventing removal of said bars from said grooves.

4,368,377
METHOD AND APPARATUS FOR ACHIEVING A DRAUGHT-FREE ENVIRONMENT

Stig-Eric Smeds, Aldersbo, S-730 73 Ransta, Sweden

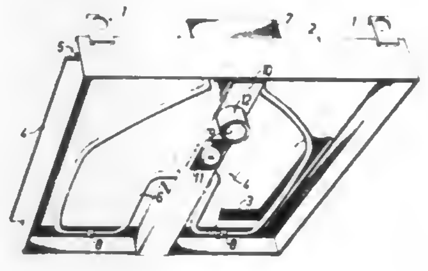
PCT No. PCT/SE80/00026, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 30, 1980, PCT Pub. No. WO80/01605, PCT Pub. Date Aug. 7, 1980

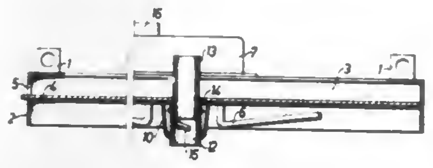
PCT Filed Jan. 30, 1980, Ser. No. 204,372

Claims priority, application Sweden, Jan. 30, 1979, 7900814

Int. Cl.^{3} F24D *13/02;* **H05B** *1/02;* **A01K** *1/02*

U.S. Cl. 219—345 **7 Claims**





1. A heating ceiling having a substantially flat extension over a defined zone of a larger room for obtaining a draught-free environment defined to said zone and having a hole formed in the heating ceiling, said heating ceiling comprising:

a frame-shaped element;

a heat source mounted within and adjacent to said frame-shaped element and having energy supply means connected thereto;

downwardly facing reflector means movably mounted within said frame-shaped element;

a control circuit mounted on said frame-shaped element for controlling said energy supply means wherein said control circuit means further comprises a temperature sensor and wherein the reflector means further comprises a flat-shaped reflector means arranged to reflect radiated heat from one or more heat producing bodies to be positioned within said zone and also reflect supplementary additional heat from said heat source wherein said heat source is arranged in the immediate vicinity of a downward side of the reflector means;

air passage means mounted in said heating ceiling for allowing air rising from the defined zone under the heating ceiling to pass therethrough wherein the air passage means further comprises a first pipe connected to said frame-shaped element; a second pipe connected to said first pipe and means for removably interconnecting said second pipe with said first pipe; and

a temperature sensor mounted in said first pipe to sense the temperature of the air rising from the defined zone and passing through the air passage means.

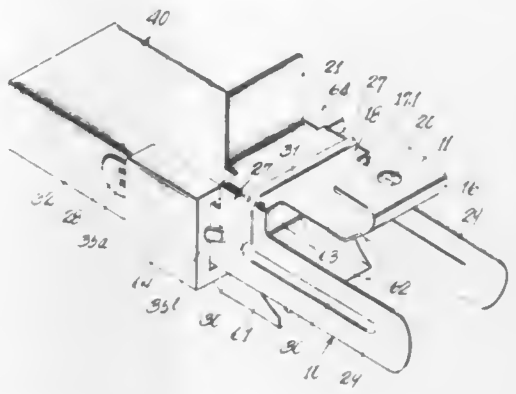
4,368,378
ELECTRIC HEATING ELEMENTS

David F. Jacobs, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 6, 1978, Ser. No. 957,891

Int. Cl.^{3} H05B *3/08*

U.S. Cl. 219—451 **6 Claims**



1. In an assembly for a plug-in electrical heating element for a stove, comprising a terminal block of rigid dielectric material having openings configured to receive terminals on the heating element and containing conductor elements resiliently engageable with said terminals, and a sheet-metal mounting bracket connectable to a part of the panel of said stove and adapted to support said terminal block, the improvement comprising:

means providing a socket in said terminal block,

finger means on said mounting bracket having plug-in connection with said socket,

said finger means being adapted to be seated within said socket and when so seated, having spaced abutments engageable with marginal surfaces defining said socket to maintain the assembly of said terminal block with said mounting bracket,

said finger means being in the form of a tapered bladelike member and said socket being in the form of a rectangular, narrow opening to receive said bladelike member in flatwise relation, the taper of said member and the spacing of said abutments providing for vertical swinging movement of said terminal block relative to said mounting bracket.

4,368,379
TOASTER HAVING TOASTING CONTROL FOR CONVENIENCE FOODS

Charles E. Swanson, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

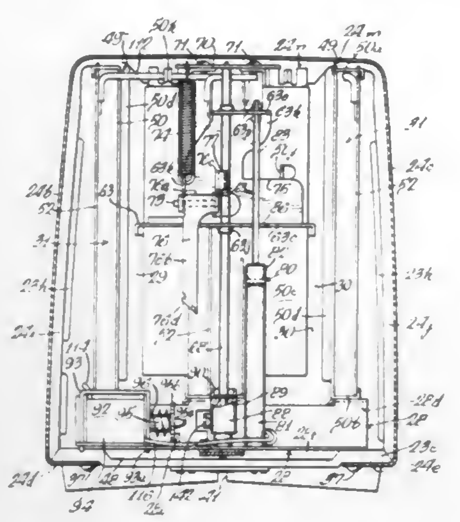
Filed Jun. 7, 1971, Ser. No. 150,544

Int. Cl.^{3} H05B *1/02*

U.S. Cl. 219—494 **11 Claims**

1. An electric toaster for receiving slices of food therein comprising control means for reducing the power utilized by said toaster from a first power level to a second lower power level, heating means constructed for providing substantially uniform heating of said slices of food for both of said power levels and adjustment means for adjusting the energy utilized by said heating means over an adjustment range to deliver a greater or lesser amount of energy to said food slices at either of said power levels; said control means being interconnected with said adjustment means to restrict said adjustment range when said power level is reduced to said second lower power level to a portion of said range for delivering a lesser amount of energy to said food slices as compared to the entire adjustment range available when said toaster is operated at said first power level, the interconnection between said control means and said adjustment means causing said adjustment means to be moved from a position on said energy range for delivering a

greater amount of energy to a portion of said energy range for delivering a lesser amount of energy when said control means is moved from said first power level to said second lower power level.



4,368,380

FLEXIBLE CERAMIC PTC ELECTRIC HEATER ASSEMBLY

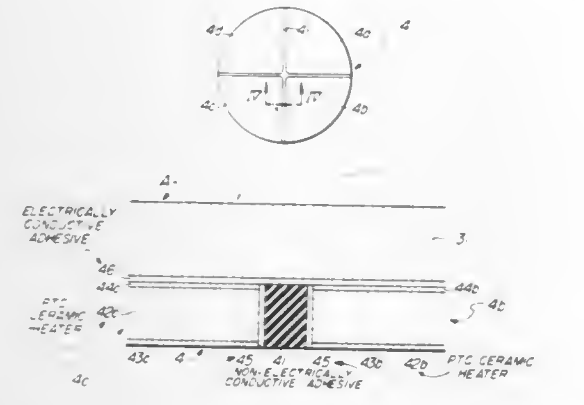
Toshihiko Igashira, Toyokawa; Ken Nomura, Okazaki, and Seiko Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 16, 1980, Ser. No. 187,941

Claims priority, application Japan, Oct. 26, 1979, 54-139005

Int. Cl.^{3} F02M *31/00;* **H05B** *3/02;* **H01C** *7/02*

U.S. Cl. 219—539 **9 Claims**


ELECTRICALLY CONDUCTIVE ADHESIVE
PTC CERAMIC HEATER
NON-ELECTRICALLY CONDUCTIVE ADHESIVE
PTC CERAMIC HEATER

1. A flexible ceramic heater comprising a thin, planar disc-shaped electrically resistive ceramic member having at least upper and lower sides each of which is provided with an electrode layer through which electric current is supplied to said ceramic member to generate heat therein wherein said ceramic member is comprised of a plurality of individual, coplanar segments each of which is provided with two interior edges and one exterior edge, wherein each of said two interior edges of each segment lie adjacent an interior edge of another adjacent segment, at least predetermined portions of each of said two interior edges of each segment being connected together through means defining a flexible, electrically non-conductive medium to form said segments into a thin disc-shaped ceramic sheet which can be flexed without causing flexing of any of the individual segments.

4,368,381

NUMERAL ADDING TOY

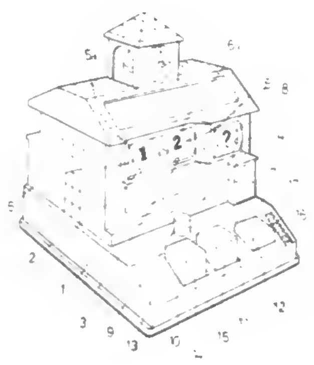
Shozo Ishiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Gakushu Kenkyusha (Gakken Co., Ltd.), Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,627

Claims priority, application Japan, Jul. 15, 1980, 55-99525[U]; Nov. 13, 1980, 55-162680[U]

Int. Cl.^{3} G06C *15/00;* **G09B** *1/00*

U.S. Cl. 235—1 C **15 Claims**



1. A numeral adding toy comprising:

a casing;

at least two first rotary wheels supported in said casing and having their outer circumferences displaying numerals to be added;

a second wheel rotatably supported in said casing and having its outer circumference displaying a numeral indicative of an added answer;

a plurality of engagement elements each mounted on one side of each of said first and second rotary wheels concentrically with said rotary wheels;

means having push clicks made engageable with said engagement elements of the respective rotary wheels for rotationally indexing said second rotary wheel and one of said two first rotary wheels in a simultaneous manner;

springs for biasing said respective rotary wheels in their returning directions;

stop clicks retaining said engagement elements of said respective rotary wheels for regulating the rotational returns of said respective rotary wheels; and

means for releasing the retaining states between said stop clicks and said engagement elements.

4,368,382

APPARATUS FOR COUNTING ARTICLES USING TORQUE

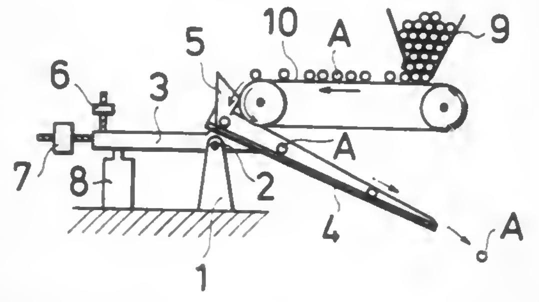
Yuzuru Nishiguchi, Higashi, Japan, assignor to Shinko Denshi Company Limited, Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,192

Claims priority, application Japan, Apr. 10, 1980, 55-47106

Int. Cl.^{3} G06G *7/00*

U.S. Cl. 235—92 PK **9 Claims**



1. An apparatus for counting the number of articles comprising

a measuring chute rotatably journalled to a horizontal shaft at its one end and being arranged in an inclined fashion so that the articles can slide therealong downwards due to gravity;

a device for electrically measuring torque generated around said horizontal shaft when the articles pass through the measuring chute to produce a torque output; and

a measuring circuit for receiving said torque output to count the number of articles by detecting a variation of the torque output due to the discharge of the respective articles from a lower end of the measuring chute remote from said horizontal shaft.

4,368,383

SYSTEM FOR FOCUS DETECTION UTILIZING A PHOTOELECTRIC SENSOR ARRAY

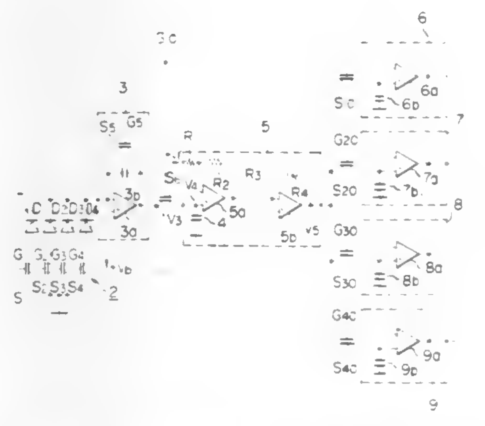
Hiroshi Shirasu, Kawasaki; Akira Ogasawara, and Ken Utagawa, both of Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 97,868, Nov. 27, 1979. This application Aug. 20, 1981, Ser. No. 294,724

Claims priority, application Japan, Nov. 30, 1978, 53-147227; Dec. 25, 1978, 53-158693

Int. Cl.^{3} G01J *1/16;* **G03B** *3/00*

U.S. Cl. 250—201 **13 Claims**



1. In a light measuring device comprising photoelectric conversion means including a plurality of photoelectric conversion elements arranged in an optical path for converting light received thereon to respective electric signals of magnitudes corresponding to the light intensity, the photoelectric conversion means time-sequentially putting out the electric signals at a predetermined time interval; means for detecting the distribution of light on the photoelectric conversion elements, the improvement comprising:

amplifying means electrically connected between the photoelectric conversion means and the detecting means, the amplifying means including means for generating a comparison signal of a predetermined magnitude related to the output level of one of said electric signals, processing means for generating output signals related to the difference between the comparison signal and each of the other of said electric signals, and an amplifier for amplifying the output signals.

4,368,384

GAIN SETTING DEVICE FOR RADIATION IMAGE READ OUT SYSTEM

Hisatoyo Kato, and Masamitsu Ishida, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,798

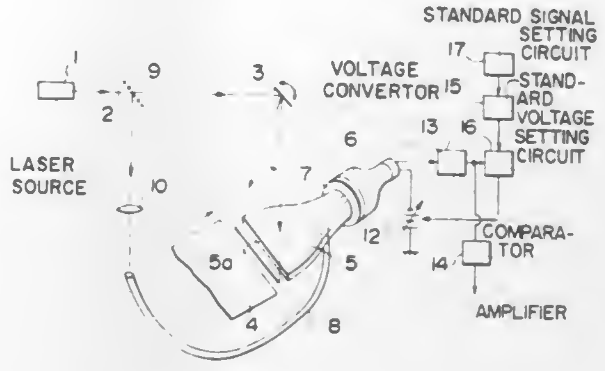
Claims priority, application Japan, Jul. 11, 1979, 54-87804; Jun. 4, 1980, 55-75317

Int. Cl.^{3} H05B *33/00;* **G01J** *1/32;* **G01T** *1/00*

U.S. Cl. 250—484.1 **6 Claims**

1. A read out gain setting device for a radiation image information read out device in which a stimulable phosphor plate is exposed to an imagewise radiation to store the energy of the radiation and record a latent image of a radiation image, the stimulable phosphor plate is exposed to stimulating rays to emit light having a wavelength different from the wavelength of the stimulating rays according to the stored energy radiation, and the emitted light is detected by an image information read out system including a photodetector,

said read out gain setting device comprising a stimulating ray receiving portion provided on a part of the light receiving face of said photodetector, means for taking out at least a part of said stimulating rays and transmitting the taken out part of the stimulating rays to said stimulating ray receiving portion of said photodetector, means for comparing the output level of said photodetector with the level of a predetermined standard voltage, and means for controlling the read out gain of the image information read out system so as to make the output level of said photodetector equal to the level of said standard voltage.



4,368,385

OPTOELECTRONIC SWITCHES

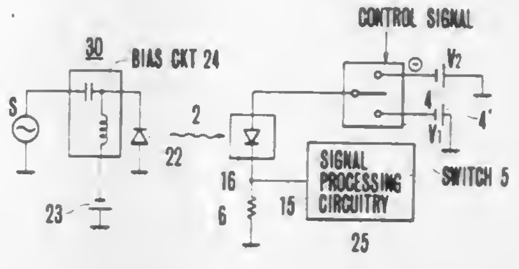
Hiroshi Kanbe, Tanashi, and Elmer H. Hara, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,614

Claims priority, application Japan, Mar. 31, 1980, 55-41474; Jun. 18, 1980, 55-81316

Int. Cl.^{3} G02B *27/00*

U.S. Cl. 250—551 **20 Claims**



1. An optoelectronic switch comprising:

light source means for producing a light signal modulated by an electric signal to be switched;

optical-to-electrical converting means disposed to receive the light signal emitted by said light source means, and

bias source means for applying reverse bias to said optical-to-electrical converting means to render ON and OFF the same;

said optical-to-electrical converting means being constituted by a photodiode formed by a first semiconductor having therein a p-n junction and a second semiconductor having a smaller energy band gap than said first semiconductor, and combined therewith to form a heterojunction.

4,368,386

LIQUID-CRYSTAL IMAGE CONVERTER DEVICE

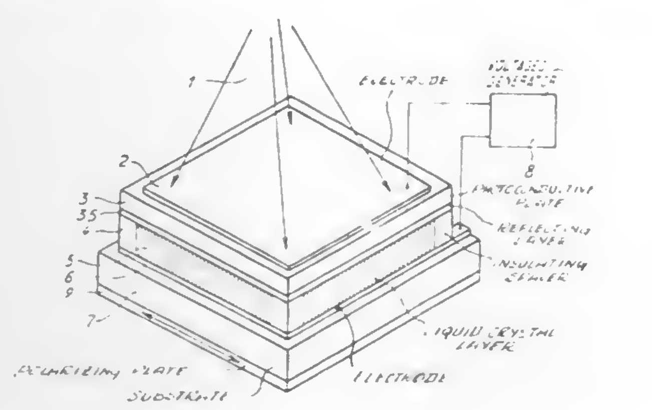
Jean-Pierre Huignard; Serge Le Berre; Christian Mayeux, and Francois Micheron, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 943,818, Sep. 19, 1978, abandoned. This application Feb. 3, 1981, Ser. No. 231,117

Claims priority, application France, Sep. 23, 1977, 77 28738

Int. Cl.^{3} G02F *1/135*

U.S. Cl. 250—213 R **25 Claims**



1. An image converter device for receiving an image projected by a write-in radiation and reading said image by a read-out radiation of visible light, comprising:

a liquid crystal layer wherein said image is at least temporarily inscribed for being read by said read-out radiation, said layer at least including a mesomorphic material having a nematic phase and being in an initial uniform orientation in the absence of said write-in radiation;

a first and second self supporting slab enclosing and completely supporting said layer; said first slab being 0.5 to 1 mm in thickness consisting of material which is photoconductive under the action of said write-in beam and being arranged for receiving said projected image; said second slab being transparent to said read-out radiation;

a first and a second electrode respectively arranged on the external face of said photoconductive first slab and the internal face of said transparent second slab and respectively transparent to said write-in and said read-out radiation;

voltage generating means for at least applying a control voltage between said first and second electrodes.

4,368,387

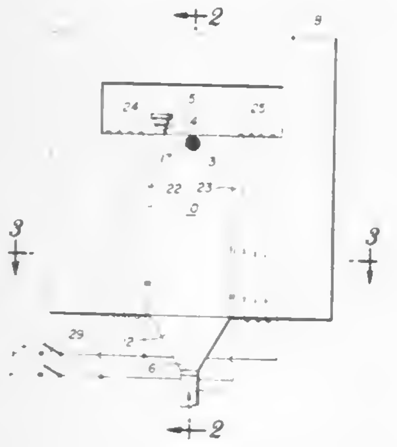
METHOD OF SEPARATING ISOTOPES

William A. Colburn, Denver, Colo., assignor to Magnesep Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 35,001, May 1, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,154

Int. Cl.^{3} H01S *1/00, 9/00;* H05H *3/00*

U.S. Cl. 250—251 **10 Claims**



1. The method for separating the isotopes of an element having isotopes of higher and lower magnetic moments for enrichment purposes which comprises:

providing a fluid stream or solution stream containing particles each particle containing only one atom of the element the isotopes of which are to be separated,

passing the stream through a mass of finely divided discrete bodies having high magnetic susceptibility,

applying a high intensity magnetic field to the mass while the stream is passing therethrough for retarding the passage of the isotope of higher magnetic moment,

directing the fluid after passage through the magnetized mass into a first vessel,

discontinuing the application of the magnetic field to the mass while maintaining the flow of the stream, and

directing the flow of the stream from the demagnetized mass into a second vessel for a period sufficient to flush the isotope of higher magnetic moment therefrom and to collect such isotope in the second vessel.

4,368,388

DETECTION OF POLAR VAPORS

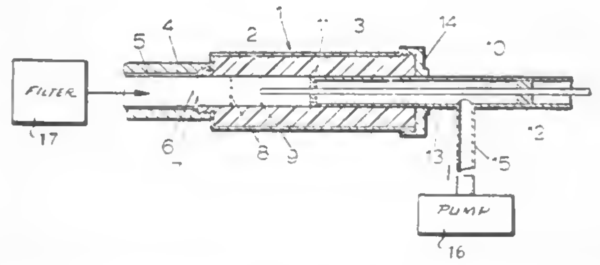
David A. Blyth, Salisbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 752,828, Dec. 14, 1976, abandoned. This application Nov. 15, 1979, Ser. No. 97,930

Claims priority, application United Kingdom, Dec. 15, 1975, 51362/75

Int. Cl.^{3} H01J *49/00, 49/22, 49/42*

U.S. Cl. 250—283 **19 Claims**



1. A method of monitoring polar vapours in a gas comprising the steps of:

passing a continuous stream of gas through a passage;

ionizing said stream in a region of said passage so that any polar vapours present will react with the gas ions formed to generate ion clusters; and

collecting ions carried downstream by said gas stream at a location so that no substantial number of the gas ions remain in said stream while a substantial proportion of the ion clusters remain in said stream.

4. Apparatus for monitoring for polar vapours in a gas comprising:

a body member defining a passage through which a continuous stream of the gas may pass;

means for inducing a continuous flow of gas through said passage;

an ionizing source associated with a region of said passage such that ionization of the gas stream takes place substantially only within said region and also any polar vapour molecules present therein will react with the gas ions formed to generate ion clusters; and

a collector electrode for collecting ions carried by the gas stream, said electrode being positioned in said passage downstream of said region and separated therefrom by a distance which is sufficient to ensure that no substantial number of the gas ions formed in said region remain in the gas stream at the collector electrode whilst ensuring that a substantial proportion of the ion clusters formed in said region remain in the gas stream at the collector electrode.

4,368,389

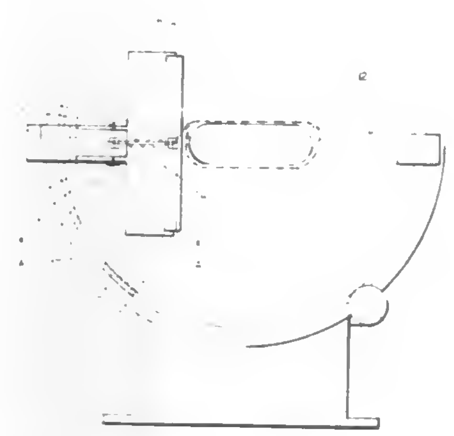
PHOTON EMISSION TOMOGRAPHIC APPARATUS AND METHOD

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Jun. 26, 1980, Ser. No. 163,057

Int. Cl.^{3} G01T *1/20*

U.S. Cl. 250—363 S **11 Claims**



1. A rotational tomographic imaging system for detecting and displaying the distribution in depth of radiation emitting materials within a body with collimated radiation detector means and body support means, comprising: detector support means; detector rotation means; and body contour following means, said body contour following means causing the collimator face to be adjacent to the surface of said body and said body support means as said detector means is rotated about said body to minimize detector/body distance for improved image resolution.

4,368,390

RADIATION IMAGE STORAGE PANEL

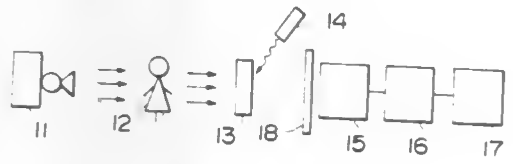
Kenji Takahashi, and Junji Miyahara, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,794

Claims priority, application Japan, Jul. 11, 1979, 54-87801

Int. Cl.^{3} G01F *1/20*

U.S. Cl. 250—363 R **31 Claims**



1. A radiation image storage panel having a fluorescent layer comprising a binder and a stimulable phosphor dispersed therein upon stimulation by rays having a wavelength ranging from 500 to 800 nm, wherein said phosphor is characterized in that said panel has a light-reflecting metallic layer on one side thereof with respect to the fluorescent layer opposite to the side exposed to the stimulating rays for said stimulable phosphor and that said phosphor is represented by the following general formula I or II;

$$\mathrm{LnOX{:}aA} \qquad \text{(I)}$$

wherein Ln represents an element selected from the group of La, Y, Gd and Lu, X represents an element selected from the group of Cl and Br, A represents an element selected from the group of Ce and Tb, and a is a number satisfying the condition of $0<a<0.1$;

$$(\mathrm{Ba}_{1-x}\mathrm{M}^{II}{}_{x})\mathrm{FX}_1{:}y\mathrm{A}_1 \qquad \text{(II)}$$

wherein M^{II} represents at least one divalent metal selected from the group consisting of Mg, Ca, Sr, Zn and Cd, X_1 represents at least one halogen selected from the group consisting of Cl, Br and I, A_1 represents at least one element selected from the group consisting of Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nd, Yb and Er, and x and y are numbers satisfying the conditions of $0 \leqq x \leqq 0.6$ and $0 \leqq y \leqq 0.2$.

4,368,391

HYDRAULIC PROCESS AND APPARATUS FOR THE RECOVERY OF ELECTRICAL ENERGY FOR USE IN MOTOR TEST STATIONS

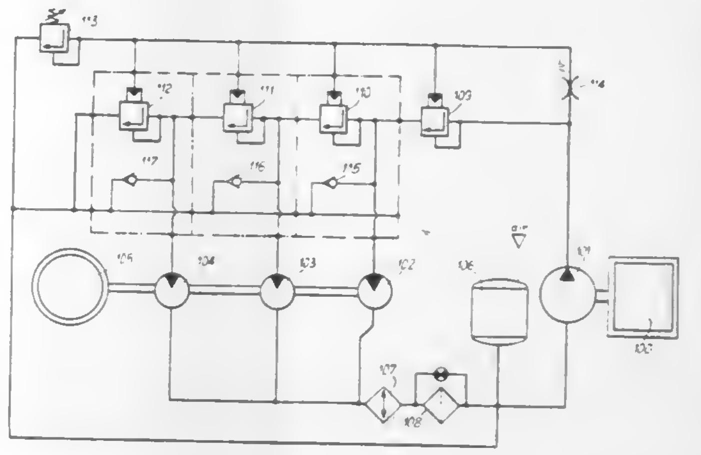
Olivier Hellouin de Menibus, Estampes, France, assignor to A M S S.A., Fresnes, France

Filed Dec. 19, 1980, Ser. No. 218,494

Claims priority, application France, Dec. 28, 1979, 79 32037

Int. Cl.^{3} H02P *9/00*

U.S. Cl. 290—4 D **29 Claims**



1. A hydraulic process for recovering electrical energy from the energy furnished by a motor being tested, said process comprising:

(a) coupling a shaft on a motor being tested, which is adapted to turn at variable speeds, to a hydraulic pump;

(b) feeding a plurality of hydraulic motors by said hydraulic pump; and

(c) coupling said hydraulic motors to an asynchronous electric generator in series and connecting said generator to an electric power supply, said hydraulic motors adapted to operate as pumps by hydraulically feeding themselves and consuming a low electric power and adapted to serve as motors by then furnishing energy to the asynchronous generator.

4,368,392

WATER TURBINE

Herman M. Drees, Cotuit, Mass., assignor to Pinson Energy Corporation, Marstons Mills, Mass.

Filed Jun. 3, 1981, Ser. No. 269,701

Int. Cl.^{3} F03B *3/14;* F03D *7/06*

U.S. Cl. 290—54 **18 Claims**

1. A water turbine for generation of electrical power from a flowing body of water, comprising

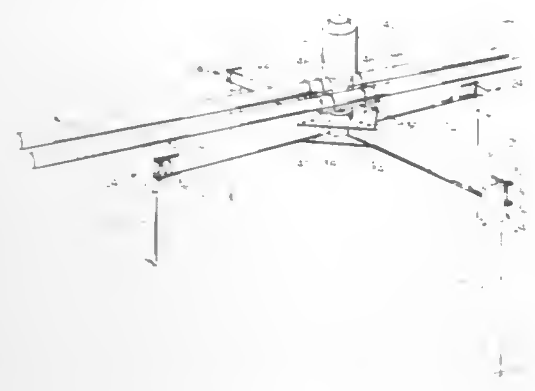
a plurality of vertically-extending blades, each with a hydrofoil horizontal cross section,

a blade support structure supporting the upper ends only of said blades,

said blade support structure including a central hub and radially extending elements extending from said hub for supporting said blades located radially of said hub,

an electrical-power generator connected to said central hub,

pitch control means for cyclically pitching said blades to maintain said blades at useful angles of attack for generation of electrical power, said pitch control means including means for independently controlling the pitch of individual blades in response to the instantaneous local flow conditions in the vicinity of the individual blade, and



means for supporting said generator and blade support structure above the surface of said flowing body of water so that essentially only said blades penetrate said body of water.

4,368,393
ROTATIONAL DIRECTION SENSOR

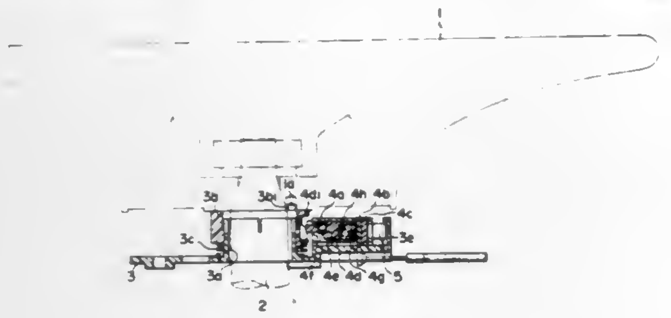
Minoru Izawa, Okazaki; Nobuhiro Takeda, Nagoya, and Tasuku Nakano, Mizunami, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Tokai Rika Co. Ltd., both of Aichi, Japan

Filed Oct. 24, 1980, Ser. No. 200,214

Claims priority, application Japan, Oct. 31, 1979, 54-150010[U]

Int. Cl.^{3} H01H *19/14;* B60Q *1/00;* H01H *3/16*

U.S. Cl. 307—115 **12 Claims**



1. A rotational sensor for a body which has a preferred neutral rotational position, and which is rotatable from said neutral position in either a clockwise rotational direction or an anticlockwise rotational direction about an axis,

said rotational direction sensor comprising:

(a) an actuating assembly, which is rotated according to said rotation of said rotational body;

(b) a first switching means for switching electrical current, which is actuated by rotation of said actuating assembly in a clockwise rotational direction by more than a first predetermined amount from a first neutral rotational position and which is also actuated by rotation of said actuating assembly in a clockwise rotational direction from a second rotational position to said first neutral rotational position, said second rotational position being defined by rotation of said actuating assembly by more than said first predetermined amount in an anticlockwise rotational direction from said neutral position, said first switching means, when actuated, at least momentarily conducting a first electric current, said first switching means not being actuated by rotation of said actuating assembly in the anticlockwise rotational direction, irrespective of the amount of said anticlockwise rotation;

(c) a second switching means for switching electrical current, which is actuated by rotation of said actuating assembly in an anticlockwise rotational direction by more than a second predetermined amount from said first neutral rotational position and which is also actuated by rotation of said actuating assembly in an anticlockwise rotational direction from a third rotational position to said first rotational position, said third rotational position being defined by rotation of said actuating assembly by more than said second predetermined amount in a clockwise rotational direction from said neutral position, said second switching means, when actuated, at least momentarily conducting a second electric current, said second switching means not being actuated by rotation of said actuating assembly in the clockwise rotational direction, irrespective of the amount of said clockwise rotation; and

(d) an electrical circuit which detects the switched electrical currents from said first and said second switching means, said electrical circuit generating a first electrical signal when it detects that said first and said second switching means are actuated successively in the order of actuation of said first and then said second switching means, and generating a second electric signal when it detects that said first and said second switching means are actuated successively in the order of actuation of said second and then said first switching means.

4,368,394
COMPUTER-CONTROLLED SWITCHING DEVICE

Hubert L. Naimer, Schumanng.33-37, Vienna A-1181, Austria

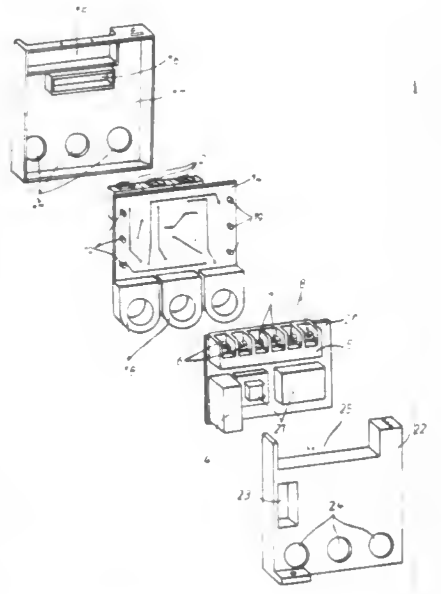
PCT No. PCT/AT80/00030, § 371 Date May 14, 1981, § 102(e) Date May 14, 1981, PCT Pub. No. WO81/01092, PCT Pub. Date Apr. 16, 1981

PCT Filed Sep. 26, 1980, Ser. No. 269,060

Claims priority, application Austria, Oct. 2, 1979, 6438/79

Int. Cl.^{3} H01H *19/14*

U.S. Cl. 307—115 **9 Claims**



1. Computer-controlled switching device for controlling power switching elements for controlling devices wherein the computer is connected through an analog-digital converter to at least one detector monitoring the current consumption of the device being monitored, and emits switching signals when predetermined values are exceeded and/or are not reached, characterized in that the detector responsive to the magnetic field of the conductor leading to the device to be monitored, the analog-digital converter, the computer comprised of a microprocessor, adjusting elements connected thereto for the input of comparison values and additional characteristic data, a switching element controlled by the output of the computer, and associated terminals are combined into a unit module, this unit module as well as a housing therefor defines passages for the conductors leading to the device to be monitored, and the detector is arranged in their proximity.

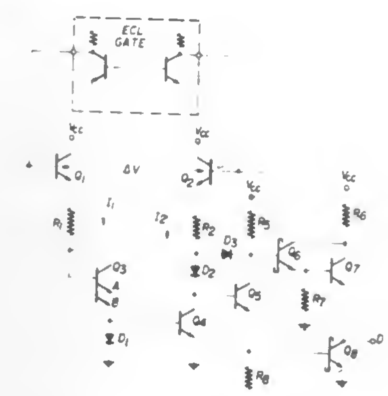
4,368,395
DIFFERENTIAL LINEAR TO DIGITAL TRANSLATOR

David L. Taylor, Carrolton, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 18, 1980, Ser. No. 170,291

Int. Cl.^{3} H03K *19/086, 19/088*

U.S. Cl. 307—455 **7 Claims**



1. A linear-to-digital translator of the differential type for differentially sensing a linear logic signal and translating said sensed signal to one compatible with a TTL gate, comprising:

first and second input means for differentially sensing said linear logic signal;

first and second circuit means each including a resistor connected to said first and second input means;

a current mirror connected to said first and second circuit means, said current mirror including a transistor having a collector, base and emitter and producing a TTL gate compatible signal at its collector; and

clamping means, including a multi-emmitter device having a first emitter connected to said collector of said transistor and a second emitter connected to said base of said transistor, for clamping said transitor out of saturation when its output is the low level of said TTL gate compatible signal.

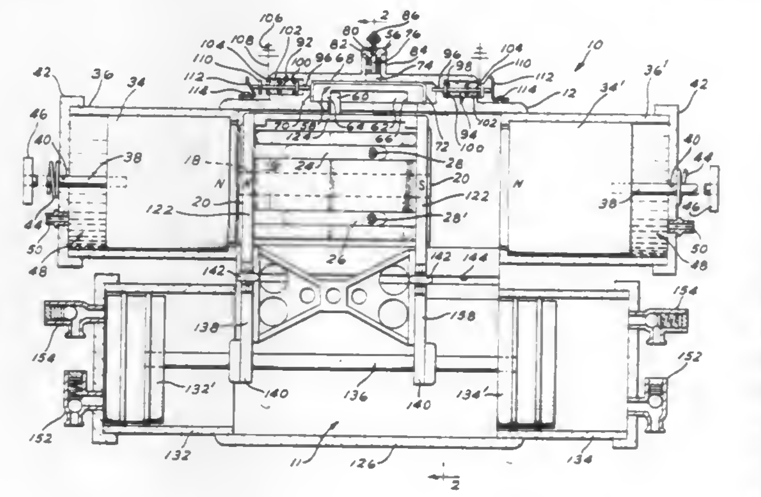
4,368,396
RECIPROCATING ELECTRIC MOTOR WITH PERMANENT MAGNETS

James A. Humphrey, P.O. Box 295, Shelbyville, Ky. 40065

Filed Nov. 20, 1980, Ser. No. 208,807

Int. Cl.^{3} H02K *33/18*

U.S. Cl. 310—27 **14 Claims**



1. In a reciprocating drive motor comprising:

a. a housing having guide means for supporting a movable electromagnet for reciprocating motion, the opposite ends of the electromagnet being of opposite polarities;

b. electrical circuit means for energizing the electromagnet with alternate current flows to obtain alternate polarities of the electromagnetic field surrounding the electromagnet;

c. a permanent magnet means positioned at a spaced distance at each end of the stroke of the movable electromagnet for creating both a strong magnetic field attraction force between the electromagnet and one of the permanent magnet means and a strong magnetic field repulsion force between the electromagnet and the opposite permanent magnet means, the same poles of the two permanent magnet means being positioned to face each other and being aligned with the adjacent end of the electromagnet;

d. an electrical switching means operated by the position of the electromagnet at each end of its stroke for reversing the flow of current within the electromagnet so as to reverse the polarity of the opposite ends of the electromagnet and thereby reverse the magnetic field forces between the electromagnet and the pair of permanent magnet means for reversing the direction of movement of the electromagnet within the motor housing to produce the reciprocating motion of the electromagnet;

e. a driven means actuated by the reciprocating motion of the electromagnet for producing work;

f. the said pair of permanent magnet means being adapted to be adjustably mounted within the housing toward or away from the opposite ends of the electromagnet so as to be able to adjust the magnetic field force acting upon the electromagnet, and hence the speed of the motor, depending upon the distance separating the two adjustable permanent magnet means from the adjacent end of the electromagnet at the ends of its stroke.

4,368,397
ARRANGEMENT FOR DEEP COOLING A FIELD WINDING IN THE ROTOR OF AN ELECTRIC MACHINE

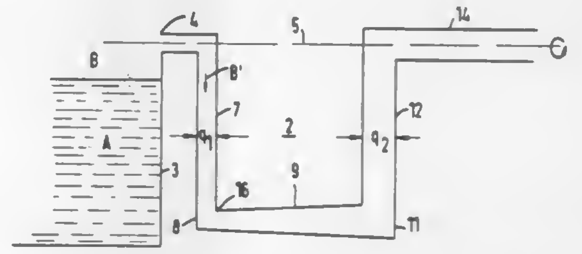
Christoph Schnapper, and Lutz Intichar, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,829

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920720; May 22, 1979, 2920742

Int. Cl.^{3} H02K *9/00*

U.S. Cl. 310—52 **22 Claims**



1. In an arrangement for deep cooling a field winding, in the rotor of an electric machine with a rotor axis and a corotating mixing chamber which contains a coolant mixture of vaporous and liquid components supplied from the outside through a feed line and to which are connected a first discharge line for the discharge of a first, liquid coolant stream to cool the field winding, and near the rotor axis, a second coolant discharge line running between areas of different temperatures, the second discharge line being designed in form of a centrifugal pump to pump a second, gaseous coolant flow out of the mixing chamber and containing at least one colder line part which runs essentially radial relative to the rotor axis, leading away from the rotor axis, followed by warmer line parts leading back to the vicinity of the rotor axis, there being a connecting point between said colder line part and said warmer line parts, the improvement comprising the maximum flow cross section of the colder line part of the second discharge line being at the most half the size of the maximum flow cross section of the warmer line parts leading back to the vicinity of the rotor axis.

4,368,398
SMALL ELECTRIC MOTOR WITH REINFORCED BRUSH HOLDER

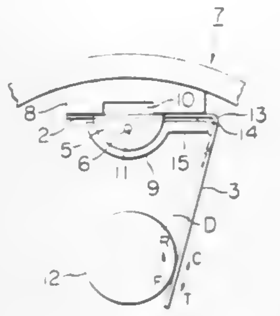
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Japan

Filed Feb. 6, 1980, Ser. No. 119,131

Claims priority, application Japan, Feb. 19, 1979, 54-20074[U]; Aug. 31, 1979, 54-119934[U]

Int. Cl.^{3} H02K *13/00*

U.S. Cl. 310—248 **2 Claims**



1. A small electric motor having a motor case cover, a commutator and a brushgear, said motor comprising brushes made of an electrically conductive and resilient material, each of said brushes having bent portions bent at a predetermined angle to form a brush base and a commutator slide with said commutator slide extending from said respective bent portion into resilient contact with the commutator of said motor, and brush supporting portions provided on the motor case cover for supporting said brush bases in such a manner that said commutator slides are brought into resilient contact wih said commutator of said motor, said brush supporting portions each including a first section for supporting the central part of the brush base and second sections for supporting both sides of the brush base and characterized in that said commutator slide, in an unconstrained state, is bent in advance toward the commutator side so that said commutator slide assumes a straight line when said commutator slide is brought into resilient contact with said commutator and rigid reinforcing portions are provided on the bent portions to provide rigidity to said bent portions.

4,368,399
ROTOR END TURN WINDING AND SUPPORT STRUCTURE

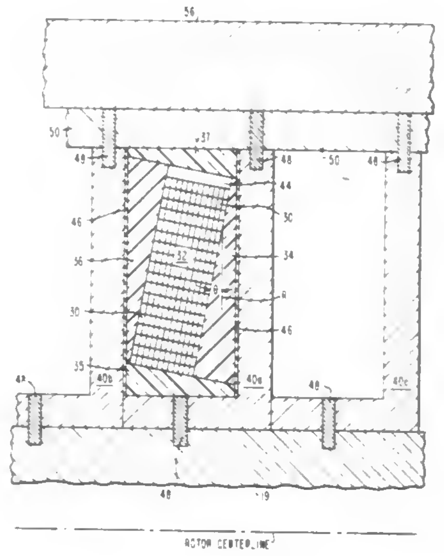
Sui-Chun Ying, Monroeville, and Donald C. Litz, Murrysville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1981, Ser. No. 293,821

Int. Cl.^{3} H02K *3/46*

U.S. Cl. 310—270 **17 Claims**

1. A dynamoelectric machine rotor, comprising:
- a field winding comprising a straight portion and an end turn portion, said straight portion being disposed in axial slots machined in said rotor, said end turn portion extending axially from said slots;
- said end turn portion comprising a plurality of coils, each of said coils comprising a plurality of conductor stacks, each of said stacks comprising a plurality of conductors, each of said stacks extending radially from said rotor at a preselected angle from a plane which is perpendicular to the centerline of said rotor;
- a plurality of arcuate support blocks, each of said support blocks having a generally L-shaped cross-section comprising an axial and a radial leg, said coil stack being disposed radially adjacent to said axially extending leg and axially adjacent to said radially extending leg;
- insulative means for preventing electrical communication between said conductor coil and said support block;
- an end turn cylinder disposed radially outward from said conductor coils and said support blocks; and



- a retaining tube disposed radially outward from said end turn cylinder.

4,368,400
PIEZOELECTRIC ULTRASONIC TRANSDUCER MOUNTED IN A HOUSING

Yoshiharu Taniguchi; Masanori Akiyama, and Osamu Kinoshita, all of 380-1, Yasunaga Hotta, Tottori-shi, Tottori 680, Japan

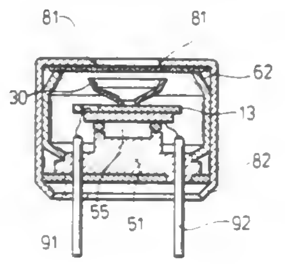
PCT No. PCT/JP80/00104, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 14, 1981

PCT Filed May 14, 1980, Ser. No. 232,042

Claims priority, application Japan, May 15, 1979, 54/060015

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—322 **1 Claim**



1. An ultrasonic transducer comprises:
- a vibrating assembly:
  - a piezoelectric ceramic element,
  - a metal resonant plate engaging one surface of the ceramic element,
  - a radiator affixed to said resonant plate, and
  - two lead wires connected to said piezoelectric element, coated with silicon compound adhesive at the proximity of soldering onto the electrode surfaces of the ceramic element so as to preclude spurious vibrations and comprises:
- a baseplate having two electrical terminals: first electrical terminal connected to the lead wire from the front electrode surface of the ceramic element and second electric terminal connected to the lead wire from the front electrode surface of the ceramic element,
- an adhesive mount provided on the baseplate, whose circumperential wall has a diameter approximately coinciding with that of the node of the vibrator proper,
- an air chamber encompassed by the bottom surface of the said vibrating assembly,
- ring-shaped adhesive as will retain sufficient elasticity elasticity after curing and the side and bottom walls of said adhesive mount,

- a metal soleplate,
- a meshed metal grill,
- a non-cylindrical holding member: stopper,
- a housing which is slightly tapered and includes a field radiation pattern director.

4,368,401
TRANSDUCER PLATE FOR PIEZO-ELECTRICAL TRANSDUCERS

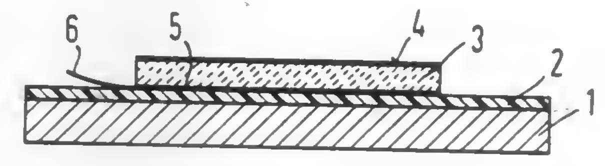
Erwin Martin, and Konrad Walliser, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,465

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005708

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—324 **7 Claims**



1. A transducer plate for telephone technology piezo-electrical transducers, comprising: a carrier plate and a piezo-ceramic member bound to the plate with an adhesive layer applied on one side thereof; electrodes on both sides of the piezo-ceramic member; the adhesive layer having a thickness selected to have an attenuating influence on excessive rises in resonance; and the adhesive layer having a thickness which amounts approximately to 20 to 50% of a thickness of a piezo-ceramic member having a diameter of 200 to 350 μm, and approximately 10 to 30% of a thickness of a carrier plate having a diameter of 40 to 45 mm.

4,368,402
H-TYPE CERAMIC RESONATOR

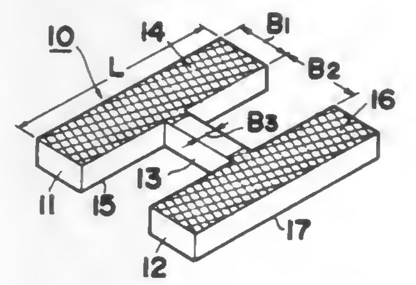
Michihiro Torii, Hamamatsu; Kohei Hirukawa, Kosai; Ryoji Tsuchiya, Hamamatsu; Hiroshi Urata; Isamu Sasaki, both of Kosai, and Kunio Esaki, Kosai, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,615

Claims priority, application Japan, Jul. 2, 1980, 55-92051[U]; Jul. 17, 1980, 55-101007[U]; **Jul. 24, 1980, 55-101462**

Int. Cl.^{3} H01L *41/04;* **H03H** *9/02*

U.S. Cl. 310—367 **6 Claims**



1. An H-type ceramic resonator which has two longitudinal, parallel resonating leaves, a connecting leaf for connecting the two resonating leaves in an H-shape and electrodes at least on both surfaces of the resonating leaves, comprising a dimensional relationship which falls within the following ranges:

$B_2/B_3=4$ to 6,

$B_1/B_3=2$ to 4, and

$L/B_1=5$ to 6

wherein L is a length of each of said resonating leaves, B_1 is a width of each of said resonating leaves, B_2 is a distance between the said two resonating leaves, and B_3 is a width of said connecting leaf.

4,368,403
ELECTRON GUN INCLUDING SUPPORT STRUCTURE FOR ACCELERATING LENS

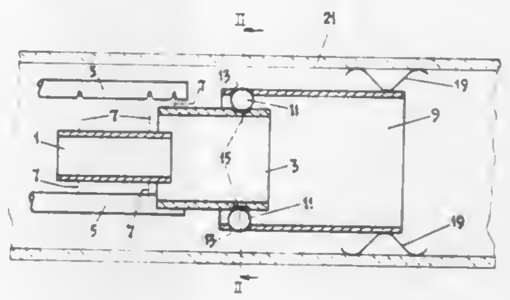
David W. Lewis, High Wycombe, England, assignor to The M-O Valve Company Limited, London, England

Filed Aug. 28, 1980, Ser. No. 182,006

Claims priority, application United Kingdom, Jul. 9, 1980, 8022415

Int. Cl.^{3} H01J *29/48, 29/82*

U.S. Cl. 313—457 **4 Claims**



1. A cathode ray tube incorporating an electron gun including an accelerating lens comprising at least two tubular electrodes disposed coaxially at different positions along the path of the electron beam produced by the gun wherein the final electrode of the lens is at least partly supported from the adjacent electrode by means of at least three spherical spacer members which fit between overlapping portions of said final and adjacent electrodes of different diameters and are axially located in recesses in said portions, said adjacent electrode is supported from rods extending parallel to the axis of the electron gun outside said adjacent electrode, and said final electrode has a diameter at least as large as the diameter on which the support rods lie.

4,368,404
MATRIX-TYPE FLUORESCENT DISPLAY DEVICE

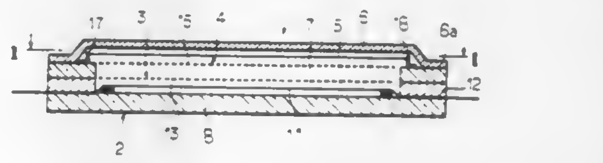
Ikuo Daisyaku, Ueno, Japan, assignor to Chowa Giken Kabushiki-Kaisha, Mie, Japan

PCT No. PCT/JP79/00104, § 371 Date Dec. 13, 1979, § 102(e) Date Dec. 13, 1979

PCT Filed Apr. 23, 1979, Ser. No. 179,294

Int. Cl.^{3} H01J *63/02*

U.S. Cl. 313—497 **11 Claims**



1. A matrix-type fluorescent dot display device which comprises:
- a quadrilateral vacuum discharge space defined by a wall and an insulated substrate opposed to said wall, at least one of said wall and substrate being light-passable, the periphery of said wall being fixed by air-tight sealing means to the periphery of said substrate,
- an anode wire array within said discharge space comprising a multitude of thin wires stretched in a plane parallel to and spaced apart from one another, said array being devoid of transverse wires,
- a plurality of wire support members holding said wires of

said array in said parallel, spaced apart position above and out of contact with said substrate,

terminal means that extends outside said discharge space to connect the wires of said array to an electric voltage source,

the wires of said array being at least partially coated with fluorescent material that will fluoresce when bombarded by thermoelectrons,

cathode filaments positioned adjacent said wall within said discharge space provided with terminal means so said filaments may be electrically energized to emit thermoelectrons,

an electrically conductive grid comprising a multitude of thin wires positioned between said array and said cathode filaments within said discharge space, said grid wires being stretched in a plane parallel to and spaced apart from one another and perpendicular to said wires of said array, said plane of said grid being spaced apart and parallel to said plane of said array, said grid being devoid of transverse wires,

terminal means that extends outside said discharge space to connect the wires of said grid to an electric voltage source,

said grid serving to create luminous dots on the wires of said array when the wires of said array are energized by a predetermined positive voltage and the wires of said grid are also energized by a predetermined positive voltage.

4,368,405

ELECTRON GUN FOR A CATHODE RAY TUBE

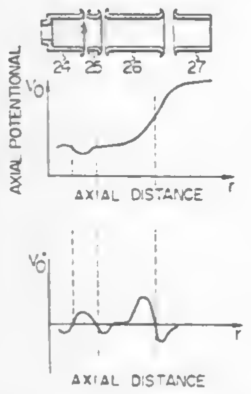
Shigeo Takenaka, Fukaya; Eizaburo Hamano, Kumagaya, and Shinpei Koshigoe, Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 961,855, Nov. 17, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,016

Claims priority, application Japan, Nov. 22, 1977, 52-139480; Dec. 27, 1977, 52-156501

Int. Cl.³ H01J *29/46, 29/56*

U.S. Cl. 315—16 **8 Claims**



1. A cathode ray tube system comprising:

an electron beam-generating source including a cathode, first grid electrode and second grid electrode; and

main lens means for substantially focusing electron beams emitted from said electron-beam generating source including first, second, third and fourth focusing electrodes arranged coaxially and in the order mentioned as counted from the second grid electrode of said electron beam-generating source and for creating an axial potential distribution having a function monotonically decreasing from a relatively intermediate potential level to a relatively low potential level from the first to the second focusing electrodes, and monotonically increasing from the relatively low potential to a relatively high potential level from the second focusing electrode to the fourth focusing electrode through the third electrode, and the second derivative of said function having two positive maximum values proximate the second and third focusing electrodes and three negative maximum values proximate the first, third and fourth focusing electrodes thereby forming a double lens construction.

4,368,406

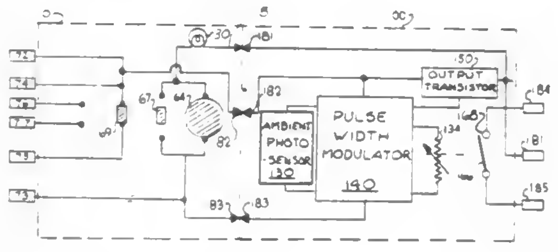
LAMP DIMMER CONTROL WITH INTEGRAL AMBIENT SENSOR

Joseph K. Kruzich, Ann Arbor, and Sidney R. Fletcher, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1980, Ser. No. 220,630

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—158 **8 Claims**



1. An adjustable lamp dimmer for controlling illumination intensity of associated illuminated instruments and gauges comprising:

a housing;

a mounting substrate within said housing;

means mounted in said housing for movable adjustment on said substrate;

at least one variable resistor mounted between said substrate and said movable means for providing a different selected resistance for each adjustment thereof;

means mounted on said substrate for continuously sensing ambient light levels in the environment external to said housing of said lamp dimmer; and

means for monitoring the resistance of said variable resistor and said ambient light sensing means to provide a pulse width modulated output signal to control said illumination intensity of associated illuminated instruments and gauges as a function of sensed ambient light levels.

4,368,407

INDUCTOR-CAPACITOR IMPEDANCE DEVICES AND METHOD OF MAKING THE SAME

Theodore Wroblewski, Danvers, Mass., assignor to Frequency Technology, Inc., Littleton, Mass.

Filed Aug. 31, 1979, Ser. No. 71,706

Int. Cl.³ H01F *27/28*

U.S. Cl. 315—291 **8 Claims**

1. An improved inductor-capacitor assembly, which improvement comprises:

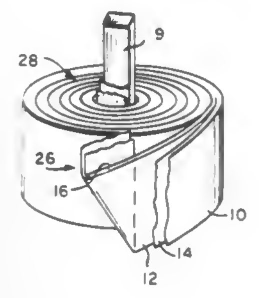
at least two elongated strips of thin conducting foil for forming respective input and output windings,

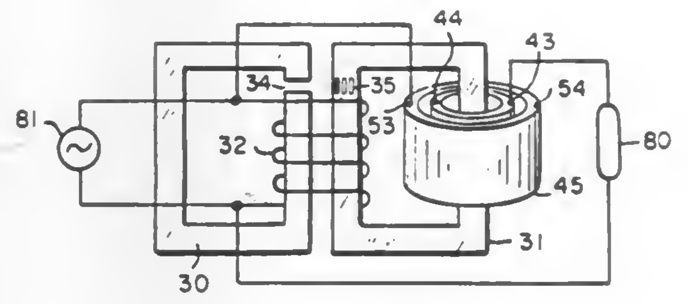
at least two elongated strips of dielectric material for separating and insulating the conducting foil, said dielectric material being coated on at least one side thereof with a bonding cement for improving the insulating and dielectric properties of said dielectric material,

both said conducting material and said dielectric material being rolled together to form a coil whereby the surfaces of the conducting foil and the dielectric material are in bounded contact with each other thereby to prevent displacement of the foil under electrical and magnetic forces and to seal the dielectric material and conducting foil from their external environment,

said coil further including an integral connection terminal disposed on at least one end of each of said input and output windings, each integral terminal being characterized as folded end portions of both the foil and dielectric material, the portions extending substantially parallel to

the axis of said windings and being substantially perpendicular to their lengthwise position before being folded, a segment of the end portion being folded over again to sandwich two layers of dielectric material between the





folded segment of the conducting foil thereby to produce an integral and durable connection terminal that is reinforced by the dielectric material sandwiched therebetween.

4,368,408

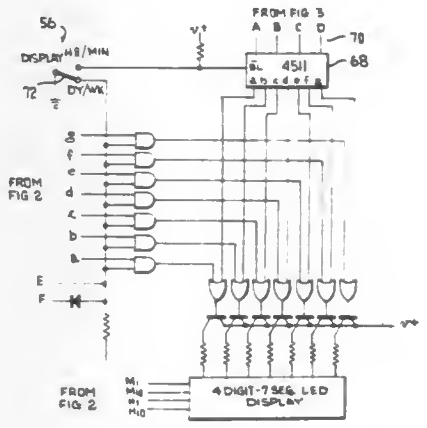
TIME CONTROLLED LIGHT DIMMER

Edward Marcus, P.O. Box 5342, 6508 Pimlico Rd., Baltimore, Md. 21209

Filed Jul. 17, 1981, Ser. No. 284,507

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—360 **17 Claims**



1. Control apparatus for reducing power supplied to utilization devices comprising:

(a) storage means for storing particular times for providing said reduced power;

(b) time keeping means for determining present time;

(c) comparing means for comparing present time with said stored times for providing said reduced power; and

(d) activating means responsive to said comparing means for providing appropriate power to said lighting devices.

4,368,409

SWITCHING REGULATOR POWER SUPPLY DEVICE COMBINED WITH THE HORIZONTAL DEFLECTION CIRCUIT OF A TELEVISION RECEIVER WHICH IT SUPPLIES

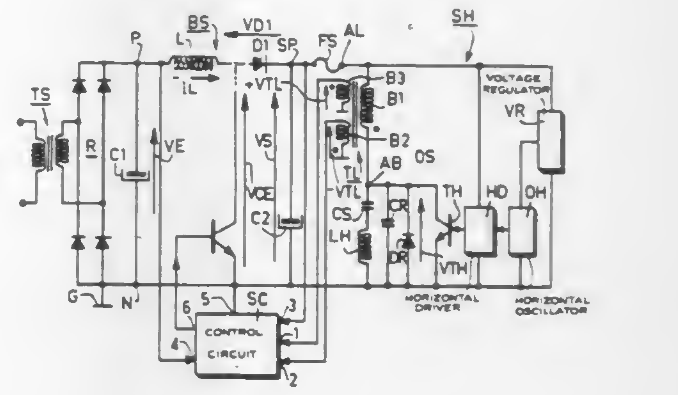
Appukuddy Sivanesan; Erich Geiger, and Gerard Rilly, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Jun. 10, 1981, Ser. No. 272,267

Claims priority, application France, Jun. 10, 1980, 80 12862

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 **9 Claims**



1. A power supply device with switching regulation and boosting of its DC output voltage, combined with a horizontal deflection circuit of a television receiver, supplied thereby and which comprises in cascade a horizontal oscillator, a driver stage and an output stage including a trace switch transistor and a line transformer, this device comprising an inductance and the collector-emitter path of a switching transistor connected in series between the poles of a DC input voltage source, a rectifying diode connected by its anode to the junction between the inductance and the collector of said switching transistor and by its cathode to one of the terminals of a filtering and storage capacitor whose other terminal is connected to the emitter of said transistor, so as to apply across its terminals an initial DC voltage slightly lower than said input voltage, when said switching transistor is turned off, and a regulated DC output voltage with a level higher than said input voltage, when said transistor is recurrently, alternately turned on and off, the level of said output voltage depending on the duty cycle of said switching transistor states, and a control circuit feeding the base of said switching transistor and including a regulator stage comparing an adjustable fraction of said output voltage to a fixed reference voltage and supplying a regulating current or voltage proportional to the difference between said compared voltages, a pulse-width modulator triggered by means of a recurrent signal and supplying a rectangular signal whose duty cycle varies as a function of said regulating current or voltage, another driver stage receiving the rectangular signal and controlling said switching transistor, the regulation and boosting of said output voltage being controlled by the initially independent starting up of the entire horizontal deflection circuit when supplied by said initial voltage from said power supply device as soon as a DC input voltage is applied thereto and which then delivers recurrent trigger pulses to said pulse-width modulator, one of the supply inputs of said other driver stage receiving directly a first voltage waveform whose positive alternations comprise constant-voltage plateau and whose negative alternations comprise negative-going horizontal flyback pulses provided by a first secondary winding of said line transformer, so as to control the turning off of said switching transistor substantially simultaneously with that of the trace switch transistor.

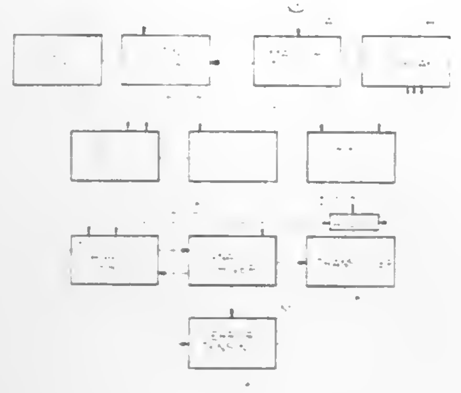
4,368,410
ULTRASOUND THERAPY DEVICE

Richard D. Hance, Elburn, and Edward J. Barsotti, Batavia, both of Ill., assignors to DynaWave Corporation, Geneva, Ill.

Filed Oct. 14, 1980, Ser. No. 196,647

Int. Cl.^{3} H02N *1/00*

U.S. Cl. 318—116 **20 Claims**



1. A device to be used for delivering ultrasonic therapy to the tissue of a human body wherein said tissue has changing load characteristics, comprising:

a transducer for converting electrical power into ultrasound power,

manually operable input means,

a source of electrical power,

connecting means for selectively connecting said power source to said transducer,

timing means connected to and responsive to said manually operable input means for controlling said connecting means to apply electrical power to said transducer for a predetermined time, and

power setting means connected to and responsive to said manually operable input means, and connected to said connected means for controlling the level of power supplied to said transducer from said source, and

feedback means connected to said transducer for determining the electrical power used by said transducer, comprising means for monitoring the voltage and current signals delivered to said transducer and means for multiplying said signals to calculate power, and connected to said connecting means for adjusting the electrical power supplied to the transducer in response to said changing tissue loads.

4,368,411
CONTROL SYSTEM FOR ELECTRIC MOTOR

H. Keith Kidd, Christianburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jul. 13, 1981, Ser. No. 282,797

Int. Cl.^{3} G05B *11/28*

U.S. Cl. 318—254 **15 Claims**

1. A system for controlling energization of an electric motor from an electric power source, comprising;

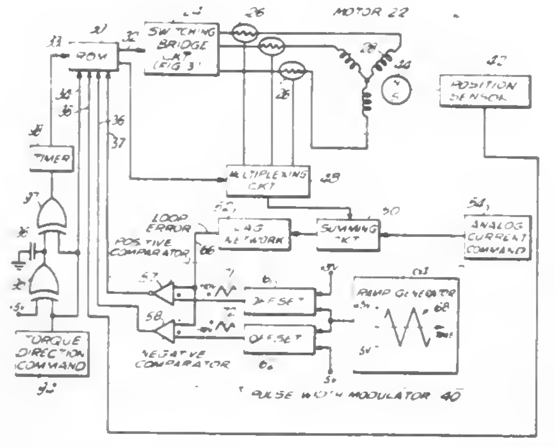
a switching circuit including switching devices for selectively connecting windings of the motor to the power source in accordance with the rotor position of the motor;

an error signal generating circuit for providing an error signal according to the difference between a control command an an actual motor condition; and

a pulse-width modultion control circuit responsive to said error signal and operatively connected to control said switching devices in said switching circuit

to provide increased duty cycle pulse-width modulation control of said switching devices as said error signal approaches zero when operating the motor in a regenerative mode, and

to provide decreased duty cycle pulse-width modulation control of said switching devices as said error signal approaches zero when operating the motor in a motoring mode.



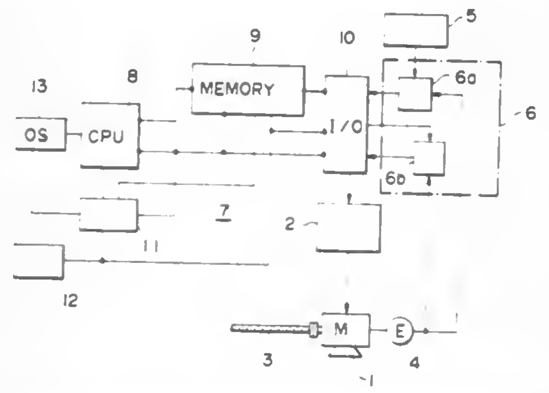
4,368,412
MICROPROCESSOR-CONTROLLED MOTOR DRIVE CONTROL SYSTEM

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 4, 1981, Ser. No. 231,433

Int. Cl.^{3} G05D *23/275*

U.S. Cl. 318—632 **6 Claims**



1. A drive control system for a motor, comprising:

a driver circuit connected to the motor;

a signal input unit for receiving an input command signal representing a desired extent of angular displacement of the motor and generating a train of pulses representing said command signal;

a microcomputer having an input/output interface connected to said driver circuit, and a central processing unit for producing a control command signal and applying said control command signal to said driver circuit, thereby providing from the latter a drive signal for said motor in accordance with said control command signal;

an encoder for sensing an angular displacement of said motor being achieved by said drive signal and producing a succession of pulses representing said angular displacement being sensed;

logic-circuit means connected between said encoder and said interface and between said signal input unit and said interface, said logic circuit means including a differential counter receiving said pulses from said signal input output and said encoder for registering a differential count thereof and applying the differential count to said interface to produce the modification of said control command signal in accordance therewith and consequentially said drive signal; and

an interrupt unit associated with said microcomputer for intermittently providing an interrupt signal to said central processing unit, thereby permitting the latter signal to execute said modification of the control command signal.

4,368,413
RECORDING APPARATUS

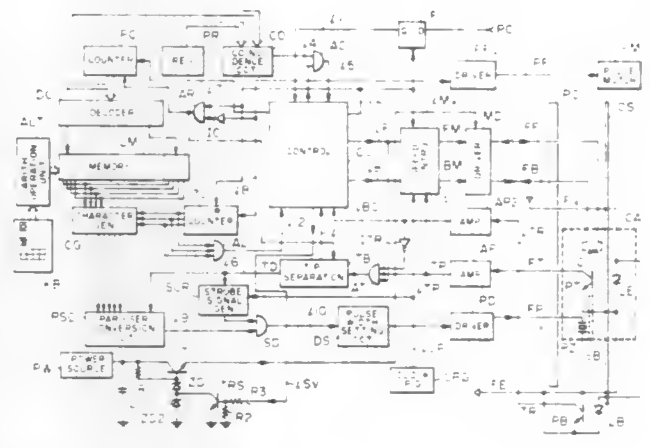
Shigemitsu Tazaki, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,218

Claims priority, application Japan, Oct. 26, 1979, 54/139553

Int. Cl.^{3} G05B *11/00*

U.S. Cl. 318—687 **5 Claims**



1. A recording apparatus comprising:

a carriage having a recording head mounted thereon;

a motor for moving said carriage reciprocally in a recording direction, and at the predetermined rate in a return direction;

first detecting means for detecting the presence and absence of recording information and for coveying the recording information to said recording head;

second detecting means for detecting when said carriage is in a home position area;

protection means disposed adjacent to the home position area of said carriage for protecting said recording head; and

drive means, which operates upon detection by said second detecting means of the return of said carriage to the home position area, for driving said motor in said recording direction to continue recording of information when said first detecting means detects the presence of information to be recorded, and for continuing the return drive of said motor at a rate less than said predetermined rate when said first detecting means detects the absence of information to be recorded, thereby placing said carriage at a position where said recording head thereon contacts said protection means.

4,368,414
PULSE MOTOR DRIVING DEVICE OF SEWING MACHINES

Kazuo Watanabe, Hachioji, and Hahiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

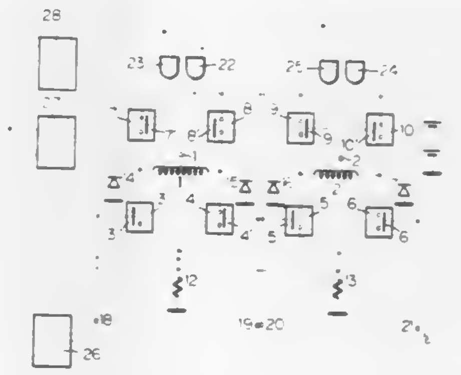
Continuation of Ser. No. 925,467, Jul. 17, 1978, abandoned. This application Jan. 10, 1980, Ser. No. 110,850

Claims priority, application Japan, Jul. 20, 1977, 52-86895; Nov. 25, 1977, 52-140743

Int. Cl.^{3} H02P *5/00*

U.S. Cl. 318—696 **1 Claim**

1. A pulse motor driving device for a pulse motor having a plurality of windings each connected to a driving power source comprising detecting means for detecting a value of electric current flowing through the windings; reference voltage generating means producing a triangular wave signal of a predetermined period; comparator means comparing the detected value of electric current of the windings and the triangular wave signal, said comparator means producing a chopping signal providing a period for applying the voltage of the driving power source to the windings each time the level of the triangular wave signal becomes higher than that of the electric current of the windings; bridge circuits each composed of four switching elements for each of the windings, said bridge circuits being each connected to the driving power source through said detecting means at a point thereof between the joints of the adjacent switching elements on one diagonal of the bridge circuit, and each having the winding connected between the joints of the adjacent switching elements on the other diagonal of the bridge circuit; switching element control means for controlling the switching operation of the opposite switching elements in each of the bridge circuits, said switching element control means selectively applying a driving pulse signal to one of the opposite switching elements in each bridge circuit, which is connected to the respective detecting means to continuously make the switching element on and off, and selectively controlling the switching operation of the other of the switching elements in each bridge circuit in accordance with the chopping signal of the comparator means so as to supply the voltage of the driving power source to the switching element while the switching element is on due to the chopping signal; and diodes connected between one pole of the driving power source and both ends of the windings respectively, said diodes forming a short-circuit in which the electromagnetic energy of the windings may flow through said detecting means and said ones switching elements connected to the detecting means while the current flow from the driving power source to said others switching elements is blocked by the chopping signal.



4,368,415
CONVERTING SOLAR POWER TO ELECTRIC POWER

Ross A. Henderson, St. Werburghs, and Douglas A. Gregory, Long Ashton, both of England, assignors to British Aerospace, Weybridge, England

Filed Sep. 15, 1980, Ser. No. 187,447

Claims priority, application United Kingdom, Sep. 14, 1979, 7931895

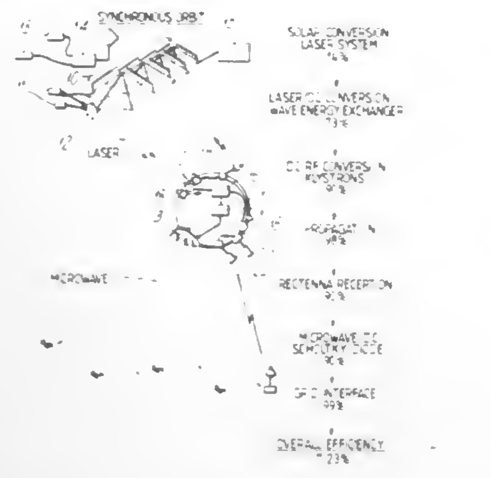
Int. Cl.^{3} B64G *1/10;* **B64C** *39/02*

U.S. Cl. 322—2 R **2 Claims**

1. A solar energy system comprising:

a space vehicle supporting means for collecting solar energy and laser means for using the collected solar energy to form a laser beam directed towards a receiving position within the upper atmosphere of the earth,

an air-buoyant intermediate station for floating at said position within the upper atmosphere and supporting means for receiving said laser beam, means for converting the energy of the laser beam to microwave energy, and means for directing said microwave energy as a beam towards a ground receiving position on the earth's surface, and

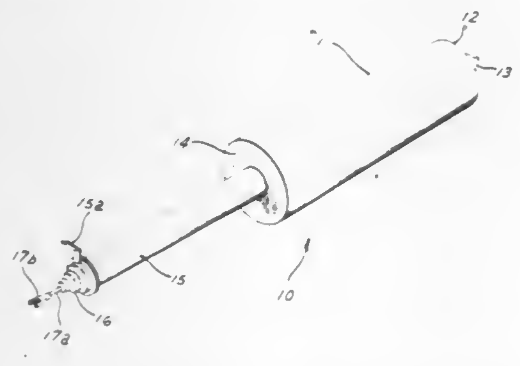


microwave energy receiving antenna means at said ground receiving position.

4,368,416
THERMIONIC-THERMOELECTRIC GENERATOR SYSTEM AND APPARATUS

Jasper L. James, deceased, late of Greeneville, Tenn. (by James I. Dye, administrator), assignor to James Laboratories, Inc., Greenville, Tenn.

Filed Feb. 19, 1981, Ser. No. 235,954
Int. Cl.³ H02N *3/00*
U.S. Cl. 322—2 R **7 Claims**

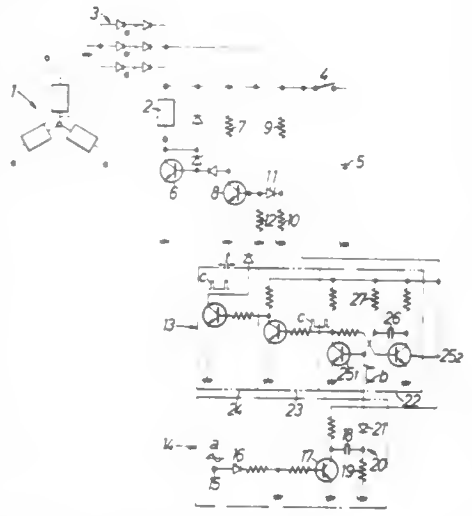


1. Thermionic-thermoelectric generator system comprising:
a pair of thermionic-thermoelectric generator apparatus, each including a pair of axially aligned and concentric metal electrode cylinders closed at both ends to form an enclosed and evacuated space therein, at least the inner surface of the outer cylinder being coated with a thermionic electron emissive material to form a cathode and at least the facing surface of the inner cylinder being coated with graphite to form an anode, and including a thermopile series nested within the inner cylinder, the positive end of the series being electrically coupled to the anode, the negative end of the series being electrically coupled to the cathode, the generator apparatus further including external positive and negative terminals coupled to the anode and cathode, respectively;
a pair of output terminals adapted to be coupled to a load impedance;
and circuit means for alternately coupling each of the generator apparatus to the output terminals to provide a continuous electric current flow to the load impedance,
said circuit means comprising a pair of charging capacitors, a first pair of controlled current switching devices, each connecting a generator apparatus to a respective charging capacitor, a second pair of current switching devices, each connecting a charging capacitor to the output terminals of the system, and timing control circuits for operating the current switches in sequentially alternations so that, as one generator is coupled to its charging capacitor, the other generator is uncoupled from its charging capacitor, and during this time the charging capacitor of the other generator is coupled to the output terminals while the charging capacitor of the one generator is uncoupled from the output terminals, the timing circuits being adapted to periodically reverse this sequence of connections.

4,368,417
OUTPUT VOLTAGE-ADJUSTING DEVICE FOR VEHICLE-MOUNTED GENERATORS

Youji Matsuyama, Higashiyamato, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,192
Claims priority, application Japan, Dec. 29, 1979, 54-182818[U]
Int. Cl.³ H02J *7/14*
U.S. Cl. 322—29 **6 Claims**



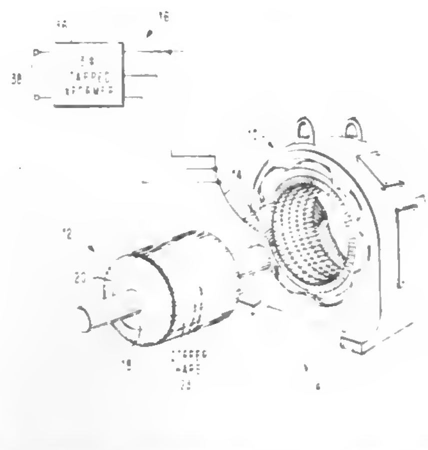
1. An output voltage-adjusting device for vehicle-mounted generators comprising a generator drivably connected to an engine and having an electromagnetic coil, a battery, switching means provided in an electric circuit connecting said coil to said battery and operable to open said circuit upon receipt of an input signal, a signal means operably coupled to the engine for generating electric signals of a frequency corresponding to the running speed of the engine, and an oscillator which converts the output signals of said signal means into pulse signals of a predetermined width having a frequency proportional to the running speed of said engine and which sends the pulse signals as input signals to said switching means.

4,368,418
APPARATUS FOR CONTROLLING HIGH VOLTAGE BY ABSORPTION OF CAPACITIVE VARS

F. Paul DeMello, Burnt Hills, and Robert J. Ringlee, Schenectady, both of N.Y., assignors to Power Technologies, Inc., Schenectady, N.Y.

Filed Apr. 21, 1981, Ser. No. 256,062
Int. Cl.³ H02J *3/16*
U.S. Cl. 323—201 **19 Claims**

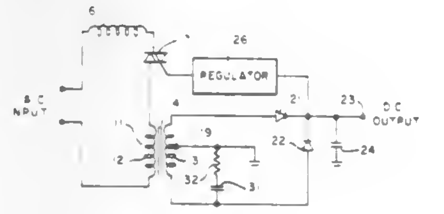
1. Apparatus for controlling high voltage by absorption of capacitive vars, comprising: a stator including a core and a stator windings connected to a source of said high voltage; and a rotor having a symmetrical uniform magnetic structure including a rotor spider made of a core of non-magnetic material disposed around the shaft of said rotor and a concentric outer cylinder of magnetic material around said non-magnetic core and designed to yield a sharp magnetic saturation, said rotor also including longitudinally extending damper bars made of a conducting material and attached to said rotor around the cylindrical rotor surface, said damper bars producing the required starting torque and damping of rotor oscillations, said rotor being operated with said stator as a free running, unloaded induction motor; whereby said rotor and said stator constitute a rotating induction reactor which functions similar to a saturable reactor with respect to var versus voltage absorption but produces a negligible amount of harmonics.

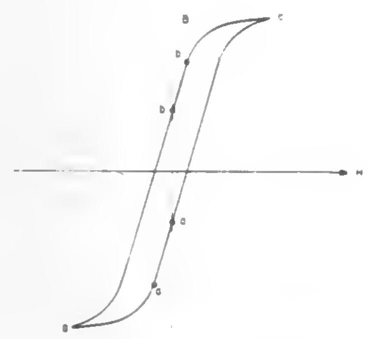


4,368,419
POWER SUPPLY AND METHOD UTILIZING APPLIED CURRENT FOR INCREASED HYSTERESIS SWING IN TRANSFORMER CORE

Joseph M. Welty, Hayward, Calif., assignor to Branson International Plasma Corporation, Hayward, Calif.

Continuation of Ser. No. 48,010, Jun. 13, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 243,738
Int. Cl.³ G05F *1/455*
U.S. Cl. 323—239 **6 Claims**



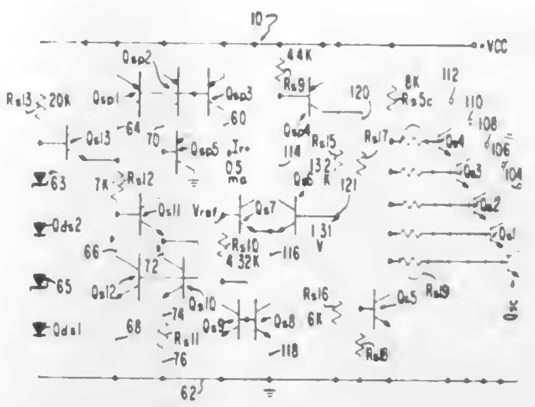


1. In a method of operating a power supply having a transformer with a core of magnetizable material energized by an alternating current which is interrupted for a period of time during each half cycle thereof to regulate the output of the supply, the magnetization of said core being driven between maximum levels of opposite polarity during alternate half cycles of the energizing current, applying an additional current to the transformer during the periods of interrupted energizing current to maintain the core near the maximum level of magnetization to which it is driven during each half cycle so that the magnetization swings from near the maximum of one polarity to the maximum of the other polarity during each half cycle of the energizing current.

4,368,420
SUPPLY VOLTAGE SENSE AMPLIFIER

James R. Kuo, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Filed Apr. 14, 1981, Ser. No. 254,338
Int. Cl.³ G05F *1/58, 3/20*
U.S. Cl. 323—303 **12 Claims**



1. A temperature-compensated supply voltage sense amplifier comprising: a first transistor circuit including a transistor means having a positive temperature coefficient of current for providing a positive temperature coefficient current in which the current increases with increasing temperature;
a second transistor circuit including a transistor means having a negative temperature coefficient of base-to-emitter voltage;
a third transistor circuit including transistors means forming a current mirror coupled between said first and said second transistor circuits for transferring said positive temperature coefficient current from said first transistor circuit into said second transistor circuit; and
a resistance means coupled between said third transistor circuit and said second transistor circuit for establishing a constant reference voltage at a first node between said resistance means and said current mirror, the magnitude of which is independent of temperature.

4,368,421
FREQUENCY MODULATED MICROWAVE IN COMBINATION WITH A VOLTAGE DETECTOR AND COMPARATOR DEVICE FOR MEASURING A VARYING MOISTURE CONTENT OF SHEET-LIKE SAMPLES

Siegfried Glander, Bad Soden am Taunus, and Franz Lappe, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

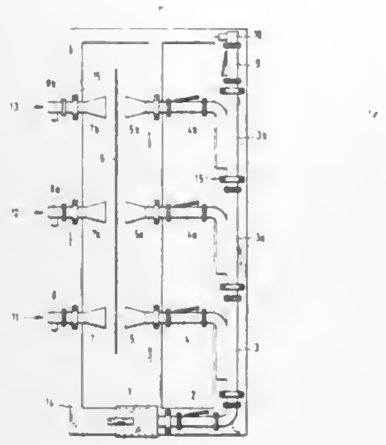
Continuation of Ser. No. 858,893, Dec. 8, 1977, abandoned. This application Aug. 6, 1980, Ser. No. 175,779
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 7638683[U]
Int. Cl.³ G01R *27/04;* G01N *22/04*
U.S. Cl. 324—58.5 A **7 Claims**

1. A device for measuring the moisture content of a sheet-like sample with microwaves, which device comprises:
a microwave oscillator for providing an output of microwaves;
at least three horn transmitters;
a microwave receiver positioned opposite each horn transmitter, said horn transmitters and receivers being positioned so that a different portion of said sheet-like sample can pass between each of said transmitters and its associated receiver;
a separate microwave detector for producing an output signal having a signal level value which has a correspondence to the detected signal level value of microwaves received by each of said receivers at a set point condition;
a microwave distributing means for distributing a portion of the microwave output of said oscillator to each of said horn transmitters, said distributing means including direc-

tional couplers and also including a separately adjustable attenuator for each said horn transmitter such that the ratios between the signal level values of the output signal values produced by each of said detectors can be set to desired signal values at said set point conditions when the relative amount of moisture of said sheet-like sample placed between the horn transmitters and receivers associated with said detectors is known for each location between each of said transmitters and receivers;

means for controllably attenuating the level of the microwave output of said oscillator which attenuating microwave output is supplied to said distributing means such that the signal level output of one of said detectors tends to remain constant and interrelated to said means for controllably attenuating said oscillator, and

means including said separate microwave detector for measuring the relative signal level value of the microwave output which is supplied to said distributing means and detected at the other remaining detectors for measuring the moisture of the sheet-like sample and comparing, with the signal level output of each of the other remaining detectors, said signal value detected by said separate detector.



4,368,422
NON-DESTRUCTIVE TESTING METHOD AND APPARATUS FOR SPOT WELDS

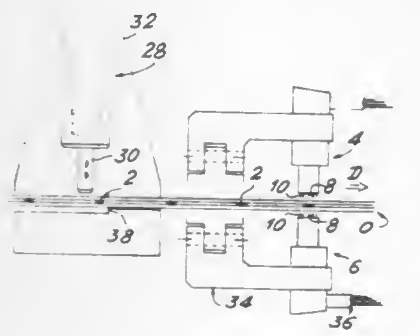
Bernard Bachet, Marsannay la Cote, and Claude Doucelance, Talant, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 2, 1980, Ser. No. 212,149

Claims priority, application France, Dec. 14, 1979, 79 30700

Int. Cl.^{3} G01R *27/14*

U.S. Cl. 324—64 **8 Claims**



5. An apparatus for the non-destructive testing of spot welds, wherein it comprises a detection system formed by two identical measuring heads, each constituted by n pairs of measuring electrodes and n pairs of supply electrodes, each pair of said supply electrodes being associated with a pair of measuring electrodes, the two measuring heads being arranged symmetrically on the area surrounding the weld under investigation and are electrically connected to a stabilized direct current supply, to a measuring system and to a visual display device.

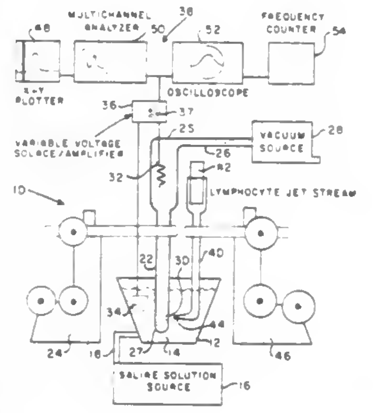
4,368,423
APPARATUS FOR DETERMINING CELL MEMBRANE DIELECTRIC BREAKDOWN

Robert P. Liburdy, 54 Pomeroy Ave., Pittsfield, Mass. 01201

Filed Jan. 13, 1981, Ser. No. 224,781

Int. Cl.^{3} G01N *27/04*

U.S. Cl. 324—65 R **9 Claims**



1. An apparatus for determining cell membrane dielectric breakdown comprising means for containing an electrolyte therein, an electric field exposure tube, means for supporting said electric field exposure tube within said electrolyte containing means, said exposure tube having a port of predetermined size adjacent one end thereof and an opening adjacent the other end thereof, means for containing and feeding a multitude of cells into said port, said predetermined size of said port being larger than the diameter of each of said cells, means for supporting said cell containing and feeding means within said electrolyte containing means adjacent said exposure tube, means operably connected to said opening at said other end of said exposure tube for continuously drawing said electrolyte and said cells through said port of said exposure tube at a preselected rate, mean operably associated with said port in said exposure tube for establishing a DC electric field across said port in said exposure tube, said means for establishing said DC electric field including a variable voltage source and means for determining the voltage across said port in said exposure tube whereby said cells which are drawn through said port act as a resistance thereby causing a voltage increase to occur, and means operably connected to said voltage determining means for utilizing said voltage increase in order to determine cell membrane dielectric breakdown.

4,368,424
MUTUAL INDUCTANCE CURRENT TRANSDUCER FOR AC ELECTRIC ENERGY METERS

Robert C. Miller, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 923,619, Jul. 11, 1978, abandoned. This application May 13, 1980, Ser. No. 149,356

Int. Cl.^{3} G01R *21/06, 15/10;* H01F *27/24*

U.S. Cl. 324—142 **3 Claims**

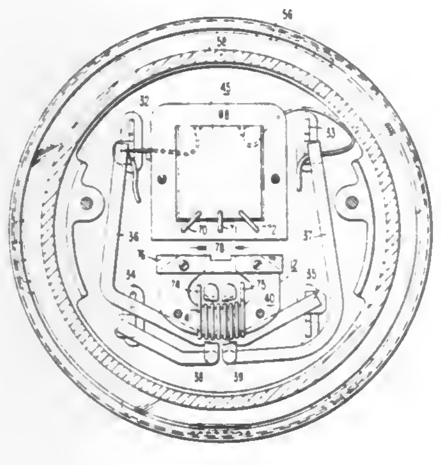
1. An AC electric energy meter comprising:

an electronic measuring circuit processing analog signals responsive to the line current and the line voltage components of an alternating current electric energy quantity to be measured for producing electronic signals representative of quantized amounts of electric energy;

means for producing an analog signal responsive to said line voltage component; and

current sensing transducer means for producing an output signal proportional to said line current component, said current sensing transducer means including conductor means for series connection with said line current component, said conductor means having a primary winding portion for producing magnetic flux responsive to variations of said line current component; said transducer means further including a secondary winding; said transducer means still further including a magnetic core made of a soft magnetic material having said primary winding portion and said secondary winding disposed about said magnetic core in an inductively coupled relationship, said magnetic core further having opposite ends separated by a space equivalent to a predetermined air gap so that said magnetic core and the space between the ends thereof couple said magnetic flux with said secondary winding for having an electromotive force generated therein proportional to the time derivative of said magnetic flux, and said secondary winding having a pair of output conductors for producing a current responsive analog signal having a voltage proportional to the time derivative of the line current component for connection to a high impedance low level signal input circuit of said electronic measuring circuit;

said current sensing transducer means including magnetically saturable shunt bar members which extend from one to the other of said opposite ends of said magnetic core for partially shunting said magnetic flux across said core space and being operable in a substantially unsaturated condition only below a predetermined low level of said magnetic flux to provide compensation for magnetic flux in said core at low levels of input current to said transducer means.



4,368,425
SYSTEM FOR AND METHOD OF TESTING TRANSISTORS

Robert W. Adams, Medford, Mass., assignor to DBX, Inc., Newton, Mass.

Filed Nov. 24, 1980, Ser. No. 209,894

Int. Cl.^{3} G01R *31/22*

U.S. Cl. 324—158 T **10 Claims**

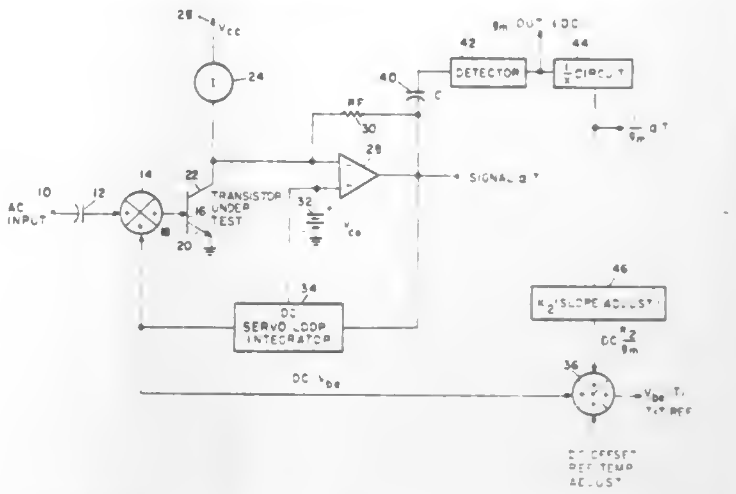
1. A system for testing a transistor for its V_{be}-I_c characteristics independent of temperature, said system comprising

means for generating a first signal which varies with temperature in accordance with the base-to-emitter voltage of said transistor as a function of temperature;

means for generating a second signal which varies with temperature in accordance with the transconductance gain of said transistor as a function of temperature;

means for modifying at least one of said signals so that as modified said first and second signals vary with temperature in a substantially equal and opposite manner to one another; and

means for adding said first and second signals as modified so as to provide an output signal representative of the V_{be}-I_c



characteristics of said transistor independent of temperature.

4,368,426
DIGITAL INDICATION TYPE SPEEDOMETER

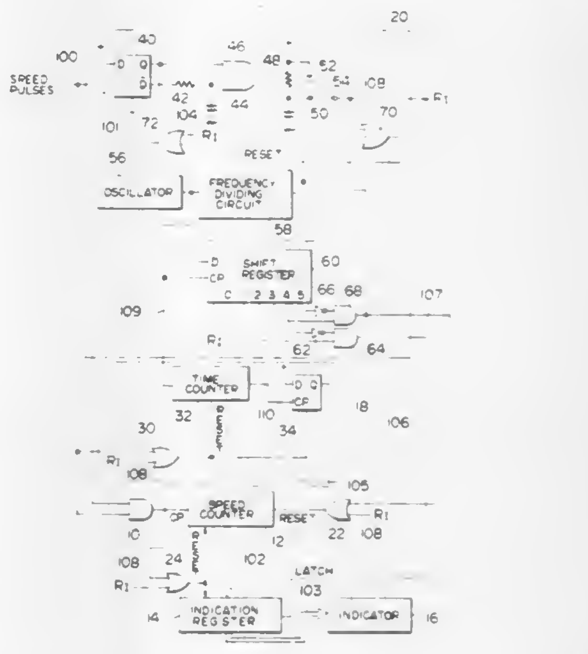
Kunihisa Hayashi, and Masakazu Moriyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1980, Ser. No. 218,500

Claims priority, application Japan, Dec. 28, 1979, 54-170608; Dec. 28, 1979, 54-170609

Int. Cl.^{3} G01P *3/48*

U.S. Cl. 324—161 **7 Claims**



1. A digital indication type speedometer comprising;

a speed counter for counting speed pulses emitted in proportion to a vehicle speed for a given gate time,

an indication register for latching a value to be indicated commensurate to an output from said speed counter,

an indicator for indicating the value latched in said indication register, and

a zero indication discriminating circuit for forcibly setting the value latched in said indication register to zero when our emitting interval of the speed pulses exceeds a predetermined period of time.

4,368,427

DIGITAL INDICATION TYPE SPEEDOMETER

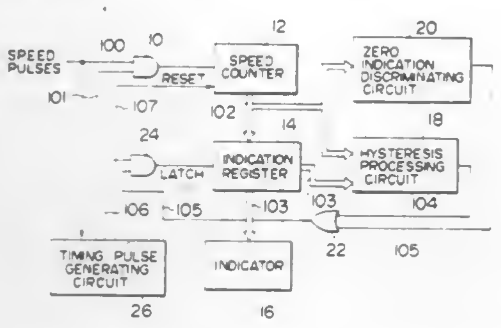
Kunihisa Hayashi, and Masakazu Moriyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1980, Ser. No. 218,834

Claims priority, application Japan, Dec. 28, 1979, 54-170606

Int. Cl.^{3} G01P *3/48*

U.S. Cl. 324—161 **10 Claims**



1. A digital indication type speedometer comprising:

a speed counter for counting speed pulses emitted in proportion to a vehicle speed for a given gate time;

an indication register for latching a value to be indicated commensurate to an output from said speed counter;

an indicator for indicating the value latched in said indication register; and

a hysteresis processing circuit for rewriting the value latched in said indication register in accordance with an output of said speed counter only when a difference between the output of said speed counter and the value latched in said indication register is not within tolerance limit upon comparison therebetween.

4,368,428

METHOD AND ARRANGEMENT FOR DETERMINING THE VELOCITY OF A VEHICLE

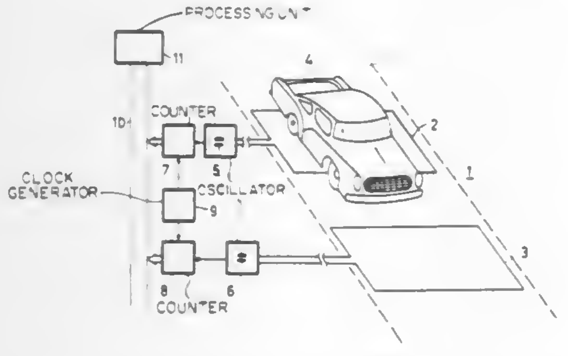
Marcellinus F. H. Dijkman, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,108

Claims priority, application Netherlands, Aug. 9, 1979, 7906087

Int. Cl.^{3} G01P *3/66*

U.S. Cl. 324—178 **8 Claims**



1. A method of determining the velocity of a vehicle by means of a vehicle detection system including first and second vehicle presence detectors arranged at a predetermined distance from one another in the travelling direction of the vehicle wherein each detector produces a measuring value which varies in dependence on the position of the vehicle relative to the detector, the method comprising, for each detector when a vehicle passes

determining a first measuring value measured over a first measuring time interval in which the measuring value exceeds a response threshold;

determining a second measuring value measured over a second measuring time interval in which the measuring value is below the response threshold, the second measuring time interval having been shifted a predetermined period of time relative to the first measuring time interval;

determining by interpolation the instant in a measuring time interval at which each detector is activated; and

computing the velocity of the vehicle using the predetermined distance between the two detectors and the time difference determined between the two instants in the interpolation step.

4,368,429

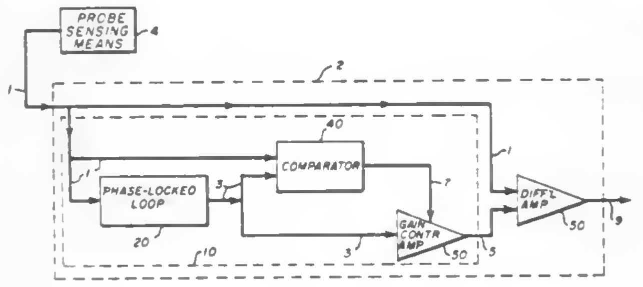
METHOD AND APPARATUS FOR SUPPRESSING NOISE DURING NONDESTRUCTIVE EDDY CURRENT TESTING

Thomas D. Jamison, Fort Oglethorpe, Ga., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 15, 1980, Ser. No. 149,828

Int. Cl.^{3} G01N *27/90;* **G01R** *33/12;* **H04B** *15/00*

U.S. Cl. 324—225 **6 Claims**



1. An apparatus for inspecting metallic workpieces comprising:

a. sensing means for detecting a defect in the metallic workpiece and for generating a signal representative of the defect;

b. a phase-locked loop for receiving the signal generated by said sensing means and for producing as an output a signal synchronized in phase and frequency with said reoccurring noise present in the received signal;

c. a gain controlled amplifier for receiving the output signal of said phase-locked loop for producing as an output an amplified reproduction of the output signal of said phase-locked loop, the gain of said amplifier being varied in response to an error voltage indicative of the amplitude differential between the output signal of said phase-locked loop and the signal generated by said sensing means;

d. a comparator for comparing the output signal of said phase-locked loop to the signal generated by said sensing means for producing as an output an error voltage indicative of the amplitude differential between the output signal of said phase-locked loop and the signal generated by said sensing means, said comparator having a first input port for receiving the signal generated by said sensing means, a second input port for receiving the output signal of said phase-locked loop and an output port at which the error voltage is presented; and

e. a differential amplifier for subtracting the output error voltage signal of said gain controlled amplifier from the signal generated by said sensing means and amplifying the difference therebetween, thereby producing a filtered defect signal, said differential amplifier having a first input port for receiving the signal from said sensing means, a second input port for receiving the output error voltage from said gain controlled amplifier and an output port at which the filtered defect signal is presented.

4,368,430

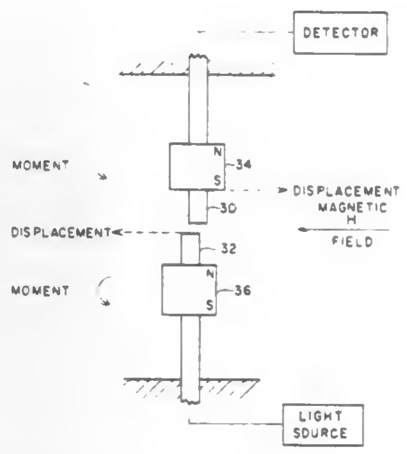
FIBER OPTIC MAGNETIC SENSORS

John C. Dale, Bedford; Glen A. Rines, Brookline, both of N.H., and Harrison W. Fuller, Lexington, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 18, 1980, Ser. No. 179,346

Int. Cl.^{3} G01R *33/032, 33/038*

U.S. Cl. 324—244 **6 Claims**



1. A magnetic sensor, comprising:

a first optical fiber, said first optical fiber being arranged as a cantilevered beam, and including a first dipolar magnet mounted on said cantilevered first optical fiber;

a second optical fiber spaced from said first optical fiber so as to produce a gap between the ends thereof, said second optical fiber being arranged as a cantilevered beam; and

a second dipolar magnet mounted on said cantilevered second optical fiber such that the optical coupling between said optical fibers varies proportionally to fluctuations of a component of the magnetic field substantially orthogonal to the longitudinal axes of said cantilevered beams which causes fluctuating magnetic torque on said magnets.

4,368,431

ELECTROCHEMICAL MEASURING DEVICE FOR DETERMINING THE OXYGEN CONTENT IN GASES

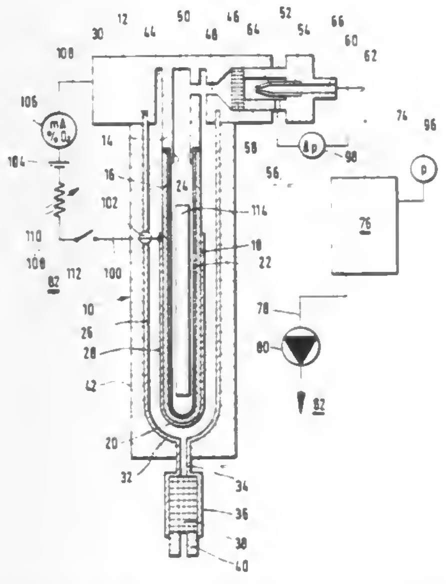
Franz-Josef Rohr, Absteinach, and Rudolf Krapf, Leimen, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannhein-Käfertal, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,380

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945698

Int. Cl.^{3} G01N *27/00*

U.S. Cl. 324—464 **19 Claims**



1. Electrochemical measuring device for determining oxygen content in gases with approximately constant pressure, especially in combustion exhaust gases, comprising a housing with a gas inlet and a gas outlet for passage of a constant pressure gas stream therethrough, an ion-conducting solid electrolyte with a first and a second electrode disposed in the housing to provide a passageway therein for contact of said constant pressure gas stream with said first electrode for measurement of the oxygen content in the gas, said first and second electrodes connected by electrical conductors to an electric current source and a current measuring device, the combination therewith of a constriction in the path of the constant pressure gas stream, said constriction having a passageway of cross sectional area to pass the gas stream at the velocity of sound under the condition of critical pressure ratio dependent on a ratio of the pressure at the outflow side of the constriction to the pressure at the inflow side of the constriction which brings about sound velocity of the gas stream.

4,368,432

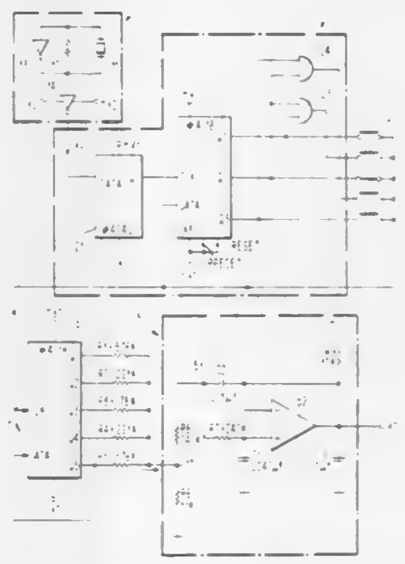
SINE WAVE GENERATOR FOR DIFFERENT FREQUENCIES

Allan Levy, Delray Beach, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Nov. 12, 1980, Ser. No. 206,256

Int. Cl.^{3} H03B *19/00;* **H03K** *3/80, 13/02*

U.S. Cl. 328—14 **10 Claims**



1. A sine wave generator composed of digital circuits comprising:

(a) a high frequency oscillator for generating a square wave output pulse train;

(b) a frequency divider circuit being composed of

  a first ripple carry binary counter having a data input and an output, and being symmetrically arranged between positive and negative supply voltage, said data input being connected to said output of said square wave oscillator; and

  a second shift register including Johnson-counter stages being symmetrically arranged between positive and negative supply voltage, having a data input, a clock input connected to said output of said binary counter and having parallel outputs, one of said parallel outputs forming an output of said frequency divider network;

(c) a binary shift register being designed as a divide-by-n counter and having m counter stages, wherein m=n/2, said shift register having a clock input connected to said output of said frequency divider circuit and having m outputs each associated with a respective one of said counter stages;

(d) a resistor network being composed of m rated resistors having first and second taps and being arranged in parallel with said first taps connected together, and each of said second taps being connected to a respective one of said outputs of said shift register, wherein the rating of said resistors is such that an k-th resistor associated with the k-th output of said shift register has the value

$$R_k = \frac{R}{\text{sine}\,\frac{\pi}{m}\,(k - C)}$$

and wherein

k is a positive integer from 1 through m;

R is a reference resistance value;

C=½ if m is an odd number; and

C=0 if m is an even number; and

(e) a low-pass filter network having an input and an output, said network input being connected to said commonly connected first taps of said resistors and said network output forming the sine wave signal output of said generator.

4,368,433
SIGNAL CONVERTER CIRCUIT

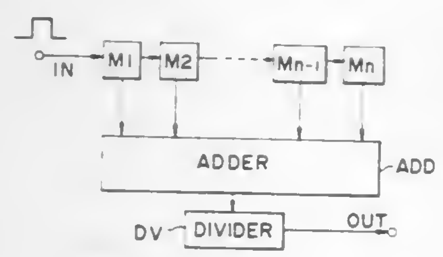
Ryoji Imazeki; Etsuo Yamazaki, and Takao Sasaki, all of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,336

Claims priority, application Japan, Aug. 25, 1979, 54-108384

Int. Cl.^{3} H03K *3/86, 6/00*

U.S. Cl. 328—30 **6 Claims**



1. A signal converter circuit for receiving clock pulses and for converting an input signal, comprising:

n memory elements for sequentially having the input signal written therein in synchrony with the clock pulses, wherein n is an integer greater than 1;

an adder, operatively connected to said n memory elements, for adding together the contents of said n memory elements and for providing, as an output, an added result; and

a divider, operatively connected to said adder, for dividing the added result by n.

4,368,434
PROGRAMMABLE DIGITAL DETECTOR FOR THE DEMODULATION OF ANGLE MODULATED ELECTRICAL SIGNALS

Charles K. Miller, Concord, and William D. Northam, Cambridge, both of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed Sep. 18, 1980, Ser. No. 188,547

Int. Cl.^{3} H03D *3/02;* **H04L** *27/14*

U.S. Cl. 329—50 **17 Claims**

1. Demodulator circuitry for angle modulated carrier signals, comprising

a discriminator for forming the respective products of successive samples of said signals with earlier such samples, to provide an output representative of said signals, comprising

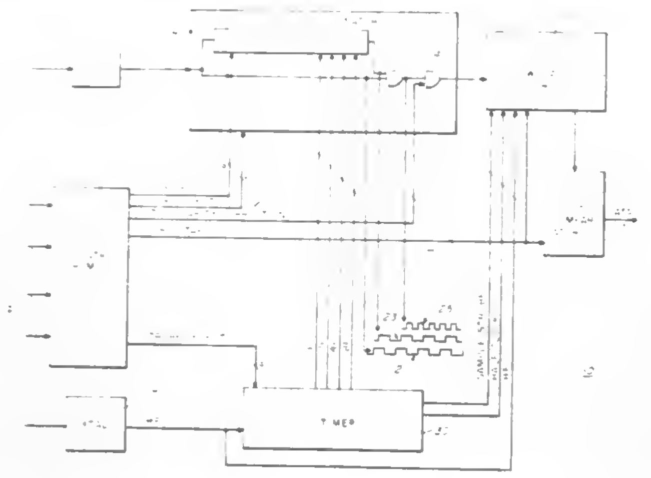
a delay line for storing said samples,

means for shifting successive samples through said delay line,

means for determining the effective length of said delay line, and

multiplying means responsive to said delay line for multiplying current samples by earlier samples stored in and shifted through said delay line, to produce said output, and

programmable control circuitry for providing to said discriminator a first control signal to selectively activate said means for determining, thereby selecting said effective length, and a second control signal to selectively activate said means for shifting to thereby select the rate at which samples are shifted through said delay line, said control signals together thereby determining the effective time delay in said discriminator.



4,368,435
SYSTEM FOR MAXIMUM EFFICIENT TRANSFER OF MODULATED AUDIO FREQUENCY ENERGY

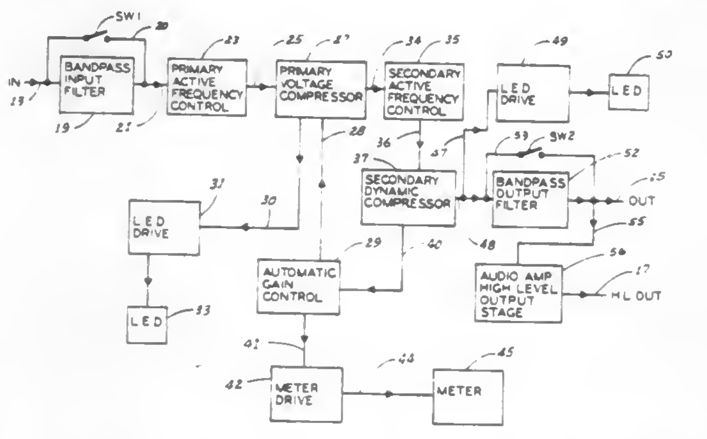
Graham P. Bloy, Bangkok, Thailand, assignor to Alfred F. Eberhardt and Marvin Coghill, both of Bangkok, Thailand, a part interest to each

PCT No. PCT/US80/01331, § 371 Date Oct. 3, 1980, § 102(e) Date Oct. 3, 1980, PCT Pub. No. WO82/01290, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 3, 1980, Ser. No. 265,990

Int. Cl.^{3} H03G *7/06*

U.S. Cl. 330—133 **24 Claims**



1. An audio processing system comprising audio signal input means for receiving an audio signal to be processed, and audio signal output means for providing a processed audio signal for further use, and characterized by primary frequency control means for selectively controlling the relative level of said audio input signal to be processed within a plurality of different audio frequency bands thereby to provide a first frequency controlled signal, a primary dynamic compressor including a controllable gain cell, the gain of which varies as a function of the signal magnitude thereto for dynamically compressing the first frequency controlled signal thereby to provide a primarily compressed audio signal, secondary frequency control means for selectively controlling the relative level of said primarily compressed signal within a plurality of different audio frequency bands, thereby to provide a frequency controlled primarily compressed signal, a secondary dynamic compressor

including a controllable gain cell, the gain of which varies as a function of the signal magnitude thereto for dynamically compressing said frequency controlled primarily compressed signal, thereby providing a secondarily compressed signal and a time-delaying, gain-limiting feedback circuit means interconnected between said primary and secondary dynamic compressors for limiting the dynamic compressing of said input signal by said primary dynamic compressor as a time-delayed function of increase in the level of said secondarily compressed signal, said audio signal output means providing said secondarily compressed signal as said processed audio signal.

4,368,436
OVERLOAD PROTECTION DEVICE FOR POWER OUTPUT CIRCUITS

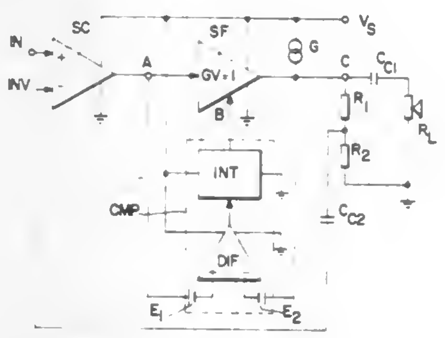
Sergio Palara, Milan, and Silvano Tintori, Bergamo, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed May 28, 1980, Ser. No. 154,082

Claims priority, application Italy, Jun. 4, 1979, 23235 A/79

Int. Cl.^{3} H03F *21/00*

U.S. Cl. 330—207 P **12 Claims**



1. An overload protection device for a power output circuit, said power output circuit having a voltage gain substantially equal to one under normal load conditions and having an input terminal, an output terminal, and an inhibit terminal, said overload protection device comprising:

a threshold comparator having first and second input terminals respectively adapted to be connected to said input and output terminals of said power output circuit and having an output terminal adapted to be connected to said inhibit terminal of said power output circuit;

wherein the threshold of said comparator is arranged such that said comparator generates a signal at its output terminal for inhibiting the operation of said power output circuit and reducing its power dissipation to a value substantially equal to zero whenever the difference between the voltage at said input terminal and the voltage at said output terminal of said power output circuit exceeds a specified value, whereby the power output circuit is protected from output overloads;

further comprising a restoring means for automatically restoring the operation of said power output circuit subsequent to its being inhibited by said comparator, said restoring means comprising a DC load adapted to be connected to said output terminal of said power output circuit, and a current generator connected to said DC load, wherein the magnitude of the current generated by said current generator is sufficient to cause a voltage drop across said DC load which is greater than said specified threshold value of said comparator.

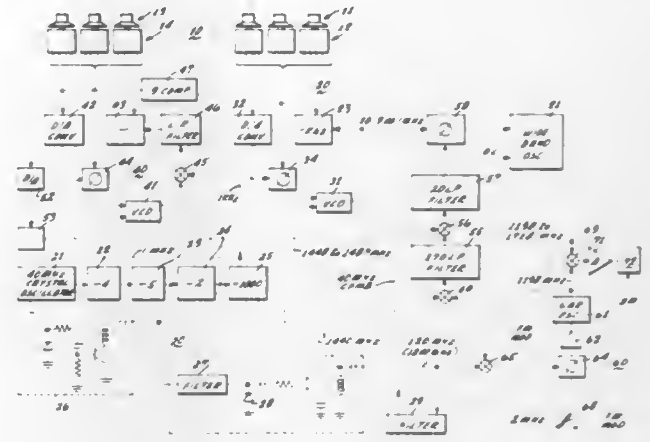
4,368,437
WIDE FREQUENCY RANGE SIGNAL GENERATOR INCLUDING PLURAL PHASE LOCKED LOOPS

Anthony W. Reuter, Indianapolis, Ind., assignor to Wavetek Indiana, Inc., Beech Grove, Ind.

Continuation of Ser. No. 774,812, Mar. 7, 1977, abandoned, which is a continuation of Ser. No. 561,332, Mar. 24, 1975, abandoned. This application Jul. 7, 1978, Ser. No. 922,764

Int. Cl.^{3} H03L *7/22*

U.S. Cl. 331—2 **29 Claims**



17. A signal generator for providing a signal having a particular frequency within a large band, comprising:

at least a pair of oscillating means each providing a signal having a frequency selectable from an individual plurality of discrete frequencies within an individual band having a width different from the widths of the other individual bands, each oscillating means including feedback means for controlling the production of the selectable frequency of the signal within each band;

input selection means having adjustable characteristics for selecting a frequency within the large band in accordance with such adjustments and being operatively coupled to the oscillating means of the pair for controlling the selection in each of the individual oscillating means of the discrete frequency within the individual band;

circuit means for providing a plurality of signals constituting a particular fundamental frequency and harmonics of the fundamental frequency and defining a comb within the large band;

additional oscillating means responsive to the input selection means for providing signals having a particular frequency within the large band in accordance with the adjustments of the input selection means;

the additional oscillating means including feedback means for controlling the production of the selectable frequency within the large band; and

signal combining means for mixing the signals from at least the pair of the oscillating means and the additional oscillating means and the signals from the circuit means in particular relationships defining the feedback means for the additional oscillating means to obtain a signal having the particular frequency from the additional oscillating means,

the signal combining means including low pass filter means for providing for the selection of an individual one of the frequencies in the comb in accordance with the adjustments in the input selection means.

4,368,438
SYSTEM FOR DETECTING SHEET-LIKE OBJECTS

Jan B. Stienstra, Venlo, Netherlands, assignor to OCE-Nederland B.V., Venlo, Netherlands

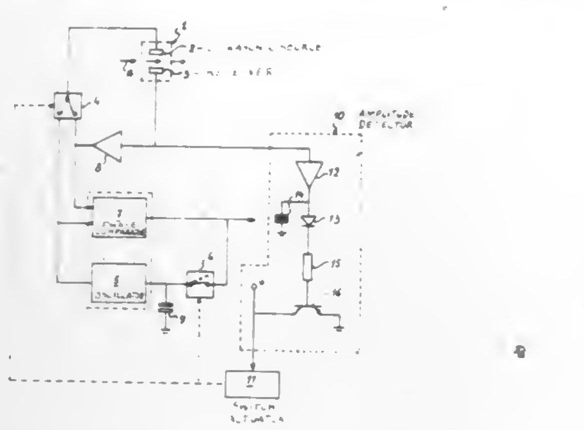
Filed Jan. 26, 1981, Ser. No. 228,332

Int. Cl.^{3} H03L *7/08;* **B65H** *7/12*

U.S. Cl. 331—14 **5 Claims**

1. A method of detecting and distinguishing between superimposed and single sheet-like objects moving along a transport

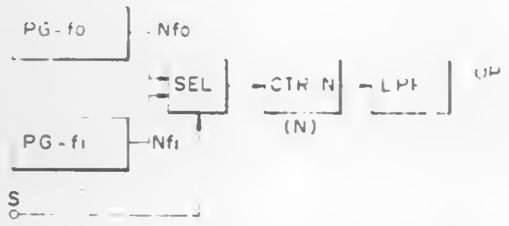
path, which comprises passing ultrasonic vibrations through a gap across the transport path from an ultrasonic source to an ultrasonic receiver that produces a signal output representing characteristics of the vibrations received; when no sheet-like object is present in said gap connecting said source with said receiver in a feedback circuit whereby the vibrations in said gap acquire a certain natural frequency determined by then



existing characteristics of the elements of said circuit and tuning an oscillator to a frequency corresponding to that natural frequency; and when a sheet-like object is present in said gap applying to said source the tuned frequency of said oscillator and comparing the phase of the oscillator vibrations resulting at said receiver with the phase of the oscillator vibrations, thereby producing a signal representing the phase displacement effected by the object.

4,368,439
FREQUENCY SHIFT KEYING SYSTEM

Kiyoshi Shibuya, Kawasaki, and Hitoshi Shirai, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 64,849, Aug. 8, 1979. This application Jun. 19, 1981, Ser. No. 275,293
Claims priority, application Japan, Aug. 24, 1978, 53-103007
Int. Cl.³ H04I *27/12*
U.S. Cl. 332—9 R **4 Claims**



1. A frequency shift keying system, for receiving an input code and for producing modulated output signals of different frequencies in dependence upon the state of the input code, comprising:

pulse source means for continuously providing, as an output pulse signals of frequencies respectively N times greater than the modulated output signals of different frequencies where N is an integer;

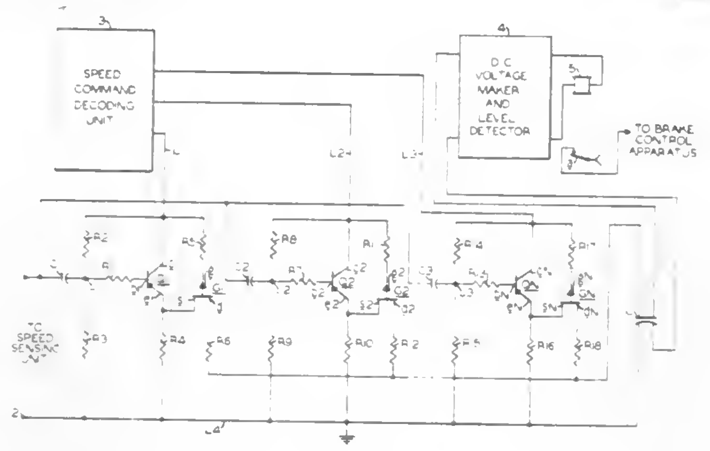
selector means, operatively connected to receive the input code and operatively connected to said pulse source means, for selectively outputting one of said pulse signals from said pulse source means in dependence upon the state of the input code;

a pulse counter, operatively connected to said selector means, for counting pulses from the output of said selector means and for providing a counter pulse signal at a frequency 1/N, said counter pulse signal having a duty ratio of 50%;

a low-pass filter, connected to said pulse counter, for converting said counter pulse signal into a sine wave having the same frequency as said counter pulse signal.

4,368,440
FAIL-SAFE LOW-PASS FILTERING CIRCUIT

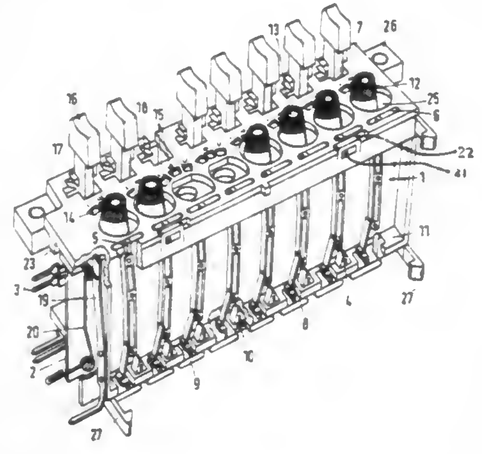
John O. G. Darrow, Murrysville, Pa., assignor to American Standard Inc., Swissvale, Pa.
Filed Oct. 23, 1980, Ser. No. 199,779
Int. Cl.³ H03H *7/10*
U.S. Cl. 333—172 **10 Claims**


SPEED COMMAND DECODING UNIT
D.C. VOLTAGE MAKER AND LEVEL DETECTOR
TO BRAKE CONTROL APPARATUS

1. A vital circuit arrangement comprising, a source of a.c. signals having a variable frequency, a plurality of electronic gates having their inputs coupled to said source of a.c. signals, one of a plurality of electronic switches coupled to the output of an associated one of said plurality of electronic gates, and a variable low-pass filter network having an upper signal frequency limit which is determined by which of said associate electronic gates and switches is rendered conductive by supplying a d.c. voltage to said associated gates and switches.

4,368,441
KEY ASSEMBLY

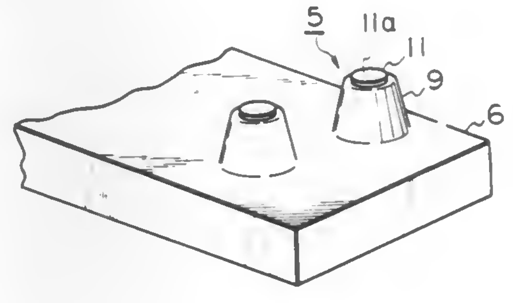
Karl-Heinz Bauer, Bad Neustadt/Saale; Gerold Eckert, Brendlorenzen, and Reinhold Wolf, Bad Naustadt/Saale, all of Fed. Rep. of Germany, assignors to Pren Elektrofeinmecahnische Wereke Jakob Preh Nachf. GmbH & Co., Neustadt, Fed. Rep. of Germany
Filed Apr. 16, 1981, Ser. No. 254,635
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015292
Int. Cl.³ H03J *1/02*
U.S. Cl. 334—15 **8 Claims**



1. A key assembly for receivers of communication systems, especially radio and television receivers, comprising a casing, keys adapted for mutual release by means of a sliding, spring-loaded locking plate for switching in storable, selectively adjustable electrical values of channel memories consisting of a plurality of voltage dividers for variable capacitance diode tuning, rotary and slidable press buttons associated with the respective keys for channel tuning and optionally for selecting a frequency range, which is adjustable in a preferably pressed position of the rotary press button being different from the tuning position by turning into various locking angular positions, as well as a unitary channel and frequency range indicator scale, characterized in that said indicator scale and the locking plate (7) for the keys (16) are one and the same.

4,368,442
MERCURY SWITCH

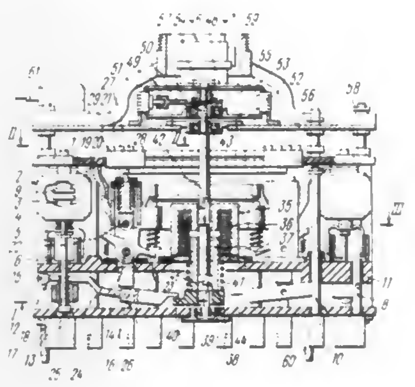
Kohmei Yamaguchi, Yokohama; Kazuo Kobayashi, and Takeo Furukawa, both of Suzaka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 8, 1980, Ser. No. 214,206
Claims priority, application Japan, Dec. 11, 1979, 54-170417[U]
Int. Cl.³ H01H *29/04*
U.S. Cl. 335—57 **11 Claims**



1. A mercury switch in which a magnetic armature and a magnetic pole having a fixed contact are inserted in a glass tube, mercury is introduced into the glass tube to wet the contact point, and both ends of the glass tube are sealed, the improvement wherein a recessed portion is formed in a portion of the magnetic pole, a contact material is adhered into the recessed portion to form a fixed contact having an upper exposed contact surface and side portions substantially buried in said recessed portion, and a film of metal oxide which will be poorly wetted with mercury is formed on the surface of the magnetic pole except on the surface of the fixed contact.

4,368,443
POWER ELECTRIC CIRCUIT SWITCHING DEVICE

Vitaly I. Koshman, bulvar Shevchenko, 123, kv. 25; Vladimir F. Petrichenko, ulitsa Prozhektornaya, 6, kv. 44; Boris S. Gnilitsky, ulitsa Artema, 116, kv. 21; Vyacheslav D. Oborotov, ulitsa Marii Ulyanovoi, 65, kv. 53; Alexandr M. Ubiiko, bulvar Shevchenko, 115, kv. 30, and Leonid P. Abara, ulitsa Nizhnekurganskaya, 3, kv. 192, all of Donetsk, U.S.S.R.
Filed Apr. 1, 1981, Ser. No. 249,840
Int. Cl.³ H01H *51/08*
U.S. Cl. 335—138 **7 Claims**



1. A power electric circuit switching device comprising;

a plurality of main contacts composed of stationary contact members arranged in a circle, and movable contact members;

a plurality of first and second auxiliary contacts adapted for switching local control circuits of the device;

mechanisms of separately operating main and auxiliary contacts, which mechanisms being provided with contact fixing devices for fixing said main and first auxiliary contacts;

a rotational electromechanical drive having a driving shaft, adapted to rotate said driving shaft through a predetermined angle;

an electromagnetic drive having an electromagnet for closing said main and first auxiliary contacts, electromagnets for opening said main and auxiliary contacts, and an actuating mechanism;

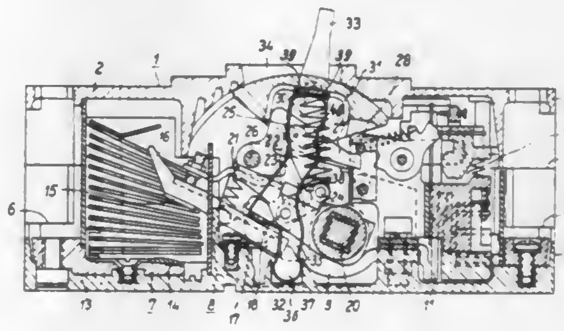
said actuating mechanism of said electromagnetic drive, comprising an armature of said electromagnet for closing said main and first auxiliary contacts, said armature being formed hollow and mounted on said driving shaft for movement along the axis of said driving shaft and rotation therewith;

plurality of armatures of said electromagnets for opening said main and auxiliary contacts, which armatures reciprocate to open said main and auxiliary contacts, the number of said armatures corresponds to the number of said contact fixing devices of said main and first auxiliary contacts, each of said plurality of armatures being cnnected with one of said contact fixing devices for opening respective contact;

a contactor secured on said armature of the electromagnet for closing said main and first auxiliary contacts, said contactor being provided with at least one projection to actuate said main and auxiliary contacts.

4,368,444
LOW-VOLTAGE PROTECTIVE CIRCUIT BREAKER WITH LOCKING LEVER

Bernhard Preuss, and Werner Koziolek, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 31, 1981, Ser. No. 297,568
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 8023509[U]
Int. Cl.³ H01H *9/20*
U.S. Cl. 335—166 **5 Claims**



1. In a circuit breaker comprising a housing, at least one stationary contact and one movable contact, a control shaft, a carrier mounted on the control shaft and connected to the movable contact to move the same relative to the fixed contact, a handle, an actuating lever connected to the handle to be controlled thereby, a pressure spring connected to the carrier and to the movable contact to exert pressure on the movable contact to force it toward the fixed contact, a drive spring connected to the actuating lever, and a toggle lever system engaging the carrier, and including a toggle joint pin, the invention comprising:

a locking lever, one end of the locking lever engaging the handle;

pivotal support means for the locking lever;

a first working surface of the locking lever;

an abutting surface on the carrier opposite the working surface and spaced therefrom by a distance less than the distance the working surface moves when the operating handle moves from its "on" position to its "off" position: and a second working surface on the locking lever opposite the toggle joint pin of the toggle lever system to engage the toggle joint pin at an intermediate position in the path of movement of the locking lever.

4,368,445

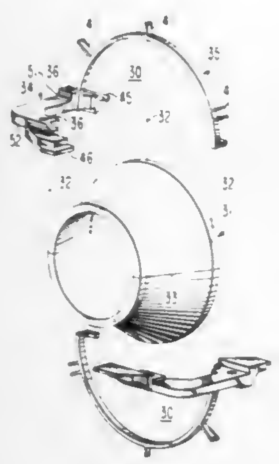
TELEVISION DEFLECTION YOKE

Robert W. Shisler, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,496

Int. Cl.³ H01F *5/02*

U.S. Cl. 335—210 **5 Claims**



1. A deflection yoke for use in a television receiver, comprising:

a magnetically permeable core having two separable core halves;

a pair of horizontal deflection coils;

a pair of yoke interlock members, one of said members mounted to each of said core halves in predetermined positional relationship to the other of said members, each of said members comprising:

  a plurality of core engaging surfaces to accurately fix the position of said interlock member with respect to said core half;

  a plurality of horizontal deflection coil engaging surfaces to accurately fix the position of one of said horizontal deflection coils with respect to said interlock member; and

a pair of vertical deflection coils, each of said vertical coils toroidally-wound on a respective core half in predetermined positional relationship relative to said interlock members, whereby each of said horizontal deflection coils is held in predetermined positional relationship with respect to the other of said horizontal deflection coils, each of said vertical deflection coils is held in predetermined positional relationship with respect to the other of said vertical deflection coils, whereby said horizontal deflection coils are held in predetermined positional relationship with respect to said vertical deflection coils.

4,368,446

SOLENOID

Kazuo Araki, Tateyama, and Ikuo Tochizawa, Takaoka, both of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama, Japan

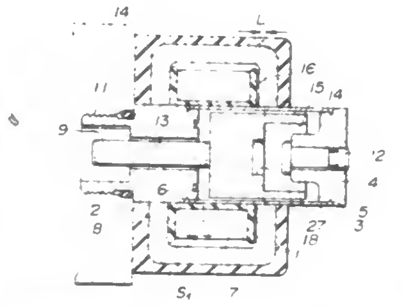
Filed Oct. 23, 1979, Ser. No. 87,485

Claims priority, application Japan, Oct. 26, 1978, 53-146420[U]; Oct. 26, 1978, 53-146421[U]

Int. Cl.³ H01F *7/08;* H02K *33/02*

U.S. Cl. 335—258 **2 Claims**

1. An AC or DC solenoid of the armature-in-tube type comprising a stationary core; an armature; an armature tube secured to said stationary core to form an oil-tight seal and enclosing said armature, said armature being axially slidable within said armature tube; and a yoke and a coil for energizing said stationary core and said armature, said solenoid having means provided at an end of said armature for reducing the effective cross-sectional area of the magnetic path extending through said yoke and said armature when the distance between said armature and said stationary core is less than a predetermined fraction of the full stroke of movement of said armature, said means for reducing the effective cross-sectional area of said magnetic path comprising a recess formed in an end surface of said armature remote from said stationary core, said recess having a bottom surface which lies in the plane of an inner wall of said yoke when said distance between said armature and said stationary core is equal to said predetermined fraction.



4,368,447

ROLLED CORE

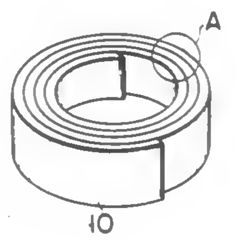
Koichiro Inomata, Yokohama, and Michio Hasegawa, Machida, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 3, 1981, Ser. No. 250,549

Claims priority, application Japan, Apr. 30, 1980, 55-56176

Int. Cl.³ H01F *21/02*

U.S. Cl. 336—20 **3 Claims**



1. A rolled core formed by winding a thin body of an amorphous magnetic alloy having positive magnetostriction characteristics, characterized in that said thin body is wound with the surface of smaller surface coarseness of said thin body facing inward.

4,368,448

WATER COOLING APPARATUS FOR ELECTRIC CIRCUIT ELEMENTS

Shigeo Kobayashi; Kazuo Kobayashi, and Eiki Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 3, 1980, Ser. No. 166,702

Claims priority, application Japan, Jul. 6, 1979, 54-84994

Int. Cl.³ H01F *27/10*

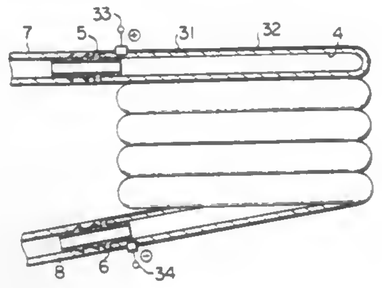
U.S. Cl. 336—61 **17 Claims**

1. A water cooling apparatus and an electric circuit element, comprising a waterway for allowing cooling water to pass therethrough, said waterway including:

(a) an inner waterway portion so arranged as to directly cool the electric circuit element and defined by a metal which is apt to be dissolved in the cooling water at high electric field intensity;

(b) an outer waterway portion connected to said inner waterway portion; and

(c) a connecting waterway portion connecting said inner waterway portion with said outer waterway portion, said connecting waterway portion being formed in metal connector means, at least an inner surface of a connecting end portion of said connector means being made of an alloy containing Fe, Ni and Cr as its main component.



4,368,449

CONTACT MECHANISM FOR TEMPERATURE SWITCH USING THERMAL EXPANSION MEMBER

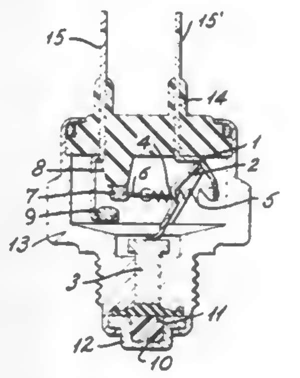
Kazumi Ubukata, Daiichi-Miyazukiso 103, 395-2 Ushinuma, Tokorozawashi, Saltamaken, Japan

Filed Mar. 6, 1981, Ser. No. 241,212

Claims priority, application Japan, Oct. 25, 1980, 55/149742

Int. Cl.³ H01H *37/46*

U.S. Cl. 337—313 **1 Claim**



1. A thermally operated temperature switch comprising;

a switch case;

at least one terminal member mounted in the case and insulated therefrom, the terminal member having a first fulcrum point thereon and a stationary end displaced away from the first fulcrum point;

a plate having opposite ends, a center, and a second fulcrum point slightly displaced from the center, one of the ends of the plate being positioned in the first fulcrum point and pivotable therein;

a thermally expandable member mounted in the case,

a piston movably mounted in the case and operably associated with the thermally expandable member, the other end of the plate resting on the piston and being movable thereby;

a stationary contact in the case;

a movable member having opposite ends and a middle, one of the ends being positioned in the second fulcrum point and pivotable therein;

a movable contact on the other end of the movable member; and

a coil spring biased between the middle of the movable member and the stationary end of the at least one terminal member;

whereby when the thermally expandable member changes size, thereby moving the piston, the plate pivots in the first fulcrum point moving the second fulcrum point whereby the movable member is instantly shifted by the biasing of the coil spring as second fulcrum point passes a dead point thereby making or breaking contact between the movable contact and the stationary contact, further movement of the piston further moving the plate and causing the movable contact to slide on its place of resting.

4,368,450

CONTACT ARRANGEMENT

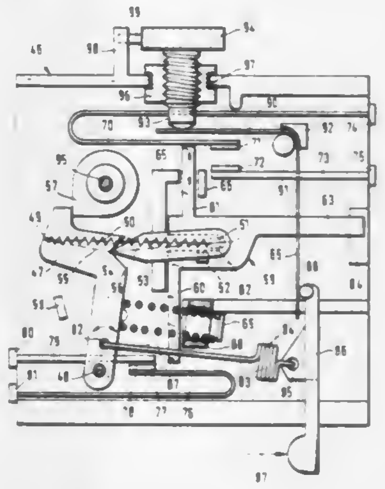
Reiner Lüdorf, Gummersbach, Fed. Rep. of Germany, assignor to Starkstrom Gummersbach GmbH, Marienbeide, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,894

Claims priority, application European Pat. Off., Nov. 28, 1980, 801074485

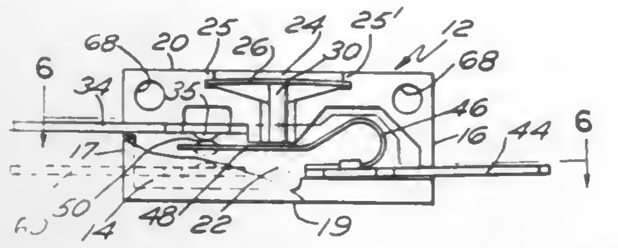
Int. Cl.³ H01H *37/52*

U.S. Cl. 337—363 **11 Claims**



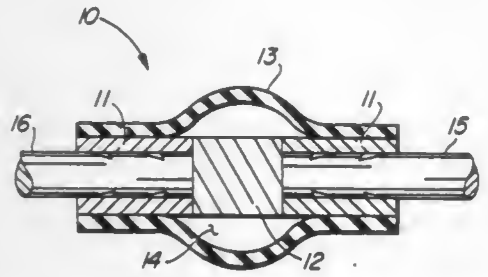
1. A contact arrangement comprising support means, a first stationary contact member mounted on said support means; a second stationary contact member mounted on said support means spaced in one direction from said first stationary contact member; a first movable contact member arranged adjacent said first stationary contact member; a second movable contact member arranged adjacent said second stationary contact member; elongated striker means guided for reciprocating movement in a direction of its elongation to move during its reciprocation in one direction one of the movable contact members in engagement with the stationary contact member adjacent thereto and the other movable contact member out of engagement with the stationary contact member adjacent thereto, and vice versa; guide means provided on said striker means extending transverse to the reciprocation direction of said striker means; a movable guide body mounted in said guide means for movement in said transverse direction; and an angle lever transversely spaced from said striker means and having one arm pivotally mounted in the region of its free end on said support means and another arm extending transverse to said one arm and integrally joined to the latter by a knee; a link member carrying in the region of one end said movable guide body and articulately engaging with its other end said angle lever in the region of said knee; a tension spring connected at one end to said movable guide body and at the other end to said other arm of said angle lever; a second guide body having two opposite faces extending in said transverse direction, said second guide body being mounted in stationary position on said support means and being coordinated with said movable guide body and said guide means thereof so that during movement of said striker means said movable guide body will first be moved in one direction along one of said opposite faces of said stationary guide body and then in an opposite direction along the other of said opposite faces of said stationary guide body.

4,368,451
THERMOSTATIC SWITCH
Henry C. Bucheister, 89 Wheeler Ave., Cranston, R.I. 02905
Filed Aug. 20, 1981, Ser. No. 294,787
Int. Cl.³ H01H *37/02*
U.S. Cl. 337—380 4 Claims



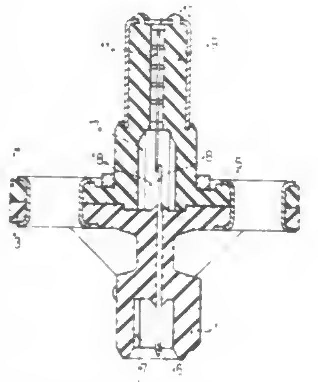
1. A thermally actuated switch comprising a one-piece molded housing member with a central cavity therein,
- said housing having walls lying in planes normal to each other to define a container with a back wall, upstanding side walls and an open face opposite the back wall,
- a first conductive contact member extending through at least one wall of said housing member and having an inner contact portion fixed with relation to the housing member,
- a second conductive member extending through a wall of said housing member and having a movable inner contact portion positioned to engage said fixed contact portion,
- said conductive members located in the cavity of said housing,
- a pocket opening in a side wall of said housing,
- a convex heat responsive element having its edges located in said pocket of said housing member, said pocket having an upper retaining lip defining a surface, and an opening to said central cavity,
- a non-electrical conductive actuator extending from said element to said second conductor member through said opening to move said second member in response to thermal changes of said convex element, said actuator having constant length by reason of the fixed distance between the lip and the first conductive member which is fixed in the same one-piece housing,
- and a cover to close the open portion of the cavity.

4,368,452
THERMAL PROTECTION OF ALUMINUM CONDUCTOR JUNCTIONS
Robert L. Kerr, Jr., 6532 W. Palm La., Phoenix, Ariz. 85035
Filed Jun. 22, 1981, Ser. No. 275,890
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—414 7 Claims



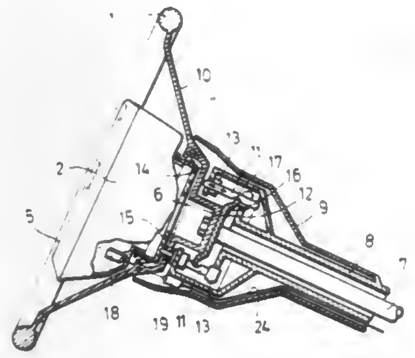
1. In an electrical connector having conduction means therethrough, an insulating envelope thereabout, and means for captivating the end of at least one exterior electrical conductor, the improvement comprising:
- thermal linkage means coupled to said conduction means for reacting meltingly to thermal rather than current overloads to interrupt said conduction means through said electrical connector when a high resistance connection results between the end of said exterior conductor and said captivating means causing a localized, potentially dangerous high temperature rise; and
- an expansion void to which said thermal linkage means moves in its molten state under the influence of gravity alone so that said conduction means remains interrupted.

4,368,453
RAPID ACTING GAS TEMPERATURE SENSOR
Werner Herden, Stuttgart; Hans-Martin Hochenberger, Nürtingen; Hans Neu, Vaihingen; Hans-Joachim Seidel, Waiblingen; Werner Pfander, Fellbach; Heiko Gruner, Gerlingen; Erich Zabler, Karlsruhe; Claus-Dietrich Pilch, Remchingen, and Karl-Otto Linn, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Nov. 3, 1980, Ser. No. 203,514
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944487
Int. Cl.³ H01C *3/04*
U.S. Cl. 338—25 7 Claims



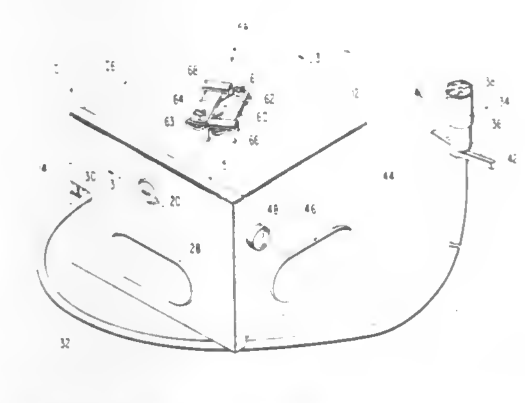
1. Rapidly responsive temperature sensor for measuring the intake air temperature of an internal combustion engine capable of operating as a supercharged engine, comprising:
- a thin wafer of insulating material (**12**);
- a meander-shaped resistance path (**13**) applied to said insulating wafer (**12**) by a thin film technique and comprising multiple conducting segments formed essentially parallel to one another and having extended end portions (**15, 16**), and made of metallic resistive material;
- a protective layer of a polymeric material selected from the group consisting of silicone and epoxy resins, covering said resistance path and said insulating wafer and protecting them against corrosion and abrasion;
- means for supporting said wafer on the air intake duct of an engine in a manner allowing a flow of air past said wafer, and
- conductors (**6**) each connected at one end (**8**) to one of said extended end portions (**15, 16**) of said resistance path for facilitating connection of an external circuit to said resistance path;
- wherein the conducting segments of the resistance path (**13**) are each about 10 mm in length, substantially 50 μm in width and 0.2–0.6 μm thick, and
- the insulating wafer is made of a ceramic material and is substantially 0.25 mm thick.

4,368,454
STEERING DEVICE WITH DISHED IMPACT PLATE FOR AUTOMOTIVE VEHICLES
Bernd Pilatzki, Wuellnerstr. 115, 5000 Cologne 41, Fed. Rep. of Germany
PCT No. PCT/EP79/00075, § 371 Date May 27, 1980, § 102(e) Date May 13, 1980, PCT Pub. No. WO80/00683, PCT Pub. Date Apr. 17, 1980
PCT Filed Sep. 26, 1979, Ser. No. 194,246
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842020
Int. Cl.³ G08G *1/00;* G05G *11/00*
U.S. Cl. 340—22 15 Claims



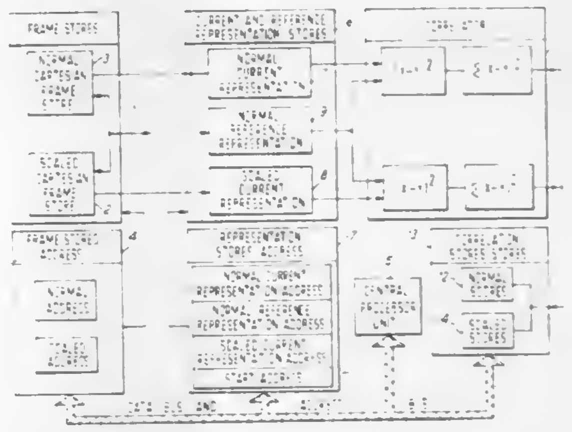
1. A steering device for a vehicle, comprising a steering wheel supported by a steering shaft; a shock proof dished plate carrying operating controls, indicating instruments or the like on an outer surface thereof facing a driver of the vehicle, the steering wheel having at least one spoke being rigidly connected to said steering shaft; a construction element immovably attached to the vehicle, said dished plate being formed with passages; and at least two displaceable coupling elements adapted to couple said dished plate to said construction element so that when one of said coupling elements is in its coupling position by engaging thereof in one of said passages the other coupling element is allowed to come out of its coupling position by disengaging thereof out of another of said passages to thereby prevent said dished plate from rotating with said steering wheel.

4,368,455
HEAVY DUTY EMERGENCY POWER PACK FOR VEHICLE TRAILER
Roger O. Menard, P.O. Box 1216, Clearfield, Pa. 16830
Filed Feb. 26, 1980, Ser. No. 124,742
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.³ B60Q *1/26;* H01M *2/10*
U.S. Cl. 340—74 24 Claims



23. Apparatus, which comprises:
- means for supporting a battery which comprises an enclosed case having a movable lid, means for locking said lid to secure the contents of said case, a handle extending from said case, means extending from said case for securing said case to a trailer, means operatively associated with said securing means for locking said case to said trailer, and an adapter plug extending from said case and adapted to be connected to a mating socket on said trailer.

4,368,456
APPARATUS FOR CORRELATING SUCCESSIVE IMAGES OF A SCENE
David P. S. Forse, Harrow; Richard W. Franks; Nigel T. Bamford, both of London; Philip V. Coates, Sunbury-on-Thames, and Jan C. Thorscov, Uxbridge, all of England, assignors to EMI Limited, Hayes, England
Filed Jan. 9, 1980, Ser. No. 116,030
Claims priority, application United Kingdom, Jan. 9, 1979, 7900664
Int. Cl.³ G06K *9/00*
U.S. Cl. 340—146.3 Q 6 Claims

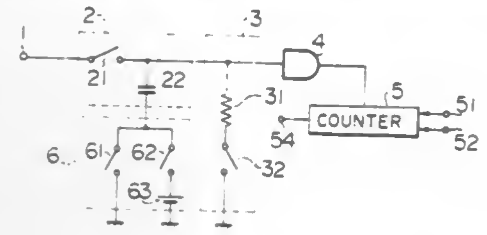


1. A correlation apparatus comprising,
- storage means containing respective storage location for storing data relating to a first succession of representations of a scene, a second succession of representations of the scene corresponding to the first succession of representations but having a scale less than that of the first succession of representations, and a reference representation of at least a portion of the scene having a scale greater than at least the initial representation of the second succession of representations,
- first comparing means for comparing the reference representation with the first succession of representations to form respective first comparison signals indicative of the degree of similarity between compared representations,
- second comparing means for comparing the reference representation with the second succession of representations to form further respective comparison signals indicative of the degree of similarity between compared representations,
- further means for comparing the first comparison and further comparison signals, and
- control means for replacing the reference representation with a selected one of the first succession of representations in dependence on the comparison of the further comparison means.

4,368,457
ANALOG-TO-DIGITAL CONVERTER
Toshiro Tsukada, Kokubunji; Hisashi Tsuruoka, Hachioji, and Michio Hara, Kodaira, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Mar. 20, 1978, Ser. No. 887,966
Claims priority, application Japan, Mar. 22, 1977, 52/30327
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 AD 11 Claims

1. An analog-to-digital converter comprising a storage means connected to an input terminal and storing a signal corresponding to the analog input signal, a discharging means connected to the output terminal of said storage means and discharging said stored signal, and a counter means for counting the number of clock pulses till the time at which the volt-

age at said output terminal of said storage means reaches a certain detection level during discharging; wherein



said analog-to-digital converter further comprises a constant DC bias voltage supply means connected in series with said storage means to shift the voltage at said output terminal of said storage means above said detection level.

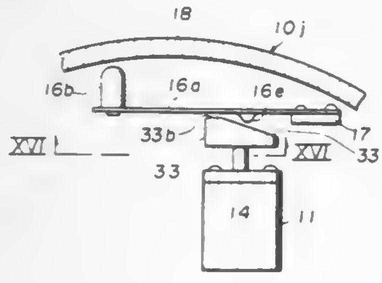
4,368,458
MOTOR ACTUATED BELL

Tadashi Ishii, Tokyo, Japan, assignor to Kobishi Electric Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,775

Int. Cl.^{3} G08B *3/00*

U.S. Cl. 340—396 **3 Claims**



1. A motor actuated bell which comprises:
(a) a base;
(b) a gong mounted on said base;
(c) a motor mounted on said base within said gong and having a rotatable drive shaft extending in parallel relation to said base;
(d) a hammer means comprising (i) a hammer element for striking against the inner wall of said gong and (ii) a leaf spring fixedly secured at one end thereof to said base and extending in parallel spaced relation thereto, said leaf spring carrying said hammer element at the other end thereof; and
(e) a circular cam member operatively and fixedly connected to said motor drive shaft for rotation therewith about the axis of said shaft, said cam member having a cam surface for acting directly on said leaf spring for moving said hammer element toward and away from the inner wall of said gong, and said leaf spring being disposed perpendicular to the axis of said cam member.

4,368,459
EDUCATIONAL APPARATUS AND METHOD FOR CONTROL OF DEAF INDIVIDUALS IN A MIXED TEACHING ENVIRONMENT

Robert Sapora, 825 Holiday La., Westminster, Md. 21157

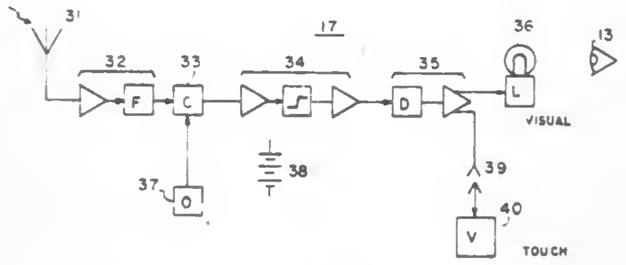
Filed Dec. 16, 1980, Ser. No. 217,081

Int. Cl.^{3} G08B *13/00*

U.S. Cl. 340—407 **10 Claims**

1. A method of coordinating, in a teaching environment, the activities of a mixed audience of deaf and hearing students to aid said deaf students in following a teacher's instructions and discussions, as translated to sign language for the deaf by an attending trained interpreter, for the purpose of achieving improved information transfer and enhanced learning opportunities, wherein the improvement comprises the steps:

a. isolating the speech of said teacher, by a first transducer having directive sensitivity so arranged as to receive said teacher's speech and to discriminate against ambient sound and audience sources of speech;
b. converting, by said first transducer and a signal processor means, acoustical energy of said teacher's speech pattern to a bistate electrical signal, said electrical signal having a first state representing a silent interval of said teacher and a second state representing a speech interval of said teacher;
c. distributing, by a broadcast communications system responsive to said bistate electrical signal, a coordinating signal to a multiplicity of personal receiving sets, one such personal receiving set kept in the actual presence and within the peripheral field of view of each individual person in the population of said deaf students;



d. converting said coordinating signal as received to silent sensory phenomena, by a second transducer and signal processor means located in each personal receiving set kept in the actual presence of each said deaf student, said phenomena having a first state representing said teacher's silence and a second state representing said teacher's audible speech;
e. displaying said silent phenomena to sensory receptors of the body of each said deaf student, said receptors sensitive to said phenomena in controlling the consciousness of said deaf student to the changing pattern of said teacher's intervals of silence and audible speech, thereby providing timely commands to said deaf student of each need to observe said sign language of said interpreter so as to follow said teacher's entire lecture.

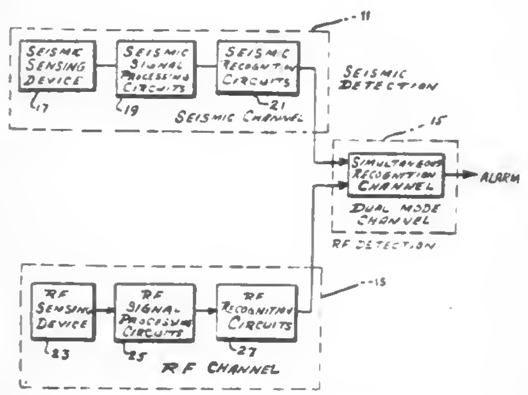
4,368,460
DUAL MODE MOVING TARGET SENSOR

Glenn G. Clinard, Upland; Kenneth C. Guth, Pomona; Gail R. Mulhollam, Upland, all of Calif., and Frank J. Volk, Hickory Hills, Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,644

Int. Cl.^{3} G08B *13/18*

U.S. Cl. 340—522 **1 Claim**



1. A moving target sensor comprising:
a. means for detecting seismic disturbances;
b. means for recognizing the detected seismic disturbances having predetermined values, the seismic recognizing means including
  1. a geophone,
  2. a threshold detector fed by the geophone,
  3. a clock,
  4. a width filter fed by the threshold detector and the clock,
  5. a spacing filter fed by the width filter and the clock, and
  6. a density filter fed by the spacing filter and the clock;
c. means for detecting RF disturbance signals including
  1. a radiating antenna,
  2. an impedance controlled oscillator connected to the antenna, the oscillator output being indicative of antenna impedance,
  3. a first mixer fed by the impedance controlled oscillator,
  4. a local oscillator feeding the first mixer,
  5. a discriminator fed by the first mixer,
  6. a double balanced mixer fed by the discriminator producing data bits,
  7. a logic level converter fed by the double balanced mixer, and
  8. a low pass filter fed by the logic level converter and fed back to the impedance controlled oscillator;
d. means for recognizing detected RF disturbance signals having a predetermined value including
  1. means for detecting changes of antenna impedance,
  2. means for detecting thresholds of antenna impedance, and
  3. means for determining the rate of changes of antenna impedance; and
e. means for detecting simultaneous occurrences of the outputs of the seismic recognizing means and the RF recognizing means.

4,368,461
DIGITAL DATA PROCESSING DEVICE

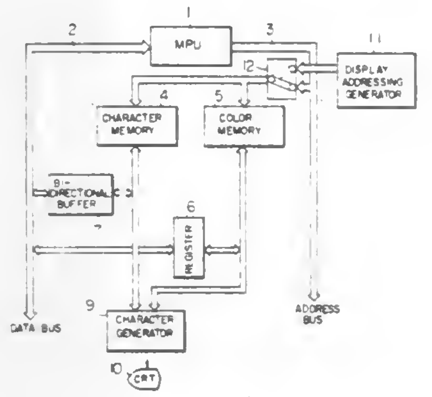
Shigeru Komatsu, Yokohama; Kunihiko Nagai, Zushi; Takuo Koyama; Tsuguji Tachiuchi, both of Yokohama; Mikiaki Kobayashi, Kamakura, and Toshiyuki Kurita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,232

Claims priority, application Japan, Dec. 3, 1979, 54-155609

Int. Cl.^{3} G09G *1/02*

U.S. Cl. 340—703 **7 Claims**



1. A digital data processing device comprising:
a plurality of memory means each having a number of corresponding address locations at which data is selectively stored;
addressing means for simultaneously addressing the same address location in each of said plurality of memory means by application of a single address thereto;
a central processing unit connected to one of said memory means by means including a data bus for performing data transfer between said central processing unit and the designated address location of said one memory means;
individual register means each provided in association with each of said memory means except for said one memory means for storing data received from or to be supplied to its associated memory means; and
means for effecting data transfer between each register means and the designated address location of each associated memory means simultaneously with data transfer between said central processing unit and said one memory means.

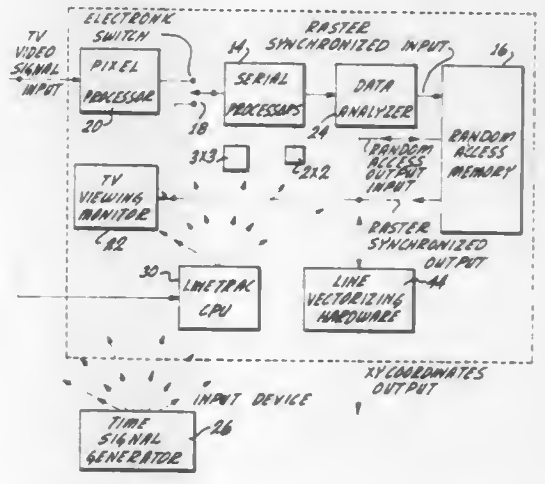
4,368,462
LINE FOLLOWER

Barry J. Crawley, Costa Mesa, Calif., assignor to Teledyne Industries, Inc., Long Beach, Calif.

Continuation of Ser. No. 56,246, Jul. 10, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,696

Int. Cl.^{3} G09G *1/00*

U.S. Cl. 340—723 **27 Claims**



1. A method of providing a digital representation of graphic information on a document wherein the document has been scanned and a signal representative of the graphic information at progressive pixel points on the document has been generated, including the following steps

storing the signal representative of the graphic information in a memory device through an input path,

retrieving the signal representative of the graphic information and feeding the signal through the input path and back to the memory device,

providing serial processing and data analysis to the signal representative of the graphic information on a reiterative basis as the signal is repeatably stored and retrieved and with the serial processing and data analysis including the following steps,

providing pixel arrays from pluralities of adjacent pixels and providing data reduction to center elements, during the serial processing and data analysis, when the pixel arrays have desired characteristics and with all of the graphic information in the signal concentrated to center elements in accordance with the pixel arrays and with surviving pixels which are not part of an array stored and an attribute representative of the level of survival also stored with the surviving pixels,

repeating the above step on a reiterative basis using the surviving center elements from the previous step to form the pixel arrays until there are no more surviving pixel arrays so that the stored surviving pixels and their attributes represent the centroids of the lines of the graphic document and the attributes represent the thickness of the lines, and

providing pixel arrays from the stored surviving pixels and comparing the pixel arrays with fixed criteria for providing gap filling and elimination of undesired pixels.

4,368,463

GRAPHIC DISPLAY AREA CLASSIFICATION

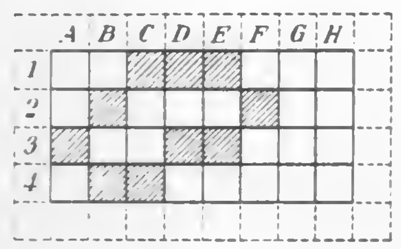
John E. H. Quilliam, Surrey, England, assignor to Sigma Electronics Limited, Horsham and The University of Surrey, Guilford, both of, England

Filed Mar. 19, 1980, Ser. No. 131,676

Claims priority, application United Kingdom, Mar. 21, 1979, 7910004

Int. Cl.^{3} G06K *9/20*

U.S. Cl. 340—744 **14 Claims**



1. A raster-scan display apparatus comprising: first store means having a plurality of memory locations for storing data representing respective dot positions of a display field; means operable to store in said store data representing boundary dot positions; second store means having a plurality of memory locations for storing data representing respective dot positions of the display field; means operable to define one or more notional dot positions in or adjacent the field as representing a seed point or points; and classifying means arranged in operation, for each dot position of the display field, to determine whether there exists, from that dot position to the or a seed point, a connected path of dot positions which does not include a dot position which is indicated by the corresponding location in said first store means as being a boundary dot position and, if such a path exists, to set the corresponding location in the second store means.

4,368,464

EIGHT SEGMENT DISPLAY FOR ORIENTAL NUMERALS

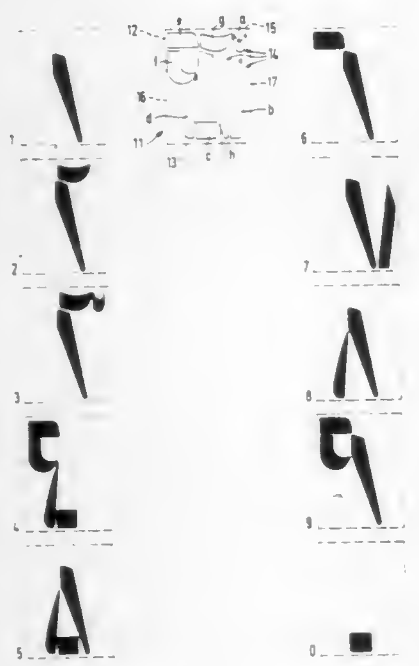
Nadim Azzam, Neufahrn, Fed. Rep. of Germany, assignor to Eurosil GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,569

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034966

Int. Cl.^{3} G09G *3/20*

U.S. Cl. 340—756 **6 Claims**



1. In a numerical display arrangement having at least one display device for the selective representation of oriental numerals of the values zero through nine, said display device including individual, discretely controllable electro-optical display segments grouped within a parallelogram-like frame standing on the narrower side thereof, the improvement comprising: said display device including eight segments of which there are arranged along the upper narrow side of said frame, as viewed in a direction towards said display arrangements, two elongate segments adjacent each other and a point-shaped segment; therebelow, along the left lengthier frame side, two elongate segments located below each other; along the right lengthier frame side an elongate segment; a tied-in short segment between said segments extending along the lower narrow frame side; and an elongate diagonal segment in the center region of said frame extending from approximately the lower right frame corner upwardly towards the left.

4,368,465

METHOD OF ACTUATING A PLASMA DISPLAY PANEL

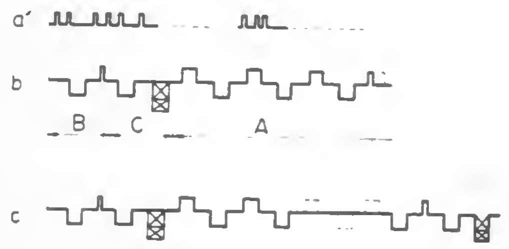
Osamu Hirakawa, and Tadatsugu Hirose, both of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 7, 1981, Ser. No. 290,974

Claims priority, application Japan, Aug. 14, 1980, 55-111103

Int. Cl.^{3} G09G *3/28*

U.S. Cl. 340—771 **6 Claims**



1. A method of actuating a PDP device using an actuating pulse signal having an erasing mode, a writing mode and a sustaining mode which comprises the steps of:

erasing data displayed on a display panel during the erasing mode;

writing new data on the panel during the writing mode; and

sustaining the display of data during the sustaining mode, the data to be displayed being input by an input signal which is not synchronized with said actuating pulse signal, at least one pulse being eliminated from said actuating pulse signal prior to and during the time the mode of said actuating signal changes.

4,368,466

DISPLAY REFRESH MEMORY WITH VARIABLE LINE START ADDRESSING

Jerold D. Dwire, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,894

Int. Cl.^{3} G09G *1/16*

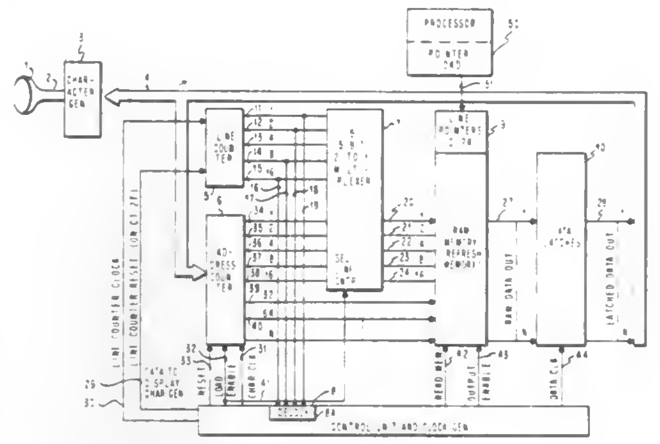
U.S. Cl. 340—799 **15 Claims**

1. A display system wherein a display is refreshed by a refresh buffer containing lines of characters to be displayed comprising:

means for loading line pointers containing the address of the first character in each of said lines into a dedicated area of said refresh buffer;

a refresh buffer address counter; and

a line counter having a count output equal to the number of said lines to be displayed, means for reading a line count from said line counter and means for applying each of said line counts to said refresh buffer to address the said line pointer at the corresponding address in said dedicated areas of said refresh buffer to cause reading of said first character addresses into said address counter.



4,368,467

DISPLAY DEVICE

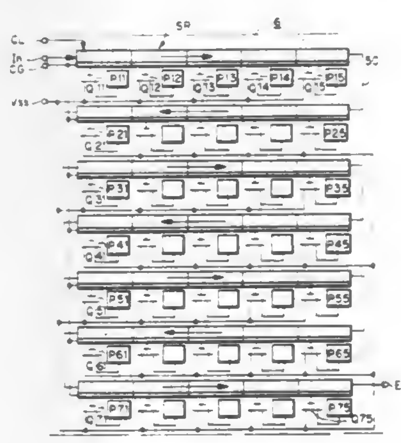
Tomoyuki Unotoro, Tokyo; Kunihiro Tanikawa, Kakogawa; Keizo Kurahashi, Kobe; Hisashi Yamaguchi, Hyogo; Yuichiro Ito, and Yoshihiro Miyamoto, both of Kobe, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 20, 1981, Ser. No. 236,621

Claims priority, application Japan, Feb. 29, 1980, 55-25844; Oct. 31, 1980, 55-154003

Int. Cl.^{3} G06F *3/14*

U.S. Cl. 340—799 **33 Claims**



1. A display device having a structure combining a plurality of display modules comprising a plurality of display picture elements and semiconductor active elements each operatively connected to one of said display picture elements, wherein said plurality of display modules each further comprise: a circuit substrate, attached to said semiconductor active elements, for driving the semiconductor active elements corresponding to said display picture elements and address circuits, operatively connected to said semiconductor active elements and attached to said circuit substrate, for inputting a display signal and distributing it to said semiconductor active elements.

4,368,468

MONOPULSE RADIO RECEIVER COMPENSATION APPARATUS

Hampton H. Lisle, Crownsville, Md., and Kevin DeMartino, Andover, Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,094

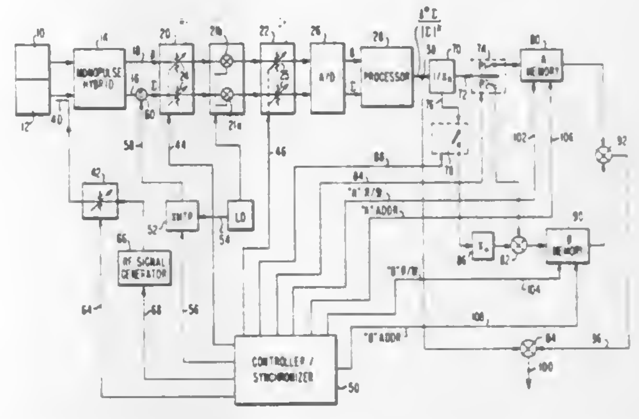
Int. Cl.^{3} G01S *13/44, 7/40*

U.S. Cl. 343—16 M **13 Claims**

1. In a monopulse radar receiver having at least one sum and difference channel pair for conditioning received target echo signals, each channel comprising at least one attenuator operative in a plurality of attenuation states; and a processor for computing from the conditioned echo signals of said at least one sum and difference channel pair a plurality of first signals correspondingly related to said attenuation states of said channel pair, the improvement comprising:

first means for injecting, at times, a pilot signal into both channels of said at least one pair;

second means for setting the at least one attenuator in each of said sum and difference channels of a pair through said plurality of attenuation states during the injection of said pilot signal to render a corresponding plurality of conditioned pilot signals of said channel pair;



third means, including said processor, for computing a respectively corresponding table of second signals from said rendered plurality of conditioned pilot signals, each computed second signal of said table corresponding to an attenuation state of said plurality of attenuation states of said channel pair;

a memory for storing the computed table of second signals into corresponding memory cells; and

fourth means for compensating each computed first signal with a selected second signal from said memory, said selection based on commonly related attenuation states of said first and second signals.

4,368,469

TRAVELING WAVE INTERFEROMETRY PARTICULARLY FOR SOLAR POWER SATELLITES

James H. Ott, and James S. Rice, both of Akron, Ohio, assignors to Novar Electronics Corporation, Barberton, Ohio

Filed Sep. 17, 1979, Ser. No. 75,943

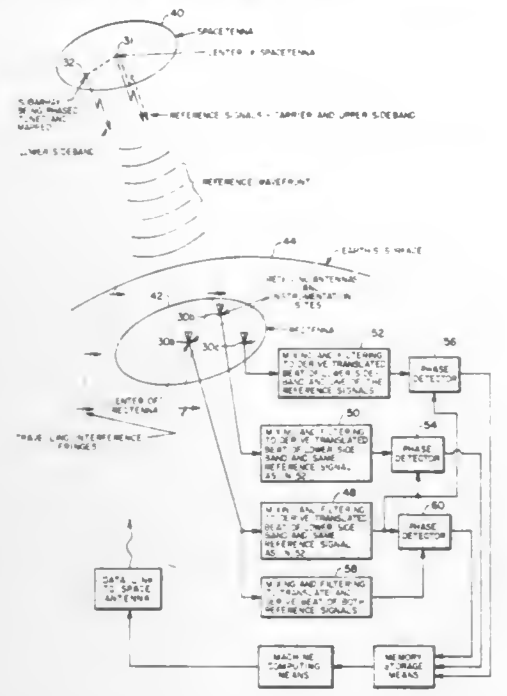
Int. Cl.^{3} H04B *7/00*

U.S. Cl. 343—100 ST **44 Claims**

1. A method for use in scientific measurement and analysis and comprising:

(a) generating travelling interference fringes by radiating at least two different periodic waves at two different frequencies, one from each of two different radiators;

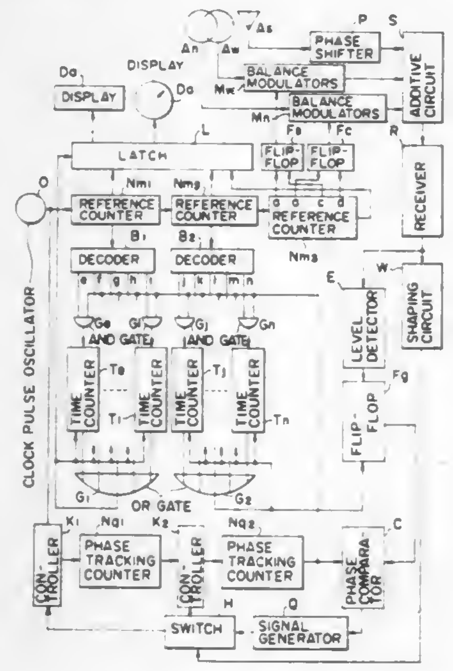
(b) receiving, mixing and filtering said radiated waves to detect at least one beat signal; and



(c) detecting the phase of said beat signal relative to a reference signal of the same frequency.

4,368,470
RADIO DIRECTION FINDER

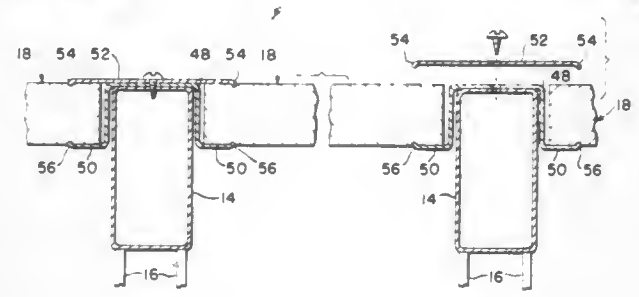
Kenzo Mori; Hyo Yasuda, both of Tokyo, and Masaru Koshi, Tokorozawa, all of Japan, assignors to Taiyo Musen Co. Ltd., Tokyo, Japan
Filed Mar. 20, 1980, Ser. No. 131,899
Claims priority, application Japan, Dec. 6, 1979, 54-157375
Int. Cl.^{3} G01S *5/02*
U.S. Cl. 343—113 R **5 Claims**



1. A radio direction finder comprising antenna means; a reference counter and a phase tracking counter for repeatedly counting a series of input pulses in synchronism with a period of substantial rotation of said antenna means; a receiver for receiving an output of said antenna means; means for converting the said output of said antenna which is received by said receiver into a signal having a frequency corresponding to the period of the aforesaid rotation and representing a phase angle corresponding to the direction of arrival of a radio wave; transmitter means for transmitting said signal, control means for operating said phase tracking counter in synchronism to the output signal from said receiver by controlling the input pulses to said phase tracking counter according to a phase difference of said output signal with respect to an instant corresponding to a predetermined count of said phase tracking counter, said count having higher and lower place bit values; a detecting circuit for transmitting an output signal when a higher place bit value of the count of said phase tracking counter at an instant corresponding to the aforesaid predetermined count of said phase tracking counter is stabilized; means for switching said control means so as to increase the number of input pulses to said phase tracking counter until said detecting circuit produces an output signal and to reduce the number of input pulses to said phase tracking counter when said output signal from said detecting circuit is produced, and means for displaying the difference between the count of said reference counter and that of said phase tracking counter at a given instant.

4,368,471
ANTENNA ICE REMOVAL AND PREVENTION APPARATUS

William B. Walton, Jr., 5436 Pinto, Rubidoux, Calif. 92509
Filed Aug. 11, 1980, Ser. No. 177,249
Int. Cl.^{3} H01Q *1/02*
U.S. Cl. 343—704 **3 Claims**



1. Apparatus for cooperation with an associated antenna, which is generally dish shaped and has a truss supporting frame, for prevention of the formation of ice and/or removal of accumulated ice which comprises:

means for enclosing substantially the entire convex face of the antenna to define a plenum chamber, said means for enclosing including a plurality of discrete panels dimensioned and configured for engagement with the truss supporting frame of the associated antenna;

means for burning a fuel to create heat, said means for burning being disposed within said plenum chamber;

means for distributing air heated by said means for burning to the geometric extent of the associated antenna;

at least some of said discrete panels being mounted by brackets cooperating with the truss supporting frame, said brackets including at least a generally U-shaped bracket and a generally planar bracket member, said generally U-shaped bracket further including flange surfaces extending in a direction which is generally parallel to said generally planar bracket member.

4,368,472
MICROWAVE DOSIMETER

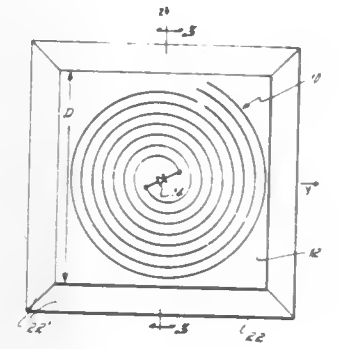
Om P. Gandhi, Salt Lake City, Utah, assignor to Dosimeter Corporation of America, Cincinnati, Ohio
Filed Oct. 8, 1980, Ser. No. 195,138
Int. Cl.^{3} H01Q *1/22*
U.S. Cl. 343—718 **14 Claims**

1. Apparatus capable of being worn by a person for providing an indication of the amount of microwave energy absorbed by a person's body at the frequencies in which substantial reflection thereof by the human body normally occurs, comprising:

an antenna at least responsive, for frequencies of microwave radiation in which substantial reflection from the human body occurs, to those components of the electric field of said microwave radiation incident on a body which lie in a plane generally parallel to said body on which said radiation is incident,

a detector responsive to said antenna for converting energy received by said antenna in said microwave frequency range in which substantial reflection from the human body occurs into a unidirectional voltage having a magnitude proportional to the amount of received energy,

isolating means located between said antenna and said user's body when said antenna is mounted thereon for preventing radiation directed toward said body in said microwave frequency range in which substantial reflection from the human body occurs from being reflected therefrom to said antenna,

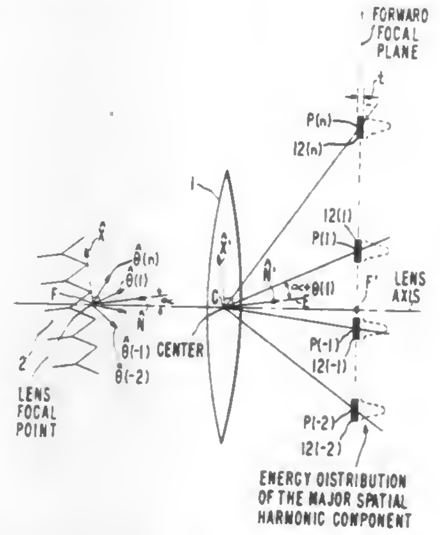


computing means responsive to said detector for providing a signal correlated to the energy absorbed by said body in said frequency range in which substantial body reflection occurs, and

indicating means responsive to said computing means to provide a humanly perceptible output correlated to said energy absorbed by said body in said frequency range in which substantial body reflection occurs.

4,368,473
MICROWAVE LENS RIPPLE FILTER

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.
Filed Sep. 8, 1980, Ser. No. 185,085
Int. Cl.^{3} H01Q *15/02, 15/10*
U.S. Cl. 343—753 **8 Claims**



1. An antenna system comprising:

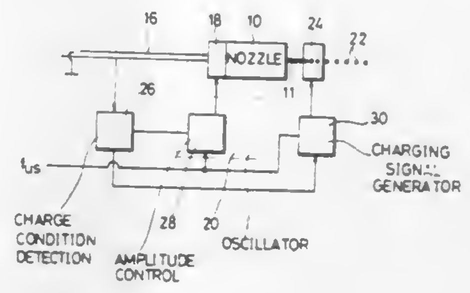
a lens capable of focusing electromagnetic radiation;

a feed array generally situated at a first focal plane of said lens and having a plurality of substantially identical radiation-directing feed elements pointed at said lens; and

a spatial filter situated in a second focal plane of said lens for reducing the size of sinusoidal perturbations in the main beam region of the radiation pattern associated with said system.

4,368,474
INK DROPLET FORMATION CONTROL IN AN INK JET SYSTEM PRINTER

Fumio Togawa, Yamatokoriyama; Yoichi Shimazawa, and Hitoshi Suzuki, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 10, 1980, Ser. No. 196,256
Claims priority, application Japan, Oct. 11, 1979, 54-131610
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



1. An automatic ink droplet formation control system in an ink jet system printer which includes a nozzle for emitting an ink jet, an electro-mechanical transducer secured to the nozzle for vibrating the nozzle in response to an excitation signal of a given frequency, thereby forming ink droplets at the given frequency, and charging means for charging the ink droplets in accordance with print information, said automatic ink droplet formation control system comprising:

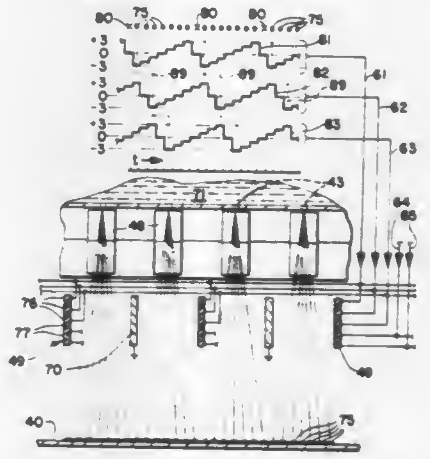
variation means for automatically varying a voltage level of said excitation signal to be applied to said electro-mechanical transducer; and

control means for developing a control signal to said variation means for automatically maintaining said voltage level of said excitation signal within a range where no satellite ink droplet is formed;

said control means including a charge detection unit for detecting a charge condition of said ink droplets effected by said charging means in order to monitor the occurrence of said satellite ink droplets.

4,368,475
JET DROP COPIER

John W. Donahue, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Division of Ser. No. 75,064, Sep. 12, 1979, Pat. No. 4,291,340.
This application Apr. 24, 1981, Ser. No. 256,864
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. Jet drop printing apparatus comprising,

a manifold including means defining a series of uniformly spaced orifices arranged along a straight line,

printing liquid supply means for supplying printing liquid to

said manifold and causing said liquid to exit through said orifices as a row of parallel streams of drops,
an elongated catcher arranged parallel to said line of orifices and positioned for catching those of said drops which follow straight line paths from their orifices,
printing control means for selectively charging predetermined ones of said drops and deflecting said predetermined drops in a first direction to avoid said catcher,
a series of drop scanning electrodes extending between said streams for causing drop scanning in a second direction perpendicular to said first direction, and
scanning signal means for applying a cyclically varying scanning signal to said scanning electrodes;
characterized in that at least alternate ones of said scanning electrodes comprise a plurality of vertically spaced electrode elements and in that said scanning signal is applied to consecutive ones of said electrode elements with a phase delay corresponding to the time required for one of said drops to travel from one electrode element to the next.

4,368,476

INK JET RECORDING HEAD

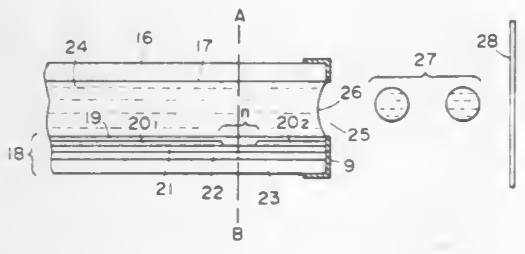
Haruo Uehara, Yokohama; Shigeyuki Matsumoto, Kawasaki; Yasushi Takatori, Sagamihara; Tokuya Ohta, Yokohama, and Yohji Matsufuji, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,448

Claims priority, application Japan, Dec. 19, 1979, 54-165437

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R 5 Claims



1. An ink jet recording head of the type in which ink droplets are jetted from the jet orifice of the head toward a recording material to effect recording on the surface of the recording material with said ink droplets, with said recording head in at least the area surrounding the jet orifice treated with a compound of general formula:

R.Si.X$_3$

wherein, R is a fluorine containing group selected from fluoroalkyl, fluoroaryl, fluorocycloalkyl, fluoroalkaryl and fluoroalkylaryl, each having 1 to 20 carbon atoms, and the ratio in number of fluorines:other elements in said fluorine containing group being not less than 1:1; and X is halogen, a hydrolyzable group selected from alkoxy, alkyl and acyloxy each having 1 to 5 carbon atoms, or hydroxyl.

4,368,477

ARRANGEMENT FOR A PRINTING HEAD IN INK MOSAIC PRINTING DEVICES

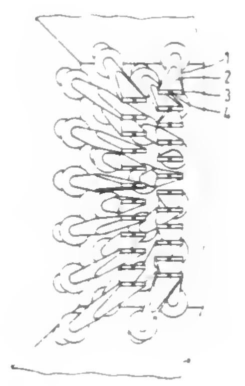
Joachim Heinzl, Munich; Erich Kattner, Neubiberg, and Guenter Rosenstock, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 262,211

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019822

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R **8 Claims**



1. An improved printer head for an ink-jet printing device having a plurality of tubular ink ducts extending through said printer head such that downstream ends of said ink ducts converge toward a printing location surface on said printer head, the improvement comprising wherein said downstream ends are each formed with a relatively narrowed leading edge having a discharge orifice, each said leading edge being connected to the remainder of said corresponding duct through a screw-driver form, wedge-shaped tapered segment.

4,368,478

INK SUPPLY SYSTEM FOR INK JET PRINTERS

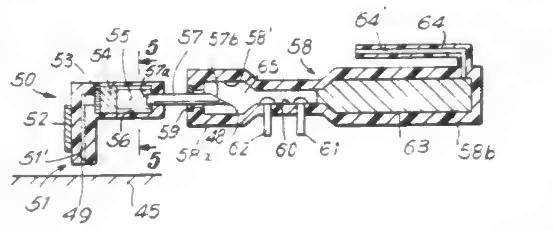
Haruhiko Koto, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Jun. 4, 1981, Ser. No. 270,680

Claims priority, application Japan, Jun. 6, 1980, 55/76257; Jun. 6, 1980, 55/76258

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R **45 Claims**



1. An ink jet printer for printing characters and symbols on a recording medium by selectively projecting ink from an ink jet nozzle on a print head toward said recording medium, comprising ink storage means for holding a supply of ink, conduit means connecting said ink storage means to said print head so that ink can be supplied to said nozzle from said ink storage means through said conduit means, and air trapping means disposed along the path of flow of said ink through said conduit means, said air trapping means including a wall which defines an inner chamber, said air trapping means further including first porous means for preventing air bubbles in said ink from flowing into said nozzle and fluid passage means formed in said inner chamber for creating a capillary force which causes said ink to flow to said nozzle through said first porous means past air bubbles in said chamber, said chamber collecting and holding air bubbles prevented from passing into said nozzle by said first porous means.

4,368,479

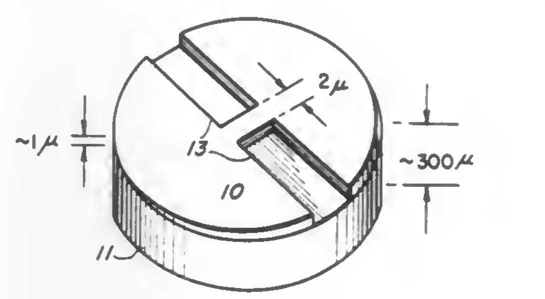
SILICON BARRIER JOSEPHSON JUNCTION CONFIGURATION

Kenneth L. Davis, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 10,859, Feb. 9, 1979, Pat. No. 4,253,230. This application Oct. 29, 1980, Ser. No. 201,898

Int. Cl.^{3} H01L *39/22, 29/06*

U.S. Cl. 357—5 **6 Claims**



1. A planar, silicon barrier, Josephson junction which comprises:
a single-crystal silicon wafer;
said silicon wafer including a barrier;
said barrier being formed by oppositely disposed channels in the upper surface of said wafer on each side of said barrier; and
a superconducting film laid on the bottom surface of each of said channels in contact with said barrier.

4,368,480

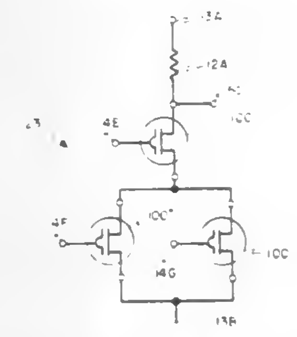
MULTIPLEXING OF CHEMICALLY RESPONSIVE FETS

Stephen D. Senturia, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 893,552, Apr. 5, 1978, Pat. No. 4,236,121. This application Dec. 17, 1979, Ser. No. 104,641

Int. Cl.^{3} H01L *29/78, 29/66, 27/52*

U.S. Cl. 357—25 **3 Claims**



2. A sensor circuit comprising, in combination, at least two charge flow transistors, each transistor comprising:
(a) a semiconductor substrate;
(b) a drain region;
(c) a source region;
(d) a gapped gate electrode; and
(e) a thin-film material said transistors each having a TURN-ON time determined primarily by the conductance of the said film materials and said transistors are connected in parallel, source to source, whereby coupling the charge flow transistors as logic elements permits changes in the ambient environment which affect said film materials to be monitored.

4,368,481

LIGHT-DRIVEN SEMICONDUCTOR DEVICE

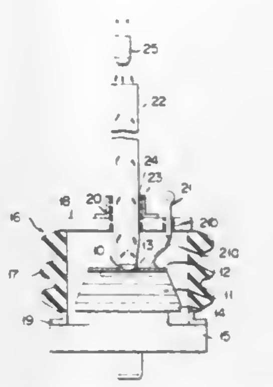
Hiromichi Ohashi, and Yoshihiro Shirasaka, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 10, 1980, Ser. No. 158,324

Claims priority, application Japan, Jun. 19, 1979, 54/77148; Oct. 29, 1979, 54/138659; Oct. 31, 1979, 54/140663

Int. Cl.^{3} H01L *27/14*

U.S. Cl. 357—30 **16 Claims**



1. A light-driven semiconductor device comprising:
a light-driven semiconductor element having a light sensitive area;
an envelope containing said element;
a light guide having an output end located in the vicinity of said light sensitive area and an input end located outside said envelope, whereby a light signal supplied to said input end is guided and emitted from said output end; and
an elastic body interposed between the output end of said light guide and the light sensitive area of said semiconductor element and pressed against said light sensitive area by said output end to cause elastic deformation of said body, whereby said output end is located relatively to said light sensitive area and the light signal emitted from said output end is led to said light sensitive area.

4,368,482

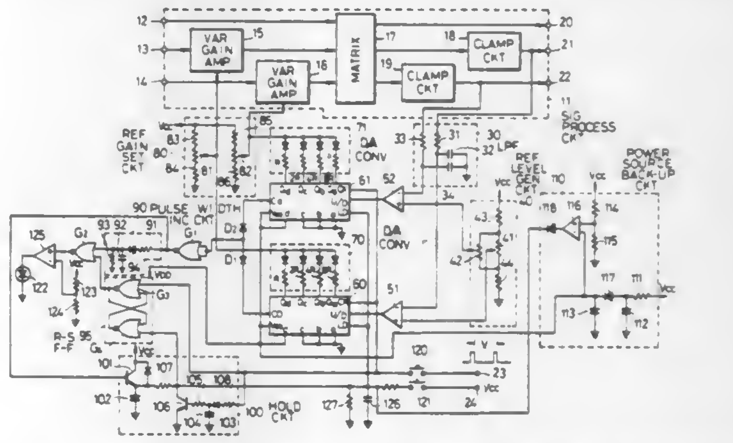
AUTOMATIC WHITE ADJUSTING CIRCUIT FOR A TELEVISION CAMERA

Toyotaka Machida, Kashiwa, and Yuichi Ikemura, Nagareyama, both of Japan, assignors to Victor Company of Japan, Kanagawa, Japan

Filed Sep. 2, 1980, Ser. No. 183,392

Int. Cl.^{3} H04N *9/535*

U.S. Cl. 358—29 **6 Claims**



1. An automatic white adjusting circuit for a television camera having a color image pick-up device, said automatic white adjusting circuit comprising;
first and second variable gain amplifying means for amplifying two predetermined primary color signals of the three primary color signals from an output signal of said image pick-up device;

matrixing means for producing two color difference signals by being supplied with either a luminance signal from the output of said image pick-up device or one remaining primary color signal of the three primary color signals, and outputs of said first and second variable gain amplifying means;

averaging means for producing first and second white detection signals by substantially averaging all or part of the respective video duration time of said output color difference signals from said matrixing means;

reference level producing means in which a reference level equal to a DC level of said two predetermined color difference signals of said output signal of the image pick-up device upon image-picking up of a white object by said image pick-up device is produced;

first and second level comparing means for respectively comparing the levels of said first and second white detection signals from said averaging means with said reference level from said reference level producing means;

first and second control voltage producing means for producing first and second control voltages according to the outputs of said first and second level comparing means,

said first and second control voltages being supplied respectively to said first and second variable gain amplifying means, and controlling their respective gains so that said two color difference signals from said matrixing means upon image-picking up of the white object by said image pick-up device become substantially zero;

a clock pulse supplying means;

said first and second control voltage producing means comprising, respectively, first and second reversible counters for producing said first and second control voltages according to the counted value obtained by counting said clock pulse supplied thereto and by being supplied with said first and second white detection signals as counting operation control signals;

means for preventing the supply of said clock pulse to said first and second reversible counters, stopping the counting operation of said first and second reversible counters, and holding the counted value, said first and second control voltages being held constant at values upon the stoppage of the counting operation of said first and second reversible counters;

said first and second control voltage producing means further comprising series connected circuits having weighting resistors and diodes, said series connected circuits being connected in series between digital count output termnals of said first and second reversible counters and a voltage source, said first and second control voltages being supplied to said first and second variable gain amplifying means through said series connected circuits; a power source back-up circuit including a capacitor connected to said voltage source for operating said first and second reversible counters and charged by said voltage source, said capacitor applying an operating voltage to said first and second reversible counters for a certain time period after cut-off of said voltage source.

4,368,483
VIDEO SIGNAL DEFECT REPLACEMENT CIRCUITRY

Frank C. Liu, Phoenix, Ariz., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,011
Int. Cl.^{3} H04N *9/535, 5/21*
U.S. Cl. 358—36 **3 Claims**

1. A video signal processing system for providing defect compensation for a color video signal by substituting a replacement color signal for color video signal during the period of a video signal defect comprising:

a source of video signals;

first delay means for delaying said video signal by substantially one television line to provide a first signal;

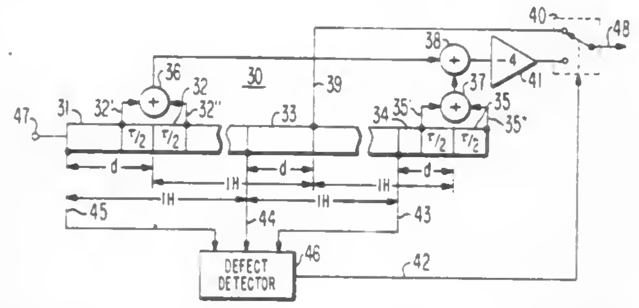
second delay means coupled to said first delay means, said first and second delay means delaying said video signals by substantially two television lines to provide a second signal;

first combining means coupled to said source of video signals for combining signal therefrom temporally separated by one color subcarrier period, the combined signal being equal in color subcarrier phasing to said first signal;

second combining means responsive to said second signal for combining signals temporally separated by one color subcarrier period, the combined signal from said second combining means being equal in color subcarrier phasing to said first signal, and wherein the first signal is delayed from the combined signal from said first combining means by one television line and the combined signal from said second combining means is delayed from said first signal by one television line;

third combining means for generating a replacement signal proportional to the combined signals from said first and second combining means; and

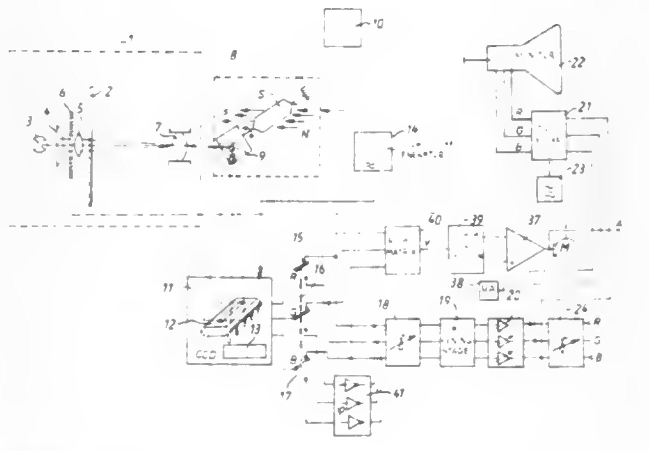
switch means responsive to a defect signal for coupling said replacement signal to a video output terminal, and coupling said first signal to said video output terminal otherwise.



4,368,484
DEVICE FOR COLOR SCANNING WITH CCD ARRAY

Otto Stemme, Munich, and Eduard Wagensonner, Aschheim, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,721
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004717
Int. Cl.^{3} H04N *9/02*
U.S. Cl. 358—41 **12 Claims**



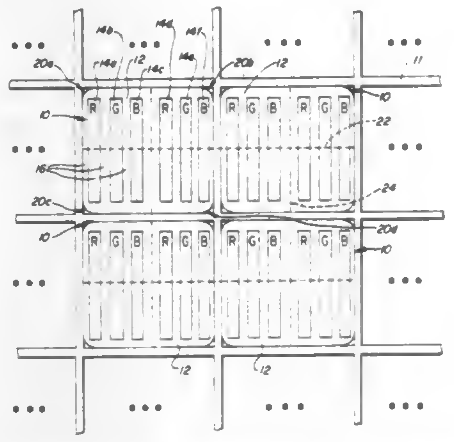
1. In an apparatus for electronically scanning optical images, including an optoelectronic converter device having an electronic circuit for linewise conversion of the scanned image into video signals, a device for recording on photosensitive paper image point signals from a video tube unit receiving the video signals and forming part of the device, and a monitor for screening of the video image produced by the video signals, the improvement wherein the opto-electronic converter device comprises a CCD-array including red-sensitive, green-sensitive and blue-sensitive photo diodes in a number assuring

an image resolution which is higher than the resolution of video images; and further comprising an optical deflecting system for deflecting light rays from an optical image onto the CCD-array to reproduce the image linewise on the array at a first frequency which is much smaller than the video image frequency; shift register means connected with said CCD-array to receive image signals therefrom and including an oscillator which effects pulsed linewise transmission of the image signals out of the shift register means at a second frequency which is higher than said first frequency by a factor at least equal to the lines of a video image; signal processing means connected with said shift register means for receiving signals therefrom and converting them to video signals which are supplied to the video tube unit at the image point frequency; and electronic storage means for the monitor which skips at least every other image point and stores and screens at most every second image point on the monitor.

4,368,485
BILLBOARD LARGE SCREEN TV

Richard W. Midland, Inverness, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 13, 1981, Ser. No. 253,425
Int. Cl.^{3} H04N *9/22, 5/68;* G09G *1/16, 1/28*
U.S. Cl. 358—64 **13 Claims**



1. A billboard video display system for producing a selected billboard display picture consisting of a plurality of picture elements, said system comprising:

a plurality of cathode ray tubes arranged in a predetermined configuration, the viewing screens of said cathode ray tubes compositely forming a billboard system display screen;

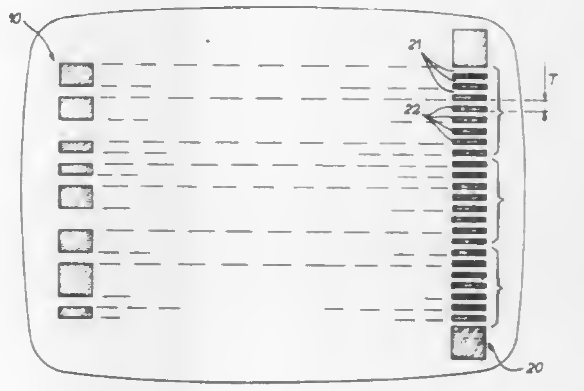
deflection means for causing an electron beam generated by each of said cathode ray tubes to scan its associated viewing screen; and

means for generating and coupling a control signal for independently modulating said electron beam of each of said cathode ray tubes for producing a low-valued plurality of said picture elements on the screen of each of said cathode ray tubes, the picture elements produced by said plurality of cathode ray tubes combining to form said selected billboard display picture on said billboard system display screen with the picture elements associated with each of said cathode ray tubes representing an unrecognizably small portion of said billboard display picture.

4,368,486
TELEVISION SYSTEM USING A MARKING CODE SUPERIMPOSED ON THE PICTURE

Gabriel Degoulet, Montfort; Gilbert Gaucher, Chateaugiron, and Christian Gauthier, Acigne, all of France, assignors to Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge and L'Etat Francais, represente par le Secretaire d'Etat aux Postes et Telecommunications (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, both of, France

Filed Feb. 25, 1981, Ser. No. 237,925
Claims priority, application France, Mar. 4, 1980, 80 04810
Int. Cl.^{3} H04N *7/04*
U.S. Cl. 358—146 **6 Claims**

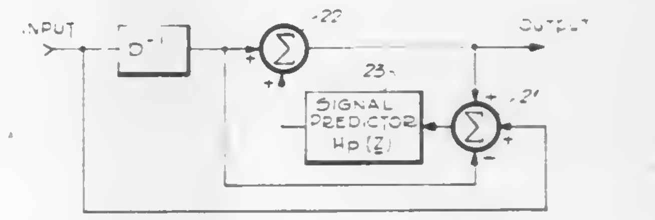


1. A television system comprising a means for superimposing a marking code on one of the pictures to be televised and a decoder able to detect the presence of this code in the pictures, wherein the said marking code is formed by a first vertical strip constituted by a periodic sequence of alternately white and black areas, said strip being positioned along one of the lateral edges of the picture and by a second vertical strip constituted by a sequence of white or black areas, each extending over a height equal to the period of said sequence formed by the first strip, said second strip being located along the other lateral edge of the picture, the video signal corresponding to a picture having received such a code thus incorporating black or white signals located at the start and finish of a scanning line, and wherein the decoder comprises a circuit for detecting, in the video signal which it receives, the presence of white and black signals located at the start and finish of the line and for recognising, on the basis of the thus detected signals, the presence of said code and for transmitting a control order.

4,368,487
METHOD AND APPARATUS FOR MITIGATION OF DEGRADATIONS CAUSED BY SPATIO-TEMPORAL FILTERING OF VIDEO SIGNALS

Mohamed S. Sabri, Beaconsfield, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 17, 1981, Ser. No. 234,787
Int. Cl.^{3} H04N *5/14*
U.S. Cl. 358—166 **17 Claims**

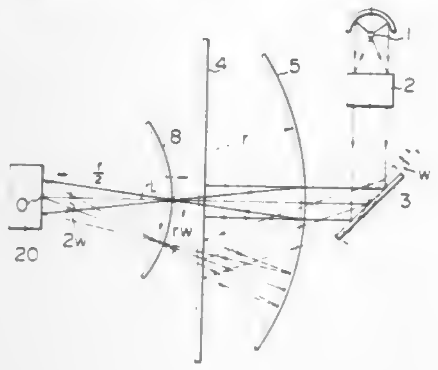


1. A method for reconstructing video signals conditioned by a characteristic filtering function including the steps of operating in a predetermined manner on said video signals to predict alternate signals therefrom, and summing said alternate signals and said video signals, characterized by the simultaneous step

of conditioning said video signals by the inverse of said characteristic filtering function.

4,368,488
PICTURE SCANNING METHOD AT HIGH SPEED

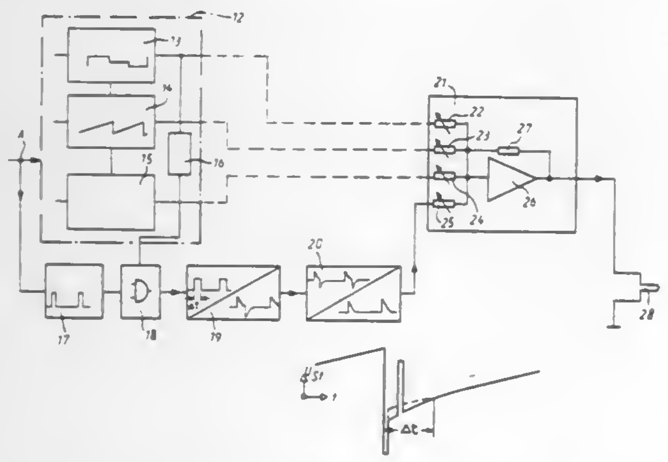
Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan
Filed Nov. 20, 1980, Ser. No. 208,636
Claims priority, application Japan, Nov. 26, 1979, 54-152826
Int. Cl.^{3} H04H *3/08*
U.S. Cl. 358—208 **14 Claims**



1. A method for scanning an original picture by a light beam at a high speed for use in a picture reproducing machine, comprising the steps of:
- (a) deflecting a light beam which is generated by a light source, by a light deflector which is pivotally oscillated, the deflected light passing by a concave mirror;
- (a 1) reflecting the light beam back to said concave mirror;
- (b) focusing the deflected light beam by a concave mirror;
- (c) scanning an original picture by a light spot obtained by focusing the light beam by the concave mirror, while the light deflector is oscillated, the original picture being arranged in a curved plane including a curve along which the light spot is focused; and
- (d) detecting the light beam passing through the original picture by a light detector to obtain a picture signal.

4,368,489
GALVANOMETER-TYPE TILTING-MIRROR SCANNING SYSTEM AND CIRCUIT THEREFOR

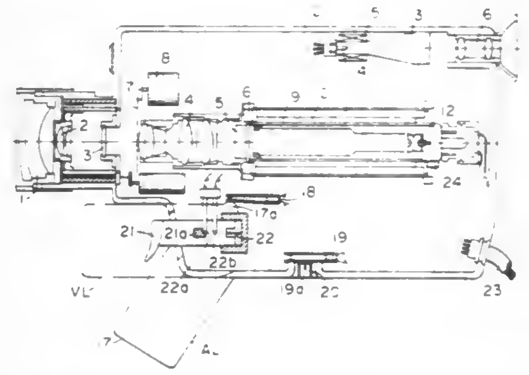
Otto Stemme, Munich; Eduard Wagensonner, Aschheim, and Wolfgang Ruf, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 56,789, Jul. 11, 1979, Pat. No. 4,330,793. This application Jun. 30, 1981, Ser. No. 279,038
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831296; Jul. 1, 1980, 3024903
Int. Cl.^{3} H04N *3/08;* G02B *27/17*
U.S. Cl. 358—208 **6 Claims**



1. In a scanning system of the type which scans originals by shifting an image of an original projected onto the photodiode row of a charge-coupled device in a direction transverse to the photodiode row, in combination, a galvanometric tilting-mirror mechanism including a mirror mounted for tilting motion and used to shift the projected image of an original to be scanned, and including an oil-filled structure operative for damping the motion of the tilting-mirror mechanism; heating means operative for stabilizing the temperature of the oil in the oil-filled structure; control circuit means generating a control signal which determines the tilting motion of the mirror and is comprised of plural control-signal components, including a sawtooth-waveform component which determines the forwards-direction scanning sweep speed of the tilting mirror, a tiltback component in the form of a pulse of a polarity causing the tilting mirror to perform a rapid tiltback motion, a forwards-accelerating component in the form of a pulse of a polarity which brakes the rapid tiltback motion and accelerates the mirror back up to its forwards-direction scanning speed, the sum of the durations of the tiltback component and the forwards-accelerating component not exceeding the vertical blanking interval of the standard T.V. scanning schedule employed, and a corrective component in the form of a pulse which compensates for the loss of linearity as between the sawtooth-waveform component and the motion of the mirror which would occur in the absence of the corrective component.

4,368,490
CAMERA

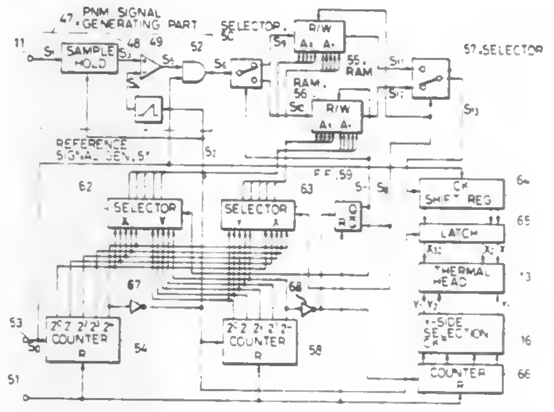
Hiroyuki Takimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1980, Ser. No. 204,877
Claims priority, application Japan, Nov. 15, 1979, 54/148617; Nov. 15, 1979, 54/148618
Int. Cl.^{3} H04N *5/30, 5/76*
U.S. Cl. 358—217 **25 Claims**



1. A camera having excitable image pick-up means to output image signals, and setting means for controlling said pick-up means, said setting means having a first setting mode for bringing said image pick-up means into a non-excited state, a second setting mode for bringing said image pick-up means into a first excited state, wherein said setting means has means for detecting cocking of a grip of the camera and bringing about said second setting mode, and a third setting mode for bringing said image pick-up means into a second excited state and making it possible to output said image signals from said image pick-up means.

4,368,491
DRIVING EQUIPMENT FOR MULTI-GRADATION LEVEL REPRODUCTION

Takashi Saito, Yokosuka, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan
Filed Feb. 2, 1981, Ser. No. 230,481
Claims priority, application Japan, Feb. 4, 1980, 55/11517
Int. Cl.^{3} H04N *1/40*
U.S. Cl. 358—283 **10 Claims**



1. A driving equipment for multi-gradation level reproduction, comprising:

pulse number modulated signal generating means for converting an input picture signal including gradation level information into a serial digital signal, having K (an integer 2 or more) bits $P_{i,1}, P_{i,2}, \ldots, P_{i,K}$ (i being the number of a picture element) per picture element, corresponding to the gradation level of the picture element to obtain a first time-serial signal $P_{1,1}, P_{1,2}, P_{1,3}, \ldots, P_{1,K}, P_{2,1}, P_{2,2}, P_{2,3}, \ldots, P_{2,K}, \ldots, P_{M,1}, P_{M,2}, P_{M,3}, \ldots, P_{M,K}$;

sequence converting means for converting the first time-serial signal into a second time-serial signal which, letting each bit of the first time-serial signal be represented by $P_{i,j}$ ($j=1, 2, \ldots K$), has bits $P_{1,1}, P_{2,1}, P_{3,1}, \ldots, P_{M,1}, P_{1,2}, P_{2,2}, P_{3,2}, \ldots, P_{M,2}, \ldots, P_{1,K}, P_{2,K}, P_{3,K}, \ldots, P_{M,K}$ so that the number j may continue for M bits while changing in a sequential order;

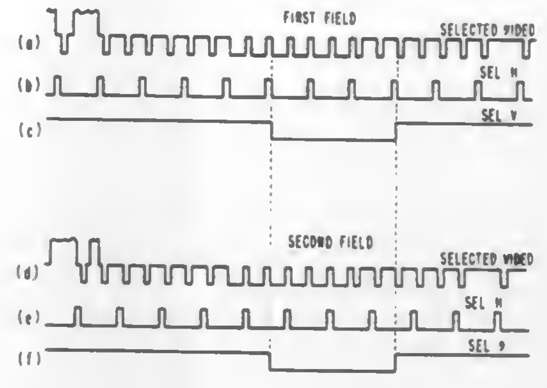
serial-parallel converting means for serial-parallel converting the second time-serial signals by steps of M bits into parallel signals of M bits; and

dirving means for applying the parallel signals of M bits simultaneously to M reproduction elements.

4,368,492
VERTICAL SYNC INDEPENDENT DIGITAL SKEW SERVO

James W. Chamberlain, Philadelphia, Pa., and Arthur M. Goldschmidt, Moorestown, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Jun. 20, 1980, Ser. No. 161,452
Claims priority, application United Kingdom, Apr. 8, 1980, 8011558
Int. Cl.^{3} G11B *21/02, 5/43*
U.S. Cl. 360—70 **11 Claims**

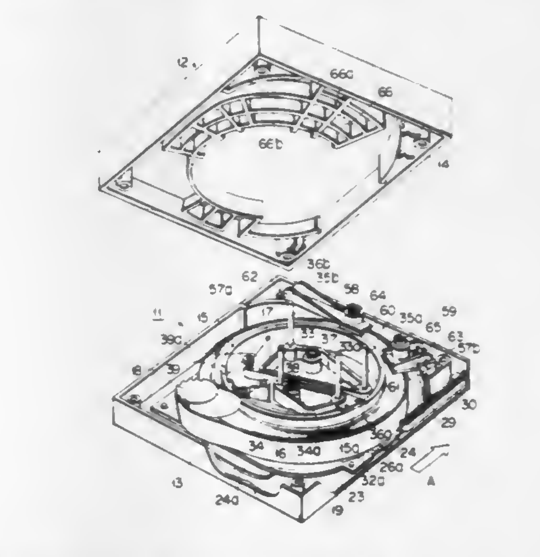
1. A method for correcting for the effects of television recording tape effective length variations, said method comprising comparing a horizontal synchronization signal from the tape with a reference horizontal synchronization signal at two different times per field just before and just after the vertical period respectively to form two comparison signals, subtracting said two comparison signals from each other to form an



error signal, and using said error signal to correct for the effects of said effective length variations.

4,368,493
TAPE CASSETTE DEVICE

Takashi Komatsu, Yokohama; Tadao Seki, Iwatsuki, and Yuichi Igarashi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 15, 1980, Ser. No. 216,502
Claims priority, application Japan, Dec. 26, 1979, 54-169745
Int. Cl.^{3} G11B *15/00, 15/70*
U.S. Cl. 360—93 **10 Claims**



1. A tape cassette device comprising:

a cassette case;

a stationary reel which is disposed inside said cassette case and which has a tape guide path extending from the outer circumference to the inner circumference of said stationary reel;

an endless tape which is wound on the outer circumference of said stationary reel and the innermost part of which is drawn out along said guide path to the inside of said stationary reel to be wound on the outer circumference of said stationary reel;

said case having a bottom plate having a scanning head and tape drive mechanism inserting opening located at the inside of said stationary reel; and

closing means disposed inside said cassette case and displaceable along the axis of said stationary reel between a first position where it is located at the side of said bottom plate for closing said opening and a second position where it is located away from said bottom plate for opening said opening,

wherein said closing means includes at least one slider and means for displaceably guiding said sliders along the axis of said stationary reel between the first and second positions.

4,368,494

PLAYER FOR MAGNETIC TAPE CARTRIDGE RECORDINGS

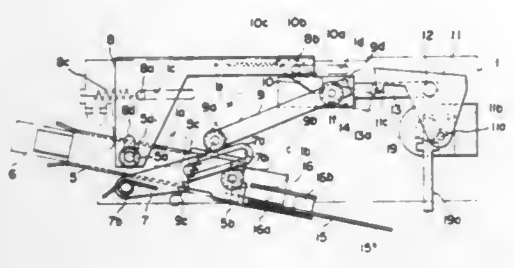
Teturo Kamimura; Masahiro Komatsubara; Shizuo Ando, and Takuzi Inanaga, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,985

Claims priority, application Japan, Dec. 29, 1979, 54-181898[U]; Dec. 29, 1979, 54-181899[U]

Int. Cl.³ G11B *15/66*

U.S. Cl. 360—96.5 **8 Claims**



1. A player for magnetic tape cartridge recording and playback operation comprising:

a chassis having a main surface;

a cartridge holder mounted for motion within said chassis and adapted to receive a tape cartridge from without said chassis at an initial oblique position with respect to the main surface;

guide means including:

two sets of L-shaped guide grooves in opposite side walls of said chassis, each groove including a first groove portion parallel to the main surface and a second groove portion extending from the first groove portion substantially perpendicular thereto;

and

two sets of guide members affixed to opposite side walls of said cartridge holder and received in the corresponding guide grooves;

said guide means allowing said cartridge holder to be translated into said chassis to an intermediate oblique position along the first groove portions and then turned from the intermediate oblique position to a position parallel to the main surface about the trailing guide members; and

means for biasing said cartridge holder so as to move it from the intermediate oblique position to the parallel position along the second guide groove portions.

4,368,495

CARTRIDGE LOADING MECHANISM FOR MAGNETIC DISK DRIVE

Kunio Hamanaka, Hinode, and Keigo Takahashi, Ome, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 10, 1980, Ser. No. 158,325

Claims priority, application Japan, Jul. 13, 1979, 54-88765

Int. Cl.³ G11B *17/04*

U.S. Cl. 360—97 **7 Claims**

1. A cartridge loading mechanism for magnetic disk drive apparatus, comprising:

a housing with an opening at the front end thereof;

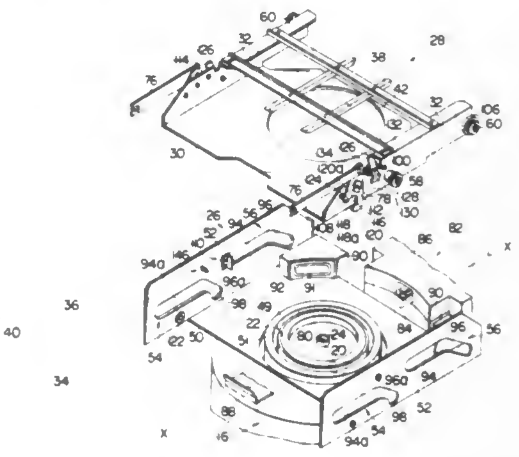
a driving means disposed in said housing;

a cartridge receiver means having a base plate to bear a magnetic disk cartridge inserted through said opening and containing a magnetic disk which is adapted to be rotated by said driving means, said cartridge being capable of being slid on said base plate in a longitudinal direction to be located in a given oriented position, said base plate having an opening therein;

first guide means for guiding the cartridge on said cartridge receiver means, said first guide means including straight guide ridge means formed on said cartridge and straight guide bar means mounted on said cartridge receiver means and extending in said longitudinal direction, said straight guide bar means engaging said guide ridge means while said cartridge is slid and supported on said base plate, so that said cartridge may be properly oriented and located angularly relative to said cartridge receiver means;

means for limiting longitudinal movement of said cartridge relative to said cartridge receiving means to properly locate the cartridge longitudinally relative to said cartridge receiver means;

second guide means for guiding said cartridge receiver means to an operating position where the magnetic disk in said cartridge receiver means is coupled with said driving means when said cartridge receiver means is pushed in backward and longitudinally of said housing after said cartridge is properly oriented and located relative to said cartridge receiver means and for guiding said cartridge receiver means to a non-operating position to allow take-out and setting of the cartridge when said cartridge receiver means means is pulled forward;



shift means for moving said cartridge receiver means forward and backward in the longitudinal direction; and

coupling means for coupling said driving means with said magnetic disk, said driving means having a sealing projection protruding from said driving means to surround said coupling means and extend through said base plate opening when said cartridge receiver means is in said operating position to abut against the bottom of said cartridge.

4,368,496

MAGNETIC HEAD

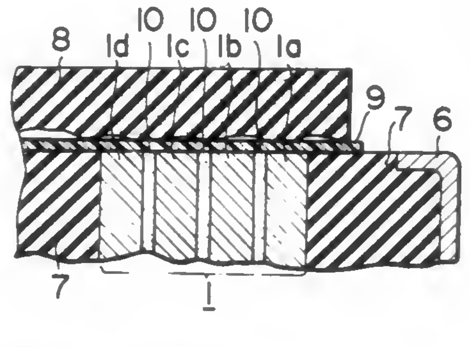
Hiroaki Kato, Machida; Junji Hamana, Chichibu; Akeo Sakai, Saitama; Yoshio Kawakami, Chichibu; Atsushi Goto, Hanno, and Saichiro Amano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 14,849, Feb. 26, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 230,107

Claims priority, application Japan, Mar. 1, 1978, 53-23221; Mar. 7, 1978, 53-25611; Jan. 23, 1979, 54-7321

Int. Cl.³ G11B *3/08, 5/08*

U.S. Cl. 360—110 **7 Claims**



1. A magnetic head, comprising:

a head core including a plurality of core halves joined to each other; and

a coil wound on said head core;

wherein each of said plurality of core halves comprises:

at least one thin plate of a predetermined thickness composed of a high-magnetic permeability material; and

at least two adhesive layers adhered to and solidified on opposing surfaces of said plate, said adhesive layers being composed of an electrically insulative resin and fine inorganic granular particles of a material harder than said high-magnetic permeability material, said particles being added to said resin in an amount of from 20 to 70 percent by weight of said resin such that said adhesive layers have a higher degree of abrasion resistance than said plate, the thickness of said adhesive layers being in a range of from one-hundredth to one-thirtieth said predetermined thickness of said plate such that said relatively thick plate having a relatively low degree of hardness and said relatively thin adhesive layers having a relatively high degree of hardness abrade at a substantially uniform rate,

whereby degradation of performance due to uneven abrasion of said plate and layers is mitigated.

4,368,497

TAPE CASSETTE

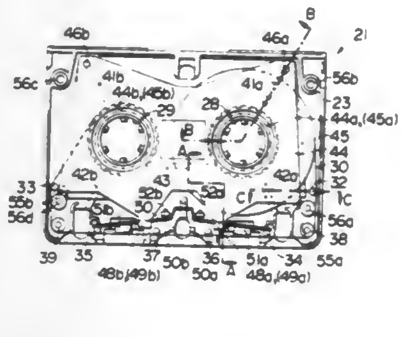
Hideo Shirako, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,901

Claims priority, application Japan, Feb. 20, 1980, 55-21332[U]; Feb. 25, 1980, 55-23748[U]; **Feb. 25, 1980, 55-23749**[U]

Int. Cl.³ G11B *23/08*

U.S. Cl. 360—132 **4 Claims**



1. A tape cassette comprising:

a pair of tape hubs including openings which are engaged by tape hub drive shafts and rotatably disposed in tape hub locating apertures which are formed in a pair of upper and lower cassette halves at laterally spaced positions, said tape hubs having upper and lower surfaces separated by tape receiving surfaces;

a pair of liner sheets disposed along the respective inner surfaces of the upper and lower cassette halves and having a pair of openings formed therein at laterally spaced position, the openings being of a diameter which is slightly less than the diameter of an outer peripheral surface of the respective tape hubs on which a tape is disposed, the openings permitting the drive shafts to extend therethrough; and

ribs formed on the inner surface of the upper and lower cassette halves in alignment with each other, the spacing between the ribs being less than the height of tape receiving surfaces of the tape hubs so that portions of the liner sheets which are located around the openings formed therein and overlap said upper and lower surfaces of said tape hubs are thereby flexed toward the inner surface of the adjacent cassette half in the region of the tape hub.

4,368,498

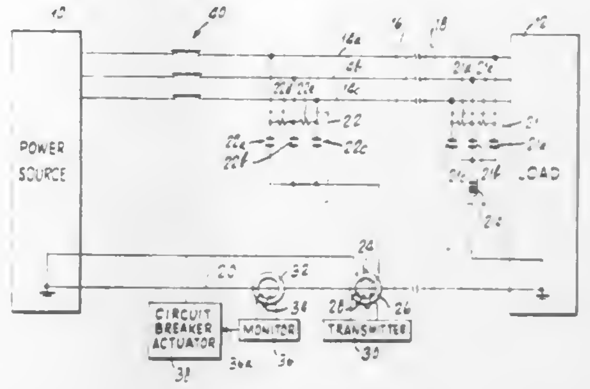
GROUND CONDUCTOR MONITORING SYSTEM

Donald E. Neuhouser, Huntington, W. Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 22,167, Mar. 20, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,018

Int. Cl.³ H02H *5/10*

U.S. Cl. 361—48 **6 Claims**



1. A ground conductor monitoring system for use with a cable system having power conductors carrying electrical power between a source and a load and a ground conductor connecting the source and the load to each other comprising:

a transmitter toroid surrounding the ground conductor, a transmitter coil wound on the transmitter toroid, a transmitter driving the transmitter coil with a monitoring a-c signal and a booster coil also wound on the transmitter toroid and having said monitoring signal induced therein;

a filter electrically connecting one side of the booster coil to the source side of the power conductors and passing said monitoring signal but not said power, a filter connecting the load side of the power conductors to the load side of the ground conductor and passing said monitoring signal but not said power, and an electrical connection between the other side of the booster coil and the source end of the ground conductor;

whereby the ends of the booster coil are connected to each other through a series circuit comprising the ground conductor, the load side filter, the power conductors and the source side filter, and said monitoring signal induced in the booster coil flows through said series circuit;

a monitor toroid also surrounding the ground conductor and a monitor coil wound on the monitor toroid to have induced therein said monitoring signal flowing in the ground conductor, and a monitor coupled with the monitor coil and responsive to an interruption in the monitoring signal induced in the monitor coil to generate a tripping signal indicative of a possible discontinuity in the ground conductor.

4,368,499

ELECTRICAL EQUIPMENT PROTECTION APPARATUS

Francis J. Stifter, Natick, Mass., assignor to Electronic Specialists, Inc., Natick, Mass.

Filed Mar. 2, 1981, Ser. No. 239,391

Int. Cl.³ H02H *3/20, 3/24*

U.S. Cl. 361—90 **11 Claims**

1. Electrical equipment protection apparatus comprising:

circuit interrupter means for connection between an AC supply and equipment to be protected and operational in a first condition to transmit power therebetween and operational in a second condition to interrupt power transmission therebetween;

control circuit means for producing said first condition in response to normal voltage from the AC supply and for producing said second condition in response to an abnormal voltage therefrom;

delay circuit means connected to said control circuit means and adapted to produce a minimum time delay between successive occurrences of said first condition;

overvoltage means connected to said control circuit means and adapted to produce said second condition in response to an input voltage from the AC supply that exceeds a predetermined maximum level; and

coupling circuit means for connecting said delay circuit means to the AC supply during said second condition and for electrically isolating said delay circuit means from the AC supply during said first condition.

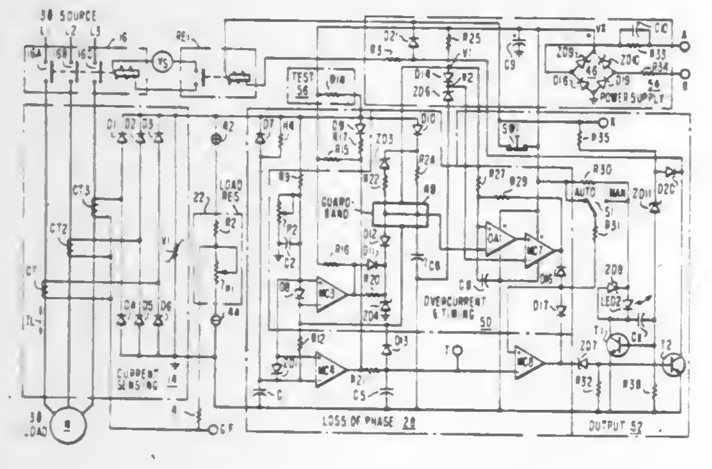
4,368,500
SOLID-STATE LOAD PROTECTION SYSTEM HAVING AN IMPROVED INVERSE TIME DELAY CIRCUIT

Ernest F. Conroy, Jr., and Robert T. Elms, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1981, Ser. No. 258,107

Int. Cl.³ H02H *3/093*

U.S. Cl. 361—94 **12 Claims**



1. A load protection system, comprising:

sensor means for sensing circuit current in an electrical circuit, said sensor means providing a first output signal which is related to said circuit current;

inverse time overload means connected to said sensor means for providing a second output signal at a time which is inversely proportional to the magnitude of said electrical circuit current provided said magnitude of said electrical circuit persists for a predetermined period of time, exceeding a predetermined level;

first unidirectional voltage means having one terminal connected to said inverse time overload means and the remaining terminal connected to a storage device means for prohibiting the charging of said storage device during normal operating conditions;

second unidirectional voltage means having one terminal connected to said inverse time overload means and the remaining terminal connected to an electrical storage device means for prohibiting the discharging of said storage device during an overcurrent condition;

said storage device means connected to said pair of unidirectional voltage means for storing a potential level whose magnitude is related to the magnitude of said circuit current in said electrical circuit;

impedance minimization means adjacent to said inverse time overload means for minimizing impedances affecting said inverse time overload means; and

circuit control trip means connected to said inverse time overload means and to said electrical circuit for opening said electrical circuit when said second output signal is provided.

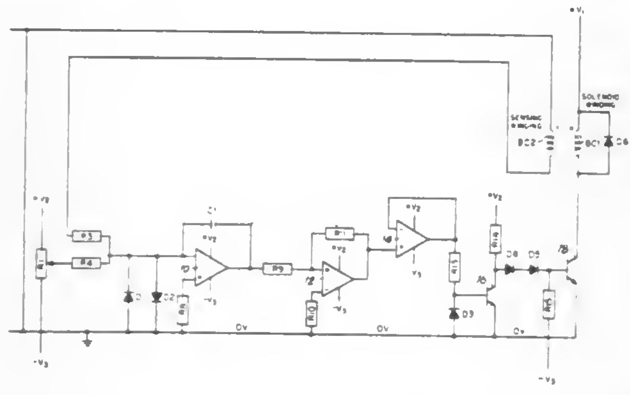
4,368,501
CONTROL OF ELECTRO-MAGNETIC SOLENOID

John A. Gingrich, Toronto, Canada, assignor to Dover Corporation, New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,128

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—152 **9 Claims**



1. A control for the activation or deactivation of an electromagnetic device having a primary operating winding, comprising:

a first switching means for controlling the flow of current through the primary winding of the device,

a sensing winding, magnetically coupled to said primary winding, in which a voltage related to the rate of change of flux in said primary winding is induced,

control means for controlling the switching of said first switching means in response to a predetermined change in flux;

means coupled to receive said induced voltage for producing a change of flux signal and for supplying said signal to said control means; and

biasing means for altering said signal for producing a change of the average flux level in said electromagnetic device at a controlled, predetermined rate.

4,368,502
LEAD-LAG LOAD LOCKOUT CONTROL

Eugene R. Jornod, Caledonia, and Steven D. Siden, Loves Park, both of Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed May 5, 1981, Ser. No. 260,249

Int. Cl.³ H01H *47/00*

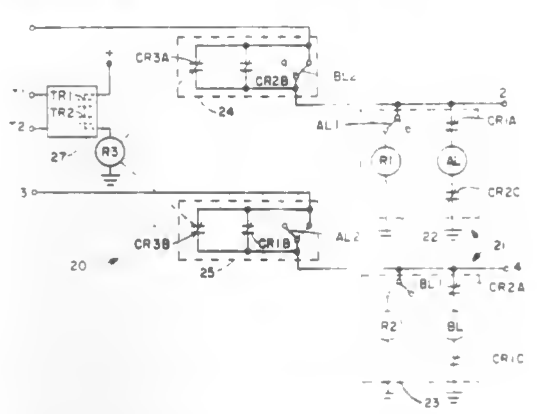
U.S. Cl. 361—192 **14 Claims**

1. A lead-lag load lockout control system for automatically locking out the lag load in a dual load system set up in a lead-lag configuration, and lockout control system comprising:

a first lockout circuit associated with a first load and comprising in parallel a first load switch, a first lockout switch, and a first lockout control switch;

a second lockout circuit associated with a second load and comprising in parallel a second load switch, a second lockout switch, and a second lockout control switch;

a lead-lag memory circuit for storing lead load and lag load identification during system operation comprising a first memory relay circuit connected between said first lockout circuit and a first output terminal and operable to open said second load switch and said second lockout switch when said first load is the lead load, and a second memory relay circuit connected between said second lockout circuit and a second output terminal and operable to open said first load switch and said first lockout switch when said second load is the lead load; and



a lockout control means for selectively opening the lead load lockout control switch in response to a predetermined condition.

4,368,503
HOLLOW MULTILAYER PRINTED WIRING BOARD

Keiji Kurosawa; Kenji Yamamoto; Mitsuo Yamashita; Hisami Mitsui; Ayako Miyabara, all of Nagano; Kiyotaka Miyagawa, Suzaka, and Takayoshi Imura, Nagano, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

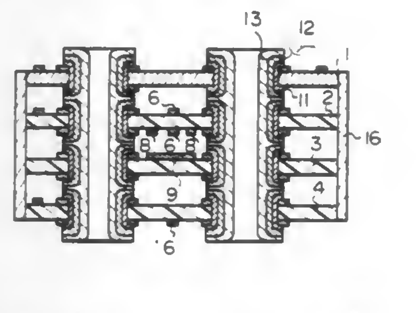
PCT No. PCT/JP80/00111, § 371 Date Jan. 24, 1981, § 102(e) Date Jan. 16, 1981, PCT Pub. No. WO80/02633, PCT Pub. Date Nov. 27, 1980

PCT Filed May 23, 1980, Ser. No. 229,594

Claims priority, application Japan, May 24, 1979, 54-64329

Int. Cl.³ H05K *1/14*

U.S. Cl. 361—414 **14 Claims**



1. A hollow multilayer printed wiring board comprising a plurality of superposed substrates,

each said superposed substrate having a signal conductor pattern formed on at least one surface of said superposed substrate and a ground conductor pattern formed on at least one surface of said superposed substrate,

said superposed substrates being superposed upon each other with a predetermined space therebetween being filled with an insulative gas or liquid,

each said superposed substrate having plated through holes in the ground conductor pattern, said plated through holes comprising a plating layer having upper and lower end surfaces, each of said plated through holes being in line with at least one other said plated through hole of each of the adjacent superposed substrates to form an interstitial hole, a layer of a low melting point metal being formed at least on the upper and lower end surfaces of the plated layer defining each said plated through hole,

said layer of a low melting point metal serving as a through connection between two or more said signal conductor patterns of the superposed substrates and as an interlayer adhesion between the superposed substrates,

all but one of the superposed substrates being made of one of a first group of materials consisting of a thermally resistant organic synthetic resin sheet and an insulation-treated metal sheet, said one of said superposed substrates being made of materials from a second group.

4,368,504
TASK LIGHTING APPARATUS

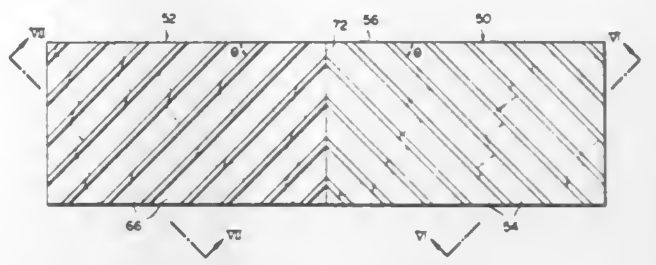
Kozi Sato, Yokohama, and Tadahiro Kaneko, Tokyo, both of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,608

Claims priority, application Japan, Sep. 22, 1981, 56-131868

Int. Cl.³ A61G *13/00*

U.S. Cl. 362—33 **13 Claims**



1. A task lighting apparatus comprising:

(a) a light source installed opposite to a work surface to be illuminated and at intervals of a prescribed distance from the work surface, and including at least a straight tube section which has a central axis and at least a first edge portion and a second edge portion opposite to each other in the longitudinal direction along the central axis;

(b) an elongated housing provided to enclose said light source and having at least an opening at a position opposite to the work surface; and

(c) light-control means provided at the opening of said housing to control most of the beams of light emitted from said light source at least in first and second directions and control the light from said light source so as to maintain the maximum intensity in the first and second directions, said first direction being set in a direction substantially parallel with a first line which is included in a plane including the central axis of the straight tube section of said light source and forming a prescribed vertical angle against the work surface, extends from the first edge portion of the straight tube section, and forms a first angle against the central axis of the straight tube section; and said second direction being set in a direction substantially parallel with a second line which is also included in said plane, crosses the first line, extends from the second edge portion of the straight tube section of said light source, and forms a second angle against the central axis of the straight tube section.

4,368,505
AUTOMOTIVE VEHICLE HEADLIGHT LENS CLEANING DEVICE

Johann Tomforde, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,815

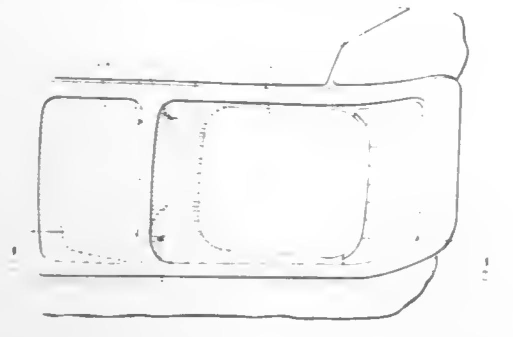
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926305

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—80 **7 Claims**

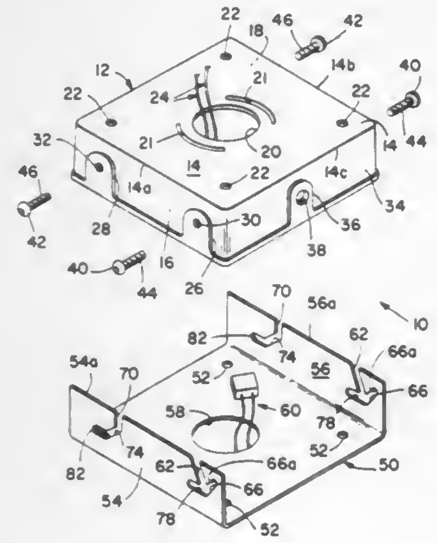
1. A device for cleaning a lamp arrangement of a motor vehicle, the lamp arrangement including at least two juxtaposed lamps and lens means associated with the respective lamps for covering the same, characterized in that a separating web means is disposed between the two juxtaposed lamps, the separating web means includes two lateral surfaces respectively facing a lens means associated with the lamps, at least

one nozzle means is provided in each of the lateral surfaces, said nozzle means is oriented toward a respective lens means so



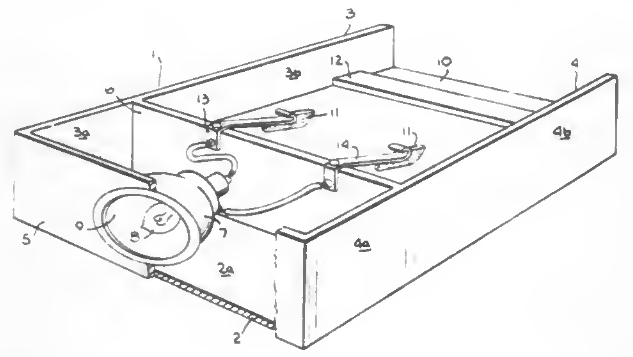
as to enable an emitting of a jet of cleaning fluid on an adjacent lens means.

4,368,506
APPARATUS FOR MOUNTING A LUMINAIRE TO A CEILING
William J. Rapp, Hayward, Calif., assignor to Gardco Manufacturing, Inc., Calif.
Filed Dec. 8, 1980, Ser. No. 214,083
Int. Cl.^{3} F21S *1/02*
U.S. Cl. 362—147 **17 Claims**



1. In an apparatus for mounting a luminaire to a ceiling including a base having a rectangular plate portion rigidly mounted to the ceiling and a pair of side portions extending downwardly from opposite edges of the plate portion, each side portion of the base having a first post and a second post extending outwardly therefrom and being separated by a first selected distance, and a bracket having means for mounting the luminaire to the bracket and a pair of upwardly extending members adapted for mounting to the side portions of the base by means of said first and second posts extending outwardly therefrom, the improvement in the bracket wherein each of the upwardly extending members of said bracket comprises:
- a first slot having an open end disposed at a selected edge of said member for receiving said first post, said first slot extending at an angle to said selected edge of said member;
- a second slot communicating with said first slot for receiving said first post from said first slot, said second slot extending at an angle with respect to said first slot to a closed end for rotationally supporting said member about said first post defining a preliminary mounting position;
- a third slot with an open end disposed at said selected edge of the member for receiving said second post and spaced by said first selected distance from said closed end of said second slot, said third slot extending at an angle to said selected edge; and
- a fourth slot communicating with said third slot for receiving said second post from said third slot and extending at an angle to said third slot to a closed end enabling vertical support of said member on each of said first and second posts in a final mounting position said first and second slots having a spacial relationship to said third slot and said fourth slot preventing said first post from being received into said first slot from said second slot when said second post is received in said third slot or said fourth slot.

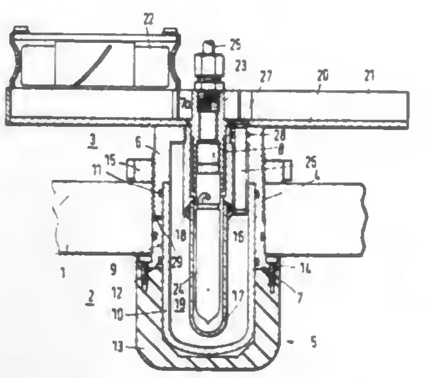
4,368,507
FLASHLIGHT
Edward J. Reynolds, 37-10 223rd St., Bayside, N.Y. 11361
Filed Jul. 3, 1979, Ser. No. 54,467
Int. Cl.^{3} F21L *7/06*
U.S. Cl. 362—200 **5 Claims**



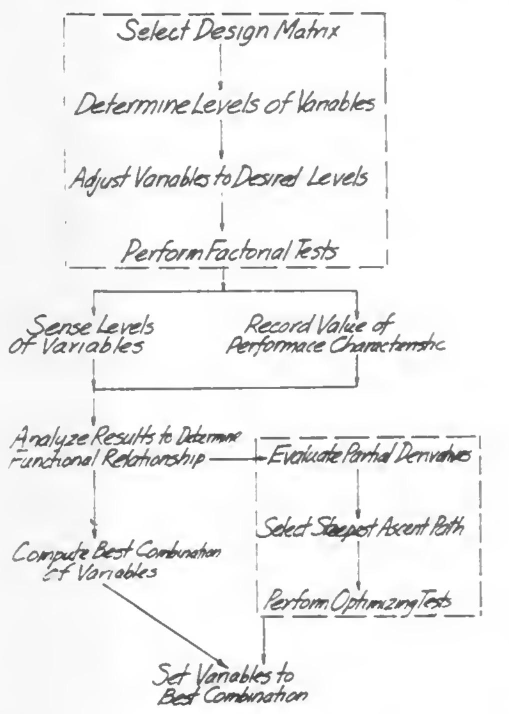
1. A battery-powered flashlight assembly, comprising:
- (a) a power source-containing chamber adapted to receive a substantially flat power source containing one or more batteries and comprised of a bottom wall, side walls attached in substantially perpendicular relationship to said bottom wall and a partition wall defining the front of said chamber, said partition wall being attached to at least one of said bottom and side walls;
- (b) means attached to the inner surface of at least one of said side walls within said power source-containing chamber for substantially confining a substantially flat power source within said chamber;
- (c) a second chamber for containing illuminating means comprised of at least two parallel side walls attached in a substantially perpendicular relationship to said partition wall and a front wall attached to each of said parallel side walls and in a substantially parallel relationship to said partition wall, said front wall containing an aperture for transmission of light therethrough;
- (d) illuminating means contained within said second chamber said illuminating means attached to said front wall and positioned behind the aperture in said front wall so as to permit light to emanate from said aperture;
- (e) means attached to said partition wall for establishing electrical contact between said illuminating means and exposed terminals of said power source.

4,368,508
LIGHT FOR SUBMERSIBLE PRESSURE VESSEL WITH COOLING MEANS
Rudolf Gantenbrink, Am Tiergarten 58, 3000 Hannover 73, Fed. Rep. of Germany
Filed Nov. 21, 1980, Ser. No. 209,287
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947817
Int. Cl.^{3} F21V *29/00*
U.S. Cl. 362—267 **23 Claims**

1. A light for a submersible pressure vessel having an interior surrounded by a wall, the light comprising a heat-conducting element inserted in an opening of said wall and extending outside the pressure vessel from said wall; a container sealingly closing said element from the interior of the pressure vessel; a light element positioned in said container and having an electrical connection extended outside the pressure vessel, said container including a first bulb and a second bulb peripherally surrounding said light element, said first bulb being spaced from said second bulb to define a cavity therebetween, said cavity being filled with heat-conducting fluid, said heat-conducting fluid being in contact with said heat-conducting element; and cooling means connected to said heat-conducting element, whereby the light is adapted to illuminate the interior of the pressure vessel and dissipate heat at the exterior thereof.

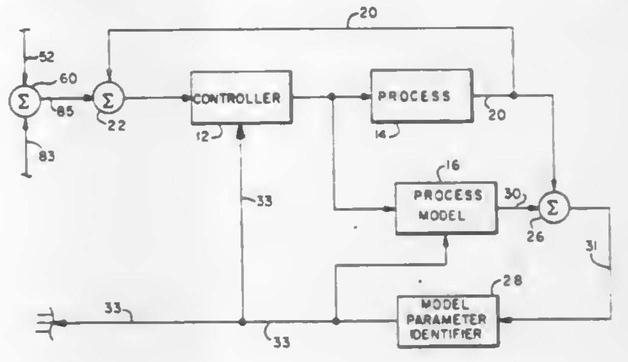


4,368,509
SELF-OPTIMIZING MACHINE AND METHOD
Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576
Continuation-in-part of Ser. No. 69,297, Aug. 24, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,758
Int. Cl.^{3} G05B *13/02, 13/04*
U.S. Cl. 364—148 **28 Claims**


Select Design Matrix
Determine Levels of Variables
Adjust Variables to Desired Levels
Perform Factorial Tests
Sense Levels of Variables
Record Value of Performace Characteristic
Analyze Results to Determine Functional Relationship
Evaluate Partial Derivatives
Select Steepest Ascent Path
Compute Best Combination of Variables
Perform Optimizing Tests
Set Variables to Best Combination

1. A method for self-optimizing, in real time, a machine relative to a specific performance characteristic in response to variations on a prescribed number m of variables comprising:
- selecting a statistical design which prescribes the number n of tests and the exact design matrix in which the test level of each of the m variables is specified for all the n tests;
- according to the design matrix simultaneously sensing and adjusting to their respectively specified test levels all said m variables at a specific time instant;
- recording and storing the value of the specific performance characteristic in response to all said m variables at their respective test levels for this specific time instant;
- sequentially and repeatedly sensing and adjusting the conditions of all said m variables according to the design matrix at n-1 substantially consecutive time instants within minutes subsequent to said specific time instant;
- sequentially and repeatedly recording and storing the n-1 values of the specific performance characteristic in response to all said m variables at their respective levels for the n-1 subsequent, consecutive time instants;
- analyzing the n sets of recorded values and combinations of levels of said variables to determine the functional relationship between said variables and said specific performance characteristic;
- from the functional relationship determining the singular combination of the conditions of said m variables that gives optimum value for the specific performance characteristic for the particular time instants and condition, environment, and service requirements of the machine; and
- setting the conditions or levels of said m variables at their respective, thus-determined conditions.

4,368,510
AUTOMATIC IDENTIFICATION SYSTEM FOR SELF TUNING PROCESS CONTROLLER
Paul Anderson, Green Lane, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Oct. 20, 1980, Ser. No. 198,801
Int. Cl.^{3} G05B *13/04, 17/02*
U.S. Cl. 364—151 **12 Claims**



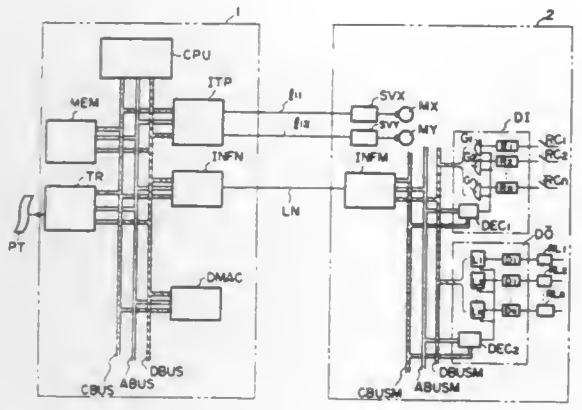
1. In a method for tuning a continuously tunable controller in which the controller parameters are responsive to at least one of a plurality of signal inputs so that said controller sends signals to control a process and supplies an input signal to a model of said process in which said model has parameters which are variable in accordance with the difference between the value of a signal that corresponds to the state of the process and the value of the output signal from process model, wherein signals that correspond to said model parameters are applied to the controller, and the said model parameters are identified by making step changes in the set point of the controller and permitting the process to reach a predetermined portion of the value of said step changes in the set point, the improvement comprising,
- providing a first signal which corresponds to the state of said process at a given time; providing a second signal which corresponds to said set point change; providing means for creating a cycle which includes the steps of adding, ignoring and subtracting said second signal from said first signal during time intervals and applying the resulting signal to said controller whereby said controller varies the input signal to the model of said process; determining the value of the output signal from said process model; and repeating said cycle until the change in the value of said output signal corresponding to at least one of said model parameters from said process model from the previous cycle to the present cycle is less than a predetermined value so that said model parameters are identified automatically.

4,368,511

NUMERICAL CONTROLLING METHOD AND SYSTEM

Ryoji Imazeki, Hachioji, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,038
Claims priority, application Japan, Sep. 4, 1979, 54-113254
Int. Cl.³ G06F *3/04;* G05B *19/18;* G06F *15/46*
U.S. Cl. 364—167 **4 Claims**



1. A numerical controlling method for controlling a machine through an exchange of data between said machine and a numerical control apparatus, which method comprises the steps of:

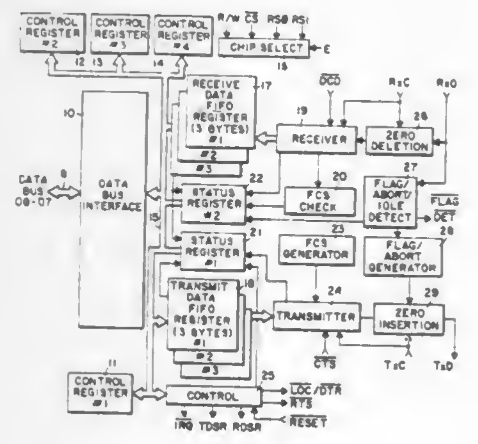
converting, in said numerical control apparatus, parallel data for controlling said machine into serial data;
generating a parallel address signal in said numerical control apparatus, the address signal corresponding to circuitry in said machine which is to be operated by said parallel data;
converting the address signal into a serial address signal in the numerical control apparatus;
transmitting said serial data in a bit-serial manner to said machine;
transmitting said serial address signal with the data to the machine;
converting, in said machine, said serial data to parallel data;
converting, in said machine, said serial address signal to a parallel address signal;
decoding said address signal in said machine; and
activating said circuitry in accordance with the result of the decoding.

4,368,512

ADVANCED DATA LINK CONTROLLER HAVING A PLURALITY OF MULTI-BIT STATUS REGISTERS

Shikun Kyu, Yokohama, Japan, and Edward C. Hepworth, Chattanooga, Tenn., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 921,012, Jun. 30, 1978, Pat. No. 4,225,919. This application Mar. 21, 1980, Ser. No. 132,437
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **7 Claims**



1. A data link controller in the form of a single integrated circuit chip for controlling data communications between a bidirectional data bus and a communications link and for transmitting and receiving data in serial from in accordance with SDLC, HDLC, and ADCCP bit-oriented protocols, said data link controller comprising:

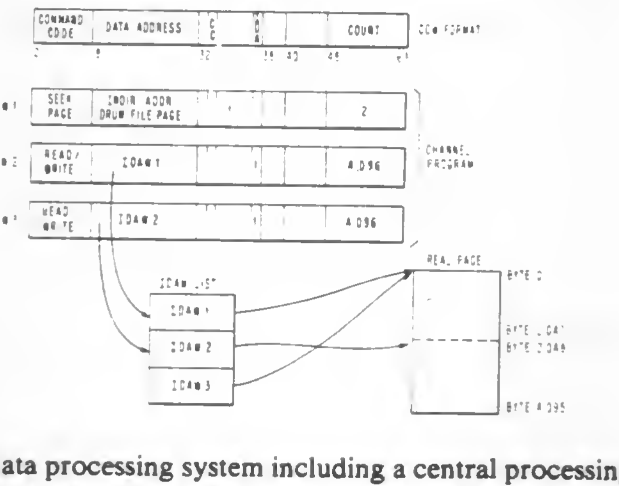
receiver means for receiving serial data in the form of SDLC, HDLC and ADCCP bit-oriented protocols from said communications link;
transmitter means for transmitting serial data in the form of SDLC, HDLC and ADCCP bit-oriented protocols to said communications link;
control means for controlling the operation of said data link controller; and
means for coupling said bidirectional data bus to a data processing system, wherein the improvement comprises:
a first status register whose contents are loaded by the data link controller with status data in response to said control means for subsequent reading by said data processing system; and
a second status register wherein both the first and second status registers have a plurality of individual locations indicating a different operating condition in either the transmitter means or the receiver means within said data link controller, the first status register being loaded by the data link controller and having a location for indicating whether the second status register requires reading by said data processing system.

4,368,513

PARTIAL ROLL MODE TRANSFER FOR CYCLIC BULK MEMORY

David Meltzer, Wappingers Falls, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,234
Int. Cl.³ G06F *7/22*
U.S. Cl. 364—200 **17 Claims**



1. In a data processing system including a central processing unit (CPU), a main storage, an input-output channel, a control unit and a page-organized cyclic access bulk storage device and means interconnecting in sequence said device, said control unit, said channel and said main storage for exchanging multi-byte page units of data, wherein said channel is adapted for operating under control of programs of chained commands located sequentially in said main storage to control selections of data pages and transfers of selected pages between said device and said main storage without interruption of said CPU, wherein said control unit is adapted for conditionally presenting status modifier signals to said channel in association with signals indicating conclusions of operations relative to said device, and wherein said channel is adapted to conditionally vary its sequence of chained command execution in response to said status modifier signals by modifying a command address used by said channel, said modifying of said address having the effect of causing said channel to skip over the command which otherwise would be next selected for execution, the improvement for effecting reduced latency access to said device comprising:

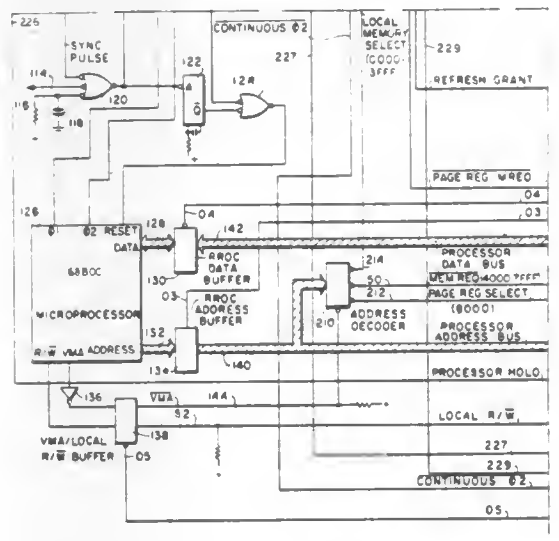
means in said channel for fetching a first command in a program of three commands stored in successive address location in said main storage and means in said control unit for locating a page storage area in said device according to said first command,
means in said control unit associated with said page storage area locating means for distinguishing an initial byte location in a first or a second half-page sector of said page area as an optimum starting position for a transfer of a page of data between said page storage area in said device and a page storage area in said main storage,
means in said control unit associated with said sector distinguishing means for presenting either a first or a second combination of concluding signals to said channel depending respectively on whether said distinguishing means has distinguished a byte location in said first or said second half-page sector area of said device as an optimum starting position; one of said first and second combinations including a said status modifier signal and the other of said combinations not including a said status modifier signal; and
means in said channel responsive to said first or second combination of concluding signals for respectively causing said channel to chain to the second or third command in said program; said second and third commands both specifying page data transfer operations; said second command being located in main storage immediately following said second command; said second command effectively specifying a page transfer operation relative to a page storage area in said main storage having first and second successively located half-page sectors, said transfer operation being effectively defined to start at an initial byte address location within said first half-page sector and proceed progressively through all byte locations in said first and second sectors; said third command effectively specifying the same page storage area and page transfer operation as said second command, but with the transfer effectively defined to start at an initial byte address within the second half-page sector, progress through all byte locations in said second sector, then link to the initial byte location in the first sector, and then progress through all byte locations in the first sector.

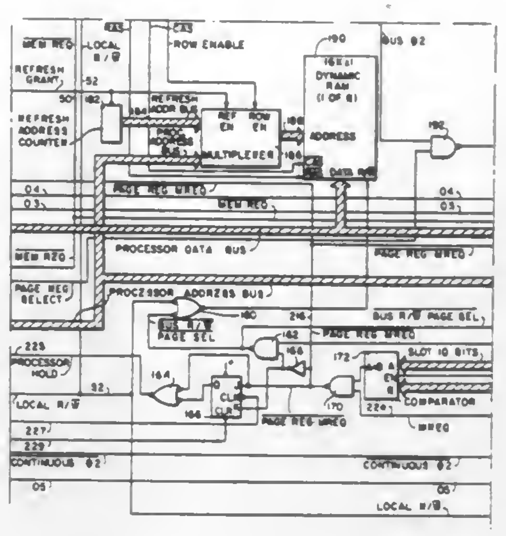
4,368,514

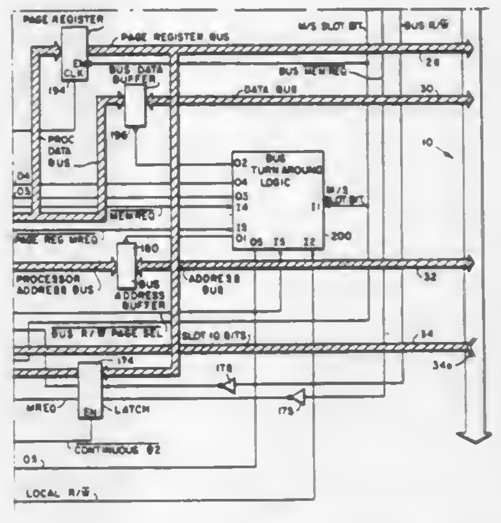
MULTI-PROCESSOR SYSTEM

Ian K. Persaud, Lodi, N.J., and Joseph B. Heinemann, New York, N.Y., assignors to Timeplex, Inc., Rochelle Park, N.J.

Filed Apr. 25, 1980, Ser. No. 143,790
Int. Cl.³ G06F *13/00, 15/16*
U.S. Cl. 364—200 **29 Claims**







1. A data processing system having a master processor and at least two slave processors; a master memory and a plurality of slave memories, with each slave processor having access only to a respective slave memory and with the master processor having access both to the master memory and to all of the slave memories; a common bus shared by all of said processors; each processor having its own address/data bus connecting it to its respective memory, and said master processor and said slave processors having means connected to said common bus for controlling said master processor to transmit address and data signals to said slave memories and for controlling said slave memories to transmit data signals to said master processor; each of said processors including means for generating phase clock signals to enable an access to its respective memory during a respective processor cycle; and control means in said master processor and in each of said slave processors, connected over said common bus, for causing said master processor to synchronize the phase clock signals in each of said slave processors, and at any time to disable the access by any selected slave processor to its respective memory for no longer than the single processor cycle during which said master processor accesses such respective slave memory and said selected slave processor would otherwise access such respective slave memory.

4,368,515

BANK SWITCHABLE MEMORY SYSTEM

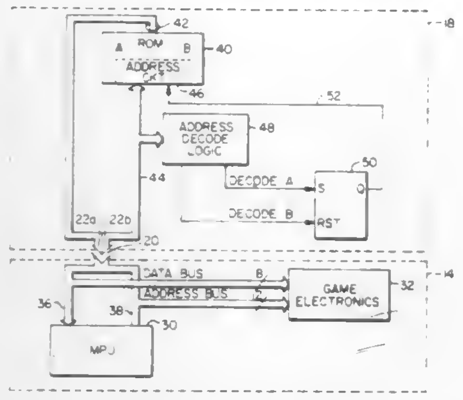
Carl J. Nielsen, Saratoga, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed May 7, 1981, Ser. No. 261,301
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **11 Claims**

1. A memory system comprising:

an address bus for providing a plurality of first address signals;
a supplemental address line;
first memory means coupled to the address bus and to the supplemental address line and having a plurality of memory locations for providing digital signals corresponding

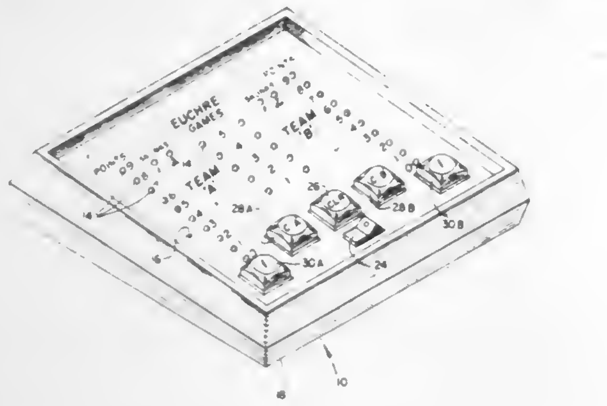
to data stored in selected memory locations in response to presence of a second address signal on the supplemental address line, the memory locations being selected in response to first address signals on the address bus;
second memory means coupled to the address bus and to the supplemental address line having a plurality of memory locations for providing digital signals corresponding to data stored in selected memory locations in response to absence of the second address signal on the supplemental address line, the memory locations selected in response to the first address signals on the address bus; and
decoder means coupled to the address bus and to the supplemental address line for providing the second address signal on the supplemental address line in response to detecting a first combination of address signals on the address bus.



4,368,516

EUCHRE SCORING COMPUTER AND METHOD

Roger W. Morin, 1426 Stag Dr., Fort Wayne, Ind. 46804
Filed Oct. 20, 1980, Ser. No. 199,076
Int. Cl.^{3} G06F *15/44*
U.S. Cl. 364—411 **20 Claims**

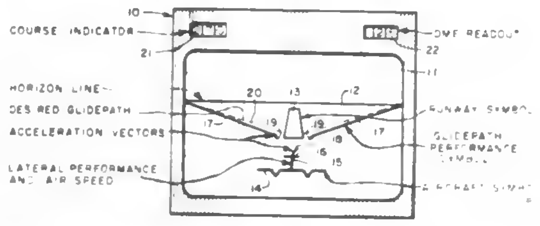


1. A euchre scoring computer comprising:
first and second means for inputting unit point information,
first and second means for totalling said unit point information from said first and second inputting means respectively,
first and second means responsive to said first and second totalling means respectively for generating game point information and zeroing said second and first totalling means respectively,
first and second means responsive to said first and second generating means and said second and first totalling means respectively for establishing skunk point information,
first and second means for displaying said unit, game and skunk point information,
first and second means for resetting said first and second totalling means respectively, and
means for clearing said first and second totalling, generating and establishing means.

4,368,517

AIRCRAFT LANDING DISPLAY SYSTEM

Peter Lovering, Dayton, Ohio, assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Continuation-in-part of Ser. No. 887,388, Mar. 16, 1978, abandoned. This application Apr. 8, 1980, Ser. No. 138,560
Int. Cl.^{3} G06F *15/50, 3/153;* **G06G** *7/78*
U.S. Cl. 364—428 **11 Claims**

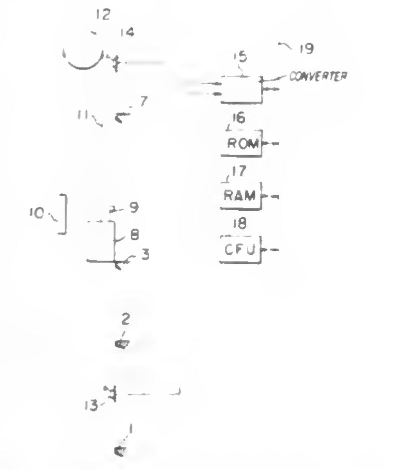


1. A system for presenting a cockpit display providing guidance information for landing an aircraft on a runway in conditions of low visibility, comprising:
a display device visible to the pilot;
means for generating on said display device a horizons reference line having a generally fixed horizontal configuration;
means for generating an aircraft symbol on said device, said aircraft symbol having an orientation with respect to said reference line corresponding to the orientation of the aircraft with respect to the actual horizon;
means for generating on said display device a runway symbol having an orientation with respect to the aircraft symbol indicative of the orientation of the actual runway with respect to the aircraft; and
means for generating a generally V-shaped descent profile vector extending from respective sides of the display towards a location on the projected flight path of the aircraft indicative of the projected landing point of the aircraft.

4,368,518

CAGE POSITION DETECTING APPARATUS

Narihiro Terazono, and Ryuichi Kajiyama, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 11, 1980, Ser. No. 186,128
Claims priority, application Japan, Oct. 9, 1979, 54-130288; Oct. 9, 1979, 54-130289
Int. Cl.^{3} B66B *3/02;* **G06F** *15/20*
U.S. Cl. 364—433 **3 Claims**

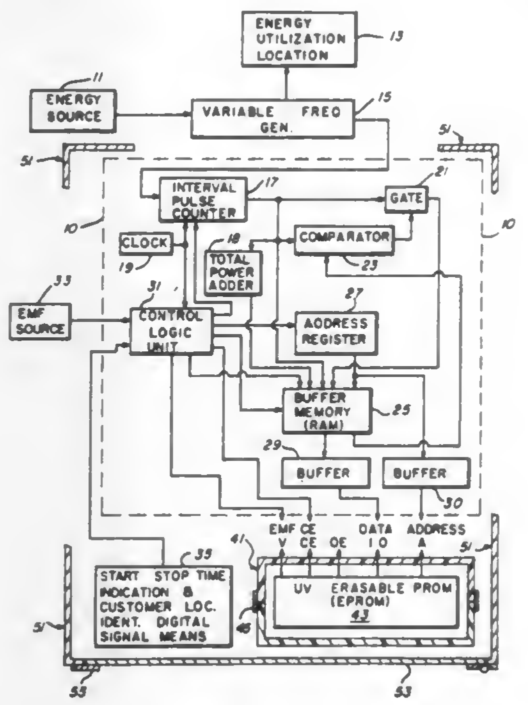


1. A cage position detecting apparatus for operating the present position of the cage by a computer, an improvement comprising;
an emergency power source for feeding the power in an abnormal state such as the service interruption of the main power source;
a memory device which is actuated by the emergency power source to memorize the present position of the cage;
processing means for operating the data for the present position of the cage to determine the use or nonuse of the data for the position of the cage memorized in the memory device depending upon the condition at the time of the abnormal state;
position detector which is placed in a hatchway to output a signal corresponding to the final floor when the cage is at the final floor;
read only memory memorizing the data for the final floor;
said processing means further processing the data for the final floor in said read only memory corresponding to the final floor as the operated present position when the position detector outputs the signal and determining the use or non-use of the data for the position memorized in said memory device depending upon the condition at the time of the abnormal state;
a running control circuit which allows the running of the cage to the final floor depending upon the determination of the non-use of the data of said memory device by said processing means operating the data, and wherein said processing means for operating the data receives an indication of whether the cage is in an automatic operation or a manual operation at the time of the abnormal state after releasing the abnormal state of the main power source and wherein said processing means receives the data indicating whether the cage is between two floors or is at a floor position to thereby determine whether the cage is running at the time of the abnormal state to determine whether the data of the memory device can be used.

4,368,519

ENERGY UTILIZATION OR CONSUMPTION RECORDING METHOD

Stanley P. Kennedy, Sparks, Md., assignor to Emax, Incorporated, Cockeysville, Md.
Division of Ser. No. 31,848, Apr. 20, 1979, Pat. No. 4,236,217. This application Aug. 4, 1980, Ser. No. 174,854
Int. Cl.^{3} G01D *9/00*
U.S. Cl. 364—483 **35 Claims**

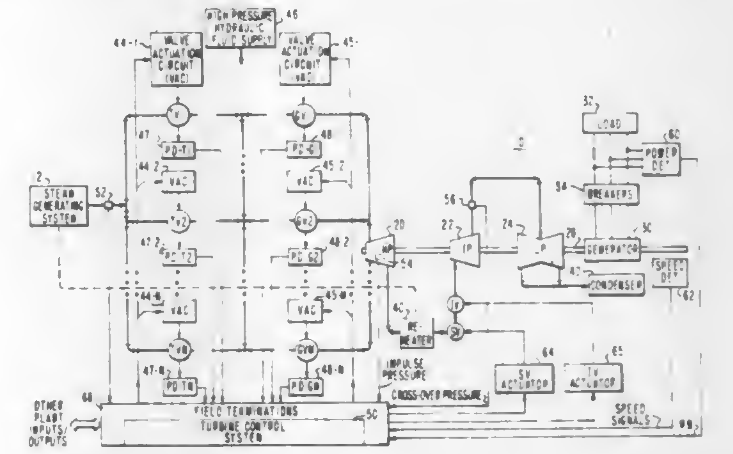


1. The method of recording the amounts of energy utilized or consumed at a given location or facility, comprising
transmitting discrete count signals varying in rate as a function of the rate of energy use,
counting the quantity of said discrete count signals during succeeding discrete time intervals to produce succeeding interval summation count value digital signals,
recording said succeeding interval summation digital count value digital signals at discrete individual locations in a record medium for subsequent read-out,
comparing said succeeding interval summation count value digital signals,
said comparing being effected by successively comparing each succeeding said interval summation count value signal with the then highest of the preceding said interval summation count value signals for each of the preceding discrete intervals of said given time period,
recording idicia, in digital form, representing peak interval summation digital count value, at a respective discrete location on said record medium, the highest of said interval summation digital count values occurring during a given total recording period composed of a plurality of said succeeding time intervals,
summing the interval summation digital count values represented by said interval summation count value digital signals over said given total recording period to thereby provide a grand total energy or power utilization or consumption digital value for said given total recording period,
and recording said grand total energy or power utilization or consumption value as a digital signal at a respective discrete location in said record medium.

4,368,520

STEAM TURBINE GENERATOR CONTROL SYSTEM

Eddie Y. Hwang, Nether Providence; Andras I. Szabo, Export, and Louis G. Ottobre, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 29, 1980, Ser. No. 191,606
Int. Cl.^{3} G06F *15/46;* **G05B** *15/00;* **F01D** *17/02*
U.S. Cl. 364—494 **36 Claims**

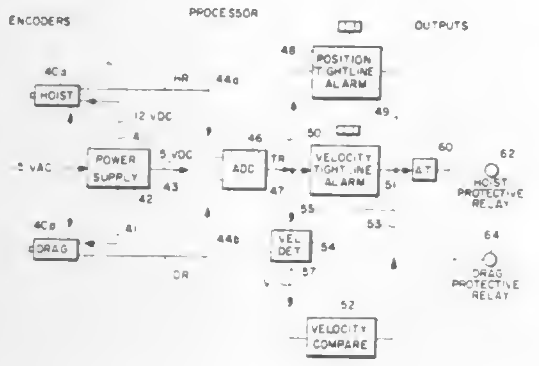


1. A control system for a steam turbine operative to drive an electric generator and having a plurality of steam admission valves which are controllable in position to determine the operating level of the turbine, comprising:
(A) a controller including programmable digital computer means operable to receive and store input target set point signals and being responsive to said signals to generate a plurality of digital valve control signals;
(B) each said steam admission valve including a valve actuation circuit operable, in response to a valve position control signal, to position the valve so as to control its degree of opening;
(C) position detection means coupled to each said valve to provide respective feedback signals indicative of valve position;
(D) a plurality of valve position control circuits each including programmable digital computer means operable to receive and store a respective one of said digital valve control signals as well as a respective one of said feedback signals and being responsive to said digital valve control and feedback signals to generate a respective one of said valve position control signals; and
(E) said programmable digital computer means of said valve position control circuit being additionally operable to

transmit selected stored digital information back to said controller.

4,368,521
METHOD AND APPARATUS FOR DRAGLINE TIGHTLINE PROTECTION

John T. Sholes, II, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sep. 30, 1980, Ser. No. 192,646
Int. Cl.³ G06F *15/20;* **E02F** *3/46*
U.S. Cl. 364—506 **9 Claims**

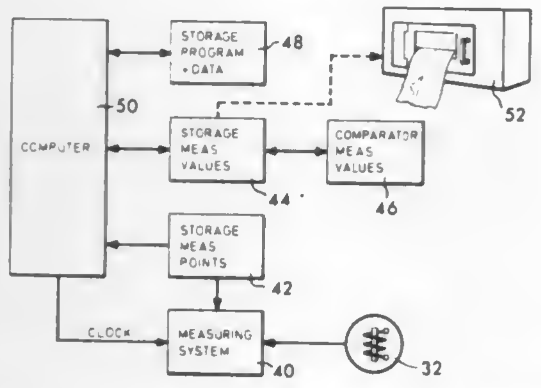


1. A method of preventing tightline condition in a dragline or the like, comprising the steps of:

- sensing the amount of hoist rope paid out from a hoist drum,
- sensing the amount of drag rope paid out by a drag drum,
- adding the values of the sensed amounts of drag and hoise rope paid out to produce a sum signal having a value corresponding to the sum of the values of hoist and drag rope paid out,
- comparing the value of said sum signal with a predetermined constant and
- halting dragline operation when the result of said comparing step is that said sum signal is of a value less than said predetermined constant.

4,368,522
METHOD OF MEASURING ERRORS IN THE TRUTH OF ROTATION OF A GEAR

Hans Späth, Kloten, and Meinrad Donner, Nuolen, both of Switzerland, assignors to Maag Gear-Wheel & Machine Co. Ltd., Zurich, Switzerland
Filed Sep. 15, 1980, Ser. No. 187,598
Claims priority, application Switzerland, Oct. 5, 1979, 8990/79
Int. Cl.³ G06F *15/36*
U.S. Cl. 364—550 **2 Claims**

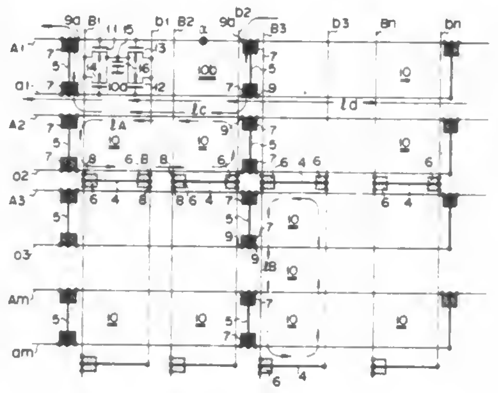


1. In a method of measuring errors in the truth of rotation of the gear teeth of a gear arising during gear fabrication by means of a measuring device having a feeler guide which is pivotable about a pivot axis extending substantially parallel to the gear axis and guides a feeler which is pre-biased in the direction of the gear, cyclically engages into the gear teeth while the gear rotates, wherein the feeler together with the feeler guide is pivotable about its pivot axis and is displaced back in relation to the feeler guide, there being provided an electronic circuit for determining during each measuring cycle the greatest rearward displacement of the feeler in that it stores signals delivered by the feeler and compares such stored signals with one another, the improvement which comprises the steps of;

- (a) during each measuring cycle forming from a number of signals delivered by the feeler as well as a number of subsequently delivered signals a respective mean value;
- (b) comparing both mean values with one another;
- (c) storing the larger of the mean values provided that it constitutes the mean value formed from the subsequently delivered signal;
- (d) repeating operations (a) to (c) for such length of time until there is formed a mean value which is smaller than the directly precedingly formed mean value; and
- (e) thereafter delivering the precedingly formed mean value as the maximum value of the related measuring cycle.

4,368,523
LIQUID CRYSTAL DISPLAY DEVICE HAVING REDUNDANT PAIRS OF ADDRESS BUSES

Keiichi Kawate, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Dec. 16, 1980, Ser. No. 217,093
Claims priority, application Japan, Dec. 20, 1979, 54-164803; Apr. 25, 1980, 55-55036; Apr. 25, 1980, 55-55037; Apr. 25, 1980, 55-55041
Int. Cl.³ G11C *5/06, 8/02, 11/24;* **H04N** *5/74*
U.S. Cl. 365—63 **43 Claims**



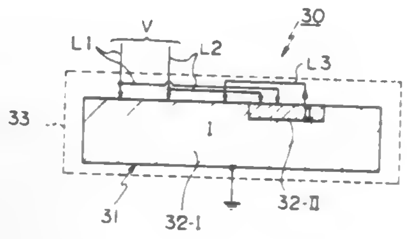
1. A memory device comprising:

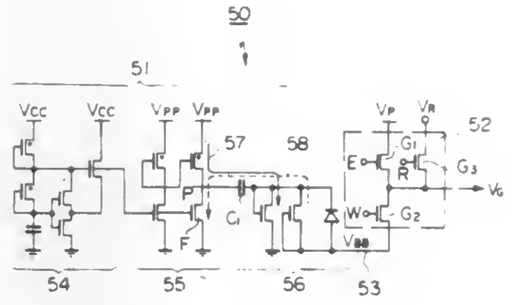
- (a) a plurality of memory cells arranged in a matrix form;
- (b) paired address buses connected to said memory cells and forming respective rows of said matrix;
- (c) data buses connected to said memory cells and forming respective columns of said matrix; and
- (d) bridge means formed in said paired address buses for connecting one with the other of said paired address buses.

4,368,524
SEMICONDUCTOR DEVICE

Kazuhisa Nakamura, San Jose, Calif., and Hideki Arakawa, Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 18, 1980, Ser. No. 170,175
Claims priority, application Japan, Jul. 26, 1979, 54-95348
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—226 **8 Claims**

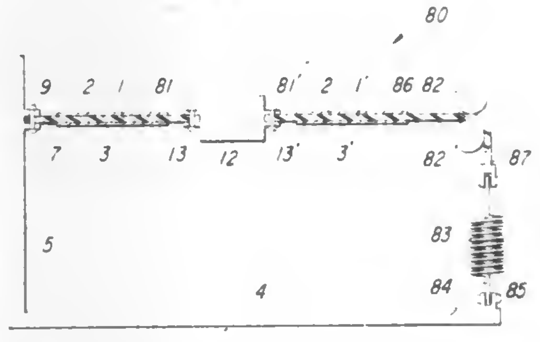
1. A semiconductor device comprising electrically alterable read-only memory cells formed in and on a silicon substrate, each of said read-only memory cells includes a control gate to which a first voltage having one polarity and a second voltage having an opposite polarity are selectively applied, the silicon substrate has a first block and a second block, each of which blocks is electrically insulated from the other block, wherein the first block contains therein said read-only memories being driven by said first voltage and said second voltage, which first voltage is supplied from an external voltage source, said second block contains therein a bipolar voltage generator being driven by said first voltage of said external voltage source but producing at least said second voltage to be applied to specified one or more said control gates.





4,368,525
VIBRATION DETECTOR

Sukiro Obata, Tokyo; Naohiro Murayama, Iwaki, and Teruo Fujii, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan
Filed Jul. 3, 1980, Ser. No. 165,802
Claims priority, application Japan, Jul. 11, 1979, 54-88547; Mar. 26, 1980, 55-38622
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—165 **16 Claims**

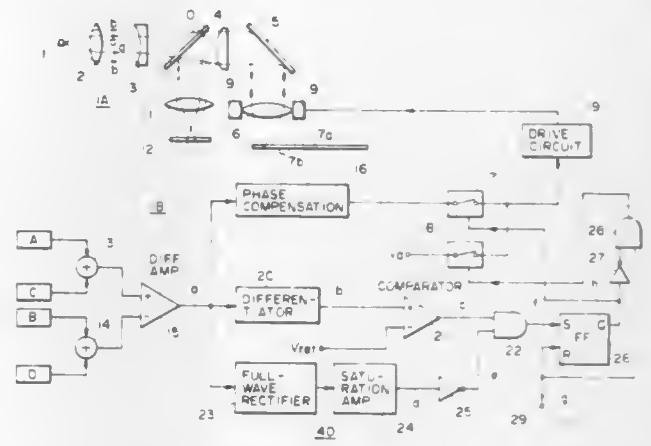


1. A vibration detector for a seismic system comprising:

- a weight member,
- a support frame,
- at least two weight supporting members, each of said supporting members being fixed to said weight member at one end thereof and being substantially fixed to said support frame at one portion thereof in detecting the vibration, and
- a means for substantially fixing said one portion to said support frame in detecting the vibration,
- wherein said support frame comprises a means for keeping said supporting member in tensile stress so as to support said weight member vibratively and a means for supporting said means for keeping the supporting member in tensile stress, said weight member is vibratively supported by tension of said supporting members, and at least a part of one of said supporting members is formed by a piezoelectric polymeric substance having a pair of vibration detecting electrodes deposited on a part of each surface of the piezoelectric polymeric substance, the part being at a position between the fixed ends of the supporting member.

4,368,526
SERVO CONTROL SYSTEM FOR OPTICAL SYSTEM WHICH FOCUSES A CONVERGING LIGHT BEAM ON A RECORDING DISC

Shunji Harigae, Neyagawa; Tomio Yoshida, Katano; Yoshinobu Nakata; Michiyoshi Nagashima, both of Ikoma, and Toshio Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan
Filed Dec. 23, 1980, Ser. No. 229,313
Claims priority, application Japan, Dec. 28, 1979, 54-172558
Int. Cl.³ G11B *7/12*
U.S. Cl. 369—45 **8 Claims**



1. A servo control system for an optical system which focuses a converging light beam on a recording disc having a layer of transparent material with a first plane facing toward said beam and a second plane spaced from said first plane, wherein information is recorded on said second plane, comprising:

- first means for detecting light reflected from said first or second plane;
- second means for deriving from said detected light an error signal representing the displacement of the focus point of said light beam from either one of said first and second planes;
- a driving mechanism for moving said optical system in a direction toward said disc, whereby said error signal includes first and second successive peaks which occur on one side of a zero crossing level when said converging light beam is made to focus successively on said first and second planes;
- third means for detecting when said error signal reaches a point substantially at or near the zero crossing point which occurs immediately following said second peak; and
- fourth means for operating said driving mechanism in an open loop mode to cause said optical system to move toward said disc until the time said zero crossing point is detected and subsequently operating said driving mechanism in a closed loop mode in accordance with said error signal to allow said converging beam to focus on said second plane.

4,368,527

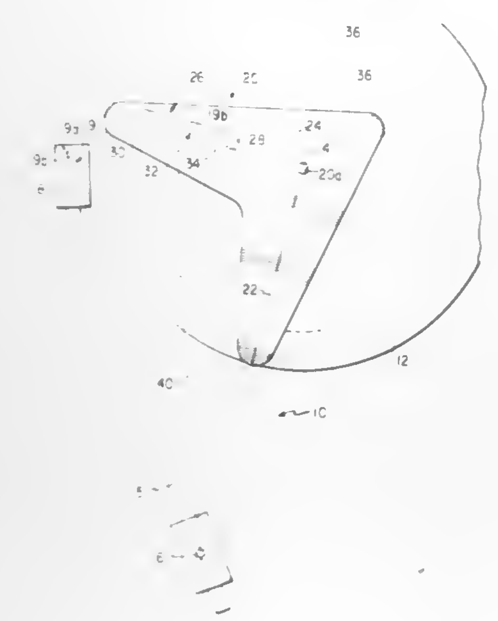
PHONOGRAPH CARTRIDGE ALIGNMENT

Michael J. Goldstein, 44 Seacord Rd., New Rochelle, N.Y. 10804

Filed Nov. 23, 1979, Ser. No. 96,695

Int. Cl.^{3} G11B *3/10*

U.S. Cl. 369—55 **15 Claims**



1. A method for use with a phonograph of the type incorporating a turntable adapted to have a record disc rested thereon for rotation about a first axis, a tone arm mounted near one of its ends for pivotal movement about a second axis and a cartridge mounted at the other end of said tone arm and having a stylus assembly with a stylus depending therefrom, said method being used for adjusting the overhang of said stylus in a procedure for aligning said cartridge with respect to said tone arm and turntable so as to minimize horizontal tracking error, said method comprising the step of adjusting at least one of said cartridge and said tone arm to make said stylus overlie a fixed point, said fixed point lying in a plane perpendicular to said axis at substantially a distance from said first axis defined by the equation:

$$d = \sqrt{L^2 - (L - O)^2}$$

where L is the effective tone arm length and O is the stylus overhang beyond said second axis which minimizes tracking error for a tone arm of that length.

4,368,528

PICKUP CARTRIDGE

Akio Sakano; Kunio Shikakura, both of Tokyo; Hideshi Tamaru, and Kimiyoshi Yoshida, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

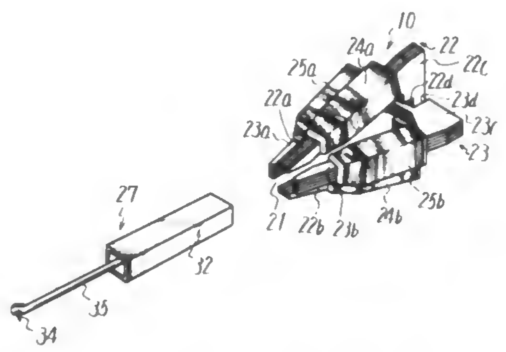
Filed Sep. 26, 1980, Ser. No. 190,976

Claims priority, application Japan, Oct. 12, 1979, 54-132168

Int. Cl.^{3} H04R *11/12*

U.S. Cl. 369—136 **8 Claims**

1. In a pickup cartridge having first and second jointless cores, each consisting of a pair of leg members which are connected by a short core member, said first and second jointless cores being connected so as to make a right angle with each other at their respective short core members, coils mounted around each of the leg members, and a cantiliver having a permanent magnet inserted into an air gap formed by adjacent free end portions of said leg members, said pair of leg members of each of said first and second cores being arranged so as to oppose each other and the spacing between each said pair of leg members becoming successively narrow toward the direction of the free end thereof, and said coils being inserted through said air gap and fixed on said each leg member.



4,368,529

SEMICONDUCTOR MEMORY CIRCUIT

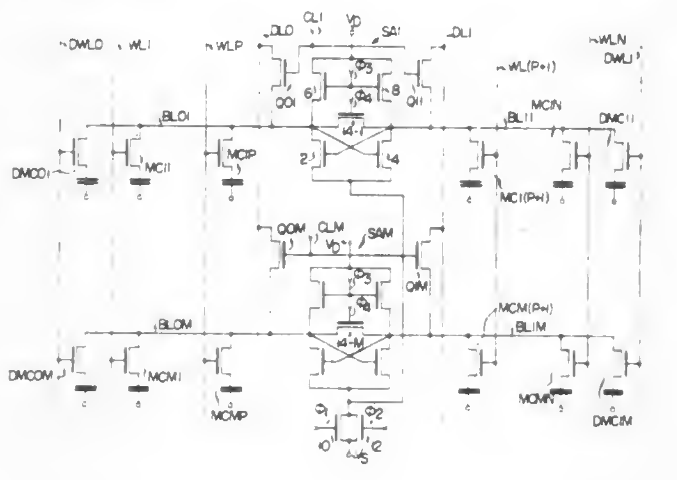
Tohru Furuyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 197,950

Claims priority, application Japan, Oct. 23, 1979, 54-136632

Int. Cl.^{3} G11C *11/40*

U.S. Cl. 365—205 **16 Claims**



1. A semiconductor memory circuit comprising:

first and second voltage supply terminals;

at least one flip-flop circuit including first and second switching means, first and second bi-stable output terminals connected through respective ones of said first and second switching means to said first voltage supply terminal, and first and second MOS transistors having drains connected to respective ones of said bi-stable output terminals and having sources connected to each other;

paired bit lines directly connected to respective ones of said first and second bi-stable output terminals of said at least one flip-flop circuit;

a plurality of semiconductor memory cells connected to each of said bit lines;

a discharging circuit connected between said second voltage supply terminal and each of the sources of said first and second MOS transistors of said at least one flip-flop circuit; and

means connected to said paired bit lines for setting and maintaining between read operations the potentials on said paired bit lines to a voltage level substantially midway between the levels of voltages of said first and second voltage supply terminals.

4,368,530

ACOUSTIC DAMPENING ASSEMBLY FOR RECORD PLAYER TURNTABLE

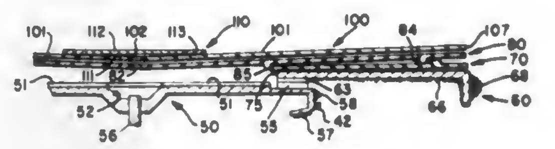
Tom A. Darnall, Jr., Rte. 6, Box 404, Buckhannon, W. Va. 26201

Continuation of Ser. No. 904,788, May 11, 1978, Pat. No. 4,202,551. This application May 9, 1980, Ser. No. 148,292

The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.

Int. Cl.^{3} G11B *3/60*

U.S. Cl. 369—264 **3 Claims**



1. In a turntable having a spindle, a motor, an outer platter having a top surface, a lower surface, an aperture, and a circular side, an inner platter having an inner top surface, a peripheral top surface, and a periphery, a platter support plate, and a mounting support plate, said platter support plate being shock-absorbingly attached to and supported by said mounting support plate, the improvement comprising a inner platter decoupling assembly which comprises:

A. a plurality of layers of energy absorbing material on said inner top surface;

B. a plurality of frequency-absorbing sandwich cushions which are disposed on said peripheral top surface for supporting the weight of said outer platter thereupon, and for absorbing vibrations being transmitted between said inner and outer platters;

C. a layer of energy absorbing material on said lower surface; and

D. a circumannular compressor which is tensionally disposed around said circular side to create strong radially directed forces that serve to absorb, diminish, and deaden the acoustical and mechanical feedback that travels through said inner platter during play of a record on said turntable.

4,368,531

FRAME ALIGNER FOR DIGITAL TELECOMMUNICATIONS EXCHANGE SYSTEM

Geoffrey Chopping, Poole, England, assignor to The Plessey Company Limited, Ilford, England

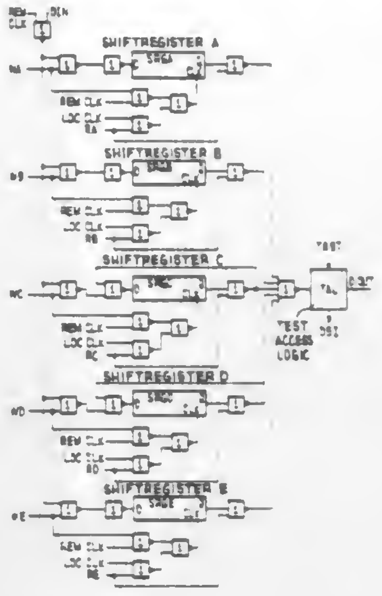
Filed Aug. 6, 1980, Ser. No. 175,780

Claims priority, application United Kingdom, Oct. 10, 1979, 7927859

Int. Cl.^{3} H04J *3/06*

U.S. Cl. 370—100 **6 Claims**

1. A frame aligner for use in a time division multiplex communication system in which a digital data bit stream is transmitted over a data highway interconnecting a first communication exchange and a second communication exchange, each exchange incorporating its own individually operating clock arrangement for defining time division multiplex frame and bit periods within a frame and the frame aligner includes five half frame shift register sections, each section being independently accessible for read and write operations, a read select counter arranged to select on a mutually exclusive basis the shift register section from which the next half frame of information is to be read, a write select counter arranged to select on a mutually exclusive basis the shift register section into which the next half frame of information received on the data highway is to be fed and a slip mechanism which monitors the incoming clock and the exchange clock and controls the read select and write select counters so that they do not concurrently select the same shift register section.



4,368,532

MEMORY CHECKING METHOD

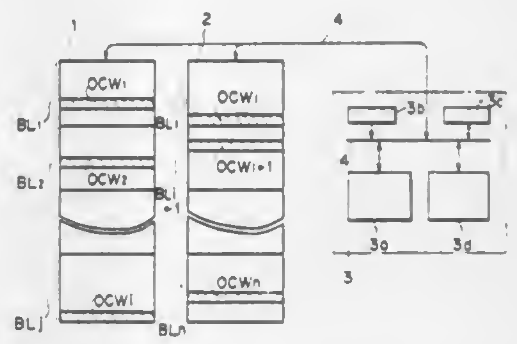
Ryoji Imazeki, Hachioji, and Michiya Inoue, Hino, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,726

Claims priority, application Japan, Aug. 1, 1979, 54-98268

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—21 **9 Claims**



1. A method of checking a read only memory in a computer system, the read only memory storing at least one logical block composed of a plurality of words, the computer system having a processor for reading data from the read only memory, for performing a prescribed operation, and for checking the read only memory, said method comprising the steps of:

(a) determining an operational control word in such a manner as to render the result of the prescribed operation equivalent to a predetermined value;

(b) storing the operational control word in said at least one logical block stored in the read only memory;

(c) sequentially reading each of the plurality of words in said at least one logical block;

(d) sequentially subjecting each of the plurality of words in said at least one logical block to the prescribed operation by employing the processor;

(e) comparing the result of the prescribed operation, after each of the plurality of words has been subjected to the prescribed operation, with the predetermined value; and

(f) determining whether the read only memory is operating normally on the basis of the comparison result.

4,368,533

ERROR DATA CORRECTING SYSTEM

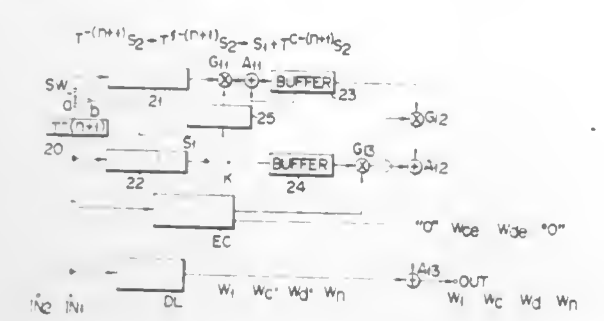
Tadashi Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 28, 1980, Ser. No. 144,521

Claims priority, application Japan, May 10, 1979, 54-57417

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **5 Claims**



1. An error data correcting system in which a series of n data words W_1 through W_n each including m bits has associated therewith a P check code

$$\left(P \oplus \sum_{r-1}^{p} W_r = 0 \right)$$

and a Q check code

$$\left(Q \oplus \sum_{r=1}^{n} T^{(n+1)-r} W_r = 0 \right),$$

the system for correcting erroneous data words W_c, and W_d, to produce correct data words W_c and W_d $(1 \leqq c < d \leqq n)$, the system generating a first syndrome value

$$S_1 = P \oplus \sum_{r=1}^{n} W_2 \neq 0$$

and a second syndrome value

$$S_2 = Q \oplus \sum_{r=1}^{n} T^{(n+1)-r} W_r \neq 0$$

when the series of data words includes erroneous data words $W_{c'}$, and $W_{d'}$, respectively, the system comprising:

- a first input terminal for receiving said series of data words and said associated first and second syndrome values;
- an auxiliary matrix circuit for multiplying said first syndrome value by an auxiliary matrix $T^{-(n+1)}$;
- a T matrix operation circuit for receiving the output of said auxiliary matrix circuit and for shifting said received value c positions to output $T^{c-(n+1)} S_2$;
- a P register coupled to said first input terminal for receiving said first syndrome value;
- switch means for selectively coupling the output of said P register to the input of said T matrix operation circuit to cause said T matrix operation circuit to store $S_1 + T^{c-(n+1)} S_2$;
- a second input terminal for receiving an error data pointer;
- an error word control circuit coupled to said second input terminal for generating an interval signal $k = d - c$ corresponding to the series positional difference between said second error word $W_{d'}$ and said first error word $W_{c'}$ in response to said error data pointer;
- a first gate circuit coupled to the output of said T matrix operation circuit;
- a matrix generating circuit for receiving said interval signal k from said error word control circuit, for generating a matrix signal corresponding to a specific bit in the output of said T matrix operation circuit, and for supplying said matrix signal to said first gate circuit, said first gate circuit for combining said output of said T matrix operation circuit ($T^{c-(n+1)} S_2$ with said matrix signal k to generate a second corrected data word W_{de};
- a first buffer for storing said second corrected data word W_{de};
- a second buffer coupled to said P register for receiving and storing said first syndrome value S_1; and
- means coupled to said first buffer for receiving said second corrected data word W_{de} and to said second buffer for receiving said first syndrome value S_1 and for combining said second corrected data word W_{de} and said first syndrome value S_1 to generate a first corrected data word W_{ce}.

4,368,534

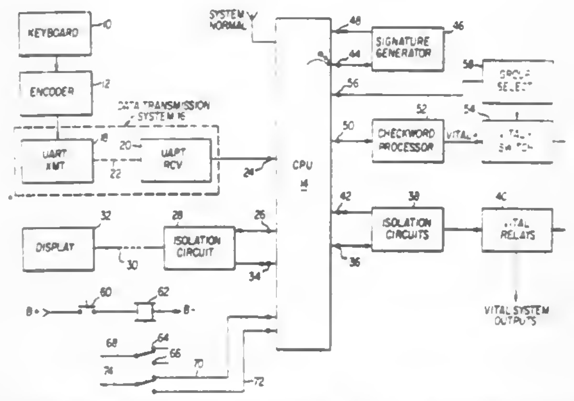
KEYBOARD CONTROLLED VITAL DIGITAL COMMUNICATION SYSTEM

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 7,184, Jan. 29, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,658

Int. Cl.³ G06F *11/08*

U.S. Cl. 371—53 **16 Claims**



1. A vital digital control system with keyboard inputs for activating at least one output device in response to a manual keyboard selection of a sequence of a predetermined number of operation instructions, comprising:

- keyboard encoder means for generating the operation instructions in the form of multi-digit keyboard words;
- vital decoding means coupled to said keyboard encoding means for identifying said keyboard words and for producing message words, diverse output words and diverse display words based on said keyboard words, and display echo words based on said display words;
- display means coupled to said decoding means for displaying a representation of said display words;
- said vital decoding means including means for sequentially producing diverse multi-bit checkwords based on predetermined words generated by said system indicative of system performance, said predetermined words including said message words, said display words, and said display echo words in response to receipt of said keyboard words, and means for checking that successive of said checkwords are diverse, said checking means including,
- means for comparing each generated checkword to a predetermined constant multi-bit pattern, and for producing a validation signal if sequential ones of said checkwords are complementary and corresponding to said constant multi-bit pattern, said vital decoding means activating the output device in accordance with the keyboard instructions only if said validation signal is produced.

4,368,535

TOMOGRAPH FOR PRODUCING TRANSVERSE LAYER IMAGES

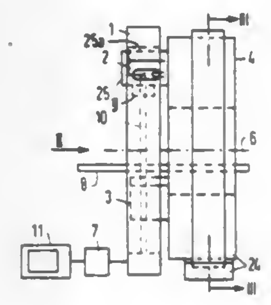
Heinz Baumann, Buckenhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 233,385, Feb. 11, 1981, abandoned, which is a continuation of Ser. No. 948,426, Oct. 4, 1978, abandoned. This application Dec. 11, 1981, Ser. No. 329,656

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750551

Int. Cl.³ H05G *1/10*

U.S. Cl. 378—15 **1 Claim**



1. In a tomographic apparatus for producing transverse layer images of an exposure subject having a stationary source of energy, an X-ray tube adapted to produce, when energized, an X-ray beam capable of penetrating the exposure subject, the cross-sectional extent of the X-ray beam perpendicular to the layer plane is the same as the layer thickness, a radiation receiver which senses the radiation intensity behind the subject by scanning the projected X-ray beam, a rotatable frame for rotating the X-ray tube in the layer plane to scan the exposure subject from different directions and a measured value converter to transform the signals delivered by the radiation receiver into a layer image, an improvement including an oil filled tank affixed to the rotatable frame, said oil filled tank includes means for generating high voltage, said means for generating includes a low voltage input and a high voltage output, said high voltage output is connected to a cathode of the X-ray tube and an anode of the X-ray tube is connected to ground potential, rotating current coupling means adapted to continuously, electrically, connect said low voltage input of said means for generating high voltage to the stationary source of energy as the rotatable frame is being rapidly rotated about the exposure subject thereby continuously providing energy to said means for generating such that the X-ray tube may be energized while the frame is being rotated through an angle of 360° in order to minimize exposure time, wherein the radiation receiver has a toroidal shape with an interior cylindrical surface and the axis of rotation of the rotatable frame corresponds to an axis of symmetry of the radiation receiver, said improvement comprising further,

- a housing for the X-ray tube, said housing is affixed to the frame and is adapted to support the X-ray tube with an anode side of the X-ray tube located adjacent an end of said housing and with a side wall of said housing positioned adjacent to and radially inwardly from the interior cylindrical surface of the radiation receiver, a grounded wire connected to said anode is positioned along an interior surface of said side wall such that said X-ray tube can be located relatively close to an adjacent region of the interior cylindrical surface of the radiation receiver.

4,368,536

DIAGNOSTIC RADIOLOGY APPARATUS FOR PRODUCING LAYER IMAGES

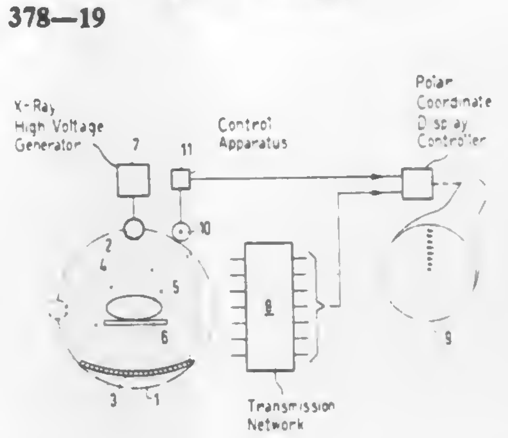
Manfred Pfeiler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,437

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950819

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—19 **1 Claim**


X-Ray High Voltage Generator
7
11
Control Apparatus
Polar Coordinate Display Controller
10
2
4
5
6
8
9
3
1
Transmission Network

1. Diagnostic radiology apparatus for producing layer images of a radiography subject, comprising a patient support, a measuring arrangement for irradiating the radiography subject from various directions, comprised of a radiation source (2) which emits a fan-shaped radiation beam penetrating the layer to be examined, whose dimension perpendicular to the layer plane is approximately equal to the layer thickness, and of a radiation receiver (3) formed of a series of detectors, which delivers electric output signals corresponding to the measured radiation intensity, a rotating frame (1) on which the radiation source and the radiation receiver are mounted, and a transmission network (8) with a video unit (9) for converting the output signals of the radiation receiver into an image of the examined layer, the video unit (9) being operable with a polar coordinate system in which a number of concentric image point circles are written, each of which is locally allocated, via the transmission network (8), to a specific detector in the radiation receiver (3) and is modulated in its intensity largely corresponding to the output signal of the associated detector, and means (11) for synchronizing the recording operation of the video unit with the scanning movement of the measuring arrangement (2, 3) such that the circles are completely recorded when a scan cycle is terminated.

4,368,537

X-RAY DIAGNOSTIC GENERATOR IN WHICH THE X-RAY TUBE VOLTAGE IS ADJUSTED VIA THE X-RAY TUBE CURRENT

Heribert Amtmann, Langensendelbach; Hermann Forkel, Buckenhof, and Hans-Jürgen Gerlach, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,840

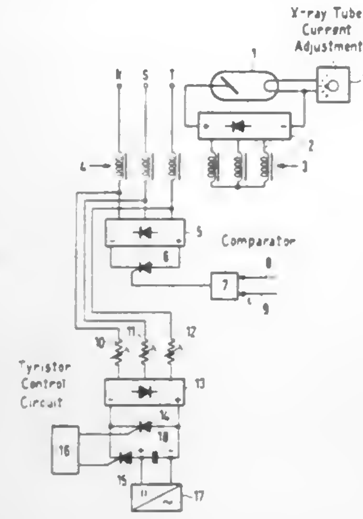
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3015039

Int. Cl.³ H05G *1/32*

U.S. Cl. 378—112 **1 Claim**

1. An x-ray diagnostic generator comprising an x-ray tube whose voltage is adjustable via means for adjusting the x-ray tube filament current, power supply means having series resistance means in a power supply path between the mains and the x-ray tube for determining the relationship between x-ray tube voltage and x-ray tube current, means for switching the x-ray tube on and off, characterized by a switching device (5, 6), for the purpose of by-passng the series resistance means (10, 11, 12), and characterized in that a comparator (7) controls the switching device (5, 6), said comparator (7) having respective inputs for receiving an actual value signal and a setpoint signal

in accordance with an actual value and a setpoint value for the x-ray tube voltage, and said comparator (7) controlling said



switching device (5, 6) such that the series resistance means (10, 11, 12) is by-passed at the commencement of a radiograph as long as the actual value is smaller than the setpoint value.

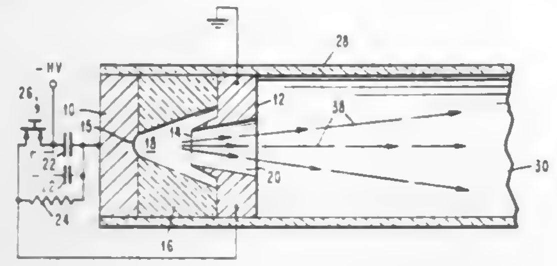
4,368,538
SPOT FOCUS FLASH X-RAY SOURCE

Richard A. McCorkle, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,931

Int. Cl.^{3} H05G *1/00*

U.S. Cl. 378—122 **11 Claims**



1. A flash X-ray source comprising:
an anode;
a cathode with a protrusion thereon;
an insulating body having a passage therethrough which is symmetrically disposed and axially aligned with said protrusion on said cathode, said insulating body being positioned between said anode and said cathode;
at least one viewing port for said passage; and
means for maintaining a potential between said anode and said cathode.

4,368,539
TRANSMITTER DETECTOR

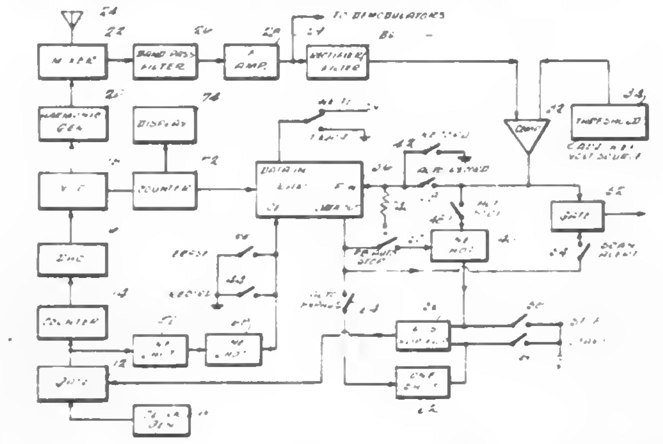
Glenn H. Whidden, 13214 L'Enfant Dr., Oxon Hill, Md. 20022

Filed Aug. 22, 1980, Ser. No. 180,484

Int. Cl.^{3} H03J *7/18;* **H04B** *17/00, 1/16*

U.S. Cl. 455—166 **31 Claims**

7. A method of detecting the presence of a transmitter in an area to be secured from transmitters comprising the steps of:
(a) generating a scanning signal consisting of frequency components related to a base frequency;
(b) combining said scanning signal with input signals to generate mixed signals;
(c) selectively amplifying a particular frequency band of said mixed signals;
(d) determining whether said amplified mixed signals exceed a predetermined threshold;
(e) storing an indication in a memory at an address related to said base frequency of said amplified mixed signals which exceed said predetermined threshold;
(f) analyzing said amplified mixed signals which exceed said predetermined threshold to determine whether the data was transmitted from a transmitter in said area;



(g) incrementally varying the frequency of said base frequency; and
(h) repeating said steps (a)–(g) bypassing said frequencies which said analyzing step determines contains data transmitted from outside said area on subsequent ones of said determining steps.

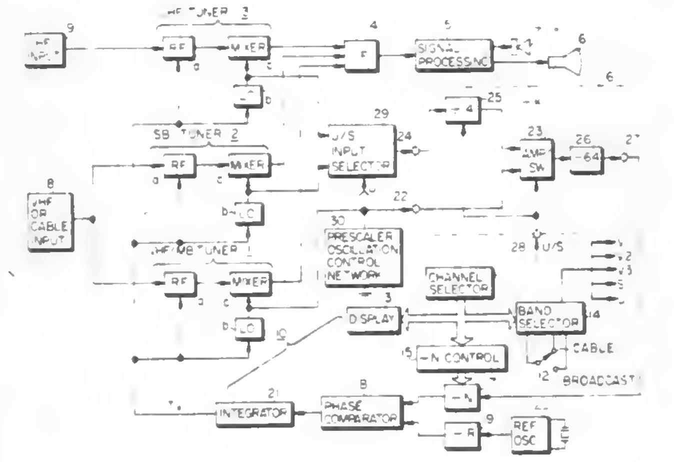
4,368,540
PHASE LOCKED LOOP TUNING SYSTEM INCLUDING A PRESCALER CONDITIONED TO OSCILLATE AT AN OUT-OF-BAND FREQUENCY

David J. Carlson, and William L. Lehmann, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 271,742

Int. Cl.^{3} H03L *7/18;* **H04B** *1/26*

U.S. Cl. 455—180 **9 Claims**



1. In a tuning system for tuning a receiver to a selected one of a plurality of channels in a predetermined range of frequencies, apparatus comprising:
local oscillator means for generating a local oscillator signal and controlling its frequency in response to the magnitude of a tuning signal;
prescaler means for dividing the frequency of said local oscillator signal by a predetermined factor to generate a frequency divided signal;
control means responsive to said frequency divided signal for generating said tuning signal and controlling its magnitude until said frequency divided signal has a predetermined frequency corresponding to a selected channel;
said prescaler means being susceptible of self-oscillation at a self-oscillation frequency and thereby generating a frequency divided signal having a frequency corresponding to that of one of said channels when said local oscillator signal has an amplitude below a predetermined threshold;

frequency selective means coupled to said prescaler means for tuning said self-oscillation frequency to a predetermined frequency such that said frequency divided signal produced in response to said self-oscillation does not correspond to that produced in response to the local oscillator frequency of any channel in said range.

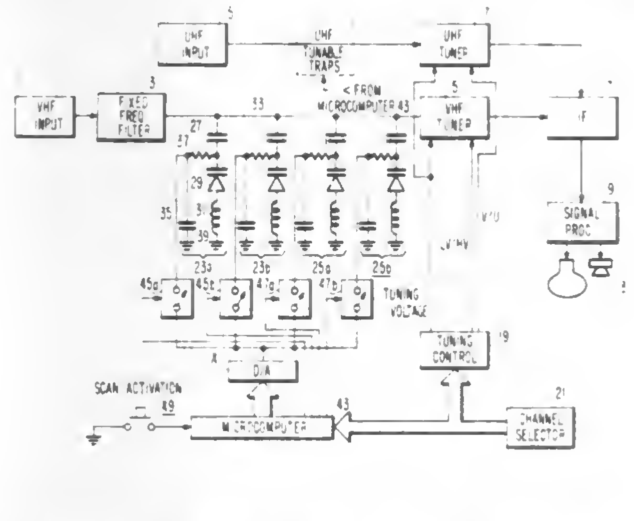
4,368,541
MULTIPLEXING ARRANGEMENT FOR A PLURALITY OF VOLTAGE CONTROLLED FILTERS

Robert M. Evans, Fox Hunt Rd., Ringoes, N.J. 08551

Filed Jun. 30, 1980, Ser. No. 164,684

Int. Cl.^{3} H04B *1/16;* **H03J** *5/24*

U.S. Cl. 455—186 **14 Claims**



1. In a receiver including channel selection means for selecting one of a plurality of channels associated with respective RF carriers modulated with information, an input for receiving said RF signals, conversion means for producing an information bearing signal in accordance with the modulation of the RF carrier associated with the selected channel, and an output at which said information bearing signal is produced, apparatus comprising:
a plurality of frequency tunable circuits coupled between said input and said output and cooperating to control the frequency characteristics of said receiver between said input and output;
each of said frequency tunable circuits including a reactive element having a reactive value determined by the magnitude of a respective analog control signal; storage means coupled to said reactive means for storing said control signal; and a control input for receiving said respective control signal; each of said control inputs being substantially electrically isolated from the other ones of said control inputs;
digital to analog converter means for generating said control signals in response to the application of respective digital control words;
switch means for sequentially and individually applying said control signals generated by said digital to analog converter means to respective ones of said control inputs; and
control means for sequentially supplying said digital control words to said digital to analog converter means to thus sequentially generate respective ones of said control signals and causing said switch means to synchronously and individually apply said sequentially generated control signals to respective ones of said control inputs while a single one of said channels is selected.

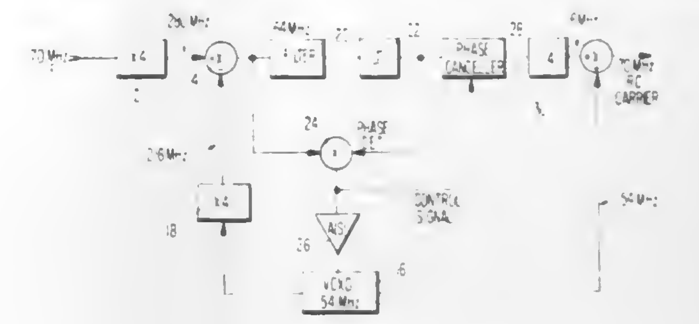
4,368,542
PHASE CANCELLER FOR CARRIER RECOVERY NETWORK

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 27, 1980, Ser. No. 134,735

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 455—316 **7 Claims**



1. A carrier recovery network comprising, an input section receiving an input signal including a carrier, automatic frequency control loop means receiving said input signal and eliminating frequency variations in said input signal, said automatic frequency control loop means including a phase detector and a band pass filter, semiconductor phase cancelling means responsive to the output of said automatic frequency control loop means and receiving a control signal from said phase detector to cancel phase shifts in a signal associated with said band pass filter, and output means responsive to an output signal from said semiconductor phase cancelling means to recover said carrier from said input signal.

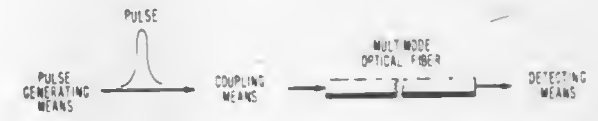
4,368,543
MULTIMODE FIBER LIGHTWAVE COMMUNICATION SYSTEM UTILIZING PULSE SELF-CONFINEMENT

Akira Hasegawa, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1981, Ser. No. 230,322

Int. Cl.^{3} H04B *9/00*

U.S. Cl. 455—612 **3 Claims**



1. A multimode fiber lightwave communication system using pulses of electromagnetic radiation of center frequency f_o and group velocity v_o, the system comprising
(a) means for generating the pulse with f_o such that $(\partial v_{gj}/\partial k_j) > 0$ in the guiding region of the fiber, and
(b) means for coupling at least a part of the energy in the pulse into the guiding region of the fiber,

CHARACTERIZED IN THAT
(c) the electric field of the pulse in the guiding region satisfies

$$\left(\frac{v_{gj}-v_o}{v_{gj}}\right)^2 \leqq 2\left(\frac{\partial v_{gj}}{\partial f_o}\ \frac{f_o}{v_{gj}}\right)\frac{\alpha n_2}{n_o}\,|\,\Phi\,|^2$$

for at least one mode of mode number j, wherein
v_{gj} is the group velocity of the j-th mode,
k_j is the wavenumber of the j-th mode,
n_o is the field-independent effective refractive index of the fiber at f_o,
n_2 is the quadratic coefficient of the refractive index of the fiber at f_o,
$|\Phi|$ is the absolute magnitude of the peak electric field in the pulse averaged over the cross-section of the guiding region, and
α is a constant approximately equal to ½.

DESIGN PATENTS

GRANTED JAN. 11, 1983

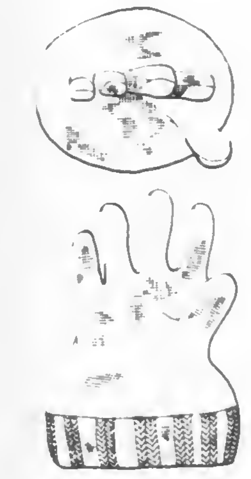
ERRATA

For CLASS	See PATENT NO.
D23–138	267,539

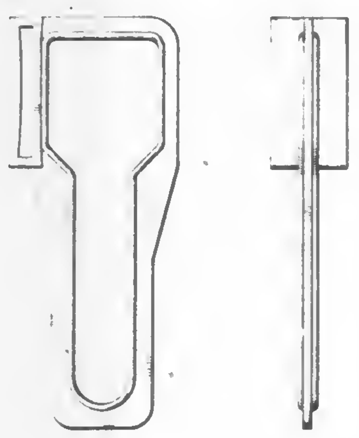
DESIGNS

JANUARY 11, 1983

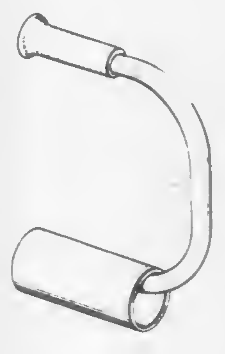
267,518
HAT
Thomas Chritton, 6509 Tottenham Dr., Madison, Wis. 53711
Filed Aug. 5, 1980, Ser. No. 175,486
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—251



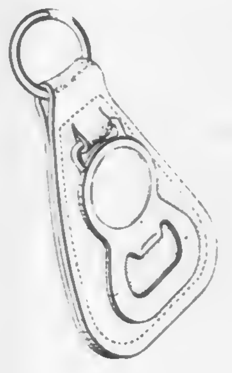
267,519
BELT MOUNTED GAME CARRIER
David J. Erickson, 15357 Nightingale St. NW., Anoke, Minn. 55303
Filed Oct. 27, 1980, Ser. No. 200,774
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



267,520
DEVICE FOR LIFTING AND CARRYING ROLLS OF SHEET MATERIAL
Thomas H. Main, Lake Oswego, Oreg., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Dec. 22, 1980, Ser. No. 219,392
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—30.1

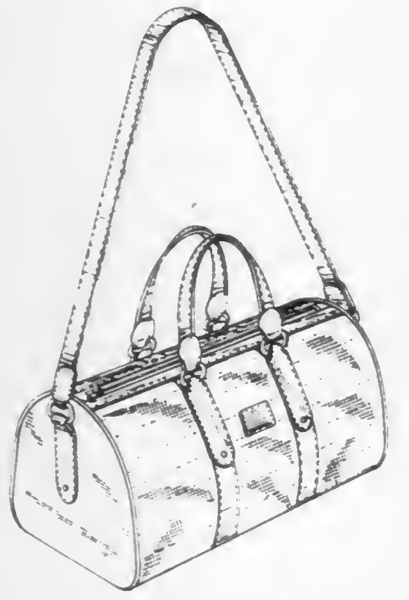


267,521
COMBINED BOTTLE OPENER KEY FOB
Robert G. Mathieson, 4457 Lakeshore Rd., Burlington, Ontario, Canada
Filed Dec. 4, 1980, Ser. No. 213,003
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—62



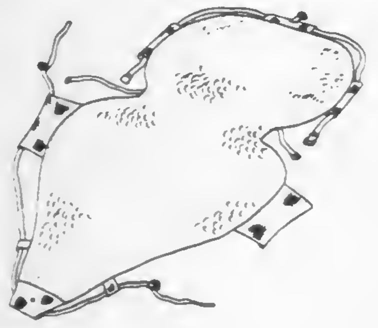
267,522
LUGGAGE

Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Jan. 12, 1981, Ser. No. 224,331
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



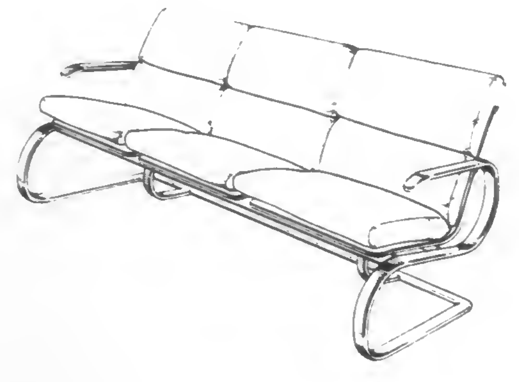
267,523
CAR SEAT COVER

William W. Neilson, 26 Ramsay Ave., Hillcrest, Australia
Filed Jul. 10, 1980, Ser. No. 167,533
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48



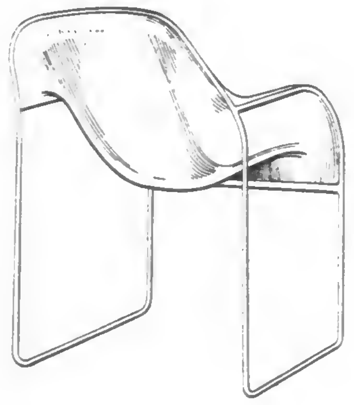
267,524
SETTEE

Larry G. Hickey, Costa Mesa, Calif., assignor to Tropitone Furniture Co., Inc., Sarasota, Fla.
Filed Dec. 23, 1980, Ser. No. 223,486
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



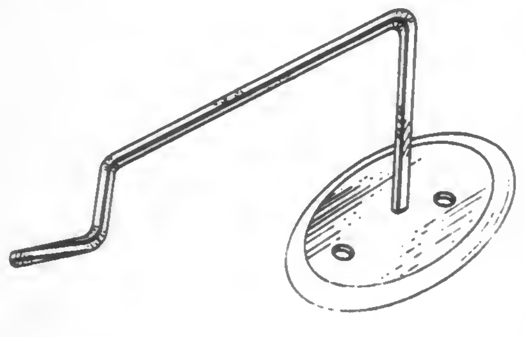
267,525
CHAIR

Warren H. Snodgrass, 223 Woodland Rd., Kentfield, Calif. 94904
Filed Jul. 27, 1979, Ser. No. 61,485
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



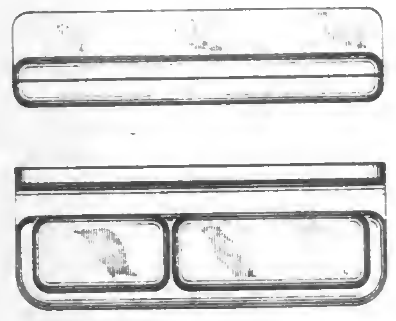
267,526
SOAP HOLDER

Earl S. Figuered, 1147 Wanamaker Dr., #B, Covina, Calif. 91724
Filed Jul. 3, 1980, Ser. No. 165,606
Term of patent 14 years
Int. Cl. D23—*02;* D8—*08*
U.S. Cl. D6—90



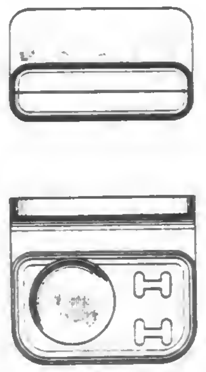
267,527
SOAP HOLDER

Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,042
Claims priority, application Portugal, May 9, 1980, 15090
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90



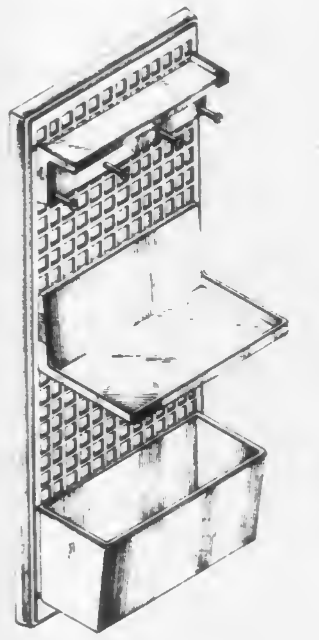
267,528
COMBINED TUMBLER AND TOOTHBRUSH HOLDER

Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,030
Claims priority, application Portugal, May 9, 1980, 15.083
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—92



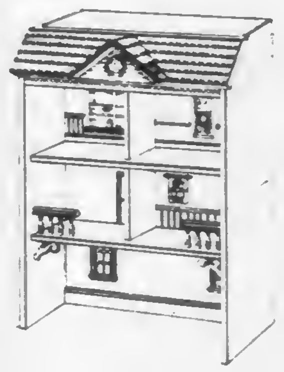
267,529
STORAGE UNIT

Anthony J. Brescia, Liverpool, and Spencer Rhoads, Baldwinsville, both of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Apr. 1, 1981, Ser. No. 249,856
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—131



267,530
HUTCH OR SIMILAR ARTICLE

Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 12, 1980, Ser. No. 186,814
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—53



267,531
DROP LID CHEST OR SIMILAR ARTICLE

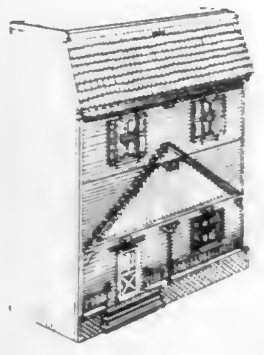
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,813

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—154



267,532
CREDENZA OR SIMILAR ARTICLE

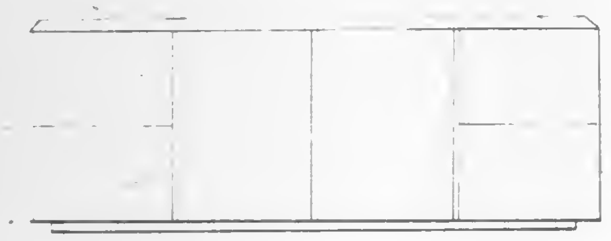
Warren Platner, Guilford, Conn., assignor to Litton Business Systems, Inc., Burlington, Iowa

Division of Ser. No. 914,285, Jun. 9, 1978. This application Jan. 9, 1981, Ser. No. 223,710

Term of patent 14 years

Int. Cl. D6—*04*

U.S. Cl. D6—164



267,533
GREETING CARD HOLDER

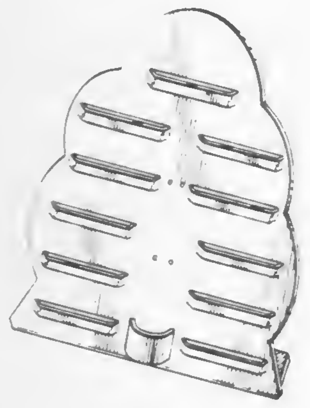
Jean H. Phillips, 538 W. Midlothian Blvd., Youngstown, Ohio 44511

Filed Nov. 3, 1980, Ser. No. 202,939

Term of patent 14 years

Int. Cl. D06—*06*

U.S. Cl. D6—180



267,534
CORNER CONNECTOR FOR FURNITURE

Ruedi Zwissler, St. Jakobstr. 87, 9000 St. Gallen, Switzerland

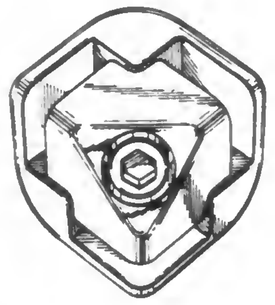
Filed Oct. 10, 1980, Ser. No. 196,611

Claims priority, application Hague, Apr. 11, 1980, DM/000 140

Term of patent 14 years

Int. Cl. D6—*06*

U.S. Cl. D6—191



267,535
DOORMAT SUPPORT PLATE OR SIMILAR ARTICLE

Ken Yamazaki, Kobe; Yosuki Yamamoto, Toyonaka; Takehisa Kinoyama, Muko, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan

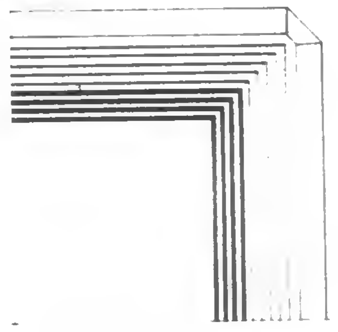
Filed Feb. 9, 1981, Ser. No. 232,965

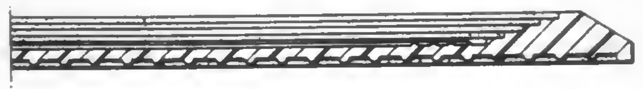
Claims priority, application Japan, Nov. 29, 1980, 55-49752

Term of patent 14 years

Int. Cl. D6—*11*

U.S. Cl. D6—219





267,536
COMBINED SCOOP, FUNNEL, AND POURER

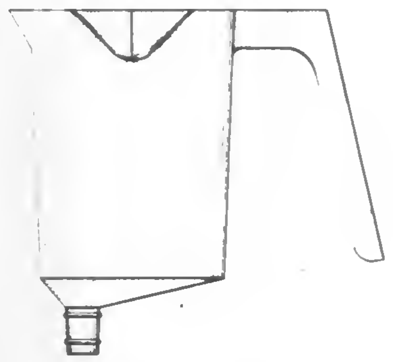
James R. Findlay, Toledo, Ohio, assignor to Impact Products, Inc., Toledo, Ohio

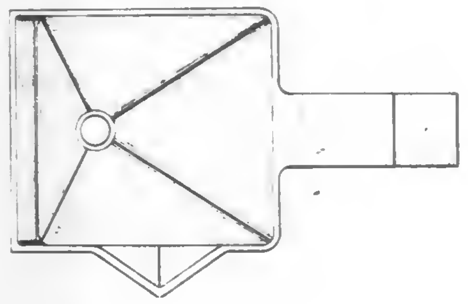
Filed Nov. 10, 1980, Ser. No. 205,698

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D7—318





267,537
FLUID DISPENSING SPOON

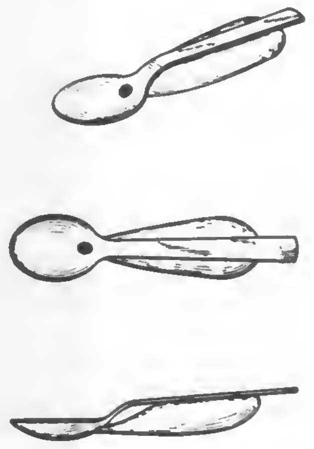
James M. Borer, 419 Webster Ave., North Mankato, Minn. 56001

Filed Nov. 17, 1980, Ser. No. 207,404

Term of patent 14 years

Int. Cl. D7—*03*

U.S. Cl. D7—141



267,538
FOOD PROCESSOR

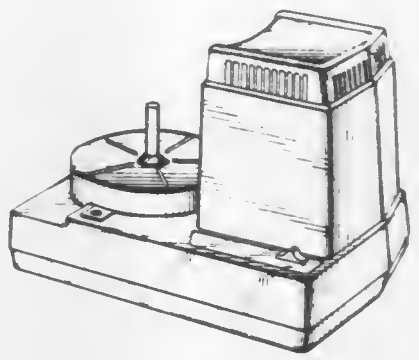
Norman A. Steinkamp, La Grange Park; Richard K. Thomas, Elk Grove Village, and Bernard B. Bluestein, Des Plaines, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

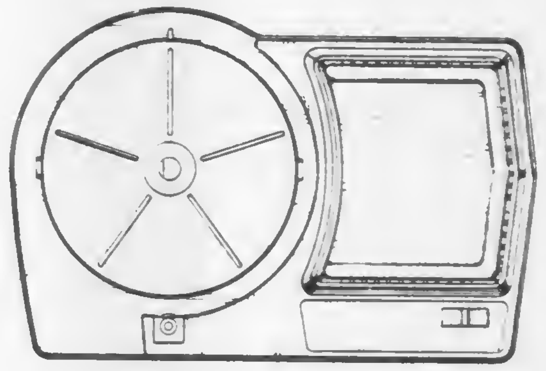
Filed Jan. 12, 1981, Ser. No. 224,249

Term of patent 14 years

Int. Cl. D7—*04*

U.S. Cl. D7—386





267,539
COAL BIN

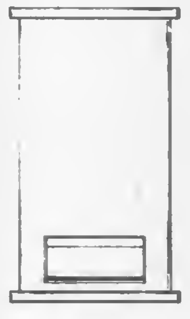
Richard A. Russo, Holbrook, Mass., assignor to Russo Manufacturing Corp., Randolph, Mass.

Filed Aug. 1, 1980, Ser. No. 174,637

Term of patent 14 years

Int. Cl. D7—*07*

U.S. Cl. D23—138.5



267,540
POLY-V PULLEY

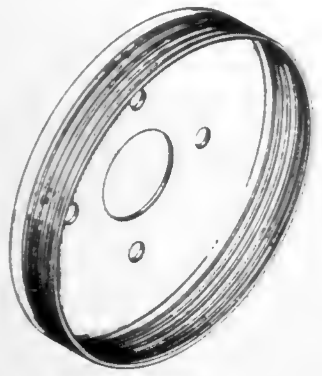
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-sho, Japan

Filed Sep. 26, 1980, Ser. No. 191,434

Term of patent 14 years

Int. Cl. D12—*05*

U.S. Cl. D8—360



267,541
POLY-V PULLEY

Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Dosho Yosetsu-Sho, Japan

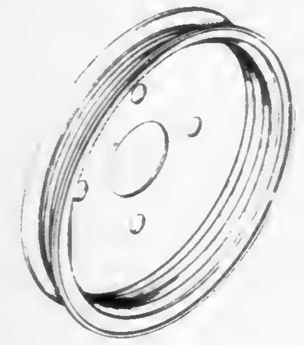
Filed Apr. 8, 1981, Ser. No. 252,497

Claims priority, application Japan, Dec. 26, 1980, 55-54859

Term of patent 14 years

Int. Cl. D14—*05*

U.S. Cl. D8—360



267,542
RIBBON CARTRIDGE SHIPPING TRAY

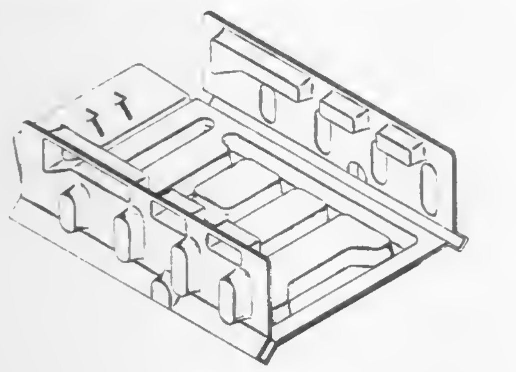
Anthony N. Paone, Syracuse, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,839

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—345



267,543
FOOD CONTAINER

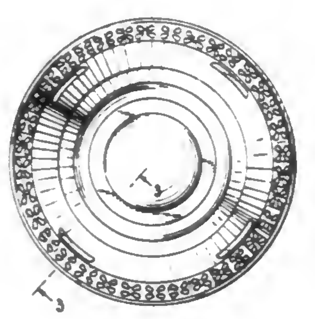
Dennis J. Nemura, Easton, Pa., and John M. Wathen, Jr., Chester, N.J., assignors to American Can Company, Greenwich, Conn.

Filed Sep. 12, 1979, Ser. No. 74,673

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—428



267,544
PACKAGING CONTAINER FOR WELDING RODS

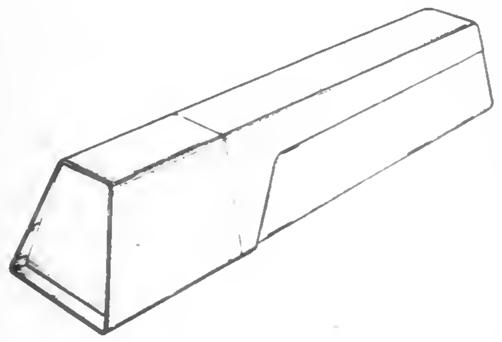
Oscar T. Neto; Joao E. B. Migliano, and Jean L. Fluckiger, all of Sao Paulo, Brazil, assignors to Eutectic Corporation, Flushing, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,375

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—431



267,545
CLOSURE PLUG

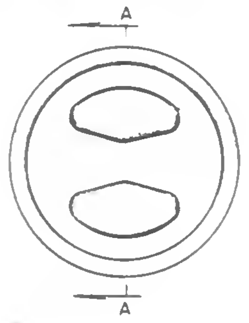
Kinji Mineo, Tokyo, Japan, assignor to Yamato Iron Works Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 140,085

Term of patent 14 years

Int. Cl. D9—*07*

U.S. Cl. D9—439



267,546
OVERCAP FOR AEROSOL CONTAINER

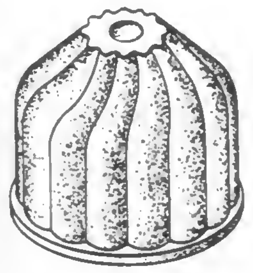
Robert S. Manlove, 31 Spyglass Hill, Oakland, Calif. 94618

Filed Jan. 26, 1981, Ser. No. 228,265

Term of patent 14 years

Int. Cl. D7—*07*

U.S. Cl. D7—445



267,547
CONTAINER CAP

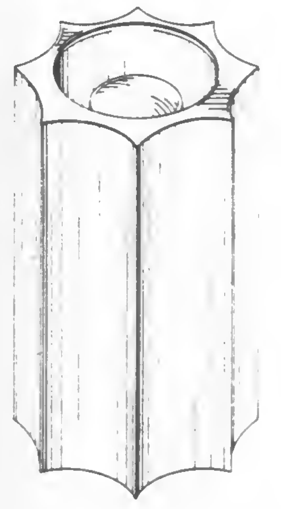
William T. Nightingale, III, Campbell, Calif., assignor to Pacer Technology & Resources, Inc., Campbell, Calif.

Filed Dec. 15, 1980, Ser. No. 216,428

Term of patent 14 years

Int. Cl. D9—*07*

U.S. Cl. D9—453



267,548
DIGITAL WRIST WATCH OR THE LIKE

Masao Wada, Mitaka, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

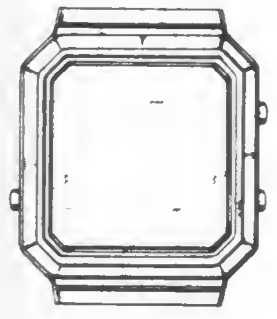
Filed Jul. 15, 1980, Ser. No. 169,225

Claims priority, application Japan, Feb. 10, 1978, 53-4374

Term of patent 14 years

Int. Cl. D10—*02*

U.S. Cl. D10—38



267,549
WATCH

Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars sur Glane, Switzerland

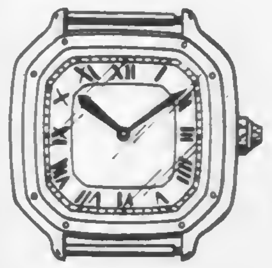
Filed Jul. 7, 1980, Ser. No. 166,746

Claims priority, application Int'l Pat. Institute, Jan. 7, 1980, 69 774

Term of patent 14 years

Int. Cl. D10—*02*

U.S. Cl. D10—39



267,550
COMBINATION SET PROTRACTOR

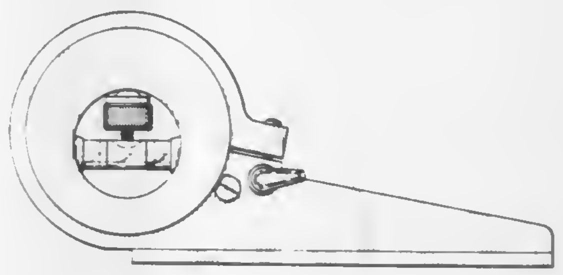
Norman L. Smyth, and Roy G. Hodgson, both of Sheffield, England, assignors to Moore & Wright (Sheffield) Ltd., Sheffield, England

Filed Dec. 11, 1980, Ser. No. 215,267

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—62



267,551
VARIABLE GRADE LEVEL

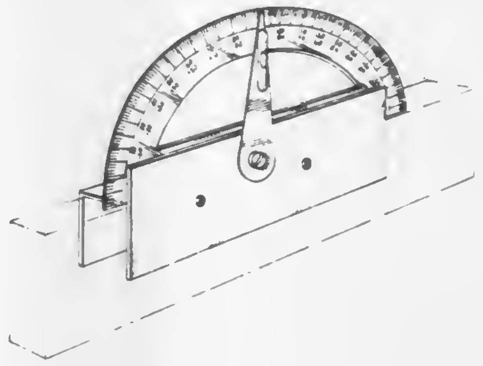
Daniel Z. Seyler, R.D. 1, Box 242C, Phillipsburg, N.J. 08865

Filed Dec. 23, 1980, Ser. No. 219,776

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—65



267,552

MULTIPLE SCALE RULE

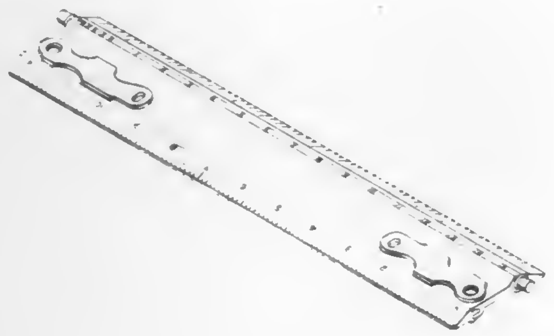
Douglas D. Seely, Jr., 54743 Merrifield Dr., Mishawaka, Ind. 46544, and Douglas D. Seely, III, 234 Murray, South Bend, Ind. 46637

Filed Nov. 10, 1980, Ser. No. 205,415

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—71



267,553

ENGINE ANALYZER

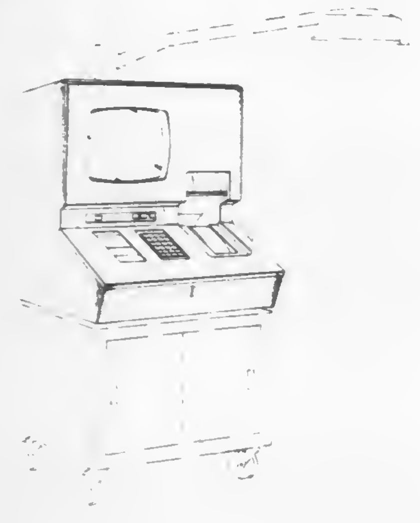
Peter Bressler, Philadelphia, Pa.; David A. Cicero, Collingswood, N.J.; Udo Kiefer, Marlton, N.J., and Robert E. Citerone, Pennsauken, N.J., assignors to Siemens Corporation, Iselin, N.J.

Filed May 29, 1979, Ser. No. 43,162

Term of patent 7 years

Int. Cl. D10—*04*

U.S. Cl. D10—75



267,554

MULTI-FUNCTION DIGITAL-CIRCUIT TESTER OR SIMILAR ARTICLE

Nicholas D. Swinstead, Church Crookham, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

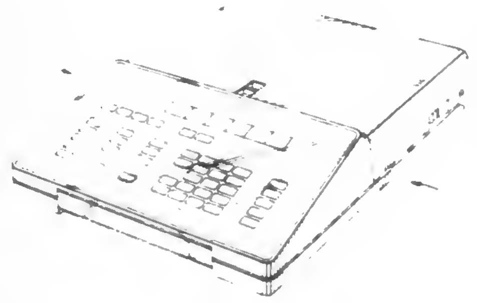
Filed Dec. 17, 1980, Ser. No. 217,313

Claims priority, application United Kingdom, Jun. 18, 1980, 80995365

Term of patent 14 years

Int. Cl. D10—*04*

U.S. Cl. D10—75



267,555

WRIST PEN HOLDER

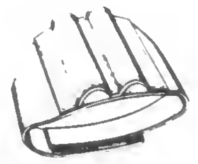
Morris E. Cox, Lot 65, Linde Rd., Jackson, Miss. 39203

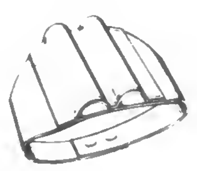
Continuation-in-part of Ser. No. 932,045, Aug. 7, 1978, Pat. No. Des. 258,812. This application Oct. 10, 1980, Ser. No. 195,831

Term of patent 14 years

Int. Cl. D11—*01;* D02—*99*

U.S. Cl. D11—2





267,556

PLAQUE

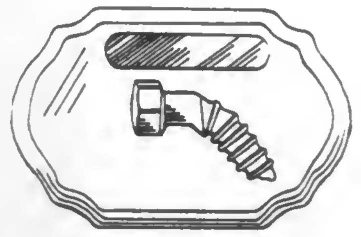
Charles H. Allgood, II, 3886 Healy Rd., Memphis, Tenn. 38111

Filed Oct. 20, 1980, Ser. No. 198,825

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—133



267,557

COMBINED FLOWER VASE AND PICTURE FRAME

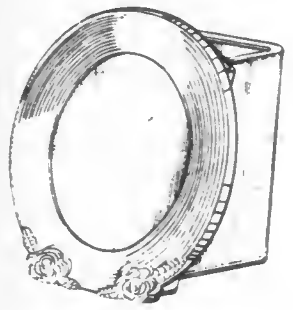
Lynda R. Resnick, Beverly Hills, Calif., assignor to Teleflora Inc., Redondo Beach, Calif.

Filed Dec. 3, 1980, Ser. No. 212,406

Term of patent 14 years

Int. Cl. D6—*07;* D11—*02*

U.S. Cl. D11—144



267,558

AUTOMOBILE BODY

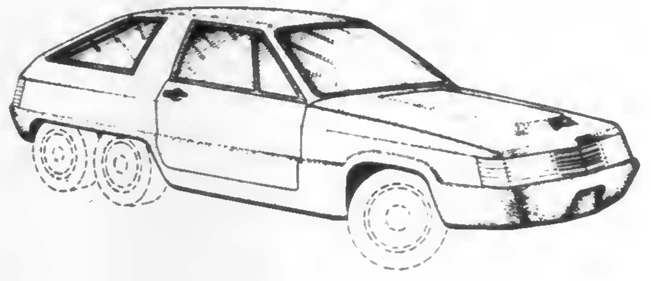
Kipp K. Stevens, Mequon, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 3, 1980, Ser. No. 126,556

Term of patent 14 years

Int. Cl. D12—*08*

U.S. Cl. D12—91



267,559

BOAT TRAILER

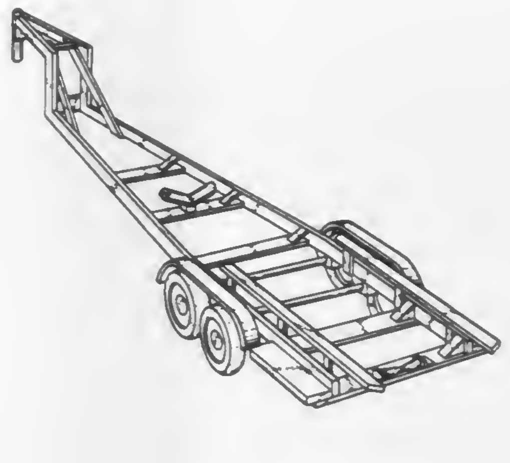
Robert S. Wormser, 6880 SW. 19th Ave., Ocala, Fla. 32671

Filed Aug. 21, 1980, Ser. No. 180,021

Term of patent 14 years

Int. Cl. D12—*10*

U.S. Cl. D12—97



267,560

MOTORCYCLE

Yukihiko Matsue, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

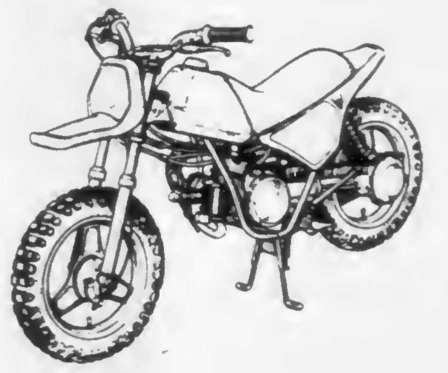
Filed Oct. 8, 1980, Ser. No. 194,962

Claims priority, application Japan, Apr. 26, 1980, 55-16810

Term of patent 14 years

Int. Cl. D12—*11*

U.S. Cl. D12—110



267,561

MOTORCYCLE

Koichiro Ban, Tachikawa; Tsunemi Kawashima, Tokyo, and Toshiharu Shimizu, Tokorozawa, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

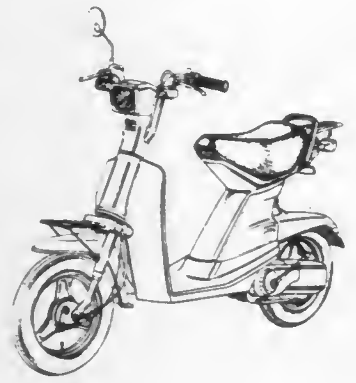
Filed Feb. 24, 1981, Ser. No. 237,640

Claims priority, application Japan, Aug. 27, 1980, 55-35382

Term of patent 14 years

Int. Cl. D12—*11*

U.S. Cl. D12—110



267,562

WHEEL COVER

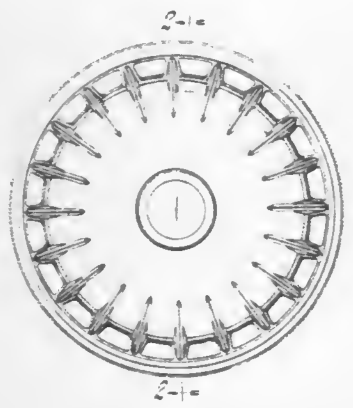
Jerry P. Palmer, Birmingham, and Randolph J. Wittine, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1980, Ser. No. 178,356

Term of patent 7 years

Int. Cl. D12—*16*

U.S. Cl. D12—211



267,563

VEHICLE WHEEL

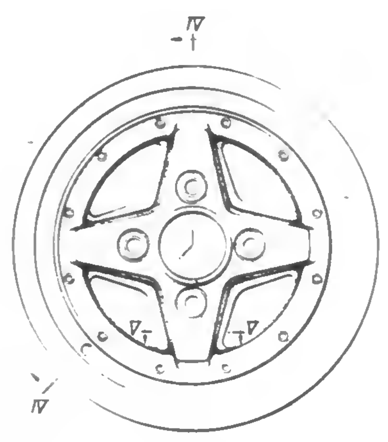
Masakazu Hayashi, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Hayashi Racing, Osaka, Japan

Filed Aug. 22, 1980, Ser. No. 180,500

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—211



267,564

VEHICLE WHEEL

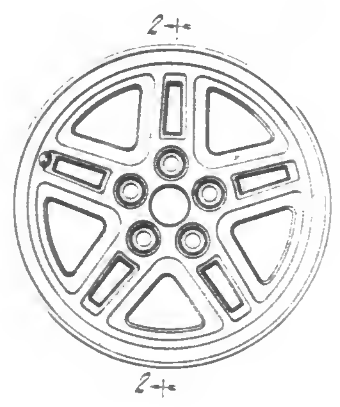
Dennis S. Wright, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1980, Ser. No. 180,513

Term of patent 7 years

Int. Cl. D12—*16*

U.S. Cl. D12—211



267,565

DOCUMENT FEEDER FOR COPYING MACHINE

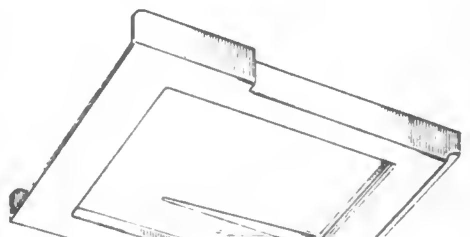
Gregory Fossella; J. B. MacDonald, both of Boston, and Michael Mercandante, North Quincy, all of Mass., assignors to Nashua Corporation, Nashua, N.H.

Filed Jul. 9, 1979, Ser. No. 56,150

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D16—32



267,566

INKED TAPE CARTRIDGE

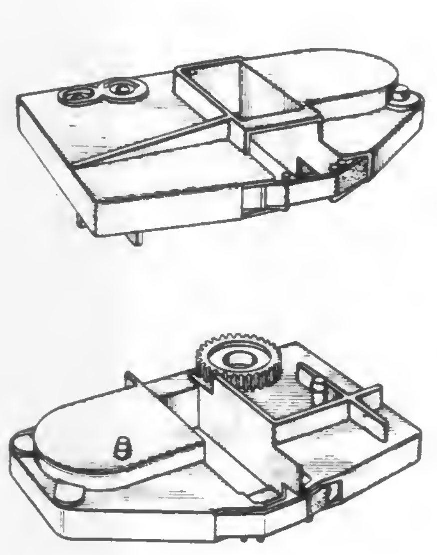
Robert C. Hoffman, Park Ridge, Ill., assignor to Qwint Systems, Inc., Northbrook, Ill.

Filed Mar. 9, 1981, Ser. No. 241,496

Term of patent 14 years

Int. Cl. D18—*01*

U.S. Cl. D18—12



267,567

INK-RIBBON CASSETTE

Masahiko Mori, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Suwa and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

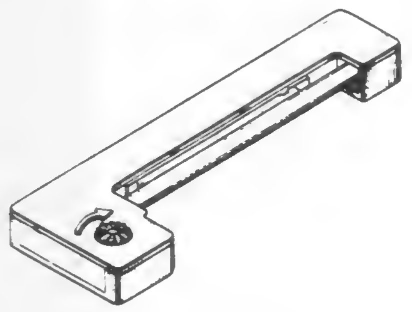
Filed Oct. 28, 1980, Ser. No. 201,105

Claims priority, application Japan, May 20, 1980, 55-19724

Term of patent 14 years

Int. Cl. D18—*99*

U.S. Cl. D18—22



267,568

GAME BOARD

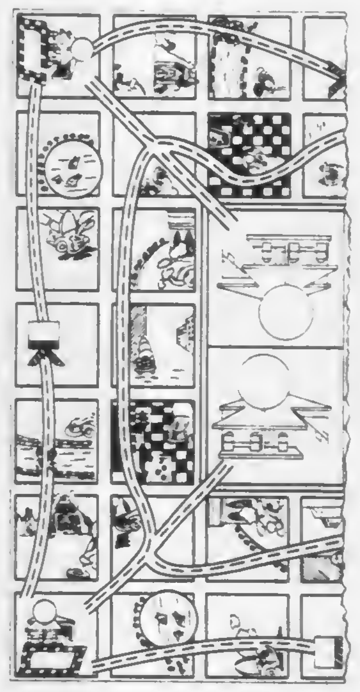
Paul K. Murphy, 6790 Tapley St., Simi Valley, Ventura County, Calif. 93063

Filed Dec. 4, 1980, Ser. No. 212,903

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—25



267,569

TEN SIDED DIE

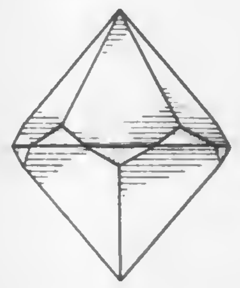
Clifford E. Polite, Biloxi, Miss., assignor to Gamescience, Inc., Gulfport, Miss.

Filed Jan. 9, 1981, Ser. No. 223,573

Term of patent 14 years

Int. Cl. D21—*01*

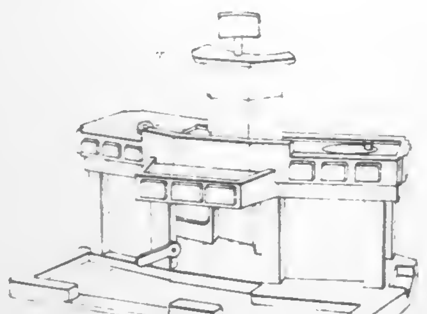
U.S. Cl. D21—41



267,570

TOY AIRPORT

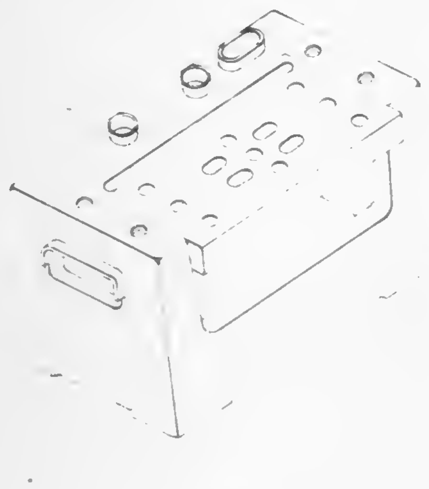
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,264
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118



267,571

TOY WORKBENCH

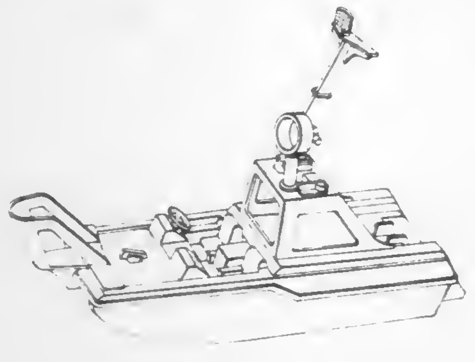
Merry S. Riehm, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 24, 1980, Ser. No. 210,266
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121



267,572

TOY BOAT

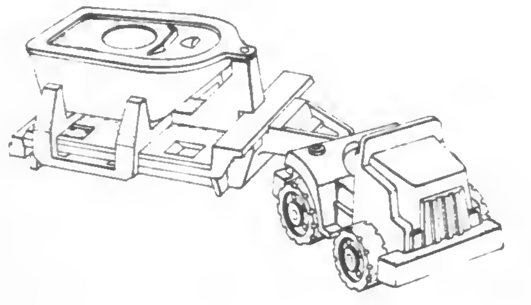
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,209
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



267,573

TOY BOAT RIG

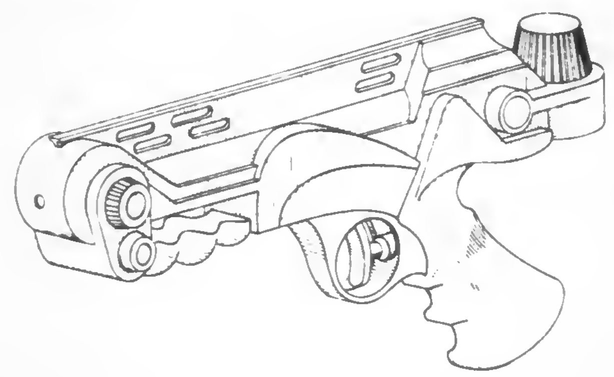
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,208
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—135



267,574

TOY WATER GUN

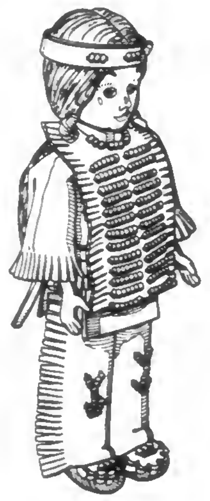
Francis M. L. Barthropp, 4371 Marine Dr., West Vancouver, British Columbia, Canada (V7V 1P3)
Filed Oct. 27, 1980, Ser. No. 200,885
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—147



267,575

INDIAN DOLL

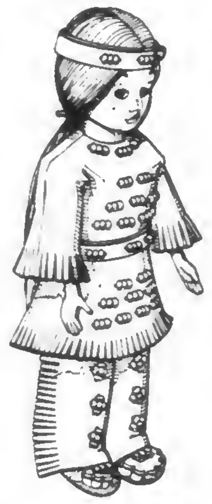
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,875
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



267,576

INDIAN DOLL

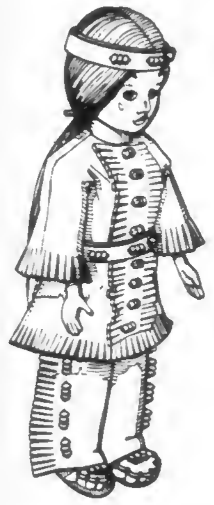
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,876
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



267,577

INDIAN DOLL

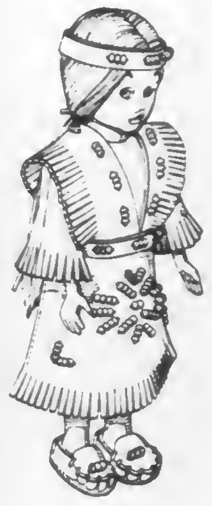
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,877
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



267,578

INDIAN DOLL

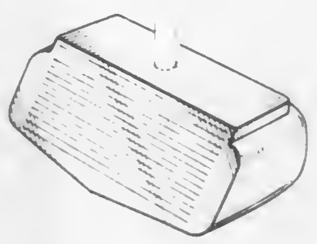
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,880
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



267,579

GOLF CLUB HEAD

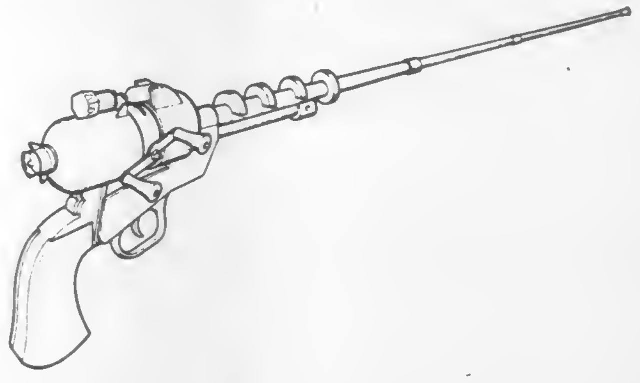
Clyde E. Mullins, 632 Ruissau Francais, Half Moon Bay, Calif. 94019
Filed Nov. 24, 1980, Ser. No. 209,544
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—214



267,580

COMBINED FISHING ROD AND REEL WITH GUN-SHAPED HANDLE

Benjamin W. Price, P.O. Box 1681, Marion, N.C. 28752
Filed Oct. 9, 1980, Ser. No. 195,508
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26

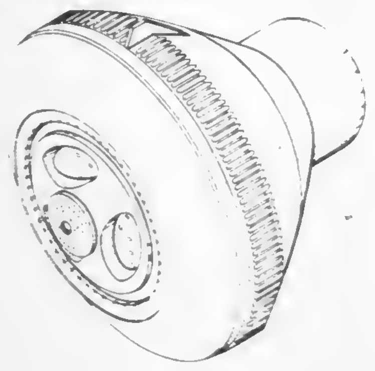


267,581
SHOWERHEAD

Spencer L. Mackay, Canoga Park; Frederick G. Mackay; Allan B. Johnson, both of Tarzana, all of Calif., and David W. Smith, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Filed Oct. 6, 1980, Ser. No. 193,960
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35

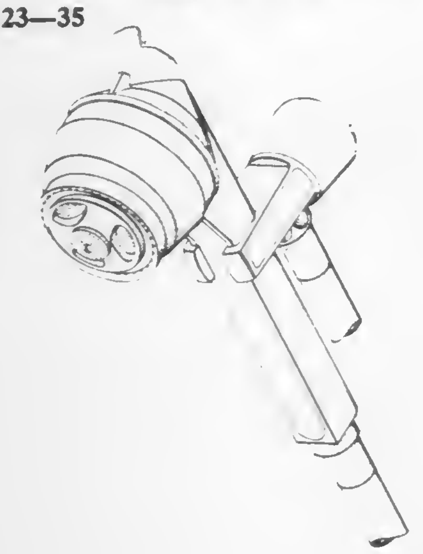


267,582
HAND-HELD SHOWERHEAD

Spencer L. Mackay, Canoga Park; Frederick G. Mackay; Allan B. Johnson, both of Tarzana, all of Calif., and David W. Smith, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.

Filed Oct. 6, 1980, Ser. No. 193,961
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35

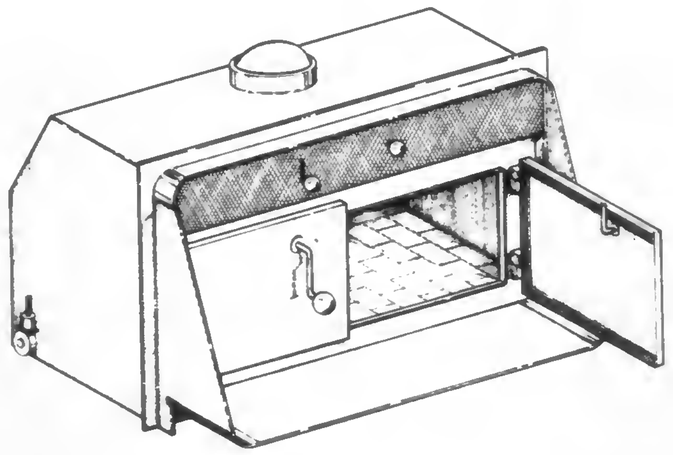


267,583
FIREPLACE INSERT

David W. Pratt, 3411 'C' St. NE., Auburn, Wash. 98002

Filed Oct. 27, 1980, Ser. No. 201,020
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—94

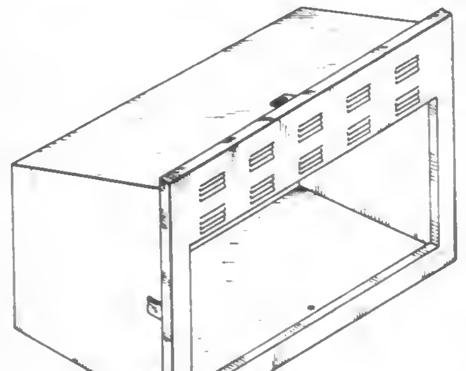


267,584
BUILT-IN FIREPLACE UNIT

Gloria D. Hilker, 1109 S. Landmark Trail, Hopkins, Minn. 55343

Filed Mar. 9, 1981, Ser. No. 241,628
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—94

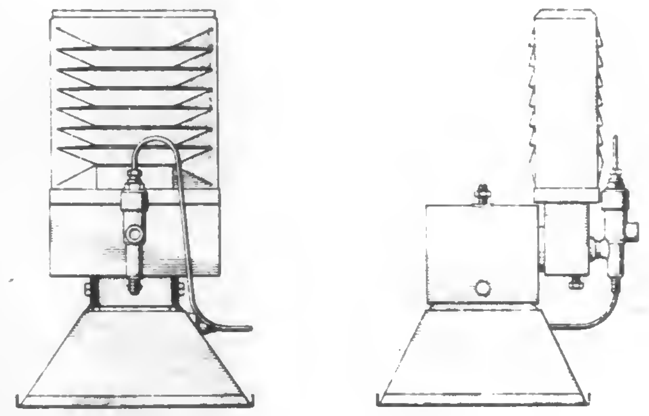


267,585
GAS-FIRED INFRARED HEATER

Pierre Sobole, Clenay, France, assignor to Societe Bourguignonne de Mecanique, France

Filed May 9, 1980, Ser. No. 148,571
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—122

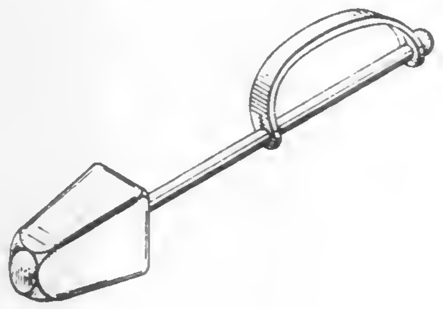


267,586
DENTAL MOUTH PROP

Roger A. Hatlen, 3021 Joseph Ave., Sacramento, Calif. 95825

Filed Apr. 30, 1980, Ser. No. 145,307
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—10

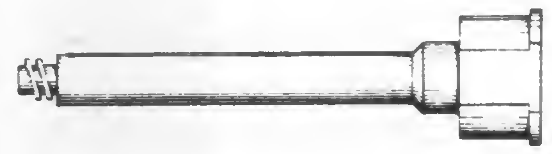


267,587
PLUNGER ROD/NEEDLE PROTECTOR FOR A HYPODERMIC SYRINGE

Thomas J. Ambrosio, Somerville; Henry J. Buchman, Edison; Joseph J. Rogus, Bridgewater, and Henry R. Sochon, Clifton, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Sep. 4, 1980, Ser. No. 184,436
Term of patent 14 years
Int. Cl. D24—*02, 99*

U.S. Cl. D24—25

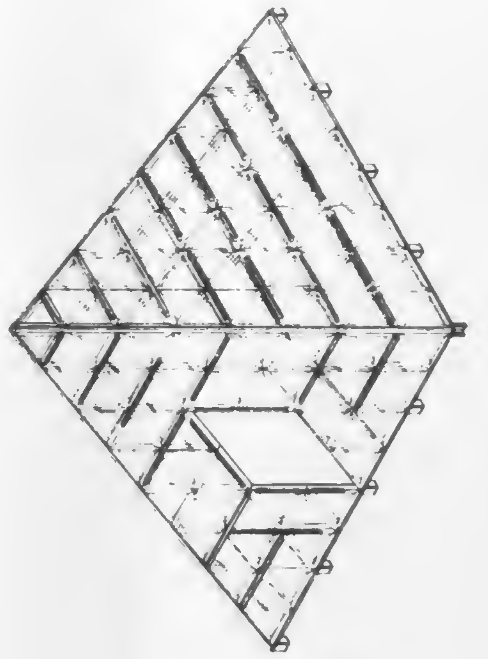


267,588
PYRAMID GREENHOUSE

David Goodell, Box 176, Trimont, Minn. 56176

Filed Oct. 27, 1980, Ser. No. 200,935
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D25—15

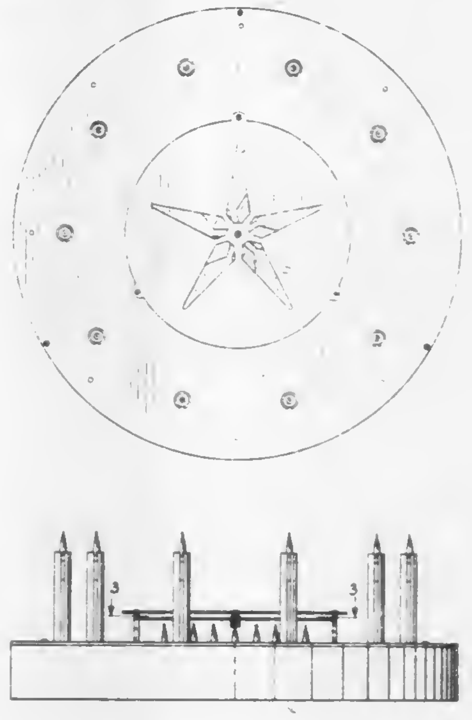


267,589
ROTATING LIGHT DISPLAY

Robert I. Worley, 4011 Sinclair, Austin, Tex. 78756

Filed Jul. 28, 1980, Ser. No. 173,147
Term of patent 14 years
Int. Cl. D26—*99*

U.S. Cl. D26—96



267,590

HOLDER PRIMARILY FOR A LIGHTER

Kumar Varma, London, England, assignor to Hall & Keane Design Limited, London, England

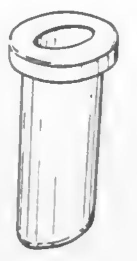
Filed Jul. 30, 1980, Ser. No. 173,851

Claims priority, application United Kingdom, May 14, 1980, 994,891

Term of patent 14 years

Int. Cl. D27—*06*

U.S. Cl. D27—51



267,591

V-SHAPED CERAMIC GREENWARE CLEANER

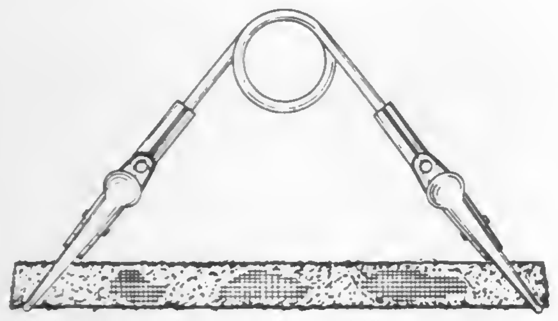
Thomas E. Gibson, 6709 Lyrewood Dr., Oklahoma City, Okla. 73132

Filed Aug. 30, 1980, Ser. No. 179,717

Term of patent 14 years

Int. Cl. D7—*05*

U.S. Cl. D32—52



267,592

DUST PAN

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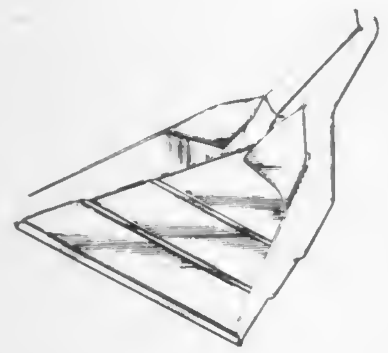
Filed Oct. 17, 1980, Ser. No. 197,770

Term of patent 14 years

Int. Cl. D7—*05*

U.S. Cl. D32—74



267,593

LEAF BAG HOLDER

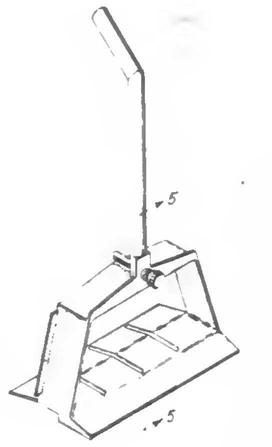
Brian F. Crawford, Schenectady, and Philip Jaros, Gloversville, both of N.Y., assignors to White Mop Wringer Company, Fultonville, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,229

Term of patent 14 years

Int. Cl. D7—*05*

U.S. Cl. D34—01



267,594

CART FOR BANK CHECK TRANSFER TRAYS

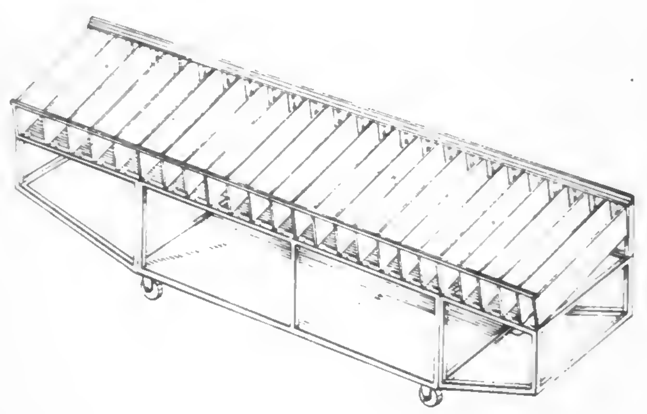
Elmer E. Ogg, Jr.; George F. Brun, Jr., both of Dayton, and William E. Wells, West Alexandria, all of Ohio, assignors to Systems Unlimited, Inc., Dayton, Ohio

Filed May 22, 1980, Ser. No. 152,380

Term of patent 14 years

Int. Cl. D12—*02*

U.S. Cl. D34—22



267,595

WHEELED LEVER

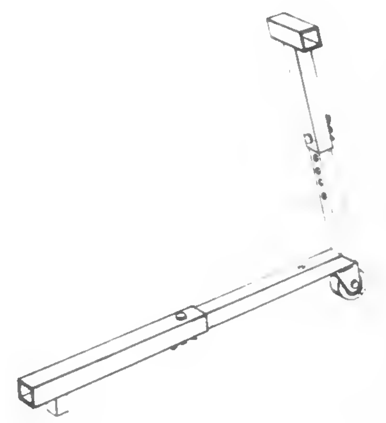
Billy G. Hauser, Winston-Salem, N.C., assignor to Poland Manufacturing Corporation, Winston-Salem, N.C.

Filed Aug. 8, 1980, Ser. No. 176,491

Term of patent 14 years

Int. Cl. D12—*05*; D8—*05*

U.S. Cl. D34—34



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  - Inada, Masami; and Aoki, Kongou, 4,367,674, Cl. 92-13.200.
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  - Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
- Ashimori Industry Co., Ltd.: *See—*
  - Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, 4,368,091, Cl. 156-287.000.
- Ashland Oil, Inc.: *See—*
  - Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., 4,368,222, Cl. 427-340.000.
- Askins, William J.: *See—*
  - Krueck, John F.; Braden, Donald G.; and Askins, William J., 4,367,673, Cl. 91-437.000.
- Atari, Inc.: *See—*
  - Nielsen, Carl J., 4,368,515, Cl. 364-200.000.
- Atlantic Richfield Company: *See—*
  - Keller, Gerald H.; Senese, Frank J.; and Vlasic, John G., 4,367,827, Cl. 222-2.000.
- Audeh, Constandi A.; and Dickert, Joseph J., Jr., to Mobil Oil Corporation. Method of removing moisture from hydraulic systems. 4,368,126, Cl. 210-663.000.
- Avco Corporation: *See—*
  - Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,368,005, Cl. 415-207.000.
- Azzam, Nadim, to Eurosil GmbH. Eight segment display for oriental numerals. 4,368,464, Cl. 340-756.000.
- B. F. Goodrich Company, The: *See—*
  - Heimovics, John F., Jr.; and Seabase, Peter P., 4,368,009, Cl. 417-191.000.
- Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a baseless incandescent lamp assembly. 4,367,573, Cl. 29-25.130.
- Babskaya, Ida N.: *See—*
  - Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
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- Bachet, Bernard; and Doucelance, Claude, to Commissariat a l'Energie Atomique. Non-destructive testing method and apparatus for spot welds. 4,368,422, Cl. 324-64.000.
- Backx, Leo J. J.: *See—*
  - Heeres, Jan; and Backx, Leo J. J., 4,368,200, Cl. 424-250.000.
- Bacs Megyei Allami Epitoipari Vallalat: *See—*
  - Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.
- Bagi nee Schmidt, Terezia: *See—*
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- Bahr, Theodor; and Pfalzer, Lothar, to J. M. Voith GmbH. Method and apparatus for the production of a suspension of fibrous material made from waste-paper. 4,368,101, Cl. 162-4.000.
- Bailey, William D., to Stimtech, Inc. Stimulating electrode. 4,367,755, Cl. 128-798.000.
- Bain, James. Safety connector for flexible tube device. 4,367,769, Cl. 138-114.000.
- Baker, Charles P. Violin, kit and method of making same. 4,367,777, Cl. 144-346.000.
- Bakonyi, Maria: *See—*
  - Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.
- Baldwin Piano & Organ Company: *See—*
  - Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
- Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., to Glaxo Group Limited. Production of cephalosporins. 4,368,263, Cl. 435-47.000.
- Ball Corporation: *See—*
  - Mapes, Glenn H.; Kwiatkowski, Jerome A.; and Haynes, J. David, 4,368,062, Cl. 65-29.000.
- Ballew, Donald H. Medicament container with timer top. 4,367,955, Cl. 368-10.000.
- Baltynova, Nazymkul: *See—*
  - Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
- Bamford, Nigel T.: *See—*
  - Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.
- Baranczyk, James G.; and Baranczyk, Richard J. Dustless cutter. 4,367,586, Cl. 30-241.000.
- Baranczyk, Richard J.: *See—*
  - Baranczyk, James G.; and Baranczyk, Richard J., 4,367,586, Cl. 30-241.000.
- Barbal, Andrew L. Automatically disengagable safety buckle assembly. 4,367,570, Cl. 24-230.00R.
- Barber-Colman Company: *See—*
  - Jornod, Eugene R.; and Siden, Steven D., 4,368,502, Cl. 361-192.000.
- Barber, S. Morgan. Lower body supporting mechanism for a tiltable body exerciser. 4,367,731, Cl. 128-71.000.
- Barkis, Edward; Crummer, Robert R.; and Joyner, James M., to Standard Oil Company (Indiana). Coated woven and non-woven polyolefin articles. 4,368,233, Cl. 428-245.000.
- Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, to Gordon Barlow Design. Boxing game. 4,367,875, Cl. 273-85.00F.
- Barnoud, Francois; and Labays, Jean-Bernard. Static penetrometer. 4,367,647, Cl. 73-84.000.
- Barry Wright Corporation: *See—*
  - Peterson, Robert R., 4,368,050, Cl. 464-83.000.
- Barsotti, Edward J.: *See—*
  - Hance, Richard D.; and Barsotti, Edward J., 4,368,410, Cl. 318-116.000.
- Bartel, William G.: *See—*
  - Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., 4,367,843, Cl. 231-2.00E.
- BASF Aktiengesellschaft: *See—*
  - Hammon, Fritz, 4,367,951, Cl. 356-357.000.
  - Kiehs, Karl; and Adolphi, Heinrich, 4,368,196, Cl. 424-200.000.
  - Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.
- BASF Wyandotte Corporation: *See—*
  - Motzkus, Gert; and Fohn, Kurt, 4,368,055, Cl. 8-662.000.
- Battelle Memorial Institute: *See—*
  - Alexander, Graham H.; and Doerschuk, David C., 4,367,882, Cl. 280-276.000.
  - de Pous, Olivier, 4,368,143, Cl. 252-457.000.
- Battista Lozio & Figli S.P.A.: *See—*
  - Lozio, Battista, 4,367,834, Cl. 227-67.000.
- Bauer, Ivan K.: *See—*
  - Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
- Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, to Pren Elektrofeinmecahnische Wereke Jakob Preh Nachf. GmbH & Co. Key assembly. 4,368,441, Cl. 334-15.000.
- Baumann, Hans, to Grob & Co. Aktiengesellschaft. Connecting part for electrical warp stop motion on weaving machines. 4,367,771, Cl. 139-358.000.
- Baumann, Heinz, to Siemens Aktiengesellschaft. Tomograph for producing transverse layer images. 4,368,535, Cl. 378-15.000.
- Baxmann, Fritz: *See—*
  - Frese, Albert; and Baxmann, Fritz, 4,368,291, Cl. 525-53.000.
- Baxter Travenol Laboratories, Inc.: *See—*
  - Gupton, John E., 4,367,736, Cl. 128-214.00E.
  - Hannah, Richard E.; and Lyons, Steffen, 4,368,023, Cl. 425-392.000.
- Bayer Aktiengesellschaft: *See—*
  - Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.
  - Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, 4,368,292, Cl. 525-54.230.
  - Brandes, Wilhelm; and Daum, Werner, 4,368,202, Cl. 424-273.00P.
  - Hocker, Jurgen; Merten, Rudolf; and Fitzky, Hans G., 4,368,319, Cl. 528-353.000.
  - Rasshofer, Werner; Grogler, Gerhard; and Findeisen, Kurt, 4,368,278, Cl. 521-115.000.
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  - Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, 4,368,231, Cl. 428-220.000.
- Bayer, Christian, to Precision Valve Corporation. One-piece mechanical break up (MBU). 4,367,847, Cl. 239-337.000.
- Bayer, Erich, to Dr. Johannes Heidenhain GmbH. Method for making matt diffusion patterns. 4,368,245, Cl. 430-5.000.
- Bayerlein, Friedrich J.; Habereder, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, to Diamalt Aktiengesellschaft. Sizing agent and process for the manufacture thereof. 4,368,324, Cl. 536-114.000.
- BBC, Brown, Boveri & Company, Ltd.: *See—*
  - Osman, Maged A., 4,368,135, Cl. 252-299.630.
- Beanland, Neill S., to West Yorkshire Metropolitan County Council. Surface drainage system and cover member for use therein. 4,367,974, Cl. 404-5.000.
- Bear Medical Systems, Inc.: *See—*
  - Hurd, Claude C., 4,367,767, Cl. 137-489.000.
- Bechmann, Georg: *See—*
  - Hillinger, Bruno; and Bechmann, Georg, 4,367,598, Cl. 34-164.000.
- Bechtel, Daniel L. Mount for rifle telescope sight. 4,367,606, Cl. 42-1.0ST.
- Beck, Rasmus: *See—*
  - Langen, Robert; and Beck, Rasmus, 4,368,080, Cl. 134-1.000.
- Becker, Dietmar: *See—*
  - Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, 4,367,891, Cl. 294-88.000.
- Becker, Herbert; Schelhorn, Gerhard; and Sunkel, Manfred, to Metallwerk Max Brose GmbH & Co. Window lift drive. 4,367,660, Cl. 74-625.000.
- Becton, Dickinson & Company: *See—*
  - Dudley, Betty J., deceased; and Williams, Joel L., 4,367,749, Cl. 128-637.000.
- Bednar, John M.; and Petersen, Clifford W., to Exxon Production Research Co. Acoustically actuated downhole blowout preventer. 4,367,794, Cl. 166-65.00R.
- Bee Line Company: *See—*
  - Harmon, Samuel R., 4,367,569, Cl. 24-211.00P.
- Beecham Group Limited: *See—*
  - Dales, John R. M., 4,368,334, Cl. 562-470.000.
- Behringwerke Aktiengesellschaft: *See—*
  - Bohn, Hans, 4,368,148, Cl. 260-112.00B.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,361, Cl. 179-170.200.
  - Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,362, Cl. 179-170.200.
  - Genaro, Donald M.; and McGarvey, John N., 4,368,359, Cl. 179-146.00R.
  - Hasegawa, Akira, 4,368,543, Cl. 455-612.000.
  - Presby, Herman M., 4,368,063, Cl. 65-42.000.
- Bellos, Thomas J., to Petrolite Corporation. Polymers of oxyalkylated piperazines and uses thereof. 4,368,137, Cl. 252-344.000.
- Belrecolt S.A.: *See—*
  - Aron, Jerome; Quirin, Michel; and Wattron, Albert, 4,367,622, Cl. 56-364.000.
- Bemis Company, Inc.: *See—*
  - Fox, Harold K., 4,367,620, Cl. 53-479.000.
- Bender, Steven L.: *See—*
  - Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,368,247, Cl. 430-17.000.
- Bendix Corporation, The: *See—*
  - Watson, Edwin B., 4,367,715, Cl. 123-458.000.
- Benedetti, Laura. Cigarette lighter provided with a device for signalling the number of lightings effected and the time interval between two subsequent lightings. 4,368,030, Cl. 431-13.000.
- Benthin, Frank, to Dragerwerk Aktiengesellschaft. Y-Fitting in the patient system of respirators. 4,367,734, Cl. 128-204.130.
- Benuzzi, Gino, to Giben Impianti S.p.A. Apparatus for the automatic discharge of panels from a machining line. 4,367,999, Cl. 414-51.000.
- Berchielli, Aldo S., to Yardney Electric Corporation. Method of making an electrode. 4,368,167, Cl. 264-104.000.
- Berg, Arne, to ASEA Aktiebolag. Gripping device. 4,367,893, Cl. 294-106.000.
- Bergendahl, Hans-Georg, to Maschinenfabrik Koopern GmbH & Co. KG. Roll press and method of regulation of the throughput of a roll press. 4,368,165, Cl. 264-40.400.

Bergs, Erwin, to Jagenberg Werke AG. Apparatus for adjustment of the coating thickness in the coating of traveling webs. 4,367,691, Cl. 118-119.000.

Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, to Jimmy Dean Meat Company, Inc., The. System for rapidly chilling carcasses. 4,367,630, Cl. 62-63.000.

Bernick, Herman C. System for teaching time recognition. 4,368,046, Cl. 434-304.000.

Bertrand, Hans: *See—*
Limque, Ferdinand; and Bertrand, Hans, 4,368,037, Cl. 432-239.000.

Bezark, Fred: *See—*
Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.

Bianco, Frank J.: *See—*
Jimenez, Oscar; and Bianco, Frank J., 4,367,752, Cl. 128-689.000.

Biffle, Morris S. Rotating blowout preventor with improved seal assembly. 4,367,795, Cl. 166-84.000.

Binder, Klaus; Edl, Wolfgang; and Twittenhoff, Hansjoachim, to Peroxid-Chemie GmbH. Accelerator for hardening unsaturated resins. 4,368,311, Cl. 526-317.000.

Biotechnology, Inc.: *See—*
Jimenez, Oscar; and Bianco, Frank J., 4,367,752, Cl. 128-689.000.

Birch, Robert A. Shoulder stand device. 4,367,870, Cl. 272-144.000.

Bird, Stanley M., Sr.: *See—*
Winter, Craig R.; Bird, Stanley M., Sr.; and Presba, Keneth E., 4,367,590, Cl. 33-137.00R.

Bitsky, Thomas C.; and Wilkus, Joseph R., to Peerless Metal Industries, Inc. Method and apparatus for lining bulk box blanks. 4,368,052, Cl. 493-96.000.

Blair, Matthew J.; and Keifer, George E., Jr., to Republic Steel Corporation. Method and apparatus for emptying bottle cars. 4,367,865, Cl. 266-44.000.

Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., to General Mills, Inc. Composition for aerated frozen desserts containing uncooked fruit puree and method of preparation. 4,368,211, Cl. 426-564.000.

Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., to Ashland Oil, Inc. Vapor permeation curable coatings for surface-porous substrates. 4,368,222, Cl. 427-340.000.

Block Drug Company Inc.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.

Blom, Ingvar G. A.; and Vuokivi, Reima J., to Hoganas AB. Refractory lining for a metal pipe. 4,367,868, Cl. 266-225.000.

Bloy, Graham P., to Eberhardt, Alfred F.; and Coghill, Marvin, a part interest to each. System for maximum efficient transfer of modulated audio frequency energy. 4,368,435, Cl. 330-133.000.

Blum, Alvin S. Photon emission tomographic apparatus and method. 4,368,389, Cl. 250-363.00S.

Blum, Herbert: *See—*
Rock, Erich; and Blum, Herbert, 4,367,566, Cl. 16-236.000.

Bluml, Hans; and Schmidt, Gerhard, to Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft. Method and apparatus for measuring the closing and holding force on pressure diecasting and injection moulding machines. 4,367,655, Cl. 73-862.540.

Blyth, David A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Detection of polar vapors. 4,368,388, Cl. 250-283.000.

Bobst SA: *See—*
Schweingruber, Hermann, 4,367,997, Cl. 414-38.000.

Boden, Richard M.: *See—*
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,368,145, Cl. 252-522.00R.

Boehringer Mannheim GmbH: *See—*
Klose, Sigmar; Roder, Albert; and Schneider, Walter, 4,368,261, Cl. 435-15.000.

Boeing Company, The: *See—*
Lazaro, Luis J., Jr., 4,367,852, Cl. 242-129.720.
Thompson, Douglas, 4,367,592, Cl. 33-172.00E.

Boesiger, Dwight D.: *See—*
Siefkin, James M.; and Boesiger, Dwight D., 4,368,111, Cl. 208-11.0LE.

Bogdany, John, to General Tire & Rubber Company, The. Carpet backing adhesive. 4,368,282, Cl. 524-58.000.

Bohn, Hans, to Behringwerke Aktiengesellschaft. Protein PP_9, process for its enrichment and its isolation and its use. 4,368,148, Cl. 260-112.00B.

Bolding, Vance E., to Global Marine, Inc. Blowout preventer and guideline handling. 4,367,796, Cl. 166-341.000.

Bolton, Bruce E. Modulating heat pump system. 4,367,634, Cl. 62-238.600.

Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, to Richter Gedeon Vegyeszeti Gyar R.T. Process for preparing 17α-hydroxy-pregn-4-en-3,20-dione derivatives. 4,368,160, Cl. 260-397.400.

Boots, Gordon C., to A. Duda & Sons, Inc. Device for orienting and topping tapered vegetables. 4,367,675, Cl. 99-546.000.

Borg, Thomas G., to Ciba-Geigy AG. Method of processing monochrome silver halide material. 4,368,255, Cl. 430-351.000.

Boudreau, Bruce E.: *See—*
Modic, Frank J.; and Boudreau, Bruce E., 4,368,279, Cl. 521-122.000.

Bourdon, Jean-Marc; Hugues, Jean-Claude; and Esnoult, Marc, to Societe Europeenne des Produits Refractaires. Refractory pads for walking beam furnaces. 4,368,038, Cl. 432-253.000.

Bourgeois, Maurice: *See—*
Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert, 4,367,831, Cl. 226-14.000.

Bowman Construction Supply, Inc.: *See—*
Bowman, William E., 4,367,976, Cl. 404-68.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip assembly for roadways, bridges and the like. 4,367,976, Cl. 404-68.000.

Boyer, Wesley D., to Ford Motor Company. Signal detection circuit with self-adjusting threshold having modulated carrier input. 4,367,721, Cl. 123-617.000.

BP Chemicals Limited: *See—*
Dickinson, Kathleen F., 4,368,345, Cl. 585-643.000.
Downs, Gordon W., 4,368,302, Cl. 526-105.000.

Brabbee, Gregory W.: *See—*
Dailey, Thomas H.; and Brabbee, Gregory W., 4,367,869, Cl. 269-324.000.

Bradbury, Ray. Nail driver accessor having a nail holder mechanism. 4,367,778, Cl. 145-30.00R.

Braden, Donald G.: *See—*
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Bradley, Robert F., to Micro-Circuits Company. Time-lapse indicator or the like. 4,367,957, Cl. 368-114.000.

Bradshaw, Norman F., to Haden Schweitzer Corporation. Air conditioning apparatus and method for paint spray booths. 4,367,787, Cl. 165-35.000.

Brand, Glen. Four-way directional valve. 4,367,763, Cl. 137-106.000.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,367,904, Cl. 384-95.000.

Brandes, Wilhelm; and Daum, Werner, to Bayer Aktiengesellschaft. Combating fungi with pyrazole-substituted oximino-cyano-acetamide derivatives. 4,368,202, Cl. 424-273.00P.

Brannegan, Daniel P.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.

Branson International Plasma Corporation: *See—*
Welty, Joseph M., 4,368,419, Cl. 323-239.000.

Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, to Hoechst Aktiengesellschaft. Process for the manufacture of desulfurizing agents for crude iron or steel melts. 4,368,071, Cl. 75-0.50R.

Bray, Geddes A.; and Holker, Richard J., to Mather & Platt Limited. Installation control valves. 4,367,861, Cl. 251-61.000.

Breister, Sigmund; and Reiner, Joseph R., to Olin Corporation. Use of the sodium salt of 2-mercaptopyridine-N-oxide to separate gold from acidic solutions. 4,368,073, Cl. 75-108.000.

Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., to Pfizer Inc. 3,4-Dihalo-tetrahydrophyran-5-one useful as intermediates for the preparation of gamma-pyrones. 4,368,331, Cl. 549-417.000.

Brenner, Walter: *See—*
Rugg, Barry A.; and Brenner, Walter, 4,368,079, Cl. 127-1.000.

British Aerospace: *See—*
Henderson, Ross A.; and Gregory, Douglas A., 4,368,415, Cl. 322-2.00R.

Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., to Hot-Shot Products Co. Animal prod. 4,367,843, Cl. 231-2.00E.

Brown, Boveri & Cie Aktiengesellschaft: *See—*
Rohr, Franz-Josef; and Krapf, Rudolf, 4,368,431, Cl. 324-464.000.

Brown, Leonard; and Goebel, Guenter R., to Crossley Machine Company, Inc. Mold box wedging assembly. 4,368,020, Cl. 425-195.000.

Brown, Robert L., to AMF Incorporated. Cable transfer sub for drill pipe and method. 4,367,797, Cl. 166-380.000.

Bruderhaus Maschinen GmbH: *See—*
Schoffmann, Ernst; and Czernuch, Alexander, 4,368,102, Cl. 162-258.000.

Bruel, Michel; and Floccari, Michel, to Commissariat a l'Energie Atomique. Process for doping semiconductors. 4,368,083, Cl. 148-1.500.

Brumfield, Robert C. Method of winding a mass transfer device and product. 4,368,124, Cl. 210-321.300.

Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., to AMP Incorporated. Printed circuits. 4,368,281, Cl. 523-458.000.

Brundage, Richard B.: *See—*
Terpstra, Daniel A.; and Brundage, Richard B., 4,367,665, Cl. 83-100.000.

Brunswick Corporation: *See—*
Karpathian, Kerry; and Trowbridge, Darrell L., 4,367,659, Cl. 74-501.00R.

Bryan, James S., to Pennsylvania Scale Company. Load cell for use with electronic counting and weighing scales. 4,367,801, Cl. 177-211.000.

Bucheister, Henry C. Thermostatic switch. 4,368,451, Cl. 337-380.000.

Buck, Josef J., to Magnetic Controls Company. Circuit monitoring jack. 4,367,907, Cl. 339-113.00R.

Buckley, John J.: *See—*
Logan, Dale R.; and Buckley, John J., 4,367,913, Cl. 350-500.000.

Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., to Research Corporation. Diagnostic test for the detection of cancer. 4,368,262, Cl. 435-23.000.

Budel, Eduard J.; Fehrmann, Heinrich; and de Kok, Johan, to Wavin B.V. Centering device for shaping tools of extrusion presses. 4,368,026, Cl. 425-466.000.

Budzich, Tadeusz. Reciprocating controls of a gas compressor using free floating hydraulically driven piston. 4,368,008, Cl. 417-46.000.

Budzinski, John C.; and Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,368,067, Cl. 71-92.000.

Buente, Stephen M., to Eaton Corporation. Acting valve gear. 4,367,701, Cl. 123-90.550.

Buketov, Eslambek A.: *See—*
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

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Bulgozdy, Eugene L.: *See—*
Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., 4,368,222, Cl. 427-340.000.

Bunker Ramo Corporation: *See—*
Lovering, Peter, 4,368,517, Cl. 364-428.000.

Burinsky, Stanislav V.; Volf, Leonard A.; and Alexandrov, Sasho P. Porous open-cell filled reactive material. 4,368,277, Cl. 521-84.000.

Burke Company, The: *See—*
Holt, Neil L., 4,367,892, Cl. 294-89.000.

Burkhart, Gerald W.: *See—*
Ceska, Gary W.; and Burkhart, Gerald W., 4,368,077, Cl. 106-96.000.

Burlington Industries, Inc.: *See—*
Irby, Enek E., 4,367,849, Cl. 242-18.0PW.
Newcomb, Kermit T., 4,367,773, Cl. 139-452.000.

Butler Manufacturing Company: *See—*
Johnson, Claris E.; and Crump, Hubert C., 4,367,578, Cl. 29-429.000.

C. L. Frost & Son, Inc.: *See—*
Nauta, Randal W., 4,367,905, Cl. 308-182.000.

Cahen, David: *See—*
Manassen, Joost; Cahen, David; and Hodes, Gary, 4,368,216, Cl. 427-74.000.

Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Substituted cobalt oxide spinels. 4,368,110, Cl 204-290.00F.

Cameron, Anthony D.: *See—*
Speirs, Graeme K.; and Cameron, Anthony D., 4,367,571, Cl. 24-249.00R.

Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., to Dow Chemical Company, The. Pressure transducer body. 4,367,651, Cl. 73-706.000.

Cann, Gordon L. Rankine cycle engine. 4,367,629, Cl. 60-669.000.

Canon Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu, 4,367,936, Cl. 354-173.000.
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
Kawai, Tohru; and Masunaga, Makoto, 4,367,931, Cl. 354-23.00D.
Kitamura, Takashi, 4,367,912, Cl. 350-6.800.
Mashimo, Yukio; and Iwashita, Tomonori, 4,367,937, Cl. 354-173.000.
Sawamua, Mitsuharu; and Ito, Susumu, 4,367,921, Cl. 350-164.000.
Suzuki, Koji, 4,367,948, Cl. 355-14.00D.
Takimoto, Hiroyuki, 4,368,490, Cl. 358-217.000.
Tazaki, Shigemitsu, 4,368,413, Cl. 318-687.000.
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.
Yoshida, Syozo; and Saito, Syuichiro, 4,367,938, Cl. 354-234.000.

Canron Corp.: *See—*
Stewart, John K.; Shupe, Charles A.; and von Beckmann, Helmuth, 4,367,681, Cl. 104-7.00B.

Carfer S.r.l.: *See—*
Carraroli, Dario, 4,368,001, Cl. 414-331.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Weinzierl, Klaus; and Tippmer, Kurt, 4,368,103, Cl. 202-99.000.

Carlemalm, Eric, to Chemische Werke Lowi G.m.b.H. Embedding medium suitable for the preparation of thin sections of embedded biological materials. 4,368,312, Cl. 526-323.200.

Carlson, David J.; and Lehmann, William L., to RCA Corporation. Phase locked loop tuning system including a prescaler conditioned to oscillate at an out-of-band frequency. 4,368,540, Cl. 455-180.000.

Carmien, Joseph A. Bushing for attaching fiberglass tool handles. 4,367,969, Cl. 403-253.000.

Caronna, Cosimo: *See—*
Leech, Brad G.; and Caronna, Cosimo, 4,367,635, Cl. 62-259.100.

Carpools Environmental Protection Services Limited: *See—*
Wilson, Gerald E., 4,368,119, Cl. 210-137.000.

Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, to Sisas S.p.A. Process for the separation of metaxylene from mixtures of aromatic hydrocarbons. 4,368,347, Cl. 585-828.000.

Carraroli, Dario, to Carfer S.r.l. Machine, particularly for loading and unloading ceramic material on to and from stake trucks. 4,368,001, Cl. 414-331.000.

Carrier Corporation: *See—*
Leech, Brad G.; and Caronna, Cosimo, 4,367,635, Cl. 62-259.100.

Carsac, Claude: *See—*
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.

Carter-Wallace, Inc.: *See—*
Drucker, Jacob; and Shea, Frank, 4,368,184, Cl. 424-66.000.

Cartwright, Frederick D. Stabilization of particulate material. 4,367,984, Cl. 405-258.000.

Casada, James H.: *See—*
Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., 4,367,621, Cl. 56-10.200.

Causer, Roy, to United Kingdom Atomic Energy Authority. Manipulators. 4,367,998, Cl. 414-4.000.

Cavanaugh, John B.: *See—*
DiDomenico, Robert A.; Cavanaugh, John B.; and Kimberley, John A., 4,367,714, Cl. 123-449.000.

Centro Ricerche Fiat S.p.A.: *See—*
Moretti, Luciano; and Dotti, Giulio, 4,367,765, Cl 137-881.000.

Centro Sperimentale Metallurgico S.p.A.: *See—*
Praitoni, Alberto; and Spaccarotella, Antonio, 4,367,784, Cl. 164-473.000.

Ceska, Gary W.; and Burkhart, Gerald W., to Polysar International, S.A. Latex compositions and products made therefrom. 4,368,077, Cl. 106-96.000.

Cha, Chang Y., to Occidental Oil Shale, Inc. Method for forming an in situ oil shale retort. 4,367,901, Cl. 299-2.000.

Chadshay, Roman, to Combustion Engineering, Inc. Stationary flame scanner for tilting burner. 4,368,031, Cl. 431-79.000.

Chamberlain, James W.; and Goldschmidt, Arthur M., to RCA Corporation. Vertical sync independent digital skew servo. 4,368,492, Cl. 360-70.000.

Champion Spark Plug Company: *See—*
Hinton, Jonathan W.; Powell, Frederick J.; and Matz, Robert W., 4,368,166, Cl. 264-61.000.

Chance, Slim; and Gray, William T. Clutched tuning peg handle. 4,367,671, Cl. 84-306.000.

Chang, Paul P. H.; and Chu, Chen-Shin. Game ball. 4,367,873, Cl. 273-60.00R.

Channing, Harry M.; Nees, John M.; and Eberle, William J., to General Battery Corporation. Method for manufacturing a battery having a temporary side terminal thereon. 4,367,582, Cl. 29-623.100.

Charon, Clarence W., to Owens-Corning Fiberglas Corporation. Glass fiber compounding in gaskets as asbestos replacement. 4,368,164, Cl. 264-37.000.

Cheburashko, Boris P.: *See—*
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.

Chemische Werke Huels, A.G.: *See—*
Frese, Albert; and Baxmann, Fritz, 4,368,291, Cl. 525-53.000.

Chemische Werke Huls AG: *See—*
Mumcu, Salih; and Feldmann, Rainer, 4,368,090, Cl. 156-283.000.
Sielfeld, Gilbert; and Sunder-Plassmann, Paul, 4,368,307, Cl. 526-202.000.

Chemische Werke Lowi G.m.b.H.: *See—*
Carlemalm, Eric, 4,368,312, Cl. 526-323.200.

Chemokomplex Vegyipari Gep-es Berendezes Export-Import Vallalat: *See—*
Puskas, Ferenc, 4,368,273, Cl. 501-155.000.

Chen, Chi-wan; and Schwing, Gregory W., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,368,069, Cl. 71-93.000.

Chen, Muh-fa: *See—*
Kreitzer, Melvyn H.; and Chen, Muh-fa, 4,367,928, Cl. 350-453.000.

Cheng, Paul J.: *See—*
Mills, King L.; and Cheng, Paul J., 4,368,182, Cl. 423-450.000.

Chernov, Gennady M.: *See—*
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.

Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., to Mobil Oil Corporation. Octane and total yield improvement in catalytic cracking. 4,368,114, Cl. 208-120.000.

Chianelli, Russell R.; Pecoraro, Theresa A.; and Dines, Martin B., to Exxon Research and Engineering Co. Catalysts comprising layered chalcogenides of group IVb-group VIIb prepared by a low temperature nonaqueous precipitate technique. 4,368,115, Cl. 208-215.000.

Ching, Ta-Yen, to General Electric Company. Alkoxysilanes and method for making. 4,368,241, Cl. 428-447.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.

Chirash, William: *See—*
Inamorato, Jack T.; and Chirash, William, 4,368,147, Cl. 252-545.000.

Chisso Corporation: *See—*
Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, 4,368,304, Cl. 526-114.000.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Miyoshi, Hajime; Okabayashi, Ikuo; and Asanagi, Etsuo, 4,367,986, Cl. 405-266.000.
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.

- Chmarzynski, Andrzej: *See—*
  - Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, 4,367,985, Cl. 405-264.000.
- Chopping, Geoffrey, to Plessey Company Limited, The. Frame aligner for digital telecommunications exchange system. 4,368,531, Cl. 370-100.000.
- Chowa Giken Kabushiki-Kaisha: *See—*
  - Daisyaku, Ikuo, 4,368,404, Cl. 313-497.000.
- Chu, Chen-Shin: *See—*
  - Chang, Paul P. H.; and Chu, Chen-Shin, 4,367,873, Cl. 273-60.00R.
- Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Automatically adjustable bidirectional-to-unidirectional transmission network. 4,368,361, Cl. 179-170.200.
- Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Automatic telephone loaded/nonloaded facility type identification circuit. 4,368,362, Cl. 179-170.200.
- Ciba-Geigy AG: *See—*
  - Borg, Thomas G., 4,368,255, Cl. 430-351.000.
  - Mollet, Herbert; and Wyrsch, Dieter, 4,368,256, Cl. 430-359.000.
- Ciba-Geigy Corporation: *See—*
  - Eckhardt, Claude; and Holzle, Gerd, 4,368,053, Cl. 8-102.000.
  - Green, George E.; and Waterhouse, John S., 4,368,253, Cl. 430-326.000.
  - Kunz, Walter, 4,368,327, Cl. 548-262.000.
  - Lohse, Friedrich; and Trachsler, Dieter, 4,368,317, Cl. 528-323.000.
  - Maier, Ludwig, 4,368,162, Cl. 260-502.50G.
- Cinelli Cino & C. S.r.l.: *See—*
  - Nieddu, Mario, 4,367,896, Cl. 297-195.000.
- Citizen Watch Company Limited: *See—*
  - Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, 4,367,958, Cl. 368-188.000.
  - Matsumoto, Masataka; and Nakajima, Kouichi, 4,368,369, Cl. 200-264.000.
- CKD Corporation: *See—*
  - Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, 4,367,574, Cl. 29-25.190.
- Claas, Helmut, to Claas OHG. Harvester-thresher combine. 4,367,757, Cl. 130-27.00T.
- Claas OHG: *See—*
  - Claas, Helmut, 4,367,757, Cl. 130-27.00T.
  - Roderfeld, Heinrich; and Kampwerth, August, 4,367,756, Cl. 130-23.000.
- Clarion Co., Ltd.: *See—*
  - Ariga, Shoji, 4,368,229, Cl. 428-120.000.
- Clark, John I., to Pitney Bowes, Inc. Postage meter value selecting system. 4,367,676, Cl. 101-91.000.
- Clark, Noel A.; and Lagerwall, Sven T. Chiral smectic C or H liquid crystal electro-optical device. 4,367,924, Cl. 350-334.000.
- Clausen, Eva: *See—*
  - Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.
- Cleasby Manufacturing Co., Inc.: *See—*
  - McCarthy, Bartholomew J., 4,367,857, Cl. 248-74.00R.
- Clifton, Hampton A. Sign for coin-operated machine. 4,367,605, Cl. 40-584.000.
- Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., to United States of America, Air Force. Dual mode moving target sensor. 4,368,460, Cl. 340-522.000.
- Clip Strip Corporation: *See—*
  - Lewis, Lawrence A., 4,367,819, Cl. 211-59.100.
- Clough, Douglas O.: *See—*
  - Parker, Alan; Dickinson, Peter J.; Clough, Douglas O.; and Farnhill, William M., 4,367,623, Cl. 57-263.000.
- Clowe, Henry W. Adjustable glue applicator rolls for container labeling machine. 4,368,097, Cl. 156-578.000.
- Coal Industry (Patents) Limited: *See—*
  - Oven, Terence; and Higgs, Robert H., 4,367,898, Cl. 299-1.000.
  - Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,367,899, Cl. 299-1.000.
- Coated Seed Limited: *See—*
  - Lloyd, John M., 4,367,609, Cl. 47-57.600.
- Coates, Philip V.: *See—*
  - Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.
- Coderre, James C.: *See—*
  - Tung, Chi F.; and Coderre, James C., 4,367,920, Cl. 350-105.000.
- Codex Corporation: *See—*
  - Miller, Charles K.; and Northam, William D., 4,368,434, Cl. 329-50.000.
- Codignola, Franco: *See—*
  - Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.
- Codrington, Ernest R. Diesel engine speed governor. 4,367,709, Cl. 123-339.000.
- Coghill, Marvin: *See—*
  - Bloy, Graham P., 4,368,435, Cl. 330-133.000.
- Colburn, William A., to Magnesep Corporation. Method of separating isotopes. 4,368,387, Cl. 250-251.000.
- Coleman, Ernest A., to Dart Industries Inc. Fast crystallizing polyethylene terephthalate containing neopentyl dibenzoate. 4,368,285, Cl. 524-293.000.
- Colgate-Palmolive Company: *See—*
  - Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., 4,367,600, Cl. 36-127.000.
  - Inamorato, Jack T.; and Chirash, William, 4,368,147, Cl. 252-545.000.
  - Kaeser, James A., 4,368,134, Cl. 252-140.000.
  - Smith, John F., 4,368,089, Cl. 156-243.000.
- Collins, John S.: *See—*
  - Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., 4,368,263, Cl. 435-47.000.
- Coloplast A/S: *See—*
  - Poulsen, Finn; and Samuelsen, Peter, 4,367,732, Cl. 128-156.000.
- Combustion Engineering, Inc.: *See—*
  - Chadshay, Roman, 4,368,031, Cl. 431-79.000.
  - Jamison, Thomas D., 4,368,429, Cl. 324-225.000.
  - Shapiro, Maurice S., 4,367,981, Cl. 405-195.000.
- Commins, Alfred D.: *See—*
  - Gilb, Tyrell T.; and Commins, Alfred D., 4,367,973, Cl. 403-405.000.
- Commissariat a l'Energie Atomique: *See—*
  - Bachet, Bernard; and Doucelance, Claude, 4,368,422, Cl. 324-64.000.
  - Bruel, Michel; and Floccari, Michel, 4,368,083, Cl. 148-1.500.
  - Mottier, Patrick; and Valette, Serge, 4,367,916, Cl. 350-96.120.
- Communications Satellite Corporation: *See—*
  - Uzunoglu, Vasil, 4,368,542, Cl. 455-316.000.
- Compagnie Francaise des Petroles: *See—*
  - de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.
- Compagnie Francaise d'Etudes et de Construction "Technip": *See—*
  - Mestrallet, Joelle; Heck, Gerard; and Kaiser, Victor, 4,368,061, Cl. 62-28.000.
- Conroy, Ernest F., Jr.; and Elms, Robert T., to Westinghouse Electric Corp. Solid-state load protection system having an improved inverse time delay circuit. 4,368,500, Cl. 361-94.000.
- Controlec Limited: *See—*
  - Tyers, Paul D., 4,367,975, Cl. 404-6.000.
- Cook, George E.: *See—*
  - Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,368,375, Cl. 219-125.120.
- Cooper, Sidney; and Jacob, Ezekiel J., to Ani-Live Film Service Inc. Dry transfer of electrophotographic images of an intumescent electroscopic thermoadhesive tower. 4,368,250, Cl. 430-109.000.
- Cordon, William A. Method and apparatus for storing energy. 4,367,788, Cl. 165-53.000.
- Coren, Alfred S. Socket retainers. 4,367,971, Cl. 403-330.000.
- Cormier, William E., Jr.: *See—*
  - Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,368,114, Cl. 208-120.000.
- Cousins, Steven J. Adjustable seat for the handicapped. 4,367,897, Cl. 297-284.000.
- Covey, Ray M., Jr. Apparatus for vaporizing fuel for engine in conjunction with carburetor. 4,368,163, Cl. 261-39.00R.
- CPC International Inc.: *See—*
  - Hinz, Gerhard; and Dinessen, Joseph, 4,367,953, Cl. 366-132.000.
- Cranston, Dean H., to Eaton Corporation. Serial impact calculator printer with dual feed and validation mechanism. 4,367,964, Cl. 400-605.000.
- Crawford, Robert J., to Procter & Gamble Company, The. Halogenation process in the presence of cyanoquinone catalyst. 4,368,140, Cl. 252-426.000.
- Crawley, Barry J., to Teledyne Industries, Inc. Line follower. 4,368,462, Cl. 340-723.000.
- Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., to Colgate-Palmolive Company. Golf shoe with improved transverse traction. 4,367,600, Cl. 36-127.000.
- Crossley Machine Company, Inc.: *See—*
  - Brown, Leonard; and Goebel, Guenter R., 4,368,020, Cl. 425-195.000.
- Crowley, Ralph P.; and Pope, Max D., to Phillips Petroleum Company. Maximizing flow of absorption liquid in absorption methods. 4,368,058, Cl. 55-21.000.
- Crumley, J. A.: *See—*
  - Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., 4,368,281, Cl. 523-458.000.
- Crummer, Robert R.: *See—*
  - Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,368,233, Cl. 428-245.000.
- Crump, Hubert C.: *See—*
  - Johnson, Claris E.; and Crump, Hubert C., 4,367,578, Cl. 29-429.000.
- Csepel Muvek Tervezo es Kutato Intezete: *See—*
  - Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.
- Csermely, Gyorgy: *See—*
  - Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.
- Cubic Western Data: *See—*
  - Toth, John E., 4,367,666, Cl. 83-203.000.
- Cuiper, Glen H.: *See—*
  - Ames, Thomas J.; and Cuiper, Glen H., 4,367,980, Cl. 405-169.000.
- Cuisinarts, Inc.: *See—*
  - Shibata, Koichiro, 4,367,667, Cl. 83-356.300.
- Curtis, Calvin E.: *See—*
  - McCartny, Gerald A.; and Curtis, Calvin E., 4,368,035, Cl. 432-13.000.

- Czebiniak, Andrew J.: *See—*
  - Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., 4,367,584, Cl. 29-837.000.
- Czernuch, Alexander: *See—*
  - Schoffmann, Ernst; and Czernuch, Alexander, 4,368,102, Cl. 162-258.000.
- Dailey, Thomas H.; and Brabbee, Gregory W. Stirrup attachment for surgical table. 4,367,869, Cl. 269-324.000.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Hafner, Gunther; and Haepp, Hans-Josef, 4,367,786, Cl. 165-10.000.
  - Scheying, Heinz, 4,367,706, Cl. 123-300.000.
  - Tomforde, Johann, 4,368,505, Cl. 362-80.000.
- Dainippon Screen Seizo Kabushiki Kaisha: *See—*
  - Hohki, Tetsuo, 4,367,926, Cl. 350-358.000.
  - Sakamoto, Takashi, 4,368,488, Cl. 358-208.000.
- Daisyaku, Ikuo, to Chowa Giken Kabushiki-Kaisha. Matrix-type fluorescent display device. 4,368,404, Cl. 313-497.000.
- Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., to Sanders Associates, Inc. Fiber optic magnetic sensors. 4,368,430, Cl. 324-244.000.
- Dales, John R. M., to Beecham Group Limited. p-Hydroxymandelic acid. 4,368,334, Cl. 562-470.000.
- Dali, Carmelo, to Novametrix Medical Systems, Inc. Nasal cannula. 4,367,735, Cl. 128-207.180.
- Danzig, Ivan F., to General Electric Company. Zinc electrode for use in rechargeable electrochemical cells. 4,368,244, Cl. 429-217.000.
- Darnall, Tom A., Jr. Acoustic dampening assembly for record player turntable. 4,368,530, Cl. 369-264.000.
- Darrow, John O. G., to American Standard Inc. Fail-safe low-pass filtering circuit. 4,368,440, Cl. 333-172.000.
- Dart Industries Inc.: *See—*
  - Coleman, Ernest A., 4,368,285, Cl. 524-293.000.
- Daughters, James R., to Wordex. Refillable typewriter ribbon cartridge. 4,367,963, Cl. 400-208.000.
- Daum, Werner: *See—*
  - Brandes, Wilhelm; and Daum, Werner, 4,368,202, Cl. 424-273.00P.
- Davis, Kenneth L., to United States of America, Navy. Silicon barrier Josephson junction configuration. 4,368,479, Cl. 357-5.000.
- Davis, Robert, to Summagraphics Corporation. Digitizer with floating scan. 4,368,352, Cl. 178-19.000.
- Davydov, Ivan V.: *See—*
  - Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
- Dawson, Terry: *See—*
  - Donley, Robert P.; and Dawson, Terry, 4,368,349, Cl. 174-52.0PE.
- DBX, Inc.: *See—*
  - Adams, Robert W., 4,368,425, Cl. 324-158.00T.
- de la Messuziere, Philippe R.: *See—*
  - Dulondel, Jacques; and de la Messuziere, Philippe R., 4,367,863, Cl. 254-391.000.
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  - Wittren, Richard A., 4,367,803, Cl. 180-153.000.
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  - Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, 4,368,320, Cl. 528-355.000.
  - Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.
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  - Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
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- Dickinson, Kathleen F., to BP Chemicals Limited. Catalyst for disproportionation of olefins. 4,368,345, Cl. 585-643.000.
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- DiFiore, Lucio: *See—*
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- Dodt, William C.: *See—*
  - Arter, Nelson K.; Dodt, William C.; and Farel, Charles A., 4,367,947, Cl. 355-75.000.
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- Dorner, Henrik: *See—*
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- Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, to Metallgesellschaft Aktiengesellschaft; and Sudchemie Aktiengesellschaft. Process of producing concentrated sulfuric acid. 4,368,183, Cl. 423-522.000.
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  - Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., 4,367,651, Cl. 73-706.000.
  - Hay, Robert A., II, 4,368,093, Cl. 156-443.000.
  - Ishibe, Nobuyuki; and Harden nee Ashley, Jimmie K., 4,368,338, Cl. 570-109.000.
  - Park, Chung P., 4,368,276, Cl. 521-79.000.
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- Draeger, Walter A. Multiple tube cleaning apparatus. 4,367,790, Cl. 165-95.000.
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  - Pasternack, Adalbert; and Hinz, Claus-Dieter, 4,367,822, Cl. 220-265.000.
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- Drong, Frank, Jr.: *See—*
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- Drummond, Donald J. Mailbox. 4,367,844, Cl. 232-17.000.
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- Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert. Looper. 4,367,831, Cl. 226-14.000.
- Dudley, Betty J., deceased (by Dudley, Kenneth H., executrix); and Williams, Joel L., to Becton, Dickinson & Company. Nonthrombogenic articles and method of preparation. 4,367,749, Cl. 128-637.000.
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  - Chen, Chi-wan; and Schwing, Gregory W., 4,368,069, Cl. 71-93.000.
  - Luckenbaugh, Raymond W., 4,368,068, Cl. 71-93.000.
  - Scott, Paul T., 4,368,274, Cl. 521-48.000.
  - Vasta, Joseph A., 4,368,289, Cl. 524-598.000.
  - Vasta, Joseph A., 4,368,309, Cl. 526-258.000.
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- DynaWave Corporation: *See—*
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- Eaton Corporation: *See—*
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- Ekshtut, Leonid. Combination tool. 4,367,664, Cl. 81-436.000.
- Eldeen, Gene H. Newel post assembly. 4,367,864, Cl. 256-59.000.
- Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., to International Business Machines Corporation. Passivation of RIE patterned al-based alloy films by etching to remove contaminants and surface oxide followed by oxidation. 4,368,220, Cl. 427-255.400.
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- Emkay Manufacturing Co. Inc.: *See—*
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- Evans, Robert M. Multiplexing arrangement for a plurality of voltage controlled filters. 4,368,541, Cl. 455-186.000.
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  - Rosenweig, Ronald E., 4,368,131, Cl. 252-62.550.
  - Seiver, Robert L., 4,368,132, Cl. 252-62.550.
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  - Winter, William E.; Tunison, Mafer E.; and Staubs, David W., 4,368,113, Cl. 208-89.000.
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- Fabrig, Paul, to Womako Maschinenkonstruktionen GmbH. Apparatus for stacking note books or the like. 4,367,815, Cl. 198-374.000.
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- Fehr, Alex: *See—*
  - Fink, Willy; and Fehr, Alex, 4,367,807, Cl. 181-230.000.
- Fehrmann, Heinrich: *See—*
  - Budel, Eduard J.; Fehrmann, Heinrich; and de Kok, Johan, 4,368,026, Cl. 425-466.000.
- Feldman, Louis. Reinforced interlocking building block. 4,367,615, Cl. 52-583.000.
- Feldmann, Rainer: *See—*
  - Mumcu, Salih; and Feldmann, Rainer, 4,368,090, Cl. 156-283.000.
- Fellows, Benjamin T.: *See—*
  - Tung, Chi F.; and Fellows, Benjamin T., 4,367,919, Cl. 350-105.000.
- Felstead, John T.; and Gerrard, John C. Device for use in making a dental replica, and a method of making a dental replica. 4,368,042, Cl. 433-213.000.
- Ferguson, Richard: *See—*
  - Johnson, Harold R.; McKnight, Harold F.; and Ferguson, Richard, 4,367,631, Cl. 62-79.000.
- Ferguson, William M.; Howard, Gene R.; and French, Charles F. Combination bee pollen trap and hive containment apparatus. 4,367,563, Cl. 6-4.00R.
- Ferris, Donald L.; and Rybicki, Robert C., to United States of America, Navy. Droop stop for fully articulated rotor. 4,368,006, Cl. 416-140.000.
- Feuerherd, Karl-Heinz: *See—*
  - Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.
- Findeisen, Kurt: *See—*
  - Rasshofer, Werner; Grogler, Gerhard; and Findeisen, Kurt, 4,368,278, Cl. 521-115.000.
- Fink, Willy; and Fehr, Alex, to Fink, Willy. Sound absorber for compressed-air operated apparatuses, in particular compressed air vibrators. 4,367,807, Cl. 181-230.000.
- Fischer, Fritz: *See—*
  - Habenicht, Gerd; and Fischer, Fritz, 4,368,372, Cl. 219-84.000.
- Fischer, Hermann, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Offset printing machine differential speed inking system. 4,367,678, Cl. 101-350.000.
- Fischer, Winfried: *See—*
  - Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, 4,368,292, Cl. 525-54.230.
- Fisher, Paul C.: *See—*
  - Williams, Raymond S.; and Fisher, Paul C., 4,367,966, Cl. 401-190.000.
- Fitzgerald, John B.; and York, George L., to ACF Industries, Inc. By-pass valve improvement. 4,367,764, Cl. 137-115.000.
- Fitzky, Hans G.: *See—*
  - Hocker, Jurgen; Merten, Rudolf; and Fitzky, Hans G., 4,368,319, Cl. 528-353.000.
- Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., to Eastman Kodak Company. Photographic materials and processes comprising oxoindolizine and oxoindolizinium compounds. 4,368,247, Cl. 430-17.000.
- Fletcher, James D., to RCA Corporation. Switch actuating apparatus for video disc player. 4,368,370, Cl. 200-329.000.
- Fletcher, Sidney R.: *See—*
  - Kruzich, Joseph K.; and Fletcher, Sidney R., 4,368,406, Cl. 315-158.000.
- Floccari, Michel: *See—*
  - Bruel, Michel; and Floccari, Michel, 4,368,083, Cl. 148-1.500.
- Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; Mentlik, Anton A.; and Warrick, Patricia P., to Eli Lilly and Company. Sensitive-skin care regime. 4,368,187, Cl. 424-81.000.
- Flynn, Edward G.: *See—*
  - Otto, William L., Jr.; and Flynn, Edward G., 4,368,074, Cl. 419-51.000.
- FMC Corporation: *See—*
  - Ames, Thomas J.; and Cuiper, Glen H., 4,367,980, Cl. 405-169.000.
  - Engel, John F., 4,368,205, Cl. 424-274.000.
- Focke, Heinz. Variable capacity buffer storage conveyor for cigarette packaging apparatus. 4,367,618, Cl. 53-234.000.
- Fohn, Kurt: *See—*
  - Motzkus, Gert; and Fohn, Kurt, 4,368,055, Cl. 8-662.000.
- Fomin, Eduard S.: *See—*
  - Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
- Ford Aerospace & Communications Corporation: *See—*
  - Luh, Howard H., 4,368,473, Cl. 343-753.000.
- Ford, James M., to Olin Corporation. Electrolytic cell with inter-electrode spacer means. 4,368,109, Cl. 204-253.000.
- Ford, John A.: *See—*
  - Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,367,899, Cl. 299-1.000.
- Ford Motor Company: *See—*
  - Boyer, Wesley D., 4,367,721, Cl. 123-617.000.
  - Greene, Thomas L., 4,367,662, Cl. 74-863.000.

- Kruzich, Joseph K.; and Fletcher, Sidney R., 4,368,406, Cl. 315-158.000.
- Forkel, Hermann: *See—*
  - Amtmann, Heribert; Forkel, Hermann; and Gerlach, Hans-Jurgen, 4,368,537, Cl. 378-112.000.
- Forsberg, John W., to Lubrizol Corporation, The. Aqueous systems containing nitrogen-containing, phosphorous-free carboxylic solubilizer/surfactant additives. 4,368,133, Cl. 252-75.000.
- Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., to EMI Limited. Apparatus for correlating successive images of a scene. 4,368,456, Cl. 340-146.30Q.
- Forster, Leslie L.; and Hay, Edward F., deceased (by Hay, Constance, executrix), to Ecolaire, Incorporated. Surface condenser. 4,367,792, Cl. 165-113.000.
- Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, to AMP Incorporated. Device for simultaneous connection of a series of cables to corresponding contacts. 4,367,575, Cl. 29-33.00M.
- Forsyth Dental Infirmary for Children: *See—*
  - Kashket, Shelby, 4,368,272, Cl. 435-293.000.
- Fortini, Umberto. Frame for eyeglasses with inclinable lenses. 4,367,929, Cl. 351-119.000.
- Fox, Harold K., to Bemis Company, Inc. Valved bag sealing. 4,367,620, Cl. 53-479.000.
- Fracchia, Pierluigi, to A. Tonolli & C.S.p.A. Method for scrubbing the flues and for recovering the salts in a process for the production of secondary aluminum. 4,368,070, Cl. 75-0.50B.
- Frame, David P.: *See—*
  - Frame, Scott W.; and Frame, David P., 4,367,685, Cl. 110-347.000.
- Frame, Scott W.; and Frame, David P. Process and apparatus for precisely metering quantities of granular or pulverulent solids. 4,367,685, Cl. 110-347.000.
- Francis, Albert C.; and Summerlin, Frederick A., to AERPAT A.G. Blind fastener and method of manufacture thereof. 4,367,994, Cl. 411-43.000.
- Frank, Robert G., to PPG Industries, Inc. Method and apparatus to remove bent, tempered glass sheets from a cooling station. 4,368,065, Cl. 65-114.000.
- Franks, Richard W.: *See—*
  - Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.
- Franz, Louis J. Die insert lock screws. 4,367,970, Cl. 403-323.000.
- Freilich, Max; and Gulati, Ramesh C., to True Temper Corporation. Rail anchor drive machine. 4,367,682, Cl. 104-17.00A.
- French, Charles F.: *See—*
  - Ferguson, William M.; Howard, Gene R.; and French, Charles F., 4,367,563, Cl. 6-4.00R.
- Frequency Technology, Inc.: *See—*
  - Wroblewski, Theodore, 4,368,407, Cl. 315-291.000.
- Frese, Albert; and Baxmann, Fritz, to Chemische Werke Huels, A.G. Process for the multi-stage polymerization of ethene. 4,368,291, Cl. 525-53.000.
- Frey, Volker: *See—*
  - Deubzer, Bernward; Esterbauer, Josef; Solbrig, Christian; and Frey, Volker, 4,368,294, Cl. 525-100.000.
- Frick, Klaus: *See—*
  - Huggett, Paul G.; and Frick, Klaus, 4,368,099, Cl. 156-628.000.
- Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
  - Habenicht, Gerd; and Fischer, Fritz, 4,368,372, Cl. 219-84.000.
- Friedmann, Oswald: *See—*
  - Maucher, Paul; and Friedmann, Oswald, 4,367,703, Cl. 123-198.00F.
  - Maucher, Paul; and Friedmann, Oswald, 4,367,704, Cl. 123-198.00F.
- Friemann, Hans: *See—*
  - Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.
- Fritsch, Joseph E., to Massey-Ferguson Inc. Single axis force transducer. 4,367,656, Cl. 73-862.650.
- Fritzsche, Klaus B.: *See—*
  - Rees, Herbert; and Fritzsche, Klaus B., 4,368,018, Cl. 425-138.000.
- Frohning, Dieter; and Horn, Gerhard, to Ruhrchemie Aktiengesellschaft. Methanation catalyst. 4,368,142, Cl. 252-455.00R.
- Froment, Gilbert F., to Kinetics Technology International Corporation. Hot gas sampling. 4,367,645, Cl. 73-23.100.
- Frye, Robert B., to General Electric Co. Silicone resin coating compositions. 4,368,236, Cl. 428-412.000.
- Fryer, Rodney I.: *See—*
  - Walser, Armin; and Fryer, Rodney I., 4,368,157, Cl. 260-239.0BD.
  - Walser, Armin; and Fryer, Rodney I., 4,368,158, Cl. 260-239.0BD.
  - Walser, Armin; and Fryer, Rodney I., 4,368,159, Cl. 260-239.0BD.
- Fuji Electrochemical Co., Ltd.: *See—*
  - Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.
- Fuji Jukogyo Kabushiki Kaisha: *See—*
  - Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.
- Fuji Photo Film Co. Ltd.: *See—*
  - Kato, Hisatoyo; and Ishida, Masamitsu, 4,368,384, Cl. 250-484.100.
  - Kobayashi, Kazuhiko, 4,368,096, Cl. 156-502.000.
  - Ohtsuka, Shuichi, 4,367,942, Cl. 355-3.00R.
  - Ono, Shigetoshi; and Fujita, Shinsaku, 4,368,251, Cl. 430-223.000.
  - Takahashi, Kenji; and Miyahara, Junji, 4,368,390, Cl. 250-363.00R.
  - Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
  - Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, 4,368,237, Cl. 428-413.000.
- Fuji Photo Optical Co., Ltd.: *See—*
  - Tanaka, Hitoshi, 4,367,730, Cl. 128-6.000.
- Fujieda, Yasuhiko: *See—*
  - Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.
- Fujii, Masahiko: *See—*
  - Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.
- Fujii, Teruo: *See—*
  - Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, 4,368,525, Cl. 367-165.000.
- Fujii, Toru, to Olympus Optical Co., Ltd. Zoom lens system. 4,367,927, Cl. 350-426.000.
- Fujikawa, Kanichi: *See—*
  - Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.
- Fujikura Cable Works, Ltd.: *See—*
  - Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, 4,368,107, Cl. 204-24.000.
- Fujimatsu, Wataru: *See—*
  - Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.
- Fujino, Hiroko: *See—*
  - Muroi, Kaname; and Fujino, Hiroko, 4,368,105, Cl. 204-1.00T.
- Fujino, Masahiko; and Nishimura, Osamu, to Takeda Chemical Industries, Ltd. Method for protecting guanidino group and restoring the same. 4,368,150, Cl. 260-112.50R.
- Fujioka, Futoshi: *See—*
  - Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.
- Fujisawa Pharmaceutical Co., Ltd.: *See—*
  - Ueda, Ikuo; and Kobayshi, Masakazu, 4,368,325, Cl. 544-16.000.
- Fujita, Shinsaku: *See—*
  - Ono, Shigetoshi; and Fujita, Shinsaku, 4,368,251, Cl. 430-223.000.
- Fujitsu Fanuc Limited: *See—*
  - Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,368,433, Cl. 328-30.000.
  - Imazeki, Ryoji, 4,368,511, Cl. 364-167.000.
  - Imazeki, Ryoji; and Inoue, Michiya, 4,368,532, Cl. 371-21.000.
- Fujitsu Limited: *See—*
  - Hirakawa, Osamu; and Hirose, Tadatsugu, 4,368,465, Cl. 340-771.000.
  - Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.
  - Nakamura, Kazuhisa; and Arakawa, Hideki, 4,368,524, Cl. 365-226.000.
  - Shibuya, Kiyoshi; and Shirai, Hitoshi, 4,368,439, Cl. 332-9.00R.
  - Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
  - Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, 4,368,442, Cl. 335-57.000.
- Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, to Konishiroku Photo Industry Co., Ltd. Process for preparing impregnated polymer latex compositions. 4,368,258, Cl. 430-493.000.
- Fujiyama, Susumu; Matsumoto, Shunichi; and Yakamizawa, Yuji, to Mitsubishi Gas Chemical Company, Inc. Process for formylating xylene mixture. 4,368,336, Cl. 568-428.000.
- Fukagawa, Yasuo: *See—*
  - Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
- Fukai, Masaru: *See—*
  - Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.
- Fukuda, Kunio: *See—*
  - Yamashita, Izumi; and Fukuda, Kunio, 4,368,293, Cl. 525-68.000.
- Fukushima, Kazumasa: *See—*
  - Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
- Fukuyama, Yoshiya: *See—*
  - Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.
- Fuller, Harrison W.: *See—*
  - Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., 4,368,430, Cl. 324-244.000.
- Funahashi, Akira: *See—*
  - Tsubouchi, Kaoru; and Funahashi, Akira, 4,367,824, Cl. 220-326.000.
- Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, to Hitachi, Ltd. Discriminator apparatus for detecting the presence of a signal by using a differential beat signal having an inaudible frequency. 4,368,354, Cl. 179-1.0GB.
- Furukawa, Hisao: *See—*
  - Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, 4,368,297, Cl. 525-342.000.
- Furukawa, Takeo: *See—*
  - Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, 4,368,442, Cl. 335-57.000.
- Furuyama, Tohru, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory circuit. 4,368,529, Cl. 365-205.000.

- Fuzeau, Michel: *See—*
  - de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.
- Fuzesi, Pal: *See—*
  - Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.
- G.D Societa per Azioni: *See—*
  - Seragnoli, Enzo, 4,367,758, Cl. 131-84.00B.
- G. Siempelkamp GmbH & Co.: *See—*
  - Moitzfeld, Winfried, 4,368,014, Cl. 425-28.00B.
- Gaboardi, Angelo, to Honeywell Information Systems Inc. Mosaic printing head. 4,367,962, Cl. 400-124.000.
- Gabor, Laszlo: *See—*
  - Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.
- Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., to Eastman Kodak Company. Photographic materials and processes comprising color-forming sulfonamidodiphenylamine dye precursors and corresponding phenazine dyes. 4,368,246, Cl. 430-9.000.
- Gaiser, Paul G.: *See—*
  - Porter, Stephen T., II; and Gaiser, Paul G., 4,367,604, Cl. 40-564.000.
- Gal, Dezso: *See—*
  - Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
- Gandhi, Om P., to Dosimeter Corporation of America. Microwave dosimeter. 4,368,472, Cl. 343-718.000.
- Gantenbrink, Rudolf. Light for submersible pressure vessel with cooling means. 4,368,508, Cl. 362-267.000.
- Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, to Baldwin Piano & Organ Company. Developing device for copier. 4,367,954, Cl. 366-156.000.
- Gardco Manufacturing, Inc.: *See—*
  - Rapp, William J., 4,368,506, Cl. 362-147.000.
- Gardner, Mark J.: *See—*
  - Shefter, Eli; Smith, Francis X.; and Gardner, Mark J., 4,368,197, Cl. 424-245.000.
- Gaucher, Gilbert: *See—*
  - Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.
- Gauthier, Christian: *See—*
  - Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.
- Gauthier, Georges. Joint prosthesis. 4,367,562, Cl. 3-1.910.
- Geiger, Erich: *See—*
  - Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, 4,368,409, Cl. 315-411.000.
- Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Wall telephone stand. 4,368,359, Cl. 179-146.00R.
- General Battery Corporation: *See—*
  - Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,367,582, Cl. 29-623.100.
- General Electric Company: *See—*
  - Anthony, Thomas R., 4,368,106, Cl. 204-15.000.
  - Arnold, Richard B.; and Schlaudroff, Leo M., 4,367,774, Cl. 140-1.000.
  - Ching, Ta-Yen, 4,368,241, Cl. 428-447.000.
  - Danzig, Ivan F., 4,368,244, Cl. 429-217.000.
  - Frye, Robert B., 4,368,236, Cl. 428-412.000.
  - Gray, David A., 4,367,638, Cl. 62-324.600.
  - Hayes, Susan E., 4,368,313, Cl. 528-14.000.
  - Modic, Frank J.; and Boudreau, Bruce E., 4,368,279, Cl. 521-122.000.
  - Sikdar, Subhas K., 4,368,315, Cl. 528-198.000.
  - Vaughn, Howard A., Jr., 4,368,235, Cl. 428-412.000.
- General Foods Inc.: *See—*
  - Pyves, Richard R.; and Jeffery, James W., 4,368,100, Cl. 159-48.100.
- General Mills, Inc.: *See—*
  - Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., 4,368,211, Cl. 426-564.000.
- General Signal Corporation: *See—*
  - Sibley, Henry C., 4,368,534, Cl. 371-53.000.
- General Tire & Rubber Company, The: *See—*
  - Bogdany, John, 4,368,282, Cl. 524-58.000.
- Georges, Michael P. Automatic microscope slide. 4,367,915, Cl. 350-530.000.
- Gerlach, Hans-Jurgen: *See—*
  - Amtmann, Heribert; Forkel, Hermann; and Gerlach, Hans-Jurgen, 4,368,537, Cl. 378-112.000.
- Gerrard, John C.: *See—*
  - Felstead, John T.; and Gerrard, John C., 4,368,042, Cl. 433-213.000.
- Gewerkschaft Eisenhutte Westfalia: *See—*
  - Trumper, Thomas, 4,367,900, Cl. 299-1.000.
- Ghyczy, Jeno: *See—*
  - Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.
- Giben Impianti S.p.A.: *See—*
  - Benuzzi, Gino, 4,367,999, Cl. 414-51.000.
- Gibson, Ronald F.; and Haynes, Hendrick W., to Gibson, Ronald F. Putter. 4,367,877, Cl. 273-164.000.
- Gilb, Tyrell T.; and Commins, Alfred D., to Simpson Manufacturing Co., Inc. Structural strap tie. 4,367,973, Cl. 403-405.000.
- Gill, Gregg: *See—*
  - Kramer, Fred; and Gill, Gregg, 4,367,644, Cl. 72-389.000.
- Gillespie, Amos L., Jr.: *See—*
  - Allen, J. Hunter, Sr.; Gillespie, Amos L., Jr.; and Johnson, George D., 4,367,646, Cl. 73-37.900.
- Gillette, Donald J., to Electrostatic Equipment Corp. Method and apparatus for producing electrical conductors. 4,368,214, Cl. 156-51.000.
- Gingrich, John A., to Dover Corporation. Control of electro-magnetic solenoid. 4,368,501, Cl. 361-152.000.
- Gladkov, Evgeny P.: *See—*
  - Vasiliev, Jury N.; and Gladkov, Evgeny P., 4,368,121, Cl. 210-170.000.
- Glander, Siegfried; and Lappe, Franz, to Hoechst Aktiengesellschaft. Frequency modulated microwave in combination with a voltage detector and comparator device for measuring a varying moisture content of sheet-like samples. 4,368,421, Cl. 324-58.50A.
- Glaser, Robert L., to Single Vend, Inc. Dispensing apparatus and method having abutment stop. 4,367,826, Cl. 221-213.000.
- Glaxo Group Limited: *See—*
  - Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., 4,368,263, Cl. 435-47.000.
- Gleason Works, The: *See—*
  - Hackett, Kenneth P., 4,367,643, Cl. 72-353.000.
- Global Marine, Inc.: *See—*
  - Bolding, Vance E., 4,367,796, Cl. 166-341.000.
- Glotov, Vadim G.: *See—*
  - Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
- Glyadinskaya, Svetlana A.: *See—*
  - Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.
- Gnilitsky, Boris S.: *See—*
  - Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.
- Godfrey, Thomas B. A. Sailboat rig. 4,367,688, Cl. 114-39.000.
- Goebel, Guenter R.: *See—*
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- Hamlyn, Paul F.: *See—*
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- Hammer, Harry B.: *See—*
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  - Forster, Leslie L.; and Hay, Edward F., deceased, 4,367,792, Cl. 165-113.000.
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- Higgs, Robert H.: *See—*
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  - Tsukada, Toshiro; Tsuruoka, Hisashi; and Hara, Michio, 4,368,457, Cl. 340-347.0AD.
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- Hitomi, Kiyoshi: *See—*
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- Hochenberger, Hans-Martin: *See—*
  - Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

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- Hodson, Ivan E. Nail driver. 4,367,836, Cl. 227-142.000.
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  - Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
  - Glander, Siegfried; and Lappe, Franz, 4,368,421, Cl. 324-58.50A.
  - Hertel, Hasso, 4,368,054, Cl. 8-527.000.
  - Hunger, Klaus; and Pesenacker, Manfred, 4,368,155, Cl. 260-157.000.
  - Kuhls, Jurgen; and Hartwimmer, Robert, 4,368,296, Cl. 525-276.000.
  - Shimmel, Gunther; Heymer, Gero; and Scott, Hasso, 4,368,179, Cl. 423-315.000.
- Hoesch Werke Aktiengesellschaft: *See—*
  - Fabian, Wolfgang; Heinen, Horst; and Sevenich, Theodor, 4,367,832, Cl. 226-108.000.
- Hoffmann, Helmuth: *See—*
  - Leverberg, Siegfried; Hofmann, Manfred; and Hoffmann, Helmuth, 4,367,888, Cl. 285-28.000.
- Hoffmann-La Roche Inc.: *See—*
  - Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,368,265, Cl. 435-75.000.
  - Walser, Armin; and Fryer, Rodney I., 4,368,157, Cl. 260-239.0BD.
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  - Blom, Ingvar G. A.; and Vuokivi, Reima J., 4,367,868, Cl. 266-225.000.
- Hohki, Tetsuo, to Dainippon Screen Seizo Kabushiki Kaisha. Light beam intensity stabilizing method. 4,367,926, Cl. 350-358.000.
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  - Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, 4,368,371, Cl. 219-73.000.
- Holker, Richard J.: *See—*
  - Bray, Geddes A.; and Holker, Richard J., 4,367,861, Cl. 251-61.000.
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  - Arentsen, Dirk, 4,367,800, Cl. 173-127.000.
- Hollenbach, Edward J.; and Howard, Norman B., to Procter & Gamble Company, The. Emulsion concentrate for palatable polyester beverage. 4,368,213, Cl. 426-590.000.
- Holley, John D. Sweeper bristle and method of making. 4,367,564, Cl. 15-179.000.
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  - Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.
- Holt, Neil L., to Burke Company, The. Lift system for tilt-up walls. 4,367,892, Cl. 294-89.000.
- Holt, William G., to Hercules Incorporated. Paint pail with depending skirt for label attachment. 4,367,821, Cl. 220-72.000.
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  - Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.
- Holzle, Gerd: *See—*
  - Eckhardt, Claude; and Holzle, Gerd, 4,368,053, Cl. 8-102.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Matsuyama, Youji, 4,368,417, Cl. 322-29.000.
  - Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,367,713, Cl. 123-440.000.
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  - Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,367,573, Cl. 29-25.130.
- Honda, Makoto: *See—*
  - Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, 4,368,275, Cl. 521-52.000.
- Honeywell Information Systems Inc.: *See—*
  - Gaboardi, Angelo, 4,367,962, Cl. 400-124.000.
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  - Ymker, Lucas; and Hoogendijk, Christiaan J., 4,367,654, Cl. 73-861.290.
- Horie, Shinji: *See—*
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- Horn, Gerhard: *See—*
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- Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Multifunctional lubricant additives and compositions thereof. 4,368,129, Cl. 252-32.70E.
- Horton Company, The: *See—*
  - Lamon, David M., 4,367,859, Cl. 248-318.000.
- Horvath, Andras: *See—*
  - Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.
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- Hotspur International Corporation, Inc.: *See—*
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- Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., to Exxon Research and Engineering Co. Epoxidation of lower α-olefins. 4,368,267, Cl. 435-123.000.
- Houba, Roger: *See—*
  - Lorge, Michel; and Houba, Roger, 4,368,027, Cl. 425-527.000.
- Howard, Gene R.: *See—*
  - Ferguson, William M.; Howard, Gene R.; and French, Charles F., 4,367,563, Cl. 6-4.00R.
- Howard, Norman B.: *See—*
  - Hollenbach, Edward J.; and Howard, Norman B., 4,368,213, Cl. 426-590.000.
- Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., to A. E. Staley Manufacturing Company. 7S And 11S vegetable protein fractionation and isolation. 4,368,151, Cl. 260-123.500.
- Howell, Stephen L.; and Dietrich, Ralph N., to Kimball International, Inc. Envelope generator employing dual charge pump. 4,367,670, Cl. 84-1.260.
- Hoyle Marine Limited: *See—*
  - Milligan, Donald L., 4,367,979, Cl. 405-70.000.
- Huang, Fu-chih, to USV Pharmaceutical Corporation. Tetrahydronaphthoxazoles. 4,368,201, Cl. 424-272.000.
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  - Hubbard, Jack L., deceased, 4,367,982, Cl. 405-202.000.
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- Hughes Aircraft Company: *See—*
  - Graube, Andrejs, 4,367,911, Cl. 350-3.610.
  - Seliger, Robert L., 4,368,215, Cl. 427-38.000.
- Hugues, Jean-Claude: *See—*
  - Bourdon, Jean-Marc; Hugues, Jean-Claude; and Esnoult, Marc, 4,368,038, Cl. 432-253.000.
- Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, to Thomson-CSF. Liquid-crystal image converter device. 4,368,386, Cl. 250-213.00R.
- Humphrey, James A. Reciprocating electric motor with permanent magnets. 4,368,396, Cl. 310-27.000.
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- Hurd, Claude C., to Bear Medical Systems, Inc. Servo-controlled gas pressure relief valve. 4,367,767, Cl. 137-489.000.
- Husky Injection Molding Systems Inc.: *See—*
  - Rees, Herbert; and Fritzsche, Klaus B., 4,368,018, Cl. 425-138.000.
- Hussain, Zahera J.: *See—*
  - Aronson, Michael P.; Larrauri, Edilia A.; and Hussain, Zahera J., 4,368,146, Cl. 252-542.000.
- Hussey Manufacturing Company: *See—*
  - Sutter, David L., 4,367,612, Cl. 52-9.000.
- Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., to Westinghouse Electric Corp. Steam turbine generator control system. 4,368,520, Cl. 364-494.000.
- Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., to Tyler Refrigeration Corporation. Flexible door operating mechanism for refrigerated merchandizer display cabinet. 4,367,632, Cl. 62-82.000.
- Ichikawa, Toshihito, to Pioneer Electronic Corporation. AM Stereophonic signal receiver with electric field strength detection. 4,368,355, Cl. 179-1.0GS.
- Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Switching control system. 4,367,936, Cl. 354-173.000.
- Igarashi, Yuichi: *See—*
  - Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, 4,368,493, Cl. 360-93.000.
- Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, to Nippon Soken, Inc. Flexible ceramic PTC electric heater assembly. 4,368,380, Cl. 219-539.000.
- Ii, Akira: *See—*
  - Miyoshi, Takeo; Nagai, Takanori; and Ii, Akira, 4,367,720, Cl. 123-571.000.
- Iida, Hiroshi; Ohara, Tetuya; and Tuji, Masakatu, to Nippon Steel Corporation. Gas-liquid cooling apparatus. 4,367,597, Cl. 34-155.000.
- Iijima, Akio: *See—*
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- Iijima, Zenshiro, to Adger Kogyo Co., Ltd. Ink composition. 4,368,076, Cl. 106-22.000.
- Ikeda, Shigeho: *See—*
  - Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, 4,368,266, Cl. 435-110.000.
- Ikemura, Yuichi: *See—*
  - Machida, Toyotaka; and Ikemura, Yuichi, 4,368,482, Cl. 358-29.000.
- Ikeura, Kenji, to Nissan Motor Co., Ltd. Method and apparatus for ignition system spark timing control within warm-up period of the engine. 4,367,711, Cl. 123-417.000.
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  - Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.
- Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, to Fujitsu Fanuc Limited. Signal converter circuit. 4,368,433, Cl. 328-30.000.

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- Imazeki, Ryoji; and Inoue, Michiya, to Fujitsu Fanuc Limited. Memory checking method. 4,368,532, Cl. 371-21.000.
- Imperial Chemical Industries Limited: *See—*
  - Newton, Alan B.; Nield, Eric; and Singh, Vir B., 4,368,295, Cl. 525-166.000.
  - Nield, Eric, 4,368,288, Cl. 524-539.000.
- Imura, Takayoshi: *See—*
  - Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.
- Inada, Masami; and Aoki, Kongou, to Aisin Seiki Kabushiki Kaisha. Actuator device. 4,367,674, Cl. 92-13.200.
- Inamorato, Jack T.; and Chirash, William, to Colgate-Palmolive Company. Liquid detergent of controlled viscosity. 4,368,147, Cl. 252-545.000.
- Inanaga, Takuzi: *See—*
  - Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,368,494, Cl. 360-96.500.
- Inomata, Koichiro; and Hasegawa, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Rolled core. 4,368,447, Cl. 336-20.000.
- Inoue, Goro: *See—*
  - Sato, Hiroshi; Ogoshi, Shohei; and Inoue, Goro, 4,368,204, Cl. 424-274.000.
- Inoue, Hiroshi; Komeya, Katsutoshi; and Tsuge, Akihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for producing powder of α-silicon nitride. 4,368,180, Cl. 423-344.000.
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  - Inoue, Kiyoshi, 4,368,412, Cl. 318-632.000.
- Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Microprocessor-controlled motor drive control system. 4,368,412, Cl. 318-632.000.
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  - Imazeki, Ryoji; and Inoue, Michiya, 4,368,532, Cl. 371-21.000.
- Inoue MTP Kabushiki Kaisha: *See—*
  - Mizutani, Tomihiko, 4,367,641, Cl. 72-65.000.
- Inoue, Takehisa: *See—*
  - Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, 4,368,339, Cl. 570-202.000.
- Inoue, Yoshio: *See—*
  - Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.
- Institute National de la Recherche Agronomique: *See—*
  - Staron, Thadee J., 4,368,269, Cl. 435-172.000.
- Instituto Mexicano del Petroleo: *See—*
  - Jimenez, Humberto D.; and Mora, Emilio W., 4,368,173, Cl. 422-197.000.
- International Business Machines Corporation: *See—*
  - Arter, Nelson K.; Dodt, William C.; and Farel, Charles A., 4,367,947, Cl. 355-75.000.
  - Dwire, Jerold D., 4,368,466, Cl. 340-799.000.
  - Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., 4,368,220, Cl. 427-255.400.
  - McCorkle, Richard A., 4,368,538, Cl. 378-122.000.
  - Meltzer, David, 4,368,513, Cl. 364-200.000.
- International Flavors & Fragrances, Inc.: *See—*
  - Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,368,145, Cl. 252-522.00R.
  - Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.
- International Telephone and Telegraph Corporation: *See—*
  - Gurak, Richard J., 4,368,357, Cl. 179-1.50R.
- Intichar, Lutz: *See—*
  - Schnapper, Christoph; and Intichar, Lutz, 4,368,397, Cl. 310-52.000.
- Ipco Corporation: *See—*
  - Weissman, Bernard, 4,368,040, Cl. 433-36.000.
- Ipsen Industries International GmbH: *See—*
  - Limque, Ferdinand; and Bertrand, Hans, 4,368,037, Cl. 432-239.000.
- Irby, Enek E., to Burlington Industries, Inc. Pneumatic transfer mechanism for forming yarn tail ends. 4,367,849, Cl. 242-18.0PW.
- Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, to Kawasaki Steel Corporation. Method for producing cold rolled steel sheets having a noticeably excellent formability. 4,368,084, Cl. 148-12.00C.
- Isawa, Kazuo: *See—*
  - Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, 4,368,107, Cl. 204-24.000.
- Iscar Ltd.: *See—*
  - Porat, Reuven; and Nessel, Elizer, 4,367,990, Cl. 407-114.000.
- Ishibe, Nobuyuki; and Harden nee Ashley, Jimmie K., to Dow Chemical Company, The. Degreaser solvent stabilization. 4,368,338, Cl. 570-109.000.
- Ishida, Kunio, to Tokico Ltd. Ball joint. 4,367,968, Cl. 403-122.000.
- Ishida, Masamitsu: *See—*
  - Kato, Hisatoyo; and Ishida, Masamitsu, 4,368,384, Cl. 250-484.100.
- Ishida, Masao: *See—*
  - Oguma, Masaomi; and Ishida, Masao, 4,368,170, Cl. 376-216.000.
- Ishihara Sangyo Kaisha Ltd.: *See—*
  - Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.
- Ishii, Keizou: *See—*
  - Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.
- Ishii, Koji; and Goto, Taro, to Ryobi, Ltd. Packing sheet overlaying device for offset printing machine. 4,367,679, Cl. 101-410.000.
- Ishii, Tadashi, to Kobishi Electric Co., Ltd. Motor actuated bell. 4,368,458, Cl. 340-396.000.
- Ishikawa, Masao, to Nissan Motor Company, Limited. Liquid crystal display unit for an automotive vehicle. 4,367,923, Cl. 350-345.000.
- Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Exposure control system. 4,367,932, Cl. 354-23.00D.
- Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Emulsifier and compositions comprising same. 4,368,287, Cl. 524-513.000.
- Ishikura, Tomoyuki: *See—*
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- Ito, Susumu: *See—*
  - Sawamua, Mitsuharu; and Ito, Susumu, 4,367,921, Cl. 350-164.000.
- Ito, Yuichiro: *See—*
  - Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
- Ivanova, Valentina N.: *See—*
  - Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
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  - Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
- Iwamoto, Seigo; and Saito, Eiichi, to Nihonshikizai Kogyo Co., Ltd.; and Takeda Chemical Industries, Ltd. Agent for improving chroma and brightness of pigments. 4,368,161, Cl. 260-448.00R.
- Iwashita, Tomonori: *See—*
  - Mashimo, Yukio; and Iwashita, Tomonori, 4,367,937, Cl. 354-173.000.
- Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Tokai Rika Co. Ltd. Rotational direction sensor. 4,368,393, Cl. 307-115.000.
- Izumi, Masayuki: *See—*
  - Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, 4,368,171, Cl. 376-217.000.
- J. I. Case Company: *See—*
  - Schlapman, William J., 4,367,603, Cl. 37-251.000.
- J. M. Voith GmbH: *See—*
  - Bahr, Theodor; and Pfalzer, Lothar, 4,368,101, Cl. 162-4.000.
- Jackson, Norman C., to Standard Products Company, The. Decorative molding with metallic appearance. 4,368,224, Cl. 428-31.000.
- Jacob, Ezekiel J.: *See—*
  - Cooper, Sidney; and Jacob, Ezekiel J., 4,368,250, Cl. 430-109.000.
- Jacobs, David F., to Emerson Electric Co. Electric heating elements. 4,368,378, Cl. 219-451.000.
- Jacquet, Maurice A., to Valeo. Switching device, notably for the control of an electrical motor in an automotive vehicle. 4,368,365, Cl. 200-11.0TW.
- Jagenberg Werke AG: *See—*
  - Bergs, Erwin, 4,367,691, Cl. 118-119.000.
- James, Jasper L., deceased (by Dye, James I., administrator), to James Laboratories, Inc. Thermionic-thermoelectric generator system and apparatus. 4,368,416, Cl. 322-2.00R.
- James Laboratories, Inc.: *See—*
  - James, Jasper L., deceased, 4,368,416, Cl. 322-2.00R.
- James, Richard P., to Personal Products Company. Substantive wetting agents for absorbent materials. 4,368,323, Cl. 536-56.000.
- Jamison, Thomas D., to Combustion Engineering, Inc. Method and apparatus for suppressing noise during nondestructive eddy current testing. 4,368,429, Cl. 324-225.000.
- Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., to Universal Instruments Corporation. Method and apparatus for straightening leads and verifying the orientation and functionality of components. 4,367,584, Cl. 29-837.000.
- Janome Sewing Machine Co., Ltd.: *See—*
  - Watanabe, Kazuo; and Makabe, Hahiro, 4,368,414, Cl. 318-696.000.
- Janosi, Wilhelm: *See—*
  - Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, 4,367,575, Cl. 29-33.00M.
- Jansen, William: *See—*
  - Link, William T.; Haney, Jerry D.; and Jansen, William, 4,367,751, Cl. 128-682.000.
- Janssen Pharmaceutica Inc.: *See—*
  - Legendre, Robert; and Schlossberg, Steven, 4,367,738, Cl. 128-218.0PA.
- Janssen Pharmaceutica N.V.: *See—*
  - Heeres, Jan; and Backx, Leo J. J., 4,368,200, Cl. 424-250.000.
- Jaquith, Douglas, deceased; by Jaquith, Hope, heiress; by Jaquith, Kent, heir; and by Jaquith, William, heir, to Jaquith, Hope. Musical instrument support. 4,367,830, Cl. 224-258.000.
- Jaquith, Hope: *See—*
  - Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.
- Jaquith, Hope, heiress: *See—*
  - Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.
- Jaquith, Kent, heir: *See—*
  - Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.

- Jaquith, William, heir: *See—*
  - Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.
- Jeffery, James W.: *See—*
  - Pyves, Richard R.; and Jeffery, James W., 4,368,100, Cl. 159-48.100.
- Jensen, Joseph D. Circular saw attachment. 4,367,668, Cl. 83-415.000.
- Jerr-Dan Corporation: *See—*
  - Kryzyosiak, Andrew, Jr., 4,368,002, Cl. 414-494.000.
- Jimenez, Humberto D.; and Mora, Emilio W., to Instituto Mexicano del Petroleo. Reactor for oxichlorination of ethylene and process therefor. 4,368,173, Cl. 422-197.000.
- Jimenez, Oscar; and Bianco, Frank J., to Biotechnology, Inc. Apparatus for testing physical condition of a subject. 4,367,752, Cl. 128-689.000.
- Jimmy Dean Meat Company, Inc., The: *See—*
  - Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, 4,367,630, Cl. 62-63.000.
- Jirak, Thomas L., to Medtronic Inc. Apparatus for monitoring and storing heartbeats of a patient. 4,367,753, Cl. 128-708.000.
- John Mowlem & Company Limited: *See—*
  - Goode, David J., 4,367,610, Cl. 49-336.000.
- Johnson, Claris E.; and Crump, Hubert C., to Butler Manufacturing Company. Method of placing stitches in a moving panel. 4,367,578, Cl. 29-429.000.
- Johnson, George D.: *See—*
  - Allen, J. Hunter, Sr.; Gillespie, Amos L., Jr.; and Johnson, George D., 4,367,646, Cl. 73-37.900.
- Johnson, Harold R.; McKnight, Harold F.; and Ferguson, Richard, to Johnson, Harold R. Air conditioning apparatus and methods using underground duct. 4,367,631, Cl. 62-79.000.
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  - Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,368,233, Cl. 428-245.000.
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  - Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
- Julius Blum Gesellschaft m.b.H.: *See—*
  - Rock, Erich; and Blum, Herbert, 4,367,566, Cl. 16-236.000.
  - Rock, Erich, 4,367,906, Cl. 312-330.00R.
- Jung, Christoph: *See—*
  - Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
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  - Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.
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  - Asano, Kazuo, 4,368,024, Cl. 425-397.000.
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  - Araki, Kazuo; and Tochizawa, Ikuo, 4,368,446, Cl. 335-258.000.
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  - Ishiyama, Shozo, 4,368,381, Cl. 235-1.00C.
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  - Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.
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  - Ogata, Yasuhiro; and Mutou, Norishige, 4,367,624, Cl. 60-484.000.
- Kabushiki Kaisha Orii Jidoki Seisakusho: *See—*
  - Orii, Masaru, 4,368,022, Cl. 425-343.000.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Koto, Haruhiko, 4,368,478, Cl. 346-140.00R.
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- Kaiser, Victor: *See—*
  - Mestrallet, Joelle; Heck, Gerard; and Kaiser, Victor, 4,368,061, Cl. 62-28.000.
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  - Terazono, Narihiro; and Kajiyama, Ryuichi, 4,368,518, Cl. 364-433.000.
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  - Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, 4,368,280, Cl. 523-211.000.
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  - Anderson, Richard B.; and Kalenda, Norman W., 4,368,154, Cl. 260-156.000.
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  - Horodysky, Andrew G.; and Kaminski, Joan M., 4,368,129, Cl. 252-32.70E.
- Kamiyama, Hiroki: *See—*
  - Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, 4,368,337, Cl. 568-613.000.
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  - Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.
- Kampfmann, Georg: *See—*
  - Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, 4,367,575, Cl. 29-33.00M.
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  - Roderfeld, Heinrich; and Kampwerth, August, 4,367,756, Cl. 130-23.000.
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  - Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
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- Kanda, Kazunori: *See—*
  - Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.
- Kanebo Foods, Ltd.: *See—*
  - Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, 4,368,297, Cl. 525-342.000.
  - Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,368,218, Cl. 427-222.000.
  - Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, 4,368,284, Cl. 524-230.000.
- Kaneko, Tadahiro: *See—*
  - Sato, Kozi; and Kaneko, Tadahiro, 4,368,504, Cl. 362-33.000.
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- Kantor, Frederick W. Rotary thermodynamic apparatus and method. 4,367,639, Cl. 62-499.000.
- Kanyo, Miklos: *See—*
  - Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.
- Kaplan, Alan, to Emkay Manufacturing Co. Inc. Method of connecting a crystal to a crystal holder. 4,367,579, Cl. 29-559.000.
- Karl Kassbohrer Fahrzeugwerke GmbH: *See—*
  - Walcher, Wilhelm, 4,367,780, Cl. 160-213.000.
- Karpathian, Kerry; and Trowbridge, Darrell L., to Brunswick Corporation. Twin lever control actuator. 4,367,659, Cl. 74-501.00R.
- Kashiwagi, Shinichi: *See—*
  - Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
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- Katayama, Yasunori: *See—*
  - Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
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- Kato, Hisatoyo; and Ishida, Masamitsu, to Fuji Photo Film Co. Ltd. Gain setting device for radiation image read out system. 4,368,384, Cl. 250-484.100.

- Kato, Takaaki: *See—*
  - Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.
- Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Paint containing a silyl group containing vinyl resin, and a method of manufacturing the same with ethyl silicate and curing catalyst. 4,368,297, Cl. 525-342.000.
- Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, to Minnesota Mining and Manufacturing Company. Process of preparing thiopyrylium sensitizing dyes. 4,368,329, Cl. 549-13.000.
- Kattner, Erich: *See—*
  - Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenter, 4,368,477, Cl. 346-140.00R.
- Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, to Citizen Watch Company Limited. Correction signal generating system for an electronic timepiece. 4,367,958, Cl. 368-188.000.
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- Kawai, Tohru; and Masunaga, Makoto, to Canon Kabushiki Kaisha. Electromagnetically driven diaphragm device. 4,367,931, Cl. 354-23.00D.
- Kawakami, Yoshio: *See—*
  - Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
- Kawasaki Jukogyo Kabushiki Kaisha: *See—*
  - Yoshida, Toshio, 4,367,838, Cl. 228-112.000.
- Kawasaki Steel Corporation: *See—*
  - Akagi, Jiro, 4,367,846, Cl. 239-96.000.
  - Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, 4,368,084, Cl. 148-12.00C.
  - Nakanishi, Teruyuki; and Hitomi, Kiyoshi, 4,367,642, Cl. 72-234.000.
- Kawashima, Sadao: *See—*
  - Morioka, Masayoshi; and Kawashima, Sadao, 4,368,232, Cl. 428-228.000.
- Kawate, Keiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid crystal display device having redundant pairs of address buses. 4,368,523, Cl. 365-63.000.
- Kazarinov, Vladimir E.: *See—*
  - Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
- Keifer, George E., Jr.: *See—*
  - Blair, Matthew J.; and Keifer, George E., Jr., 4,367,865, Cl. 266-44.000.
- Keller, Gerald H.; Senese, Frank J.; and Vlasic, John G., to Atlantic Richfield Company. Antitheft mechanism for gasoline pump. 4,367,827, Cl. 222-2.000.
- Kelly, Joseph D.: *See—*
  - Valimont, James L.; and Kelly, Joseph D., 4,368,087, Cl. 156-102.000.
- Kennedy, Stanley P., to Emax, Incorporated. Energy utilization or consumption recording method. 4,368,519, Cl. 364-483.000.
- Kenney, Alan G., to Ofrex Group Limited. Tacker. 4,367,833, Cl. 227-8.000.
- Keramaris, Nikolaos: *See—*
  - Bayerlein, Friedrich J.; Habereder, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, 4,368,324, Cl. 536-114.000.
- Kerr, Robert L., Jr. Thermal protection of aluminum conductor junctions. 4,368,452, Cl. 337-414.000.
- Kidd, H. Keith, to Kollmorgen Technologies Corporation. Control system for electric motor. 4,368,411, Cl. 318-254.000.
- Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Phosphoric acid esters, and their use for combating pests. 4,368,196, Cl. 424-200.000.
- Kikuchi, Makoto; and Kobayashi, Akiyoshi, to Toyoda Koki Kabushiki Kaisha. Cage slot grinding machine. 4,367,611, Cl. 51-41.000.
- Kikuta, Kazutsune: *See—*
  - Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, 4,368,304, Cl. 526-114.000.
- Kilmer, Lauren G. Filament vegetation trimmer. 4,367,587, Cl. 30-276.000.
- Kimball International, Inc.: *See—*
  - Howell, Stephen L.; and Dietrich, Ralph N., 4,367,670, Cl. 84-1.260.
- Kimberley, John A.: *See—*
  - DiDomenico, Robert A.; Cavanaugh, John B.; and Kimberley, John A., 4,367,714, Cl. 123-449.000.
- Kimura, Susumu; Ario, Hiroyosi; and Midorikawa, Minoru, to Nissan Motor Co., Ltd. Cross-flow type internal combustion engine having an exhaust gas recirculation system. 4,367,719, Cl. 123-568.000.
- Kinetics Technology International Corporation: *See—*
  - Froment, Gilbert F., 4,367,645, Cl. 73-23.100.
- Kinoshita, Osamu: *See—*
  - Taniguchi, Yoshiharu; Akiyama, Masanori; and Kinoshita, Osamu, 4,368,400, Cl. 310-322.000.
- Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, to Mitsubishi Rayon Co., Ltd. Reinforced resin composition. 4,368,283, Cl. 524-109.000.
- Kitamoto, Tatsuji: *See—*
  - Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, 4,368,237, Cl. 428-413.000.
- Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Pneumatically operated device with valve and switch mechanisms. 4,368,366, Cl. 200-83.00Q.
- Kitamura, Takashi, to Canon Kabushiki Kaisha. Light deflecting apparatus. 4,367,912, Cl. 350-6.800.
- Klijanowicz, James E.: *See—*
  - Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,368,246, Cl. 430-9.000.
- Kline, Larry H. Flexible teeth-cleaning device. 4,367,759, Cl. 132-89.000.
- Klomp, Alfred W., to Exacto Inc. Coupler assembly joining a driving shaft to a driven shaft for constant velocity transmission. 4,368,049, Cl. 464-50.000.
- Klose, Sigmar; Roder, Albert; and Schneider, Walter, to Boehringer Mannheim GmbH. Method and reagent for the determination of triglycerides. 4,368,261, Cl. 435-15.000.
- Klug, Jerry J., to United States of America, Interior. Combined aerosol monitor and calibrateable light ray scattering reference rod. 4,367,950, Cl. 356-338.000.
- Knutson, Richard K.: *See—*
  - Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., 4,368,211, Cl. 426-564.000.
- Kobayashi, Akiyoshi: *See—*
  - Kikuchi, Makoto; and Kobayashi, Akiyoshi, 4,367,611, Cl. 51-41.000.
- Kobayashi, Kazuhiko, to Fuji Photo Film Co., Ltd. Photographic film splicer. 4,368,096, Cl. 156-502.000.
- Kobayashi, Kazuo: *See—*
  - Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, 4,368,448, Cl. 336-61.000.
  - Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, 4,368,442, Cl. 335-57.000.
- Kobayashi, Keizo: *See—*
  - Kobayashi, Kouzi; and Kobayashi, Keizo, 4,367,812, Cl. 192-3.300.
- Kobayashi, Kouzi; and Kobayashi, Keizo, to Aisin-Warner Kabushiki Kaisha. Control apparatus for torque converter direct coupling clutch in automatic transmissions. 4,367,812, Cl. 192-3.300.
- Kobayashi, Kunio: *See—*
  - Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,368,239, Cl. 428-421.000.
- Kobayashi, Mikiaki: *See—*
  - Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
- Kobayashi, Ryuichiro: *See—*
  - Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,368,260, Cl. 430-562.000.
- Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, to Hitachi, Ltd. Water cooling apparatus for electric circuit elements. 4,368,448, Cl. 336-61.000.
- Kobayashi, Takayuki; and Tamamura, Ryo, to Asahi Glass Company, Ltd. Process for preparing nickel layer. 4,368,223, Cl. 427-443.100.
- Kobayshi, Masakazu: *See—*
  - Ueda, Ikuo; and Kobayshi, Masakazu, 4,368,325, Cl. 544-16.000.
- Kobe Steel, Ltd.: *See—*
  - Asami, Takayoshi, 4,367,791, Cl. 165-109.00T.
- Kobishi Electric Co., Ltd.: *See—*
  - Ishii, Tadashi, 4,368,458, Cl. 340-396.000.
- Kobzhasov, Abubakir K.: *See—*
  - Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
- Kodama, Shun-ichi: *See—*
  - Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, 4,368,308, Cl. 526-247.000.
- Kogawa, Yoshio: *See—*
  - Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
- Kohlbauer, Walter; and Schirk, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for admitting liquid to the vessels of developing machines for photosensitive material. 4,368,010, Cl. 417-271.000.
- Kohler, Kranz, to Messerschmitt-Bolkow-Blohm GmbH. Method of manufacturing an array of solar cells. 4,367,581, Cl. 29-572.000.
- Kojima, Gen: *See—*
  - Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, 4,368,308, Cl. 526-247.000.
- Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Error data correcting system. 4,368,533, Cl. 371-37.000.
- Kokeguchi, Sadao: *See—*
  - Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
- Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
  - Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.
- Kolb, Frederick J., Jr., to Eastman Kodak Company. Sound reproduction method and apparatus. 4,367,930, Cl. 352-27.000.
- Kollmorgen Technologies Corporation: *See—*
  - Kidd, H. Keith, 4,368,411, Cl. 318-254.000.
- Kolts, John H., to Phillips Petroleum Company. Oxidative dehydrogenation of organic compounds with a zinc titanate catalyst. 4,368,344, Cl. 585-624.000.
- Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, to Konishiroku Photo Industry Co., Ltd. Photographic light sensitive element. 4,368,260, Cl. 430-562.000.

Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, to Hitachi, Ltd. Digital data processing device. 4,368,461, Cl. 340-703.000.
Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape cassette device. 4,368,493, Cl. 360-93.000.
Komatsu, Toshiaki: *See*—
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,368,198, Cl. 424-246.000.
Komatsubara, Masahiro: *See*—
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Komemushi, Setsuo: *See*—
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
Komeya, Katsutoshi: *See*—
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Kondo, Shiro, to Olympus Optical Co., Ltd. Reel shaft braking device of magnetic recording tape running apparatus. 4,367,856, Cl. 242-204.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Abe, Tadashi, 4,367,945, Cl. 355-51.000.
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.
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Kuge, Takao; and Ohta, Takeshi, 4,367,935, Cl. 354-25.000.
Kuru, Hiroshi, 4,367,944, Cl. 355-14.0CH.
Nakamura, Hiroya, 4,367,943, Cl. 355-3.00R.
Sakaguchi, Hirofumi; Matsumoto, Ken-ichi; and Masuda, Keiji, 4,367,690, Cl. 118-60.000.
Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.
Kos, Jacob J.: *See*—
Nauta, Jan P.; and Kos, Jacob J., 4,368,240, Cl. 428-447.000.
Koshi, Masaru: *See*—
Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, 4,368,470, Cl. 343-113.00R.
Koshigoe, Shinpei: *See*—
Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, 4,368,405, Cl. 315-16.000.
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P. Power electric circuit switching device. 4,368,443, Cl. 335-138.000.
Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A. Process for producing high-vacuum oils. 4,368,343, Cl. 585-456.000.
Koto, Haruhiko, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Ink supply system for ink jet printers. 4,368,478, Cl. 346-140.00R.
Kotoyori, Yukio, to Kabushiki Kaisha Universal. Score display apparatus for pinball game machines and display method therefor. 4,367,876, Cl. 273-121.00A.
Kotzur, Frank W., to Windings, Inc. Guide and support members for unwinding flexible material from a wound package. 4,367,853, Cl. 242-163.000.
Kouno, Kageaki: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
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Koyama, Mitoshi: *See*—
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
Koyama, Takuo: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Kozam, George; and Romanelli, Pat. Multiple barrel syringe. 4,367,737, Cl. 128-215.000.
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Preuss, Bernhard; and Koziolek, Werner, 4,368,444, Cl. 335-166.000.
Kramer, David A.: *See*—
Johnson, Howard L.; and Kramer, David A., 4,367,884, Cl. 280-423.00B.
Kramer, Fred; and Gill, Gregg, to Pennsylvania Crusher Corporation. Adjustable die and key assembly. 4,367,644, Cl. 72-389.000.
Krapf, Rudolf: *See*—
Rohr, Franz-Josef; and Krapf, Rudolf, 4,368,431, Cl. 324-464.000.
Kreitzer, Melvyn H.; and Chen, Muh-fa, to Vivitar Corporation. Wide angle lens attachment. 4,367,928, Cl. 350-453.000.
Kremheller, Hermann, to Ludwig Riedhammer GmbH & Co. KG. Kiln for firing ceramic workpieces. 4,368,036, Cl. 432-146.000.
Kriebel, Manfred: *See*—
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,368,059, Cl. 55-73.000.
Kroo, Erik: *See*—
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Krueck, John F.; Braden, Donald G.; and Askins, William J., to Dresser Industries, Inc. System and method for controlling the elevation of a boom hoist device. 4,367,673, Cl. 91-437.000.
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Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.
Kruzich, Joseph K.; and Fletcher, Sidney R., to Ford Motor Company. Lamp dimmer control with integral ambient sensor. 4,368,406, Cl. 315-158.000.
Kryzyosiak, Andrew, Jr., to Jerr-Dan Corporation. Car carrier. 4,368,002, Cl. 414-494.000.
Kubota, Ltd.: *See*—
Takahashi, Makoto; and Sugitani, Junichi, 4,368,172, Cl. 420-584.000.
Kuge, Takao; and Ohta, Takeshi, to Konishiroku Photo Industry Co., Ltd. Camera equipped with an automatic focus adjusting device. 4,367,935, Cl. 354-25.000.
Kuh, Susan N. Y. Time machine/time puzzle. 4,368,045, Cl. 434-304.000.
Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.
Kuhls, Jurgen; and Hartwimmer, Robert, to Hoechst Aktiengesellschaft. Free-flowing sintering powders which have improved properties and are based on tetrafluoroethylene polymers, and a process for their manufacture. 4,368,296, Cl. 525-276.000.
Kuintzle, Charles, Jr.: *See*—
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,368,005, Cl. 415-207.000.
Kukes, Semyon, to Phillips Petroleum Company. Olefin disproportionation and catalyst therefor. 4,368,141, Cl. 252-439.000.
Kukolja, Stjepan: *See*—
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., 4,368,156, Cl. 260-239.00A.
Kumazawa, Katsuyoshi: *See*—
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
Kumazawa, Toshihiko: *See*—
Mitsuhata, Masashi; Watanabe, Fumio; and Kumazawa, Toshihiko, 4,368,144, Cl. 252-463.000.
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, to Texas Gas Transmission Corporation. Pyrochemical processes for the decomposition of water. 4,368,169, Cl. 376-148.000.
Kunz, Walter, to Ciba-Geigy Corporation. Process for the preparation of 3-(N-arylamino)-tetra-hydrothiophen-2-one derivatives. 4,368,327, Cl. 548-262.000.
Kuo, James R., to Fairchild Camera and Instrument Corp. Supply voltage sense amplifier. 4,368,420, Cl. 323-303.000.
Kurahashi, Keizo: *See*—
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
Kuraray Company, Limited: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi; Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,368,043, Cl. 433-217.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, 4,368,525, Cl. 367-165.000.
Kurihara, Tomiaki: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
Kurita, Toshiyuki: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, to Fujitsu Limited. Hollow multilayer printed wiring board. 4,368,503, Cl. 361-414.000.
Kuru, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Charging potential control means for electrophotographic copiers. 4,367,944, Cl. 355-14.0CH.
Kurz, Dieter, to Wacker-Chemie GmbH. Process and catalyst for the polymerization of α-olefins. 4,368,306, Cl. 526-125.000.
Kusainov, Temirkhan A.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
Kusaka, Masaharu: *See*—
Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, 4,368,088, Cl. 156-143.000.

Kusumoto, Hideto: *See*—
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.
Kusz, John P. Unit for carrying cargo and/or child. 4,367,829, Cl. 224-31.000.
Kuzunuki, Soshiro: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
Kwiatkowski, Jerome A.: *See*—
Mapes, Glenn H.; Kwiatkowski, Jerome A.; and Haynes, J. David, 4,368,062, Cl. 65-29.000.
Kyu, Shikun; and Hepworth, Edward C., to Motorola, Inc. Advanced data link controller having a plurality of multi-bit status registers. 4,368,512, Cl. 364-200.000.
L. M. Ericsson Pty. Ltd.: *See*—
Herschtal, Ludwik, 4,368,358, Cl. 179-17.00B.
La-Z-Boy Chair Company: *See*—
Pacitti, William; and Ruble, Harold P., 4,367,895, Cl. 297-85.000.
Labatt Brewing Company Limited: *See*—
McFadden, Richard D., 4,367,840, Cl. 229-39.00R.
Labays, Jean-Bernard: *See*—
Barnoud, Francois; and Labays, Jean-Bernard, 4,367,647, Cl. 73-84.000.
Lacour, Alain P.: *See*—
Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.
Lacroix, Alain, to Societe Lyonnaise des Applications Catalytiques. Heterogeneous flameless hydrocarbon combustion contact catalyst, method of making same and method for combustion of hydrocarbons. 4,368,029, Cl. 431-7.000.
Laddha, Sudhir L.; and Sulzberg, Theodore, to Sun Chemical Corporation. Process for the preparation of high-solids rosin-modified polyesters. 4,368,316, Cl. 528-295.500.
Lagerwall, Sven T.: *See*—
Clark, Noel A.; and Lagerwall, Sven T., 4,367,924, Cl. 350-334.000.
Lammert, Steven R.: *See*—
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., 4,368,156, Cl. 260-239.00A.
Lamon, David M., to Horton Company, The. Ceiling-mounted holder for intravenous fluid receptacles. 4,367,859, Cl. 248-318.000.
Lance, Thomas N. Barrel dog house. 4,367,695, Cl. 119-19.000.
Langen, Hans: *See*—
Nittel, Fritz; Langen, Hans; and Ranz, Erwin, 4,368,259, Cl. 430-546.000.
Langen, Robert; and Beck, Rasmus. Method of removing rust from metallic objects. 4,368,080, Cl. 134-1.000.
Langston, Herbert. Athletic accessory. 4,367,872, Cl. 273-54.00B.
Lapart, Andre, to Societe Anonyme dite: Alsthom-Atlantique. Apparatus for preventing a turbine from exceeding a predetermined value of a monitored physical magnitude. 4,368,004, Cl. 415-39.000.
Lappe, Franz: *See*—
Glander, Siegfried; and Lappe, Franz, 4,368,421, Cl. 324-58.50A.
Larrauri, Edilia A.: *See*—
Aronson, Michael P.; Larrauri, Edilia A.; and Hussain, Zahera J., 4,368,146, Cl. 252-542.000.
Larsen, John: *See*—
Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., 4,367,600, Cl. 36-127.000.
Larsen, LaVerne M.: *See*—
Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., 4,367,843, Cl. 231-2.00E.
Laskin, Allen I.: *See*—
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,368,267, Cl. 435-123.000.
Lassanske, George G., to Outboard Marine Corporation. Internal combustion engine with automatic compression release. 4,367,702, Cl. 123-182.000.
Latimer, John P.; and Hall, John H., to Deepsea Ventures, Inc. Separable means for excluding oversized slender objects. 4,367,601, Cl. 37-57.000.
Laurel Bank Machine Co., Ltd.: *See*—
Miyazaki, Yorizo, 4,367,617, Cl. 53-212.000.
Lausch, Herbert: *See*—
Schnabel, Wolfram; Reuter, Gerhard; and Lausch, Herbert, 4,368,177, Cl. 423-175.000.
Lavering, Gordon R. Aiming method and means. 4,367,949, Cl. 356-144.000.
Lavigne, Ronald L.: *See*—
Martone, Leonard P.; and Lavigne, Ronald L., 4,368,120, Cl. 210-170.000.
Lavrenchuk, Vladimir N.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
Lazaro, Luis J., Jr., to Boeing Company, The. Powered wire spool holding and positioning apparatus. 4,367,852, Cl. 242-129.720.
Leatherman, Ivan R., to PPG Industries, Inc. Method of polymerizing sheets. 4,368,310, Cl. 526-314.000.
Le Berre, Serge: *See*—
Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, 4,368,386, Cl. 250-213.00R.
Lee, Michael H.: *See*—
Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., 4,368,220, Cl. 427-255.400.
Leech, Brad G.; and Caronna, Cosimo, to Carrier Corporation. Combination control box and service cord strain relief for an air conditioning unit. 4,367,635, Cl. 62-259.100.
Leeds & Northrup Company: *See*—
Anderson, Paul, 4,368,510, Cl. 364-151.000.
Leffert, Charles B.: *See*—
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.
Legendre, Robert; and Schlossberg, Steven, to Janssen Pharmaceutica Inc. Pre-filled syringe for abusable drugs. 4,367,738, Cl. 128-218.0PA.
Lehmacher, Hans. Method of and apparatus for making handle bags bearing indicia. 4,368,051, Cl. 493-11.000.
Lehmann, William L.: *See*—
Carlson, David J.; and Lehmann, William L., 4,368,540, Cl. 455-180.000.
Lehnhardt, William F.: *See*—
Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., 4,368,151, Cl. 260-123.500.
Lein, Joseph: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
Leong, Basil K. J., to Upjohn Company, The. Dust generator. 4,367,988, Cl. 406-63.000.
L'Etat Francais, represente par le Secretaire d'Etat aux Postes et Telecommunications (Centre National d'Etudes des Telecommunications): *See*—
Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.
Lettner, Kurt: *See*—
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, 4,368,371, Cl. 219-73.000.
Leuschke, Christian: *See*—
Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, 4,368,292, Cl. 525-54.230.
LeVeen, Eric G.: *See*—
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,367,739, Cl. 128-236.000.
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F. Syringe. 4,367,739, Cl. 128-236.000.
LeVeen, Robert F.: *See*—
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,367,739, Cl. 128-236.000.
Lever Brothers Company: *See*—
Aronson, Michael P.; Larrauri, Edilia A.; and Hussain, Zahera J., 4,368,146, Cl. 252-542.000.
Leverberg, Siegfried; Hofmann, Manfred; and Hoffmann, Helmuth. Plug coupler for several hose connections. 4,367,888, Cl. 285-28.000.
Levie, Michael M.: *See*—
Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., 4,367,584, Cl. 29-837.000.
Levine, Robert A. Device for obtaining stool samples. 4,367,750, Cl. 128-638.000.
Levitt, George: *See*—
Budzinski, John C.; and Levitt, George, 4,368,067, Cl. 71-92.000.
Levy, Allan, to Siemens Corporation. Sine wave generator for different frequencies. 4,368,432, Cl. 328-14.000.
Lewis, David W., to M-O Valve Company Limited, The. Electron gun including support structure for accelerating lens. 4,368,403, Cl. 313-457.000.
Lewis, Lawrence A., to Clip Strip Corporation. Display rack. 4,367,819, Cl. 211-59.100.
Lhommet, Girard A. F.: *See*—
Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, 4,368,329, Cl. 549-13.000.
Li, Chou H. Self-optimizing machine and method. 4,368,509, Cl. 364-148.000.
Liburdy, Robert P. Apparatus for determining cell membrane dielectric breakdown. 4,368,423, Cl. 324-65.00R.
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., to International Flavors & Fragrances, Inc. Perfume use for oxoalkyl esters. 4,368,145, Cl. 252-522.00R.
Light, Kenneth K.; McGhie, Joseph A.; Fujioká, Futoshi; and Yoshida, Takao, to International Flavors & Fragrances Inc. Tricyclic alcohols, ethers and esters, process for preparing same and use thereof in augmenting or enhancing the organoleptic properties of consumable materials. 4,368,128, Cl. 252-8.900.
Limque, Ferdinand; and Bertrand, Hans, to Ipsen Industries International GmbH. Conveyor arrangement for a continuous oven. 4,368,037, Cl. 432-239.000.
Lin, Nan J.: *See*—
O'Rell, Dennis D.; and Lin, Nan J., 4,368,243, Cl. 429-147.000.
Lingl Corporation: *See*—
Muller, Walter, 4,368,033, Cl. 432-6.000.
Link, William T.; Haney, Jerry D.; and Jansen, William, to Warner-Lambert Company. Apparatus and process for producing artifact effect on sphygmometric information. 4,367,751, Cl. 128-682.000.
Linn, Karl-Otto: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

- Linsenmeyer, Arthur: *See—*
  - Ehmke, Richard J.; and Linsenmeyer, Arthur, 4,367,848, Cl. 239-665.000.
- Lipkins, Morton S. Pentareflectors and their manufacture. 4,367,922, Cl. 350-301.000.
- Lisle, Hampton H.; and DeMartino, Kevin, to Westinghouse Electric Corp. Monopulse radio receiver compensation apparatus. 4,368,468, Cl. 343-16.00M.
- Lisnow, Theodore E., to Lisnow & Weiss Co, Inc. Watch case assembly. 4,367,960, Cl. 368-309.000.
- Lisnow & Weiss Co. Inc.: *See—*
  - Lisnow, Theodore E., 4,367,960, Cl. 368-309.000.
- Litton Systems, Inc.: *See—*
  - Baccei, James S. C., 4,367,583, Cl. 29-739.000.
- Litz, Donald C.: *See—*
  - Ying, Sui-Chun; and Litz, Donald C., 4,368,399, Cl. 310-270.000.
- Liu, Chao-Min; Prosser, Barbara; and Westley, John, to Hoffmann-La Roche Inc. Culturing a strain of nocardia to produce antibiotic X-14868A. 4,368,265, Cl. 435-75.000.
- Liu, Frank C., to RCA Corporation. Video signal defect replacement circuitry. 4,368,483, Cl. 358-36.000.
- Llorach, Alfredo B. Collectors of solar energy trapping devices. 4,367,727, Cl. 126-449.000.
- Lloyd, John M., to Coated Seed Limited. Use of microorganisms in conjunction with seeds. 4,367,609, Cl. 47-57.600.
- Load Cells Inc.: *See—*
  - Harbers, H. C., Jr., 4,368,364, Cl. 200-6.00R.
- Logan, Dale R.; and Buckley, John J., to Westinghouse Electric Corp. Inertially dampened heliostat assembly. 4,367,913, Cl. 350-500.000.
- Logic Devices, Inc.: *See—*
  - Allen, Paul E., 4,367,785, Cl. 165-2.000.
- Lohse, Friedrich; and Trachsler, Dieter, to Ciba-Geigy Corporation. Mixtures for the preparation of nitrogen-containing polyadducts. 4,368,317, Cl. 528-323.000.
- Lopetegui Legorburu, Jose A., to Maquinaria Geka, S.L. Device for cutting angular profiles applicable to hydraulic shears. 4,367,669, Cl. 83-579.000.
- Lorge, Michel; and Houba, Roger, to Solvay & Cie. Device for manufacture of hollow articles. 4,368,027, Cl. 425-527.000.
- Lorsch, Johannes. Device for stacking slide frames into a container. 4,367,619, Cl. 53-245.000.
- Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company Inc. Higher alcohol toxicants effective against insects. 4,368,207, Cl. 424-343.000.
- Lovering, Peter, to Bunker Ramo Corporation. Aircraft landing display system. 4,368,517, Cl. 364-428.000.
- Lozio, Battista, to Battista Lozio & Figli S.P.A. Tag-attaching gun. 4,367,834, Cl. 227-67.000.
- Lubrizol Corporation, The: *See—*
  - Forsberg, John W., 4,368,133, Cl. 252-75.000.
- Luckenbaugh, Raymond W., to Du Pont de Nemours, E. I., and Company. Benzotriazine derivatives as selective weed control agents. 4,368,068, Cl. 71-93.000.
- Ludorf, Reiner, to Starkstrom Gummersbach GmbH. Contact arrangement. 4,368,450, Cl. 337-363.000.
- Ludwig Riedhammer GmbH & Co. KG: *See—*
  - Kremheller, Hermann, 4,368,036, Cl. 432-146.000.
- Lugosi, Gyorgy: *See—*
  - Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.
- Luh, Howard H., to Ford Aerospace & Communications Corporation. Microwave lens ripple filter. 4,368,473, Cl. 343-753.000.
- Luk Lamellen und Kupplungsbau GmbH: *See—*
  - Maucher, Paul; and Friedmann, Oswald, 4,367,703, Cl. 123-198.00F.
  - Maucher, Paul; and Friedmann, Oswald, 4,367,704, Cl. 123-198.00F.
- Lukacs, Julia: *See—*
  - Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
- Lukaszewicz, Raymond: *See—*
  - Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,367,899, Cl. 299-1.000.
- Lukehart, Leonard J.; and Sietmann, Vernon H. Water recreational vehicle. 4,367,689, Cl. 114-346.000.
- Lynch, Donald M.: *See—*
  - Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.
- Lyons, Steffen: *See—*
  - Hannah, Richard E.; and Lyons, Steffen, 4,368,023, Cl. 425-392.000.
- M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See—*
  - Fischer, Hermann, 4,367,678, Cl. 101-350.000.
- M-O Valve Company Limited, The: *See—*
  - Lewis, David W., 4,368,403, Cl. 313-457.000.
- Maag Gear-Wheel & Machine Co. Ltd.: *See—*
  - Spath, Hans; and Donner, Meinrad, 4,368,522, Cl. 364-550.000.
- Mabuchi Motor Co. Ltd.: *See—*
  - Mabuchi, Takaichi, 4,368,398, Cl. 310-248.000.
- Mabuchi, Takaichi, to Mabuchi Motor Co. Ltd. Small electric motor with reinforced brush holder. 4,368,398, Cl. 310-248.000.
- Mac Engineering & Equip. Co., Inc.: *See—*
  - Schultz, Carl D.; and Simonton, Robert D., 4,368,373, Cl. 219-86.220.
- MacDonald, John T. Foldable farm implement with single port hopper-feeding auger. 4,368,003, Cl. 414-523.000.
- Machida, Toyotaka; and Ikemura, Yuichi, to Victor Company of Japan. Automatic white adjusting circuit for a television camera. 4,368,482, Cl. 358-29.000.
- Machihara, Akio: *See—*
  - Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, 4,368,088, Cl. 156-143.000.
- MacIntosh, John J. Universal radiator assembly. 4,367,793, Cl. 165-151.000.
- Madaus, Rolf; Gorler, Klaus; and Molls, Werner, to Dr. Madaus & Co. Method for the extraction of silymarin from plants. 4,368,195, Cl. 424-195.000.
- Maeda, Kouzou; and Kamijo, Ken, to Nissan Motor Co., Ltd. Seat belt retractor with a tension eliminator. 4,367,851, Cl. 242-107.700.
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  - Suttles, James M., 4,367,818, Cl. 211-49.00D.
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  - Wakamiya, Yoshinori, 4,368,034, Cl. 432-11.000.
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  - Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
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  - Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.
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- Mizuno, Tiaki, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engine. 4,367,722, Cl. 123-644.000.
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  - Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.
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  - Audeh, Constandi A.; and Dickert, Joseph J., Jr., 4,368,126, Cl. 210-663.000.
  - Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,368,114, Cl. 208-120.000.
  - Horodysky, Andrew G.; and Kaminski, Joan M., 4,368,129, Cl. 252-32.70E.
  - Hubbard, Jack L., deceased, 4,367,982, Cl. 405-202.000.
  - Mazumdar, Ranjit, 4,367,841, Cl. 229-54.00R.
  - Valyocsik, Ernest W., 4,368,174, Cl. 422-208.000.
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- Modic, Frank J.; and Boudreau, Bruce E., to General Electric Company. Method for mechanically foaming silicone compositions. 4,368,279, Cl. 521-122.000.

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  - Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezsó; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
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  - Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.
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  - Madaus, Rolf; Gorler, Klaus; and Molls, Werner, 4,368,195, Cl. 424-195.000.
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  - Mathis, Thomas C.; and Morgan, Albert W., 4,368,341, Cl. 585-25.000.
- Montanwerke Walter GmbH: *See—*
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  - Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,361, Cl. 179-170.200.
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  - Jimenez, Humberto D.; and Mora, Emilio W., 4,368,173, Cl. 422-197.000.
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  - Mathis, Thomas C.; and Morgan, Albert W., 4,368,341, Cl. 585-25.000.
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- Moris, Alfred H., to Minnesota Mining and Manufacturing Co. Endless loop tape cartridge. 4,367,850, Cl. 242-55.19A.
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- Moriyama, Masakazu: *See—*
  - Hayashi, Kunihisa; and Moriyama, Masakazu, 4,368,426, Cl. 324-161.000.
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  - Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, 4,368,320, Cl. 528-355.000.
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  - Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., 4,368,262, Cl. 435-23.000.
- Mosburger, Hans: *See—*
  - Mayer, Johann; Maier, Johann; Mosburger, Hans; and Erl, Michael, 4,368,094, Cl. 156-462.000.
- Moskov, Ruslan N.: *See—*
  - Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
- Motorola Inc.: *See—*
  - Ecklund, Lawrence M.; and Drong, Frank, Jr., 4,368,356, Cl. 179-1.0GS.
  - Kyu, Shikun; and Hepworth, Edward C., 4,368,512, Cl. 364-200.000.
- Mottier, Patrick; and Valette, Serge, to Commissariat a l'Energie Atomique. Fresnel lens for integrated optics. 4,367,916, Cl. 350-96.120.
- Motzkus, Gert; and Fohn, Kurt, to BASF Wyandotte Corporation. Solvent bleed-fast, deep-shade disperse dyed textile material. 4,368,055, Cl. 8-662.000.
- Mucaria, Gasper. Glass units. 4,368,226, Cl. 428-34.000.
- Muff, Nicholas S. Extractor for removing broken tubing tips from catheter hubs. 4,367,577, Cl. 29-234.000.
- Mukai, Seiichi: *See—*
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- Mukasa, Shizuo, to Olympus Optical Co., Ltd. Microscope equipped with a micro manipulator. 4,367,914, Cl. 350-530.000.
- Mukhamedinov, Murat M.: *See—*
  - Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
- Mulhollam, Gail R.: *See—*
  - Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 4,368,460, Cl. 340-522.000.
- Muller, Walter, to Lingl Corporation. Apparatus and method for adjusting pallet-mounted saggers. 4,368,033, Cl. 432-6.000.
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  - Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, 4,368,525, Cl. 367-165.000.
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- Murphey, Joseph R., to Halliburton Services. Aqueous gel composition for temporary stabilization of subterranean well formation. 4,368,136, Cl. 252-316.000.
- Murray, James D., to Passavant-Werke AG & Co. KG. Apparatus for extracting liquid from a suspension. 4,368,125, Cl. 210-403.000.
- Murray, Malcolm G., Jr. Alignment system. 4,367,594, Cl. 33-181.00R.
- Mutke, Hans G. Isolation apparatus. 4,367,728, Cl. 128-1.00R.
- Mutou, Norishige: *See—*
  - Ogata, Yasuhiro; and Mutou, Norishige, 4,367,624, Cl. 60-484.000.
- Muzzarelli, Riccardo, to Anic, S.p.A. Chitosan-glucan complex, method for its production and end uses. 4,368,322, Cl. 536-20.000.
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  - Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.
- Myers, James E.: *See—*
  - Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., 4,367,632, Cl. 62-82.000.
- Naaktgeboren, Adrianus; and Vansteelant, Marc G., to Sperry Corporation. Bale wagons. 4,368,000, Cl. 414-111.000.
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- Nagai, Takanori: *See—*
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- Nagashima, Michiyoshi: *See—*
  - Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.
- Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, to Sumitomo Light Metal Industries Ltd. Method and apparatus for coating the inner surface of long tubes of small diameter. 4,368,219, Cl. 427-236.000.
- Naimer, Hubert L. Computer-controlled switching device. 4,368,394, Cl. 307-115.000.
- Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, to Nippon Soken, Inc. Extrusion device for producing honeycomb structures. 4,368,025, Cl. 425-462.000.
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- Nakagawa, Fumio: *See—*
  - Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
- Nakagawa, Kazuhiko: *See—*
  - Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.
- Nakagawa, Masao: *See—*
  - Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,368,218, Cl. 427-222.000.
- Nakagome, Takenari: *See—*
  - Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,368,198, Cl. 424-246.000.

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- Nakajima, Kouichi: *See—*
  - Matsumoto, Masataka; and Nakajima, Kouichi, 4,368,369, Cl. 200-264.000.
- Nakamura, Hiroya, to Konishiroku Photo Industry Co., Ltd. Apparatus for providing recording compensation for rotating drum speed fluctuations in an information recording apparatus. 4,367,943, Cl. 355-3.00R.
- Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. System for regulating the engine speed. 4,367,708, Cl. 123-339.000.
- Nakamura, Kazuhisa; and Arakawa, Hideki, to Fujitsu Limited. Semiconductor device. 4,368,524, Cl. 365-226.000.
- Nakanishi, Teruyuki; and Hitomi, Kiyoshi, to Kawasaki Steel Corporation. Method of producing H-beams. 4,367,642, Cl. 72-234.000.
- Nakano, Tasuku: *See—*
  - Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.
- Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, to Ube Industries, Ltd. Photosetting composition containing modified epoxy resins and an oligoester diacrylate compound. 4,368,300, Cl. 525-531.000.
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- Nakata, Yoshinobu: *See—*
  - Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.
- Nakazato, Masao: *See—*
  - Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
- Nakazima, Isamu: *See—*
  - Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, 4,367,636, Cl. 62-262.000.
- Narasaka, Shin: *See—*
  - Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,367,713, Cl. 123-440.000.
- National Research Development Corporation: *See—*
  - Jones, Robert L.; and Wilson, Norman H., 4,368,332, Cl. 560-120.000.
  - Sinclair, David A.; and Smith, Ian R., 4,367,648, Cl. 73-620.000.
- National Starch and Chemical Corporation: *See—*
  - Heckman, Erwin, 4,368,212, Cl. 426-579.000.
- National Steel Corporation: *See—*
  - Saunders, William T., 4,367,996, Cl. 413-14.000.
- Nauta, Jan P.; and Kos, Jacob J., to Nauta Roll Corporation. High gloss rubber roll. 4,368,240, Cl. 428-447.000.
- Nauta, Randal W., to C. L. Frost & Son, Inc. Wheeled support assembly for conveyors with locking and fastening feature. 4,367,905, Cl. 308-182.000.
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  - Nauta, Jan P.; and Kos, Jacob J., 4,368,240, Cl. 428-447.000.
- Nees, John M.: *See—*
  - Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,367,582, Cl. 29-623.100.
- Nefedov, Vladimir P.: *See—*
  - Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.
- Nemes, Istvan: *See—*
  - Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
- Nemeth, Andras: *See—*
  - Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
- Nessel, Elizer: *See—*
  - Porat, Reuven; and Nessel, Elizer, 4,367,990, Cl. 407-114.000.
- Neu, Hans: *See—*
  - Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.
- Neuhouser, Donald E., to Harvey Hubbell Incorporated. Ground conductor monitoring system. 4,368,498, Cl. 361-48.000.
- New York University: *See—*
  - Rugg, Barry A.; and Brenner, Walter, 4,368,079, Cl. 127-1.000.
- Newcomb, Kermit T., to Burlington Industries, Inc. Guide for withdrawing yarn from a filling measuring and supplying device for a loom. 4,367,773, Cl. 139-452.000.
- Newcomer, John R.: *See—*
  - Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.
- Newton, Alan B.; Nield, Eric; and Singh, Vir B., to Imperial Chemical Industries Limited. Films from compositions of polyesters and olefine polymers. 4,368,295, Cl. 525-166.000.
- Nieddu, Mario, to Cinelli Cino & C. S.r.l. Armature for bicycle saddles. 4,367,896, Cl. 297-195.000.
- Nield, Eric, to Imperial Chemical Industries Limited. Fast crystallizing polyester compositions. 4,368,288, Cl. 524-539.000.
- Nield, Eric: *See—*
  - Newton, Alan B.; Nield, Eric; and Singh, Vir B., 4,368,295, Cl. 525-166.000.
- Nielsen, Carl J., to Atari, Inc. Bank switchable memory system. 4,368,515, Cl. 364-200.000.
- Nifco Inc.: *See—*
  - Mizusawa, Akira; and Notoya, Yoshiaki, 4,367,995, Cl. 411-57.000.
- Nihonshikizai Kogyo Co., Ltd.: *See—*
  - Iwamoto, Seigo; and Saito, Eiichi, 4,368,161, Cl. 260-448.00R.
- Niiya, Masamichi: *See—*
  - Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.
- Nikiforov, Lev I.: *See—*
  - Sarkisov, Arutjun K.; and Nikiforov, Lev I., 4,368,191, Cl. 424-88.000.
- Ninomiya, Yoshinobu: *See—*
  - Somezawa, Masashi; Ninomiya, Yoshinobu; and Hashimoto, Akira, 4,368,238, Cl. 428-413.000.
- Nippon Kogaku K.K.: *See—*
  - Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,368,383, Cl. 250-201.000.
- Nippon Oil and Fats Company, Ltd.: *See—*
  - Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.
- Nippon Paint Co., Ltd.: *See—*
  - Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.
- Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
  - Mitsuhata, Masashi; Watanabe, Fumio; and Kumazawa, Toshihiko, 4,368,144, Cl. 252-463.000.
- Nippon Soken, Inc.: *See—*
  - Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,368,380, Cl. 219-539.000.
  - Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.
- Nippon Steel Corporation: *See—*
  - Iida, Hiroshi; Ohara, Tetuya; and Tuji, Masakatu, 4,367,597, Cl. 34-155.000.
- Nippon Telegraph & Telephone Public Corporation: *See—*
  - Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
  - Kanbe, Hiroshi; and Hara, Elmer H., 4,368,385, Cl. 250-551.000.
  - Saito, Takashi, 4,368,491, Cl. 358-283.000.
- Nippondenso Co., Ltd.: *See—*
  - Mizuno, Tiaki, 4,367,722, Cl. 123-644.000.
  - Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.
- Nishida, Tatehiko: *See—*
  - Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,368,218, Cl. 427-222.000.
- Nishiguchi, Yoichi: *See—*
  - Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
- Nishiguchi, Yuzuru, to Shinko Denshi Company Limited. Apparatus for counting articles using torque. 4,368,382, Cl. 235-92.0PK.
- Nishikawa, Mamoru: *See—*
  - Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.
- Nishimura, Osamu: *See—*
  - Fujino, Masahiko; and Nishimura, Osamu, 4,368,150, Cl. 260-112.50R.
- Nishio, Kazuaki: *See—*
  - Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, 4,368,300, Cl. 525-531.000.
- Nishiya, Yashinori: *See—*
  - Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, 4,368,280, Cl. 523-211.000.
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  - Okayama, Kiyoaki; and Nishizuka, Makoto, 4,368,298, Cl. 525-480.000.
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  - Ikeura, Kenji, 4,367,711, Cl. 123-417.000.
  - Ishikawa, Masao, 4,367,923, Cl. 350-345.000.
  - Kimura, Susumu; Ario, Hiroyosi; and Midorikawa, Minoru, 4,367,719, Cl. 123-568.000.
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  - Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.
  - Yasuhara, Seishi, 4,367,716, Cl. 123-478.000.
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- Nitto Electric Industrial Co., Ltd.: *See—*
  - Kakuhashi, Takeshi; and Miyake, Yasufumi, 4,368,252, Cl. 430-312.000.
- Noda, Munetaka: *See—*
  - Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.
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  - Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, 4,368,275, Cl. 521-52.000.
- Nomura, Ken: *See—*
  - Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,368,380, Cl. 219-539.000.
- Nonoyama, Takao: *See—*
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- Nordic Diving Salvage & Marine Contractors Ltd.: *See—*
  - McGregor, Robert I., 4,367,862, Cl. 254-231.000.
- Northam, William D.: *See—*
  - Miller, Charles K.; and Northam, William D., 4,368,434, Cl. 329-50.000.
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  - Sabri, Mohamed S., 4,368,487, Cl. 358-166.000.
- Northwest Investments: *See—*
  - Ray, Dennis A., 4,367,717, Cl. 123-557.000.
- Northwest Orthodontics, Inc.: *See—*
  - Armstrong, Maclay M., 4,368,039, Cl. 433-5.000.
- Notoya, Yoshiaki: *See—*
  - Mizusawa, Akira; and Notoya, Yoshiaki, 4,367,995, Cl. 411-57.000.
- Novametrix Medical Systems, Inc.: *See—*
  - Dali, Carmelo, 4,367,735, Cl. 128-207.180.
- Novar Electronics Corporation: *See—*
  - Ott, James H.; and Rice, James S., 4,368,469, Cl. 343-100.0ST.
- Nowakowski, Rafal: *See—*
  - Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, 4,367,985, Cl. 405-264.000.
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  - Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.
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  - Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
- Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vibration detector. 4,368,525, Cl. 367-165.000.
- Oberg, Olov T. Silencer. 4,367,808, Cl. 181-272.000.
- Oborotov, Vyacheslav D.: *See—*
  - Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.
- Occidental Oil Shale, Inc.: *See—*
  - Cha, Chang Y., 4,367,901, Cl. 299-2.000.
- OCE-Nederland B.V.: *See—*
  - Stienstra, Jan B., 4,368,438, Cl. 331-14.000.
- Oeth, James F., to Deere & Company. Heat activated fuel shut-off valve actuator. 4,367,705, Cl. 123-198.0DB.
- Ofrex Group Limited: *See—*
  - Kenney, Alan G., 4,367,833, Cl. 227-8.000.
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  - Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,368,383, Cl. 250-201.000.
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  - Endo, Takeshi; Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,368,314, Cl. 528-89.000.
- Ogata, Yasuhiro; and Mutou, Norishige, to Kabushiki Kaisha Komatsu Seisakusho. Control system for hydraulic actuator. 4,367,624, Cl. 60-484.000.
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  - Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, 4,367,574, Cl. 29-25.190.
- Ogihara, Masato; and Tsubaki, Masamitsu, to Ricoh Company, Ltd. Development apparatus. 4,367,693, Cl. 118-674.000.
- Ogiu, Hisao, to Olympus Optical Co. Ltd. Endoscope provided with an elongate medical treating instrument utilizing laser beams. 4,367,729, Cl. 128-6.000.
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  - Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.
- Ogoshi, Shohei: *See—*
  - Sato, Hiroshi; Ogoshi, Shohei; and Inoue, Goro, 4,368,204, Cl. 424-274.000.
- Oguino, Masanori: *See—*
  - Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, 4,368,354, Cl. 179-1.0GB.
- Oguma, Masaomi; and Ishida, Masao, to Hitachi, Ltd. Method of operating nuclear reactors. 4,368,170, Cl. 376-216.000.
- Ohara, Tetuya: *See—*
  - Iida, Hiroshi; Ohara, Tetuya; and Tuji, Masakatu, 4,367,597, Cl. 34-155.000.
- Ohashi, Hiromichi; and Shirasaka, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Light-driven semiconductor device. 4,368,481, Cl. 357-30.000.
- Ohgami, Masaaki: *See—*
  - Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.
- Ohmori, Yasuo: *See—*
  - Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
- Ohta, Takeshi: *See—*
  - Kuge, Takao; and Ohta, Takeshi, 4,367,935, Cl. 354-25.000.
- Ohta, Tokuya: *See—*
  - Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.
- Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Xerographic copying machine. 4,367,942, Cl. 355-3.00R.
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  - Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.
- Okabayashi, Ikuo: *See—*
  - Miyoshi, Hajime; Okabayashi, Ikuo; and Asanagi, Etsuo, 4,367,986, Cl. 405-266.000.
- Okada, Ken: *See—*
  - Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
- Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, to Sanraku-Ocean Co., Ltd. Antibiotics and derivatives thereof having β-lactamase inhibitory activity and production thereof. 4,368,203, Cl. 424-274.000.
- Okamura, Kiyonobu: *See—*
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- O'Kane, Joseph C.: *See—*
  - Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., 4,367,783, Cl. 164-452.000.
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- OKI Electric Industry Co., Ltd.: *See—*
  - Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
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- Okumura, Yasushi: *See—*
  - Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
- Okura, Zenichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic aperture presetting device. 4,367,939, Cl. 354-272.000.
- Olin Corporation: *See—*
  - Breister, Sigmund; and Reiner, Joseph R., 4,368,073, Cl. 75-108.000.
  - Ford, James M., 4,368,109, Cl. 204-253.000.
- Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugallagerfabriken GmbH. Rotary drill bit with conical rotary cutters. 4,367,904, Cl. 384-95.000.
- Olympus Optical Co., Ltd.: *See—*
  - Fujii, Toru, 4,367,927, Cl. 350-426.000.
  - Kondo, Shiro, 4,367,856, Cl. 242-204.000.
  - Mukasa, Shizuo, 4,367,914, Cl. 350-530.000.
  - Ogiu, Hisao, 4,367,729, Cl. 128-6.000.
  - Saitou, Sinichi, 4,367,854, Cl. 242-198.000.
  - Shirako, Hideo, 4,368,497, Cl. 360-132.000.
- Onitsuka, Hatsuki: *See—*
  - Miyake, Tetsuya; Takeda, Kunihiko; and Onitsuka, Hatsuki, 4,368,175, Cl. 423-7.000.
- Ono, Shigetoshi; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic light-sensitive sheet. 4,368,251, Cl. 430-223.000.
- Onodera, Hirohumi. Drying apparatus. 4,367,596, Cl. 34-147.000.
- Onozaki, Masaki: *See—*
  - Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
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- Orazalina, Kasken N.: *See—*
  - Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
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- Orii, Masaru, to Kabushiki Kaisha Orii Jidoki Seisakusho. Feeding apparatus in pressing machine. 4,368,022, Cl. 425-343.000.
- Ornstein, Murray. Ostomy bag. 4,367,742, Cl. 128-283.000.
- Orthoefer, Frank T.: *See—*
  - Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., 4,368,151, Cl. 260-123.500.

- Oshima, Kihachiro: *See—*
  - Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
- Osman, Maged A., to BBC, Brown, Boveri & Company, Ltd. Anisotropic compounds with negative or positive DC-anisotropy and low optical anisotropy. 4,368,135, Cl. 252-299.630.
- Otis Elevator Company: *See—*
  - Doane, John C.; Deric, J. Mark; and Roberts, Gary K., 4,367,810, Cl. 187-29.00R.
- Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio control system for internal combustion engines, having air/fuel control function at engine deceleration. 4,367,713, Cl. 123-440.000.
- Ott, James H.; and Rice, James S., to Novar Electronics Corporation. Traveling wave interferometry particularly for solar power satellites. 4,368,469, Cl. 343-100.0ST.
- Otto, William L., Jr.; and Flynn, Edward G., to Aluminum Company of America. Method of producing a high temperature metal powder component. 4,368,074, Cl. 419-51.000.
- Ottobre, Louis G.: *See—*
  - Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., 4,368,520, Cl. 364-494.000.
- Oughton, Richard W., to Du Pont Canada Inc. Control of residual solvent in proteinaceous materials. 4,368,152, Cl. 260-123.500.
- Outboard Marine Corporation: *See—*
  - Lassanske, George G., 4,367,702, Cl. 123-182.000.
  - Strang, Charles D., 4,367,860, Cl. 248-641.000.
  - Williams, Dwight E., 4,367,881, Cl. 280-96.000.
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  - Hintikka, Vaino V. H., 4,368,117, Cl. 209-167.000.
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- Ovsyannikov, Vladimir I.: *See—*
  - Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
- Owens-Corning Fiberglas Corporation: *See—*
  - Charon, Clarence W., 4,368,164, Cl. 264-37.000.
- Oy Wartsila Ab: *See—*
  - Uomala, Vilho, 4,367,766, Cl. 137-243.000.
- Ozarski, Robert G.: *See—*
  - Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.
- Pace, James L., to Hotspur International Corporation, Inc. Apparatus for insuring the complete burning of fuel in a six cycle combustion engine. 4,367,700, Cl. 123-64.000.
- Pacitti, William; and Ruble, Harold P., to La-Z-Boy Chair Company. Reclinable chair. 4,367,895, Cl. 297-85.000.
- Palara, Sergio; and Tintori, Silvano, to SGS-ATES Componenti Elettronici S.p.A. Overload protection device for power output circuits. 4,368,436, Cl. 330-207.00P.
- Palmer, Raymond J.; and Micheaux, Dominique, to McDonnell Douglas Corporation. Woven material and layered assembly thereof. 4,368,234, Cl. 428-245.000.
- Panthout, Raymond. Attachment arrangement. 4,367,972, Cl. 403-387.000.
- Paoletti, Ugo: *See—*
  - Angelini, Gianfranco; and Paoletti, Ugo, 4,368,078, Cl. 106-164.000.
- Parise, Carl, to Parise & Sons, Inc. Double insulated wet/dry vacuum extraction machine. 4,367,565, Cl. 15-321.000.
- Parise & Sons, Inc.: *See—*
  - Parise, Carl, 4,367,565, Cl. 15-321.000.
- Park, Chung P., to Dow Chemical Company, The. Novel olefin polymer compositions and foamed articles prepared therefrom having improved elevated temperature dimensional stability. 4,368,276, Cl. 521-79.000.
- Parker, Alan; Dickinson, Peter J.; Clough, Douglas O.; and Farnhill, William M. Piecing up a friction spinning apparatus. 4,367,623, Cl. 57-263.000.
- Parker Manufacturing Company: *See—*
  - Ewig, John F., 4,367,779, Cl. 145-33.00A.
- Passavant-Werke AG & Co. KG: *See—*
  - Murray, James D., 4,368,125, Cl. 210-403.000.
- Pasternack, Adalbert; and Hinz, Claus-Dieter, to Dragerwerk Aktiengesellschaft. Airtight receptacle lock for emergency respirators. 4,367,822, Cl. 220-265.000.
- Patel, Ramesh N.: *See—*
  - Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,368,267, Cl. 435-123.000.
- Paulokat, Horst, to Messerschmitt-Boelkow-Blohm GmbH. Apparatus for the maintenance of refrigeration equipment. 4,367,637, Cl. 62-292.000.
- Pearson, Ronald D. Wooden beam suspended ceiling assembly. 4,367,616, Cl. 52-664.000.
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  - Chianelli, Russell R.; Pecoraro, Theresa A.; and Dines, Martin B., 4,368,115, Cl. 208-215.000.
- Peel, John L., to Rockwell International Corporation. SOS island edge passivation structure. 4,368,085, Cl. 148-33.300.
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  - Bitsky, Thomas C.; and Wilkus, Joseph R., 4,368,052, Cl. 493-96.000.
- Peichl, Robert: *See—*
  - Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
- Pennsylvania Crusher Corporation: *See—*
  - Kramer. Fred; and Gill, Gregg, 4,367,644, Cl. 72-389.000.
- Pennsylvania Scale Company: *See—*
  - Bryan, James S., 4,367,801, Cl. 177-211.000.
- Perelman, Robert D., to Andrew Corporation. Corrugated coaxial cable. 4,368,350, Cl. 174-102.00D.
- Perkin-Elmer Corporation, The: *See—*
  - Steinberg, George N.; and Reinberg, Alan R., 4,368,092, Cl. 156-345.000.
- Peroxid-Chemie GmbH: *See—*
  - Binder, Klaus; Edl, Wolfgang; and Twittenhoff, Hansjoachim, 4,368,311, Cl. 526-317.000.
- Persaud, Ian K.; and Heinemann, Joseph B., to Timeplex, Inc. Multiprocessor system. 4,368,514, Cl. 364-200.000.
- Personal Products Company: *See—*
  - James, Richard P., 4,368,323, Cl. 536-56.000.
- Pesenacker, Manfred: *See—*
  - Hunger, Klaus; and Pesenacker, Manfred, 4,368,155, Cl. 260-157.000.
- Petersen, Clifford W.: *See—*
  - Bednar, John M.; and Petersen, Clifford W., 4,367,794, Cl. 166-65.00R.
- Petersen, Gerald A. Lock and key retainer for excavator tooth. 4,367,602, Cl. 37-142.00A.
- Petersen, Robert A.: *See—*
  - Acker, John N.; and Petersen, Robert A., 4,367,866, Cl. 266-99.000.
- Peterson, Robert R., to Barry Wright Corporation. Coupling. 4,368,050, Cl. 464-83.000.
- Petrichenko, Vladimir F.: *See—*
  - Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.
- Petrolite Corporation: *See—*
  - Bellos, Thomas J., 4,368,137, Cl. 252-344.000.
- Petrovich, Vojislav. Polyhydroxy fatty acids collector-frothers. 4,368,116, Cl. 209-166.000.
- Pfaff Industriemaschinen GmbH: *See—*
  - Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, 4,367,891, Cl. 294-88.000.
- Pfalzer, Lothar: *See—*
  - Bahr, Theodor; and Pfalzer, Lothar, 4,368,101, Cl. 162-4.000.
- Pfander, Werner: *See—*
  - Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.
- Pfeiler, Manfred, to Siemens Aktiengesellschaft. Diagnostic radiology apparatus for producing layer images. 4,368,536, Cl. 378-19.000.
- Pfender, Georg, to MBK Maschinenbau GmbH. Machine for the manufacture of reinforcing bodies for precast concrete parts. 4,367,776, Cl. 140-112.000.
- Pfizer Inc.: *See—*
  - Andrews, Glenn C., 4,368,330, Cl. 549-315.000.
  - Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.
- Phillips Petroleum Company: *See—*
  - Crowley, Ralph P.; and Pope, Max D., 4,368,058, Cl. 55-21.000.
  - Eastman, Alan D., 4,368,346, Cl. 585-658.000.
  - Gragson, James T., 4,368,130, Cl. 252-33.400.
  - Hawley, Gil R.; and McDaniel, Max P., 4,368,301, Cl. 526-100.000.
  - Kolts, John H., 4,368,344, Cl. 585-624.000.
  - Kukes, Semyon, 4,368,141, Cl. 252-439.000.
  - McDaniel, Max P., 4,368,303, Cl. 526-106.000.
  - Mills, King L.; and Cheng, Paul J., 4,368,182, Cl. 423-450.000.
  - Sherk, Fred T.; and Hammer, Harry B., 4,368,321, Cl. 528-388.000.
  - Siefkin, James M.; and Boesiger, Dwight D., 4,368,111, Cl. 208-11.0LE.
- Piccirelli, Robert A.: *See—*
  - Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.
- Pierce, Sammy M.; and Wayman, Morris. Diesel fuel by fermentation of wastes. 4,368,056, Cl. 44-53.000.
- Pilatzki, Bernd. Steering device with dished impact plate for automotive vehicles. 4,368,454, Cl. 340-22.000.
- Pilch, Claus-Dietrich: *See—*
  - Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.
- Pinnow, Douglas A., to Times Fiber Communications, Inc. Plastic clad optical fibers. 4,367,918, Cl. 350-96.300.
- Pinson Energy Corporation: *See—*
  - Drees, Herman M., 4,368,392, Cl. 290-54.000.
- Pioneer Electronic Corporation: *See—*
  - Ichikawa, Toshihito, 4,368,355, Cl. 179-1.0GS.
  - Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,368,494, Cl. 360-96.500.
- Pitney Bowes, Inc.: *See—*
  - Clark, John I., 4,367,676, Cl. 101-91.000.

- Platek, Stanley W.: *See—*
  - Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., 4,367,783, Cl. 164-452.000.
- Platoshkina, Maria G.: *See—*
  - Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.
- Plessey Company Limited, The: *See—*
  - Chopping, Geoffrey, 4,368,531, Cl. 370-100.000.
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- Pollerspock, Kurt, to Siemens Aktiengesellschaft. Pressure-resistant housing having a rectangular lid. 4,367,825, Cl. 220-346.000.
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  - Ahrens, Harald; and Schulz, Dieter, 4,367,952, Cl. 356-400.000.
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  - Ceska, Gary W.; and Burkhart, Gerald W., 4,368,077, Cl. 106-96.000.
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  - Crowley, Ralph P.; and Pope, Max D., 4,368,058, Cl. 55-21.000.
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- Porter, Stephen T., II; and Gaiser, Paul G., to Marriott Corporation. Menu board. 4,367,604, Cl. 40-564.000.
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  - Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
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  - Hinton, Jonathan W.; Powell, Frederick J.; and Matz, Robert W., 4,368,166, Cl. 264-61.000.
- Power Technologies, Inc.: *See—*
  - DeMello, F. Paul; and Ringlee, Robert J., 4,368,418, Cl. 323-201.000.
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  - Frank, Robert G., 4,368,065, Cl. 65-114.000.
  - Leatherman, Ivan R., 4,368,310, Cl. 526-314.000.
  - Valimont, James L.; and Kelly, Joseph D., 4,368,087, Cl. 156-102.000.
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  - Bayer, Christian, 4,367,847, Cl. 239-337.000.
- Preformed Line Marine, Inc.: *See—*
  - Albert, Frank, Jr., 4,367,967, Cl. 403-41.000.
- Pren Elektrofeinmecahnische Wereke Jakob Preh Nachf. GmbH & Co.: *See—*
  - Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, 4,368,441, Cl. 334-15.000.
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  - Winter, Craig R.; Bird, Stanley M., Sr.; and Presba, Keneth E., 4,367,590, Cl. 33-137.00R.
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  - Crawford, Robert J., 4,368,140, Cl. 252-426.000.
  - Hollenbach, Edward J.; and Howard, Norman B., 4,368,213, Cl. 426-590.000.
- Produits Chimiques Ugine Kuhlmann: *See—*
  - Tournut, Claude, 4,368,217, Cl. 427-181.000.
- Prosser, Barbara: *See—*
  - Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,368,265, Cl. 435-75.000.
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- Quilliam, John E. H., to Sigma Electronics Limited; and University of Surrey, The. Graphic display area classification. 4,368,463, Cl. 340-744.000.
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  - Underwood, Arthur A.; and Radtke, Richard L., 4,367,692, Cl. 118-415.000.
- Ramer, Paul C., to Alpine Research, Inc. Ski binding. 4,367,885, Cl. 280-614.000.
- Ramquist, Amos H. Combined drive and brake mechanism for a wheeled vehicle carriage. 4,367,806, Cl. 180-308.000.
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  - Nittel, Fritz; Langen, Hans; and Ranz, Erwin, 4,368,259, Cl. 430-546.000.
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- Rasmussen, Ole-Bendt. Apparatus for film extrusion comprising rotary die parts. 4,368,017, Cl. 425-131.100.
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  - Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, 4,367,630, Cl. 62-63.000.
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- Rausing, Hans, to Tetra Pak International AB. Packing container for pressurized contents. 4,367,842, Cl. 229-55.000.
- Ravagnan, Giancarlo. System for separating and collecting oily materials from water expanses. 4,368,122, Cl. 210-242.300.
- Raver, Clarence L., to Thornhill-Craver Company. Locking device for connectors and closures. 4,367,823, Cl. 220-316.000.
- Ray, Dennis A., to Northwest Investments. Fuel treating apparatus for engines. 4,367,717, Cl. 123-557.000.
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  - Carlson, David J.; and Lehmann, William L., 4,368,540, Cl. 455-180.000.
  - Chamberlain, James W.; and Goldschmidt, Arthur M., 4,368,492, Cl. 360-70.000.
  - Fletcher, James D., 4,368,370, Cl. 200-329.000.
  - Huggett, Paul G.; and Frick, Klaus, 4,368,099, Cl. 156-628.000.
  - Liu, Frank C., 4,368,483, Cl. 358-36.000.
  - Shisler, Robert W., 4,368,445, Cl. 335-210.000.
  - Siegel, Stefan A., 4,368,064, Cl. 65-105.000.
- Redl, Philip J. Fire guarded blowout preventer hose. 4,367,889, Cl. 285-149.000.
- Rees, Herbert; and Fritzsche, Klaus B., to Husky Injection Molding Systems Inc. Transporter for injection-molded parts or inserts therefor. 4,368,018, Cl. 425-138.000.
- Reese, Eckart: *See—*
  - Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, 4,368,231, Cl. 428-220.000.
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  - Deleris, Robert, 4,367,710, Cl. 123-416.000.
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  - Steinberg, George N.; and Reinberg, Alan R., 4,368,092, Cl. 156-345.000.
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  - Breister, Sigmund; and Reiner, Joseph R., 4,368,073, Cl. 75-108.000.
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  - Blair, Matthew J.; and Keifer, George E., Jr., 4,367,865, Cl. 266-44.000.
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  - Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., 4,368,262, Cl. 435-23.000.
  - Shefter, Eli; Smith, Francis X.; and Gardner, Mark J., 4,368,197, Cl. 424-245.000.
- Resuggan, Harold F., to Webley and Scott Limited. Air gun with piston fully cocked in plurality of stages. 4,367,723, Cl. 124-67.000.
- Reuter, Anthony W., to Wavetek Indiana, Inc. Wide frequency range signal generator including plural phase locked loops. 4,368,437, Cl. 331-2.000.
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- Revici, Emanuel. Method for treating alcoholism and eliminating and preventing alcohol intoxication. 4,368,206, Cl. 424-312.000.
- Reynolds, Edward J. Flashlight. 4,368,507, Cl. 362-200.000.
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  - Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, 4,368,329, Cl. 549-13.000.
- Rhodes, William E., III: *See—*
  - Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.
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- Richmond, James M., to Akzona Incorporated. Fabric softening compounds and method. 4,368,127, Cl. 252-8.800.

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  - Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.
- Richter, Hans-Hugo; and Trumper, Fritz-Dieter, to Uhde GmbH. Device for measuring solids in a moving stream. 4,367,653, Cl. 73-861.210.
- Ricoh Company, Ltd.: *See—*
  - Ogihara, Masato; and Tsubaki, Masamitsu, 4,367,693, Cl. 118-674.000.
- Riederauer, Szilard: *See—*
  - Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
- Rilly, Gerard: *See—*
  - Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, 4,368,409, Cl. 315-411.000.
- Rines, Glen A.: *See—*
  - Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., 4,368,430, Cl. 324-244.000.
- Ringlee, Robert J.: *See—*
  - DeMello, F. Paul; and Ringlee, Robert J., 4,368,418, Cl. 323-201.000.
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- Robert, Andre: *See—*
  - Rouge, Jean; and Robert, Andre, 4,367,649, Cl. 73-645.000.
- Robert Bosch GmbH: *See—*
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- Roberts, Gary K.: *See—*
  - Doane, John C.; Deric, J. Mark; and Roberts, Gary K., 4,367,810, Cl. 187-29.00R.
- Rochelt, Gunter. Oscillating member for transforming a rotary motion into a reciprocating motion. 4,367,658, Cl. 74-40.000.
- Rock, Erich; and Blum, Herbert, to Julius Blum Gesellschaft m.b.H. Mounting plate for a furniture hinge. 4,367,566, Cl. 16-236.000.
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- Rockwell International Corporation: *See—*
  - Manasevit, Harold M., 4,368,098, Cl. 156-606.000.
  - Peel, John L., 4,368,085, Cl. 148-33.300.
- Rockwell-Rimoldi, S.p.A.: *See—*
  - Sanvito, Roberto, 4,367,687, Cl. 112-217.100.
- Roder, Albert: *See—*
  - Klose, Sigmar; Roder, Albert; and Schneider, Walter, 4,368,261, Cl. 435-15.000.
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- Rohr, Franz-Josef; and Krapf, Rudolf, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical measuring device for determining the oxygen content in gases. 4,368,431, Cl. 324-464.000.
- Romanelli, Pat: *See—*
  - Kozam, George; and Romanelli, Pat, 4,367,737, Cl. 128-215.000.
- Rosenstock, Guenter: *See—*
  - Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenter, 4,368,477, Cl. 346-140.00R.
- Rosenweig, Ronald E., to Exxon Research and Engineering Co. Composition for use in a magnetically fluidized bed. 4,368,131, Cl. 252-62.550.
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- Roth, Adrian W.; and Wuthrich, Hans-Rudolf, to Sprecher & Schuh AG. Gas-blast switch. 4,368,367, Cl. 200-148.00A.
- Rouge, Jean; and Robert, Andre, to Thomson-CSF. Acoustic polarimeter. 4,367,649, Cl. 73-645.000.
- Roup, Walter G. Dental simulator and method for recording jaw movements. 4,368,041, Cl. 433-69.000.
- Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N. Process for electrolytic recovery of gallium or gallium and vanadium from alkaline liquors resulting from alumina production. 4,368,108, Cl. 204-43.00R.
- Ruble, Harold P.: *See—*
  - Pacitti, William; and Ruble, Harold P., 4,367,895, Cl. 297-85.000.
- Ruf, Wolfgang: *See—*
  - Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,368,489, Cl. 358-208.000.
- Rugg, Barry A.; and Brenner, Walter, to New York University. Apparatus for chemical conversion of materials and particularly the conversion of cellulose waste to glucose. 4,368,079, Cl. 127-1.000.
- Ruhrchemie Aktiengesellschaft: *See—*
  - Frohning, Dieter; and Horn, Gerhard, 4,368,142, Cl. 252-455.00R.
- Russenberger, Victor. Electrical switch with a vertical push-piece. 4,368,368, Cl. 200-153.00J.
- Rybicki, Robert C.: *See—*
  - Ferris, Donald L.; and Rybicki, Robert C., 4,368,006, Cl. 416-140.000.
- Ryckman, George, deceased (by Ryckman, Margaret V., executrix), to Service (Engineers) Limited. Oval dish forming method and machine. 4,368,021, Cl. 425-265.000.
- Ryckman, Margaret V., executrix: *See—*
  - Ryckman, George, deceased, 4,368,021, Cl. 425-265.000.
- Ryobi, Ltd.: *See—*
  - Ishii, Koji; and Goto, Taro, 4,367,679, Cl. 101-410.000.
- Sabol, Linda M. Horse hoof cleaning tool. 4,367,798, Cl. 168-45.000.
- Sabri, Mohamed S., to Northern Telecom Limited. Method and apparatus for mitigation of degradations caused by spatio-temporal filtering of video signals. 4,368,487, Cl. 358-166.000.
- Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Audible indication device for cameras. 4,367,933, Cl. 354-23.00D.
- Saito, Eiichi: *See—*
  - Iwamoto, Seigo; and Saito, Eiichi, 4,368,161, Cl. 260-448.00R.
- Saito, Syuichiro: *See—*
  - Yoshida, Syozo; and Saito, Syuichiro, 4,367,938, Cl. 354-234.000.
- Saito, Tadao: *See—*
  - Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.
- Saito, Takashi, to Nippon Telegraph & Telephone Public Corporation. Driving equipment for multi-gradation level reproduction. 4,368,491, Cl. 358-283.000.
- Saito, Toshihiko: *See—*
  - Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
- Saito, Yasuhisa: *See—*
  - Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.
- Saitou, Sinichi, to Olympus Optical Company Limited. Tape cassette. 4,367,854, Cl. 242-198.000.
- Sakaguchi, Hirofumi; Matsumoto, Ken-ichi; and Masuda, Keiji, to Konishiroku Photo Industry Co., Ltd. Heated roller type fixing apparatus. 4,367,690, Cl. 118-60.000.
- Sakai, Akeo: *See—*
  - Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
- Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Vehicle constant speed driving apparatus. 4,367,804, Cl. 180-176.000.
- Sakamoto, Moriyoshi: *See—*
  - Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
- Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Picture scanning method at high speed. 4,368,488, Cl. 358-208.000.
- Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, to Sony Corporation. Pickup cartridge. 4,368,528, Cl. 369-136.000.
- Sakata, Kazuhiro: *See—*
  - Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
- Sakata, Noboru: *See—*
  - Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, 4,368,354, Cl. 179-1.0GB.
- Sakata, Tenji: *See—*
  - Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
- Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, to Mitsubishi Denki Kabushiki Kaisha. Air conditioner. 4,367,636, Cl. 62-262.000.
- Samuelsen, Peter: *See—*
  - Poulsen, Finn; and Samuelsen, Peter, 4,367,732, Cl. 128-156.000.
- Sander, Ulrich: *See—*
  - Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
- Sanders Associates, Inc.: *See—*
  - Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., 4,368,430, Cl. 324-244.000.
- Sanraku-Ocean Co., Ltd.: *See—*
  - Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
- Santacesaria, Elio: *See—*
  - Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.
- Sanvito, Roberto, to Rockwell-Rimoldi, S.p.A. Worktable for sewing machines. 4,367,687, Cl. 112-217.100.
- Sapora, Robert. Educational apparatus and method for control of deaf individuals in a mixed teaching environment. 4,368,459, Cl. 340-407.000.
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- Saruwatari, Koichi: *See—*
  - Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, 4,368,107, Cl. 204-24.000.
- Sasaki, Isamu: *See—*
  - Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.

- Sasaki, Isao: *See—*
  - Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, 4,368,283, Cl. 524-109.000.
- Sasaki, Osamu: *See—*
  - Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.
- Sasaki, Takao: *See—*
  - Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,368,433, Cl. 328-30.000.
- Satake Engineering Co., Ltd.: *See—*
  - Satake, Toshihiko, 4,367,817, Cl. 209-580.000.
- Satake, Toshihiko, to Satake Engineering Co., Ltd. Color discriminating machine. 4,367,817, Cl. 209-580.000.
- Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, to Chisso Corporation. Process for producing α-olefin polymers. 4,368,304, Cl. 526-114.000.
- Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Adaptive control type echo suppressor. 4,368,360, Cl. 179-170.200.
- Sato, Hiroshi; Ogoshi, Shohei; and Inoue, Goro, to Ajinomoto Company Incorporated. Nutrition composition for pediatrics. 4,368,204, Cl. 424-274.000.
- Sato, Kozi; and Kaneko, Tadahiro, to Toshiba Electric Equipment Corporation. Task lighting apparatus. 4,368,504, Cl. 362-33.000.
- Sato, Susumu: *See—*
  - Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, 4,368,084, Cl. 148-12.00C.
- Sato, Toshio: *See—*
  - Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.
- Sattlegger, Hans: *See—*
  - Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.
- Saunders, William T., to National Steel Corporation. Tab opener end closure assembly method. 4,367,996, Cl. 413-14.000.
- Sawamua, Mitsuharu; and Ito, Susumu, to Canon Kabushiki Kaisha. Low polarization beam splitter. 4,367,921, Cl. 350-164.000.
- Schaaf, Cecil; and Schaaf, Craig. Device for preventing beach erosion. 4,367,978, Cl. 405-30.000.
- Schaaf, Cecil F.; and Schaaf, Craig R. Shore erosion prevention modules. 4,367,977, Cl. 405-25.000.
- Schaaf, Craig: *See—*
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- Schaaf, Craig R.: *See—*
  - Schaaf, Cecil F.; and Schaaf, Craig R., 4,367,977, Cl. 405-25.000.
- Schaefer, Hans: *See—*
  - Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.
- Schaufler, Hans-Peter: *See—*
  - Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, 4,368,320, Cl. 528-355.000.
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  - Pfeiler, Manfred, 4,368,536, Cl. 378-19.000.
  - Pollerspock, Kurt, 4,367,825, Cl. 220-346.000.
  - Preuss, Bernhard; and Koziolek, Werner, 4,368,444, Cl. 335-166.000.
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  - Spirk, Franz, 4,367,890, Cl. 290-52.000.
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- Singh, Vir B.: *See—*
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  - Lapart, Andre, 4,368,004, Cl. 415-39.000.
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  - Speitel, Francois X.; and Speitel, Robert F. M., 4,367,965, Cl. 401-60.000.
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  - Roth, Adrian W.; and Wuthrich, Hans-Rudolf, 4,368,367, Cl. 200-148.00A.
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  - Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,368,233, Cl. 428-245.000.
- Standard Products Company, The: *See—*
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  - Nussbaum, Joel H., 4,368,225, Cl. 428-31.000.
- Stanley, Bedford F. Regenerative counter top water conditioner. 4,368,123, Cl. 210-269.000.
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- Staub, Anthony F.; Staub, Norman T.; and Erwin, John R., to Starwin Industries, Inc. Tennis racquet and method of making same. 4,367,874, Cl. 273-73.00R.
- Staub, Norman T.: *See—*
  - Staub, Anthony F.; Staub, Norman T.; and Erwin, John R., 4,367,874, Cl. 273-73.00R.
- Staubs, David W.: *See—*
  - Winter, William E.; Tunison, Mafer E.; and Staubs, David W., 4,368,113, Cl. 208-89.000.
- Steag Aktiengesellschaft: *See—*
  - Adrian, Fritz, 4,367,686, Cl. 110-347.000.
- Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, to Bacs Megyei Allami Epitoipari Vallalat; and Csepel Muvek Tervezo es Kutato Intezete. Process for coating fibrous glass with amorphous nickel phosphorous glass metal. 4,368,221, Cl. 427-305.000.
- Steinberg, George N.; and Reinberg, Alan R., to Perkin-Elmer Corporation, The. Apparatus for the etching for semiconductor devices. 4,368,092, Cl. 156-345.000.
- Stemme, Otto; and Wagensonner, Eduard, to Agfa-Gevaert AG. Device for color scanning with CCD array. 4,368,484, Cl. 358-41.000.
- Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, to Agfa-Gevaert AG. Galvanometer-type tilting-mirror scanning system and circuit therefor. 4,368,489, Cl. 358-208.000.
- Stephenson, Ronald G. Feeder for nailing machine. 4,367,835, Cl. 227-109.000.
- Stewart, John K.; Shupe, Charles A.; and von Beckmann, Helmuth, to Canron Corp. Dynamic loading correcting device. 4,367,681, Cl. 104-7.00B.
- Stienstra, Jan B., to OCE-Nederland B.V. System for detecting sheet-like objects. 4,368,438, Cl. 331-14.000.
- Stiff, Alonzo B.; and Harris, Gilbert L., to Jordan, Russell Eugene. Automatic steering mechanism for use on apparatus forming beds of uniform widths and rows of uniform spacing. 4,367,802, Cl. 180-131.000.
- Stifter, Francis J., to Electronic Specialists, Inc. Electrical equipment protection apparatus. 4,368,499, Cl. 361-90.000.
- Stimtech, Inc.: *See—*
  - Bailey, William D., 4,367,755, Cl. 128-798.000.
- Stover, William A.: *See—*
  - Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,368,114, Cl. 208-120.000.
- Strabag Bau-AG: *See—*
  - Weiser, Martin, 4,367,568, Cl. 24-122.600.
- Strang, Charles D., to Outboard Marine Corporation. High pivot transom bracket assembly for mounting outboard motor. 4,367,860, Cl. 248-641.000.
- Strathman, Ronald L. Battery and solar powered refrigerating system. 4,367,633, Cl. 62-236.000.
- Strauss, Georg: *See—*
  - Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
- Streich, Steven G., to Halliburton Company. Leg closure. 4,367,983, Cl. 405-227.000.
- Strippers Paint Removal Services Ltd.: *See—*
  - Poels, Philip, 4,368,082, Cl. 134-4.000.
- Stroman, David W.: *See—*
  - Argoudelis, Alexander D.; and Stroman, David W., 4,368,193, Cl. 424-180.000.
- Stromgren, Lawrence T. Ankle support. 4,367,733, Cl. 128-166.000.
- Strommer, Deon L.: *See—*
  - Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., 4,368,211, Cl. 426-564.000.
- Strub, Robert D. Stairs and method of making the same. 4,367,613, Cl. 52-188.000.
- Stufflebeam, Donnie L.: *See—*
  - Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., 4,367,651, Cl. 73-706.000.
- Subera, Elmer J.: *See—*
  - Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., 4,367,632, Cl. 62-82.000.
- Sudchemie Aktiengesellschaft: *See—*
  - Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
- Sudo, Kyuji: *See—*
  - Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.
- Sudreau, Bernard: *See—*
  - de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.
- Sugimoto, Koichi: *See—*
  - Hirabayashi, Hisaaki; and Sugimoto, Koichi, 4,367,591, Cl. 33-169.00C.
- Suginaka, Akinori: *See—*
  - Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.
- Sugitani, Junichi: *See—*
  - Takahashi, Makoto; and Sugitani, Junichi, 4,368,172, Cl. 420-584.000.
- Sugiura, Noboru, to Hitachi, Ltd. Ignition timing control system for internal combustion engine. 4,367,712, Cl. 123-427.000.

Sugiya, Teruo: *See—*
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
Sugiyama, Tetuo: *See—*
Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, 4,367,636, Cl. 62-262.000.
Sulzberg, Theodore: *See—*
Laddha, Sudhir L.; and Sulzberg, Theodore, 4,368,316, Cl. 528-295.500.
Sulzer Brothers Limited: *See—*
Wall, Erich, 4,367,772, Cl. 139-435.000.
Sumitomo Chemical Company, Limited: *See—*
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,368,198, Cl. 424-246.000.
Sumitomo Light Metal Industries Ltd.: *See—*
Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.
Summagraphics Corporation: *See—*
Davis, Robert, 4,368,352, Cl. 178-19.000.
Zimmer, Scott E., 4,368,351, Cl. 178-19.000.
Summerlin, Frederick A.: *See—*
Francis, Albert C.; and Summerlin, Frederick A., 4,367,994, Cl. 411-43.000.
Sun Chemical Corporation: *See—*
Laddha, Sudhir L.; and Sulzberg, Theodore, 4,368,316, Cl. 528-295.500.
Sunbeam Corporation: *See—*
Swanson, Charles E., 4,368,379, Cl. 219-494.000.
Sunbeam Equipment Corporation: *See—*
Acker, John N.; and Petersen, Robert A., 4,367,866, Cl. 266-99.000.
Sunder-Plassmann, Paul: *See—*
Sielfeld, Gilbert; and Sunder-Plassmann, Paul, 4,368,307, Cl. 526-202.000.
Sunkel, Manfred: *See—*
Becker, Herbert; Schelhorn, Gerhard; and Sunkel, Manfred. 4,367.660, Cl. 74-625.000.
Sutter, David L., to Hussey Manufacturing Company. Composite supporting structure. 4,367,612, Cl. 52-9.000.
Suttles, James M., to Mead Corporation, The. Forward feed merchandising device for soft drink bottles. 4,367,818, Cl. 211-49.00D.
Suzuki, Hiroshige; and Hase, Teizo, to Suzuki, Hiroshige. Method of producing β-silicon carbide. 4,368,181, Cl. 423-345.000.
Suzuki, Hitoshi: *See—*
Togawa, Fumio; Shimazawa, Yoichi; and Suzuki, Hitoshi, 4,368,474, Cl. 346-75.000.
Suzuki, Koji, to Canon Kabushiki Kaisha. Surface potential electrometer and image forming apparatus using the same. 4,367,948, Cl. 355-14.00D.
Suzuki, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,367,707, Cl. 123-306.000.
Suzuki, Zituo: *See—*
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.
Swanson, Charles E., to Sunbeam Corporation. Toaster having toasting control for convenience foods. 4,368,379, Cl. 219-494.000.
Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., to University of Kentucky Research Foundation, The. Crop harvester including a quickly adjustable semi-floating, self-steering cutter head. 4,367,621, Cl. 56-10.200.
Syme, Duncan C., to Vermont Castings, Inc. Wood and coal burning heating method and apparatus. 4,367,725, Cl. 126-77.000.
Syntex (U.S.A.) Inc.: *See—*
Vickery, Brian H.; Anik, Shabbir; and Jones, Richard E., 4,368,186, Cl. 424-78.000.
Szabo, Andras I.: *See—*
Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., 4,368,520. Cl. 364-494.000.
Szabo, Imre: *See—*
Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.
Szabo nee Mogyorosi, Katalin: *See—*
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Szen, Tamas: *See—*
Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.
Szentgyorgyi, Geza: *See—*
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Szepvolgyi, Janos: *See—*
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for preparing alkylthiobenzimidazoles. 4,368,328, Cl. 548-306.000.
Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, to Energiagazdalkodasi Intezet. Method and apparatus for drying products, especially corn or piece products. 4,367,595, Cl. 34-27.000.
Tachibana, Kikuji: *See—*
Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.
Tachiuchi, Tsuguji: *See—*
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, to Toray Industries, Incorporated. Process for the isomerization of a halogenated toluene. 4,368,339, Cl. 570-202.000.
Tahara, Toshiro: *See—*
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
Taiyo Musen Co. Ltd.: *See—*
Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, 4,368,470, Cl. 343-113.00R.
Takada, Juichiro. Automatic passive safety seat belt system for a vehicle. 4,367,887, Cl. 280-803.000.
Takahara, Michio: *See—*
Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, 4,367,574, Cl. 29-25.190.
Takahashi, Eiki: *See—*
Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, 4,368,448, Cl. 336-61.000.
Takahashi, Hiroshi: *See—*
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
Takahashi, Jiro: *See—*
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,368,260, Cl. 430-562.000.
Takahashi, Keigo: *See—*
Hamanaka, Kunio; and Takahashi, Keigo, 4,368,495, Cl. 360-97.000.
Takahashi, Kenji; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,368,390, Cl. 250-363.00R.
Takahashi, Makoto; and Sugitani, Junichi, to Kubota, Ltd. Heat resistant cast alloy. 4,368,172, Cl. 420-584.000.
Takahashi, Tsunematsu: *See—*
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
Takamizawa, Minoru: *See—*
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.
Takatori, Yasushi: *See—*
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.
Takeda Chemical Industries, Ltd.: *See—*
Fujino, Masahiko; and Nishimura, Osamu, 4,368,150, Cl. 260-112.50R.
Iwamoto, Seigo; and Saito, Eiichi, 4,368,161, Cl. 260-448.00R.
Takeda, Kunihiko: *See—*
Miyake, Tetsuya; Takeda, Kunihiko; and Onitsuka, Hatsuki, 4,368,175, Cl. 423-7.000.
Takeda, Nobuhiro: *See—*
Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.
Takeda, Renzo: *See—*
Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, 4,368,171, Cl. 376-217.000.
Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron gun for a cathode ray tube. 4,368,405, Cl. 315-16.000.
Takeuchi, Masayuki: *See—*
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.
Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Camera. 4,368,490, Cl. 358-217.000.
Tamamura, Ryo: *See—*
Kobayashi, Takayuki; and Tamamura, Ryo, 4,368,223, Cl. 427-443.100.
Tamaru, Hideshi: *See—*
Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, 4,368,528, Cl. 369-136.000.
Tanaka, Eiji: *See—*
Tanaka, Toru; and Tanaka, Eiji, 4,368,305, Cl. 526-116.000.
Tanaka, Hitoshi, to Fuji Photo Optical Co., Ltd. Water proof cover for endoscope. 4,367,730, Cl. 128-6.000.
Tanaka, Toru; and Tanaka, Eiji, to Mitsubishi Chemical Industries, Ltd. Process for producing olefin polymers. 4,368,305, Cl. 526-116.000.
Taniguchi, Nobuyuki: *See—*
Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, 4,367,932, Cl. 354-23.00D.
Taniguchi, Yoshiharu; Akiyama, Masanori; and Kinoshita, Osamu. Piezoelectric ultrasonic transducer mounted in a housing. 4,368,400, Cl. 310-322.000.

Tanikawa, Kunihiro: *See—*
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
Tarpley, William B., Jr., to Energy & Minerals Research Co. Apparatus for continuous discharge of material at localized damage point. 4,367,799, Cl. 169-46.000.
Tatabanyai Szenbanyak: *See—*
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Tate, David L.: *See—*
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,368,005, Cl. 415-207.000.
Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride composite material. 4,368,284, Cl. 524-230.000.
Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, to Maruzen Oil Co., Ltd. Process for converting glycol dialkyl ether. 4,368,337, Cl. 568-613.000.
Taylor, David L., to Harris Corporation. Differential linear to digital translator. 4,368,395, Cl. 307-455.000.
Taylor, Thomas J.: *See—*
Elliott, William A.; and Taylor, Thomas J., 4,367,585, Cl. 29-857.000.
Tazaki, Shigemitsu, to Canon Kabushiki Kaisha. Recording apparatus. 4,368,413, Cl. 318-687.000.
Techno-Chemie Kessler & Co. GmbH: *See—*
Eichelberger, Leo; and Endres, Georg, 4,368,348, Cl. 174-47.000.
Teichmann, Theodor: *See—*
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.
Teijin Limited: *See—*
Masuho, Yasuhiko; and Hara, Takeshi, 4,368,149, Cl. 260-112.00B.
Teledyne Industries, Inc.: *See—*
Crawley, Barry J., 4,368,462, Cl. 340-723.000.
Siddall, Mark B., 4,368,072, Cl. 75-84.400.
Teleplastics Industries Company: *See—*
Speitel, Francois X.; and Speitel, Robert F. M., 4,367,965, Cl. 401-60.000.
Tell-Kassenfabrik und-Tresorbau, Brack & Peter, Inh. Jucker & Co.: *See—*
Jucker, Hans, 4,367,684, Cl. 109-70.000.
Terazono, Narihiro; and Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Cage position detecting apparatus. 4,368,518, Cl. 364-433.000.
Terpstra, Daniel A.; and Brundage, Richard B., to Emerson Electric Co. Sawdust collection system. 4,367,665, Cl. 83-100.000.
Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,367,828, Cl. 222-528.000.
Tetra Pak International AB: *See—*
Rausing, Hans, 4,367,842, Cl. 229-55.000.
Texas Gas Transmission Corporation: *See—*
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.
Texas Instruments Incorporated: *See—*
Guterman, Daniel C., 4,367,580, Cl. 29-571.000.
Thomas, Kim; and Van Zeggeren, Wilhelm A. Coin dispenser made with adjustable height structure. 4,367,760, Cl. 133-4.00A.
Thompson, Daniel T. Compact dough divider and forming machine. 4,368,019, Cl. 425-141.000.
Thompson, Douglas, to Boeing Company, The. Gauge apparatus and method for measuring the depth of a circumferential groove on the inside wall of a tubular part. 4,367,592, Cl. 33-172.00E.
Thompson, John A.; Shaw, David H.; and Gudelis, David A., to Exxon Research and Engineering Co. Solvent recovery from foots oil using modified regenerated cellulose membranes. 4,368,112, Cl. 208-31.000.
Thomson-Brandt: *See—*
Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, 4,368,409, Cl. 315-411.000.
Thomson-CSF: *See—*
Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, 4,368,386, Cl. 250-213.00R.
Rouge, Jean; and Robert, Andre, 4,367,649, Cl. 73-645.000.
Thornhill-Craver Company: *See—*
Raver, Clarence L., 4,367,823, Cl. 220-316.000.
Thorscov, Jan C.: *See—*
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.
TII Industries Inc.: *See—*
Ahuja, Omprakash G., 4,368,363, Cl. 179-175.30R.
Timeplex, Inc.: *See—*
Persaud, Ian K.; and Heinemann, Joseph B., 4,368,514, Cl. 364-200.000.
Times Fiber Communications, Inc.: *See—*
Pinnow, Douglas A., 4,367,918, Cl. 350-96.300.
Tintori, Silvano: *See—*
Palara, Sergio; and Tintori, Silvano, 4,368,436, Cl. 330-207.00P.
Tippmer, Kurt: *See—*
Weinzierl, Klaus; and Tippmer, Kurt, 4,368,103, Cl. 202-99.000.
Tisne-Versailles, Jacky A.: *See—*
Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.
Toagoesi Chemical Industry Co., Ltd.: *See—*
Endo, Takeshi; Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,368,314, Cl. 528-89.000.
Tochizawa, Ikuo: *See—*
Araki, Kazuo; and Tochizawa, Ikuo, 4,368,446, Cl. 335-258.000.
Togawa, Fumio; Shimazawa, Yoichi; and Suzuki, Hitoshi, to Sharp Kabushiki Kaisha. Ink droplet formation control in an ink jet system printer. 4,368,474. Cl. 346-75.000.
Tokai Rika Co. Ltd.: *See—*
Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.
Tokico Ltd.: *See—*
Ishida, Kunio, 4,367,968, Cl. 403-122.000.
Tokunaga, Kinjiro, to SI Handling Systems, Inc. Driveless vehicle with speed control. 4,367,683, Cl. 104-166.000.
Tokyo Gas Co. Ltd.: *See—*
Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, 4,368,091, Cl. 156-287.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,367,573, Cl. 29-25.130.
Furuyama, Tohru, 4,368,529, Cl. 365-205.000.
Hamanaka, Kunio; and Takahashi, Keigo, 4,368,495, Cl. 360-97.000.
Inomata, Koichiro; and Hasegawa, Michio, 4,368,447, Cl. 336-20.000.
Inoue, Hiroshi; Komeya, Katsutoshi; and Tsuge, Akihiko, 4,368,180, Cl. 423-344.000.
Kawate, Keiichi, 4,368,523, Cl. 365-63.000.
Kojima, Tadashi, 4,368,533, Cl. 371-37.000.
Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, 4,368,493, Cl. 360-93.000.
Ohashi, Hiromichi; and Shirasaka, Yoshihiro, 4,368,481, Cl. 357-30.000.
Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, 4,368,405, Cl. 315-16.000.
Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, to Uniwersytet Mikolaja Kopernika. Method of sealing salina excavations. 4,367,985, Cl. 405-264.000.
Tomcufcik, Andrew S.: *See—*
Meyer, Walter E.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., 4,368,335, Cl. 564-245.000.
Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Automotive vehicle headlight lens cleaning device. 4,368,505, Cl. 362-80.000.
Tomlinson, David, to Tweedy of Burnley Limited. Dough mixing for farinaceous foodstuff production. 4,368,209, Cl. 426-504.000.
Toogood, Graham J., to Dowty Hydraulic Units Limited. Gear motor with fluid pressure groove and recess to facilitate starting. 4,368,013, Cl. 418-74.000.
Toray Industries, Incorporated: *See—*
Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, 4,368,339, Cl. 570-202.000.
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Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, to Ajinomoto Company Incorporated. Method for producing L-glutamic acid by fermentation. 4,368,266, Cl. 435-110.000.
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Toyo Kagaku Kabushiki Kaisha: *See—*
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Toyoda Koki Kabushiki Kaisha: *See—*
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Hayashi, Kunihisa; and Moriyama, Masakazu, 4,368,427, Cl. 324-161.000.
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Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, 4,368,366, Cl. 200-83.00Q.

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Trumper, Thomas, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation with electronic control. 4,367,900, Cl. 299-1.000.
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Schrader, Gustav E., 4,367,782, Cl. 164-137.000.
Tsubaki, Masamitsu: *See—*
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Tung, Chi F.; and Fellows, Benjamin T., to Minnesota Mining and Manufacturing Company. Durable glass elements. 4,367,919, Cl. 350-105.000.
Tung, Chi F.; and Coderre, James C., to Minnesota Mining and Manufacturing Company. Retroflective sheeting. 4,367,920, Cl. 350-105.000.
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Ueda, Ikuo; and Kobayshi, Masakazu, to Fujisawa Pharmaceutical Co., Ltd. Processes for preparing 3-cephem compounds. 4,368,325, Cl. 544-16.000.
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, to Canon Kabushiki Kaisha. Ink jet recording head. 4,368,476, Cl. 346-140.00R.
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, to Fuji Photo Film Co., Ltd. Apparatus for silver recovery during photographic processing. 4,367,941, Cl. 354-324.000.
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Underwood, Arthur A.; and Radtke, Richard L., to United States Gypsum Company. Joint compound dispenser. 4,367,692, Cl. 118-415.000.
United Kingdom Atomic Energy Authority: *See—*
Causer, Roy, 4,367,998, Cl. 414-4.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Blyth, David A., 4,368,388, Cl. 250-283.000.
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Upjohn Company, The: *See—*
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Valimont, James L.; and Kelly, Joseph D., to PPG Industries, Inc. Arrangement of vacuum cups to assemble one or more bent glass sheets with a sheet of flexible interlayer material. 4,368,087, Cl. 156-102.000.
Vallieres, Theodore E., Jr.; and Dinicola, Nicholas F. Interleaved flexible weather door and method of manufacture. 4,367,781, Cl. 160-332.000.

Valyocsik, Ernest W., to Mobil Oil Corporation. Apparatus for a continuous down-flow zeolite production. 4,368,174, Cl. 422-208.000.
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Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E. Non-silver light-sensitive composition. 4,368,254, Cl. 430-333.000.
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Van Wagenen, Richard: *See—*
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Varner, Jerry R., to Eastman Kodak Company. Light valve imaging apparatus having improved optical configuration. 4,367,946, Cl. 355-71.000.
Vasiliev, Jury N.; and Gladkov, Evgeny P. Dam spillway. 4,368,121, Cl. 210-170.000.
Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Coating compositions of polymers of vinyl oxazoline drying oil esters made by an improved process. 4,368,289, Cl. 524-598.000.
Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Polymers of vinyl oxazoline drying oil esters made by an improved process. 4,368,309, Cl. 526-258.000.
Vaughn, Howard A., Jr., to General Electric Co. Silicone resin coating composition. 4,368,235, Cl. 428-412.000.
Venuso, Nicholas A., to Metropolitan Sanitary District of Greater Chicago, The. Method and apparatus for monitoring wastewater. 4,367,652, Cl. 73-861.000.
Vereinigte Elektrizitats-Werke Westfalen AG: *See—*
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Vickery, Brian H.; Anik, Shabbir; and Jones, Richard E., to Syntex (U.S.A.) Inc. Methods and compositions for intravaginal contraception. 4,368,186, Cl. 424-78.000.
Victor Company of Japan: *See—*
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Villemain, Herbert F., to United States of America, Air Force. Method of fabricating an aircraft self-sealing fuel tank. 4,368,086, Cl. 156-93.000.
Vitale, Nicholas G., to Mechanical Technology Incorporated. Stirling engine with parallel flow heat exchangers. 4,367,625, Cl. 60-517.000.
Vivitar Corporation: *See—*
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Vlasic, John G.: *See—*
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VLSI Technology Research Association: *See—*
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Volf, Leonard A.: *See—*
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von der Heide, Hans. Apparatus for the excision and removal of blocks of silage. 4,367,855, Cl. 241-283.000.
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W. R. Grace & Co.: *See—*
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Wakamiya, Yoshinori, to Mitsubishi Denki Kabushiki Kaisha. Heating control method for continuously heating furnace. 4,368,034, Cl. 432-11.000.
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Walcher, Wilhelm, to Karl Kassbohrer Fahrzeugwerke GmbH. Closure member for vehicles. 4,367,780, Cl. 160-213.000.
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Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Intermediates to produce imidazodiazepines. 4,368,157, Cl. 260-239.0BD.
Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Intermediates to produce imidazodiazepines. 4,368,158, Cl. 260-239.0BD.
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Walters, Armon J. Dispensing system for porous floor containers. 4,367,987, Cl. 406-15.000.
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Walton, William B., Jr. Antenna ice removal and prevention apparatus. 4,368,471, Cl. 343-704.000.
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Ward, Ralph C., to United States of America, Energy. Sludge sampler. 4,367,657, Cl. 73-864.610.
Warner-Lambert Company: *See—*
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Warwick, Charles H., to Tyre Mfg. Co., Inc. Fire endurance door. 4,367,614, Cl. 52-455.000.
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Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, to Sumitomo Chemical Company, Limited. Epoxy resin compositions. 4,368,299, Cl. 525-481.000.
Watanabe, Kazuo; and Makabe, Hahiro, to Janome Sewing Machine Co., Ltd. Pulse motor driving device of sewing machines. 4,368,414, Cl. 318-696.000.
Waterhouse, John S.: *See—*
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Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, to Pfaff Industriemaschinen GmbH. Industrial robot with a gripping mechanism. 4,367,891, Cl. 294-88.000.
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Wedler, Herbert, to Mannesmann Aktiengesellschaft. Ship S drive system. 4,368,048, Cl. 440-75.000.

- Weeks, Paul D.: *See—*
  - Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.
- Weinzierl, Klaus; and Tippmer, Kurt, to Vereinigte Elektrizitats-Werke Westfalen AG; and Carl Still GmbH & Co. KG, Firma. Coal carbonization and/or gasification plant. 4,368,103, Cl. 202-99.000.
- Weiser, Martin, to Strabag Bau-AG. Anchorage devices for a tension wire bundle of tension wires. 4,367,568, Cl. 24-122.600.
- Weissman, Bernard, to Ipco Corporation. Dental impression tray for forming a dental prosthesis in situ. 4,368,040, Cl. 433-36.000.
- Welage, Norbert A., to Minnesota Mining and Manufacturing Company. Conformable electrically conductive compositions. 4,367,745, Cl. 128-303.130.
- Welty, Joseph M., to Branson International Plasma Corporation. Power supply and method utilizing applied current for increased hysteresis swing in transformer core. 4,368,419, Cl. 323-239.000.
- Weresch, Thomas. Apparatus for cutting to size and bending leads of electrical components. 4,367,775, Cl. 140-105.000.
- West Yorkshire Metropolitan County Council: *See—*
  - Beanland, Neill S., 4,367,974, Cl. 404-5.000.
- Western Electric Company, Inc.: *See—*
  - Elliott, William A.; and Taylor, Thomas J., 4,367,585, Cl. 29-857.000.
- Westinghouse Electric Corp.: *See—*
  - Conroy, Ernest F., Jr.; and Elms, Robert T., 4,368,500, Cl. 361-94.000.
  - Hwang, Eddie Y.; Szabo, Andràs I.; and Ottobre, Louis G., 4,368,520, Cl. 364-494.000.
  - Lisle, Hampton H.; and DeMartino, Kevin, 4,368,468, Cl. 343-16.00M.
  - Logan, Dale R.; and Buckley, John J., 4,367,913, Cl. 350-500.000.
  - Miller, Robert C., 4,368,424, Cl. 324-142.000.
  - Soroka, Daniel P., 4,367,992, Cl. 409-264.000.
  - Ying, Sui-Chun; and Litz, Donald C., 4,368,399, Cl. 310-270.000.
- Westley, John: *See—*
  - Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,368,265, Cl. 435-75.000.
- Whidden, Glenn H. Transmitter detector. 4,368,539, Cl. 455-166.000.
- Whitaker, Dewey R.: *See—*
  - Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., 4,368,281, Cl. 523-458.000.
- Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., to Coal Industry (Patents) Limited. Holder assemblies for sensitized cutter tools on mining machines. 4,367,899, Cl. 299-1.000.
- Whitworth, Loraine T. Pattern drafting tool. 4,367,593, Cl. 33-174.00N.
- Whybrew, Walter D.: *See—*
  - Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., 4,368,262, Cl. 435-23.000.
- Wieland, Dieter; and Merz, Walter, to Andreas Stihl. Mechanism to control power chain saw clutch operation. 4,367,813, Cl. 192-17.00R.
- Wiesert, Loser & Sohn GmbH & Co.: *See—*
  - Zoller, Roland, 4,368,016, Cl. 425-94.000.
- Wiget, Fridolin, to Ebauches, S.A. Pseudo-analog display device. 4,367,959, Cl. 368-240.000.
- Wilkes, Kenneth R. Tear strip for gas sterilizable package and package. 4,367,816, Cl. 206-439.000.
- Wilkus, Joseph R.: *See—*
  - Bitsky, Thomas C.; and Wilkus, Joseph R., 4,368,052, Cl. 493-96.000.
- Willett, Paul E. Baker's ovens. 4,367,724, Cl. 126-20.000.
- Williams, Dwight E., to Outboard Marine Corporation. Vehicle steering system. 4,367,881, Cl. 280-96.000.
- Williams, Joel L.: *See—*
  - Dudley, Betty J., deceased; and Williams, Joel L., 4,367,749, Cl. 128-637.000.
- Williams, Raymond S.; and Fisher, Paul C., to Fisher, Paul C. Erasable ink for ball point pens comprising trifluoroethylene and vinyl acetate polymers. 4,367,966, Cl. 401-190.000.
- Wilson, Gerald E., to Carpools Environmental Protection Services Limited. Apparatus for continuous treatment of mixtures. 4,368,119, Cl. 210-137.000.
- Wilson, Norman H.: *See—*
  - Jones, Robert L.; and Wilson, Norman H., 4,368,332, Cl. 560-120.000.
- Winant, Daniel. Portable fabric shelter. 4,367,761, Cl. 135-87.000.
- Windings, Inc.: *See—*
  - Kotzur, Frank W., 4,367,853, Cl. 242-163.000.
- Windstey, Friedrich. Clockwork of an electric quartz clock. 4,367,956, Cl. 368-88.000.
- Winter, Craig R.; Bird, Stanley M., Sr.; and Presba, Keneth E. Calibrated tape for use in constructing wall with vertical studs. 4,367,590, Cl. 33-137.00R.
- Winter, William E.; Tunison, Mafer E.; and Staubs, David W., to Exxon Research and Engineering Co. Hydrocarbon hydrocracking process. 4,368,113, Cl. 208-89.000.
- Winter, William L. Inspection hole cover for coke oven. 4,368,104, Cl. 202-248.000.
- Wittren, Richard A., to Deere & Company. Steering system. 4,367,803, Cl. 180-153.000.
- Witzel, Lothar. Pneumatic dilatator for introdution into the esophagus. 4,367,747, Cl. 128-344.000.
- Wolf, Reinhold: *See—*
  - Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, 4,368,441, Cl. 334-15.000.
- Womako Maschinenkonstruktionen GmbH: *See—*
  - Fabrig, Paul, 4,367,815, Cl. 198-374.000.
- Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., to Hazelett Strip-Casting Corporation. Method and apparatus for continuous casting of metal under controlled load conditions. 4,367,783, Cl. 164-452.000.
- Woodling, George V. Cylindrical tooth set having a concave socket and a cylindrical tooth engaging each other on the transverse line of eccentricity. 4,368,011, Cl. 418-61.00B.
- Woodling, George V. Fluid pressure assembly having a valve disk member with identical flat sides. 4,368,012, Cl. 418-61.00B.
- Worbois, Robert J., to American Standard Inc. System for automatically delaying application of a snow brake for a railway vehicle. 4,367,903, Cl. 303-13.000.
- Wordex: *See—*
  - Daughters, James R., 4,367,963, Cl. 400-208.000.
- Wroblewski, Theodore, to Frequency Technology, Inc. Inductor-capacitor impedance devices and method of making the same. 4,368,407, Cl. 315-291.000.
- Wunsch, Erich, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Peptides. 4,368,192, Cl. 424-177.000.
- Wuthrich, Hans-Rudolf: *See—*
  - Roth, Adrian W.; and Wuthrich, Hans-Rudolf, 4,368,367, Cl. 200-148.00A.
- Wyrsch, Dieter: *See—*
  - Mollet, Herbert; and Wyrsch, Dieter, 4,368,256, Cl. 430-359.000.
- Xerox Corporation: *See—*
  - Sprague, Robert A.; and Turner, William D., 4,367,925, Cl. 350-355.000.
- Yakamizawa, Yuji: *See—*
  - Fujiyama, Susumu; Matsumoto, Shunichi; and Yakamizawa, Yuji, 4,368,336, Cl. 568-428.000.
- Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, to Asahi Glass Company, Ltd. Fluorine-containing elastomer having excellent low temperature resistance and oil resistance. 4,368,308, Cl. 526-247.000.
- Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, to Sumitomo Chemical Company Limited. Cephalosporins. 4,368,198, Cl. 424-246.000.
- Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Process for producing magnetic recording device. 4,368,237, Cl. 428-413.000.
- Yamaguchi, Hisashi: *See—*
  - Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
- Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, to Fujitsu Limited. Mercury switch. 4,368,442, Cl. 335-57.000.
- Yamamoto, Kenji: *See—*
  - Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.
- Yamamoto, Shinichi: *See—*
  - Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.
- Yamamoto, Tetsuro: *See—*
  - Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, 4,368,284, Cl. 524-230.000.
- Yamanouchi, Hideki: *See—*
  - Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.
- Yamashita, Izumi; and Fukuda, Kunio, to Asahi-Dow Limited. Polyphenylene ether compositions. 4,368,293, Cl. 525-68.000.
- Yamashita, Mitsuo: *See—*
  - Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.
- Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, to Kuraray Company, Limited. Adhesive cementing agents for the hard tissues of the human body. 4,368,043, Cl. 433-217.000.
- Yamauchi, Masamichi: *See—*
  - Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, 4,367,958, Cl. 368-188.000.
- Yamazaki, Etsuo: *See—*
  - Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,368,433, Cl. 328-30.000.
- Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, to Chiyoda Chemical Engineering & Construction Co., Ltd. Gas sparging method. 4,368,060, Cl. 55-73.000.
- Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Isocyanurate-vinyl alcohol-vinyl ester chromatographic packing. 4,368,275, Cl. 521-52.000.
- Yardney Electric Corporation: *See—*
  - Berchielli, Aldo S., 4,368,167, Cl. 264-104.000.
- Yasuda, Hyo: *See—*
  - Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, 4,368,470, Cl. 343-113.00R.
- Yasuhara, Seishi, to Nissan Motor Company, Limited. Fuel injection timing control system. 4,367,716, Cl. 123-478.000.
- Yasui, Nobushige: *See—*
  - Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

- Yasuno, Hiroshi: *See—*
  - Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, 4,368,300, Cl. 525-531.000.
- Yatsenko, Sergei P.: *See—*
  - Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
- Yeda Research and Development Co. Ltd.: *See—*
  - Manassen, Joost; Cahen, David; and Hodes, Gary, 4,368,216, Cl. 427-74.000.
- Ying, Sui-Chun; and Litz, Donald C., to Westinghouse Electric Corp. Rotor end turn winding and support structure. 4,368,399, Cl. 310-270.000.
- Ymker, Lucas; and Hoogendijk, Christiaan J., to Altometer, Productiebedrijf Van Rheometron A.G. Device for measuring the flow velocity of fluids. 4,367,654, Cl. 73-861.290.
- Yokomichi, Isao: *See—*
  - Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.
- Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, to Hitachi, Ltd. Elevator control system. 4,367,811, Cl. 187-29.00R.
- York, George L.: *See—*
  - Fitzgerald, John B.; and York, George L., 4,367,764, Cl. 137-115.000.
- Yoshida, Kimiyoshi: *See—*
  - Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, 4,368,528, Cl. 369-136.000.
- Yoshida, Michihiro: *See—*
  - Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
- Yoshida, Syozo; and Saito, Syuichiro, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,367,938, Cl. 354-234.000.
- Yoshida, Takao: *See—*
  - Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.
- Yoshida, Tomio: *See—*
  - Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.
- Yoshida, Toshio, to Kawasaki Jukogyo Kabushiki Kaisha. Method of producing clad steel articles. 4,367,838, Cl. 228-112.000.
- Yoshii, Hiroe: *See—*
  - Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, 4,368,266, Cl. 435-110.000.
- Yoshimura, Tamotsu: *See—*
  - Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.
- Yoshino Kogyosho Co., Ltd.: *See—*
  - Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.
- Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, to Yoshino Kogyosho Co., Ltd. Saturated polyester resin bottle and stand. 4,367,820, Cl. 215-12.00R.
- Yoshioka, Hiroshi: *See—*
  - Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.
- Young, Walter M.: *See—*
  - Shatto, Walter C., Jr.; and Young, Walter M., 4,367,909, Cl. 339-176.0MF.
- Young, Wendell M. Safety lift and tie-down apparatus for portable elevators and the like. 4,367,814, Cl. 198-301.000.
- Yuasa, Yoshio: *See—*
  - Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, 4,367,932, Cl. 354-23.00D.
- Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, to Mitsubishi Petrochemical Company, Ltd. Partially cross-linkable compositions and process for preparing partially cross-linked thermoplastic elastomers. 4,368,280, Cl. 523-211.000.
- Yuminaka, Takeo: *See—*
  - Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
- Z-L Limited Partnership: *See—*
  - Zilliken, Fritz W., 4,368,264, Cl. 435-52.000.
- Zabler, Erich: *See—*
  - Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.
- Zahnradfabrik Friedrichshafen, AG: *See—*
  - Elser, Dieter, 4,367,672, Cl. 91-375.00A.
- Zapfe, Helmut H.: *See—*
  - Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., 4,368,222, Cl. 427-340.000.
- Zeeh, Bernd: *See—*
  - Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.
- Zenith Radio Corporation: *See—*
  - Midland, Richard W., 4,368,485, Cl. 358-64.000.
- Ziaylek, Theodore, Jr. Nozzle bracket mount. 4,367,858, Cl. 248-75.000.
- Zielenski, Anthony L. Elastic clamping apparatus. 4,367,572, Cl. 24-301.000.
- Zilliken, Fritz W., to Z-L Limited Partnership. Fermentation methods of preparing ergostadientriols. 4,368,264, Cl. 435-52.000.
- Zimmer, Scott E., to Summagraphics Corporation. Amplitude modulated digitizer. 4,368,351, Cl. 178-19.000.
- Zlokazova, Tatyana M.: *See—*
  - Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
- Zoeller, Robert: *See—*
  - Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert, 4,367,831, Cl. 226-14.000.
- Zoller, Roland, to Wiesert, Loser & Sohn GmbH & Co. Apparatus for feeding a candy filling forced out of a conveyor into a rod forming apparatus. 4,368,016, Cl. 425-94.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JANUARY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bacsanyi, Thomas J.; Harmon, Edward J., deceased (by Harmon, Patricia, joint personal representative); and by National Bank of Detroit, joint personal representative, to Ransburg Corporation. Imbalance determining apparatus and method. Re. 31,120, Cl. 73-483.000.
- Centron Corporation: *See—*
  - Simmons, Billy P., Re. 31,123, Cl. 285-334.000.
- Dresser Industries, Inc.: *See—*
  - Fertl, Walter H.; and Vaello, Donald B., Re. 31,122, Cl. 166-254.000.
- Fertl, Walter H.; and Vaello, Donald B., to Dresser Industries, Inc. Method for ascertaining optimum location for well stimulation and/or perforation. Re. 31,122, Cl. 166-254.000.
- Harmon, Edward J., deceased: *See—*
  - Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.
- Harmon, Patricia, joint personal representative: *See—*
  - Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.
- Jongetjes, Hendrik, to Koninklijke Papierfabrieken Van Gelder Zonen N.V. Reinforced plastics carrier for printed circuits. Re. 31,124, Cl. 162-156.000.
- Koninklijke Papierfabrieken Van Gelder Zonen N.V.: *See—*
  - Jongetjes, Hendrik, Re. 31,124, Cl. 162-156.000.
- National Bank of Detroit, joint personal representative: *See—*
  - Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.
- Parker-Hannifin Corporation: *See—*
  - Reinicke, Robert H., Re. 31,121, Cl. 137-493.000.
- Ransburg Corporation: *See—*
  - Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.
- Reinicke, Robert H., to Parker-Hannifin Corporation. Control device for prosthetic urinary sphincter cuff. Re. 31,121, Cl. 137-493.000.
- Simmons, Billy P., to Centron Corporation. Pipe section and coupling. Re. 31,123, Cl. 285-334.000.
- Vaello, Donald B.: *See—*
  - Fertl, Walter H.; and Vaello, Donald B., Re. 31,122, Cl. 166-254.000.

LIST OF DESIGN PATENTEES

- Allgood, Charles H., II. Plaque. 267,556, 1-11-83, Cl. D11-133.000.
- Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., to Schering Corporation. Plunger rod/needle protector for a hypodermic syringe. 267,587, 1-11-83, Cl. D24-25.000.
- American Can Company: *See—*
  - Nemura, Dennis J.; and Wathen, John M., Jr., 267,543, Cl. D9-428.000.
- Argandona, Augusto, to Quaker Oats Company, The. Toy airport. 267,570, 1-11-83, Cl. D21-118.000.
- Ban, Koichiro; Kawashima, Tsunemi; and Shimizu, Toshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 267,561, 1-11-83, Cl. D12-110.000.
- Barthropp, Francis M. L. Toy water gun. 267,574, 1-11-83, Cl. D21-147.000.
- Bluestein, Bernard B.: *See—*
  - Steinkamp, Norman A.; Thomas, Richard K.; and Bluestein, Bernard B., 267,538, Cl. D7-386.000.
- Borer, James M. Fluid dispensing spoon. 267,537, 1-11-83, Cl. D7-141.000.
- Breneman, Jack L., to Quaker Oats Company, The. Toy boat rig. 267,573, 1-11-83, Cl. D21-135.000.
- Brescia, Anthony J.; and Rhoads, Spencer, to Syroco, Inc. Storage unit. 267,529, 1-11-83, Cl. D6-131.000.
- Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., to Siemens Corporation. Engine analyzer. 267,553, 1-11-83, Cl. D10-75.000.
- Briggs & Stratton Corporation: *See—*
  - Stevens, Kipp K., 267,558, Cl. D12-91.000.
- Brun, George F., Jr.: *See—*
  - Ogg, Elmer E., Jr.; Brun, George F., Jr.; and Wells, William E., 267,594, Cl. D34-22.000.
- Buchman, Henry J.: *See—*
  - Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., 267,587, Cl. D24-25.000.
- Carlson, Ann. Indian doll. 267,575, 1-11-83, Cl. D21-182.000.
- Carlson, Ann. Indian doll. 267,576, 1-11-83, Cl. D21-182.000.
- Carlson, Ann. Indian doll. 267,577, 1-11-83, Cl. D21-182.000.
- Carlson, Ann. Indian doll. 267,578, 1-11-83, Cl. D21-182.000.
- Casio Computer Co., Ltd.: *See—*
  - Wada, Masao, 267,548, Cl. D10-38.000.
- Chritton, Thomas. Hat. 267,518, 1-11-83, Cl. D2-251.000.
- Cicero, David A.: *See—*
  - Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., 267,553, Cl. D10-75.000.
- Citerone, Robert E.: *See—*
  - Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., 267,553, Cl. D10-75.000.
- Cohen, Piet, to Materias Plasticas, Limitada. Soap holder. 267,527, 1-11-83, Cl. D6-90.000.
- Cohen, Piet, to Materias Plasticas, Limitada. Combined tumbler and toothbrush holder. 267,528, 1-11-83, Cl. D6-92.000.
- Cox, Morris E. Wrist pen holder. 267,555, 1-11-83, Cl. D11-2.000.
- Crawford, Brian F.; and Jaros, Philip, to White Mop Wringer Company. Leaf bag holder. 267,593, 1-11-83, Cl. D34-01.000.
- Crown Zellerbach Corporation: *See—*
  - Main, Thomas H., 267,520, Cl. D3-30.100.
- Duskin Franchise Kabushiki Kaisha: *See—*
  - Yamazaki, Ken; Yamamoto, Yosuki; Kinoyama, Takehisa; and Sasagawa, Kinichi, 267,535, Cl. D6-219.000.
- Edwards, Ralph: *See—*
  - Payne, C. Lee, Jr.; and Snoke, Phillip J., 267,592, Cl. D32-74.000.
- Erickson, David J. Belt mounted game carrier. 267,519, 1-11-83, Cl. D2-400.000.
- Eutectic Corporation: *See—*
  - Neto, Oscar T.; Migliano, Joao E. B.; and Fluckiger, Jean L., 267,544, Cl. D9-431.000.
- Figuered, Earl S. Soap holder. 267,526, 1-11-83, Cl. D6-90.000.
- Findlay, James R., to Impact Products, Inc. Combined scoop, funnel, and pourer. 267,536, 1-11-83, Cl. D7-318.000.
- Fluckiger, Jean L.: *See—*
  - Neto, Oscar T.; Migliano, Joao E. B.; and Fluckiger, Jean L., 267,544, Cl. D9-431.000.
- Fossella, Gregory; MacDonald, J. B.; and Mercandante, Michael, to Nashua Corporation. Document feeder for copying machine. 267,565, 1-11-83, Cl. D16-32.000.
- Gamescience, Inc.: *See—*
  - Polite, Clifford E., 267,569, Cl. D21-41.000.
- General Motors Corporation: *See—*
  - Palmer, Jerry P.; and Wittine, Randolph J., 267,562, Cl. D12-211.000.
  - Wright, Dennis S., 267,564, Cl. D12-211.000.
- Gibson, Thomas E. V-Shaped ceramic greenware cleaner. 267,591, 1-11-83, Cl. D32-52.000.
- Goodell, David. Pyramid greenhouse. 267,588, 1-11-83, Cl. D25-15.000.
- Goshi Kaisha Kanemitsu Doko Yosetsu-sho: *See—*
  - Kanemitsu, Yukio, 267,540, Cl. D8-360.000.
- Goshi Kaisha Kanemitsu Dosho Yosetsu-Sho: *See—*
  - Kanemitsu, Yukio, 267,541, Cl. D8-360.000.

- Hall & Keane Design Limited: *See—*
  - Varma, Kumar, 267,590, Cl. D27-51.000.
- Hatlen, Roger A. Dental mouth prop. 267,586, 1-11-83, Cl. D24-10.000.
- Hauser, Billy G., to Poland Manufacturing Corporation. Wheeled lever. 267,595, 1-11-83, Cl. D34-34.000.
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462	4,368,094
497	4,368,095
502	4,368,096
578	4,368,097
606	4,368,098
628	4,368,099
CLASS 159	
48.1	4,368,100
CLASS 160	
213	4,367,780
332	4,367,781
CLASS 162	
4	4,368,101
156	Re.31,124
258	4,368,102
CLASS 164	
137	4,367,782
452	4,367,783
473	4,367,784
CLASS 165	
2	4,367,785
10	4,367,786
35	4,367,787
53	4,367,788
76	4,367,789
95	4,367,790
109 T	4,367,791
113	4,367,792
151	4,367,793
CLASS 166	
65 R	4,367,794
84	4,367,795
254	Re.31,122
341	4,367,796
380	4,367,797
CLASS 168	
45	4,367,798
CLASS 169	
46	4,367,799
CLASS 173	
127	4,367,800
CLASS 174	
47	4,368,348
52 PE	4,368,349
102 D	4,368,350
CLASS 177	
211	4,367,801
CLASS 178	
19	4,368,351
	4,368,352
30	4,368,353
CLASS 179	
1 GB	4,368,354
1 GS	4,368,355
	4,368,356
1.5 R	4,368,357
17 B	4,368,358
146 R	4,368,359
170.2	4,368,360
	4,368,361
	4,368,362
175.3 R	4,368,363
CLASS 180	
131	4,367,802
153	4,367,803
176	4,367,804
179	4,367,805
308	4,367,806
CLASS 181	
230	4,367,807
272	4,367,808
CLASS 182	
48	4,367,809
CLASS 187	
29 R	4,367,810
	4,367,811
CLASS 192	
3.3	4,367,812
17 R	4,367,813
CLASS 198	
301	4,367,814
374	4,367,815
CLASS 200	
6 R	4,368,364
11 TW	4,368,365
83 Q	4,368,366
148 A	4,368,367
153 J	4,368,368
264	4,368,369
329	4,368,370
CLASS 202	
99	4,368,103
248	4,368,104
CLASS 204	
1 T	4,368,105
15	4,368,106
24	4,368,107
43 R	4,368,108
253	4,368,109
290 F	4,368,110
CLASS 206	
439	4,367,816
CLASS 208	
11 LE	4,368,111
31	4,368,112
89	4,368,113
120	4,368,114
215	4,368,115
CLASS 209	
166	4,368,116
167	4,368,117
580	4,367,817
CLASS 210	
136	4,368,118
137	4,368,119
170	4,368,120
	4,368,121
242.3	4,368,122
269	4,368,123
321.3	4,368,124
403	4,368,125
663	4,368,126
CLASS 211	
49 D	4,367,818
59.1	4,367,819
CLASS 215	
12 R	4,367,820
CLASS 219	
73	4,368,371
84	4,368,372
86.22	4,368,373
121 EN	4,368,374
125.12	4,368,375
222	4,368,376
345	4,368,377
451	4,368,378
494	4,368,379

539	4,368,380
CLASS 220	
72	4,367,821
265	4,367,822
316	4,367,823
326	4,367,824
346	4,367,825
CLASS 221	
213	4,367,826
CLASS 222	
2	4,367,827
528	4,367,828
CLASS 224	
31	4,367,829
258	4,367,830
CLASS 226	
14	4,367,831
108	4,367,832
CLASS 227	
8	4,367,833
67	4,367,834
109	4,367,835
136	4,367,837
142	4,367,836
CLASS 228	
112	4,367,838
155	4,367,839
CLASS 229	
39 R	4,367,840
54 R	4,367,841
55	4,367,842
CLASS 231	
2 E	4,367,843
CLASS 232	
17	4,367,844
CLASS 235	
1 C	4,368,381
92 PK	4,368,382
CLASS 236	
21 R	4,367,845
CLASS 239	
96	4,367,846
337	4,367,847
665	4,367,848
CLASS 241	
283	4,367,855
CLASS 242	
18 PW	4,367,849
55.19 A	4,367,850
107.7	4,367,851
129.72	4,367,852
163	4,367,853
198	4,367,854
204	4,367,856
CLASS 248	
74 R	4,367,857
75	4,367,858
318	4,367,859
641	4,367,860
CLASS 250	
201	4,368,383
213 R	4,368,386
251	4,368,387
283	4,368,388
363 R	4,368,390
363 S	4,368,389
484.1	4,368,384
551	4,368,385
CLASS 251	
61	4,367,861
CLASS 252	
8.8	4,368,127
8.9	4,368,128
32.7 E	4,368,129
33.4	4,368,130
62.55	4,368,131
	4,368,132
75	4,368,133
140	4,368,134
299.63	4,368,135
316	4,368,136
344	4,368,137
363.5	4,368,138
384	4,368,139
426	4,368,140
439	4,368,141
455 R	4,368,142
457	4,368,143
463	4,368,144
522 R	4,368,145
542	4,368,146
545	4,368,147
CLASS 254	
231	4,367,862
391	4,367,863
CLASS 256	
59	4,367,864
CLASS 260	
112 B	4,368,148
	4,368,149
112.5 R	4,368,150
123.5	4,368,151
	4,368,152
156	4,368,153
	4,368,154
157	4,368,155
239 A	4,368,156
239 BD	4,368,157
	4,368,158
	4,368,159
397.4	4,368,160
448 R	4,368,161
502.5 G	4,368,162
CLASS 261	
39 R	4,368,163
CLASS 264	
37	4,368,164
40.4	4,368,165
61	4,368,166
104	4,368,167
272.14	4,368,168
CLASS 266	
44	4,367,865
99	4,367,866
190	4,367,867
225	4,367,868
CLASS 269	
324	4,367,869
CLASS 272	
144	4,367,870
CLASS 273	
29 A	4,367,871
54 B	4,367,872
60 R	4,367,873
73 R	4,367,874
85 F	4,367,875
121 A	4,367,876
164	4,367,877
175	4,367,878
211	4,367,879
CLASS 280	
47.13 R	4,367,880
96	4,367,881
276	4,367,882
301	4,367,883
423 B	4,367,884
614	4,367,885
802	4,367,886
803	4,367,887
CLASS 285	
28	4,367,888
149	4,367,889
334	Re.31,123
CLASS 290	
4 D	4,368,391
52	4,367,890
54	4,368,392
CLASS 294	
88	4,367,891
89	4,367,892
106	4,367,893
CLASS 297	
19	4,367,894
85	4,367,895
195	4,367,896
284	4,367,897
CLASS 299	
1	4,367,898
	4,367,899
	4,367,900
2	4,367,901
42	4,367,902
CLASS 303	
13	4,367,903
CLASS 307	
115	4,368,393
	4,368,394
455	4,368,395
CLASS 308	
182	4,367,905
CLASS 310	
27	4,368,396
52	4,368,397
248	4,368,398
270	4,368,399
322	4,368,400
324	4,368,401
367	4,368,402
CLASS 312	
330 R	4,367,906
CLASS 313	
457	4,368,403
497	4,368,404
CLASS 315	
16	4,368,405
158	4,368,406
291	4,368,407
360	4,368,408
411	4,368,409
CLASS 318	
116	4,368,410
254	4,368,411
632	4,368,412
687	4,368,413
696	4,368,414
CLASS 322	
2 R	4,368,415
	4,368,416
29	4,368,417
CLASS 323	
201	4,368,418
239	4,368,419
303	4,368,420
CLASS 324	
58.5 A	4,368,421
64	4,368,422
65 R	4,368,423
142	4,368,424
158 T	4,368,425
161	4,368,426
	4,368,427
178	4,368,428
225	4,368,429
244	4,368,430
464	4,368,431
CLASS 328	
14	4,368,432
30	4,368,433
CLASS 329	
50	4,368,434
CLASS 330	
133	4,368,435
207 P	4,368,436
CLASS 331	
2	4,368,437
14	4,368,438
CLASS 332	
9 R	4,368,439
CLASS 333	
172	4,368,440
CLASS 334	
15	4,368,441
CLASS 335	
57	4,368,442
138	4,368,443
166	4,368,444
210	4,368,445
258	4,368,446
CLASS 336	
20	4,368,447
61	4,368,448
CLASS 337	
313	4,368,449
363	4,368,450
380	4,368,451
414	4,368,452
CLASS 338	
25	4,368,453
CLASS 339	
113 R	4,367,907
154 A	4,367,908
176 MF	4,367,909
275 B	4,367,910
CLASS 340	
22	4,368,454
74	4,368,455
146.3 Q	4,368,456
347 AD	4,368,457
396	4,368,458
407	4,368,459
522	4,368,460
703	4,368,461
723	4,368,462
744	4,368,463
756	4,368,464
771	4,368,465
799	4,368,466
	4,368,467
CLASS 343	
16 M	4,368,468
100 ST	4,368,469
113 R	4,368,470
704	4,368,471
718	4,368,472
753	4,368,473
CLASS 346	
75	4,368,474
	4,368,475
140 R	4,368,476
	4,368,477
	4,368,478
CLASS 350	
3.61	4,367,911
6.8	4,367,912
96.12	4,367,916
96.23	4,367,917
96.30	4,367,918
105	4,367,919
	4,367,920
164	4,367,921
301	4,367,922
334	4,367,924
345	4,367,923
355	4,367,925
358	4,367,926
426	4,367,927
453	4,367,928
500	4,367,913
530	4,367,914
	4,367,915
CLASS 351	
119	4,367,929
CLASS 352	
27	4,367,930
CLASS 354	
23 D	4,367,931
	4,367,932
	4,367,933
25	4,367,934
	4,367,935
173	4,367,936
	4,367,937
234	4,367,938
272	4,367,939
317	4,367,940
324	4,367,941
CLASS 355	
3 R	4,367,942
	4,367,943
14 CH	4,367,944
14 D	4,367,948
51	4,367,945
71	4,367,946
75	4,367,947
CLASS 356	
144	4,367,949
338	4,367,950
357	4,367,951
400	4,367,952
CLASS 357	
5	4,368,479
25	4,368,480
30	4,368,481
CLASS 358	
29	4,368,482
36	4,368,483
41	4,368,484
64	4,368,485
146	4,368,486
166	4,368,487
208	4,368,488
	4,368,489
217	4,368,490
283	4,368,491
CLASS 360	
70	4,368,492
93	4,368,493
96.5	4,368,494
97	4,368,495
110	4,368,496
132	4,368,497
CLASS 361	
48	4,368,498
90	4,368,499
94	4,368,500
152	4,368,501
192	4,368,502
414	4,368,503
CLASS 362	
33	4,368,504
80	4,368,505
147	4,368,506
200	4,368,507
267	4,368,508
CLASS 364	
148	4,368,509
151	4,368,510
167	4,368,511
200	4,368,512
	4,368,513
	4,368,514
	4,368,515
411	4,368,516
428	4,368,517
433	4,368,518
483	4,368,519
494	4,368,520
506	4,368,521
550	4,368,522
CLASS 365	
63	4,368,523
205	4,368,529
226	4,368,524
CLASS 366	
132	4,367,953
156	4,367,954
CLASS 367	
12	B1 3,553,638
165	4,368,525
CLASS 368	
10	4,367,955
88	4,367,956
114	4,367,957
188	4,367,958
240	4,367,959
309	4,367,960
CLASS 369	
45	4,368,526
55	4,368,527
136	4,368,528
264	4,368,530
CLASS 370	
100	4,368,531
CLASS 371	
21	4,368,532
37	4,368,533
53	4,368,534
CLASS 374	
44	B1 4,255,962
46	4,367,961
CLASS 376	
148	4,368,169
216	4,368,170
217	4,368,171
CLASS 378	
15	4,368,535
19	4,368,536
112	4,368,537
122	4,368,538
CLASS 384	
95	4,367,904
CLASS 400	
124	4,367,962
208	4,367,963
605	4,367,964
CLASS 401	
60	4,367,965
190	4,367,966
CLASS 403	
41	4,367,967
122	4,367,968
253	4,367,969
323	4,367,970
330	4,367,971
387	4,367,972
405	4,367,973
CLASS 404	
5	4,367,974
6	4,367,975
68	4,367,976
CLASS 405	
25	4,367,977
30	4,367,978
70	4,367,979
169	4,367,980
195	4,367,981
202	4,367,982
227	4,367,983
258	4,367,984
264	4,367,985
266	4,367,986
CLASS 406	
15	4,367,987
63	4,367,988
153	4,367,989
CLASS 407	
114	4,367,990
CLASS 408	
224	4,367,991
CLASS 409	
264	4,367,992
CLASS 410	
103	4,367,993
CLASS 411	
43	4,367,994
57	4,367,995
CLASS 413	
14	4,367,996
CLASS 414	
4	4,367,998
38	4,367,997
51	4,367,999
111	4,368,000
331	4,368,001
494	4,368,002
523	4,368,003
CLASS 415	
39	4,368,004
207	4,368,005
CLASS 416	
140	4,368,006
238	4,368,007
CLASS 417	
46	4,368,008
191	4,368,009
271	4,368,010
CLASS 418	
61 B	4,368,011
	4,368,012
74	4,368,013
CLASS 419	
51	4,368,074
CLASS 420	
584	4,368,172
CLASS 422	
162	B1 4,261,953
197	4,368,173
208	4,368,174
CLASS 423	
7	4,368,175
25	4,368,176
175	4,368,177
226	4,368,178
315	4,368,179
344	4,368,180
345	4,368,181
450	4,368,182
522	4,368,183
CLASS 424	
66	4,368,184
78	4,368,185
	4,368,186
81	4,368,187
	4,368,188
	4,368,189
88	4,368,190
	4,368,191
177	4,368,192
180	4,368,193
185	4,368,194
195	4,368,195
200	4,368,196
245	4,368,197
246	4,368,198
250	4,368,199
	4,368,200
272	4,368,201
273 P	4,368,202
274	4,368,203
	4,368,204
	4,368,205
312	4,368,206
343	4,368,207
CLASS 425	
28 B	4,368,014
29	4,368,015
94	4,368,016
131.1	4,368,017
138	4,368,018

141	4,368,019
195	4,368,020
265	4,368,021
343	4,368,022
392	4,368,023
397	4,368,024
462	4,368,025
466	4,368,026
527	4,368,027
569	4,368,028
CLASS 426	
250	4,368,208
504	4,368,209
557	4,368,210
564	4,368,211
579	4,368,212
590	4,368,213
CLASS 427	
38	4,368,215
74	4,368,216
181	4,368,217
222	4,368,218
236	4,368,219
255.4	4,368,220
305	4,368,221
340	4,368,222
443.1	4,368,223
CLASS 428	
31	4,368,224
	4,368,225
34	4,368,226
91	4,368,227
110	4,368,228
120	4,368,229
203	4,368,230
220	4,368,231
228	4,368,232
245	4,368,233
	4,368,234
412	4,368,235
	4,368,236
413	4,368,237
	4,368,238
421	4,368,239
447	4,368,240
	4,368,241
	4,368,242
CLASS 429	
147	4,368,243
217	4,368,244
CLASS 430	
5	4,368,245
9	4,368,246
17	4,368,247
	4,368,248
	4,368,249
109	4,368,250
223	4,368,251
312	4,368,252
326	4,368,253
333	4,368,254
351	4,368,255
359	4,368,256
384	4,368,257
493	4,368,258
546	4,368,259
562	4,368,260
CLASS 431	
7	4,368,029
13	4,368,030
79	4,368,031
118	4,368,032
CLASS 432	
6	4,368,033
11	4,368,034
13	4,368,035
146	4,368,036
239	4,368,037
253	4,368,038
CLASS 433	
5	4,368,039
36	4,368,040
69	4,368,041
213	4,368,042
217	4,368,043
CLASS 434	
249	4,368,044
304	4,368,045
	4,368,046
CLASS 435	
4	4,368,047
15	4,368,261
23	4,368,262
47	4,368,263
52	4,368,264
75	4,368,265
110	4,368,266
123	4,368,267
161	4,368,268
172	4,368,269
226	4,368,270
247	4,368,271
293	4,368,272
CLASS 440	
75	4,368,048
CLASS 455	
166	4,368,539
180	4,368,540
186	4,368,541
316	4,368,542
612	4,368,543
CLASS 464	
50	4,368,049
83	4,368,050
CLASS 493	
11	4,368,051
96	4,368,052
CLASS 501	
155	4,368,273
CLASS 521	
48	4,368,274
52	4,368,275
79	4,368,276
84	4,368,277
115	4,368,278
122	4,368,279
CLASS 523	
211	4,368,280
458	4,368,281
CLASS 524	
58	4,368,282
109	4,368,283
230	4,368,284
293	4,368,285
394	4,368,286
513	4,368,287
539	4,368,288
598	4,368,289
CLASS 525	
29	4,368,290
53	4,368,291
54.23	4,368,292
68	4,368,293
100	4,368,294
166	4,368,295
276	4,368,296
342	4,368,297
480	4,368,298
481	4,368,299
531	4,368,300
CLASS 526	
100	4,368,301
105	4,368,302
106	4,368,303
114	4,368,304
116	4,368,305
125	4,368,306
202	4,368,307
247	4,368,308
258	4,368,309
314	4,368,310
317	4,368,311
323.2	4,368,312
CLASS 528	
14	4,368,313
89	4,368,314
198	4,368,315
295.5	4,368,316
323	4,368,317
326	4,368,318
353	4,368,319
355	4,368,320
388	4,368,321
CLASS 536	
20	4,368,322
56	4,368,323
114	4,368,324
CLASS 544	
16	4,368,325
CLASS 546	
45	4,368,326
CLASS 548	
262	4,368,327
306	4,368,328
CLASS 549	
13	4,368,329
315	4,368,330
417	4,368,331
CLASS 560	
120	4,368,332
CLASS 562	
407	4,368,333
470	4,368,334
CLASS 564	
245	4,368,335
CLASS 568	
428	4,368,336
613	4,368,337
CLASS 570	
109	4,368,338
202	4,368,339
207	4,368,340
CLASS 585	
25	4,368,341
446	4,368,342
456	4,368,343
624	4,368,344
643	4,368,345
658	4,368,346
828	4,368,347
CLASS 604	
43	4,367,740

CLASSIFICATION OF DESIGNS

D2—	251	267,518
	400	267,519
D3—	30.1	267,520
	62	267,521
	71	267,522
D6—	48	267,523
	53	267,530
	63	267,524
	69	267,525
	90	267,526
		267,527
	92	267,528
	131	267,529
	154	267,531
	164	267,532
	180	267,533
	191	267,534
	219	267,535
D7—	141	267,537
	318	267,536
	386	267,538
	445	267,546
D8—	360	267,540
		267,541
D9—	345	267,542
	428	267,543
	431	267,544
	439	267,545
	453	267,547
D10—	38	267,548
	39	267,549
	62	267,550
	65	267,551
	71	267,552
	75	267,553
		267,554
D11—	2	267,555
	133	267,556
	144	267,557
D12—	91	267,558
	97	267,559
	110	267,560
		267,561
	211	267,562
		267,563
		267,564
D16—	32	267,565
D18—	12	267,566
	22	267,567
D21—	25	267,568
	41	267,569
	118	267,570
	121	267,571
	130	267,572
	135	267,573
	147	267,574
	182	267,575
		267,576
		267,577
		267,578
	214	267,579
D22—	26	267,580
D23—	35	267,581
		267,582
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority will change as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
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· Until Jan. 22, 1983, All cases	710.00
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Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

Dec. 3, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,514,074, Re. S.N. 418,435, Filed Sept. 15, 1982, Cl. 251/127, HIGH ENERGY LOSS FLUID CONTROL, Richard E. Self, Owner of Record: *Inventor,* Attorney or Agent: J. Arthur Gross, et al., Ex. Gp.: 341

4,223,970, Re. S.N. 420,720, Filed Sept. 21, 1982, Cl. 339/17C, COMPLIANT BACKPLANE ELECTRICAL CONNECTOR, Leo Walter, et al., Owner of Record: *Electronics Stamping Corp., Compton, Calif.,* Attorney or Agent: William W. Haefliger, Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue

Automation Plan under Section 9 of P. L. 96–517 Sent to Congress

On Dec. 13, 1982, the Patent and Trademark Office delivered to the Congress a comprehensive plan for automating the Patent and Trademark Office by 1990. The plan which took two years to develop, is required by §9 P.L. 96–517.

The plan details a three phase program. During the first phase, which extends through calendar year 1984, all trademark functions and patent Group 220 will be fully automated. In the second phase, which runs through 1987, all patent groups will be fully automated and an essentially paperless operation achieved. The third and final stage will provide world wide access and expanded dissemination capabilities.

The plan consists of three volumes: a 27 page executive summary (Vol. 1), a detail Automation Master Plan (Vol. 2) and appendices (Vol. 3). A copy of the executive summary will be sent to any interested member of the public. Requests should be directed to Dr. J. Howard Bryant, Administrator for Automation, (703–557–3967). A limited number of copies of the Master Plan and the Appendices are also available.

Jan. 3, 1983.

GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

PATENT NOTICES

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 27, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-19-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	8-28-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-18-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-17-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-16-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	12-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-02-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-09-80

Expiration of patents: The patents within the range of numbers indicated below expire during November 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,214,767 to 3,221,338, inclusive
Plant Patents . . . . . Numbers 2,566 to 2,576 inclusive

REEXAMINATIONS

January 18, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,386,435 (42nd)

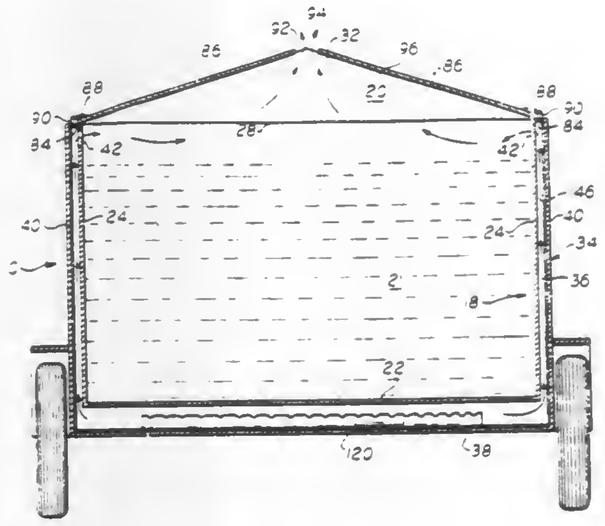
VEHICULAR ENCLOSURE FOR MAINTAINING MATERIAL THEREIN AT AN ELEVATED TEMPERATURE

Anton H. Heller, Levittown, N.Y., assignor to Poweray Infrared Corp., Amityville, N.Y.

Reexamination Request No. 90/000,109, Nov. 13, 1981.

Reexamination Certificate for Patent No. 3,386,435, issued Jun. 4, 1968, Ser. No. 569,423, Aug. 1, 1966.

U.S.Cl. 126/343.5 A **Int. Cl.^{3} E01C 19/45.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **4** and **5**, having been finally determined to be unpatentable, are cancelled.

The patentability of claims **7-10** is confirmed.

Claims **3** and **6** are determined to be patentable as amended:

New claims **11-15** are added and determined to be patentable.

6. A vehicular enclosure adapted to contain material which is to be maintained at an elevated temperature, comprising inner wall means defining a hollow interior space in which material is adapted to be located in engagement with said inner wall means, outer wall means having a configuration conforming generally to that of said inner wall means, said outer wall means being spaced from said inner wall means and defining a predetermined air space therewith, heating means communicating with said air space for heating the air therein, flow-creating means operatively connected with said inner and outer wall means for creating a flow of air through said air space and from the latter across at least an upper portion of said hollow interior space so that air flowing through said air space is heated by said heating means to heat the material in said hollow interior space through said inner wall means and then the heated air, by flowing across at least said upper portion of said hollow interior space, directly engages the material in said interior space at an upper surface of the material for additionally heating the latter, and the top of said hollow interior space being constantly open to the surrounding atmosphere for the normal exhaust of the air flowing across the upper portion of said hollow interior space and therefrom to the surrounding atmosphere, [The combination of claim 1,] and wherein each of said wall means includes a bottom wall, a pair of opposed side walls extending upwardly from said bottom wall, and a pair of opposed end walls extending upwardly from said bottom wall, said [heaing] *heating* means being situated between said bottom walls, and said bottom walls respectively having rear ends in the region of which said heating means is situated, closure means extending between and connected to said pairs of opposed walls in the region of upper ends thereof for closing said air space at an upper portion thereof, and said flow-creating means including a rear wall extending between said bottom walls in the region of said rear ends thereof and formed with inlet vents through which air enters into said air space to flow past said heating means therein, said flow-creating means including upper portions of at least one of said pairs of opposed walls formed with outlet vents through which heated air flows from said air space into said hollow interior space defined by said inner wall means.

B1 3,952,741 (43rd)

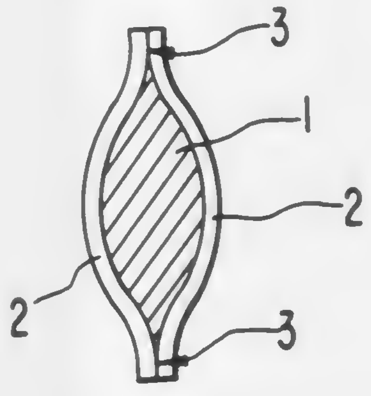
CONTROLLED RELEASE DELIVERY SYSTEM BY AN OSMOTIC BURSTING MECHANISM

Richard William Baker, Bend, Oreg., assignor to ALZA Corp., Palo Alto, Calif.

Reexamination Request No. 90/000,085, Oct. 14, 1981.

Reexamination Certificate for Patent No. 3,952,741, issued Apr. 27, 1976, Ser. No. 539,637, Jan. 9, 1975.

U.S. Cl. 128/260 **Int. Cl.^{3} A61M 7/00; B65D 35/08.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1-14**, having been determined to be unpatentable, are cancelled.

New claims 15-22 are added and determined to be patentable.

15. An osmotic dosage form comprising, in combination, a plurality of individual discreet dispensers for dispensing a predetermined amount of active agent into an aqueous fluid or a humid environment, each such dispenser comprising:

(a) a wall member defining a hollow enclosure having an enclosed volume sized to receive said predetermined

amount of active agent; said wall member having a semipermeable portion and an impermeable portion, said semipermeable portion being permeable to the flow of water through said wall while being substantially impermeable to the flow of water and the flow of active agent, and

(b) an active agent within said hollow enclosure, said active agent exhibiting an osmotic pressure on exposure of said dispensers to the environment sufficient to distort, stretch and finally rupture said wall member resulting in the immediate release of the agent to the environment;

the relationship between the surface area of said permeable and impermeable portions of said wall member varying within the population comprising the plurality of dispensers whereby a predetermined and sequential bursting of individual dispensers releases the active agent from said dosage form in a predetermined manner over a prolonged period of time.

B1 4,111,204 (44th)

SUCTION COLLECTION SYSTEM

Stephen Roy Hessel, Somerville, N.J., assignor to C. R. Bard, Inc., Murry Hill, N.J.

Reexamination Request No. 90/000,168, Feb. 25, 1982.

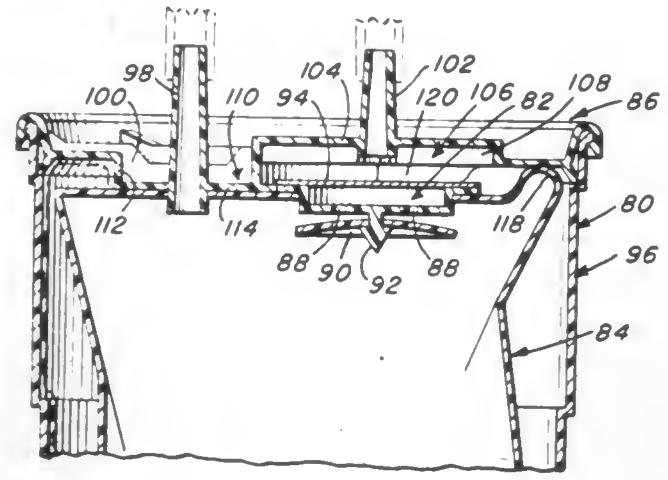
Reexamination Certificate for Patent No. 4,111,204, issued Sept. 5, 1978, Ser. No. 730,404, Oct. 7, 1976.

U.S. Cl. 128/276 **Int. Cl.³ A61M 1/00.**

AS A RESULT OF REEXAMINATION. IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–23 is confirmed.

18. For use in a collection system comprising a rigid reusable canister, a drainage receiving assembly including a lid receivable over and releasably sealable to the canister, a flexible receiving bag sealed to the lid and depending therefrom for reception within the canister, a separate compartment defined generally between said lid and said bag, said compartment having first fluid path means therefrom communicating solely with the interior of the bag and second fluid path means therefrom opening through the lid and to the exterior of the bag immediately adjacent thereto, and air pervious-liquid impervious member positioned in said compartment and solely overlying said first fluid path means between said first and second fluid path means, and means for mounting a suction outlet fitting in communication with said compartment outward of said air pervious-liquid impervious member to effect a restricted drawing of air through the first fluid path means and overlying air pervious-liquid impervious member, and an unrestricted drawing of air through said second fluid path means.



REISSUES

JANUARY 18, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,125

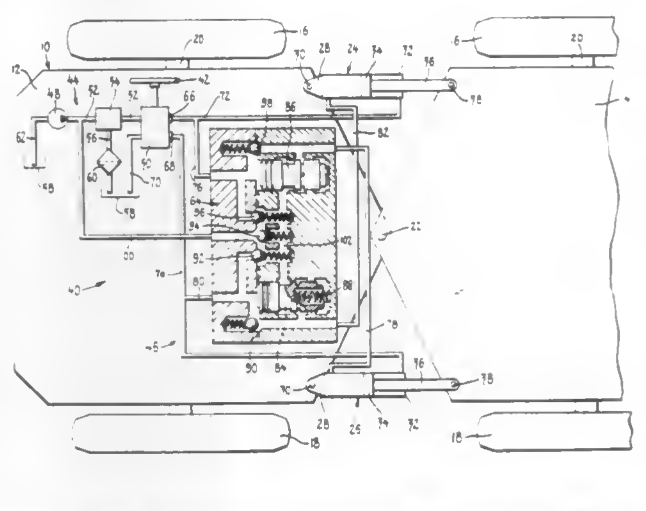
ARTICULATED VEHICLE STEERING SYSTEM

Robert M. Dwyer, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Original No. 4,081,961, dated Apr. 4, 1978, Ser. No. 785,133, Apr. 6, 1977. Application for reissue Feb. 26, 1979, Ser. No. 15,513

Int. Cl.³ B62D *5/08, 5/10;* **F15B** *13/06, 20/00*

U.S. Cl. 60—386 **6 Claims**



9. A valve (64) for a steering system of the type including a pair of oppositely acting double acting hydraulic cylinders (24,26), a motor driven pump (48), a hydrostatic steering unit (50), and a rotatable steering wheel (42), said steering wheel operating at a first steering ratio when the pump (48) is in operation and at a second higher steering ratio when the pump is not in operation, said valve (64) including:

a pair of independently operable pilot operated two position spool valves (84, 86) normally spring biased by spring bias means to a closed position, a pair of separate pilot line passageways each of which is in fluid communication with one of said spool valves and operable when pressurized to shift said spool valve against said spring bias means to an open position, another pair of separate passageways each of which is associated with one of said spool valves and is operable to place the associated spool valve in communication with one end of one of a pair of double acting cylinders (24, 26), additional passageway means extending between said spool valves and adapted to be placed in fluid communication with a pump, and a pair of check valves (90, 98), there being one check valve between each of said pilot line passageways and one of said another pair of separate passageways, each check valve being capable of preventing flow from the associated pilot line passageway to the associated another separate passageway.

Re. 31,126

QUATERNARY AMMONIUM COMPOUNDS IN PRETREATMENT OF HAIR BEFORE SHAMPOOING WITH AN ANIONIC SHAMPOO

George F. Dasher, Inverness; Kathleen A. O'Cull, Northlake, and Thomas J. Schamper, Chicago, all of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Original No: 4,061,150, dated Dec. 6, 1977, Ser. No. 709,782, Jul. 29, 1976. Continuation-in-part of Ser. No. 538,891, Jan. 6, 1975, Pat. No. 3,980,091. Application for reissue Dec. 31, 1979, Ser. No. 109,001

The portion of the term of this patent subsequent to Sep. 14, 1993, has been disclaimed.

Int. Cl.³ A45D *7/00;* **A61K** *7/08*

U.S. Cl. 132—7 **21 Claims**

16. A composition for pretreatment of hair prior to shampooing said pretreated hair with an anionic shampoo, said composition comprising a major proportion of water, and minor proportions of a readily water-soluble quaternary ammonium compound containing at least one long chain aliphatic hydrocarbyl radical directly or indirectly linked to a quaternary nitrogen atom in said quaternary ammonium compound, and polyethylenimine having a molecular weight in the range of about 10,000 to about 70,000, and at least one water-soluble acid, said composition having a pH in the range of about 3 to below 7.

Re. 31,127

OIL WELL CEMENTING PROCESS

Jerry D. Childs, and Roosevelt Love, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Original No. 4,047,567, dated Sep. 13, 1977, Ser. No. 654,497, Feb. 2, 1976. Application for reissue Aug. 31, 1981, Ser. No. 298,037

Int. Cl.³ C04B *7/02, 7/35;* **E21B** *33/14*

U.S. Cl. 166—293 **2 Claims**

3. In a process for cementing a zone at an elevated temperature by pumping an aqueous hydraulic cement slurry into said zone, the improvement of controlling the setting time of said cement and preventing gelation of said cement by mixing with said hydraulic cement a high efficiency non-gelling retarder consisting essentially of a mixture of at least one water soluble hydroxy carboxylic acid and a low molecular weight sulfoalkylated lignin; wherein the concentration of retarder is calculated to control the setting time of said hydraulic cement to exceed the pumping time; wherein the weight ratio of said acid to lignin is in the range of about 1:0.1–5.0; wherein the carboxylic acid is a substantially linear aliphatic acid having at least one termial carboxyl group in the form of acid, salt or mixtures thereof; wherein said sulfoalkylated lignin has a molecular weight in the range of about 2,000–10,000 and which is substantially sulfoalkylated on the benzene ring in the lignin molecule in the position ortho to the free phenolic hydroxy group and the sulfonate group is attached to the ortho position by an alkylidene radical having one to three carbon atoms.

Re. 31,128

FUSED ALUMINUM OXIDE ABRASIVE GRAIN CONTAINING REDUCED TITANIUM OXIDE

Thomas B. Walker, Lewiston; Robert J. Seider, Ransomville, and Paul Cichy, Buffalo, all of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Original No. 4,111,668, dated Sep. 5, 1978, Ser. No. 691,817, Jun. 1, 1976. Application for reissue Sep. 2, 1980, Ser. No. 183,496

Int. Cl.³ C09K *3/14*

U.S. Cl. 51—309 **17 Claims**

1. A process for producing a fused abrasive grain which is bluish black in color and consists essentially of:

(1) [titanium oxide containing] from about 0.42 to about 0.84% titanium, by weight of the abrasive grain, [said titanium being present as a reduced titanium oxide having an average oxidation state lower than in Ti_2O_3] *wherein said titanium is present in an easily recognizable second phase and in a form which has a low solubility in aluminum oxide;*

(2) from about 0.05 to about 0.3% by weight carbon;

(3) from about 0.02 to about 0.1% by weight Na_2O;

(4) from 0 to about 0.1% by weight total of calcium and silicon oxides; and

(5) alumina;

said abrasive having a gain on ignition in air before roasting at 1300° C., when of a size of about 147 microns and finer, of from about 0.4 to about 0.7% by weight; comprising the steps of:

(a) charging to an electric furnace a mixture of:
  (i) from about 0.7 to about 1.7 parts by weight high purity TiO_2;
  (ii) from about 98.6 to about 99.3 parts by weight alumina containing Na_2O as the only oxide impurity present in an amount in excess of 0.1% by weight; and
  (iii) carbon, in an amount of from 1 to 10 times the theoretical amount necessary, based on the amount of TiO_2 and Na_2O added, to reduce the TiO_2 and Na_2O according to the following formulas:

(A) $2TiO_2+C=Ti_2O_3+CO$, and

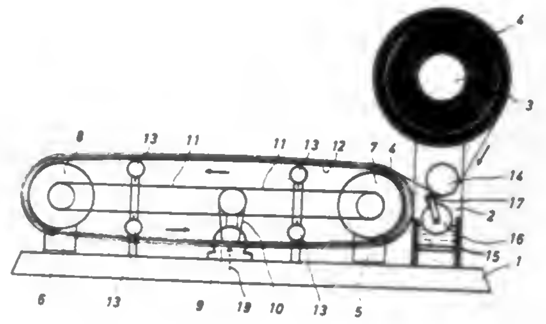
(B) $Na_2O+C=2Na+CO$ and

(b) subjecting the mixture of titania, alumina and carbon to the heat of an electric arc, said electric arc being a reducing arc passed from carbon electrodes to the mixture of titania, alumina and carbon, for a time sufficient to melt the mixture;
(c) solidifying the melted mixture;
(d) crushing the solidified mixture to obtain abrasive grain; and
(e) roasting the abrasive grain by subjecting the crushed grain to an oxidizing atmosphere for from about 5 minutes to about 64 hours at a temperature of from about 1250° to about 1450° C.

Re. 31,129
METHOD AND APPARATUS FOR PRODUCING CONTINUOUS SURFACE ELEMENTS

Max O. H. Rasmussen, Greve Strand, Denmark, assignor to Heikki S. Suominen, Tampere, Finland
Original No. 3,963,549, dated Jun. 15, 1976, Ser. No. 478,958, Jun. 13, 1974. Application for reissue Mar. 8, 1978, Ser. No. 884,775
Int. Cl.³ B65H *81/00;* **B29C** *17/00*
U.S. Cl. 156—193 **6 Claims**

6. A method of manufacturing a thermal insulating member from a thin film of material and comprising a pair of spaced opposing generally parallel sidewalls which are bridged by a plurality of spaced transverse walls comprising the steps of:
winding a continuous length of a tube formed of the material in its flattened state onto a generally cylindrical member whose circumference corresponds to the desired width of the insulating member, each successive layer of said tube being wound to overlie the immediately preceeding layer to provide thereby a generally cylindrical band of tubular layers extending axially along said cylindrical member a distance corresponding substantially to the flattened width of said tube,
adheringly applying the flattened tube during the winding step to the portion of the tube already wound onto the cylindrical member over a band of predetermined width corresponding substantially to the desired width of said spaced transverse walls and thus to the desired spacing between said sidewalls,
terminating the winding of the tube onto the cylindrical member when a predetermined number of layers of the tube has been wound thereon corresponding to the desired length of the thermal insulating member,
and cutting the superimposed assemblage of successively adhering layers of the tube in a direction transverse to the longitudinal direction of the tube,
said assemblage when longitudinally straightened and then extended in a direction transverse to the longitudinal direction of the tube so as to expand the successively joined tubes forming said thermal insulating member.



PLANT PATENTS
GRANTED JANUARY 18, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,974
APPLE TREE

Alvah Taylor, Selah, Wash., assignor to McCormick Fruit Tree Co., Yakima, Wash.
Filed Jul. 8, 1981, Ser. No. 281,426
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree substantially as shown and described, characterized particularly as to novelty by the unique combination of earlier ripening than parent "Starkspur Red Rome Beauty" with early overall color of fruit a solid red, sugar content one-percent greater on the average than parent, good keeping qualities, mildew and insect resistant similar to parent, and somewhat less compact tree size than parent.

4,975
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Werther Strasse 112, D-4294 Isselburg, Fed. Rep. of Germany
Filed Jul. 1, 1980, Ser. No. 165,075
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African Violet plant, known by the cultivar name Oklahoma, as described and illustrated, and particularly characterized by its large non-dropping flowers with frilled edges, generally purplish-red flower color, with certain petals being lighter in color than others, upright flower stems, vigorous and compact growth habit, and by its floriferousness, with up to 15 flowers being carried on each stem.

4,976
AFRICAN VIOLET NAMED EVENING STAR

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.
Filed Apr. 9, 1981, Ser. No. 252,318
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct African Violet plant, substantially as herein shown and described, characterized by its profuse production of rotate actinomorphic flowers, having a pleasing violet color, borne in a bouquet above the plant foliage.

PATENTS

GRANTED JAN. 18, 1983

ERRATA

For CLASS	See PATENT NO.
110–212	4,368,668
604–158	4,368,730
604–175	4,368,737
604–180	4,368,738
604–054	4,368,739
060–667	4,368,773
384–192	4,368,931
436–011	4,369,127
524–294	4,369,135
524–371	4,369,136
548–539	4,369,139
524–535	4,369,292
378–160	4,369,370

PATENTS

GRANTED JANUARY 18, 1983

GENERAL AND MECHANICAL

4,368,544

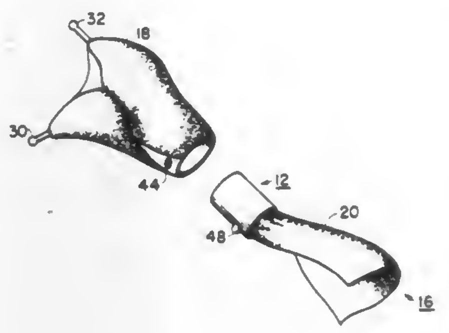
CONVERTIBLE NECKTIE STRUCTURE

Ellis L. Smith, 6410 Brentwood Stair Rd. #105, Fort Worth, Tex. 76112

Filed Jun. 26, 1981, Ser. No. 277,634

Int. Cl.^{3} A41D *25/14, 25/16*

U.S. Cl. 2—153 **12 Claims**



1. In an article of manufacture adapted to receive and retain a first fabric draped to appear as a necktie knot and to receive and retain a second fabric suspended to appear as a necktie streamer with said streamer and said knot being readily changed respective to one another, the combination comprising:

(a) a general triangular knot body defining (1) a generally convex front side, (2) a generally cylindrical socket extending into a first angle of said body, (3) strap connection means disposed at the other two angles of said body for releasably connecting a neck strap to said body, and (4) fabric retaining means defined on the rear of said body along the two sides extending from said first angle respectively to each of said other two angles;

(b) said body being adapted to receive said first fabric draped across said front side, around said two sides and said retaining means in draped position to appear as a necktie knot;

(c) a hollow generally cylindrical plug means releasably fitted into said socket;

(d) detent latching means releasably latching said plug means within said socket; and

(e) said plug means including grasping means having internal barbs adapted to grasp said second fabric in suspended relationship to appear as a necktie streamer.

4,368,545

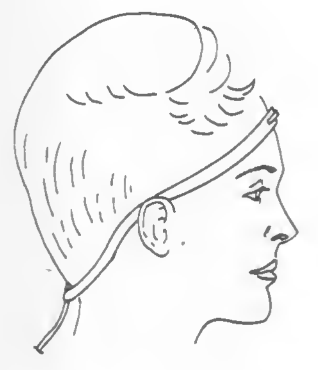
FACE PROTECTING DEVICE

Elisabeth Seidman, 18988 Carillo Ct., Sonoma, Calif. 95476

Filed Nov. 20, 1980, Ser. No. 208,664

Int. Cl.^{3} A41D *13/00*

U.S. Cl. 2—174 **1 Claim**



1. Apparatus for protecting the face, eyes, and ears of a user against hair permanent solutions comprising:

a flexible, generally upwardly curved band defining a channel, the channel narrow at its outer ends and wider at its center, the band mountable on the head of a user above the eyes and ears of said user, the ban including a soft inner forehead liner;

a flexible strip on one end of the band and a strip receiving tab on the other end of the band;

a removable elongate channel shaped wedge insertable between the ends of the band adjacent the strap and tab;

an optionally closeable solution draining flow rate control valve on the band;

the band wearable by the user during both application of hair permanent solutions and the drying of the hair while the head of the user is in a normal, untilted position, so that the face, eyes, and ears of the user are substantially protected from wetting by the hair permanent solution.

4,368,546

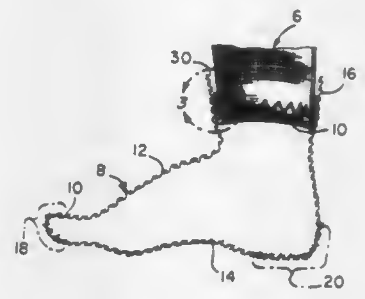
ATHLETIC UNDERGARMENT

Alice C. White, 105 Pulis Ave., Franklin Lakes, N.J. 07417

Filed Aug. 6, 1980, Ser. No. 175,729

Int. Cl.^{3} A41B *11/00*

U.S. Cl. 2—239 **7 Claims**



1. An athletic undergarment for providing circulatory stimulation and muscle support to the wearer's legs and for protecting the comforting the wearer's feet while preventing relative slippage between the feet and the wearer's shoes, said athletic undergarment comprising at least one leg portion formed from resiliently elastic material which terminates at a point above the wearer's foot, the bottom edge of said leg portion being folded back for a short distance upon the remaining material in said leg portion to provide a double layer of resiliently elastic material, a foot portion formed from a heavy, compressible knit material which is permanently secured to the leg portion such that the foot portion completely surrounds the wearer's foot to provide gripping surfaces along the top and bottom thereof for resisting slippage inside the wearer's shoes while permitting transpirational removal of perspiration from the wearer's foot, said foot portion including an ankle section and said double layer of said leg portion being permanently secured to the interior surface of said ankle section by stitching.

4,368,547

GARMENTS FORMED OF HELICALLY WOUND MATERIAL AND METHOD OF MAKING SAME

Harry R. dePolo, 480 Park Ave., New York, N.Y. 10022

Continuation-in-part of Ser. No. 176,522, Aug. 8, 1980. This application Jul. 27, 1981, Ser. No. 287,368

Int. Cl.^{3} A41B *11/04*

U.S. Cl. 2—409 **22 Claims**

1. In a method of making a pants-type garment having two legs, a waist and a crotch, the steps of providing first and second bands of material each having first and second side edges, a lower edge and an upper edge, providing first and second side extension pieces of material each having an upper end, an outer side edge and an inner side edge having an upper

portion and a lower portion inclined to said outer side edge, joining said lower portion of said inner side edge of said first side extension piece with at least an upper portion of the first side edge of said first band and joining said lower portion of said inner side edge of said second side extension piece with at least an upper portion of said first side edge of said second band so that said side extension pieces extend laterally at an angle from respective bands with the outer side edge of each side extension piece forming an angle with said first side of the respective band and with said second upper portion of the inner side edge of each side extension piece forming an extension of the upper edge of the respective band, said upper portion of the inner side edge of each side extension piece and an adjacent portion of the upper edge of the adjacent band being shaped to form the crotch of the garment, winding said first bsnd with its side extension piece helically and joining contiguous edges of edges of convolutions in a helical junction line to form a first leg of said garment, winding said second band with its side extension piece helically and joining contiguous edges of convolutions in a helical junction line to form a second leg of said garment, and joining said crotch-forming edge portions of said first band and respective side extension piece with said crotch-forming edge portions of said second band and respective side extension piece to thereby join said first and second bands and their respective side extension pieces to form said garment.

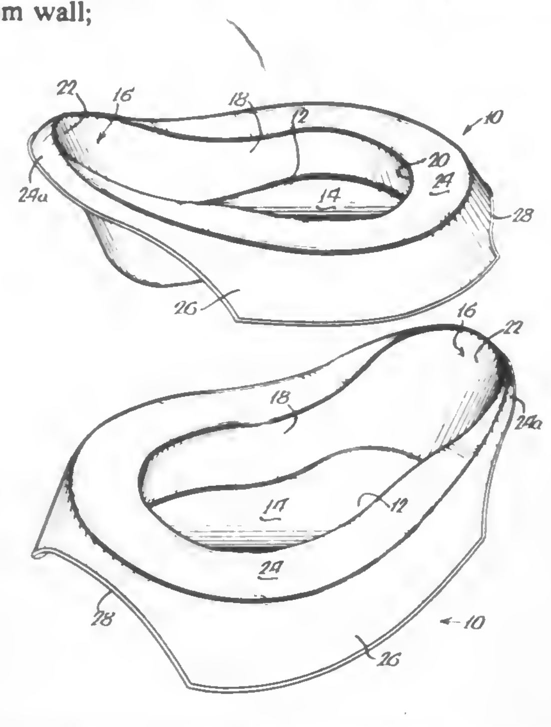
4,368,548

NESTABLE UNDERCUT BEDPAN

Henry P. Glass, 245 Dickens Rd., Northfield, Ill. 60093
Continuation of Ser. No. 228,294, Jan. 26, 1981, abandoned. This application Jan. 25, 1982, Ser. No. 342,285
Int. Cl.^{3} A61G *9/00*

U.S. Cl. 4—451 **11 Claims**

1. A single patient use bedpan comprising:
a cavity defining a receptacle portion and formed by a bottom wall and an upright wall extending from the peripheral edges of said bottom wall;
a seat member extending outwardly from a major part of the upper peripheral edge of said upright wall, said seat member merging into a peripheral bead formed on the remaining part of said upper peripheral edge of said upright wall portion; and
a stabilizing member extending downwardly from the outer peripheral edge of said seat portion the lower edge of said stabilizer portion terminating substantially in the plane of said receptacle bottom;
said upright wall defining a pair of opposed side wall segments and a pair of opposed end wall segments;
said side wall segments and one of said end wall segments tapering downwardly and inwardly and the other of said end wall segments tapering downwardly and outwardly to define an undercut to inhibit splashback and spillage during transportation of said bedpan the acute angle defined between said other undercut defining endwall segment and said bottom wall being greater than the acute angle defined between said one endwall segment and said bottom wall;
a plurality of said bedpans being nestable one within the other.

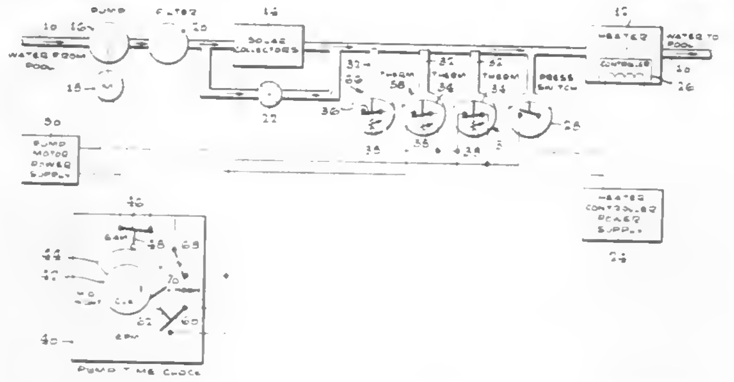


4,368,549

SWIMMING POOL HEATER TEMPERATURE CONTROL SYSTEM

Robert M. Ramey, North Hollywood, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Dec. 29, 1980, Ser. No. 220,377
Int. Cl.^{3} E04H *3/18, 3/16*

U.S. Cl. 4—493 **3 Claims**



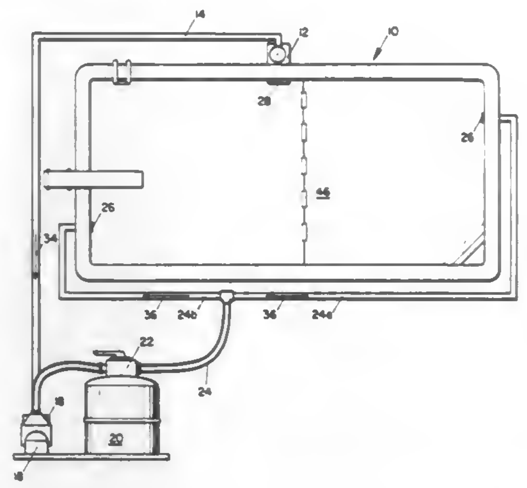
1. In a swimming pool heater temperature control system having solar collectors for solar heating the pool water, a non-solar heater responsive to a selected temperature level for heating the pool water to that selected temperature level, and means for passing the pool water through the solar collectors and through the non-solar heater so that the water may be heated by the solar collectors and by the non-solar heater, the improvement comprising:
means for providing a plurality of predetermined pool water temperature levels; and automatic means for automatically changing the selected temperature level as a function of time, including means for sequentially setting the selected temperature level to one of the predetermined temperature levels to create a selected temperature vs. time profile for controlling the non-solar heater.

4,368,550

METHOD AND APPARATUS FOR WINTERIZING A SWIMMING POOL

Gunther A. Stevens, 47 Peachtree La., Levittown, Pa. 19054
Filed Apr. 10, 1981, Ser. No. 252,912
Int. Cl.^{3} E04H *3/20*

U.S. Cl. 4—507 **9 Claims**



1. In a swimming pool system including a pool and a water recirculating system including at least a skimmer means having an intake throat connected to said pool, an intake line connected to said skimmer, a pump connected to said intake line and a return line connecting said pump to said pool, the improvement comprising:
one-way valve means connected to said return line for allowing water to pass through from said return line to said pool but not in the reverse direction; and,
skimmer sealing means attached to said skimmer for substantially completely blocking the flow of water into said skimmer.

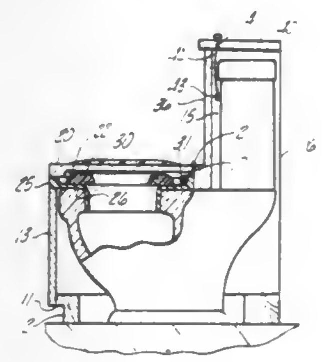
8. A method for winterizing a swimming pool of the type having a water recirculating system including at least a skimmer connected to said pool by a skimmer throat, an intake line connected to said skimmer, a pump connected to said intake line and a return line connecting said pump to said pool, said method comprising the steps of:
placing a one-way valve means in said return line to prevent the flow of water from said pool into said return line but not vice versa;
sealing off said skimmer throat with a skimmer sealing means; and,
blowing water out of said intake and return lines.

4,368,551

COMMODE ENCLOSURE FOR FORMING A UTILITY CABINET

Kent Cummings, 17487 Common Rd., Roseville, Mich. 48066
Filed Jul. 14, 1980, Ser. No. 167,824
Int. Cl.^{3} A47K *13/00*

U.S. Cl. 4—661 **7 Claims**



1. A contemporary commode enclosure used to enclose the conventional toilet bowl and flush tank, said contemporary commode comprising:
a lower closure means having at least one upright member enclosing said toilet bowl, said at least one upright member further extending substantially to the same height as said toilet bowl;
a top panel cover member attached to said at least one upright member, said top panel member having an aperture therein, said aperture located proximate said toilet bowl outline, said top panel member further having an end portion having an opening;
an upper closure means having at least one upright member enclosing said tank, said upper closure means mounted to said lower closure and within said opening of said end portion of the top panel member and further extending substantially to the same height as said flush tank;
a cover member mounted to said at least one upright member of said upper closure means such that said cover member and said at least one upright member cooperate to completely enclose said flush tank;
hinge means mounted to said top panel cover member proximate said at least one upright member of said upper closure means;
a seat cover member mounted adjacent to said top panel cover member and attached to said hinge means so that said seat cover member cooperates with said top panel cover member to cover said aperture of said top panel member when said seat cover member is in one position and whereby said seat cover member rotates upwards to rest against said at least one upright member of said upper closure means to uncover said aperture of said top panel cover member when said seat cover member is in a second open position;
an adjustable centering member mounted to said at least one upright member of said lower closure means and said top panel member, said adjustable member having an extended portion adapted to engage the bowl aperture of the toilet bowl;
means for flushing said flush tank, said flushing means including means for attaching said flushing means to said cover member;
means for adjusting said lower closure means whereby said enclosure may be adjusted to a predetermined height according to the height of a toilet to be enclosed; and
resilient means attached to said upper closure means and said seat cover member such that when the enclosure is used as a chair, the resilient means provides a cushioned seat for seating and cushioned upper closure means as a seat back rest for the user.

4,368,552

METHOD OF MAKING SELF TAPPING THREAD FORMING SCREW

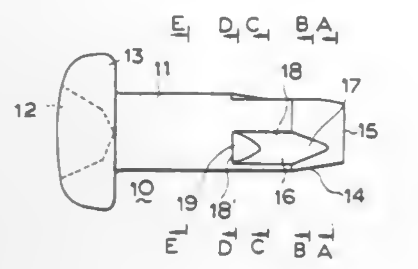
Ichirou Sugiyama, Shiki, Japan, assignor to Crown Screw Corporation, Shiki, Japan
Filed Nov. 4, 1980, Ser. No. 203,885
Int. Cl.^{3} B21K *1/56;* B21H *3/02*

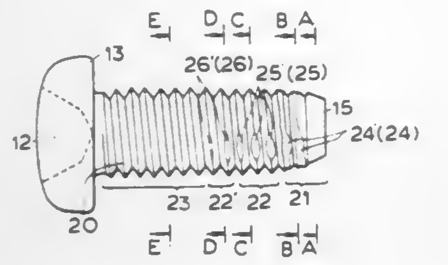
U.S. Cl. 10—10 R **7 Claims**

1. A method of making a self-tapping thread-forming headed screw comprising the steps of:
(a) forming a blank having a longitudinal axis, including a generally right-cylinder shank portion and a tapered frustoconical shaft portion at the work entering end of the shank portion;
(b) forming three spaced flat portions on the blank extending longitudinally on the blank parallel with the longitudinal axis, terminating at opposite ends within the shank portion and the shaft portion;
(c) forming a delta formed region at the head end of each of the flat portions, the delta formed region including a peripherally arcuate convex surface tapering gradually to the flat portion and having side edges such that the side edges and the edge of the delta formed region closest to the screw

head, which bound the delta formed region, define an isosceles triangle; and

(d) thread rolling the blank to form male threads on the shank portion and the frusto-conical shaft portion except at the work entering end thereof, whereby a second length of spoon-like recesses are formed on the crest portions of the threads passing on each delta formed region, adjacent ones of the spoon-like recesses having a same width and decreasing depth in the direction from the work entering end to head end of the screw.





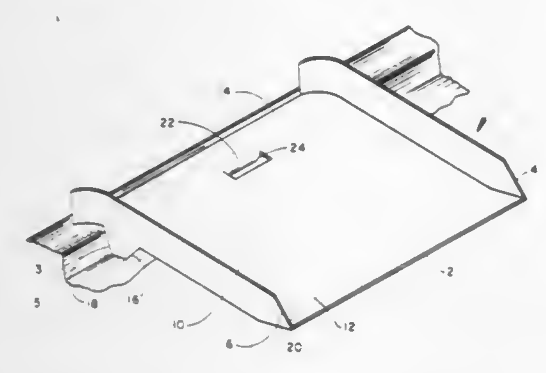
4,368,553
PORTABLE RAMP

H. Dwaine Perry, 5922 Yorkgate, Spring, Tex. 77373

Filed Apr. 3, 1981, Ser. No. 250,540

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—69.5 **5 Claims**



1. A portable ramp for placement adjacent a curb having a wall extending down to a street or the like for use with portable, wheeled devices for carrying goods comprising:

(a) ramp means including:
  a support surface for supporting and enabling movement or the wheeled devices on the ramp, said support surface including a lower end for placement on the street; and
  said support surface further including an upper end for placement on the curb.
  said support surface also including a stop member extending downwardly therefrom adjacent said upper end, said stop member contacting the curb to prevent unwanted movement of the ramp as the wheeled devices are moved upwardly over the curb from said lower end to said upper end to enable goods to be carried;
(b) two longitudinal side plates mounted with the support surface, each of said side plates including a load bearing section for placement on the curb; and
(c) a pair of depending arms, one of each of which is mounted with said support surfaces adjacent one of each of said longitudinal side plates, said arm being mounted adjacent said upper end and extending downwardly to contact the wall of the curb wherein the angle between each of said depending arms contacting the wall of the curb and one of each of said load bearing sections of one of each of said side plates, respectively, is a load bearing angle to help support said wheeled devices.

4,368,554
ROAD SWEEPING APPARATUS

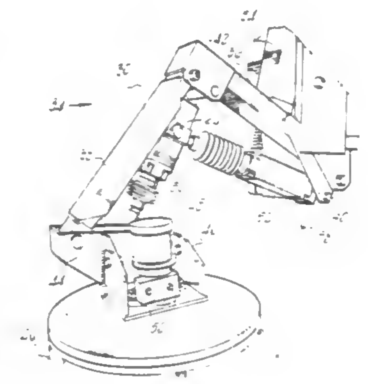
Barrie E. Mealing; Raymond H. Payne, both of Warwick, and James Boswell, Coventry, all of England, assignors to Hestair Eagle Limited, Warwick, England

Filed Nov. 12, 1980, Ser. No. 206,205

Claims priority, application United Kingdom, Mar. 28, 1980, 8010457; Jun. 14, 1980, 8019528

Int. Cl.³ E01H *1/05, 1/08*

U.S. Cl. 15—354 **24 Claims**



1. Road sweeping apparatus comprising:
a frame or body;
a brush and mounting and drive means therefor whereby the brush is rotatable to effect sweeping in the region of one side of the apparatus;
a refuse tank;
refuse collecting and transfer means associated with the brush to collect material swept by the brush and to transfer the material to the tank;
the mounting means for mounting the brush on the frame or body comprising:
an inner mounting link;
an outer mounting link; and
actuating means for said links;
the inner mounting link being connected at its inner end to the frame or body and being pivotally connected at its outer end to the adjacent end of the outer mounting link;
the outer mounting link being connected at its outer end to the brush; and
the actuating means being connected to said links and being operable to cause angular movement of the links relative to each other whereby the linkage formed thereby extends and retracts moving the brush inwards and outwards relative to the frame.

4,368,555
SLIDING DOOR SAFETY DEVICE

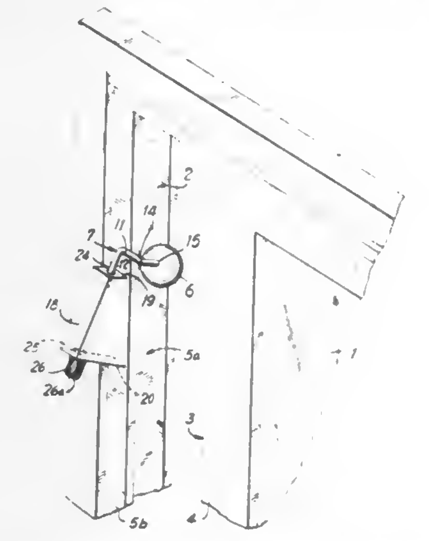
Michael T. Salerno, 424A Ramapo Valley Rd., Oakland, N.J. 07436

Filed Apr. 21, 1981, Ser. No. 256,017

Int. Cl.³ E05F *5/04*

U.S. Cl. 16—83 **5 Claims**

1. A sliding door safety device for a sliding door slidably mounted in a door frame having a track slidably accommodating the door, said door having a leading edge which abuts the frame when the door is closed and a leading surface in the area of the leading edge, said frame having a leading surface which is next-adjacent the leading surface of the door when the door is closed, said sliding door safety device comprising
a resilient ball;
support means pivotally supporting the resilient ball on one of the leading surface of the door and the leading surface of the frame in a manner whereby the gravitational force on said ball moves said ball between the door and the frame, said ball being manually movable away from said door and said frame, so that said ball is positioned by gravitational force in abutment with the leading surface of one of said frame and said door when said door is closed thereby permitting said door to be securely closed with its leading edge in abutment with said frame, and is interposed by gravitational force between said leading edge of said door and said frame when said door is open thereby preventing the door from closing fully by preventing said leading edge of said door from abutting said frame and thus protecting hands from being crushed between said door and said frame, said support means comprising a rod of predetermined diameter having a linear part and spaced opposite first and second ends, said linear part of said rod extending for most of its length from the first end and being bent in the area of its second end in a manner whereby said second end is spaced at a substantially radial distance from said linear part, said ball being mounted on the second end of said rod, and mounting means pivotally mounting said rod at an acute angle with one of said leading surface of said door and said leading surface of said frame in a manner whereby said ball is rotatable in an operating plane perpendicular to said linear part and at an acute angle with one of said leading surface of said door and said frame, said mounting means comprising a housing affixed to one of said leading surface of said door and said leading surface of said frame, said housing having spaced substantially parallel top and bottom parts extending in planes spaced below and substantially parallel to the operating plane, said top part having a top hole formed therethrough and said bottom part having a bottom hole of predetermined diameter formed therethrough, said top and bottom holes pivotally accommodating said rod with the first end of said rod passing through said bottom hole and the area of the end of said linear part adjacent the bent area of said rod passing through said top hole and most of said linear part of said rod being in said housing and the bent area of said rod being outside of said housing, the first end of said rod being outside said housing, and deactivation preventing means mounted in said housing for limiting the extent of manual movement of said ball away from said leading edges of said door and said frame to prevent positioning of said ball at a point from which the gravitational force on said ball moves said ball to one of the leading surface of said door and the leading surface of said frame, rather than between said leading edges of said door and said frame; and
a bushing in said bottom hole affixed to said first end of said rod and rotatable therewith for manually rotating said rod to return said ball from a position between said door and said frame to a position at the leading edge of one of said frame and said door, said bushing having a finger accommodating portion outside said housing of greater diameter than that of said bottom hole and a securing ring portion inside said housing of greater diameter than that of said bottom hole for retaining said rod in position in said housing, said deactivation preventing means comprising a first lug extending from said ring portion of said bushing and rotatable therewith and a second lug in said housing in operative proximity with said first lug, said first lug abutting said second lug upon manual rotation of said rod a predetermined rotary angular extent to prevent further rotation of said rod and thereby preventing positioning of said ball at at point from which the gravitational force on said ball moves said ball to one of the leading surface of said door and the leading surface of said frame, rather than between said leading edges of said door and said frame.



4,368,556
HANDLE ASSEMBLY

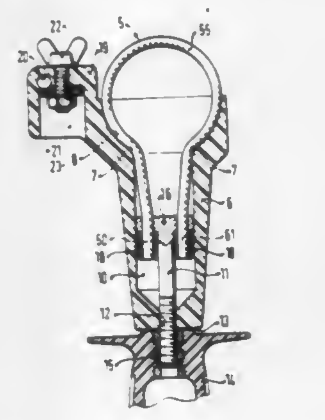
Karl Wanner; Herbert Wiesner, both of Leinfelden-Echterdingen, and Rolf Renner, Stuttgart-Plieningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,588

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 8006965[U]

Int. Cl.³ E05B *3/00;* E21B *11/00*

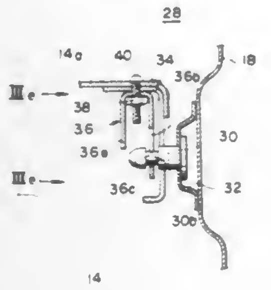
U.S. Cl. 16—111 R **16 Claims**



1. A handle assembly for a hand-held machine tool having a housing and a cylindrical projection extending from said housing and adapted to receive a tool, and a handle having an opening, comprising means for connecting said handle to said housing, said means including at least one clamping strand formed with a loop, two end portions and two transition shoulders located between said loop and said end portions, said loop being adapted to encompass said projection; a hollow member positioned between said projection and said handle and adapted to receive said transition shoulders and said end portions; and a bolt having one end rigidly connected to said end portions and another end threadably inserted into said opening of the handle, said clamping strand being formed as a wire element.

4,368,557
PINTLE CATCH

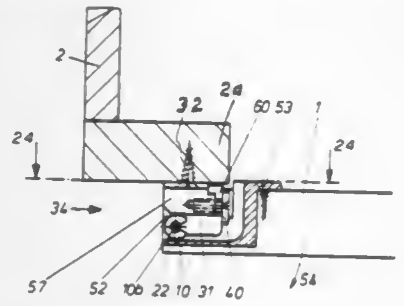
Hideho Inasawa, and Yoshinori Akiyama, both of Yokohama, Japan, assignors to Nippon Motor Company, Limited, Yokohama, Japan
Filed Jul. 25, 1980, Ser. No. 172,459
Claims priority, application Japan, Jul. 27, 1979, 54-95733
Int. Cl.³ E05D *5/12*
U.S. Cl. 16—263 **5 Claims**



1. A seatback pivotal joint for permitting the seatback of a seat to be tiltable back and forth relative to the seat proper comprising:
- a pin about which said seat back pivots securely connected at one end thereof to a stationary member located beside said seat, said pin having an annular groove formed around the axis thereof;
- a bracket securely connected to said seatback, said bracket having an opening therein through which said pin passes so that said annular groove of said pin is located behind said opening with respect to said stationary member;
- a catcher movably arranged behind said bracket said catcher having retaining means engageable with said annular groove of said pin to retain said pin when said catcher takes a predetermined position, said retaining means including a cutout formed in said catcher, said cutout being sized to match with said groove of said pin whereby when said catcher takes said predetermined position, said cutout engages said groove to retain said pin; and
- moving means for moving said catcher from a position where said retaining means of said catcher is inoperative to said predetermined position, said moving means including a freely rotatable bolt held in an opening formed in said bracket, and a nut fixed to said catcher, said bolt being screwed into said nut whereby turning said bolt about the axis thereof induces the movement of said catcher.

4,368,558
DOOR HINGE WITH A PRESSURE CLOSING DEVICE

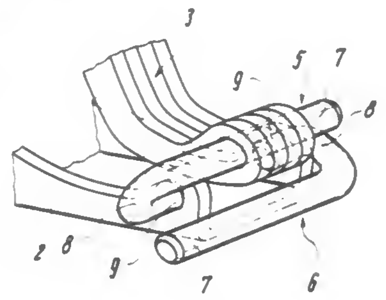
Alfred Grass, Konsumstrasse 20, A-6973 Höchst/Vlbg., Austria
Filed May 12, 1980, Ser. No. 149,275
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1979, 2947153
Int. Cl.³ E05D *11/10*
U.S. Cl. 16—332 **14 Claims**



1. A pressure-operated hinge for substantially concealed door-closed mounting and door to frame position retention operation which comprises, a hollow hinge box adapted to be secured within the door from its back side, said box having a flange portion for mounting it on the door, said box in its mounted position being open to the back side and adjacent edge of the door, an angle-shaped swing arm adapted to be mounted on an adjacent portion of the frame to project forwardly towards the front side of the frame, said box having a pair of ears, pin means swingably journaling a forward end portion of said swing arm within said pair of ears for door swinging opening and closing movement with respect thereto, said box having an end portion open towards said swing arm to receive said swing arm therein when the door is in a closed position in such a manner as to substantially hide said swing arm from the front side of the frame and door, said forward end portion of said swing arm being a somewhat cylindrical contoured guiding surface portion provided with an offset thereon and being carried on said pin means, a pressure element operatively positioned within said box and having a contoured tip end portion, said guiding surface portion and said contoured tip end portion being in operative engagement, and spring means operatively positioned within said box to flexibly apply forward pressure to said tip end portion to maintain it in operating engagement with said guiding surface portion during swinging movement of the door and to exert a position-attaining and retaining force on the door when in operating engagement with said offset.

4,368,559
FURNITURE HINGE

Wilfried Oepping, Kirchlengern, and Ulrich Beneke, Bünde, both of Fed. Rep. of Germany, assignors to Paul Hettich & Co., Kirchlengern, Fed. Rep. of Germany
Filed Jun. 25, 1980, Ser. No. 162,731
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926486
Int. Cl.³ E05D *5/10*
U.S. Cl. 16—386 **8 Claims**

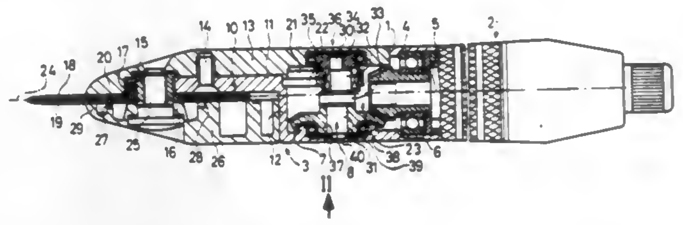


1. A furniture hinge, comprising a hollow housing connectable with one part of furniture; a hinge arm connectable with another part of furniture; at least two links extending between and pivotally connecting said hinge arm with said housing; and at least two link pins each having a curved portion and a straight portion, said curved portions of said link pins pivotally supporting one of said links, and said straight portions of said link pins extending through the interior of said housing.

4,368,560
ARRANGEMENT FOR REMOVING SKIN OF SLAUGHTERED ANIMALS

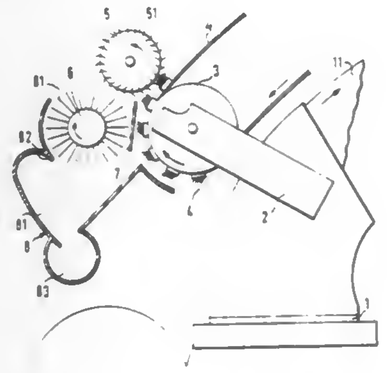
Ludwig Wetzel, Pforzheim, and Erich Mammel, Mühlacker, both of Fed. Rep. of Germany, assignors to Schmid & Wezel, Maulbronn, Fed. Rep. of Germany
Filed Jun. 2, 1981, Ser. No. 269,789
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020878
Int. Cl.³ A22B *5/16*
U.S. Cl. 17—21 **20 Claims**

1. An arrangement for removing skin of slaughtered animals, comprising a housing having a central plane and substantially forming a handle; cutting means including two cutting disks having a further central plane substantially corresponding to said central plane of said housing; drive means; transmission means arranged between said drive means and said cutting means to reciprocate the latter, said transmission means including two bevel gears engaging with one another and an eccentric shaft at least partially supported in said housing; a separating wall arranged to separate said transmission means from said cutting means, said separating wall being of one piece with said housing and including a central plate extending substantially in the region of said central plane and a limiting plate extending substantially normal to the latter; a spacer ring having one side which abuts against said central plate, and a periphery on which said cutting disks are supported; and two covers one of which is connected with said central plate of said separating wall and partially supports said eccentric shaft, the other of said covers abutting against said limiting plate of said separating wall and being pressed against said spacer ring, said central plate of said separating wall having an end portion which is spaced from said limiting plate, and said covers overlapping said end portion of said central plate.



4,368,561
APPARATUS FOR STRIPPING REVOLVING CARD FLATS

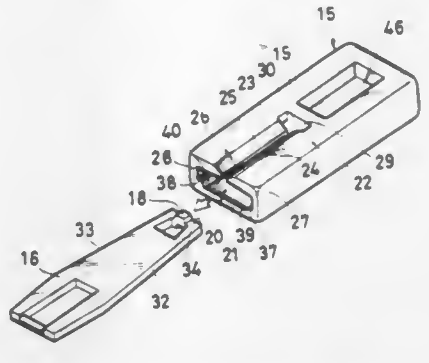
Hermann Trützschler, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany
Filed Jun. 30, 1980, Ser. No. 164,557
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926261
Int. Cl.³ D01G *15/78*
U.S. Cl. 19—111 **5 Claims**



1. In a carding machine including a main cylinder, revolving flats provided with clothing and moving along a circumferential portion of the main cylinder, a cleaning apparatus for cleaning the revolving flats and a suction device disposed underneath said apparatus for removing waste generated during operation of the cleaning apparatus; the improvement in said cleaning apparatus comprising
- (a) a flat stripping brush mounted for rotation adjacent the traveling path of said flats for cooperating with the clothing of the flats to remove waste therefrom; said flat stripping brush having a brush assembly;
- (b) a brush cleaning roll mounted for rotation and having a brush assembly arranged at a small distance from the brush assembly of said flat stripping brush to continuously remove waste from said brush assembly of said flat stripping brush;
- (c) a waste collecting means for catching waste thrown by said brush cleaning roll and for guiding the waste to said suction device; and
- (d) a stripping edge forming a part of said waste collecting means and cooperating with the brush assembly of said brush cleaning roll.

4,368,562
ORNAMENTAL ATTACHMENT FOR SLIDE FASTENER SLIDERS

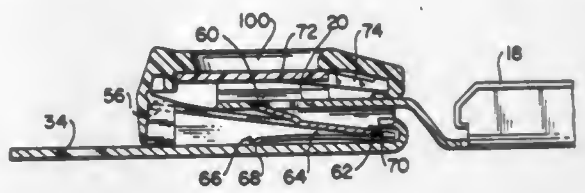
Hiroo Minami, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jan. 22, 1981, Ser. No. 227,525
Claims priority, application Japan, Jan. 31, 1980, 55-10726[U]; Jun. 24, 1980, 55-88393[U]
Int. Cl.³ A44B *19/26*
U.S. Cl. 24—205.11 L **8 Claims**



1. An ornamental attachment for a slide fastener slider including a pull tab having a lateral projection, comprising:
- (a) a body including a plate and a pair of cantilevered resilient flaps confronting said plate and having distal edges directed toward each other;
- (b) said plate and pair of cantilevered flaps jointly defining a slot receptive of the pull tab;
- (c) said body having a hole communicating with said slot and disposed adjacent to said flaps; and
- (d) at least one cam projecting into said slot for causing the pull tab on engagement therewith to displace at least one of said flaps against the resiliency thereof when the pull tab is inserted into said slot, until the lateral projection of the pull tab becomes snapped into said hole.

4,368,563
SEAT BELT BUCKLE WITH PLASTIC COVER

James M. Lentz, Knoxville, Tenn., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Filed Jul. 13, 1981, Ser. No. 282,697
Int. Cl.³ A44B *11/26*
U.S. Cl. 24—230 A **10 Claims**



1. In a seat belt buckle comprising a base having upturned side shoulders, a latch pivotally supported in said base and contained between said side shoulders, said latch having a latching surface for communication with an opening in a tongue adapted to be inserted into said buckle, and a spring member biasing said latch into a latching position, the improvement comprising:
- (1) an integral, one-piece molded plastic cover enclosing said base, latch and spring, said cover having molded therein a plurality of separate channels on the underside of said cover adjacent its forward end, each of said channels having an open end adjacent the central portion of said cover and a closed end adjacent said forward end of said cover, and integral ledge means extending adjacent the

closed end of each of said channels, said cover having an aperture in its central portion; and

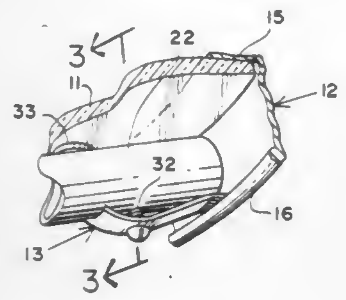
(2) an integral, one-piece molded plastic push button having a central portion and a plurality of separate legs extending forwardly of said central portion, said legs extending into said separate channels on the underside of said cover, the ends of said legs being supported by said ledge means, the ends of said legs defining a pivot axis for said button, said legs being laterally retained in said channels to prevent lateral shifting of said button, said central portion of said button being positioned beneath said aperture in said cover whereby said button may be contacted and pivoted in said cover, and contact means on the underside of said button in contact with said latch.

4,368,564

CLIP FOR ASSEMBLING THE BASE TO THE TOP RING OF METAL FRAMEWORK TABLES

Leo Martin, Miami, Fla., assignor to Miami Metal Products Inc., Miami, Fla.

Filed Aug. 10, 1981, Ser. No. 291,647
Int. Cl.^{3} A44B *21/00*
U.S. Cl. 24—259 R **4 Claims**



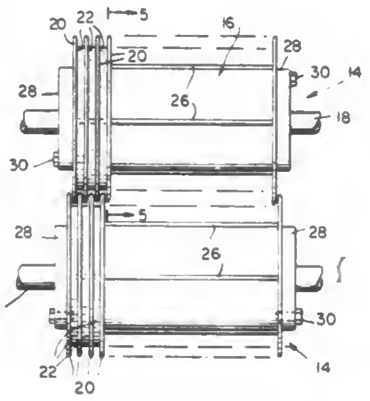
1. In a clip for assembling the base to the top ring of metal framework tables of the type wherein the top ring has a peripheral sidewall providing a table top edge and an inwardly directed flange at the upper end of the sidewall for the seating thereagainst, from underneath, of the table top panel, and wherein the base is fabricated of bent metal tubing providing, at its lower end, a plurality of spaced legs and, at its upper end, a like number of outwardly-extending, horizontal support arms upon which the table top panel rests and the outer ends of which lie in close proximity to inner surface portions of the peripheral sidewall of the table top ring; the combination comprising, an elongated leaf spring member, said elongated leaf spring member being sinuously bent along its length to provide an arcuate portion beginning at the inner end thereof, said arcuate portion merging, at its outer end, with an intermediate portion, said intermediate portion, at its outer end, terminating in a reversely-bent outer end portion, said arcuate portion being provided with a through opening for the reception therethrough of an attachment screw, and an arcuate concavity formed transversely along said inner end of said elongated leaf spring member, whereby, upon the placement of the clip with its inner end in contact with an outer peripheral wall portion of an associated horizontal support arm at the outer end thereof and then attaching it thereto with a screw extending through said through opening, the outer end of said elongated leaf spring member will be forced outwardly to abuttingly engage an inner sidewall portion of the table top ring.

4,368,565

GROOVED ROLLER ASSEMBLY FOR LATERALLY STRETCHING FILM

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Biax-Fiberfilm Corporation, Neenah, Wis.

Filed Mar. 28, 1978, Ser. No. 890,995
Int. Cl.^{3} D06C *3/06*
U.S. Cl. 26—99 **9 Claims**



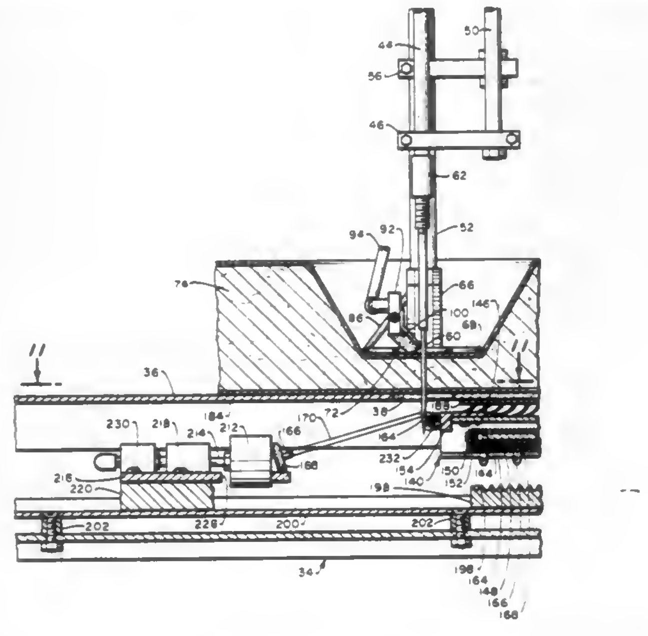
1. A roller assembly for laterally stretching a film of a synthetic orientable thermoplastic material which comprises:
- first and second grooved rollers, said first and second grooved rollers being comprised of a first and second set of discs positioned on a mandrel, said first set of discs having a diameter larger than the diameter of said second set of discs, said first set of discs being positioned on said mandrel in interlocking relationship for rotational movement therewith, said first and second set of discs being held on said mandrel in a loosened state thereby to permit self-centering of said first set of discs during stretching, said first and second grooved rollers being placed in juxtaposition to form a nip and stretching grooves therebetween; and
- means for introducing said material into said nip of said grooved rollers.

4,368,566

UPHOLSTERY MACHINE

Richard H. Miller, 3067 Seaview Ave., Ventura, Calif. 93001

Filed Aug. 8, 1980, Ser. No. 176,460
Int. Cl.^{3} B68G *7/08*
U.S. Cl. 29—91.4 **36 Claims**



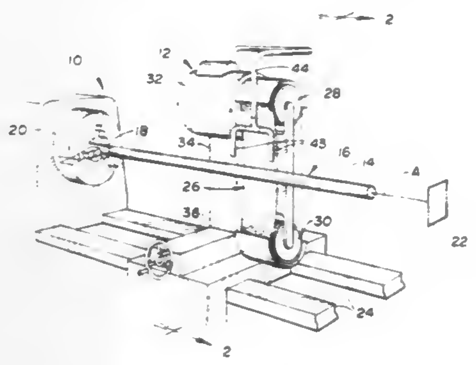
1. In combination with an upholstery machine for the tufting of a button assembly within a cushion, said upholstery machine including a movable needle, each said button assembly including a first button and a second button, said first button having an attaching eyelet protruding therefrom through which is attached a string loop which extends therefrom, a button feeding mechanism comprising:
- an elongated housing;
- a strip of frictionally grabbing material movably mounted on said elongated housing, an elongated guide channel formed between said housing and said strip, said elongated guide channel being adapted to snugly retain a row of said first buttons, said guide channel terminating in a discharge end;
- cam means attached to said strip, said cam means adapted to be contacted by an actuating means for moving said strip, said cam means for causing movement of said row of said first buttons resulting in a discharge of a said first button from said discharging end of said guide channel; and
- loop guide means attached to said housing, each said string loop of said first button being located about said loop guide means, whereby after discharge of a said first button from said discharge end the said string loop for that said first button is guided by said loop guide means to engage with said movable needle.

4,368,567

GLASS CONVEYOR ROLL FINISHING TECHNIQUE

Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469

Filed Nov. 25, 1980, Ser. No. 210,457
Int. Cl.^{3} B21B *27/02*
U.S. Cl. 29—121.1 **1 Claim**



1. A hot glass sheet conveyor roll of an elongated shape with a round cross-section and made of sinter bonded fused silica particles, the roll comprising: an outer surface including projections having ground top surfaces that are straight along the length of the roll and which cooperatively define the round cross-section of the roll; said projections having sloped sides; and curved junctions connecting the top surfaces and the sloped sides of the projections whereby the projections do not mark conveyed hot glass sheets in their softened condition.

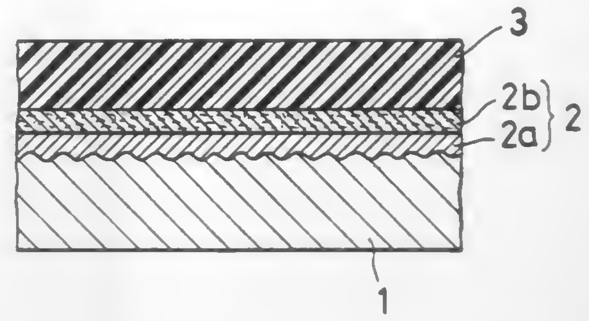
4,368,568

ELASTOMERIC MATERIAL COVERED ROLLS AND A METHOD OF MAKING THE SAME

Atsuo Watanabe, Kyoto, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan

Filed Jul. 31, 1980, Ser. No. 174,244
Claims priority, application Japan, Aug. 10, 1979, 54-102607
Int. Cl.^{3} B21B *31/08*
U.S. Cl. 29—130 **23 Claims**

1. In an elastomeric material covered roll including a metallic roll core having a roughened surface, a fibrous reinforcing layer impregnated with a thermosetting resin and surrounding said roll core, and a layer of elastomeric material surrounding said reinforcing layer, the improvement wherein said reinforcing layer comprises at least one layer formed by a fabric comprised of nonwoven fibers, said fabric being impregnated with a mixture of said thermosetting resin and a fine inorganic powder, said last mentioned layer underlying said layer of elastomeric material and being united integrally therewith.

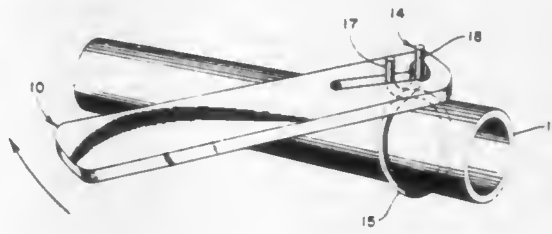


4,368,569

HOSE CLAMP TOOL

John Van Dam, Jr., 2060 Swensburg Ave., NE., Grand Rapids, Mich. 49505

Filed Feb. 23, 1981, Ser. No. 236,703
Int. Cl.^{3} B25B *27/00*
U.S. Cl. 29—229 **1 Claim**



1. A tool for manipulating a resilient wire hose clamp of the type having an arcuate portion and ends terminating in substantially radially outwardly extending projections overlapping in the relaxed condition of said clamp, said tool comprising:
- a substantially flat, rectangular plate having, adjacent one end thereof, a generally keyhole-shaped opening formed of a first, arcuate portion adjacent said one end of said plate and a second, parallel sided slot portion extending from the first portion at an acute angle to the longitudinal axis of said plate and away from the said one end thereof, the diameter of said arcuate portion being slightly greater than twice the diameter of the wire forming said hose clamp, the length of said slot portion being of sufficient length to receive both said projections in the relaxed condition of said clamp, the width of said slot portion being slightly greater than the diameter of said wire, the center of said arcuate portion being offset from the axis of said slot portion, and the lines of extension of said parallel sides across said arcuate portion being secants thereof, the remainder of said plate beyond said slot portion being adapted as a handle.

4,368,570

METHOD OF AND APPARATUS FOR ATTACHING TOP AND BOTTOM STOPS TO A SLIDE FASTENER CHAIN

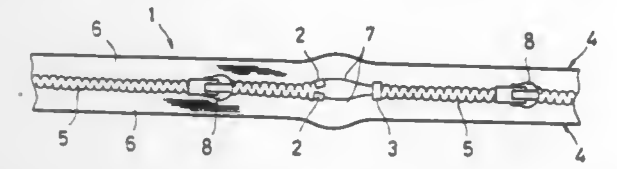
Toyoo Morita, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 322,886
Claims priority, application Japan, Nov. 27, 1980, 55-167266
Int. Cl.^{3} B21D *53/56*
U.S. Cl. 29—408 **10 Claims**

1. A method of attaching top and bottom end stops to a slide fastener chain including a pair of continuous stringers, each stringer having successive spaced groups of coupling elements mounted on a continuous stringer tape and interengaged with opposed complementary groups of coupling elements on the

other stringer tape, the fastener chain having successive spaced pairs of opposed blank tape portions between the successive spaced pairs of coupling elements groups, there being a plurality of sliders each threaded on a respective one of the successive spaced pairs of coupling element groups at a predetermined position, said method comprising the steps of:

(a) moving the fastener chain longitudinally along a path in a predetermined direction;
(b) sensing the arrival of one of the successive spaced pairs of coupling element groups;
(c) in response to said arrival, disengaging leading end portions of said one of the successive pairs coupling element groups;
(d) further moving the fastener chain along the path in said predetermined direction until a trailing end of a preceding pair of coupling element groups arrives at a first fixed point;



(e) with the trailing end of the preceding pair of coupling element groups retained at said first fixed point, sagging one of the successive pairs of opposed blank tape portions until the endmost disengaged coupling elements arrive at a second fixed point spaced a predetermined distance from said first fixed point along the path; and
(f) attaching a bottom end stop and a pair of top end stops concurrently and respectively to the trailing end of the preceding pair of coupling element groups at said first fixed point and to the disengaged endmost portions of said one of the successive pairs of coupling element groups at said second fixed point.

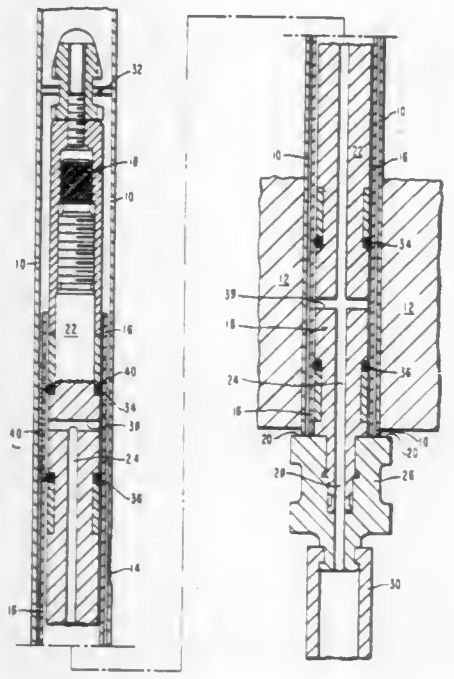
4,368,571
SLEEVING METHOD

Frank W. Cooper, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1980, Ser. No. 185,656

Int. Cl.^{3} B23P *17/00*

U.S. Cl. 29—421 R **11 Claims**



1. A method of securing a metal sleeve within a metal tube comprising:

positioning in said tube a metal sleeve having annular grooves around a portion of the outside surface thereof;

internally expanding the portion of said sleeve wherein said grooves are located thereby securing one end of said sleeve to said tube;

securing the other end of said sleeve to said tube; and

internally expanding the remainder of said sleeve into contact with said tube whereby said sleeve tends to shrink axially causing said sleeve to closely contact said tube establishing a substantially leak tight joint between said sleeve and said tube.

4,368,572
METHOD OF MANUFACTURING A SHAFT STRUCTURE HAVING A SPHERICAL BULB

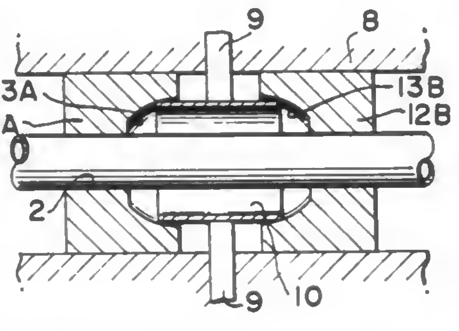
Hirotaka Kanazawa; Yoshikazu Yasuda; Kozo Harada, and Susumu Yoshida, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd. and Delta Kogyo Co., Ltd., both of Hiroshima, Japan

Filed Oct. 15, 1980, Ser. No. 197,197

Claims priority, application Japan, Oct. 15, 1979, 54-134612; May 24, 1980, 55-71702[U]; May 30, 1980, 55-73275; Jun. 2, 1980, 55-76870[U]

Int. Cl.^{3} B23P *11/00*

U.S. Cl. 29—432 **3 Claims**



1. A method for manufacturing a shaft structure comprising a shaft having a spherical bulb secured to the shaft, said method comprising steps of providing a hollow cylindrical blank, inserting the shaft through the blank in concentrically spaced relationship therewith, and forming the blank into a substantially spherical bulb while simultaneously swaging the ends of the blank around the shaft so that the shaft is locally deformed by edges of the ends of the blank and the edges of the ends of the blank bite into the shaft to thereby secure the spherical bulb firmly to the shaft.

4,368,573
METHOD OF MANUFACTURING INTEGRATED CIRCUITS BY MEANS OF A MULTILAYER MASK

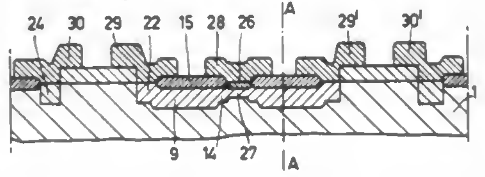
Michel X. M. deBrebisson, and Marc Tessier, both of Caen, France, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Apr. 14, 1980, Ser. No. 139,932

Claims priority, application France, Apr. 20, 1979, 79 10086

Int. Cl.^{3} H01L *21/26, 21/22*

U.S. Cl. 29—569 R **26 Claims**



1. A method for manufacturing a semiconductor device wherein a mask comprising a first layer and a second layer above the first layer is formed along an upper surface of a first region of a first conductivity type in a semiconductor body with a first portion of the mask extending to an aperture through the mask, at least one semiconductor impurity of a second conductivity type opposite to the first conductivity type is introduced through at least part of the aperture into part of the first region to define a first zone of the second conductivity type, an insulating and masking layer is formed along the upper surface where the first layer is absent, at least part of the first portion is removed to form a window therethrough, and semiconductor impurities of both conductivity types are introduced through the window into part of the first region to define a second zone of the second conductivity type continuous with the first zone and to define a second region of the first conductivity type laterally and downwardly enclosed by the zones and the insulating and masking layer, characterized by the steps of:

creating a second portion of the mask separated from the first portion by at least part of the aperture;

selectively laterally etching the first layer to remove therefrom a part of the second portion along the aperture to form a first window and to remove therefrom another part of the second portion to form a second window spaced apart from the first window; and

introducing a semiconductor impurity of the second conductivity type into part of the first region through the first window to form a third zone of the second conductivity type continuous with the first zone.

4,368,574
METHOD OF ASSEMBLING A RELAY

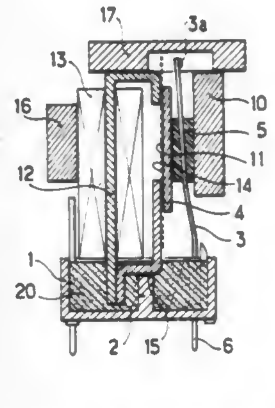
Ferdinand Litt, Bischheim; Daniel Neff, Reichsett; Gilbert Schneider, Mundelsheim; Roger Sprauel, Strasbourg, and Guy Wotling, Illkirch-Graffenstaden, all of France, assignors to Societe Anonyme dite: la Telephonie Industrielle et Commerciale - TELIC, Strasbourg, France

Filed May 8, 1980, Ser. No. 147,787

Claims priority, application France, May 9, 1979, 79 11717

Int. Cl.^{3} H01H *11/00*

U.S. Cl. 29—602 R **2 Claims**



1. A method of assembling a multiple electromagnetic relay formed of a plurality of individual relays positioned side-by-side, each of said individual relays comprising a magnetic circuit member equipped with a winding, a magnetic armature, and a blade spring bearing a contact at a movable end thereof, said method comprising the following steps:

assembling the blade springs of the individual relays together with their respective magnetic armature by moulding each armature to each spring so as to constitute a single spring-carrier part;

fixing the end of each blade spring remote from the contact within a hollow base and maintaining it stationary with respect thereto;

moving, by means of a first moving tool, the blade springs of said parts so as to bring the armatures, respectively, of said parts up to a first limit plane at right angles to the longitudinal axis of the base and in a position which they occupy when the individual relays are under winding energized condition;

placing the magnetic circuit members of the individual relays in upright position with one end thereof within said base and by means of a second moving tool, moving said magnetic circuits laterally to one side thereof to bring one side thereof up to a second limit plane parallel to said first limit plane; and

casting a settable resin into the base so as to trap the foot of the spring-carrier parts and the bases of the magnetic circuit members so as to accurately define the same air gap when the blade springs are relaxed and the armature separated from the circuit members for all of said relays irrespective of tolerance variations for both said spring-carrier parts and said magnetic circuit members.

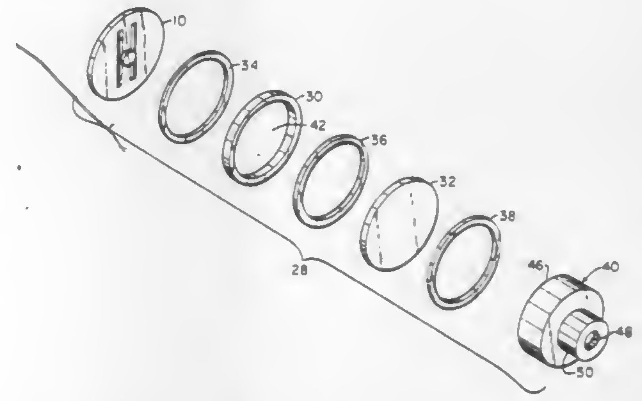
4,368,575
PRESSURE TRANSDUCER—METHOD OF MAKING SAME

Herman W. Erichsen, Medfield, and Michael A. Amoroso, Jr., Billerica, both of Mass., assignors to Data Instruments, Inc., Lexington, Mass.

Filed Jul. 14, 1980, Ser. No. 168,095

Int. Cl.^{3} H01C *17/00;* G01L *1/22*

U.S. Cl. 29—610 SG **12 Claims**



1. A process of making a pressure transducer, the process comprising the steps of:

selectively forming the following elements

(a) a first sheet of material including at least two apertures so as to form a beam therebetween,
(b) a second sheet of material including an aperture,
(c) a third sheet of material adapted to cooperate with the aperture of the second sheet so as to define a flexible diaphragm,
(d) a post adapted to be disposed between the beam and the diaphragm, and
(e) at least four braze preforms, sized so that a first preform is adapted to be disposed between the beam and the post, a second preform is adapted to be disposed between the post and the diaphragm, a third preform is adapted to be disposed between the first and second sheets, and the fourth preform is adapted to be disposed between the second and third sheets; and

assembling and heating said elements so as to braze said post to said beam with said first preform, said post to said diaphragm with said second preform, said second sheet to said first sheet with said third preform so that said post extends through the aperture of the second sheet, and the third sheet to the second sheet with said fourth preform so that the aperture of the second sheet cooperates with the third sheet to define said diaphragm.

4,368,576
METHOD OF FORMING AN END CONNECTION ARRANGEMENT ON A CO-AXIAL CABLE

Hermanus Smit, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,807

Claims priority, application Netherlands, Nov. 16, 1979, 7908378

Int. Cl.^{3} H01B *13/20;* H02G *15/02*

U.S. Cl. 29—828 **5 Claims**

1. A method of forming an end connection arrangement on

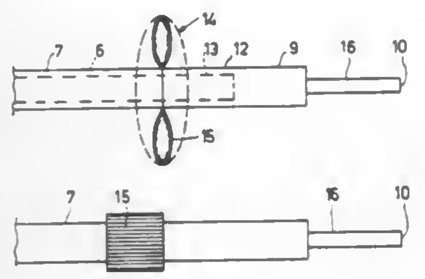
a coaxial cable having a central conductor, a layer of insulation surrounding the conductor, a flexible metal shield around the insulation layer, and a synthetic material outer sheath, comprising

cutting circumferentially through the outer sheath at a location spaced a first distance from the cable end, thereby defining an end portion of said sheath,

moving said end portion of the sheath in a first direction toward said cable end a distance less than said first distance, whereby said end portion projects partly beyond the cable end,

removing a distal end part of said end portion so as to shorten said end portion, and

moving the shortened end portion in the direction opposite said first direction while clamping the end portion against the metal shield, so as to upset the shield and expose the insulated central conductor.



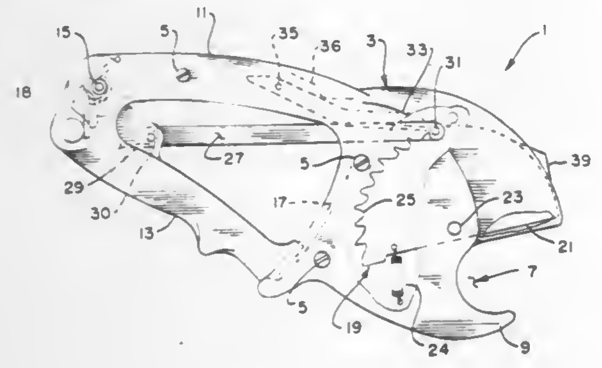
4,368,577
HAND TOOL FOR CUTTING PLASTIC PIPE OR THE LIKE

Larry F. Babb, LaGrange, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 15, 1979, Ser. No. 84,544

Int. Cl.^{3} B23D ***21/06***

U.S. Cl. 30—92 **8 Claims**



1. A cutting tool particularly well-suited for cutting articles, such as plastic pipe or tubing, rubber hose, or the like, comprising a frame having a notch for receiving the article to be cut, a portion of said frame adjacent said notch constituting a stationary anvil, a blade having a cutting surface, said blade being rotatably mounted within said frame for rotation from a retracted position in which said blade including its cutting edge is enclosed within said frame and an extended cutoff position in which the cutting edge of the blade cooperates with said anvil so as to sever said article, handle means pivotally supported on said frame for swinging between an open and a closed position, means operable upon the repeated opening and closing of said handle means between an open position and an intermediate position for moving said blade in increments from its retracted position to its cutoff position, said blade moving means comprising a plurality of ratchet teeth on said blade, a link pivotally connected between said handle means and said blade and being engageable with one of said ratchet teeth on said blade when said handle means is open and acting on said one tooth as said handle means is moved from its open position toward its intermediate position thereby to effect incremental movement of said blade toward its cutoff position, said link being movable relative to said blade as said handle means is opened for engagement with another of said ratchet teeth, means for holding said blade against returning toward its said retracted position upon opening of the handle means thereby to permit the blade to be advanced another increment toward its cutoff position upon the next closing movement of the handle means said ratchet teeth being arranged in a part-circular pattern on said blade generally concentric with the point about which said blade is rotatably mounted with respect to said frame, said link being movable in a direction generally tangential to said part-circular pattern of ratchet teeth for moving said blade through its increment of movement upon closing said handle means, wherein said frame comprises a rigid frame portion rigidly connected to and extending rearwardly from said portion of said frame enclosing said blade, said handle means being pivotally secured to the rear of said rigid frame portion, said rigid frame portion being adapted to bear against the palm of one of the user's hands and the handle means being adapted to be readily gripped by the fingers of said one hand whereby upon squeezing of the rigid frame portion and the handle means together, said handle means swings toward said rigid frame portion for advancing said blade through an increment of movement toward its cutoff position.

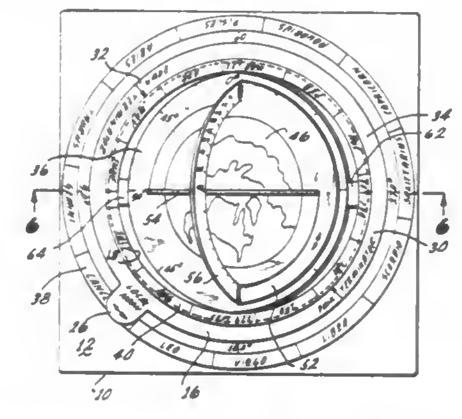
4,368,578
ORBITAL MISSION PLANNING INDICATOR

William J. Carroll, Cypress, and James W. Patrick, Fullerton, both of Calif., assignors to Rockwell International Corporation, Downey, Calif.

Filed Nov. 23, 1979, Ser. No. 97,090

Int. Cl.^{3} G01C ***21/00, 21/24***

U.S. Cl. 33—1 SA **7 Claims**



1. An Orbital Mission Planning Indicator, comprising, in combination:

(a) A frame having a first planar surface, said surface being generally horizontal and integral with said frame;

(b) a second planar surface, integral with said frame and inclined at an angle to said first planar surface with approximately half of said second surface above said first surface and half below the same;

(c) a planetary reference element rotatably coupled to said second planar surface at a first axis perpendicular to said surface;

(d) a planar carrier plate rotatably coupled to said planetary reference element for rotation in its plane about said first axis;

(e) a protractor element, said protractor element coupled to said carrier plate so that said protractor element lies in a plane containing said first axis of rotation of said carrier plate;

(f) a flat surfaced Orbital Plane reference element, said element hinged to said carrier plate and so hinged as to allow movement about a second axis in the plane of said carrier plate, said second axis oriented perpendicular to the plane of said protractor element; and

(g) a solar vector ring element having a tab with directional indicators thereon, said ring rotatably mounted on said frame so as to encircle said other elements while being free to rotate about said elements in the plane of said first planar surface.

4,368,579
LOCKING CAP FOR AN OIL GAUGE PIPE

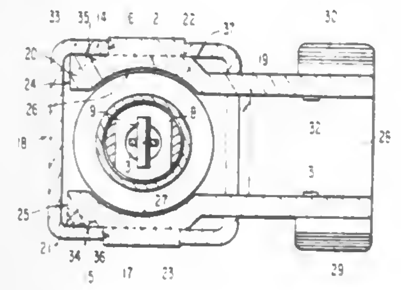
Ludwig Bauer, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,468

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 3012459

Int. Cl.^{3} G01F ***23/04***

U.S. Cl. 33—176.7 R **22 Claims**



1. A cap for an oil gauge pipe, the cap including a measuring rod means adapted to be inserted into the oil gauge pipe, means for mounting the measuring rod means to the cap, means for locking the cap at an opening of the oil gauge pipe, characterized in that the locking means includes an eccentric lever means mounted on the cap for engaging an underside of a flange provided at the opening of the oil gauge pipe when the locking means is in a locked position, a sealing means is mounted on the cap and is interposed between the cap and the flange in such a manner that the cap rests against the flange with the sealing means pressed between an inner surface of the cap and the flange in the locked position of the locking means, the eccentric lever means includes a pair of spaced lever parts disposed parallel to each other, the spaced lever parts are adapted to extend around the oil gauge pipe, and in that means are provided for connecting the lever parts to each other so as to form an operating handle.

4,368,580
APPARATUS FOR TESTING THE DIAMETER OF A CYLINDRICAL HOLE MACHINED IN A VERY THICK PART

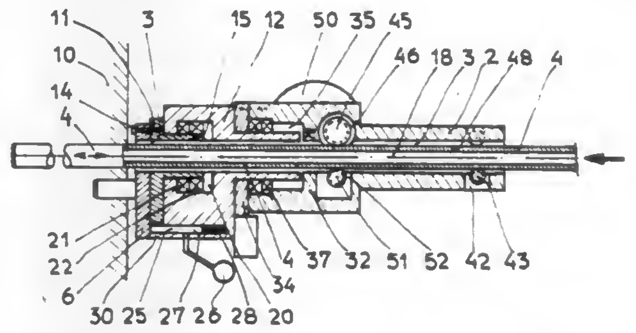
Gilles Frontiere, Chalon-sur-Saone, France, assignor to Framatome, Courbevoie, France

Filed Sep. 24, 1980, Ser. No. 190,390

Claims priority, application France, Oct. 8, 1979, 79 24985

Int. Cl.^{3} G01B ***7/28***

U.S. Cl. 33—178 R **6 Claims**



1. Apparatus for testing the diameter of a cylindrical hole machined in a very thick part (10), in two different planes passing through the axis of the hole and along its whole length, comprising

(a) a first support (1) comprising a central cavity (3) over its entire length and means (8, 9) for fixing it removably on the very thick part (10), so that the cavity (3) is arranged as the continuation of said hole;

(b) a second support (2) mounted on said first support (1), rotatable about an axis coinciding with the axis of said hole when said first support is fixed on said very thick part, having a cavity in the axial direction in continuation of said central cavity (3) of said first support;

(c) a shaft (4) bearing a bore-testing means (5) at one of its ends disposed axially inside said cavity (3) of said supports (1, 2) so that its end bearing said bore-testing means (5) is directed towards said hole in said very thick part, the diameter of said shaft and the transverse dimensions of said testing means allowing their free movement inside said hole;

(d) a first driving means (40) mounted on said first support (1) so that said second support (2) can be angularly oriented and locked in position with respect to the first, in one or the other of two positions allowing testing to be carried out in one or the other of said axial planes;

(e) a second driving means (50) and guiding means (43, 45) borne by said second support (2) for moving said shaft (4) in axial translation in one direction and in the other over a distance at least equal to the length of said hole, said shaft moving freely inside said axial cavity (3) of said first support; and

(f) means (54, 55, 56, 57) for controlling said first (40) and said second (50) driving means for starting said first driving means in one direction or the other and stopping said second driving means when the latter has carried out a complete translation corresponding to the stroke of said testing means over the entire length of said hole in one direction or the other, and inversely for stopping said first driving means and starting said second driving means when said first driving means has finished its movement for orienting said second support, in one direction or in the other.

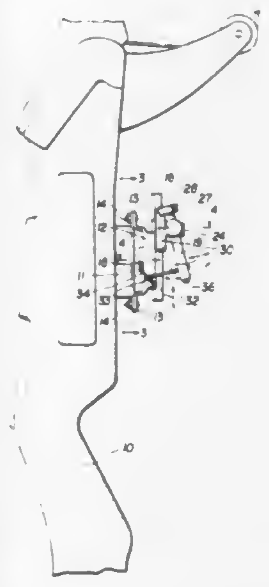
4,368,581
BOW SIGHT

Charles E. Tullos, Swartz, La., assignor to Stanley R. Palowsky, Jr. and Clifford L. Lawrence, both of Monroe, La., part interest to each

Filed Apr. 23, 1981, Ser. No. 256,737

Int. Cl.^{3} F41G ***1/46***

U.S. Cl. 33—265 **7 Claims**



1. A bow sight to enable an archer to aim at a target with accuracy from an elevated position or from a ground level position comprising a bow sight pivot element adapted to respond to gravity, means forming an axle and support for the pivot element above the center of gravity of the pivot element and being adjustable to release the pivot element for free swinging about said axle and for locking the pivot element against movement relative to said axle, a sight bead separate

from the pivot element, adjustable means carrying the sight bead and engaging the pivot element across the axis of the pivot element and being lockable thereto in any selected position of the sight bead laterally of the pivot element to adjust the center of gravity of the pivot element relative to said axle, and carrier means for the first-named means and being adjustable on two orthogonal axes.

4,368,582

PROCESS FOR DRYING FINELY DIVIDED PIGMENTS

Fritz Graser, Ludwigshafen, and Gerhard Wickenhaeuser, Birkenheide, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany
Filed Mar. 10, 1981, Ser. No. 242,189
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009603
Int. Cl.^{3} F26B *5/04*
U.S. Cl. 34—15 **14 Claims**

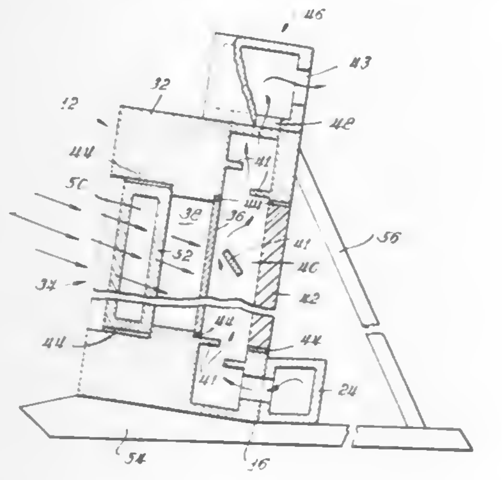
1. In a process for drying a finely divided pigment which is in the form of a press cake containing a liquid, or in the form of a suspension, by evaporating the liquid, the improvement comprising:

(a) heating under pressure a mixture of a finely divided pigment and a liquid for drying said pigment whose critical temperature is below the decomposition temperature of the pigment to above the critical temperature of the drying liquid; and
(b) releasing said pressure, while maintaining the temperature at all times above the due point of the liquid.

4,368,583

SOLAR-POWERED GRAIN DRYER AND PROCESS FOR DRYING GRAIN

Fred H. Bauermeister, 2801 Holiday La., St. Charles, Mo. 63301
Filed Oct. 14, 1980, Ser. No. 196,271
Int. Cl.^{3} F26B *3/28*
U.S. Cl. 34—93 **39 Claims**



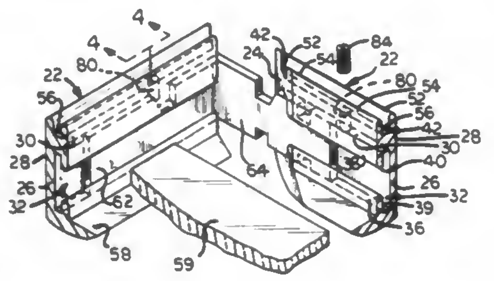
1. In a grain dryer which comprises means for passing heated ambient air through a mass of said grain and a heating unit for imparting heat to said air before it is brought into contact with said grain, the improvement in said heating unit which comprises:

an imperforate accumulator panel of heat-conducting metal;
a transparent panel for passing radiant solar energy onto said accumulator panel;
channeling means for channeling said ambient air into contact with the reverse side of said accumulator; and,
keepng means for keeping dust particles carried by the ambient air from being deposited on the inner surfaces of said panels; said transparent panel being uncovered, so that its outer surface can be easily cleaned of any dust particles deposited thereon, said accumulator panel being composed of a single sheet of isothermic foil having uniform heat-transfer characteristics throughout its expanse and being crinkled or subject to crinkling due to the differential expansion of the surfaces thereof.

4,368,584

PICTURE FRAME ASSEMBLY COMPONENTS

Malcolm Logan, Barrington, Ill., assignor to Logan Graphic Products, Inc., Wauconda, Ill.
Filed Dec. 2, 1980, Ser. No. 211,621
Int. Cl.^{3} G09F *1/12*
U.S. Cl. 40—152 **18 Claims**



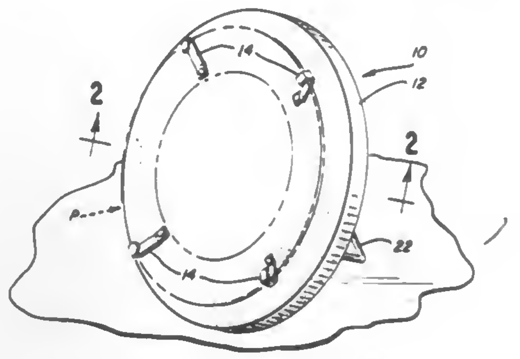
1. Components for constructing a back-loading picture frame comprising:

a plurality of frame sections for being assembled into a picture frame, any two of which sections are adapted to be oriented at an angle to form a corner of the assembled frame at the adjacent ends of the two sections, each frame section having at each end a sidewall defining a first channel for facing inwardly when the section is assembled with the other sections to form the frame, said first channel at each frame section end extending along the frame section for at least a portion of the length of the frame section, each frame section further having a pair of spaced-apart flanges extending from opposite sides of said first channel to define an opening to said first channel;
a bracket having a first leg and a second leg disposed at an angle substantially identical to the angle formed by said two frame sections at said frame corner, said legs each having dimensions of width and thickness whereby said bracket can be disposed within the first channels of said two frame sections, the width of each said leg being greater than the opening defined by said flanges thereby to retain the bracket within said first channels of said two frame sections, at least said first leg defining a notch opening toward the back of the assembled frame, a portion of said notch being defined by a slanting planar engagement surface extending into said first leg from a margin of said first leg at an angle relative to the length of said first leg, the distance between said slanting engagement surface and said second leg decreasing with increasing notch depth; and
locking means associated with at least one of said two frame sections and with said bracket first leg for being disposed within said one frame section from the back of the assembled frame to simultaneously engage said bracket slanting engagement surface and said one frame section when said bracket first leg is disposed within said first channel of said one frame section and when said bracket second leg is disposed within said first channel of the other of said two frame sections forming said corner whereby movement of said locking means relative to said one frame section causes relative movement between said bracket first leg and said one frame section in the direction parallel to the length of said one frame section to draw the facing regions of said two frame sections together at the corner.

4,368,585

DISPLAY FRAME FOR DECORATIVE OBJECT

Peter M. Meltzer, Glenview, and Donald G. Gallagher, Chicago, both of Ill., assignors to The Bradford Exchange, Ltd.
Filed Jun. 2, 1981, Ser. No. 269,747
Int. Cl.^{3} G09F *1/12*
U.S. Cl. 40—152.1 **8 Claims**



1. An improved display frame for holding and displaying an associated decorative object, such as a plate, outwardly of a planar surface of said frame to permit backlighting of said decorative object, comprising:

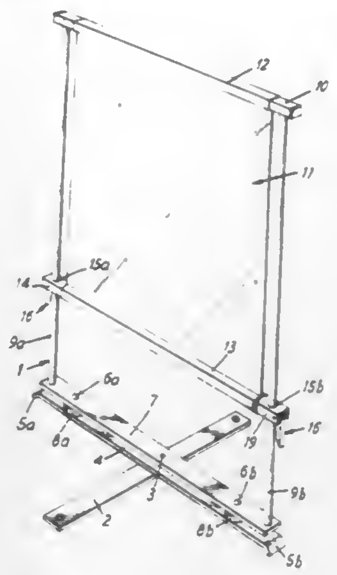
a substantially rigid background frame member having a generally flat planar surface,
said planar surface being continuous throughout its extent and adapted to substantially completely underlie said object, and said planar surface comprising material exhibiting low optical reflectivity relative to said decorative object, and
a plurality of gripping finger means affixed to said background frame member on said flat surface, each finger means being adapted to engage a peripheral edge portion of said decorative object, said finger means being spaced from each other and extending outwardly of the planar surface of said frame member so that said decorative object is held by said finger means spaced from and adjacent to said planar surface, and said finger means each defining an edge engaging portion, said edge engaging portions being disposed in a common plane which is spaced from and generally parallel to said flat planar surface, whereby said finger means collectively maintain said object in evenly closely spaced relation outwardly of said flat planar surface, said edge engaging portions and said flat planar surface being spaced from one another by a dimension that is sufficient to permit diffused light from said surface exhibiting relatively low optical reflectivity to strike said decorative object to accommodate backlighting of said decorative object of enhancing its appearance during display.

4,368,586

TENSIONING AND ATTACHMENT MEANS FOR DISPLAY STANDS AND SIMILAR DEVICES

Tage N. Forzelias, Villa Brunemo, 186 00 Vallentuna, Sweden
Filed Jul. 3, 1980, Ser. No. 165,904
Int. Cl.^{3} G09F *17/00;* **F16M** *11/00;* **B65H** *59/10;* **A47B** *47/00*
U.S. Cl. 40—604 **3 Claims**

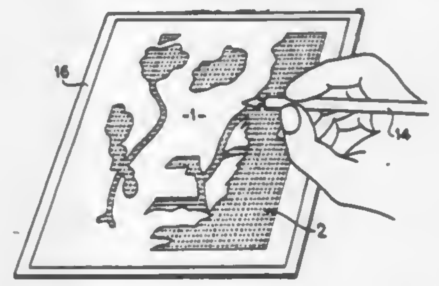
1. A tensioning and attachment device, to co-operate with a tube or a bar having a substantially circular section, comprising a bracket carried displaceably on the tube or the bar, and a tensioning arm pivotally mounted to said bracket, said arm including a handle portion and an abutment portion, said abutment portion having two laterally spaced legs at a spacing which substantially corresponds to the diameter of the tube or bar the pivotal journalling point of the arm on the bracket being selected such that said legs, upon swinging of the tensioning arm from an idle to an operative position, engage the outer surface of the tube or bar with a successively increasing force and said swinging movement, due to a grip obtained between the abutment portion and the tube, causing displacement of the bracket along the tube or the bar and resulting in an increasingly stronger grip between the tensioning arm and the bar or tube.



4,368,587

METHOD OF MAKING COLOR SEPARATION PLATES USED AS A PROOF AND A POSITIVE FOR MAKING OFFSET PRINTING PLATES PHOTOGRAPHICALLY

Bernard Childs, 4, Rue de l'Universite, 75007 Paris, France
Continuation of Ser. No. 31,938, Apr. 20, 1979, abandoned, which is a continuation of Ser. No. 783,748, Apr. 1, 1977, abandoned. This application Jan. 15, 1981, Ser. No. 225,381
Int. Cl.^{3} G09F *19/00;* **B05D** *3/00;* **G03B** *27/02;* **B41M** *1/14*
U.S. Cl. 40—615 **3 Claims**



1. A method of making color separation plates used as a proof and a positive from which offset printing plates are directly made photographically comprising, creating an original art image as full color line art on a monochrome overlay by superimposing in an overlay arrangement a plurality of individual transparent supports each having a continuous color layer of coloring material on a major side surface and the coloring material of the coloring material of the individual layers of the monochrome supports each being a different color corresponding to the color of a printing ink, mechanically removing coloring material on each support sequentially while maintaining the monochrome supports superimposed to define thereon an elementary design for progressively jointly defining with the individual monochrome supports superimposed with elementary designs thereon in a registry effective to define a final original art image in a desired color for each portion of said original art image,

while removing said coloring material continuously comparing the elementary design of the individual monochrome supports superimposed with elementary designs thereon in a registry effective to define a final original art image in a desired color for each portion of said original art image,
while removing said coloring material continuously comparing the elementary design of the individual monochrome supports superimposed so that the complete original art image defined by the superimposed monochrome supports

is revised as the elementary design on given support is changed, and

maintaining the monochrome supports superimposed to obtain a multicolor final original art image by transparency.

4,368,588
EXPLOSIVE POWDER DRIVEN FASTENING FASTENING ELEMENT SETTING DEVICE

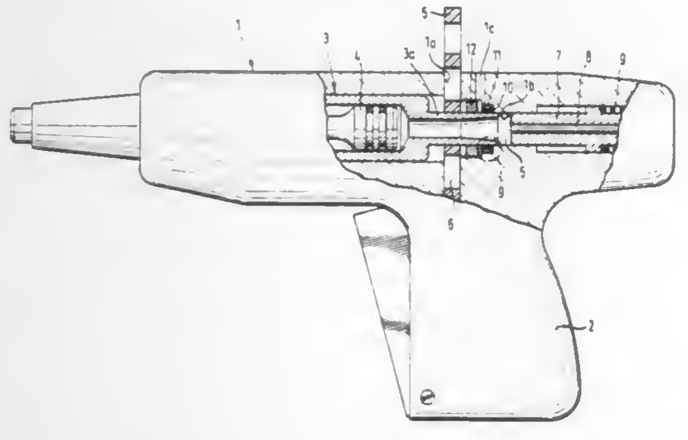
Peter Jochum, Meiningen, Austria, and Franz Buechel, Ruggell, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Feb. 10, 1981, Ser. No. 233,069

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005341

Int. Cl.^{3} F41C *27/00;* **B25C** *1/10*

U.S. Cl. 42—1 R **5 Claims**



1. A setting device adapted to use an explosive powder propellent for driving fastening elements, such as bolts, nails and the like, into a hard receiving material, with the powder propellent being in the form of a caseless propellent charge, comprising a casing, means within said casing for forming a combustion chamber, said means comprising an axially extending feed element displaceably positionable in the axial direction thereof within said casing, a counterpressure member in axial alignment with said feed element, said feed element forming one side of said combustion chamber and said counterpressure member forming an opposite side of said combustion member, a ring located within said casing and encircling said feed element, said ring having a radially inner surface arranged to contact the outside surface of said feed element and a radially outer frusto-conical surface with the frusto-conical surface tapering inwardly in the direction away from said combustion chamber, said casing having a frusto-conical surface arranged in contact with said frusto-conical surface on said ring with said frusto-conical surface on said casing tapering inwardly in the same direction as said frusto-conical surface on said ring and said ring being arranged to be contacted by propellent gases generated within said combustion chamber when a propellent charge is ignited so that the frusto-conical surface of said ring tends to be displaced along the frusto-conical surface of said casing in the direction away from said combustion chamber so that the inside surface of said ring is pressed against the outside surface of said feed element.

4,368,589
HAND GUN AND KIT THEREFOR

Anthony A'Costa, 2216-7th Ave., Apt. C 301, Pueblo, Colo. 81003

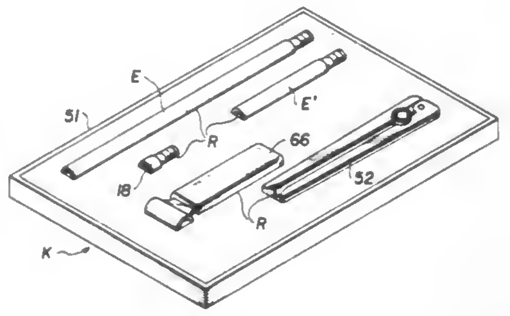
Filed Aug. 28, 1979, Ser. No. 70,466

Int. Cl.^{3} F41C *21/00*

U.S. Cl. 42—77 **5 Claims**

1. A barrel extension for a bullet firing weapon having a barrel and an internally threaded forward end portion comprising a tubular member of metal having a longitudinally extending central bore, said central bore being defined by a smooth inner uniform wall having an inner diameter corresponding to the inner diameter of the barrel of said weapon, said barrel extension having an outer uniform diameter corresponding to the outer diameter of said weapon barrel, said barrel extension having an externally threaded end portion arranged for threaded engagement with said weapon barrel internally threaded end portion with the adjacent ends of said weapon barrel and barrel extension in abutting engagement;

a wrench for clamping engagement with said barrel extension during assembly and disassembly of said barrel extension on said weapon, said wrench comprisng a pair of clamping arms pivotally mounted together at one end for movement between an opened release position and a closed clamping position, an annular recess in each of said clamping arms adjacent one end, said annular recesses opening inwardly toward each other for clamping engagement with a barrel extension positioned therein in the closed position of said clamping arms.



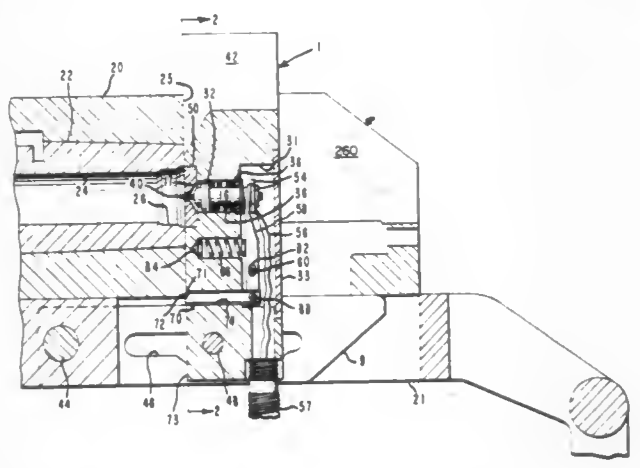
4,368,590
FIRING PIN RETRACTOR MECHANISM FOR ELECTRICALLY-FIRED GUNS

John R. Palmer, Utica, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Jun. 26, 1980, Ser. No. 163,309

Int. Cl.^{3} F41C *19/12*

U.S. Cl. 42—84 **8 Claims**



1. In an electrically-fired gun which includes a barrel having an open breech; a yoke secured to said barrel and formed with a passage communicating with said breech and having a wall extending transversely to the length of said barrel; a breechblock having a surface conformable to said passage wall and slidably received in said passage; means for reciprocating said breechblock in said passage between positions opening and closing said breech; electrical firing pin means reciprocable in said breechblock between a firing position protruding from said breechblock into said breech for electrical firing contact with a shell received in said barrel, and a position retracted within said breechblock;

an improved firing pin retractor mechanism comprising, in combination: a retractor lever connected with said firing pin means and mounted in said breechblock for movement

to a position retracting said firing pin means, and to a position releasing said firing pin means for displacement to said firing position; and lever-positioning means including a firing pin spring biasing said firing pin means toward said firing position, and said retractor lever toward said releasing position; said lever-positioning means further including a plunger movably mounted in said breechblock, drivingly connected with said retractor lever, and formed with a cam surface extensible from said breechblock surface for sliding engagement with said passage wall; said lever-positioning means being constructed and arranged to move said retractor lever to said retracting position in response to displacement of said breechblock from said breech-closing position, and to said releasing position in response to displacement of said breechblock into said breech-closing position.

4,368,591
SEED HAVING HIGH OPACITY COATINGS

Martin B. Barke, and Rebecca A. Luebke, both of Minneapolis, Minn., assignors to Cargill, Incorporated, Minnetonka, Minn.

Filed Nov. 12, 1980, Ser. No. 205,891

Int. Cl.^{3} A01C *1/06*

U.S. Cl. 47—57.6 **10 Claims**

1. Seed having an exposed coating comprising between about 0.035 and about 1.80 gm. of titanium dioxide per kilogram of seed and an effective amount of an active ingredient, said titanium dioxide having an average particle diameter between about 10 microns and about 80 microns thereby providing the coating with high opacity and brightness whereby the visible characteristics of the coated seeds are substantially enhanced.

4,368,592
SEMI-DWARF MAIZE AND METHOD

Vern A. Welch, Fremont, Nebr., assignor to DeKalb AgResearch, Inc., DeKalb, Ill.

Filed Jul. 27, 1981, Ser. No. 286,858

Int. Cl.^{3} A01H *1/02*

U.S. Cl. 47—58 **7 Claims**

1. A method of obtaining seeds of dominant semi-dwarf maize, including the steps of:

growing a first generation maize plant from first generation seed which includes a dominant semi-dwarf height allele;

self-pollinating the first generation maize plant to produce second generation seed;

growing a second generation of maize plants from the second generation seed;

eliminating the normal height maize plants, if any, from the second generation plants;

self-pollinating the remaining second generation plants to produce third generation seed;

isolating the third generation seed from each plant as a set from the seed of the remaining second generation plants;

growing third generation plants on a segregated basis from seed from each set of isolated third generation seed;

self-pollinating the third generation plants in the isolated sets which are of semi-dwarf height to produce fourth generation seeds;

collecting the fourth generation seed from the sets of isolated seed whose segregated third generation sample plants are all of semi-dwarf height;

and thereafter cyclically growing additional generation of plants from the thus collected fourth generation seed, self-pollinating such plants to produce additional seed from which additional plant generations are grown and self-pollinated to produce additional seed, etc. on a cyclical basis a sufficient number of times to produce final semi-dwarf seed of satisfactory homozygosity.

4,368,593
DEVICE FOR STORAGE AND DOSED DELIVERY OF LIQUIDS

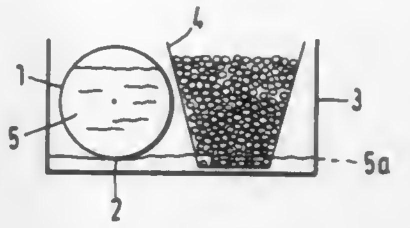
Wolfgang Blaicher, Gartenstrasse 10, 5901 Eppelheim, Fed. Rep. of Germany

Division of Ser. No. 35,443, May 3, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,498

Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820540; Dec. 23, 1978, 2855973

Int. Cl.^{3} A01G *31/02;* **B65B** *3/26*

U.S. Cl. 47—59 **8 Claims**



1. A hydroculture, soilless plant watering system comprising a plant container or culture pot filled only with an inert granular substrate;

an outer vessel containing said plant container;

a water supply container situated in said outer vessel, said water container designed for the storage and dosed delivery of water including means to maintain a pre-determined and variable discharge water level in said outer vessel, said water supply container comprising a tank rotatably mounted about at least one axis of said tank and having at least one opening rotatable from an upper filling or non-operating position to a lower discharge or operating position, the degree of rotation determinate of the desired water level in said outer vessel; and

a nutrient supply affixed in on or adjacent said tank.

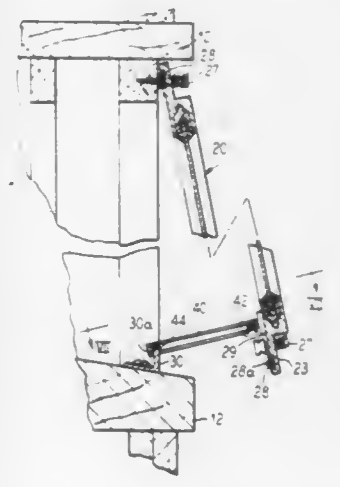
4,368,594
STORM WINDOW

William O. Milam, and Ransoma L. Morrow, both of Portland, Oreg., assignors to Milam Corporation, Portland, Oreg.

Filed Feb. 12, 1981, Ser. No. 233,936

Int. Cl.^{3} E05B *65/04*

U.S. Cl. 49—67 **10 Claims**



1. In a storm window structure including a storm window for protectively screening out cold air, dirt and the like when mounted upon a window frame carrying at least one window, the improvement of a window suspension arrangement for mounting the storm window frame in assembly with the frame of the window, the storm window frame having a continuous annular resilient synthetic plastic spacer mounted on an inwardly facing surface of the frame for abutment against the frame carrying the window, and spring loaded fasteners extending through said storm window frame for compressing

said continuous annular resilient synthetic plastic spacer throughout its annular dimension and for securing the storm window frame in retained engagement with the window frame of the window thus insuring a snug air-tight assemblage of the storm window on the window frame of the window, said window frame on said storm window having an annular inwardly facing retaining groove and with said continuous annular resilient synthetic spacer being retainingly engaged and retained in said groove, at least some of the fasteners extending into said groove and through said spacer in threaded engagement with the window frame carrying the window.

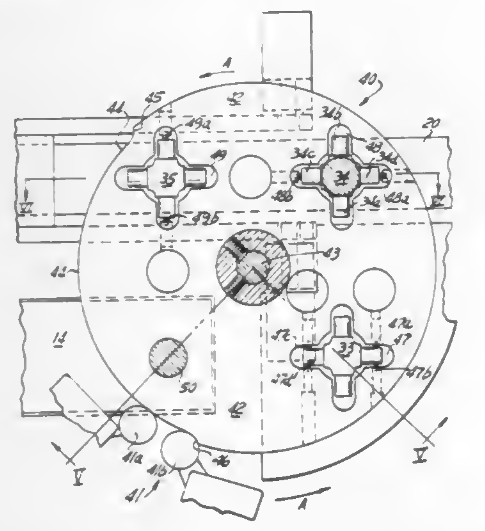
4,368,595
GRINDING APPARATUS HAVING IMPROVED WORKPIECE HANDLING ACCESSORY

Jack L. Garnett, Beloit, Wis., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 12, 1980, Ser. No. 206,122

Int. Cl.^{3} B24B ***5/02***

U.S. Cl. 51—118 **10 Claims**



1. In a grinding apparatus of the type having a frame, a grinding member coupled to the frame for grinding a surface of workpiece at a grinding station, a carrier movably coupled to said frame for moving a workpiece from a loading station through the grinding station to an unloading station, and means coupled to the frame for receiving a workpiece at the unloading station and for rotating a workpiece by an angular displacement after grinding a first surface to present a second surface for grinding and for moving the workpiece to the loading station, the improvement wherein:

the means for rotating the workpiece includes a plate member rotatably mounted to the frame and having an aperture for receiving the workpiece and means for rotating the plate member and workpiece in a single plane from a first position to a second position by the angular displacement to orient the second surface in a position for grinding when moved to the loading station.

4,368,596
FEED SAFETY APPARATUS FOR MOVABLE MEMBER

Ryuji Wada, Nagoya; Kenichi Munekata; Kunihiko Unno, both of Kariya; Norihiko Shimizu, Nagoya, and Yasuo Suzuki, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 23, 1981, Ser. No. 237,271

Claims priority, application Japan, Feb. 29, 1980, 55-24132

Int. Cl.^{3} B24B ***49/08***

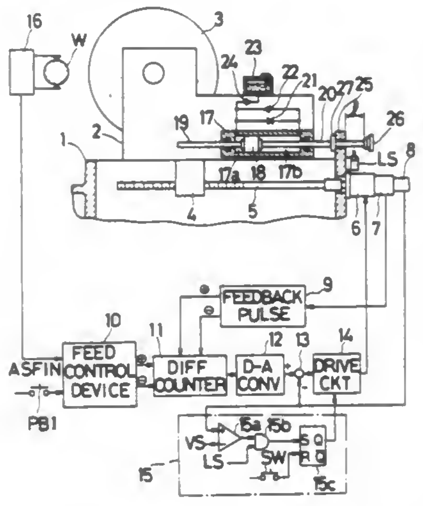
U.S. Cl. 51—165.77 **6 Claims**

1. A feed safety apparatus for a movable member slidably supported on a stationary bed of a machine tool, comprising:

feed means having a single drive motor for moving said movable member a predetermined first distance at a rapid feed speed and then a second distance at a machining feed speed substantially lower than said rapid feed speed;

a hydraulic cylinder fixedly mounted on one of said bed and said movable member and including a piston slidably received therein to define a pair of cylinder chambers;

fluid flow regulating means disposed between said pair of cylinder chambers for controlling flow of fluid between said pair of cylinder chambers so as to prevent said piston from moving relative to said hydraulic cylinder not sufficiently slower than said rapid feed speed; and



piston control means for permitting bodily movement of said piston with said hydraulic cylinder when said movable member is moved by said feed means said predetermined first distance, but restraining movement of said piston relative to the other of said bed and said movable member when said movable member is subsequently moved by said feed means said second distance, whereby said movable member is prevented from moving said second distance not sufficiently slower than said rapid feed speed.

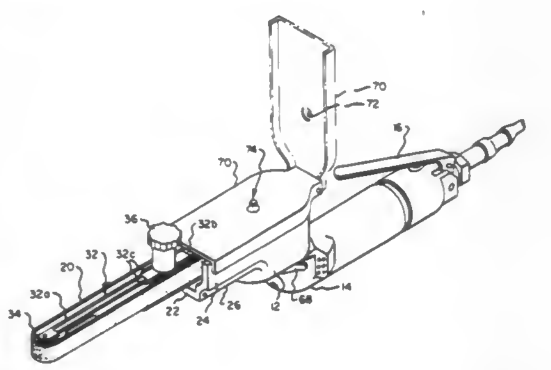
4,368,597
MINIATURE BELT GRINDER

Elwin H. Fleckenstein, Alden, N.Y., assignor to Dynabrade, Inc., Tonawanda, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,968

Int. Cl.^{3} B24B ***23/06***

U.S. Cl. 51—170 EB **9 Claims**



1. A portable belt grinder comprising in combination:

a casing having an open front end and an open top;

a drive pulley;

means for mounting said drive pulley in said casing effecting driven rotation thereof;

a contact pulley;

means for mounting said contact pulley exteriorly of said casing and for rotation about an axis essentially parallel to the axis of rotation of said drive pulley, said drive pulley and said contact pulley being adapted to support an abrasive belt trained thereabout, said means for mounting said contact pulley includes a post upstanding within said casing lengthwise intermediate said drive and contact pulleys and transversely intermediate runs of said belt when trained about said drive and contact pulleys, an arm extending through said front end of said casing having an outer end for mounting said contact pulley and an inner end, a guide means cooperating with said inner end of said arm for supporting said arm for reciprocating movement to vary the distance between said drive and contact pulleys, spring means for biasing said arm for reciprocating movement increasing the distance between said drive and contact pulleys for tightening said belt, means carried by said post for selectively varying said bias of said spring means to provide for loosening of said belt;

a cover hingedly mounted on said casing adjacent a rear portion thereof for closing said open top,

an aperture in said cover,

latch means for releasably locking said cover in a position closing said open top, said latch means including a resiliently deformable member arranged to upstand from said post for receipt within said aperture.

4,368,598
HAND-HELD POWER GRINDING TOOL

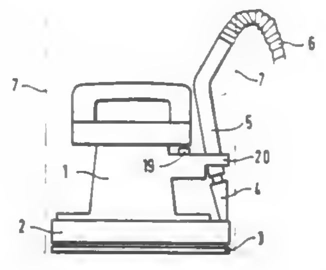
Gerhard Kuhlmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,241

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010838

Int. Cl.^{3} B24B ***23/04, 55/06***

U.S. Cl. 51—170 R **16 Claims**



1. A hand-held power tool, particularly a grinding machine and the like, comprising a housing; a working platen having an axis and arranged to move from an inoperative position to an operative position in which it oscillates relative to said housing, said working platen in said inoperative position overlapping a predetermined surface, said axis extending normal to said surface overlapped by said platen and having an imaginary extension; movable conduit means for transporting a material removed by said working platen; and control means for operating the power tool, said control means being located within a region which extends normal to said surface overlapped by said platen, so that only said movable conduit means extends outwardly beyond said region, said control means having a handle with an elongated gripping portion which extends substantially parallel to said working platen and is pivotable about said imaginary extension of said axis so as to assume a plurality of different radial positions relative to said housing.

4,368,599
APPARATUS FOR TRANSPORT AND SIMULTANEOUS SURFACE-TREATMENT OF DISCRETE COMMODITIES

Werner Hunziker, Staffelbachstrasse 195, Kirchleerau, Switzerland (CH-5054)

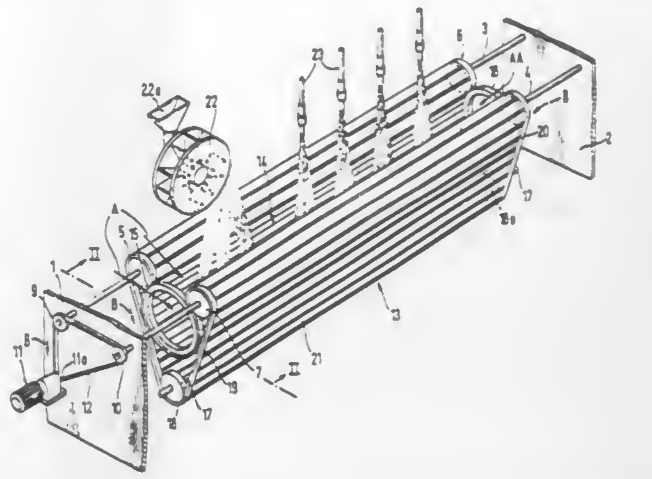
Continuation of Ser. No. 812,313, Jul. 1, 1977, Pat. No. 4,218,854. This application Jul. 1, 1980, Ser. No. 165,209

Claims priority, application Switzerland, Jul. 20, 1976, 9261/76

Int. Cl.^{3} B24C ***3/14***

U.S. Cl. 51—418 **19 Claims**

18. Apparatus for continuously transporting and changing the orientation of metallic objects or other discrete commodities, comprising substantially parallel first and second direction changing means; an endless band-like conveyor trained over and having a trough-shaped portion between said direction changing means; a feeding station disposed at one end of said trough-shaped portion for admission of discrete commodities into said one end; means for driving said conveyor; and means for forwarding the commodities from said one end toward the other end of said trough-shaped portion, said forwarding



means including a plurality of extensions resiliently affixed to said conveyor so as to extend at an angle inclined with respect to the surface of said conveyor in a direction toward said other end for resiliently flexing in said direction whereby a commodity on said extensions having sufficient weight to deflect the same will be conveyed in said direction.

4,368,600
REMOVABLE GUTTERING ASSEMBLY FOR MAN-HOLES OR THE LIKE

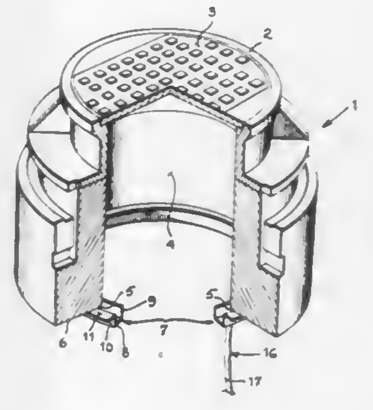
Yvon Carriere, 73, Huneault St., Pincourt, Quebec, Canada (J7V 7C3)

Filed Oct. 10, 1980, Ser. No. 196,059

Claims priority, application Canada, Oct. 31, 1979, 338839

Int. Cl.^{3} E02D ***29/14***

U.S. Cl. 52—11 **5 Claims**



1. A removable guttering assembly for use in a man-hole ventilation shaft or the like comprising:

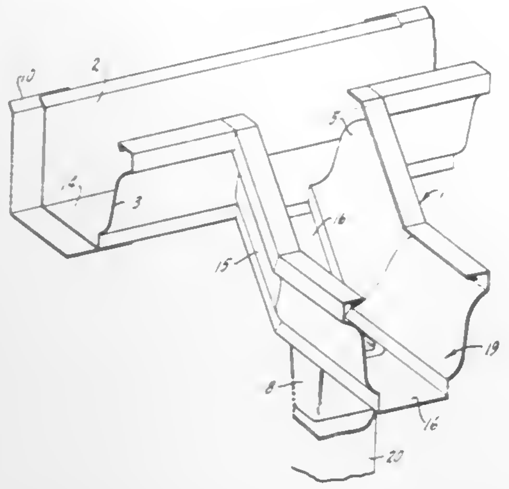
a. attaching means comprising a plurality of hooks located at spaced apart points around the periphery of a lower end of the hole or shaft in such a manner that they can receive a lateral flange of a removable gutter by mere insertion of the same therein;

b. a removable gutter having substantially the same size and shape as the lower end of the hole or shaft for collecting water entering said hole or shaft, said gutter having a laterally extending flange that can be quickly and easily engaged with said attaching means; and

c. at least one draining tube attached to said removable gutter for draining the water collected therein toward the ground.

4,368,601
GUTTER IMPROVEMENT

Harry A. Price, 14906 Kildare, Midlothian, Ill. 60445
Filed Aug. 8, 1980, Ser. No. 176,533
Int. Cl.^{3} E04D *13/08*
U.S. Cl. 52—16 **13 Claims**



1. A device for use with guttering, troughs and downspouts which collect water and blocking debris, including:

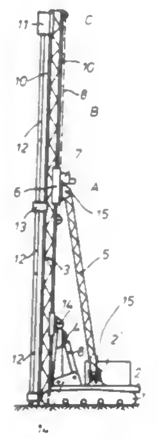
a channel having a trough end and an open end including a chute portion and a pair of side walls capable of being attached to a trough so that said chute portion is aligned with the bottom of said trough and said chute portion slopes downward and away from said trough at its attachment to said trough and said pair of side walls are connected to the front wall of said trough so as to allow water to flow from said trough to said channel; and,

an outlet located in said chute portion of said channel capable of conducting water from said channel to a downspout, said outlet being disposed between said trough side of said channel and said open end of said channel, wherein said channel and said outlet when used in guttering between said trough and said downspout allow water to be collected by said trough, flow to said channel, flow down said chute, flow into said outlet and then flow through said downspout, while also allowing blocking debris to pass through said channel over said chute, over said outlet and out said open end of said channel while bypassing said downspout.

4,368,602
MOBILE DRILLING RIG HAVING A RETRACTABLE GUIDING MOUNT OR MAST

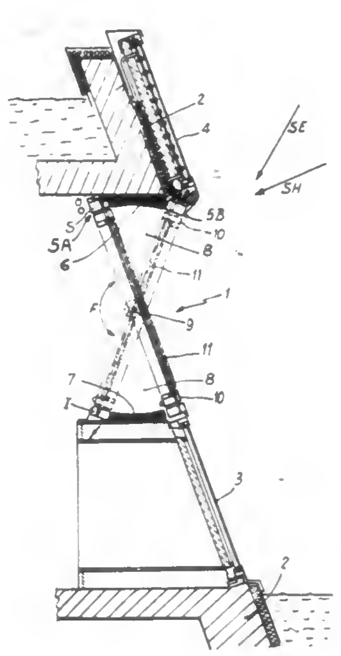
Heinrich Manten, Haselnussweg 3, D-3320 Salzgitter 51, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 175,199
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1979, 2931805
Int. Cl.^{3} E21C *11/02*
U.S. Cl. 52—115 **7 Claims**

1. A mobile drilling machine comprising a mobile undercarriage; a mast for supporting and guiding a drive unit for drilling tools; a slider arranged for movement in the longitudinal direction on said mast; at least one first arm of a constant length hinged at fixed points relative to said mast and said under carriage; at least one single second arm of a constant length hinged at fixed points relative to said slider and said undercarriage; the hinge points of said first and second arms on said undercarriage being spaced apart from each other about a constant distance; a self-locking power drive arranged between said mast and said slider to displace the same to a desired position on said mast; and a hydraulically driven cylinder-and-piston unit hinged at fixed points relative to said first arm and said undercarriage to tilt said mast in cooperation with said self-locking power drive about the corresponding hinge points of said first and second arms.



4,368,603
WINDOW WITH A PIVOTABLE FRAME HAVING IN CLOSED POSITION DIFFERENT INCLINATIONS WITH RESPECT TO THE SUN

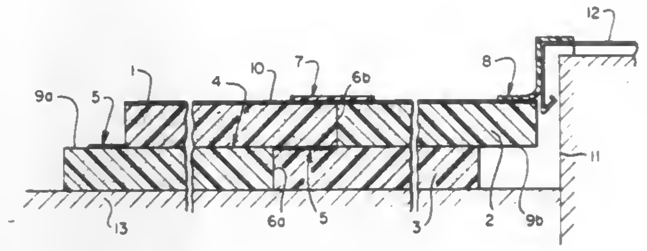
Jean Dumas, 43, Charles Laffitte St., 92200 Neuilly.Sur.Seine, France
Filed Oct. 2, 1980, Ser. No. 193,354
Claims priority, application France, Oct. 4, 1979, 79 24696
Int. Cl.^{3} E06B *1/04, 3/34*
U.S. Cl. 52—173 R **7 Claims**



1. A window with a window pane, pivoting around a horizontal axis to assume a first weathertight closing position during one season of the year and a second weathertight closing position during another season, comprising in combination two fixed casings, the first weathertight of which being in a position corresponding to the first weathertight closing position of the window pane, and the second one corresponding to the second weathertight closing position of the same window pane, with the planes of the two fixed casings crossing each other along a straight line which constitutes the pivoting axis of the window pane.

4,368,604
INSULATING PANEL FOR ROOF COVERINGS

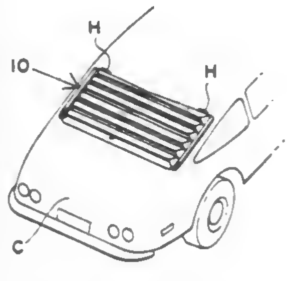
Paul Spielau, Troisdorf; Peter Pütz, Augustin; Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, and Hansfritz Schraube, deceased, late of Happerschoss, Fed. Rep. of Germany (by Maria K. Schraube, heir), assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Division of Ser. No. 33,840, Apr. 27, 1979, Pat. No. 4,282,697. This application Apr. 2, 1981, Ser. No. 250,218
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818485
Int. Cl.^{3} E04B *5/00;* **E04D** *1/28*
U.S. Cl. 52—309.8 **7 Claims**



1. An insulating panel comprising a core layer of a synthetic foam material bonded adhesively on its topside to a sealing thermoplastic layer or sheet throughout the surface area of the topside for the covering of roof structures, said core layer comprising at least two superimposed foam sheets of an elastic, closed-cell crosslinked polyolefin foam material, said sheets being bonded together throughout the contacting surface areas by flame laminating, the bonding surfaces of the foam, initially melted by the flame laminating, together constituting a homogeneous polyolefin layer.

4,368,605
AUTOMOBILE LOUVER ASSEMBLAGE

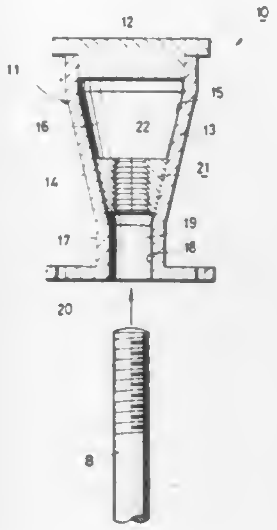
Everette R. Ulrich, 5631 SW. 8th Ct., Plantation, Fla. 33317
Filed Sep. 22, 1980, Ser. No. 189,282
Int. Cl.^{3} E04B *7/08*
U.S. Cl. 52—473 **8 Claims**



1. An automobile louver assemblage comprising, in combination, a plurality of elongate sheet metal vane members of substantially equal length, a pair of elongate, substantially equal side channel members, each side channel member having a longitudinally extending slot for the insertive reception of marginal end portions, respectively, of said louver vane members when said vane members are disposed in co-extensive parallel relation, hook means operative upon the insertion of said marginal end portions of said vane members in said side channel slots for preventing their subsequent withdrawal from said side channel members, said hook means comprising a plurality of spring clips, one for each marginal end portion of said plurality of vane members, and a through opening in each of said vane member marginal end portions for the interfitting reception, one each, of said spring clips.

4,368,606
SOCKET MEANS FOR EMBEDMENT IN A CONCRETE SLAB

Zenji Hoshino, Tokyo, Japan, assignor to Sanyo Industries, Ltd., Japan
Filed Jul. 15, 1980, Ser. No. 169,081
Claims priority, application Japan, Jul. 31, 1979, 54-106039[U]; Sep. 17, 1979, 54-128155[U]; Sep. 28, 1979, 54-134388[U]; Dec. 13, 1979, 54-172881[U]
Int. Cl.^{3} E04B *1/41*
U.S. Cl. 52—711 **2 Claims**

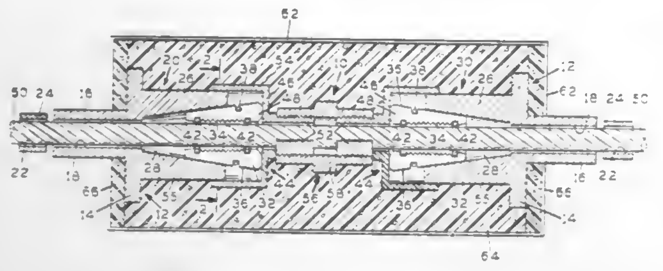


1. A socket comprising, a socket body to be anchored in fixed position when in use and having an internal blind bore having an open end and a closed end, said blind bore having a portion axially spaced from the open end of the blind bore, said portion having inner surfaces converging in a direction toward the open end of the blind bore and diverging toward the closed end of the blind bore, an internally threaded locking element in said portion of the blind bore, for releasably securing an externally threaded bolt in said blind bore portion upon insertion of the bolt axially into the blind bore and without need of rotating the bolt to thread it with the locking element, said locking element comprising at least two, separate segments having outer side surfaces complementary with the converging inner surfaces of said portion of the blind bore, said segments each having an axial extent less than the axial length of said portion of the blind bore and each having an internal thread, said segments being dimensioned to slide axially on the inner surfaces diverging toward the closed end of the bore and disposed jointly defining an internal threaded bore concentric with the blind bore and of lesser diameter than the diameter of a threaded bolt with complementary threads insertable axially into said blind bore for threading with said locking element without rotation of the bolt, whereby when a bolt to be secured with said socket and having threads complementary with the threads of the segments is inserted into said socket body a leading end of the inserted bolt engages said segments and moves them axially along the diverging surfaces of the blind bore toward the closed end of the blind bore and separates them radially to effect threading with the locking element by simple axial insertion into said blind bore and upon movement of the bolt axially in a direction away from the closed end said segments are moved to the converging surfaces and clamp about the bolt threads and hold it fixed in said portion in a threaded condition.

4,368,607

ANCHOR CONSTRUCTION FOR PRESTRESSING MEMBERS

Cornelis J. F. Boonman, Delfgauw, Netherlands
Division of Ser. No. 37,304, May 8, 1979, Pat. No. 4,318,256. This application Jun. 16, 1981, Ser. No. 274,253
Claims priority, application Netherlands, May 16, 1978, 7805229
Int. Cl.³ E04C *3/10*
U.S. Cl. 52—741 **7 Claims**

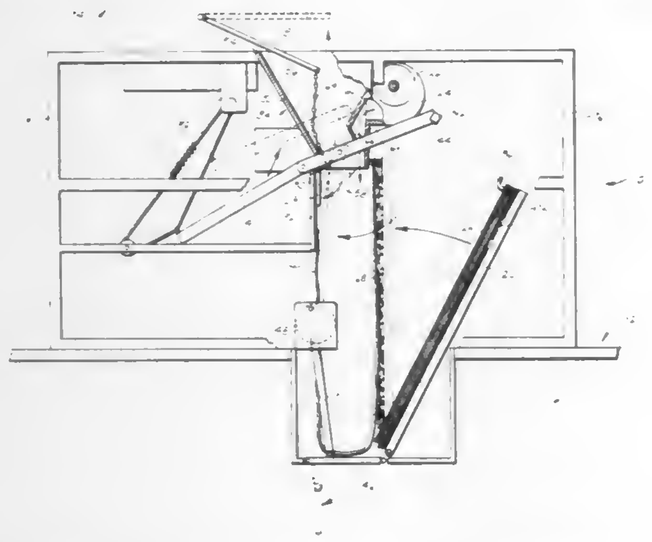


1. The method of constructing a prestressed concrete slab comprising at least one continuous prestressing member extending between the ends of said slab; providing at least one support at each end of said slab, providing at least one additional support intermediate the end supports, assembling an anchor-clamp to said at least one prestressing member, locating said anchor-clamp intermediate the length of said prestressing member and over an intermediate support, protecting said anchor-clamp from contamination by wet concrete, pouring the concrete for said slab with the prestressing member positioned therewith, allowing said concrete to harden, stressing said at least one prestressing member and anchoring the same at both of its ends, activating said anchor-clamp to securely clamp the same to said prestressing member, and pouring concrete about said anchor-clamp to imbed said anchor-clamp in the concrete of said slab.

4,368,608

AUTOMATIC ICE BAGGER

Jimmy C. Ray, Denison, Tex., assignor to Texas Aim, Inc., Houston, Tex.
Filed Jul. 25, 1977, Ser. No. 818,506
Int. Cl.³ B65B *5/06, 63/08*
U.S. Cl. 53—440 **16 Claims**

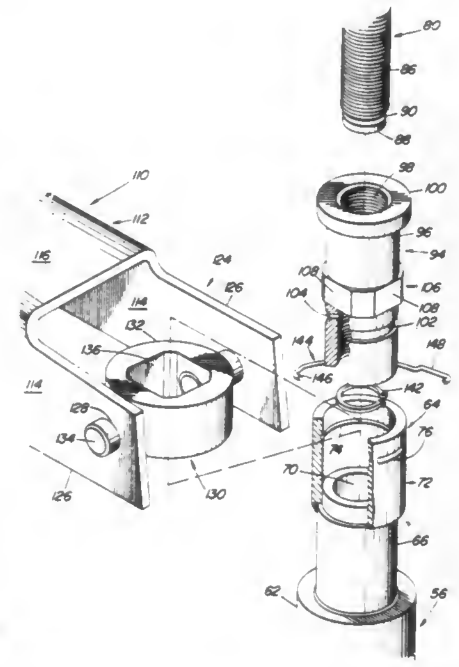


1. The method of preparing a bag of ice comprising:
a. freezing water into ice in the tray,
b. dumping the ice from the tray directly into a heat sealable bag,
c. sealing the bag closed,
d. dumping the ice through a chute,
e. carrying a plurality of bags by a panel of each of the bags stacked on a movable platen,
f. moving the platen with the bags to the chute,
g. opening the bag and
h. attaching another panel of the bag to the chute, then
j. performing said dumping step, then
k. moving the platen away from the chute, and
m. performing said sealing step.

4,368,609

HEIGHT ADJUSTMENT AND SAFETY STOP FOR A HARVESTER REEL

Eugene B. Hutchinson, East Moline, and Donald L. Dailey, Coal Valley, both of Ill., assignors to Deere & Company, Moline, Ill.
Filed Feb. 20, 1981, Ser. No. 236,396
Int. Cl.³ A01D *57/04*
U.S. Cl. 56—221 **9 Claims**



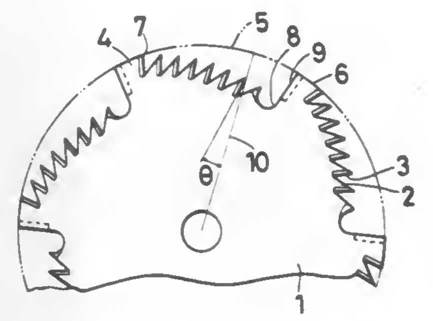
1. In an agricultural machine having a mobile frame and a power source and carrying juxtaposed cooperating first and second material handling components, an improved means for controlling the spacing of the components to suit operating conditions comprising:
a linear actuator having an effective stroke and operably connected to the power source and having opposite first and second ends respectively engaging the first and second components adjacent a first location and extendable and retractable responsive to the power source to vary the spacing of the components at the first location within a first operating range established by the effective stroke of the actuator;
adjustment means integral with the actuator for changing the spacing of the ends of the actuator independently of the powered operation of the actuator so as to shift the operating range of the first component relative to the second; and
means carried by the linear actuator shiftable between first and second modes of engagement with the actuator and operable to actuate the independent adjustment means when in the first mode and operable to limit retraction of the actuator when in the second mode.

4,368,610

SERRATED BLADE FOR A MOWING MACHINE

Toshio Aono, 2185-2, Fukui, Miki-shi, Hyogo-ken, Japan
Continuation of Ser. No. 172,849, Jul. 28, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,693
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **2 Claims**

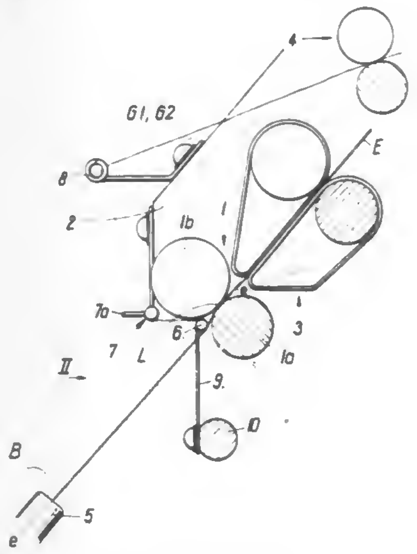
1. A serrated blade for a mowing machine comprising:
a disc-shaped rotatable cutting blade;
said cutting blade having a plurality of fingers, each of said fingers having two substantially radial edges extending radially outward therefrom, said fingers being circumferentially spaced along an outer edge of said cutting blade and being arranged such that circumferential spaces are defined between any two opposing radial edges of adjacent fingers and the outer peripheral edges of said fingers lying on an imaginary circle which has a center that is coaxial with the axis of said cutting blade, the leading radial edge being a cutting edge and having the outer end inclined in the direction of rotation of said blade relative to the inner end;
said cutting blade having a plurality of radially extending sawteeth, positioned in the circumferential spaces, each of said sawteeth positioned in a corresponding circumferential space having the outer peripheral edges thereof defining points of a corresponding imaginary substantially circular arc extending from said leading radial edge inwardly from said imaginary circle and which has a radius of curvature less than that of the corresponding imaginary circle and has a center eccentric to the center of the corresponding imaginary circle;
each of said sawteeth having a leading sawtooth cutting edge defined by a radial edge thereof, the sawteeth cutting edges being positioned on corresponding radial edges of said sawteeth and each said sawtooth cutting edge extending in a radial direction that is substantially perpendicular to the direction of a line tangent to the corresponding imaginary substantially circular arc.



4,368,611

APPARATUS FOR PRODUCING EFFECT YARN

Manfred Mainka, Günzach; Heinz Bleeck, Probstried; Gerbard Wehrmeister, Kempten, and Milan Czapay, Betzigau, all of Fed. Rep. of Germany, assignors to Firma Saurer-Allma GmbH, Kempten, Fed. Rep. of Germany
Filed Mar. 24, 1981, Ser. No. 247,021
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 8009985[U]
Int. Cl.³ D02G *3/34;* **D01H** *13/04, 7/88*
U.S. Cl. 57—6 **8 Claims**

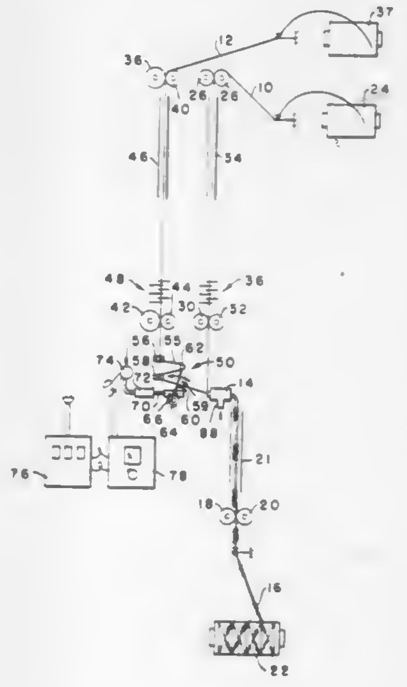


1. In an apparatus for producing effect yarn which includes at least one pair of feed rollers for the yarn component which creates the effect, said pair of feed rollers consisting of a driven roller and a pressure roller forced against the driven roller, a supply arrangement for at least one foundation thread, a hollow spindle for carrying a bobbin of binding thread, said hollow spindle having a twist limiter, and a pair of draw-off rollers, the improvement which comprises a deflecting pin for the foundation thread arranged at the exit of the pair of feed rollers in the wedge between the feed rollers, said deflecting pin extending substantially parallel to the axes of the feed rollers and being arranged substantially in the plane of thread movement defined by the line of contact of said feed rollers and by the combined threads running to the hollow spindle downstream of the feed rollers, and means for guiding the foundation thread past the feed rollers on the outside thereof and then to the deflecting pin.

4,368,612

APPARATUS FOR FORMING FALSE TWISTED SLUBYARN

Paul W. Eschenbach, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Division of Ser. No. 93,199, Nov. 13, 1979, Pat. No. 4,305,245. This application May 26, 1981, Ser. No. 267,100
Int. Cl.³ D02G *3/34*
U.S. Cl. 57—6 **8 Claims**



1. Apparatus to form a slub yarn comprising: means to supply an effect yarn, means to supply a core yarn, means operably associated with said apparatus to false twist said effect and core yarns, an air jet yarn entangling means, a first means to supply the effect yarn to said air jet means from said means to false twist, a second means to supply the core yarn to said air jet means, means to supply air under pressure to said air jet means to entangle the core and effect yarns in said air jet means and means to take-up the entangled core and effect yarns, said first means including a yarn path deviating means to periodically increase the path of the effect yarn between the false twist means and said air jet means, said yarn path deviating means including a lever arm attached to a gear, said gear being rotably mounted in contact with a rack, said yarn path deviating means including a means to periodically and randomly reciprocate said rack.

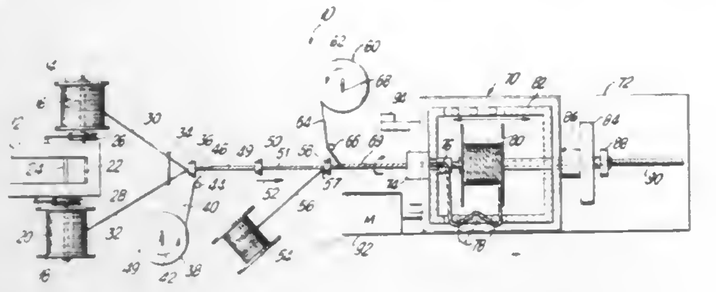
4,368,613
TAPE WRAPPED CONDUCTOR

Florencio Sanchez, Vineland, N.J., assignor to InsCon Cable Inc., Bridgeton, N.J.

Division of Ser. No. 205,943, Nov. 12, 1980, abandoned. This application Jul. 22, 1981, Ser. No. 285,818

Int. Cl.^{3} H01B *13/06;* **D07B** *1/14, 1/16*

U.S. Cl. 57—11 **9 Claims**



1. An apparatus for producing a tape wrapped conductor, comprising:

- first means for both rotating and longitudinally advancing a conductor from a source reel to a take up reel;
- second means for supplying a first insulating tape, a drain wire, and a second insulating tape at respective successive locations with respect to the advancing conductor; and
- third means for drawing said first insulating tape, said drain wire and said second insulating tape successively into a spiral wrap about the conductor in an overlying relationship with each other by utilizing the rotating and advancing movement of the conductor to provide the spiral wrap.

4,368,614
VERTICAL WIRE-ROPE TWISTING MACHINE

Viktor F. Groza, ulitsa Darvina, 7, kv. 12, Kharkov; Khristofor S. Shakhpazov, prospekt Mira, 188, kv. 30, Moscow; Nikolai P. Shtykh, ulitsa III Internatsionala, 17, kv. 56, Kharkov; Ivan N. Nedovizy, ulitsa Moskovskaya, 37, kv. 49, Magnitogorsk; Nikolai I. Drozdov, prospekt Vernadskogo, 82, kv. 1517, Moscow; Sergei F. Korovainy, ulitsa Vokzalnaya, 70, kv. 29, Khartsyzsk, Donetskaya oblast; Nikolai P. Chernenko, ulitsa Pushkinskaya, 18, kv. 4; Vitaly S. Starchenko, Moskovskoe shosse, 157, kv. 12, both of Orel; Jury I. Chernichenko, ulitsa Bljukhera, 7, kv. 161, Kharkov; Ljudmila P. Lebed, ulitsa Geroev Truda, 26, kv. 65, Kharkov; Ljubov F. Musolova, prospekt 50 let Vlksm, 44-a, kv. 168, Kharkov; Vladimir F. Mischikha, Yasny proezd, 30, korpus 1, kv. 47, Moscow; Sergei D. Psarev, prospekt Metallurgov, 32, kv. 32, Orel; Stanislav A. Ropakov, prospekt Lenina, 64, kv. 236, and Igor G. Mirensky, Kirgizsky proezd, 1, kv. 16, both of Kharkov, all of U.S.S.R.

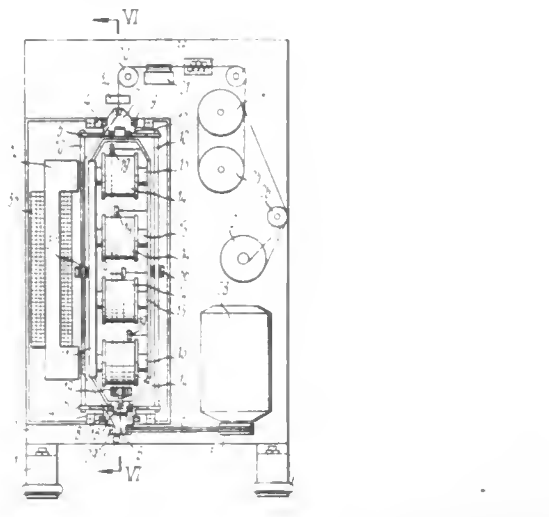
Filed Mar. 19, 1981, Ser. No. 245,393

Int. Cl.^{3} D07B *3/04, 3/12, 7/02*

U.S. Cl. 57—58.52 **5 Claims**

1. A vertical wire-rope twisting machine comprising:

- a carrying plate;
- a rotor mounted in supports secured to said carrying plate and having a vertical axis of rotation, said rotor including at least two interconnected end plates journaled in bearings;
- a drive for one of said end plates;
- spools provided with braking means and wire to be twisted;
- a single spool holder common for all the spools and journaled in bearings inside said rotor, the axis of rotation of the spool holder coinciding with the axis of rotation of the rotor; and
- an electromagnetic system for fixing said spool holder.



4,368,615
FIBRE, THREAD BUNDLE AND CORD FROM POLY-P-PHENYLENE TEREPHTHALAMIDE

Henri T. Lammers, Duiven, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Jun. 2, 1980, Ser. No. 155,748

Claims priority, application Netherlands, Jun. 8, 1979, 7904496

Int. Cl.^{3} D02G *3/02;* **D01F** *6/00*

U.S. Cl. 57—251 **10 Claims**

1. A fiber consisting essentially of a poly-p-phenylene terephthalamide or of a copolyamide containing more than 95 mole percent p-phenylene terephthalamide units and having an inherent viscosity of at least 2.5 which fiber has a tenacity of at least 10 cN/dtex, an elongation at break of at least 2.7% and an initial modulus of at least 300 cN/dtex, characterized in that the fiber has a heat sensitivity index not higher than 12.

4. Thread bundle formed from endless filaments of the fiber according to claim 1 or 2, characterized in that a symmetrical cord formed from these filaments has a cord efficiency of at least 75% when said cord has a twist factor of 16,500 and the surface of the cord filaments is provided with an adhesive.

4,368,616
TWO-SHAFT GAS TURBINE ENGINE

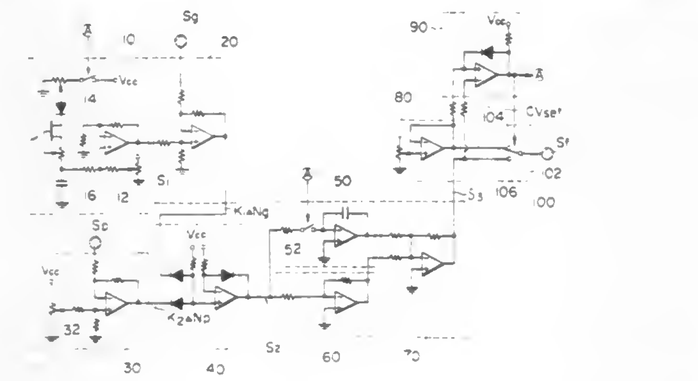
Toshimi Abo, and Hidetoshi Kanegae, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 28, 1980, Ser. No. 134,989

Claims priority, application Japan, Mar. 29, 1979, 54/37542

Int. Cl.^{3} F02C *3/10, 7/26*

U.S. Cl. 60—39.14 R **12 Claims**



1. A system to control the rate of fuel feed to a two-shaft gas turbine engine in which a gas generator shaft and a power turbine shaft rotate independently of each other, the system comprising components for controlling said fuel feed rate initially in accordance with the rotation rate of said gas generator shaft and thereafter in accordance with the rotation rate of said power turbine shaft, including:

- first means for continuously producing a first electrical signal representing the magnitude of a deviation of actual rate of rotation of the gas generator shaft from a target value;
- second means for continuously producing a second electrical signal representing the magnitude of a deviation of actual rate of rotation of the power turbine shaft from a target value;
- third means for continuously making a comparison between said first and second signals and providing a third electrical signal which corresponds to a smaller one of said first and second signals;
- said first means including means for presetting a low speed target value for the rate of rotation of the gas generator shaft during a first time period occurring shortly after starting the engine, so that the deviation of the rate of rotation of said gas generator shaft from said low target value represented by said first electrical signal is smaller than the deviation of the rate of rotation of the power turbine shaft represented by said second electrical signal during said first time period, and a higher speed target value thereafter, and
- fourth means for producing a fourth electrical signal which can serve as a fuel feed rate control signal by utilizing said third signal.

4,368,617
DEVICE FOR CONTROLLING TIMING OF FUEL SUPPLY FOR STARTING A GAS TURBINE ENGINE

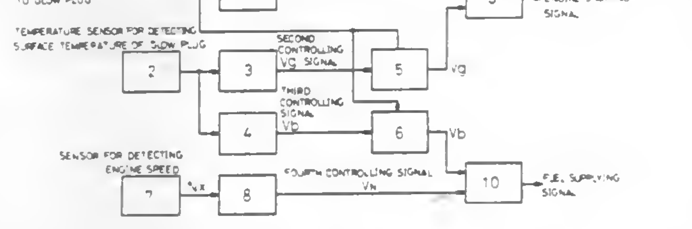
Daiki Fukuda, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 13, 1981, Ser. No. 253,278

Claims priority, application Japan, Dec. 24, 1980, 55-183311

Int. Cl.^{3} F02C *7/26*

U.S. Cl. 60—39.14 R **7 Claims**


ELECTRIFYING SIGNAL TO GLOW PLUG
FIRST CONTROLLING SIGNAL Vt
1
9
ENGINE STARTING SIGNAL
TEMPERATURE SENSOR FOR DETECTING SURFACE TEMPERATURE OF GLOW PLUG
2
3
SECOND CONTROLLING SIGNAL Vg
5
Vg
THIRD CONTROLLING SIGNAL Vb
4
6
Vb
SENSOR FOR DETECTING ENGINE SPEED
7
Nx
8
FOURTH CONTROLLING SIGNAL Vn
10
FUEL SUPPLYING SIGNAL

1. A device for controlling timing of fuel; supply for starting a gas turbine engine having a glow plug as an ignition source for fuel, said device comprising:

- a temperature sensor mounted on said engine for detecting the initial temperature of said glow plug upon application of electricity to said glow plug and generating a signal for starting said engine, said signal corresponding to said initial temperature of said glow plug;
- a means for determining time for preheating said glow plug from starting of said application of electricity to said glow plug till starting of said engine by said signal; and
- a means for determining timing for starting fuel supply to a combustion chamber of said engine after starting thereof by said signal.

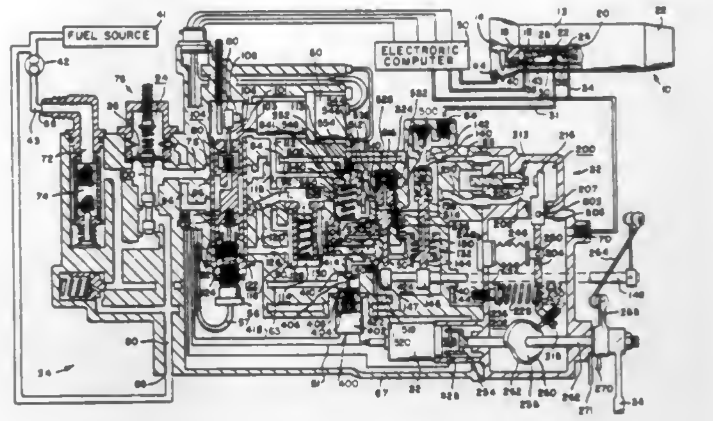
4,368,618
MANUALLY OPERATED METERING VALVE FOR A FUEL CONTROL

William E. Nave, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1980, Ser. No. 193,229

Int. Cl.^{3} F02D *33/00*

U.S. Cl. 60—39.28 R **11 Claims**



1. In a fuel management system having a primary metering valve and a secondary metering valve through which fuel from a source is supplied to an engine to meet a fuel flow requirement in response to an operational signal applied to a power lever, a transfer valve connected to the power lever for shifting from the primary metering valve to the secondary metering valve on movement of the power lever should a malfunction occur in the primary metering valve, the improvement comprising:

- sensor means for detecting the malfunction to establish a transfer signal;
- control means responsive to said transfer signal for automatically transferring the fuel flow requirement from the primary metering valve to the secondary metering valve without moving the power lever when the fuel flow requirement is below a fixed level;
- a first cam connected to said power lever, said first cam having an operational surface with a first constant rise from a starting point;
- a second cam connected to said control means, said second cam having an operational surface with a constant drop from a starting point;
- linkage for connecting the first and second cams to provide said control means with an operational input corresponding with the fuel flow requirement;
- said control means includes a plunger having a cylindrical body with a first end and a second end, said first end having a stem extending therefrom, said cylindrical body having an annular groove located between the first and second ends, said first end being connected to receive said transfer signal and said second end being connected to a reference signal and
- first resilient means connected to said cylindrical body for urging said first end toward a first seat when fuel flow requirement is above the fixed level, said second cam engaging said stem to hold the first end away from the seat when the fuel flow requirement is below the fixed level.

4,368,619
CENTRIFUGAL CHAMBERS GAS TURBINE

Jean-Paul Levesque, P.O. Box 568, Schefferville, County of Duplessis, Canada (G0G 2T0)

Filed Jan. 28, 1981, Ser. No. 218,810

Claims priority, application Canada, Feb. 4, 1980, 344976

Int. Cl.^{3} F02C *3/14*

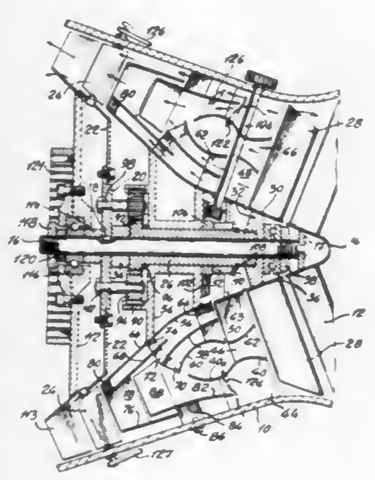
U.S. Cl. 60—39.35 **6 Claims**

1. A gas turbine comprising:

(a) a housing:

(b) a main shaft mounted in said housing;

(c) a rotating cage rotatable on said shaft;
(d) a primary combustion chamber mounted in said housing and comprising two concentric walls separated by a predetermined distance and having at one end an opening permitting entry of compressed gas into the combustion chamber, and at its other end an opening for the exhaust of combustion gases;
(e) means for securing the outside wall of said combustion chamber to said housing and the inside wall of said combustion chamber to said rotating cage;
(f) a secondary combustion chamber in communication at one end with the exhaust opening of the primary combustion chamber and having a plurality of transverse vanes located at its other end through with the exhaust gases of said secondary combustion chamber are ejected;



(g) a rotating nozzle including a plurality of transverse vanes rotated at the output of the vanes of said secondary combustion chamber and secured to the inside wall of said primary combustion chamber for rotation of the inside wall of the primary combustion chamber;
(h) a compressor coupled to said rotating cage for compressing gas into the primary and secondary combustion chambers; and
(i) a turbine output wheel mounted for rotation on said main shaft and having a plurality of transverse blades located at the output of the transverse vanes of said primary combustion chamber and permitting rotation of said turbine output wheel.

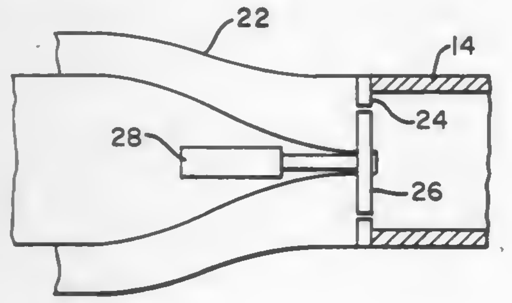
4,368,620
WINDMILLS FOR RAMJET ENGINE

Harry L. Giles, Jr., 3630 - 122nd Pl., NE., Bellevue, Wash. 98005

Filed Jun. 20, 1980, Ser. No. 161,245

Int. Cl.^{3} F02K *7/18*

U.S. Cl. 60—270 S **7 Claims**



1. A ramjet engine comprising a combustion chamber having an air inlet and an exhaust outlet, solid fuel carried within said combustion chamber and having a central opening therein through which gases can flow from said inlet to said exhaust outlet, and a rotatable windmill disposed at said inlet to create swirl and vorticity of the entering air and promote better mixing of gases in said central opening and improved combustion efficiency.

4,368,621
METHOD OF OPERATING AIR CONDITIONER

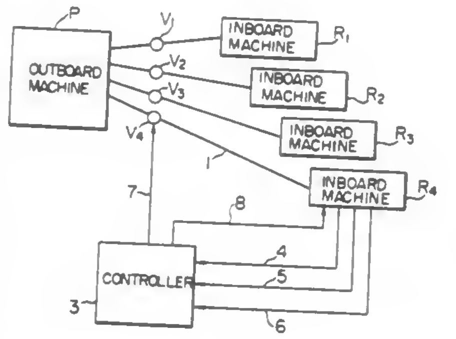
Naoto Yamaguma; Jyoji Okamoto, both of Yanai; Tadahisa Masai, Yamaguchi; Takeshi Imaizumi, Matsudo, and Yoshihiro Okita, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,069

Claims priority, application Japan, Jun. 30, 1980, 55-87865

Int. Cl.^{3} F25B *5/00*

U.S. Cl. 62—117 **4 Claims**



1. A method of operating an air conditioner having a plurality of indoor units connected to a common outdoor unit adapted to supply said indoor units with a heat transfer medium, said method comprising the steps of detecting, when a plurality of indoor units are required to operate, the temperature difference between the actual room temperature and the set temperature for each indoor unit; determining the indoor unit or units for which said temperature difference is the smallest of the all; and limiting the amount of heat exchange in said indoor unit or units having the smallest temperature difference.

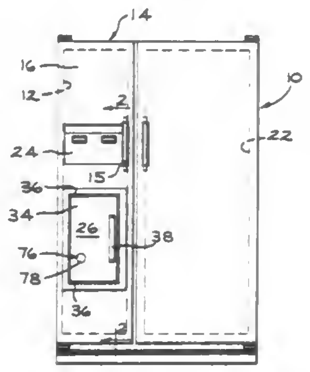
4,368,622
REFRIGERATOR WITH THROUGH-THE-DOOR QUICK-CHILLING SERVICE

Robert B. Brooks, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 14, 1981, Ser. No. 263,627

Int. Cl.^{3} G05D *23/32*

U.S. Cl. 62—157 **10 Claims**



1. Refrigerator apparatus comprising:
(a) a freezer compartment,
(b) a quick-chilling chamber in association with the freezer compartment and having a first container section from outside the freezer compartment and a second air duct section,
(c) air flow communication means between the first container section and freezer compartment, air flow communication means between the second air duct section and freezer compartment and air flow communication means between the first and second sections near the top thereof,
(d) means for moving air from the freezer compartment in a path through one section then the other section of the quick-chilling chamber and back into the freezer compartment for a selectable period of time,
(e) settable timing means to start and stop the means for moving air, and
(f) thermal insulation between the quick-chilling chamber and the freezer compartment.

4,368,623
METHOD AND APPARATUS FOR USE OF HEAT TAKEN UP AT LOW TEMPERATURE

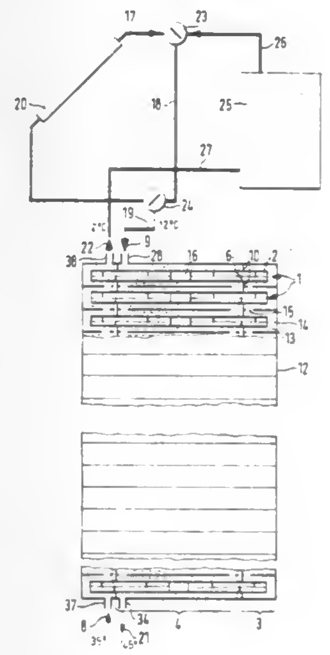
Karl F. Knoche, Wiesenweg, D-5100 Aachen-Horbach; Heinrich Trümper, Engler Strasse, D-7500 Karlsruhe, and Dieter Stehmeier, Schlossweiherstrasse 14, D-5100, Aachen, all of Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,117

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938203

Int. Cl.^{3} A63C *19/10;* F25B *17/02*

U.S. Cl. 62—235.1 **13 Claims**



1. A process for utilizing heat taken up at relatively low temperature, which heat is transferred at a higher temperature to a heat receiver, via the intermediary of a multistage absorption heat pump, and in which absorption stages of the absorption heat pump are regenerated periodically by relatively high temperature heat, comprising the steps of:

passing a flow of heat transfer medium through a source of relatively low temperature heat to absorb heat;

passing the heat transfer medium through multiple sequential absorption stages of the absorption heat pump, which stages increase in temperature from stage to stage, said medium picking up absorption heat and being thereby heated to a temperature required for the heat receiver;

transferring heat from the heat transfer medium to the heat receiver;

subsequently passing the heat transfer medium through multiple sequential degassing stages of the absorption heat pump, which degassing stages are coordinated with the respective absorption stages, and thereby using said heat transfer medium to release heat of vaporization and cooling said heat transfer medium to a suitable temperature for use in the source of relatively low temperature heat; and

regenerating a relatively weak solution of a pair of working substances in the degassing stages and a relatively strong solution of the pair of working substances in the absorber stages by flowing the heat transfer medium at a relatively high temperature through the absorber stages, each operating now as a separator, whereby the relatively weak solution is driven off from the relatively strong solution and is then condensed in the respective associated degassing stage, now operating as a resorber, said condensation being accompanied by the liberation of heat which is removed from the relatively weak solution, the flow of the heat transfer medium which has been cooled in this manner being fed to a heat receiver, and wherein the return flow from said heat receiver is then passed through the degassing stage which is now operating as a resorber, whereby said flow picks up the heat of condensation and is subsequently reheated.

4,368,624
ABSORPTION TYPE HEAT PUMP HAVING INDOOR AND OUTDOOR RADIATORS CONNECTED IN SERIES IN A WATER FLOW CIRCUIT DURING HEAT MODE

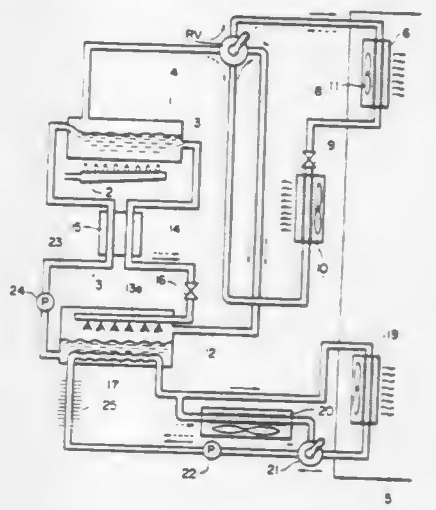
Isao Takeshita, Neyagawa, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Mar. 4, 1981, Ser. No. 240,591

Claims priority, application Japan, Mar. 5, 1980, 55-28338; Mar. 5, 1980, 55-28339; Apr. 10, 1980, 55-47874

Int. Cl.^{3} F25B *27/02*

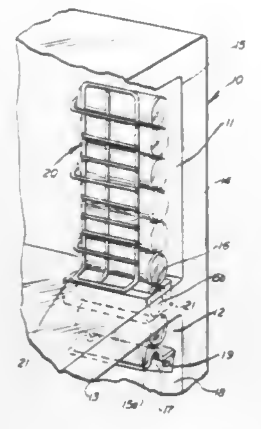
U.S. Cl. 62—238.3 **23 Claims**



1. An air conditioning system comprising:
a generator containing a solution of evaporable refrigerant in a less evaporable solvent for generating pressurized vapor phase refrigerant by heating said solution;
a condenser receiving the generated vapor phase refrigerant for generating heat by condensation of the refrigerant to liquid phase;
an evaporator for evaporating the liquid phase refrigerant to extract heat from the environment;
an absorber connected in a closed loop working fluid flow circuit with said generator to generate absorption heat by absorbing the vapor phase refrigerant from said evaporator with a solution of low refrigerant concentration from said generator for delivery of a solution of high refrigerant concentration to said generator, the absorber including a section of a closed loop cooling fluid flow circuit for transferring thermal energy from the solution to the cooling fluid;
a first radiator provided in a space to be air-conditioned and connected in said cooling fluid flow circuit; and
a second radiator located outside of said air-conditioned space and connected in said cooling fluid flow circuit downstream of said first radiator to reduce the temperature of the cooling fluid discharged from said first radiator by an amount depending on the outdoor temperature prior to the cooling fluid entering said absorber.

4,368,625
REFRIGERATION APPARATUS HAVING ITEM THAWING MEANS

Clark I. Platt, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Sep. 3, 1981, Ser. No. 299,035
Int. Cl.^{3} F25D *25/00*
U.S. Cl. 62—378 **22 Claims**



1. In a refrigeration apparatus having means defining a freezer compartment refrigerated to a below-freezing temperature, a refrigerator compartment refrigerated to an above-freezing temperature, and an insulated wall separating said compartments, means for thawing food items normally stored at below-freezing temperatures in said below-freezing compartment prior to removal thereof from said apparatus for use at above-freezing temperatures, said thawing means comprising:

passage means defining a passage through said insulated wall for passing said food items seriatim therethrough;

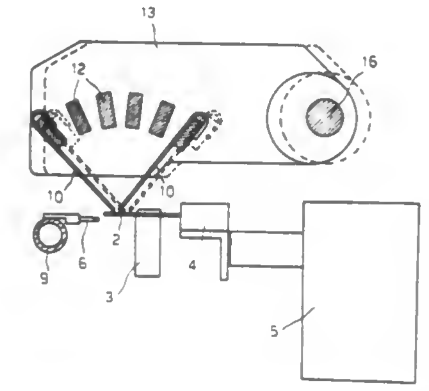
storage means in said freezer compartment and having a lower end opening into said passage means, said storage means being arranged to hold a plurality of said food items for gravitational movement downwardly toward said lower end; and

receiving means adjacent said passage means and exposed to the above-freezing temperature of the refrigerator compartment, including means for receiving and retaining for user access at least one of said food items delivered to said passage means to be thawed by the exposure thereof to said above-freezing temperature, the remaining food items in said storage means being releasably retained against downward gravitational movement by said at least one food item retained by said receiving means, the removal of a food item from said receiving means by the user permitting gravitational downward movement of a food item from those stored in said storage means for automatic replacement of the removed food item in said receiving means.

4,368,626
CROCHET KNITTING MACHINE WITH WEFT BAR ADJUSTMENT AND GUIDE ASSEMBLY

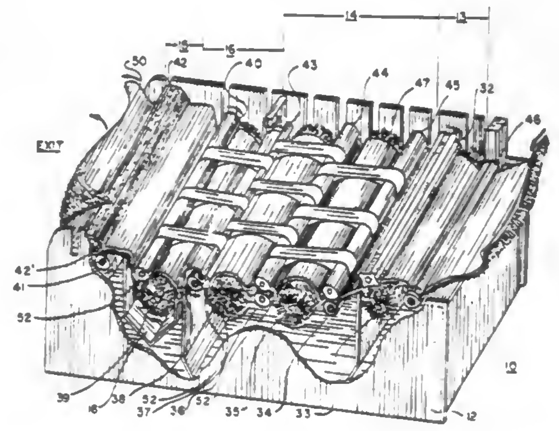
Carlo Menegatto, Milan, Italy, assignor to O.M.M. Officine Meccaniche Menegatto S.p.A., Milan, Italy
Filed Oct. 1, 1980, Ser. No. 192,706
Claims priority, application Italy, Oct. 1, 1979, 26148 A/79
Int. Cl.^{3} D04B *23/00*
U.S. Cl. 66—203 **8 Claims**

1. Crochet knitting machine of the type comprising a set of warp-guide thread guide needles and a set of weft-guide thread guides which are mobile in combination with a bed of needles to make fabric, in which the weft-guide thread guides are carried on horizontal bars mobile lengthwise by means of a system of control cams, said bars being held by lateral support moved vertically, a control unit for controlling vertical movement of said supports, rod means for interconnecting said control unit with said supports, each weft bar support comprising a first device for adjusting the position along a vertical axis and respectively a second device for adjusting the position along a horizontal axis parallel to the aforementioned needles, said first device comprising means for adjusting the vertical relationship between said rod means, said control unit, and said supports, said second device being independent from said first device so that vertical adjustment is provided only by said first device and horizontal adjustment is provided only by said second device.



4,368,627
MAT OR RUG CLEANING SYSTEM

Howard E. Bode, Sr., P.O. Box 9442, Metairie, La. 70055, and James B. Williams, 5168 Mt. Revarb, Marrero, La. 70072
Division of Ser. No. 879,042, Feb. 21, 1978, Pat. No. 4,226,641. This application Oct. 6, 1980, Ser. No. 194,217
Int. Cl.^{3} D06B *3/22, 23/02*
U.S. Cl. 68—13 R **12 Claims**



1. A rug cleaning system, comprising:

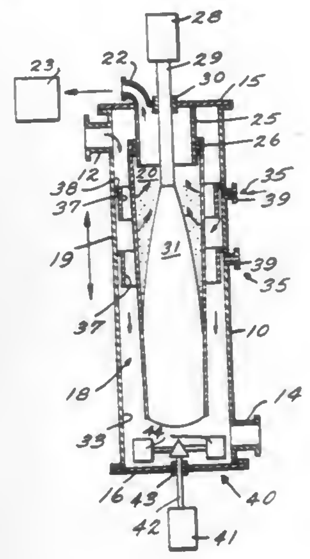
a. first rotary feed roller means for conveying the rug to be cleaned;

b. roller brush cleaning means adjacent and substantially parallel to and downstream from said first feed roller means for cleaning the surface of the rug, said roller brush means providing a brushing surface for the rug leaving said first feed roller means; and

c. second rotary feed roller means adjacent to and positioned downstream from said roller brush means and receiving the rug being conveyed from said roller brush means for further conveying the rug, said second feed roller means having a peripheral speed slower than the peripheral speed of said brushing surface and conveying the rug at a slower speed than the peripheral speed of said brushing surface to form a tuck in the rug by the differential in the peripheral speeds between said roller brush means and said second feed roller means.

4,368,628
APPARATUS FOR TREATMENT OF SUSPENSIONS IN MOVEMENT

Finn Jacobsen, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden
Filed Jan. 9, 1981, Ser. No. 223,741
Claims priority, application Sweden, Jan. 10, 1980, 8000196; Jan. 10, 1980, 8000198
Int. Cl.^{3} D21D *5/02*
U.S. Cl. 68—181 R **20 Claims**



1. Apparatus for continuously extracting liquid from a flowing suspension, comprising

an elongated container through which suspension to be treated flows in a first direction substantially coextensive with the dimension of elongation of said container, said container having an inlet and an outlet adjacent opposite ends of said container in the dimension of elongation thereof;

screen means for removal of a portion of the liquid from the suspension flowing through said container, said screen means including a screen surface defining a screen cavity volume therewithin, the screen cavity volume continuously tapering over substantially the entire operative length thereof in said first direction so that the cross-section of suspension flow channel expands towards said container outlet;

baffle means disposed within said screen cavity volume;

an outlet from said screen cavity volume to an area remote from said container;

bearing means for mounting said screen means for movement generally in the dimension of elongation of said container; and

means for moving said screen means generally in the dimension of elongation of said container.

4,368,629
LOCK SYSTEM

Kurt Prunbauer, Herzogenburg, Austria, assignor to Evva Werk Spezialerzeugung von Zylinderschlössern Gesellschaft MbH & Co. Kommanditgesellschaft, Vienna, Austria
Division of Ser. No. 919,559, Jun. 27, 1978, which is a continuation of Ser. No. 762,418, Jan. 25, 1977. This application Jun. 26, 1979, Ser. No. 52,964
Claims priority, application Austria, Jan. 28, 1976, 592/76
The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.
Int. Cl.^{3} E05B *19/04*
U.S. Cl. 70—406 **15 Claims**

1. A lock system comprising:

a master-only lock having a master-key slot formed with a plurality of parallel longitudinally extending and inwardly projecting guide ridges and with a plurality of parallel longitudinally extending and inwardly open variable recesses arranged between said guide ridges;

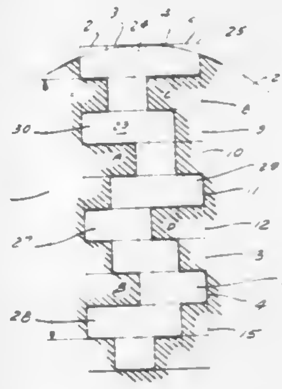
a master key insertable longitudinally into said master-key slot and formed with a plurality of parallel longitudinally extending and outwardly open guide grooves and with a plurality of parallel longitudinally extending and outwardly projecting variable ridges matable with said guide ridges and with said variable recesses respectively on fitting of said master key to said master-key slot, said master only lock being operable by rotation of said master key after insertion thereof into said master-key slot;

a primary subordinate lock having a primary subordinate-key slot formed with a plurality of parallel longitudinally extending and inwardly projecting guide ridges identical to said guide ridges of said master-key slot, with a plurality of parallel longitudinally extending and inwardly open variable recesses identical to said variable recesses of said master-key slot, and in said variable recesses with at least one further inwardly open and longitudinally extending variable groove, said master key being receivable in said primary subordinate-key slot with a space between said master key and said further variable groove;

a primary subordinate key insertable longitudinally into said primary subordinate-key slot and formed with a plurality of parallel longitudinally extending and outwardly open guide grooves, with a plurality of parallel longitudinally extending and outwardly projecting variable ridges, and with a further outwardly projecting variable ridge matable with said guide ridges, with said variable recesses, and with said further variable recess respectively for snug fitting of said primary subordinate key in said primary subordinate-key slot, said primary subordinate key being of greater cross-sectional area than said master key and being too large in cross-sectional size to fit into said master key slot, said primary subordinate lock being operable by said primary subordinate key and by said master key;

a secondary subordinate lock having a secondary subordinate-key slot formed with a plurality of parallel longitudinally extending and inwardly projecting guide ridges identical to said guide ridges of said master-key slot, with a plurality of parallel longitudinally extending and inwardly open variable recesses identical to said variable recesses of said master-key slot, and in said variable recesses with at least one further inwardly open and longitudinally extending variable groove, said master key and said primary subordinate key being receivable in said secondary subordinate-key slot with a space between said master key and said further variable groove; and

a secondary subordinate key insertable longitudinally into said secondary subordinate-key slot and formed with a plurality of parallel longitudinally extending and outwardly open guide grooves, with a plurality of parallel longitudinally extending and outwardly projecting variable ridges, and with a further outwardly projecting variable ridge matable with said guide ridges, with said variable recesses, and with said further variable recess respectively for snug fitting of said secondary subordinate key in said secondary subordinate-key slot, said secondary subor-

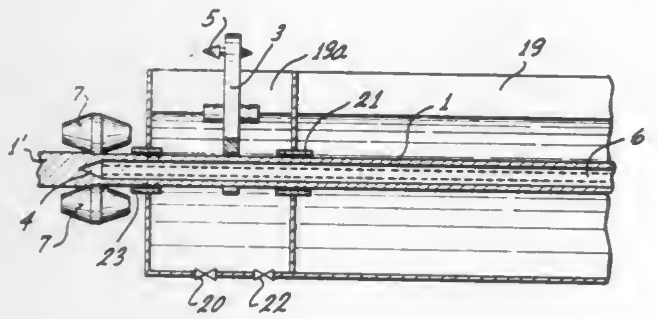


dinate key being of greater cross-sectional area than said primary subordinate key and being too large in cross-sectional size to fit into said primary subordinate key slot, said secondary subordinate lock being operable by said secondary subordinate key said primary subordinate key and by said master key.

4,368,630
MANDREL EXCHANGE IN PIERCING MILLS

Otto Uhlmann, Burgdorf, and Klaus-Peter Uhlmann, Bad Iburg, both of Fed. Rep. of Germany, assignors to Kabel- und Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 128,957
Int. Cl.^{3} B21B *27/00;* B21D *37/16*
U.S. Cl. 72—69 **3 Claims**

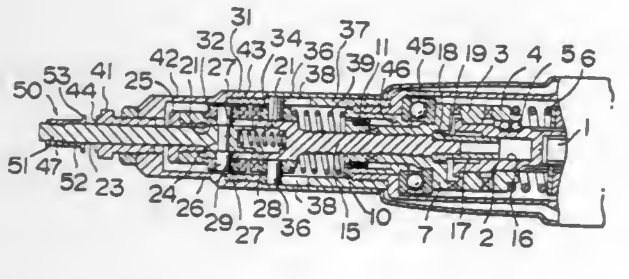


1. In a rolling mill for rolling by piercing round billets into a seamless tube, the mill including at least two rolls, a mandrel and a mandrel rod, the improvement comprising:
  a first wafer tank disposed adjacent to the rolls and having two aligned openings traversed by the tube as rolled as well as by the mandrel rod, the mandrel having a disposition during rolling adjacent to the rolls, external to the first tank;
  a mandrel exchange device in the first tank;
  means for charing and discharging the first tank with water so that upon discharge of water easy access to the mandrel exchange device is provided, permitting an exchange of mandrels;
  means for preventing flow of water through said openings; and
  a second water tank disposed adjacent to the first water tank and also being traversed by the tube as rolled and by the mandrel rod.

4,368,631
AUTOMATIC SETTING TOOL

Osamu Tanikawa, Toyohashi, Japan, assignor to USM Corporation, Farmington, Conn.

Filed Jul. 6, 1981, Ser. No. 280,940
Claims priority, application Japan, Jun. 25, 1980, 55-86258
Int. Cl.^{3} B21J *15/34*
U.S. Cl. 72—114 **11 Claims**

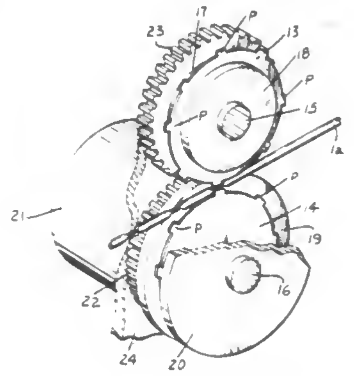


1. A fastener setting tool for setting, to a panel member or the like, a fastener including an internally threaded nut portion, a tubular portion extending from said nut portion and a flange portion at the end of said tubular portion, said tool comprising a driving shaft, a nut member operatively connected to said shaft, a pulling rod threadably connected to said nut member and extending forward to said tool and a mandrel removably mounted to the end of said pulling rod with the end thereof having an externally threaded portion, a half nut connected to said nut member so as to be rotated with said nut member and mounted on the externally threaded surface of said pulling rod under a predetermined binding force by a ring.

4,368,632
APPARATUS FOR REDUCING THE CROSS SECTIONAL AREA OF A WIRE

Robert N. Thrash, Tucker, and W. Ralph Crooks, Stone Mountain, both of Ga., assignors to Kearney-National Inc., Atlanta, Ga.

Filed Jan. 27, 1981, Ser. No. 228,991
Int. Cl.^{3} B21J *13/02*
U.S. Cl. 72—198 **19 Claims**



13. Apparatus for reducing the cross sectional area of a length of wire at spaced intervals along the length thereof comprising means for advancing said wire, a pair of wheels adapted to rotate about spaced generally parallel axes in opposite directions with a portion of said wire disposed between said wheels, spaced multiple projections on the periphery of each of said wheels, said projections on one wheel being synchronized and coincidental with corresponding projections on the other of said wheels so as to impart a transverse deforming force to opposite parts of said wire, and two of said corresponding projections being separated at the point of closest proximity by a distance less than the diameter of said wire.

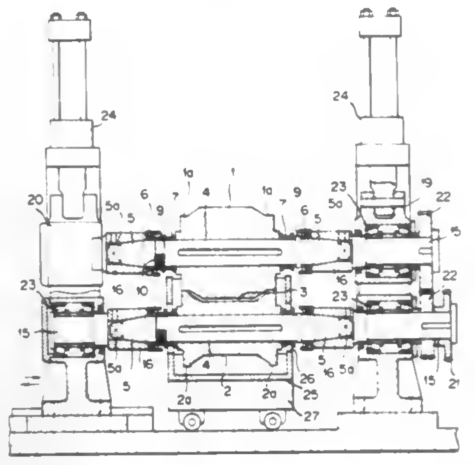
4,368,633
COLD ROLL FORMING APPARATUS PROCEDING FOR THE EXCHANGE OF ROLLS AS A UNIT

Isao Nogota, Ueno, Japan, assignor to Yutaka Morikoshi, Hadano, Japan

Filed Jul. 16, 1980, Ser. No. 169,467
Claims priority, application Japan, Jul. 17, 1979, 54-89783
Int. Cl.^{3} B21B *31/02, 31/07*
U.S. Cl. 72—239 **8 Claims**

5. A cold roll forming apparatus providing for the exchange of rolls as a unit comprising:
  a pair of rolls, each roll having an axle with portions extending from ends thereof;
  a fixed stand and a movable stand for rotatably supporting the extending portions of the axles of the pair of rolls in spaced relationship, the pair of rolls having contoured surfaces cooperating with each other to form an aperture for working between the rolls, each of the stands having rotatable holders with bores formed therein for receiving ends of the axles of the rolls;
  means operatively associated with one of said holders for rotatably driving said holder to thereby drive the pair of rolls; and
  a springy compressible device carried by an axle of each roll comprising a first member movable with respect to the axle and engageable with a surface of one of the holders

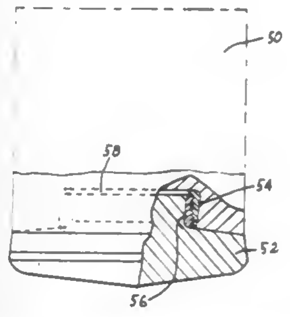
when the axle is received in the bore of said one holder, and means for exerting a biassing force on the first member so that the roll axle is urged out of the bore of said one holder by said springy compressible device.



4,368,634
EXTRUSION PUNCH AND METHOD OF CONSTRUCTION

Thomas A. Brown, Greensburg, and Joseph B. Huber, Acme, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 644,642, Dec. 12, 1975, abandoned.
This application Sep. 3, 1980, Ser. No. 183,723
Int. Cl.^{3} B21C *23/18, 2600*
U.S. Cl. 72—273 **3 Claims**

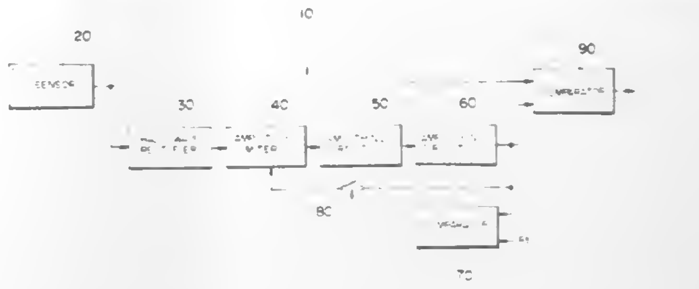


1. An extrusion or forming punch for shaping material in a die means, comprising: a cemented hard metal carbide cylindrical body having opposite ends with one end adapted for connection to a reciprocal force transmitting source and a second end having a recess; an internally threaded ring means fitting into said recess and forming an interference fit with said recess for solid and firm engagement of the ring means; a cylindrical end cap formed of a cemented hard metal carbide material and having a first face portion for engagement with the material to be extruded, a second face portion for abutting engagement with the opposed end of said cemented hard metal carbide cylindrical body, a reduced diameter extension tapering outwardly toward the outer end thereof and extending axially from said second face portion; and a metal ring having external threads thereon and an inside diameter which tapers outwardly in conformity with the taper on said extension; said metal ring on said extension threadedly engaging said ring means in said recess thereby holding said end cap firmly in concentric and abutting engagement with said cemented hard metal carbide cylindrical body.

4,368,635
KNOCKING DETECTOR

Kenichi Yoshida, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 2, 1980, Ser. No. 212,319
Claims priority, application Japan, Dec. 4, 1979, 54-156994
Int. Cl.^{3} G01L *23/22*
U.S. Cl. 73—35 **5 Claims**

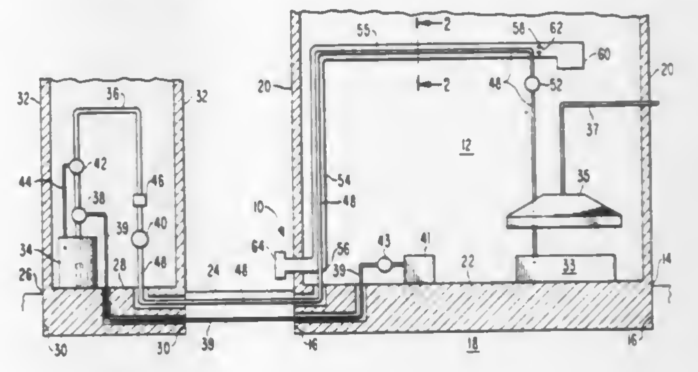


1. A knocking detector for use with an internal combustion engine, comprising:
  (a) means for sensing engine vibration and producing a first input signal indicative thereof;
  (b) means for rectifying the first input signal and producing a second rectified input signal;
  (c) means for smoothing the second rectified input signal to produce a background noise level signal;
  (d) first comparing means for comparing the magnitude of the background noise level signal to a predetermined reference value;
  (e) means responsive to the first comparing means for limiting the amplitude of the second rectified input signal when the amplitude of the background noise level signal is greater than said predetermined reference value; and
  (f) second comparing means for comparing said first input signal to the background noise level signal and generating a knocking indication signal when said first input signal is greater in magnitude than the background noise level signal.

4,368,636
SYSTEM FOR HANDLING A VOLATILE AND FLAMMABLE LIQUID

Joseph H. Thorn, and Robert E. Jennings, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,253
Int. Cl.^{3} G01M *3/04*
U.S. Cl. 73—40.5 R **6 Claims**



5. A process for the safe supply, distribution, and delivery of a highly volatile and flammable liquid to a processing area within an enclosed work place comprising the steps of:
  providing a source of supply of said liquid exteriorly of said enclosed work place,
  delivering said liquid from said source of supply exteriorly of said enclosed work place to said processing area within said enclosed work place by pipeline means,
  enclosing said pipeline means within said enclosed work place by protective casing means such that any vapors

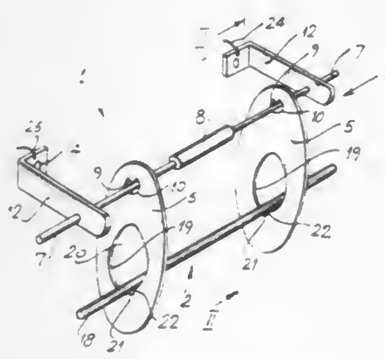
escaping from said liquid within said pipeline means within said enclosed work place are trapped within said casing means,

venting said casing means exteriorly of said enclosed work place to thereby exhaust said vapors trapped within said casing means outwardly of said enclosed work place,

purging said casing means by the use of air under pressure to positively remove and exhaust said vapors outwardly of said enclosed work place, and

sensing said purging air as it is exhausted outwardly of said enclosed work place to detect the presence of said vapors within said purging air whereby said delivering of said liquid from said source of supply exteriorly of said enclosed work place to said processing area within said enclosed work place may be ceased upon detection of said vapors.

4,368,637
VIBRATION SENSING DEVICE
Francis J. Anderson, 68 Allen Park Rd., Stillorgan, County Dublin, Ireland
Filed Aug. 11, 1980, Ser. No. 176,888
Claims priority, application Ireland, Aug. 14, 1979, 1560/79
Int. Cl.^{3} H01H ***35/14***
U.S. Cl. 73—652 **29 Claims**



1. A vibration sensing device for mounting on a structure, the vibration sensing device comprising:

a base member adapted for mounting on the structure,

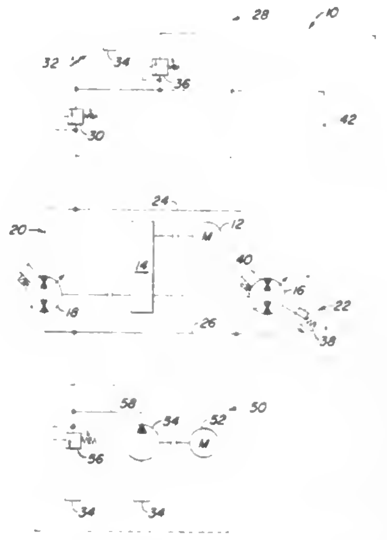
a vibration sensor comprising an electrically conductive support member and an electrically conductive inertia mass supported on the support member, the support member forming with the inertia mass part of an electrical circuit so that on vibration of the device the inertia mass lifts off the support member to open the electrical circuit, and

a pendulous support extending from the support member of the vibration sensor for pendulously suspending the vibration sensor from the base member to eliminate from the vibration sensor the effects of vibrations of a certain frequency range in the structure, the pendulous support being adapted for pendulous mounting to the base member.

4,368,638
TEST STAND FOR TESTING HYDRAULIC DEVICES
Richard L. Groves, and Grant A. Pipho, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 20, 1980, Ser. No. 198,881
Int. Cl.^{3} G01M ***19/00***
U.S. Cl. 73—168 **11 Claims**

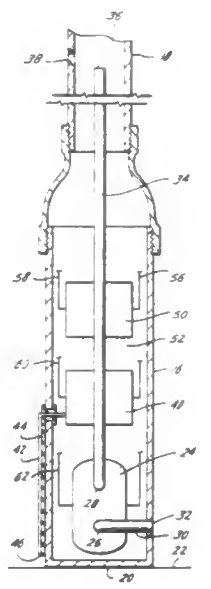
1. A test stand for testing hydraulic devices such as hydraulic pumps and motors, either separately or jointly, said test stand comprising:

(a) a primary power source;
(b) a hydraulic motor;
(c) a hydraulic pump;
(d) a drive train operatively connected to said primary power source, to said hydraulic motor and to said hydraulic pump;
(e) passage means for fluidly connecting said hydraulic pump to said hydraulic motor;
(f) pressure control means for preventing pressure build-up within said passage means above a predetermined value; and



(g) system control means for adjusting fluid displacement of said hydraulic motor to correspond to fluid output of said hydraulic pump, said system control means including a control mechnanism electrically connected to said pressure control means and a composite actuator.

4,368,639
LIQUID TANK GAUGE
Donald R. Owens, 204 Burnett, Baytown, Tex. 77520
Filed Sep. 19, 1980, Ser. No. 188,786
Int. Cl.^{3} G01F ***23/18***
U.S. Cl. 73—301 **5 Claims**



2. A liquid gauge for measuring liquid level in a container comprising,

a housing having an opening adapted to be positioned in the liquid in the container and contacting the bottom of the container,

a differential pressure transducer for measuring the hydrostatic pressure of said liquid and positioned in the housing, said transducer having first and second pressure input ports,

said first port vertically positioned from the bottom of the transducer a selected known distance above the bottom of the housing, the housing including an opening in a wall connected to a conduit communicating with the first port,

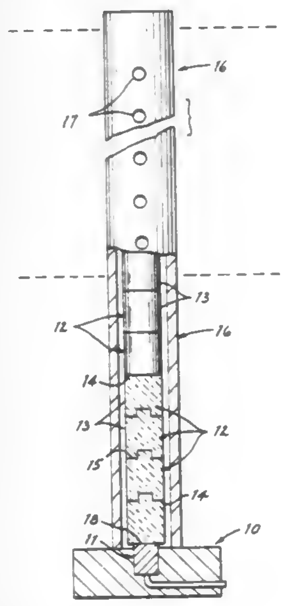
a conduit connected to the housing and adapted to extend above the liquid level in the container,

a tubing connected to the second port and extending through the conduit for communication with the environment above the liquid,

electrical connections to the transducer extending through the conduit,

a water level detector positioned in the housing for detecting water in said liquid in the container, said detector positioned a predetermined vertical distance above the bottom of the housing.

4,368,640
LIQUID LEVEL SENSING DEVICE
Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 29, 1981, Ser. No. 229,424
Int. Cl.^{3} G01F ***23/10***
U.S. Cl. 73—311 **12 Claims**



1. A liquid level sensing device comprising:

a base adapted to be fixed at a submerged location within an enclosure containing a liquid;

weight responsive means on said base, said weight responsive means having an upwardly-facing active surface upon which the effective weight resting on it is monitored;

a plurality of independent segmented elements stacked upwardly one on another above and covering the upwardly facing active surface of the weight responsive means;

and a guide tube extending upward from said base for freely encircling and protecting the stacked elements and for locating their lowermost surface in contact with the active surface of said weight responsive means, whereby differences in the effective weight of the stack of elements due to flotation effects will be sensed by said weight responsive means.

4,368,641
OUT-OF-ROUND DETECTOR
Francis D. McLeod, Jr., Ithaca, N.Y., assignor to Powers Manufacturing, Inc., Elmira, N.Y.
Filed Jan. 30, 1981, Ser. No. 229,917
Int. Cl.^{3} G01N ***29/00***
U.S. Cl. 73—597 **28 Claims**

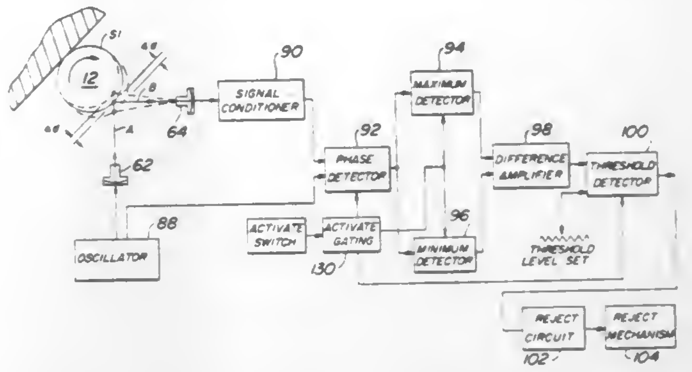
1. A method of detecting an out-of-round condition in a container, comprising:

directing a signal to a surface of the container, said signal being reflected by said surface,

causing relative rotation between the container and signal,

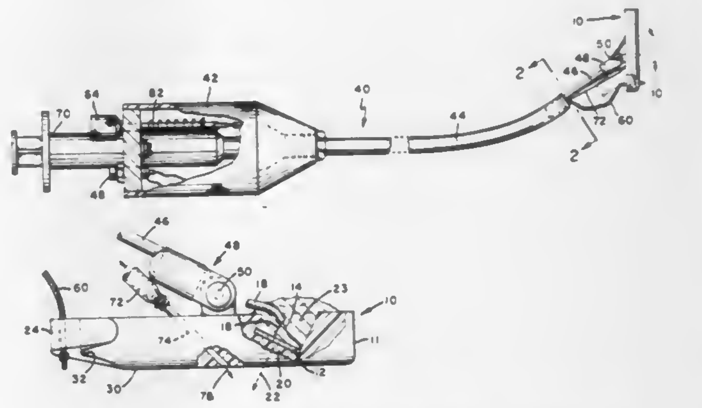
detecting variations in phase difference between the signal directed to the container surface and the reflected signal,

determining maximum and minimum variations in phase differences between the directed and reflected signals, and



determining whether there is an excessive out-of-round condition of the container by comparing the difference between said maximum and minimum variations to a predetermined threshold value.

4,368,642
ULTRASONIC TRANSDUCER PROBE
Thomas J. Carodiskey, McVeytown, Pa., assignor to Krautkramer-Branson, Inc., Stratford, Conn.
Filed Feb. 23, 1981, Ser. No. 236,888
Int. Cl.^{3} G01N ***29/04***
U.S. Cl. 73—623 **7 Claims**



1. An ultrasonic transducer probe assembly comprising:

an elongated molded transducer body shaped externally to conform with a workpiece engaging surface to the contour of a workpiece area to be tested and including as an integral part of the molded body a hook shaped indexing portion for locating said workpiece engaging surface in a predetermined position relative to said workpiece area, and

a piezoelectric transducer means enclosed within said molded body and positioned rearwardly of said workpiece engaging surface and oriented to transmit ultrasonic energy toward a predetermined workpiece portion when said workpiece engaging surface is in said predetermined position whereby the molded body material disposed between said piezoelectric means and said workpiece engaging surface acts as a delay for the ultrasonic signals traversing the distance between said piezoelectric means and the workpiece.

4,368,643

ULTRASONIC IMAGING BY RADIAL SCAN BEAMS EMANATING FROM A HYPOTHETICAL POINT LOCATED BEHIND LINEAR TRANSDUCER ARRAY

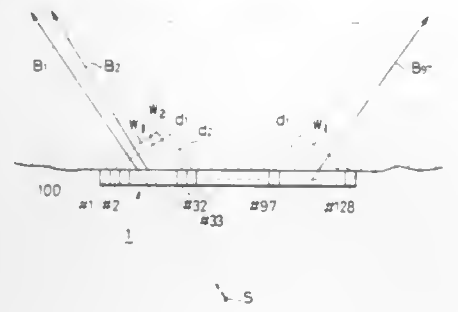
Ryobun Tachita, Kanagawa; Hiroshi Fukukita, Tokyo; Yoshihiro Hayakawa, and Kazuyoshi Irioka, both of Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Nov. 14, 1980, Ser. No. 206,828

Claims priority, application Japan, Nov. 16, 1979, 54-149388

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—626 7 Claims



1. A method of generating radial scan beams of untrasonic waves using a linear array of transducers, comprising the steps of:

selecting one of a plurality of successively arranged overlapping subarrays of transducers from said linear array for connection to a plurality of transmitting and receiving channels;

successively activating the transducers of said selected subarray at times delayed between different transducers to transmit a single scan beam which appears to extend from a hypothetical point source located behind said linear array;

successively shifting the connections to the transmitting and receiving channels from the selected transducer subarray to a next subarray overlapping the first selected subarray by at least one transducer in response to a clock pulse; and

varying the amount of said delay times provided to transducers in the next subarray from the delay times provided to transducers in the first selected subarray in response to said clock pulse so that the successively activated transducers of the next subarray transmit a radial scan beam which appears to radiate from said hypothetical point source.

4,368,644

TOOL FOR INSPECTING DEFECTS IN IRREGULAR WELD BODIES

Timothy H. Wentzell, South Windsor, and Charles B. Innes, Jr., Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 26, 1981, Ser. No. 267,142

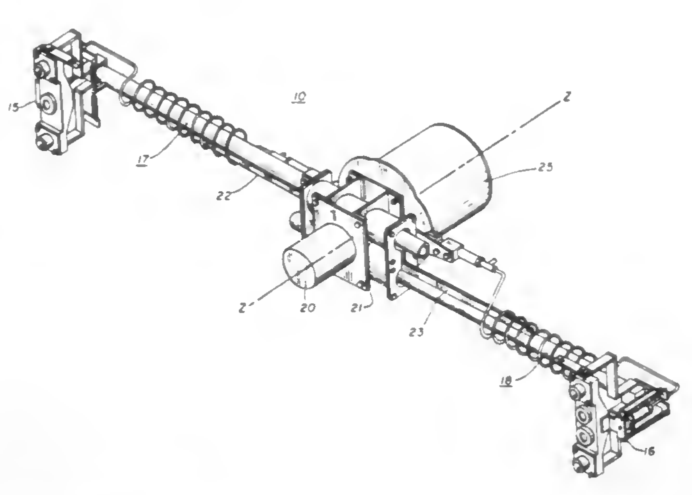
Int. Cl.^{3} G01N *9/24, 9/04, 29/04;* G21C *17/00*

U.S. Cl. 73—634 6 Claims

1. In a weld body inspection tool which positions an ultrasonic detector from the centerline of a cylindrical nozzle joined to a cylindrical aperture in the side of a nuclear reactor vessel by moving the detector connected to the outer end of an extensible arm over the surface of the weld body,

a cam fixedly mounted at the center of arm rotation,

a hydraulic closed loop power system connected between the cam and the ultrasonic transducer mounted at the outer end of the extensible arm to control the direction of the output of the ultrasonic transducer as the arm pivots to maintain a predetermined relationship of the ultrasonic transducer output to the weld geometric shape,



and means connected to the ultrasonic transducer to manifest the reflection of the transducer output in detection of imperfections in the weld body.

4,368,645

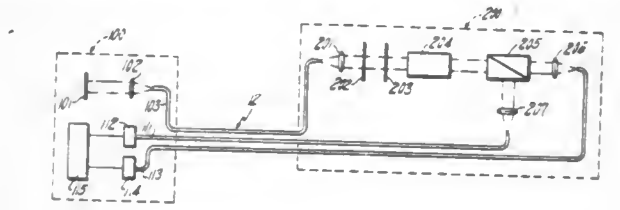
OPTICAL PRESSURE SENSOR

William H. Glenn, Vernon, and Richard G. Tomlinson, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 26, 1980, Ser. No. 191,193

Int. Cl.^{3} G01L *9/00*

U.S. Cl. 73—705 5 Claims



1. An apparatus for pressure measurement comprising:

a photoelastic medium responsive to external pressure;

means for directing a single beam of light along an optic axis through said photoelastic medium from an upbeam side of said photoelastic medium to a downbeam side;

a polarizing means mounted along said optic axis upbeam of said photoelastic medium and oriented with a predetermined polarization axis perpendicular to said optic axis;

a birefringent plate mounted along said optic axis intermediate said photoelastic medium and said polarizing means and having a plate axis perpendicular to said optic axis and oriented at forty five degrees with respect to said polarization axis;

a polarization analyzer, mounted along said beam axis downbeam of said photoelastic medium for resolving first and second polarization components of light contained in said beam emerging from photoelastic medium;

means for transporting said two polarization components of light to remote measurement means;

means for measuring the intensities of said two polarization components; and

means for combining said two measured intensities in a predetermined manner to form a measurement of external pressure applied to said photoelastic medium.

4,368,646

FLOW METER FOR LIQUID OR GASEOUS MEDIA

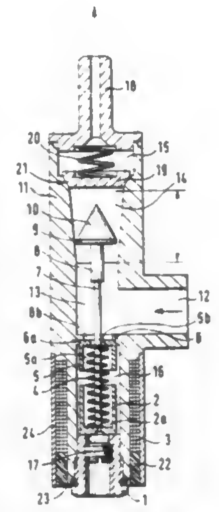
Werner Rogg, Schwenningen, Fed. Rep. of Germany, assignor to Irion & Vosseler, Zählerfabrik, Schwenningen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,717

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010282; Oct. 25, 1980, 3040320

Int. Cl.^{3} G01F *1/24, 1/28*

U.S. Cl. 73—861.55 13 Claims



10. In a flow meter for liquid or gaseous media including a housing having an inlet and an outlet through which the medium flows and a discharge nipple, a floating body within the housing disposed for movement from an initial position to a displaced position under the influence of a lifting force produced by an increased flow of the medium through the housing, the floating body being rigidly connected to a weight body of ferromagnetic material by a connecting rod, said weight body being located in a field of an induction coil mounted within the housing, wherein the improvement comprises:

a damping valve located between said floating body and said discharge nipple;

said housing having a tapered extension made of non-ferromagnetic material, said induction coil being mounted onto said extension; and

a metallic shielding member mounted on said extension and over said coil;

said induction coil being sandwiched between said housing extension and said shielding member and terminating short of the ends thereof to form an open annular space between said extension and said shielding member; and

said space being filled with an insulating casting material.

4,368,647

RECIPROCATING DRIVING DEVICE

Hirofumi Sakaguchi, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,148

Claims priority, application Japan, Jul. 27, 1979, 54-94923

Int. Cl.^{3} F16H *19/06, 35/12*

U.S. Cl. 74—89.22 4 Claims

1. A driving device for reciprocating a driven member in a copying machine and for minimizing operative vibration as reciprocation of the driven member is initiated, said driving device comprising:

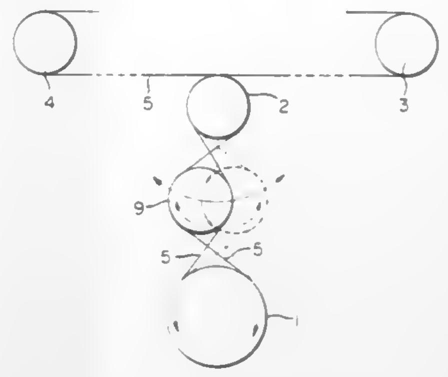
a bidirectionally rotatable driving pulley;

at least two fixed pulleys mounted in spaced apart relation on the copying machine;

an oscillating pulley;

wire means guided about alternating radially opposite sides of said driving pulley, said oscillating pulley and said fixed pulleys, and connected to the driven member between said fixed pulleys;

an oscillating plate for supporting said oscillating pulley between said driving pulley and said fixed pulleys, said oscillating plate being substantially freely movable to carry said oscillating pulley along a path from a neutral position centrally within said path in response to rotation of said driving pulley in either direction thereof; and



a friction member for applying a frictional force to said freely movable oscillating plate in either direction of driving pulley rotation to damp movement of said oscillating plate as reciprocation of the driven member is initiated.

4,368,648

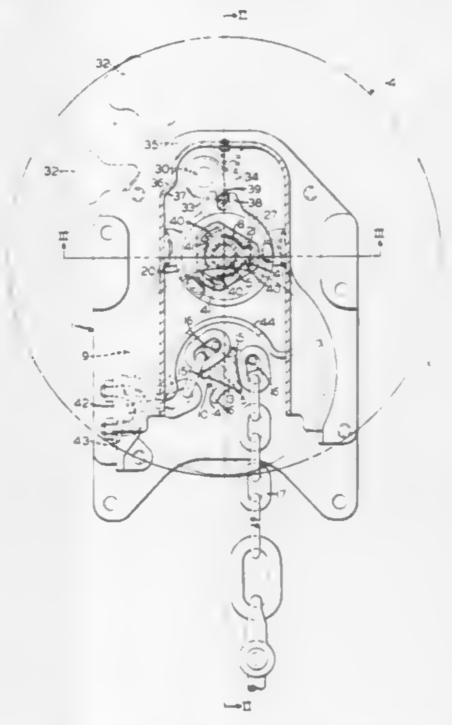
HAND BRAKE FOR RAILROAD CAR

Richard J. Housman, Dolton, and Wajih Kanjo, Midlothian, both of Ill., assignors to American Standard Inc., Chicago, Ill.

Filed Jun. 23, 1980, Ser. No. 162,298

Int. Cl.^{3} G05G *1/08*

U.S. Cl. 74—505 6 Claims



1. A handbrake, including a chain connectable at one end to a railroad car brake, said brake comprising:

(a) a chain drum by which said chain may be either taken up for effecting a brake application when rotated in one direction or let out for releasing the brake application when rotated in an opposite direction;

(b) manually operable driving means connected to said chain drum and rotatable in one direction or an opposite direction for causing rotation of said chain drum into said one or said opposite direction, respectively, said driving means including a drive shaft having a screw-threaded portion and a pinion secured at the opposite end of said drive shaft for rotation therewith; and

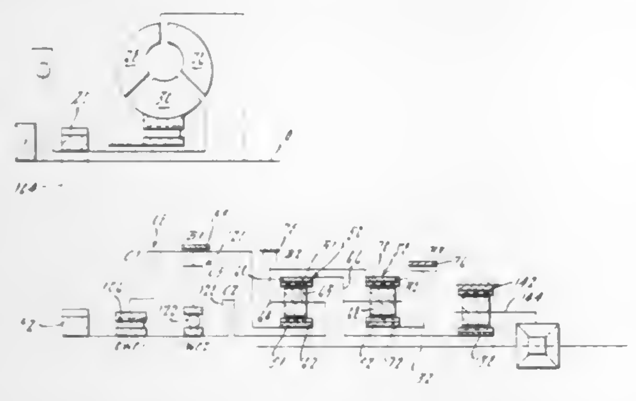
(c) a clutch and release mechanism cooperatively connected with said driving mechanism and operable upon rotation thereof in said one direction and upon buildup of tension on said chain during take-up thereof for effecting a brake application, to an engaged disposition in which said driving means is constrained from rotation in said opposite direction and thereby maintaining the brake application until released;

(d) said clutch and release mechanism including ratchet means rotatable along with the driving means and cooperative with a holding pawl, upon termination of manual effort on the driving means for retaining said driving means and the brake application in a state of equilibrium, said clutch and release mechanism further including a clutch collar rotatably engaged with said pinion, an annular stationary cam member secured in fixed coaxial surrounding relation to said drive shaft adjacent to the end to which said pinion is secured, an annular movable cam disposed coaxially with and in surrounding relation to said stationary cam and being connected therewith by complementary fast pitch threads formed partly on said stationary cam and partly on said movable cam, a release lever connected to said movable cam and effective, upon rotation in one direction, for rotating said movable cam and effecting axial movement thereof via said fast pitch threads, said clutch collar having a flange formed thereon engageable by said movable cam during axial movement of the latter for operating said clutch collar to a disengaged position from said pinion, so that said pinion is disconnected from the driving mechanism and may rotate freely to effect a quick release of the brakes.

4,368,649
AUTOMATIC TRANSAXLE DRIVELINE HAVING FOUR FORWARD DRIVING RATIOS AND A SINGLE REVERSE RATIO

Adam Vahratian; Howard L. Croswhite, both of Livonia; Roosevelt Maynard, Jr., Birmingham, and Po Lung Liang, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 1, 1980, Ser. No. 164,869
Int. Cl.^{3} F16H ***37/08***
U.S. Cl. 74—695 **2 Claims**



1. A power transmission mechanism comprising a hydrokinetic unit having an impeller and a turbine, the impeller being connected to a driving shaft;

a torque transfer means comprising a driving element connected to said turbine and a driven element mounted for rotation about an axis that is laterally displaced from the axis of said hydrokinetic unit;

a multiple ratio gear system comprising two simple planetary gear units, each gear unit having a sun gear, a ring gear, a carrier and planet pinions journalled on said carrier in meshing engagement with said sun and ring gear;

first clutch means for connecting said driven element to the sun gear of a first of said gear units, second clutch means for connecting the carrier of said first gear unit to said driven element, third clutch means for connecting the sun gear of said first gear unit to said driven element;

first brake means for braking the sun gear of said first gear unit, second brake means for braking the carrier of said first gear unit and third brake means for braking the sun gear of the second of said gear units;

the carrier of said first gear unit being connected to the ring gear of said second gear unit, the ring gear of said first gear unit and the carrier of said second gear unit being connected to a driven member;

said first clutch means comprising a first overrunning coupling and a first friction clutch in series relationship, said first overrunning coupling being effective to transfer driving torque from said driven element to said gear system;

said third clutch means comprising a second overrunning coupling and another friction clutch in series relationship, said second overrunning coupling being adapted to deliver the sun gear torque of the sun gear of said first gear unit to the torque input side of said first overrunning coupling;

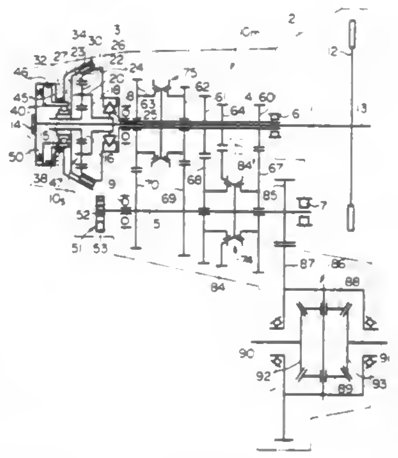
said driven member comprising a part of final drive gearing;

said final drive gearing having a differential gear assembly with differential side gears, a differential carrier and pinions on said differential carrier engaging said side gears, a torque output shaft connected to said side gear, one torque output shaft extending concentrically through said planetary gear system.

4,368,650
COMPACT TRANSMISSION, INCLUDING A MAIN TRANSMISSION AND A SUBTRANSMISSION

Akio Numazawa, Nagoya; Hajime Arai, Aichi, and Shoji Haga, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 6, 1980, Ser. No. 194,380
Claims priority, application Japan, Nov. 5, 1979, 54-143751; Nov. 5, 1979, 54-143753
Int. Cl.^{3} F16H ***3/06, 3/44;*** **B60K** ***41/06***
U.S. Cl. 74—740 **9 Claims**



1. A transmission for an automotive vehicle comprising an engine, comprising:

(a) a manually controlled main transmission, comprising: a main casing; a tubular intermediate shaft rotatably supported by said main casing; a power output shaft rotatably supported by said main casing parallel to said tubular intermediate shaft; a plurality of gear wheels on said tubular intermediate shaft; and a plurality of gear wheels on said power output shaft; selective engagement of said gear wheels on said tubular intermediate shaft and on said power output shaft providing a plurality of different speed gearing ratios between said tubular intermediate shaft and said power output shaft; one end of said tubular intermediate shaft and one end of said power output shaft protruding somewhat from one end of said main casing;

(b) a power input shaft, coaxial with and passing through said tubular intermediate shaft and rotatably supported therein, one end of which protrudes from said one end of said tubular intermediate shaft; and the other end of which protrudes from the other end of the tubular intermediate shaft for being driven;

(c) a subtransmission, comprising: a subcasing attached to said one end of said main casing; a sun gear rotatably supported by said one end of said power input shaft; a ring gear connected to said one end of said tubular intermediate shaft; a carrier connected to said one end of said power input shaft; a plurality of planetary pinions, each of which is meshed with said sun gear and with said ring gear and is rotatably supported by said carrier; an engagement member, coaxial with and connected to said sun gear so as to be rotationally fixed thereto, and axially displaceable with respect to said subcasing between a first position wherein it is frictionally engaged to said ring gear and a second position wherein it is frictionally engaged to said casing; and a fluid pressure actuator located in said subcasing for driving said engagement member between its said first and second positions; and

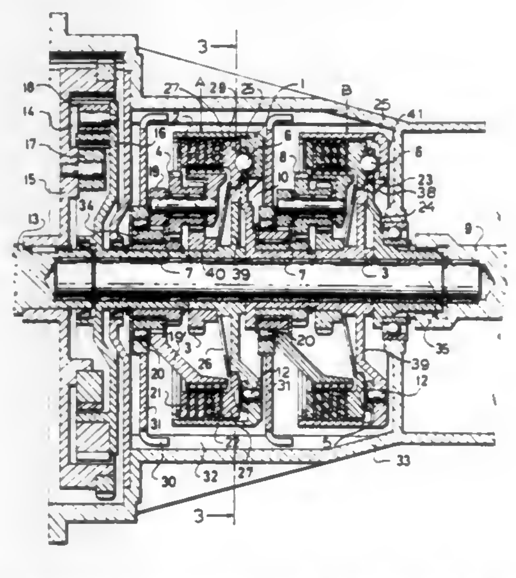
(d) a fluid pressure control device for selectively supplying actuating fluid pressure to said fluid pressure actuator, located within said subcasing and axially opposing said one end of said power output shaft, and comprising a fluid pressure pump which is rotationally coupled with and driven by said one end of said power output shaft; said fluid pressure control device being automatically controlled so as selectively to supply actuating fluid pressure to said fluid pressure actuator, according to operational parameters of said automotive vehicle;

(e) whereby the overall axial length, and the weight, of said transmission are minimized, while its operability by the drive of the vehicle is made no more difficult than that of a standard manual transmission, while providing sufficient number of gear ratios for dealing with various driving conditions, and also providing modular demountability for said subtransmission from said main transmission, while enabling fluid pressure connections between said fluid pressure control device and said subtransmission to be reliably provided.

4,368,651
MULTISTAGE AUTOMATIC PLANETARY TRANSMISSION GEARING

Jiri Bednar, Povazska Bystrica, Czechoslovakia, assignor to Povazske strojarne, narodni podnik, Povazska Bystrica, Czechoslovakia

Filed Oct. 25, 1977, Ser. No. 845,313
Claims priority, application Czechoslovakia, Oct. 22, 1976, 6806
Int. Cl.^{3} F16H ***3/74***
U.S. Cl. 74—752 E **5 Claims**

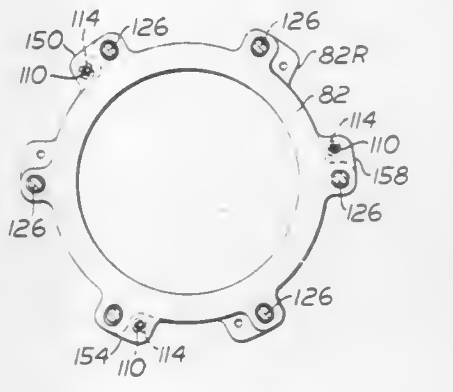


1. In an automatic planetary gear transmission comprising a driving shaft, a driven shaft, and at least one gearing stage, the improvement wherein each stage has a planetary gearing unit and a centrifugal gear change clutch, each unit comprising an input gear, an output gear, a planetary gear meshing with the input gear and the output gear, and a rotatable carrier for the planetary gear, the centrifugal gear change clutch being connected between the carrier and the output gear, the centrifugal gear change clutch being so constructed and arranged as to decrease the difference in speed between the carrier and the output gear upon an increase in speed of rotation of the output gear, and means to increase the difference in speed between the carrier and the output gear upon the subjection of the output gear to an increase in its driving torque.

4,368,652
FRICTION ASSEMBLIES FOR USE IN PLANETARY TRANSMISSIONS

Willis E. Windish, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 900,633, Apr. 27, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,694
Int. Cl.^{3} F16H ***57/10;*** **F16D** ***55/40***
U.S. Cl. 74—764 **13 Claims**



1. In a planetary gear mechanism including input and output shafts;

at least one planetary gear assembly interconnecting the shafts and including a sun gear, a planet gear meshed with the sun gear and mounted by a carrier and a ring gear meshed with the planet gear;

at least two housing parts at least partially enclosing the planetary gear assembly;

a friction assembly including a piston, a first friction plate engageable by the piston and secured against rotation relative to the housing parts, a second friction plate aligned with and engageable by the first friction plate and mounted on said one of the ring gear and the carrier against relative rotation with respect thereto;

a plurality of tie bolts assembling said housing parts, and coil springs urging said first plate towards said piston and away from said second plate;

the improvement comprising a plurality of aligned bores in said housing parts radially outwardly of the planetary gear assembly and a plurality of pins, each said pin loosely received in corresponding ones of said aligned bores in said housing parts and extending through said first plate, said bores being of larger size than the corresponding pin so that each said pin floats in its bores enabling the use of large tolerances, said coil springs being disposed on corresponding ones of said pins in abutment with said first plate and one of said housing parts.

4,368,653
HYDROMECHANICAL TRANSMISSION

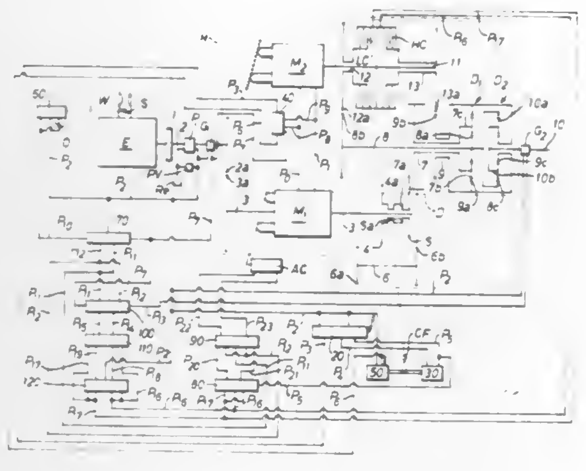
Kiyohumi Mizuno, Nagoya; Hiroaki Maeda, Toyota; Shigeo Takahashi, Chiryu, and Tsukasa Watanabe, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 764,532, Feb. 1, 1977, abandoned. This application Oct. 4, 1979, Ser. No. 82,225

Claims priority, application Japan, Feb. 2, 1976, 51-10127

Int. Cl.^{3} B60K *21/00;* F16H *47/04*

U.S. Cl. 74—868 **5 Claims**



1. A hydromechanical transmission comprising:
an input shaft;
an output shaft;
a hydraulically controlled differential gear unit for selectively providing low and high speed drive power trains between said input and output shafts;
a first positive displacement pump-motor drivingly connected with one of said input and output shafts;
a second positive displacement pump-motor hydraulically connected with said first pump-motor, the capacity of said second pump-motor being substantially the same as that of said first pump-motor;
clutch means including a first clutch to complete said low speed drive power train and a second clutch to complete said high speed drive power train, for switching-over said low speed drive power train to and from said high speed drive power train when an actual speed ratio of said output shaft to said input shaft reaches a predetermined speed ratio wherein one of said pump-motors is conditioned in its maximum capacity to conduct a 1:1 speed ratio between said first and second clutches;
a fluid actuator for varying the displacement capacity of said one of said pump-motors to control the actual speed ratio;
a speed responsive valve for controlling fluid pressure applied to said actuator from a source of fluid pressure in accordance with a first signal responsive to a throttle opening angle and a second signal responsive to the rotational speed of said input shaft;
speed ratio detecting means for detecting changes of the actual speed ratio and for generating a first shift signal slightly before the actual speed ratio increases to the predetermined speed ratio and a second shift signal slightly before the actual speed ratio decreases to the predetermined speed ratio; and
clutch control means for conducting the operation of said second clutch in response to the first shift signal from said speed ratio detecting means and for conducting the operation of said first clutch in response to the second shift signal from said speed ratio detecting means.

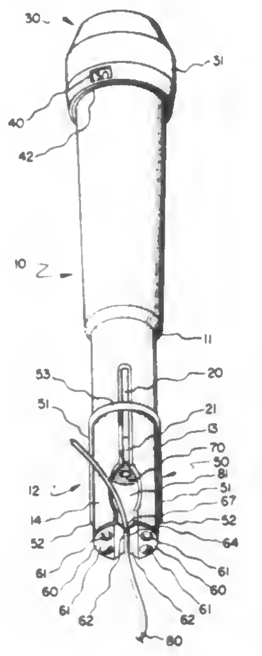
4,368,654
ADJUSTABLE STRIPPING TOOL

Marvin Kober, Spring Valley, and Eugene Battaglia, New York, both of N.Y., assignors to O. K. Machine and Tool Corp., Bronx, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,512

Int. Cl.^{3} H02G *1/12*

U.S. Cl. 81—9.5 R **10 Claims**



1. An adjustable wire stripping tool comprising a handle-shaped housing member having a longitudinal axis and having a bifurcated end forming portions that are laterally spaced and laterally displaceable with respect to the said longitudinal axis, said laterally displaceable portions each having a site for receiving a stripper blade, a pair of stripper blades each having a cutting edge and each mounted on one of the receiving sites with its cutting edge facing and extending substantially parallel to the cutting edge of the other blade, the spacing between the facing cutting edges determining the wire size that can be stripped by a user of the tool, means mounted on the housing adjacent the bifurcated end for exerting a continuous biasing force urging the laterally displaceable portions toward one another and thus tending to narrow the cutting edge spacing, means on the housing and operatively connected to the housing bifurcated end under control of the user for continuously applying a lateral force after release by said user tending to spread apart the laterally displaceable portions against the action of the biasing force exerting means and for selectively varying and setting the spacing between the cutting edges to enable differently sized wires to be stripped by differently set cutting edge spacings, and means connected to the spacing varying means for indicating the set spacing dimension and thereby the size of the wire for which the tool has been set to be stripped.

4,368,655
CONTINUOUS RATCHET DRIVE

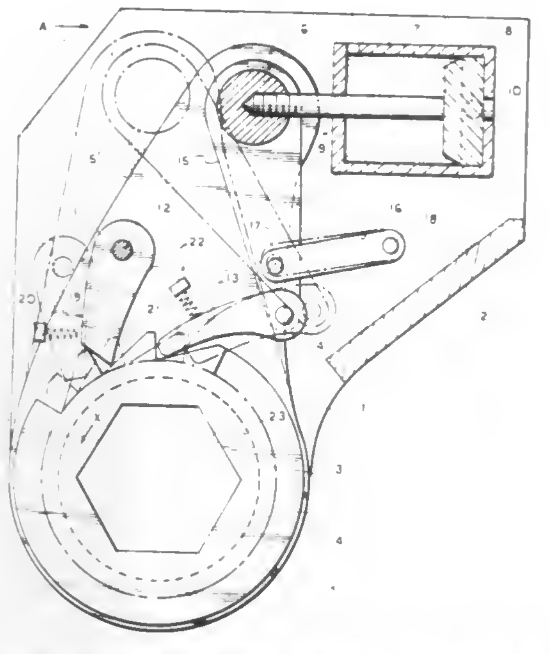
John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Filed Nov. 12, 1980, Ser. No. 205,971

Int. Cl.^{3} B25B *29/02*

U.S. Cl. 81—57.39 **11 Claims**

1. A ratchet drive for a wrench or the like comprising support means; a ratchet gear mounted turnably about its axis on said support means; a pair of drive pawls respectively having free ends engaging the teeth of the ratchet gear; drive means having a single drive element reciprocatable along a forward and a rearward stroke; and transmission means between said single drive element and said drive pawls constructed and arranged for moving during the forward stroke of said single drive element one of the drive pawls in a given direction along an active stroke driving said ratchet gears through a given angle and the other of said drive pawls along a return stroke to move in a direction opposite to said given direction over at least one tooth of the ratchet gear, and to move during the rearward stroke of said single drive element said other drive pawl along its active stroke and said one drive pawl along its return stroke, said transmission means comprising drive arm means pivotable about the axis of said ratchet gear, one of said drive pawls being mounted on said drive arm means and said transmission means further including lever means carrying the other drive pawl.



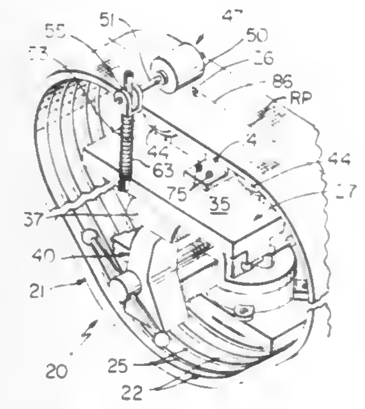
4,368,656
MANUAL TOOL FOR CUTTING POLYMERIC BELT BODY

Anderson W. Howerton, Nixa, and Mark P. Foley, Springfield, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Nov. 26, 1980, Ser. No. 210,991

Int. Cl.^{3} B26D *1/02*

U.S. Cl. 83—178 **12 Claims**



1. In a manual tool for cutting a polymeric endless power transmission belt body which has a plurality of endless V-belt elements fastened in spaced side-by-side relation by an endless structure to define alternating projections and grooves in said belt body, said tool comprising, a cutting knife for cutting said endless structure to define a plurality of endless belts each having at least one belt element, the improvement comprising a support which is adapted to be disposed in a stationary position, means for fastening said knife at a fixed location on said support, and means for supporting and guiding said belt body during cutting, said supporting and guiding means being supported on said support, said knife cooperating with said supporting and guiding means to provide precise cutting through said structure at the base of a particular groove upon moving said belt body relative to said knife with said knife in cutting engagement with said structure, said supporting and guiding means comprising a pair of rotatable wheels disposed substantially in a rectilinear path with said knife and with said knife aligned therebetween, each of said wheels having an outer portion disposed in said particular groove together with said knife during cutting, said outer portions defining the sole means which engage said belt body to provide supporting and guiding during said cutting, said particular groove having side walls defined by facing surfaces of an immediately adjacent pair of belt elements and said outer portions of said wheels only engaging said facing surfaces of said adjacent pair of belt elements and being spaced from said endless structure during said cutting.

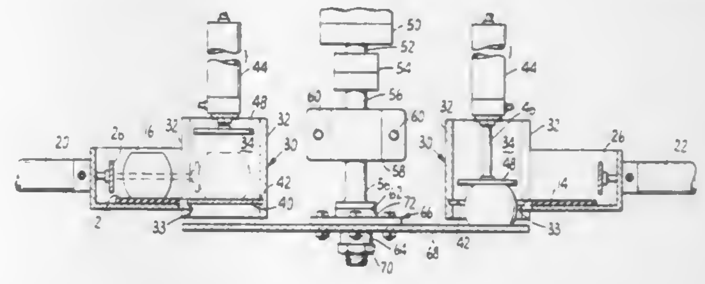
4,368,657
FEEDER AND SLICER

Roy C. Pellaton, 2308 Virginia La., Stockton, Calif. 95204

Filed Sep. 2, 1980, Ser. No. 182,987

Int. Cl.^{3} B26D *7/06*

U.S. Cl. 83—356.3 **3 Claims**



1. In a slicer comprising: a horizontally disposed rotary plate; slicing knife means carried by said plate; pocket means to position an item on said plate for slicing, said pocket means having an open side for the passage of an item into said pocket means; a pusher to move an item through said open side; and a hold-down means to press said item against said plate as it is sliced by said knife means, the improvement therein comprising a slidable trap door disposed in parallel relationship to said plate and associated with said pocket means to support an item pushed into said means by the pusher in an upright condition spaced above said plate, said door being selectively retractable to permit an item supported thereon to lower onto said plate while remaining in an upright condition confined within said pocket means; and box-like pocket means adapted to fully laterally enclose and entrap said item while it is on said plate.

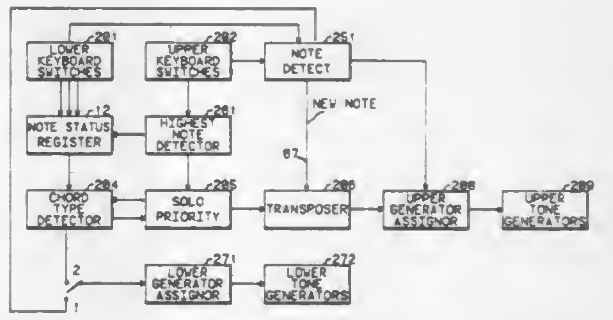
4,368,658
APPARATUS FOR SOLO HARMONY TRANSFER IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Glendale, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Feb. 24, 1981, Ser. No. 237,009

Int. Cl.^{3} G10F *1/00*

U.S. Cl. 84—1.03 **19 Claims**



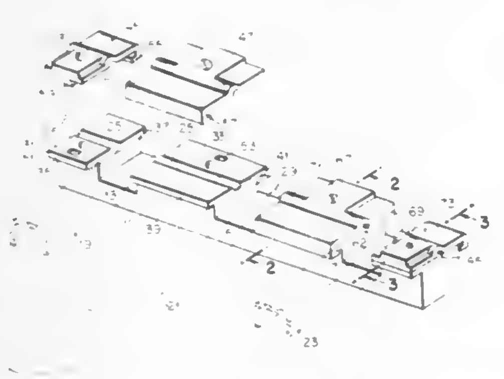
1. In a keyboard instrument having a first and second keyboard array of keyswitches, apparatus for adding fill-in notes to notes played on the first keyboard comprising:
a first detection means for detecting actuated keyswitches in said first keyboard array of keyswitches,

a second detection means for detecting actuated keyswitches in said second keyboard array of keyswitches,
a first plurality of tone generators for creating musical tones,
a second plurality of tone generators for creating musical tones,
a chord detect means responsive to a combination of actuated keyswitches detected by said first detection means and by actuated keyswitches detected by said second detection means comprising a matched filter processor wherein a musical chord type is selected from a preselected multiplicity of musical chord types irrespectively of whether or not said combination of said actuated keyswitches comprise one of said musical chord types,
a root note generator means responsive to actuated keyswitches detected by said first detector means and by actuated keyswitches detected by said second detection means whereby a chord root note number is generated,
a first assignor means for assigning tone generators in said first plurality of tone generators to actuated keyswitches detected by said first detection means and for assigning tone generators in said first plurality of tone generators to said musical chord type selected by said chord detect means and transposed by said chord root number thereby providing said fill-in notes, and
a second assignor means for assigning tone generators in said second plurality of tone generators to actuated keyswitches detected by said second detection means.

4,368,659
PIANO PEDAL ASSEMBLY

Harry C. Kapreilian, 324 Nassau Ct., Marco Island, Fla. 33937; Vincent J. Hart, 4 Smith Ave., Kingston, N.Y. 12401, and Robert O. Robeson, Boiceville, N.Y. 12412

Filed Feb. 4, 1980, Ser. No. 118,441
Int. Cl.^{3} G10C *3/26*
U.S. Cl. 84—228 **6 Claims**

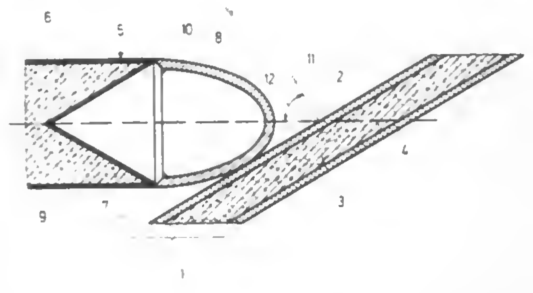


1. A piano pedal assembly comprising in combination:
a plurality of pedals,
a support member,
said support member comprising a unitary base member having a configuration including a plurality of upper surface areas and a plurality of recesses lower surface areas for containing said plurality of pedals,
said upper surface areas having extended front and rear edge portions, and
means coupling said pedals to said support member in a predetermined orientation,
said coupling means including a plurality of clip members, one clip member for each of said upper surface areas,
said clip members being adapted to engage said extended front and rear edge portions of said upper surface areas, and
each of said clip members including a detent adapted to fit within an associated opening on one of said upper surface areas for securely attaching said clip members to said support member,
whereby said pedals are maintained in said predetermined orientation during operation of said foot pedal assembly.

4,368,660
PROTECTIVE ARRANGEMENT AGAINST PROJECTILES, PARTICULARLY HOLLOW EXPLOSIVE CHARGE PROJECTILES

Manfred Held, Kühbach, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 951,085, Oct. 13, 1978, abandoned, which is a continuation of Ser. No. 842,177, Oct. 14, 1977, abandoned, which is a continuation of Ser. No. 706,067, Jul. 9, 1976, abandoned, which is a continuation of Ser. No. 495,834, Aug. 6, 1974, abandoned. This application Mar. 11, 1980, Ser. No. 129,237
Int. Cl.^{3} F41H *5/04*
U.S. Cl. 89—36 AE **12 Claims**



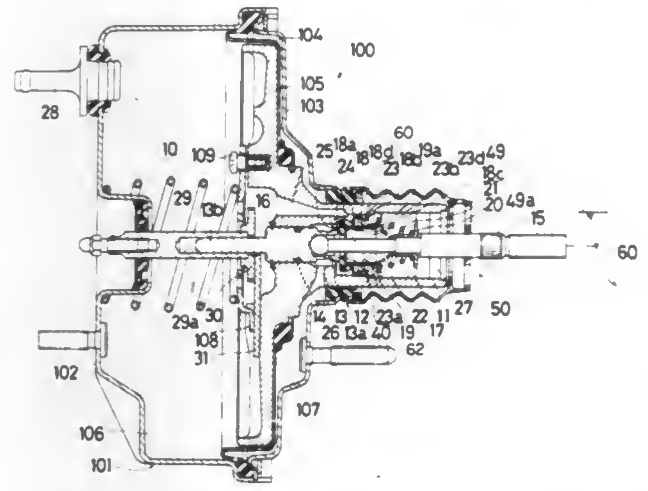
1. A protective arrangement against projectiles, for covering the surfaces of vehicles such as land vehicles like tanks, flying vehicles like aircraft and sea-going vehicles like ships and of stationary installations where the protective arrangement covers surfaces of the vehicle or stationary installation exposed to attack by projectiles, comprising a continuous wall structure, said wall structure having a continuous first wall layer of explosive material with oppositely directed faces and a first and a second additional continuous layer each covering and in surface contact with one of the faces of said wall layer with said first additional continuous layer facing in the direction from which a projectile usually impacts against said wall structure and said second additional continuous layer facing in the direction opposite to the direction in which said first additional continuous layer faces, each of said first and second additional wall layers is formed of an inert non-explosive material and has a first surface directed outwardly from said first wall layer with said face surface extending obliquely to the usual impact direction of a projectile against said wall structure, said first wall layer of explosive material detonating only at shock wave pressures exceeding a given level so that said first wall layer does not detonate when exposed to small arms fire and similar sources of shock wave pressure, and when said first wall layer detonates said first and second additional wall layers move away from said first wall layer in a direction perpendicular or approximately perpendicular to said first wall layer.

4,368,661
CONTROL VALVE FOR BRAKE BOOSTER

Atsushi Ohmi, Anjo, and Chiaki Ochiai, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Sep. 17, 1980, Ser. No. 188,143
Claims priority, application Japan, Sep. 29, 1979, 54-125921
Int. Cl.^{3} F15B *13/16*
U.S. Cl. 91—376 R **7 Claims**

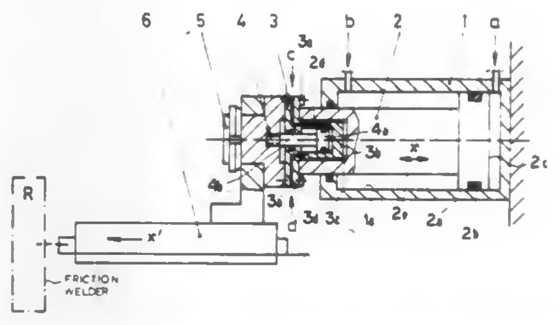
1. A control valve for controlling the pressure difference between opposite sides of a power piston in a brake booster, the valve comprising:
a plunger member disposed within a central bore in the power piston and having a first valve seat formed in an axial end thereof;
a push rod disposed within said bore and connected at one axial end to said plunger member and pivotally connected at the other axial end to a brake pedal; a second valve seat formed in a wall of said bore;
an annular poppet member having an interior wall surface disposed within said bore and having a sealing face made of resilient material at one axial end thereof, said sealing face facing said first valve seat and said second valve seat;
an annular retainer positioned within said bore, the other axial end of said poppet member being sealingly secured to the wall of said bore by said retainer, said poppet member having an intermediate flexible diaphragm portion;
a coil spring for biasing said sealing face of said poppet member toward said valve seats, one end of said coil spring being connected to said push rod;
guide means cooperating with the interior surface of said annular poppet member for centering said poppet member in said bore, said guide means including a tubular guiding member positioned within said poppet member, the outer cylindrical surface of said tubular guiding member contacting the inner surface of said annular poppet member; and
wherein said annular retainer further includes an elongated inner cylindrical surface extending in the direction of the axis of said bore for contacting the outer cylindrical surface of said tubular guiding member, the axial length of said elongated guiding surface being a significant fraction of the overall axial length of said annular retainer, said tubular guiding member being supported and constrained for centered, sliding axial movement by said annular retainer elongated inner surface.



4,368,662
CYLINDER ARRANGEMENT FOR FRICTION-WELDING MACHINE

Wilhelm Steinhart, Friedberg, Fed. Rep. of Germany, assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft Zwelgnieder-Lassung Keller & Knappich, Augsburg, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 128,050
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909267
Int. Cl.^{3} F01B *7/20*
U.S. Cl. 92—52 **3 Claims**

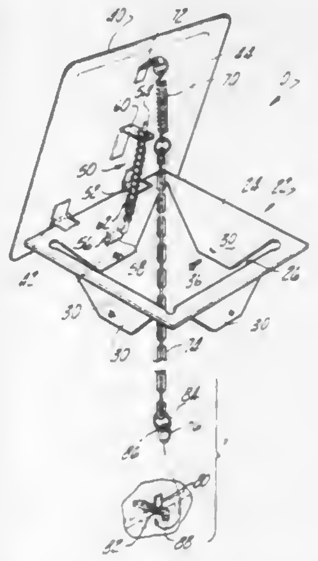


1. In a friction welding machine of the type wherein a cylinder arrangement presses a workpiece against another workpiece upon relative rotation of the workpieces in contact at a common interface to bond said workpieces together, the improvement wherein said cylinder arrangement comprises a main cylinder, a main piston displaceable in said main cylinder and having a force-applying end, said force-applying end being formed directly with an auxiliary cylinder isolated from said main cylinder and externally thereof, an auxiliary piston shiftable in said auxiliary cylinder, and pressure-transmitting means for applying force of said main piston and of said auxiliary piston to one of said workpieces transversely to said interface, said cylinders being provided with independently chargeable fluid-inlet ports to each side of the respective piston, said end of said main piston being provided with an internally threaded bore, said auxiliary cylinder being threaded into said bore and having a flange transverse to said pistons and disposed outside said bore, and means for selectively securing said flange to said pressure-transmitting means.

4,368,663
CHIMNEY DAMPER

Salvatore C. Tabacco, 6869 Indian Creek, West Bloomfield, Mich. 48033

Filed Mar. 9, 1981, Ser. No. 241,679
Int. Cl.^{3} F23L *17/02*
U.S. Cl. 98—59 **8 Claims**



1. A damper attachable to the top of a chimney flue comprising:
a substantially rectangular stamped frame having a central opening, said frame having a portion dimensioned to flatly abut against the top of a chimney flue,
means for attaching said frame to said flue,
a door pivotally mounted to said frame and movable between an open and a closed position wherein in said closed position said door covers said opening whereas in said open position, said door is spaced apart from said opening,
means for resiliently urging said door towards said open position,
elongated means connected at one end to said door and extending downwardly through said chimney flue for moving said door between said open and said closed position,
a bracket having a hole, said bracket secured to said door, and
wherein said resilient urging means comprises a rod, means for pivotally securing one end of said rod to said frame, the other end of said rod being longitudinally slidably positioned through said hole in said bracket, a stop member secured adjacent said other end of said rod for retaining said rod within said bracket hole and so that said bracket abuts against said stop member when said door is in said open position, and a helical compression spring positioned around said rod and sandwiched in between said bracket and said pivotal securing means.

4,368,664

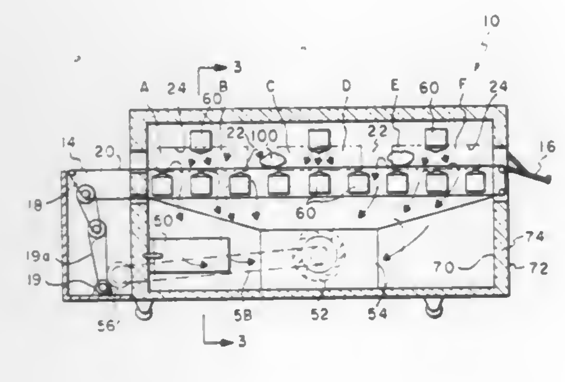
APPARATUS TO TRANSFER HEAT TO A PRODUCT AND SIDE LOADING DOOR THEREFOR

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220; Jarald E. High, Grand Prairie, and William W. Plumb, Dallas, both of Tex., assignors to Donald P. Smith, Dallas, Tex.

Continuation of Ser. No. 901,487, May 1, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,815

Int. Cl.^{3} A47J *37/04*

U.S. Cl. 99—386 **18 Claims**



1. An apparatus for transferring heat to a product, comprising in combination:

- a product support means comprising a conveyor for transporting the product while heat is transferred to the product;
- a cabinet enclosing the conveyor wherein the cabinet forms a plurality of openings for accessing the product on the conveyor, with at least one of the openings adjacent to the space immediately above the transporting portion of the conveyor and spaced apart from the ends of the full normal conveyor cycle, having a substantially horizontal bottom edge with a bottom outside corner and a bottom inside corner, and a top edge with a top inside corner;
- a panel hingedly connected to the bottom outside corner of the at least one opening, movable about an axis of rotation between an open position internal to the cabinet extending substantially completely across the bottom edge to a point adjacent the conveyor and a substantially closed position extending from the bottom outside corner of the opening to the top inside corner of the opening whereby the panel acts as a shield in the open position for protecting a user of the apparatus from being burned when placing or removing a product on said conveyor by hand by the bottom edge when the bottom edge is hot and from hot air blasts coming up from between the conveyor and the cabinet, and whereby the top edge of the opening is cooled by air from outside of the cabinet when the panel is in the closed position, reducing the chance of a user being burned by the top edge; and
- a handle rigidly affixed to the hinged edge of the panel wherein the handle is substantially oppositely disposed about the axis of rotation from the panel whereby the handle acts in combination with the panel as a lever for raising the panel to the substantially closed position and lowering the panel to the open position wherein the panel will go to the open position in the absence of force on the handle.

4,368,665

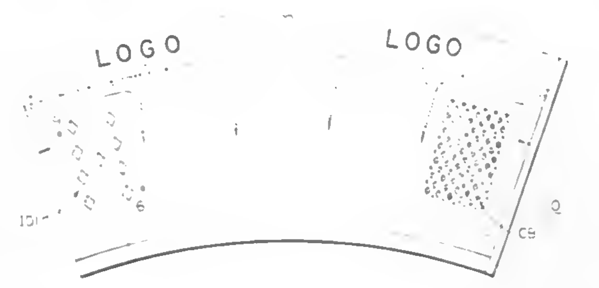
METHOD FOR IMPRINTING MULTIPLE PERMUTATIONS AND COMBINATIONS OF CARDS AND THE LIKE ON DRINKING CUPS AND PRODUCTS MANUFACTURED THEREBY

Patrick T. Boyle, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mill, Md.

Division of Ser. No. 29,073, Apr. 11, 1979, Pat. No. 4,287,824. This application Dec. 29, 1980, Ser. No. 220,916

Int. Cl.^{3} B41F *17/28*

U.S. Cl. 101—93.01 **4 Claims**



1. The method of printing a plurality of container sidewall blanks in sequence on a strip of stock material and providing said blanks in said sequence with combinations of the same number of generically related discrete indicia such that no two successive blanks bear the same combination by the steps of:

moving said strip of stock through a printing zone from an upstream position to a downstream position;

providing a first repetitive number of first sidewall blank imprints in succession to said strip of stock at said upstream position, each of said first imprints in said repetitive number containing a different discrete indicia; and

providing at least a second repetitive larger number of second sidewall blank imprints at a downstream position with each of said second imprints being in registry on said stock with a said first imprint, and with each said second imprint containing a different discrete indicia from any other first and second imprint.

4,368,666

METHOD AND CIRCUIT ARRANGEMENT FOR CONTROLLING PRINT TIMING IN A PRINTING APPARATUS

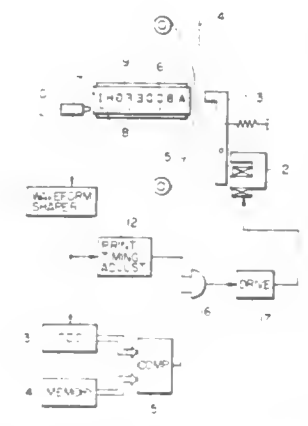
Hiroomi Kozawa, and Kensei Hosoya, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Jan. 7, 1981, Ser. No. 223,089

Claims priority, application Japan, Jan. 12, 1980, 55-2481; Mar. 18, 1980, 55-35382

Int. Cl.^{3} B41J *1/20*

U.S. Cl. 101—93.01 **22 Claims**



1. A method of controlling print timing in a printing apparatus of the type having a type carrier, wherein at least one of a plurality of print hammers is selectively driven by a corresponding electromagnet with print timing which is basically determined by detecting a character mark moving with said type carrier, said electromagnet being energized after a first interval from the time of detection of said character mark, printing being performed after a second interval from the time of energization of said electromagnet, said print timing corresponding to the sum of said first and second intervals, the method comprising the steps of:

(a) performing test printing with first and second print timings which have been respectively advanced and retarded from a standard print timing by an amount as great as a negative tolerance of a variation in said second interval for advanced print timing, and as great as a positive tolerance of a variation in said second interval for retarded print timing, wherein said negative and positive tolerances are amounts of variations of said second interval within which each character can be perfectly printed when said first interval has been set to an optimum value;

(b) further advancing and/or retarding said first and second print timings during said test printing so that printed characters are perfect, a value to be either advanced or retarded from said standard print timing being found by said step of further advancing and/or retarding; and

(c) setting an ideal printing timing by either advancing or retarding said standard print timing as much as said value found in said step of further advancing and/or retarding.

4,368,667

ROLLER SQUEEGEE FOR SCREEN PRINTING

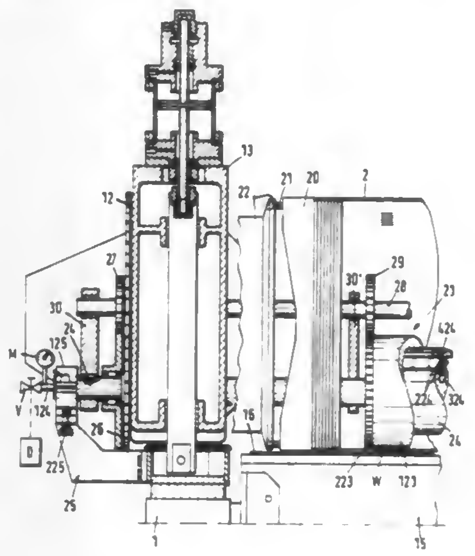
Mathias Mitter, Schloss Holte, Fed. Rep. of Germany, assignor to Mitter & Co., Schloss Holte, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,459

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934059

Int. Cl.^{3} B41L *13/00*

U.S. Cl. 101—120 **15 Claims**



1. A roller squeegee for use with printing screens having a surface with which it defines a printing line, comprising a stationary shaft; a tubular jacket rotatably surrounding said shaft with a clearance; and means for applying to said jacket fluid pressure from the interior of said jacket outwardly and in a direction away from said printing line, said applying means comprising a longitudinally extending groove in the periphery of said shaft at a side thereof which faces away from said surface, a glide shoe received in said groove and having an outer surface engaging an inner surface of said jacket, and means for admitting pressure fluid into said groove beneath said glide shoe so as to cause the glide shoe to emerge from the groove to a selectable extent.

12. A roller squeegee for use with printing screens with which it defines a printing line, comprising a stationary shaft which is hollow and has at least one opening communicating its interior with its periphery at a location diametrally opposite said printing line; a tubular jacket rotatably surrounding said shaft with a clearance; means for applying to said jacket fluid pressure from the interior of said jacket outwardly and in a direction away from said printing line; and subdividing means on said shaft extending into sealing and sliding engagement with an inner peripheral surface of said jacket and subdividing said clearance into a first chamber proximal to and a second chamber distal from said printing line, said opening communicating with said second chamber and said applying means communicating via said hollow shaft and said opening with said second chamber, so that pressure fluid flows from said opening of said shaft into said second chamber of said jacket to apply fluid pressure to the latter in the direction away from said printing line.

4,368,668

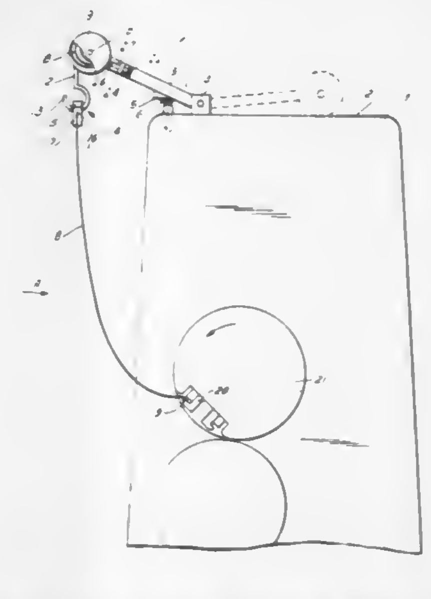
PRINTING PLATE MOUNTING ARRANGEMENT

Hans Johne, Radebeul; Arndt Jentzsch, Coswig; Günter Schumann, Radebeul; Arnfried Jehring, Coswig; Fritz Liebschner, Weinböhla; Rolf Gutsche, Coswig, and Frank Grafe, Radebeul, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed May 15, 1981, Ser. No. 264,667

Int. Cl.^{3} B41F *27/00*

U.S. Cl. 101—212 **6 Claims**



1. Arrangement for mounting printing plates on the plate cylinder of an offset machine printing station, comprising at least two arms mountable at opposite lateral sides of a printing station and each having a free end portion; engaging means for engaging a trailing edge portion of a printing plate to be installed on a plate cylinder of the printing station, said engaging means comprising a rail, and a plurality of plate-engaging devices mounted on said rail; releasable holding means releasably connectable with said engaging means; and connecting means for yieldably connecting said holding means to said free end portions of said arms, said plate-engaging devices each including support means depending from said rail, abutment means spaced from and opposite said support means and provided with a friction-promoting layer, slots in said support means inclined downwardly and in direction towards said abutment means and the layer, and an elastically yieldable roller shiftable in said slots towards and away from said layer.

4,368,669

METHOD AND APPARATUS FOR NON-IMPACT PRINTING ON BARRIER COATED SUBSTRATE

Franklin S. Love, III, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

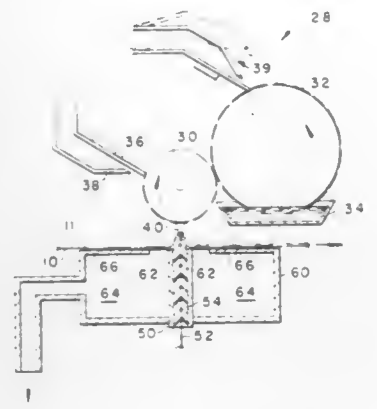
Filed Jan. 2, 1981, Ser. No. 221,982

Int. Cl.^{3} G01D *5/44;* **B05B** *5/02*

U.S. Cl. 101—426 **9 Claims**

1. A method for printing on a substrate surface comprising the steps of:

(a) providing a dry substrate;
(b) applying a barrier material to coat one surface of said substrate;
(c) locating a marking material applicator means in operative relationship with said coating surface of said substrate;
(d) applying a marking material immiscible with said barrier material to said coated surface of said substrate;
(e) locating an electric field generating means in operative relation with a second surface of said substrate opposite said applicator means;



(f) locating a vacuum holding means adjacent to said field generating means and in operative relation with said second substrate surface;
(g) engaging said vacuum holding means to draw said second substrate surface toward said electric field generating means while moving said coated surface of said substrate into operative relation with said applicator means and simultaneously generating an electric field substantially opposite said applicator means, thereby causing said marking material to displace selectively said barrier material and to wet said coated surface of said substrate.

4,368,670
DETONATOR WITHOUT INITIATING EXPLOSIVE

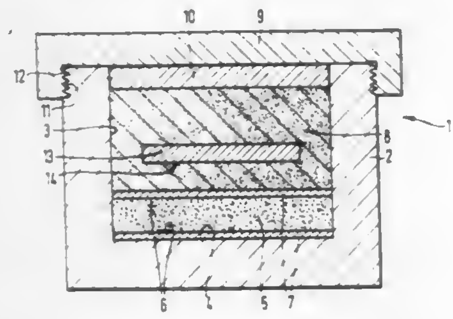
Peter Weidner, Breitenbrunn, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,335

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931765

Int. Cl.³ F42C *19/12*

U.S. Cl. 102—202.5 **11 Claims**



1. A detonator without initiating explosive for the electrical detonation of explosives; comprising at least one piezo element; a secondary explosive at least partially encompassing said piezo element and being subjectable to a steeply rising voltage impulse so as to rapidly expand and generate a shock wave, said secondary explosive being detonated by said shock wave.

4,368,671
DOME-SHAPED MOLDED COMPONENT FOR OPERATIVE ELEMENTS, ESPECIALLY MINES

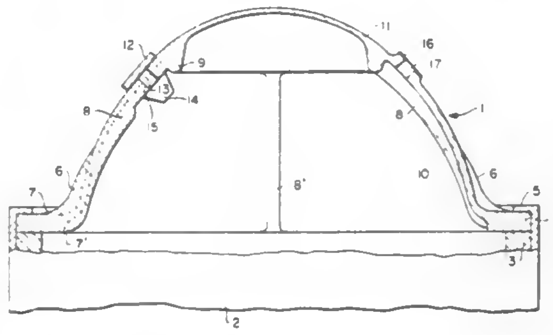
Manfred Weber, Neunkirchen-Seelscheid; Dieter F. von Hinleder, Sindelfingen; Dieter Picht, Porz-Urbach, and Klaus Fischer, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,846

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931180

Int. Cl.³ F42B *23/24*

U.S. Cl. 102—401 **20 Claims**



1. A dome-shaped molded component for use with an operative element, especially a mine, which is adapted to be connected at a continuous rim with the operative element, said component being extroverted in its functional position to form a cavity with respect to the operative element, and is formed of an elastic material, characterized in that the molded component has rib means extending thereon and, in its initial position, the molded component is compressed under elastic deformation by means of an externally effective force and is held in a position wherein it is pressed against the operative element, introverted, wherein forces occur in the ribs means in dependence on the arrangement and deformation of said rib means, these forces effecting, after elimination of the external force, the deployment of the molded component into its functional operative position.

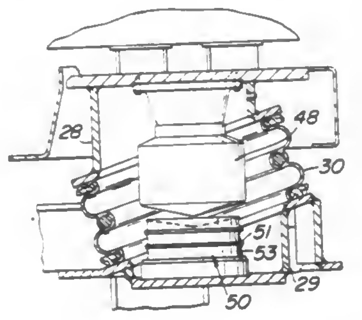
4,368,672
SECONDARY SUSPENSION SYSTEM FOR A RAILWAY CAR

John A. Germer, Doylestown, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 29, 1980, Ser. No. 220,804

Int. Cl.³ B61F *3/004*

U.S. Cl. 105—199 R **2 Claims**



1. In combination with a railway car including a main body and a truck having a bolster, a combined lateral and vertical suspension system comprising:
(a) angular mounting blocks secured to said main body;
(b) angular spring seats secured to said bolster;
(c) a pair of air springs extending upwardly and inwardly from said angular spring seats secured to said bolster towards the center of said main body to said mounting blocks at angles between it and 25 degrees from the vertical plane of said main body;
(d) emergency spring means secured within each of said pair of air springs normally inoperative and becoming operative when one of said air springs fail;
(e) said emergency spring means including a non-linear spring secured to one of said mounting blocks and a lateral suspension spring normally spaced from said non-linear spring and secured to one of said spring seats; and
(f) said lateral suspension spring comprising a plurality of thin metal plates disposed between rubber blocks,

whereby vertical and lateral suspension is provided for said railway car during normal operating conditions and during emergency operating conditions when said air springs fail.

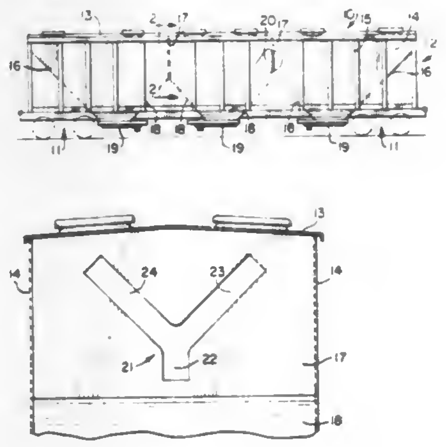
4,368,673
DISTRIBUTION MEANS FOR PARTITION SHEET ASSEMBLY

Richard P. Dvorscak, Portage, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 86,887, Oct. 22, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 256,862

Int. Cl.³ B61D *7/00, 17/00*

U.S. Cl. 105—248 **7 Claims**



1. A covered railway hopper car having a body including a roof structure extending between and being connected to a pair of generally vertical transversely spaced side walls and having an opening to admit lading, a plurality of partition sheet assemblies extending generally vertically within said body being disposed between and connected to said side walls defining hopper compartments, the improvement comprising:
upwardly converging slope sheets at opposite sides of each partition sheet assembly and terminating in an apical structure at the lower edge thereof,
said partition sheet assemblies including distribution means providing for communication and cross-flow of commodity between said hopper compartment,
said partition sheet assemblies except for said distribution means being imperforate and the lower end of said distribution means extending proximate to the apical structure therebeneath,
said distribution means providing opening means with first portions located at opposite upper lateral end regions of the associated partition sheet assembly and said first portions converging therefrom inwardly to an apex at the central portion of the partition sheet assembly,
said opening means including a second portion extending from the apex into the lower region of said partition sheet assembly,
the area of said opening means being the smallest midway between said side walls and spreading out therefrom laterally and vertically in a uniform arrangement to sift commodity from one side of the partition sheet assembly to the other in a predetermined pattern toward the center of the car, and
said partition sheet assemblies being co-extensive and connected about their entire peripheries with the interior of the hopper car body thereby providing structural rigidification of the hopper car body while said distribution means provides communication and cross-flow of commodity between adjacent hopper compartments in a predetermined pattern.

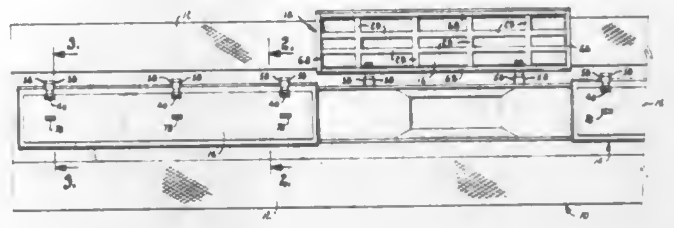
4,368,674
HATCH COVER FOR RAILROAD HOPPER CARS

Lewis H. Wiens; James R. Saylor, both of Johnson County, Kans., and Orville E. Blume, Buchanan County, Mo., assignors to Aero Plastics of K.C., Inc., Kansas City, Mo.

Filed Jan. 28, 1981, Ser. No. 229,286

Int. Cl.³ B61D *39/000*

U.S. Cl. 105—377 **18 Claims**



1. A hatch cover for an open topped railroad hopper car, said hatch covering comprising:
a rigid panel having sufficient size to cover the open top of the hopper car, said panel having generally flat upper and lower surfaces and mutually perpendicular longitudinal and transverse axes;
hinge means for connecting said panel to the hopper car in a manner permitting the panel to open and close the top of the car;
means for sealing said panel to the hopper car when the panel is closed; and
a plurality of reinforcing ribs on the lower surface of said panel arranged in a crossing pattern thereon to strengthen and stiffen the panel, each of said reinforcing ribs having a honeycomb core and a rigid shell secured to the lower surface of said panel to enclose said honeycomb core, said ribs being arranged into a plurality of spaced apart longitudinal ribs extending substantially parallel to said longitudinal axis and a plurality of spaced apart transverse ribs extending substantially parallel to said transverse axis.

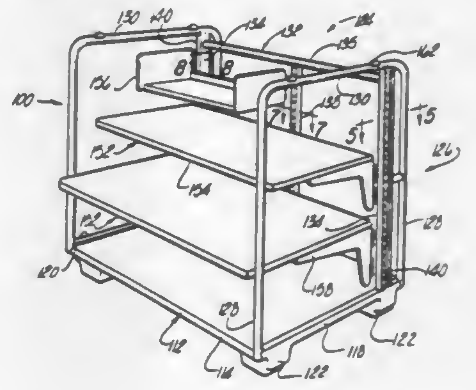
4,368,675
STACKING PALLET

Robert L. Propst, Ann Arbor, and Terry L. Mitchell, Jenison, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 960,173, Nov. 13, 1978, abandoned. This application Apr. 21, 1981, Ser. No. 142,346

Int. Cl.³ B65D *19/00, 19/44*

U.S. Cl. 108—53.1 **14 Claims**



1. A material handling pallet comprising a rectangular base having sides and ends, a plurality of spaced-apart supporting legs connected to and extending downwardly from said base, said legs each having a ground-engaging portion and cooperatively effecting a clearance below said base for receiving pallet-lifting means, an upright frame mounted on said base and

consisting of a pair of open framework end portions positioned at opposite ends of said base and a cross frame portion extending lengthwise of said pallet at a position between and connected to said end portions, vertically-spaced horizontal load supporting members on said cross frame portion extending lengthwise of said pallet for supporting objects which are removable from said load-supporting members by movement thereof lengthwise of said cross frame portion through said open framework end portions or sideways of said cross frame portion across one side of said pallet at a position between said frame end portions, said frame terminating at the upper end thereof in frame members which extend transversely of said base and which are in substantial vertical alignment with said supporting legs enabling said pallet to be stacked upon another like pallet, each of said legs having a receiver portion positioned adjacent to and above said ground-engaging portion, said receiver portion being positionable on a transversely extending frame member of another pallet so that said leg is lowered into a position in which it is in horizontal interfering relationship with said frame member to cooperate therewith to restrain relative lengthwise movement between a stacked pair of pallets, a plurality of projecting members on said frame members extending upwardly therefrom, and a recess in each of said legs located above said ground engaging portion and operable to receive an associated one of the projecting members on the frame members of a lower pallet to restrain relative horizontal movement between the stacked pair of pallets.

4,368,676

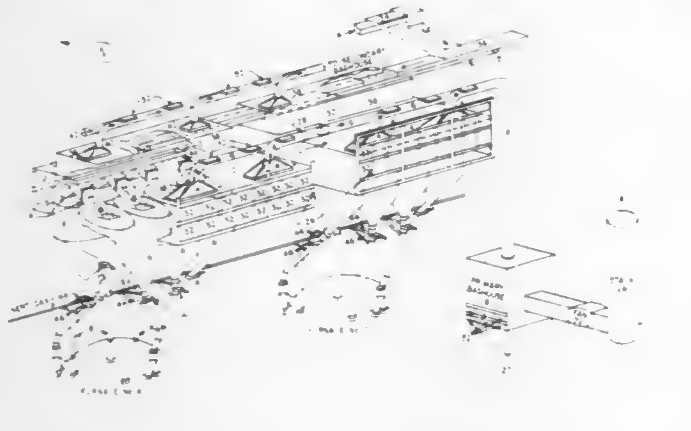
APPARATUS FOR COLLECTION OF GASES AND PARTICULATES IN A FURNACE FEED SYSTEM

Arthur J. Henriksen, Pocatello, Id.; Klaus F. Thiel, Foster City, Calif., and Carl F. Petersen, Pocatello, Id., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 16, 1980, Ser. No. 169,248

Int. Cl.³ F23K *3/00*

U.S. Cl. 110—101 CD **32 Claims**



1. In combination, a furnace feed system and gas and particulate collection system comprising movable means for conveying feed material to feed bins to predetermined levels, an enclosure enveloping at least the top openings of the feed bins which enclosure contains any furnace gases and particulates arising from the feed bins, intake openings in the enclosure to permit atmospheric air to enter the enclosure, exhaust openings in the enclosure to remove any furnace gases, particulates and intake air from the enclosure, enclosed duct means connecting said exhaust openings for conveying the exhaust gases and particulates from the enclosure, separating means connected to said duct means for separating any particulates from gases, a fan for conveying the separated gases from said separating means and which fan maintains the enclosure, the duct means and separating means under subatmospheric pressure, and discharging the separated gases.

4,368,677

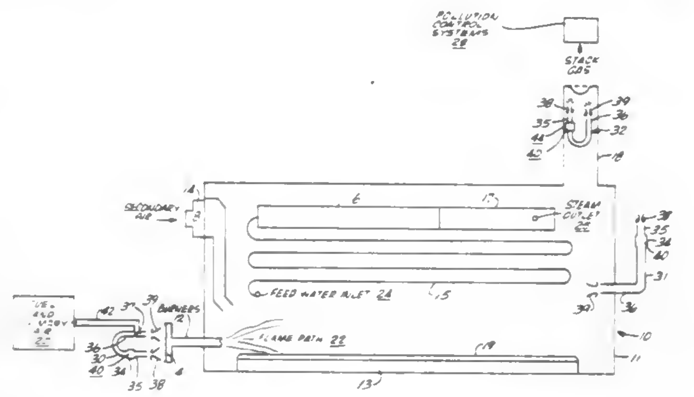
PULSE COMBUSTION SYSTEM FOR BOILERS

Michael J. Kline, 10947 El Chino Ave., Fountain Valley, Calif. 92708

Filed Apr. 7, 1981, Ser. No. 251,908

Int. Cl.³ F23B *5/00*

U.S. Cl. 110—212 **6 Claims**



1. In a selective catalytic reduction system which contains catalytic surfaces for removing nitrous oxide from stack gas, the improvement comprising:

a pulse jet engine disposed to direct pulsating hot gas and sonic energy on the catalytic surfaces for cleaning the surfaces.

4,368,678

INJECTION OF PULVERIZED MATERIAL INTO A PRESSURIZED FURNACE

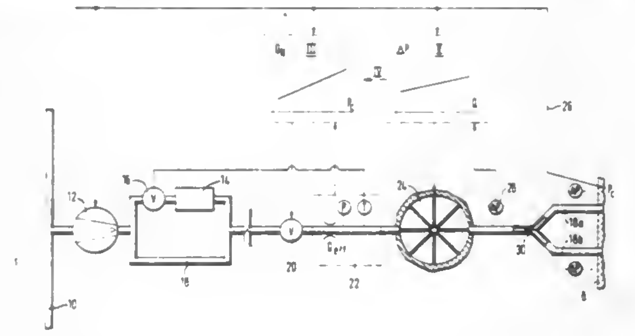
Leon Ulveling, Howald, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Dec. 15, 1980, Ser. No. 216,438

Claims priority, application Luxembourg, Dec. 27, 1979, 82036

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **26 Claims**



1. A process for the injection of pulverized solid material into a pressurized vessel including the steps of:

controllably pressurizing a carrier gas;

delivering the pressurized carrier gas to a conduit;

controlling the volume flow rate of the carrier gas in the conduit;

controllably feeding the pulverized material into the conduit whereby it will be mixed with and entrained in the carrier gas;

injecting the mixed carrier gas-pulverized material stream into the vessel;

monitoring the pressure in the vessel;

monitoring the pressure drop along at least a portion of the conduit downstream of the pulverized material feed point;

varying the pulverized material feed rate to maintain the pressure drop at a predetermined level; and

varying the volume flow rate of the carrier gas as a function of the vessel pressure.

4,368,679

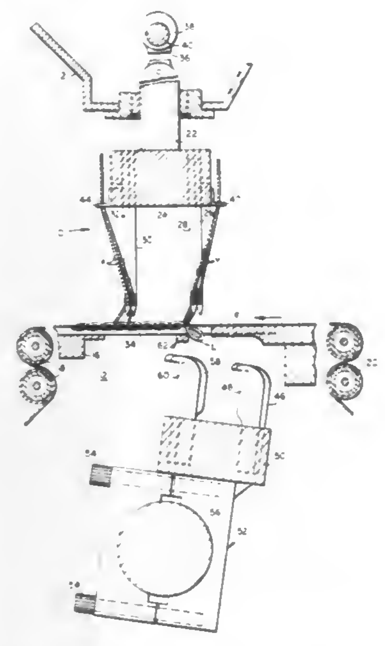
APPARATUS AND METHOD FOR FORMING TUFTED PILE FABRIC

Juel T. Hash, Tunnel Hill, Ga., assignor to Shirley M. Jorges, Ft. Oglethorpe, Ga., a part interest

Filed Feb. 24, 1981, Ser. No. 237,665

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **12 Claims**



1. A method of tufting pile fabric comprising supporting and feeding a base fabric in one direction, reciprocating a yarn carrying needle to stitch the yarn continuously through said base fabric to form a row of successive yarn loops on one side of said fabric, supporting on said one side of said fabric a first looper having a free end pointing in said one direction, oscillating said looper so the free end enters and seizes and thereafter sheds the loops in succession, and deflecting each loop in succession toward said base fabric into the path of said needle so said needle enters the preceeding loop as it forms each loop.

4,368,680

ELECTRONIC SEWING MACHINE WITH MULTI-PATTERN SELECTING SYSTEM

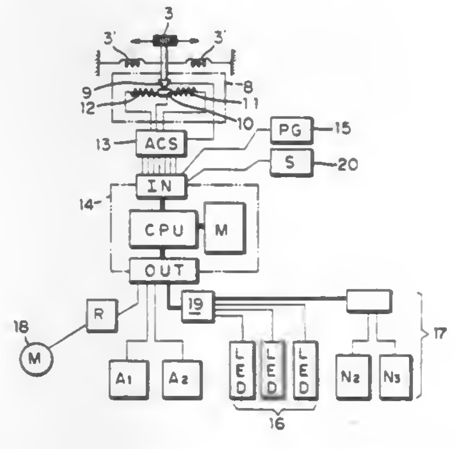
Toshiro Fujimura, Musashino, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 35,505, May 2, 1979, abandoned. This application Jan. 25, 1980, Ser. No. 115,290

Claims priority, application Japan, May 12, 1978, 53-55672

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **5 Claims**



1. An electronic sewing machine having an electronic memory storing control data and a panel carrying a plurality of pattern indications with pattern numbers which are selectively indicated by a light, comprising separate pattern number indication means on the panel for indicating the extra pattern numbers other than the pattern numbers arranged on the panel; means manually operated to selectively indicate the pattern numbers on the panel and extra pattern numbers by way of the separate pattern number indication means; and switch means automatically operated at a speed in accordance to the operation amount of the manually operated means to sequentially indicate the pattern numbers arranged on the panel and the extra pattern numbers by way of the separate pattern number indication means.

4,368,681

PATTERN SELECTING MECHANISM OF A SEWING MACHINE

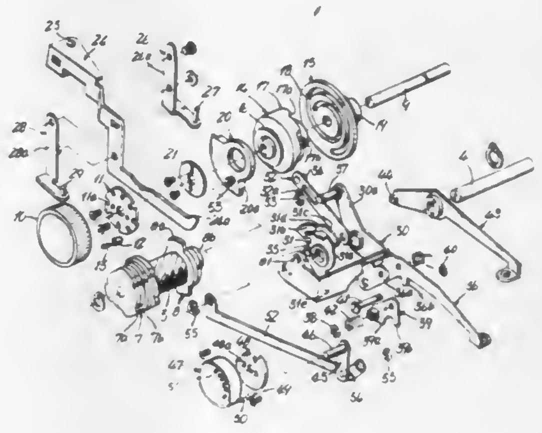
Susumu Hanyu, Hachioji; Shuzo Morimoto, Hino, and Yasuro Sano, Hachioji, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Aug. 12, 1980, Ser. No. 178,706

Claims priority, application Japan, Aug. 16, 1979, 54-112055

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 A **7 Claims**



1. In a sewing machine, a combination comprising a housing; a driven shaft rotatably mounted in said housing; a group of pattern cams and two adjacent feed changing cams mounted on said driven shaft for rotation therewith; a second shaft parallel to said driven shaft turnably mounted in said housing; a pattern selecting dial fixed to said second shaft for manually turning the same between a plurality of first angular positions and a plurality of second angular positions following said first position; a needle bar having a longitudinal axis and extending substantially normal to the axes of said shafts; a needle bar support mounted on said housing and supporting said needle bar for reciprocation along its axis and for movement transverse thereto; an amplitude control cam, a pattern selecting cam and a feed setting disc cam mounted on said second shaft for turning therewith; means connected to said needle bar support and having an end adapted to engage one of said pattern cams, said means cooperating with said amplitude control cam for moving said needle bar support in said transverse direction and cooperating with said pattern selecting cam so that depending on the angular position on which said second shaft is turned, said end will engage a selected one of said pattern cams; a feed adjuster tiltably mounted on a shaft extending transverse to said second shaft; manually operable pattern switch cam means having a smaller diameter portion and a larger diameter portion; a super pattern feed pawl having an end adapted to engage one of said feed changing cams; support means freely tiltably mounted on said first shaft and supporting said super pattern feed pawl; a pattern switch arm having a follower engaging said pattern switching cam means; means connecting said pattern switch arm to said support means for maintaining said end of said super pattern feed pawl out of engagement with any feed changing cam when said follower engages said small diameter portion of said pattern switching cam means and for engaging said end of said super pattern feed pawl with one of said feed changing cams when said follower engages said larger diameter portion of said pattern switching cam; and means cooperating with said feed

setting disc cam for aligning in any of said first angular positions of said pattern selecting dial said super pattern feed pawl with said one feed changing cam and for aligning in any of said second angular positions of said pattern selecting dial said super pattern feed pawl with the other of said feed changing cams while engaging said end of said pawl with said other feed changing cam even when said follower engages said small diameter portion of said pattern switching cam means.

4,368,682
ELECTRONIC SEWING MACHINE WITH PATTERN ELONGATION SYSTEM

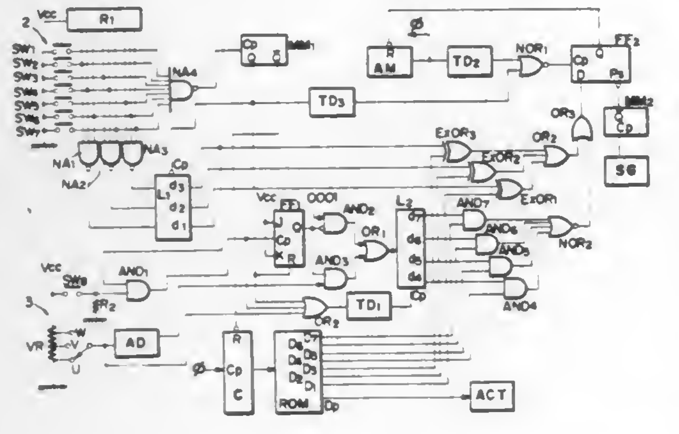
Hideaki Takenoya, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,510

Claims priority, application Japan, Jul. 8, 1980, 55/92271

Int. Cl.^{3} D05B *3/02*

U.S. Cl. 112—158 E **2 Claims**



1. An electronic sewing machine with a pattern elongation system of the type having a housing, stitch forming instrumentalities, a needle vertically and laterally reciprocated by rotation of an upper drive shaft and a fabric feeding device for transporting a fabric to be sewn with respect to the needle, a combination comprising pattern elongation selecting means operated to produce a pattern elongation signal designating the stitches of a selected pattern to be enlarged or reduced in a fabric feeding direction; a memory connected to the stitch forming instrumentalities and operative for storing stitch control data optionally addressed to read out to control at least the positions of the needle, said memory storing a discriminating signal in pair with each of the stitch control data in response to the enlarging or reducing designations of a pattern so that the stitch control data may be optionally read out; pulse generator means operated in synchronism with rotation of the upper drive shaft to produce a timing pulse per rotation of the upper shaft; addressing means including an oscillator operated in relation with the timing pulse of the pulse generator means to address the memory per stitch of the pattern and to thus progressively scan the locations of the stitch control data per stitch of the selected pattern; and comparator means for comparing the discriminating signal and the pattern elongation signal to cause the addressing means to determine the addresses of the stitch control data optionally addressed.

4,368,683
SEWING MACHINE WITH FEED DOG DROPPING SYSTEM

Hideaki Takenoya, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

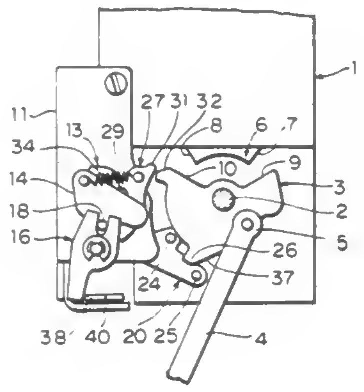
Filed Oct. 27, 1980, Ser. No. 201,317

Claims priority, application Japan, Jul. 11, 1979, 54-153622[U]

Int. Cl.^{3} D05B *27/00*

U.S. Cl. 112—314 **6 Claims**

1. A sewing machine, comprising a feed dog vertically displaceable between an upper operative position and a lower inoperative position and horizontally movable for feeding; a fabric feed regulator adjustably operative to control the horizontal feeding movement of said feed dog; a control motor having a control shaft operatively connected with said fabric regulator to adjustably set the latter in accordance with a selected stitch pattern; control means connected with said control shaft and turnable by the latter within a predetermined range in two opposite directions; a cam element displaceable from an inoperative position to an operative position by said control means during turning of the latter in one of said directions; a cam follower normally engaging said cam element and displaceable from an inoperative position to a set position by said cam element during displacement of said cam element from its inoperative position to its operative position, said cam follower in said set position being further displaceable to an operative position by said control means during turning of the latter in the other of said directions; and transmitting means operatively connected with said cam follower and said feed dog and operated by said cam follower during displacement of said cam follower from its set position to its operative position to displace said feed dog from its upper operative position to its lower inoperative position.



4,368,684
DIE ASSEMBLY FOR DECORATING PASTRIES AND DESSERTS

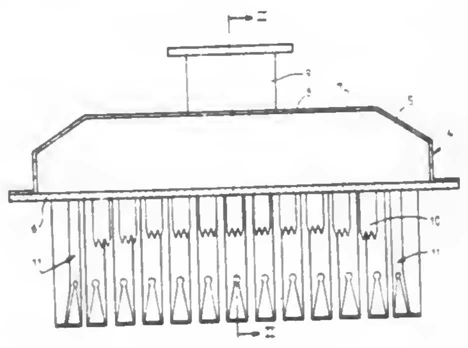
Noël Launay, Beauvais, France, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 15, 1981, Ser. No. 264,063

Claims priority, application France, May 19, 1980, 80 11125

Int. Cl.^{3} B05C *5/02*

U.S. Cl. 118—25 **9 Claims**



1. Apparatus for simultaneously coating and decorating with an aerated product of semifluid consistency the upper face and the lateral faces of an article of confectionery said apparatus comprising a base having a downwardly-facing lower surface an array of upper decorating nozzles fixed to the base and extending downwardly from the lower surface thereof, each such upper decorating nozzle having a serrated outlet opening at its lower end, a plurality of lateral decorating nozzles fixed to the base and extending downwardly from the lower surface thereof at regular intervals along the periphery of said array of upper decorating nozzles, said lateral decorating nozzles extending downwardly beyond said upper decorating nozzles so that said lateral and upper nozzles cooperatively define a space bounded on its sides by said lateral decorating nozzles and on its top by said upper decorating nozzles, each of said lateral decorating nozzles having a lateral outlet opening directed inwards towards said space so that the openings of said upper and lateral decorating nozzles will confront the upper and lateral faces of an article disposed within said space said apparatus also comprising a support for the articles to be coated, means for moving said support and said base vertically relative to one another to advance an article into space and withdraw it therefrom and means for feeding said aerated product through said upper and lateral decorating nozzles simultaneously while an article to be decorated is disposed in said space to thereby simultaneously coat the upper and lateral faces of such article.

4,368,685
WIPING OF TREATED WIRE OR STRIP

Colin D. Peel, and Colin Gin, both of Beach Rd., Auckland, New Zealand

Filed Dec. 7, 1981, Ser. No. 327,786

Int. Cl.^{3} C23C *1/00*

U.S. Cl. 118—109 **4 Claims**

1. A pad for the wiping of coated wire or strip emerging from a bath of molten metal, characterised in that said pad includes alumino silicate fibrous material, having been compressed by the application of pressure.

3. A method for forming a pad for the wiping of coated wire or strip, including the steps of:
(1) Taking an amount of alumino silicate fibrous material;
(2) Compressing said alumino silicate fibrous material into a pad by the application of pressure, and thereafter
(3) Using said pad for the wiping of coated wire or strip emerging from a bath of molten metal.

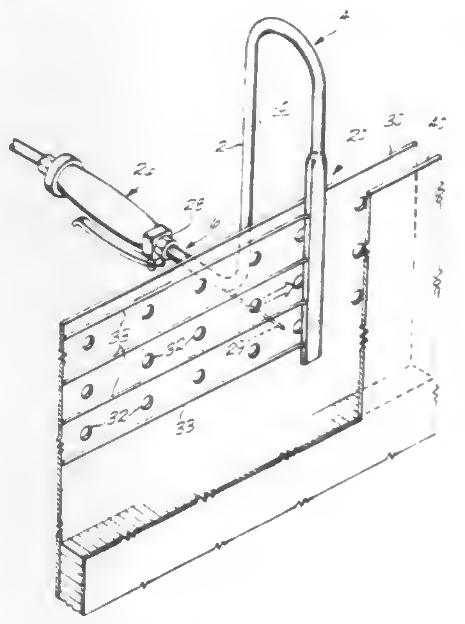
4,368,686
APPARATUS FOR APPLYING SEALANT BETWEEN FAYING SURFACES OF AIRCRAFT WING STRUCTURES

Jerald L. Dickson, Kirkland, and Harvey E. Green, Jr., Pacific, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 22, 1980, Ser. No. 189,281

Int. Cl.^{3} B05C *5/02*

U.S. Cl. 118—411 **1 Claim**



1. A sealing tool including a fastener hole locator for guidance of bead deposits along between rows of fastener holes in a joint structure comprising:
a tubular-shaped member having a u-shaped portion intermediate first and second end portions;
said first end portion having a threaded portion and travel limit means adapted for receiving a pneumatic cartridge gun;
said second end portion having a thin profiled flattened portion including a trailing edge;
said trailing edge of said thin profiled flattened portion having a plurality of apertures distributed therealong in predetermined spaced apart relationship; and,
guide means comprising a rod member attached to said first end portion and extending perpendicularly towards said thin profiled flattened portion for guidance of said bead deposits between said rows of fastener holes in said joint structure.

4,368,687
METHOD AND APPARATUS FOR DEVELOPING MAGNETIC LATENT IMAGE

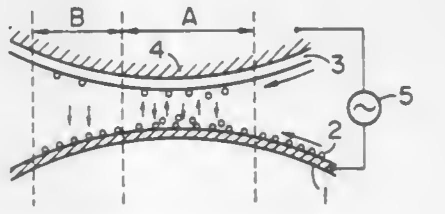
Junichiro Kanbe, Tokyo; Nagao Hosono, Chofu, and Tohru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,048

Claims priority, application Japan, Jan. 28, 1980, 55-8626

Int. Cl.^{3} G03G *15/08, 15/09*

U.S. Cl. 118—653 **7 Claims**



1. A magnetic latent image developing device, comprising:
magnetic latent image bearing means;
toner bearing means disposed in confrontation to said magnetic latent image bearing means, said toner bearing means carrying thereon a magnetic toner having electric charge of a particular polarity; and
means for applying an alternating electric field at the clearance between said magnetic latent image bearing member and said toner bearing member;
wherein there is no magnetic field in the clearance other than the magnetic field formed by the magnetic latent image.

4,368,688
APPARATUS FOR APPLYING LIQUID PLASTICIZER TO FILAMENTARY FILTER MATERIAL

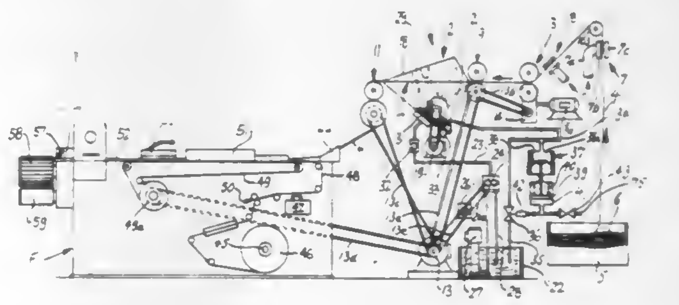
Peter Grumer, Tespe; Wolfgang Wiese, Hamwarde, and Günter Serrin, Buchholz, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,976

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023001

Int. Cl.^{3} A24D *3/00*

U.S. Cl. 118—674 **13 Claims**



1. Apparatus for applying liquid plasticizer to a foraminous

running tow of filamentary filter material, comprising a housing defining a treating zone; means for conveying the tow toward, through and from said housing at a variable speed including zero speed; a source of supply of liquid plasticizer; means for atomizing liquid plasticizer in said zone and for directing atomized plasticizer against the tow in said housing; means for conveying liquid plasticizer to said atomizing means at a first rate which is at least substantially proportional to the speed of the tow in said housing so that the amounts of plasticizer which are withdrawn from the housing by successive unit lengths of the running tow at least closely approximate the amounts of plasticizer admitted to said housing during transport of a unit length of the tow through said zone, said housing normally containing a quantity of residual plasticizer while the tow is conveyed at a speed within a range of speeds higher than zero speed; and means for increasing the rate of admission of liquid plasticizer into said housing to a higher second rate at least during the initial stage of acceleration of the tow from said zero speed so as to reestablish said quantity of residual plasticizer in said housing.

4,368,689

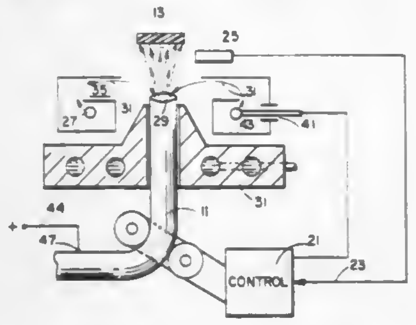
BEAM SOURCE FOR DEPOSITION OF THIN FILM ALLOYS

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 29, 1980, Ser. No. 220,397

Int. Cl.³ C23C *13/02*

U.S. Cl. 118—688 **8 Claims**



1. A thin film alloy deposition source, comprising in combination:
  a source of alloy wire;
  impacting means comprising electrons and a source of high voltage therefor with said source being at a negative potential relative to said wire;
  means for advancing the wire to attain the desired deposition rate;
  detector means for measuring deposition rate in the vicinity of said end of the wire; and,
  said means for advancing controlling wire feed in response to said detector means.

4,368,690

PACKAGING CONTAINER FOR THE TREATMENT OF PUPAE

Walter Tenzer, Grossenzensdorf, Austria, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

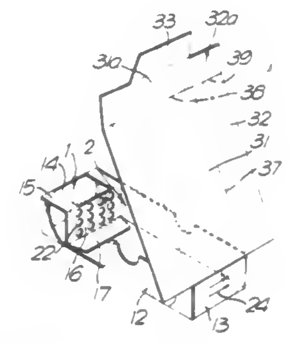
Filed Feb. 12, 1981, Ser. No. 234,106

Claims priority, application Austria, Feb. 15, 1980, 850/80

Int. Cl.³ A01K *67/00*

U.S. Cl. 119—1 **6 Claims**

1. Packaging container for the treatment of pupae by means of sterilizing radiation, for marking insects when they hatch from the pupae and for the transport and controllable release of the hatched insects, whereby the packaging container consists of a one-piece board blank and is erected into a folding carton which has two adjacent compartments of different size constituting a development compartment for the pupae and a storage compartment for the hatched insects that can be closed by a joint lid and are separated from each other by a separating wall which has holes perforated in it, whilst the opposing wall of the larger storage compartment has incisions to let light through and whereby the larger compartment has at least one tear opening for the distribution of the insects.



4,368,691

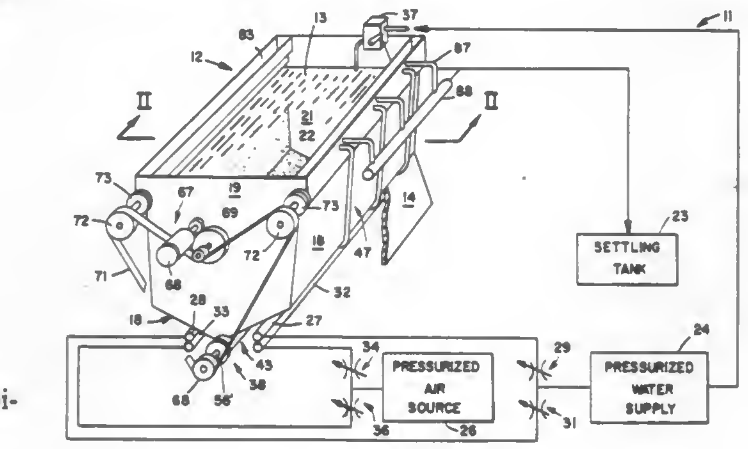
FLOWING BED METHOD AND APPARATUS FOR CULTURING AQUATIC ORGANISMS

David E. Brune, Winters, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Filed Mar. 4, 1981, Ser. No. 240,556

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **22 Claims**



1. In a method of culturing aquatic organisms which are confined to a predetermined region in a liquid medium and in which a volume of loose solid particles is provided at a boundary of said being in position to accumulate matter which is to be removed from said region, the steps comprising:
  removing said matter from said region by causing said volume of particles to flow between a first location and a second spaced apart location, and by directing the flow of said particles and matter carried thereby out of said region at said second location,
  separating said matter from said particles at a third location which is outside of said region, and
  then returning said particles to said region for repeated movement between said first location and said second location.

4,368,692

WIND TURBINE

Yasuo Kita, Kyoto, Japan, assignor to Shimadzu Co., Kyoto, Japan

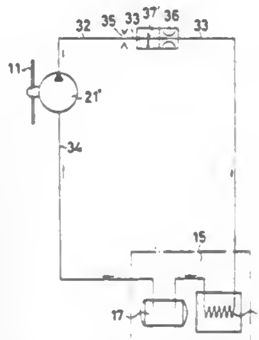
Filed Aug. 28, 1980, Ser. No. 181,961

Claims priority, application Japan, Aug. 31, 1979, 54-112087

Int. Cl.³ F22B *3/06;* F24C *9/00*

U.S. Cl. 122—26 **8 Claims**

1. An apparatus for converting wind energy into hydraulic energy which comprises in combination a hydraulic pump means for pumping a hydraulic fluid through said apparatus, a propeller means for driving said hydraulic pump means, a radiator means, a means for storing said fluid, a pipe means for connecting said radiator means and fluid storage means in a closed loop with said hydraulic pump means through which said fluid is circulated, and a thermosensitive mechanism for controlling and regulating the flow of said fluid in response to the velocity of the rotation of said propeller means so as to prevent damage to said apparatus, said thermosensitive mechanism comprising a thermosensitive element responsive to a variation in temperature of said hydraulic fluid, a flow control means responsive to said thermosensitive element for controlling the flow of said hydraulic fluid in response to said wind driven propeller means, controlling the rotation of said propeller so as to eliminate damage to said apparatus and means for linking said thermosensitive element to said flow control means.



4,368,693

DISTRIBUTOR FOR THE ADMISSION OF A FLUID TO BE VAPORIZED INTO A STEAM GENERATOR

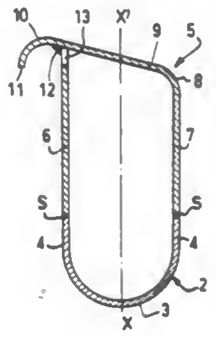
Patrick Alliot, Paris, France, assignor to Framatome, Courbevoie, France

Filed Jul. 9, 1981, Ser. No. 281,743

Claims priority, application France, Jul. 31, 1980, 80 16880

Int. Cl.³ F22B *1/06*

U.S. Cl. 122—491 **3 Claims**



1. Distributor for the admission of fluid to be vaporized in a steam generator formed by a duct and flow means for said fluid communicating the inside of said duct with the surrounding medium, said flow means being located in the uppermost part of said duct so as to obviate the entrapment of vapor pockets during filling of said duct or when the water level in said generator is at a lower level than a plane passing through said flow means, said duct (5) comprising
  (a) a curved wall (2) having a U-shaped profile and forming the base of said duct;
  (b) a first side wall (6 A) the lower edge of which is connected to the inner edge of said curved wall (2);
  (c) a second side wall (7) the lower edge of which is connected to the inner edge of said curved wall (2);
  (d) an upper wall (9) the edges of which are respectively connected to the upper edge of said second side wall (7) and to the upper edge of said first side wall (6); said upper wall (9) being upwardly inclined from said second side wall (7) to said first side wall (6) and having a portion (10) projecting beyond said first side wall (6) and curved downwardly;
  (e) at least one orifice (13) being provided adjacent the upper edge of said first side wall (6) to constitute said flow means.

4,368,694

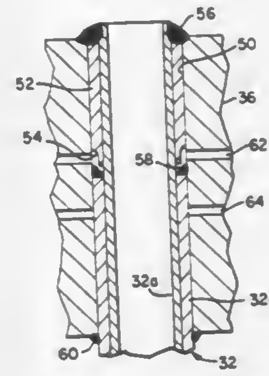
LEAK DETECTION SYSTEM FOR A STEAM GENERATOR

Charles T. Ward, and Ronald B. Creek, both of Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 21, 1981, Ser. No. 265,879

Int. Cl.³ F22B *37/42;* F28F *9/02*

U.S. Cl. 122—504 **10 Claims**



1. In a steam generator having at least one tube sheet supported therewithin so as to extend transversely of the major axis of the steam generator, said tube sheet embodying a unitary construction operable to define the thickness thereof, said tube sheet having a multiplicity of tube holes formed through the thickness thereof, and a multiplicity of duplex tubes embodying a double wall form of construction each having one end thereof retained by welding in a corresponding one of said multiplicity of tube holes, the improvement comprising a leak detection system operable to detect the occurrence of a leak that could give rise to the commingling of a pair of operating fluids that desirably are designed to flow through the steam generator in fluid isolation one to the other as well as to provide a determination as to the probable source of the leak and the direction of flow of the leaking fluid, one of the pair of operating fluids that flow through the steam generator being at a pressure greater than the pressure of the other one of the pair of operating fluids that flow through the steam generator, said leak detection system comprising:
  a. interconnecting means establishing a fluidic interconnection between pairs of said multiplicity of tube holes;
  b. plenum means fluidically interconnecting selective ones of said interconnecting means so as to establish within said tube sheet a plurality of separate and independent fluidic circuits each isolated from all the others, said plenum means being filled with fluid having a different composition than either of the pair of operating fluids that are made to flow through the steam generator, the fluid of said plenum means having a pressure intermediate the pressures of the pair of operating fluids that flow through the steam generator, said plenum means forming a portion of the leakage path when a leak occurs such that the leaking fluid becomes commingled with the fluid filling said plenum means thereby causing a change to occur in the pressure and/or composition of the fluid filling said plenum means;
  c. instrument tube means connected in fluid flow relation with said plenum means, said instrument tube means being operative to receive from said plenum means information in fluidic form as to the occurrence of a change in the pressure and/or composition of the fluid filling said plenum means; and

d. an instrumentation package fluidically interconnected with said instrument tube means and therethrough to said plenum means, said instrumentation package being operative to indicate from the information received in fluid form from said instrument tube means that when the pressure of the fluid in said plenum means is sensed to have decreased the leaking fluid is the lower pressure fluid flowing through the steam generator and the direction of flow of the leaking fluid is away from said plenum means, and to indicate that when the pressure of the fluid in said plenum means is sensed to have increased the leaking fluid is the higher pressure fluid flowing through the steam generator and the direction of flow of the leaking fluid is towards said plenum means.

4,368,695

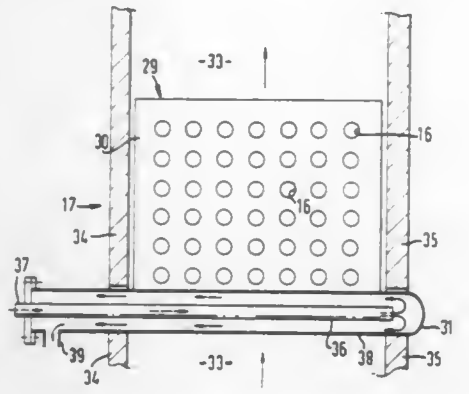
SUPPORTING THE WEIGHT OF A STRUCTURE IN A HOT ENVIRONMENT

Peter Davies, Esher, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 28, 1981, Ser. No. 265,805

Int. Cl.³ F22B *37/24*

U.S. Cl. 122—510 **4 Claims**



1. In combination, a furnace having an array of generally horizontal furnace tubes extending between side walls of said furnace, said tubes extending through and being held in spaced relation by a plurality of generally vertical disposed tube sheets; and support means for each of said tube sheets, each said support means being in contact with a lower portion of its respective tube sheet to support the weight thereof and comprising an outer tube having a closed end and extending through and engaging apertures in the furnace side walls, an inner tube disposed within said outer tube and extending from one end of said outer tube to a point adjacent the closed end of said outer tube, said inner tube having an outside dimension less than the inside dimension of said outer tube to define a liquid passageway therebetween, and means for circulating a coolant liquid through said passageway to thereby cool said support means and maintaining it at such a temperature that the strength thereof is sufficient to support its respective tube sheet.

4,368,696

ELECTROLYTIC SUPPLEMENTAL FUEL GENERATION FOR MOTOR VEHICLES

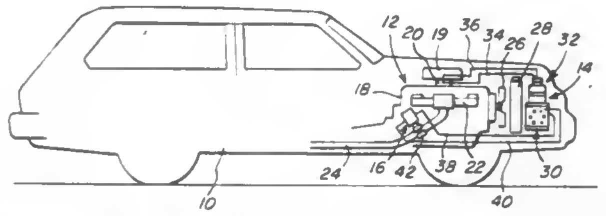
Weldon E. Reinhardt, 12119 De Moya Dr., SE., Fort Myers, Fla. 33905

Filed Jul. 29, 1980, Ser. No. 173,900

Int. Cl.³ F02B *43/10*

U.S. Cl. 123—3 **8 Claims**

1. A device in combination with an internal combustion engine for electrolytically supplying supplemental fuel thereto comprising means to produce oxygen and hydrogen gas from water, said gas producing means having a separate tank system for storing an aqueous electrolyte solution in reservoirs and for separately storing each component gas decomposed from the aqueous electrolyte solution, said gas producing means further having an electrolyzing system including a series of electrolysis cells having closely spaced electrodes in a stacked array and including means piping derived gases from the electrolysis cells to the respective reservoirs and means piping aqueous electrolyte solution from the reservoirs to the series of electrolysis cells, said means forming said gases by the electrolysis of water, said device further comprising a means to generate linear alternations of electrical current for conduction to said gas producing means, said means to generate electrical current being activated by heat from exhaust means of said internal combustion engine, said electrical generating means being positioned adjacent said exhaust means, means for conducting said electrical current to said gas producing means and means to transport said gases from the separate tank system to the internal combustion engine, each of the electrolyte cells comprising a gas barrier performing as an ion exchange member when sandwiched between two solid nickel wire mesh electrodes, hollow annular members in turn sandwiching the assembly of electrodes and the gas barrier, and an elastomeric gasket bounded and sealed about said cells.



4,368,697

LIQUID-COOLED PISTON FOR INTERNAL COMBUSTION ENGINES

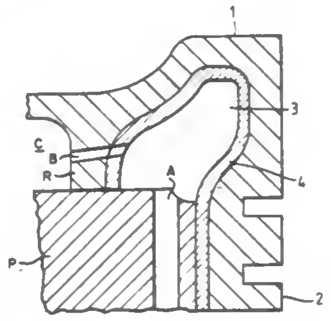
Horst Moebus, Neckarsulm, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,449

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008330

Int. Cl.³ F01P *3/10*

U.S. Cl. 123—41.35 **6 Claims**



1. In a composite liquid-cooled piston for internal combustion engines, of the type having a lower part connected to an upper part composed of ferrous material and including a top land, a ring carrying portion therebelow, a ring bearing on the upper surface of the lower part to form the radially inner boundary of an annular cooling passage in communication with a central cooling chamber and disposed in the upper part behind the top land and at least part of the ring carrying portion and open to the interfacial plane of the two parts, the improvement comprising a coating of material having a higher thermal conductivity than the upper part and disposed on the inside wall of the upper part at least behind the top land thereof.

4,368,698

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

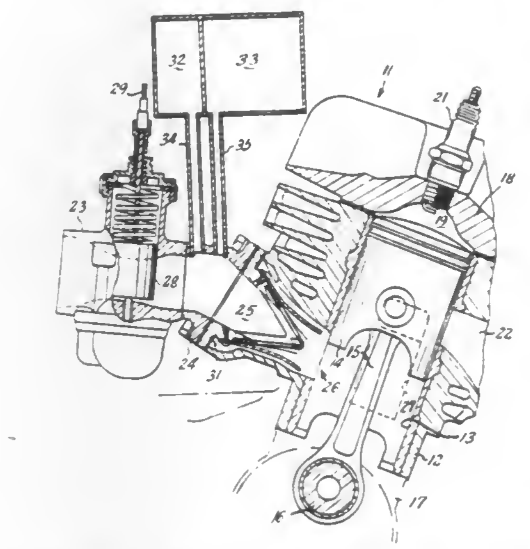
Noritaka Matsuo; Kohichiro Takeuchi, both of Iwata, and Tokuzi Muramatsu, Hamakita, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 15, 1981, Ser. No. 264,056

Claims priority, application Japan, Jun. 28, 1980, 55-88285

Int. Cl.³ F02B *75/18, 33/07*

U.S. Cl. 123—52 M **34 Claims**



1. In an induction system for an internal combustion engine having a chamber of variable volume, an intake passage for delivering a charge to the chamber, and throttle valve means for controlling the flow to the chamber through said intake passage, the improvement comprising plenum chamber means defining at least a first effective volume and a second effective volume different from said first effective volume and branch passage means communicating said plenum chamber means with said main induction passage between said throttle valve and said variable volume chamber, said branch passage means having an opening communicating with said induction passage of substantially smaller effective cross-sectional area than said induction passage.

4,368,699

SELF-CONTAINED TYPE LASH ADJUSTER

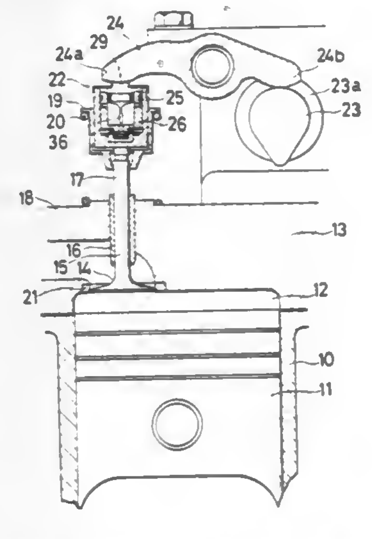
Hisashi Kodama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 23,505, Mar. 23, 1979, Pat. No. 4,274,370. This application Dec. 24, 1980, Ser. No. 219,760

Claims priority, application Japan, Mar. 23, 1978, 53-37272; Mar. 23, 1978, 53-37274; Mar. 23, 1978, 53-37275

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.58 **1 Claim**



1. In an internal combustion engine having at least one combustion chamber, a cylinder head having at least one port, a valve member having a stem guided in said head for controlling communication between said port and said chamber, cam operated means and spring means for reciprocating said valve means and self-contained hydraulic lash adjuster means interposed between said cam operated means and said valve means, the improvement comprising spring retainer means fixedly secured to the upper end of said stem, said spring retainer means having an upwardly opening axial bore slidably receiving said lash adjuster means therein and an outwardly directed flange on said spring retainer means for retaining said spring means between said retainer means and said head.

4,368,700

SPLIT TYPE INTERNAL COMBUSTION ENGINE

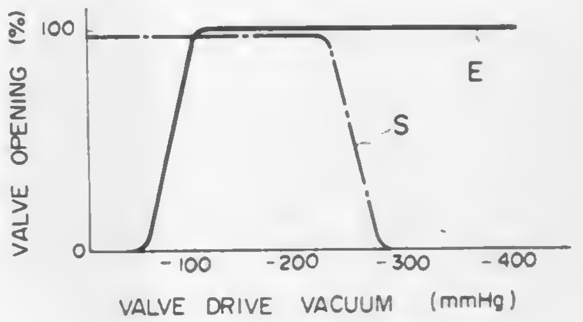
Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jan. 7, 1981, Ser. No. 223,158

Claims priority, application Japan, Jan. 10, 1980, 55-1648

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **4 Claims**



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) an intake manifold divided into first and second intake passages leading to said first and second cylinder units, respectively, said second intake passage having therein a stop valve;

(c) an EGR passage for introducing exhaust gases into said second intake passage, said EGR passage having therein an EGR Valve;

(d) control means for providing a first control signal and disabling said second cylinder unit when the engine load is below a predetermined value, said control means providing a second control signal under high load conditions;

(e) an EGR valve actuator for operating said EGR Valve, said EGR Valve actuator normally closing said EGR Valve and opening the same in response to a first drive signal;

(f) a stop valve actuator for operating said stop valve, said stop valve actuator normally opening said stop valve and closing the same in response to a second drive signal; and

(g) valve drive means responsive to the first control signal for generating the second drive signal immediately and the first drive signal with a first delay predetermined to ensure that said EGR valve opens after said stop valve closed, said valve drive means responsive to the second control signal for stopping the first drive signal immediately and the second drive signal with a second delay predetermined to ensure that said stop valve opens just after said EGR Valve closes.

4,368,701

INTERNAL COMBUSTION ENGINE WITH MEANS FOR SEPARABLY COUPLING DISCRETE CRANKSHAFTS TO EACH OTHER

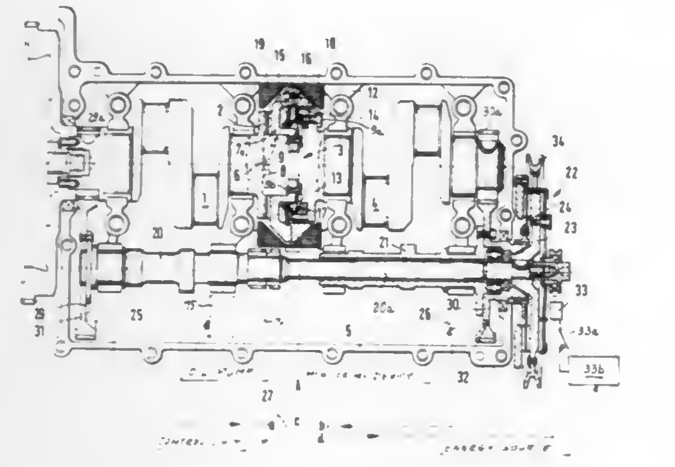
Lothar Huber, Bühl-Altschweier, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbua GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,958

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005344

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—198 F **29 Claims**



1. In an internal combustion engine, the combination of a first section having a first crankshaft, a first camshaft and means for transmitting torque between said first crankshaft and said first camshaft; a second section having a second crankshaft, a second camshaft and means for transmitting torque between said second crankshaft and said second camshaft, said first and second crankshafts having adjacent end portions; a first clutch including first and second clutch members respectively non-rotatably connected with the end portions of said first and second crankshafts, at least one of said clutch members being movable axially of said crankshafts to and from an end position and said clutch members having complementary profiles which engage each other to establish a direct torque-transmitting connection between said crankshafts in said end position of said one clutch member; shifting means operable to move said one clutch member to said end position; an accelerating clutch including coaxial first and second clutch elements respectively non-rotatably secured to said first and second camshafts; means for effecting engagement between said clutch elements to thereby accelerate said second crankshaft through the medium of said second camshaft; and means for operating said shifting means to move said one clutch member to said end position on completion of acceleration of said second camshaft to a speed which at least approximates the speed of said first camshaft.

4,368,702

METHOD OF OPERATING AN AIR-COMPRESSING, SELF-IGNITING INTERNAL COMBUSTION ENGINE

Gerhard Finsterwalder, Bergisch-Gladbach, and Jakob Saftig, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jan. 9, 1980, Ser. No. 110,709

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901210

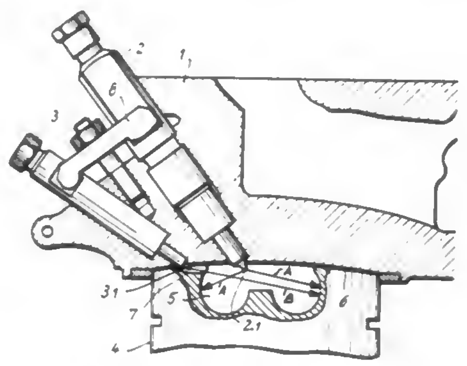
Int. Cl.³ F02N *17/08;* **F02B** *3/06*

U.S. Cl. 123—261 **6 Claims**

1. A method of operating an air compressing, self-igniting internal combustion engine for liquid fuels to burn primarily oxygen-containing liquid fuels which are reluctant to ignite soley due to compression in the engine, which engine has at least one cylinder with a piston therein the piston having a combustion chamber depression therein for receiving injected fuel and a rotating charge of air, the method comprising the steps of:

during each cycle of the engine, injecting a first, defined stream of diesel-cycle fuel in a path toward the wall of the combustion chamber wherein the fuel ignites upon compression in the engine reaching a predetermined level to subsequently ignite an oxygen containing fuel;

subsequent to starting injection of the diesel-cycle fuel, injecting a plurality of defined streams of said oxygen-containing fuel toward the wall of the depression along paths which do not intersect the path of the first stream to minimize cooling of the diesel-cycle fuel by the oxygen-containing fuel, the injection of diesel-cycle fuel being generally adjacent the center of the combustion chamber depression, and



overlapping the injection of the diesel-cycle fuel with the injection of the oxygen-containing fuel,

whereby ignition of the diesel-cycle fuel occurs first and subsequently causes ignition of the oxygen-containing fuel which ignition of the oxygen-containing fuel powers the engine while ignition of the diesel-cycle fuel merely serves to ignite the oxygen-containing fuel.

4,368,703

TWO STROKE ENGINE HAVING EXHAUST TIMING CONTROL VALVE MEANS

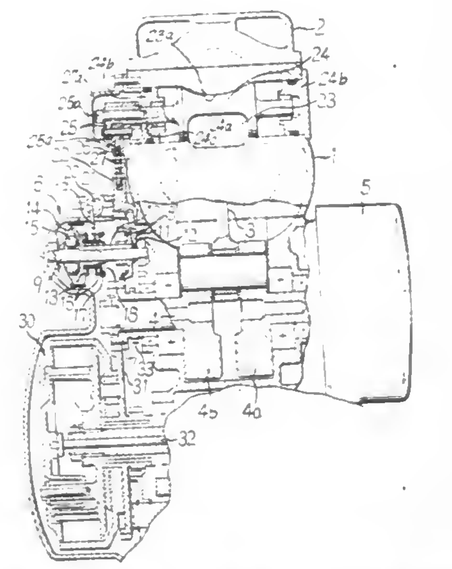
Hirotaka Shibata, Hamamatsu, Japan, assignor to Yamaha, Hatsudoki, Kabushiki, Kaisha, Iwata, Japan

Filed Jan. 7, 1981, Ser. No. 223,225

Claims priority, application Japan, Jan. 30, 1980, 55/9816

Int. Cl.³ F02D *9/06*

U.S. Cl. 123—323 **3 Claims**



1. A two stroke engine comprising cylinder means, piston means which is received in said cylinder means for reciprocating movement, and crankshaft means connected with said piston means and having power take-off means on one end thereof, magneto means connected with the other end of said crankshaft means, said cylinder means having exhaust port means adapted to be closed by said piston means, exhaust port timing control rotary valve means provided in said exhaust port means at upper portion thereof, said valve means being movable between a projected position wherein it is projected into the exhaust port means to thereby cover the upper portion of the exhaust port means and a retracted position wherein it is retracted from the exhaust port means, centrifugal actuator means for moving said valve means between said projected and retracted positions in accordance with engine speed, said centrifugal actuator means connected to said one end of said crankshaft means remote from the said magneto means to reduce to a minimum magnetic influences of said magneto means on the centrifugal actuator means.

4,368,704

FAST IDLE DEVICE FOR CARBURETOR

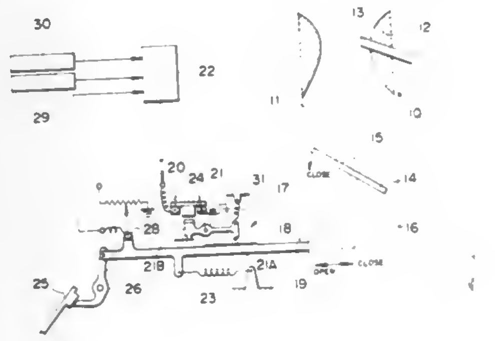
Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,310

Claims priority, application Japan, Nov. 15, 1979, 54-158478[U]

Int. Cl.³ B60K *31/00*

U.S. Cl. 123—339 **4 Claims**



1. A fast idle device for controlling a throttle valve positioned in the bore of a carburetor to open and close the bore and thereby control engine speed, comprising:

(a) a linkage for connecting an accelerator pedal to said throttle valve;

(b) a plurality of sensors for detecting various engine operating conditions;

(c) a throttle valve position sensor;

(d) a calculating circuit for storing throttle valve positions previously determined according to the engine operating conditions by which optimum engine idle speed can be obtained, said calculating circuit being connected to said engine operating condition sensors and said throttle valve position sensor and operable to output a throttle valve locking signal when a signal value from said throttle valve position sensor coincides with a stored throttle valve position value corresponding to the engine operating conditions detected by said engine operating condition sensors;

(e) a solenoid connected to said calculating circuit, said solenoid being energized in response to the throttle valve locking signal; and

(f) an electromagnetic ratchet mechanism comprising:

  (1) a ratchet pawl resiliently biased away from said linkage and operable to move against said bias when said solenoid is energized; and

  (2) a bias means connected to said linkage, said linkage further comprising a means for engaging said ratchet pawl, wherein said linkage is urged by said bias means to close said throttle valve when said ratchet pawl is not engaged with said engagement means and is locked when said ratchet pawl is engaged with said engagement means,

whereby when said accelerator pedal is depressed to open said throttle valve and then released, said linkage is steppedly urged in a direction to close said throttle valve and is stopped to retain said throttle valve at a position corresponding to the sensed engine operating conditions by the operation of said calculating circuit energizing said solenoid with said locking signal which actuates said ratchet pawl.

4,368,705

ENGINE CONTROL SYSTEM

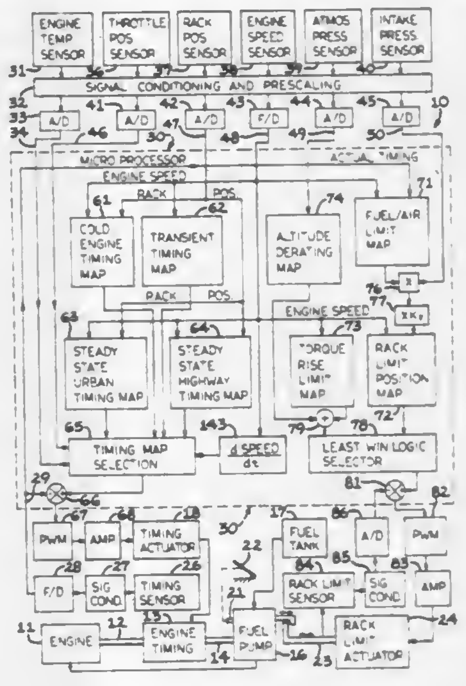
Thomas T. Stevenson; John F. Szentes, and Marios C. Zenios, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00269, § 371 Date Mar. 3, 1981, § 102(e) Date Mar. 3, 1981, PCT Pub. No. WO82/03107, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 3, 1981, Ser. No. 277,745

Int. Cl.³ F02D *1/04, 1/06*

U.S. Cl. 123—357 **26 Claims**



1. A control system (10) for an engine-fuel supply system, said engine fuel-supply system including an internal combustion engine (11) having a rotatable crank shaft (211), an operator-controlled throttle (22), a fuel pump (16) for supplying fuel to said engine (11), a first settable engine control means (13) comprising a timing means (13) for driving said fuel pump (16) at a speed proportional to the rotational speed of said crank shaft (211) and at a desired advance angle relative to the rotation of said crank shaft (211) for setting the engine timing advance, said fuel pump (16) having a movable fuel control means (21) for regulating the amount of fuel delivered by said fuel pump (16) to said engine (11), said fuel control means (21) being movable by said throttle (22) in a first direction to increase fuel delivery and in a second direction to decrease fuel delivery, and a second settable engine control means (23) comprising a fuel control limit means (23) for limiting movement of said fuel control means (21) in said one direction thereof, said control system (10) comprising:

first condition signal means (38) for generating a first condition signal having a value proportional to the speed of said engine (11);

second condition signal means (37) for generating a second condition signal having a value proportional to the distance that said fuel control means (21) has been moved;

third condition signal means (26) for generating a fluid condition signal having a value proportional to the magnitude of engine timing advance set by said timing means (13);

timing control signal means (61,63 or 64) for storing a plurality of timing advance control signals, each timing advance control signal having a predetermined value corresponding to a desired setting of said timing means (13) for engine operation at a particular combination of engine speed and fuel control means position and for generating a timing advance control signal having the predetermined value corresponding to the particular values of the first and second condition signals generated by said first (38) and second (37) condition signal means;

fuel control means limit control signal means (**71**,**76**,**77**,**72**) for storing a plurality of fuel control means limit control signals, each fuel control means limit control signal having a predetermined value corresponding to a desired setting of the position of said fuel control means limit for engine operation at a particular combination of engine speed and engine timing and for generating a fuel control means limit position control signal having the predetermined value corresponding to the first and third condition signals generated by said first and third condition signal means (**38**,**26**);

means (**18**) for setting said timing means (**13**) in accordance with the value of the generated advance control signals; and

means (**24**) for setting the position of said fuel control means limit (**23**) in accordance with the value of the generated fuel control means limit position control signal.

4,368,706
DISTRIBUTOR-TYPE FUEL INJECTION PUMP GOVERNOR

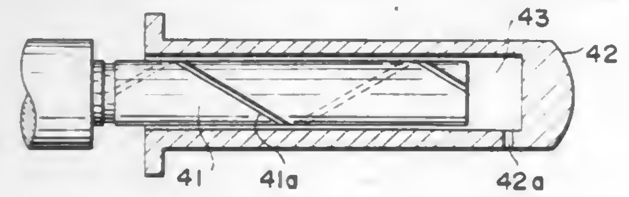
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 16, 1980, Ser. No. 150,526

Claims priority, application Japan, May 21, 1979, 54-66800[U]

Int. Cl.^{3} F02D *1/04*

U.S. Cl. 123—370 **10 Claims**



1. In a distributor-type fuel injection pump for an internal combustion engine, including:

a pump housing having an inner chamber charged with fuel;

means forming a pump work chamber in communication with said inner chamber;

a distributor plunger adjoining said pump work chamber and delivering a quantity of fuel to said engine for injection during each pressure stroke, said distributor plunger having a relief channel in communication with said pump work chamber;

a control sleeve mounted on said distributor plunger for controlling said relief channel; and

a governor mechanism controlling the axial position of said control sleeve to vary said quantity of injected fuel by changing the terminal moment of fuel delivery during each pressure stroke of said distributor plunger, said governor mechanism having a stationary governor shaft, a governor sleeve axially displaceable on said governor shaft and having an inner space adjoined by said governor shaft and in communication with said inner chamber, centrifugal weights mounted for rotation about said governor shaft and mounted to swing outwardly displacing said governor sleeve in the direction to produce expansion of said inner space, and coupling means providing operative connection between said control sleeve and said governor sleeve;

whereby said control sleeve is displaced in the direction to increase said quantity of injected fuel in response to displacement of said governor sleeve in the direction to produce contraction of said inner space;

the improvement therein comprising forced fuel conveying means actuated by rotation of said governor sleeve and yieldingly forcing fuel to flow into said inner space, said forced fuel conveying means comprising a helical passageway defined by said governor shaft and said governor sleeve.

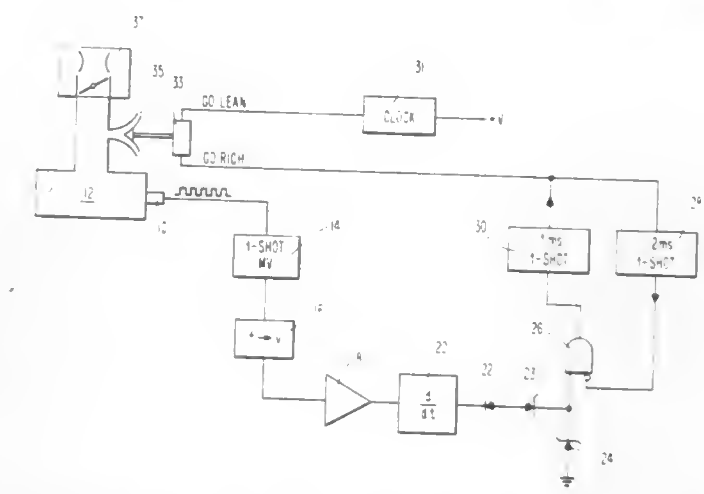
4,368,707
ADAPTIVE CHARGE FORMING SYSTEM FOR CONTROLLING THE AIR/FUEL MIXTURE SUPPLIED TO AN INTERNAL COMBUSTION ENGINE

Ervin Leshner, Cherry Hill, and Michael D. Leshner, Glendora, both of N.J., assignors to Fuel Injection Development Corporation, Bellmawr, N.J.

Continuation-in-part of Ser. No. 743,764, Nov. 22, 1976, Pat. No. 4,232,643. This application Jul. 28, 1980, Ser. No. 172,665

Int. Cl.^{3} F02B *33/00;* **F02M** *7/00*

U.S. Cl. 123—436 **24 Claims**



1. Apparatus for controlling valve means for altering the ratio of the fuel/air mixture supplied to an engine to equal an optimum ratio varying in accordance with the instantaneous power output of said engine, comprising:

means for providing a first fixed signal for controlling said valve means to alter said mixture in a first direction;

means for providing a second variable signal proportional to departure of said mixture from said optimum ratio to cause said valve means to alter said mixture in a second opposite direction; and

means for controlling said valve means adapted to alter said ratio at a rate proportional to the difference between said first and second signals.

4,368,708
POSITIONING DEVICE FOR AN AIR VALVE ARRANGED IN THE CHARGING AIR LINE OF AN INTERNAL COMBUSTION ENGINE

Reinhard Fried, Nussbaumen, Switzerland; Rudolf Heller, Munich, and Heimo Hübner, Greifenberg, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,367

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2901082; European Pat. Off., May 19, 1980, 80020040090.3

Int. Cl.^{3} F02M *39/00*

U.S. Cl. 123—452 **12 Claims**

1. A positioning device for an air flap valve arranged in the charging air line of a diesel engine, comprising:

a shutoff valve provided for the air flap valve;

said shutoff valve being incorporated into a flow path between an impingement line branching-off from a pressure oil line of the diesel engine and an oil return flow line;

an impingement chamber with which there is connected said impingement line;

a positioning piston arranged within said impingement chamber and serving to actuate the air flap valve;

means defining a continuously effective force for loading said positioning piston;

said shutoff valve including a control piston;

said shutoff valve being actuatable by means of said control piston in order to impinge the positioning piston with oil in the opening direction of the air flap valve;

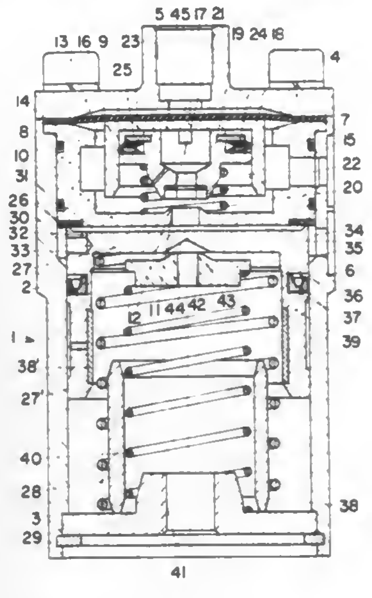
a spring acting upon said control piston;

said control piston being loaded by the pressure prevailing in the charging air line against the force of said spring;

said shutoff valve being interposed between the impingement chamber and the oil return flow line;

said shutoff valve in the presence of oil pressure for impinging the positioning piston with pressurized oil, being moved by the charging air pressure in the charging air line out of its open position into its closed position; and

said closed shutoff valve, only with an absence of oil pressure being controlled by the spring force of the spring from its closed position into its open position, in order to relieve the positioning piston from the action of the oil pressure.



4,368,709
FUEL INJECTION PUMP WITH AN INJECTION TIMING CONTROL DEVICE

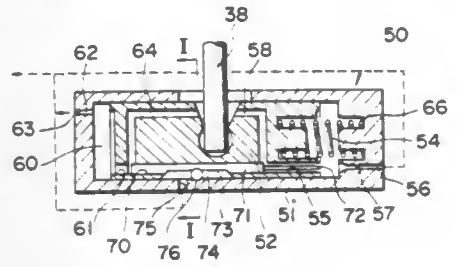
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 30, 1981, Ser. No. 248,671

Claims priority, application Japan, Mar. 31, 1980, 55-41448; Jul. 31, 1980, 55-105520

Int. Cl.^{3} F02M *59/20*

U.S. Cl. 123—502 **11 Claims**



1. A distributor type fuel injection pump for use with a diesel engine for successively supplying pressurized fuel to engine injectors in synchronism with engine rotation, said fuel injection pump including an angularly movable control member adapted to determine the timing of fuel injection in accordance with its angular position, and an injection timing control device for varying the angular position of said control member, said injection timing control device comprising:

(a) a casing

(b) a piston drivingly connected to said control member and located for reciprocating movement within said casing to form first and second pressure chambers at the respective ends thereof, said first pressure chamber having a first release port and a first inlet port, said second pressure chamber having a second release port and a second inlet port, said piston formed therein with first and second pressure passages, said first pressure passage communicating a pressure source with said first inlet port, said second pressure passage communicating said pressure source with said second inlet port;

(c) control circuit means for calculating an optimum injection timing value for an engine operating condition from various engine operating parameters and providing a control signal indicative of the calculated injection timing value; and

(d) valve means responsive to the control signal from said control circuit means for varying the ratio of the effective area of said first pressure passage to that of said second pressure passage to create a pressure difference across said piston, whereby said piston moves to move said control member to an angular position corresponding to the calculated injection timing value.

4,368,710
APPARATUS FOR CONTROLLING THE OPERATING MIXTURE COMPOSITION IN INTERNAL COMBUSTION ENGINES

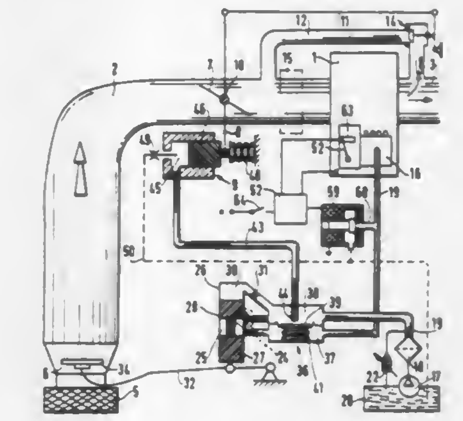
Klaus Krieger, Affalterbach; Volker Schneider, Waiblingen; Hans-Jörg Vogtmann, Markgröningen, and Ludwig Walz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,750

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944166

Int. Cl.^{3} F02M *63/00, 7/00, 25/06*

U.S. Cl. 123—505 **8 Claims**



1. An apparatus for controlling the composition of the operating mixture to be introduced into the combustion chambers of an internal combustion engine comprising a fuel supply device, a fuel supply line, a fuel pump connected in said fuel supply line for supplying fuel at a constant pressure to an injection pump, an adjustable fuel metering apparatus connected in said fuel supply line, said fuel metering apparatus including a metering cross section, a throttle valve disposed in said fuel supply line leading away from said fuel supply device, said fuel metering apparatus being adjustable in accordance with an aspirated fresh air quantity, said fuel supply line upstream and downstream of said metering cross section arranged to communicate with a differential pressure valve having first and second chambers, a fuel discharge line controlled by means separating said first and second pressure chambers, a servomotor, said fuel discharge line connected to said servomotor and adapted to provide a control pressure upstream of a throttle in a fuel return line between said servomotor and said fuel supply device for controlling said servomotor, a fresh-air intake tube, a baffle element in said fresh-air intake tube arranged to control the fresh-air intake into said intake tube of said engine, further including a branch line provided downstream of the metering cross section of the fuel supply line, said branch line being connected between said fuel supply line and said fuel return line secured to said servomotor,

said branch line including a cross section which is controlled in accordance with operational parameters of said engine.

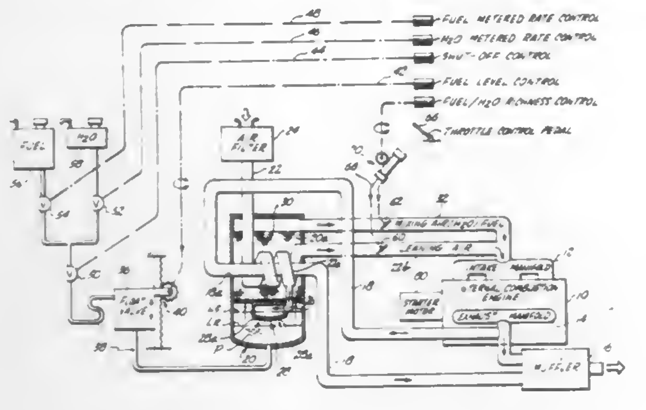
4,368,711
APPARATUS AND A METHOD FOR OPERATING AN INTERNAL COMBUSTION ENGINE

Larry D. Allen, Seattle, Wash., assignor to Larry Allen; Robert Harrison; Harry Harbour; Gary Hisel; Thomas Kraft; Ansell Johnson and Harry Rose

Continuation of Ser. No. 97,418, Nov. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 968,555, Dec. 11, 1978, abandoned. This application Jan. 15, 1982, Ser. No. 339,618

Int. Cl.^{3} F02M ***17/18;*** **F02D** ***19/00***

U.S. Cl. 123—522 **7 Claims**



1. In combination with an internal combustion engine having an intake manifold sustaining a partial vacuum during engine operation, and an exhaust manifold discharging hot exhaust gases from the engine, fuel and water vaporizer means having a mixing chamber therein with liquid fuel and water inlet means, and with a vapor outlet in the upper portion of said chamber connected to said intake manifold so as to subject the chamber interior to the partial vacuum of said intake manifold, primary fuel supply means operable to maintain a pool of mixed non-water soluble liquid fuel and water in selected ratio in said chamber, mixing air supply means through which mixing air is drawn from the atmosphere into said chamber by the partial vacuum therein, said mixing air supply means including air inlet orifice means relatively located and directed in said chamber to agitate the pool of liquid fuel and water to stimulate vaporization thereof, heat exchanger means connected with the engine exhaust manifold and operable to heat the vaporizer means and thereby the mixing air and the pool of fuel and water, whereby vaporization of fuel and water and the admixture thereof with mixing air for flow into the intake manifold occurs within said chamber under the combined effects of engine exhaust heat, said mixing air inflow agitation and the partial vacuum within said chamber, leaning air supply means also connected to the intake manifold for drawing atmospheric air into the engine in by-pass relation to said vaporizer means chamber, and engine throttle means operable to vary the flow of leaning air and the flow of vapor-laden mixing air in controlled relationship to the intake manifold.

4,368,712
VAPOROUS GASOLINE FUEL SYSTEM AND CONTROL THEREFOR

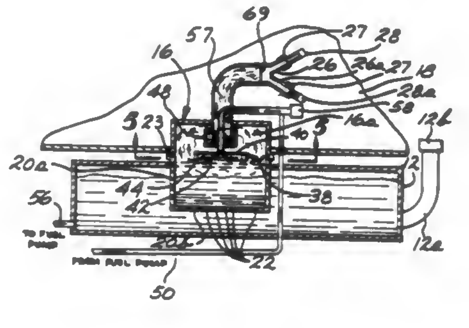
Kenneth A. Jackson, Wooster; George I. Arndt, Loudonville, and James L. Maynard, Cuyahoga Falls, all of Ohio, assignors to V.G.A.S., Inc., Loudonville, Ohio

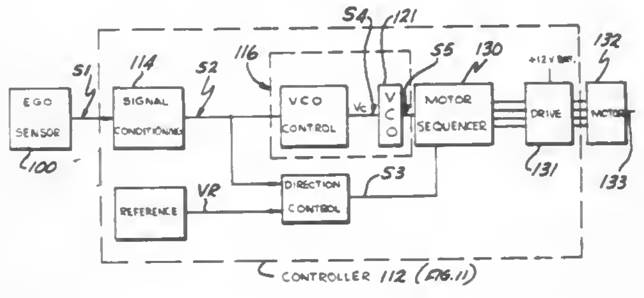
Filed Aug. 1, 1980, Ser. No. 173,605

Int. Cl.^{3} F02M ***17/18, 17/22***

U.S. Cl. 123—523 **18 Claims**

1. A fuel system for use with an internal combustion engine having associated fuel delivery means and fuel ignitable means for power conversion comprising, a containable source for liquid ignitable fuel, a collector means communicating with said source for collecting fuel fumes or vapor adapted to emanate from said liquid ignitable fuel, means communicable with atmosphere and extending into the container source being operable to transmit air into said source above the liquid fuel therein for generating a fumed fuel-air mixture therefrom, means for transmitting the fumed fuel-air mixture from said collector means to the associated fuel delivery means of the engine for ignition therein, means coacting with the means communicable with atmosphere and responsive to actuation of the engine for insertion of liquid ignitable fuel into said communicable means for intermixing with intake air therein, means coacting with said communicable means for diffusing the fuel-air mixture entering into said containable source above the liquid fuel therein, and electronic control means coacting with said engine and said fuel system being responsive to the operating load conditions of said engine to correspondingly control the fuel to air ratio of the mixture prior to the transmission of said mixture to said fuel delivery means of said engine effective to maintain said mixture at its optimum combustible composition.





4,368,713
GAS-OPERATED INTERNAL COMBUSTION ENGINE

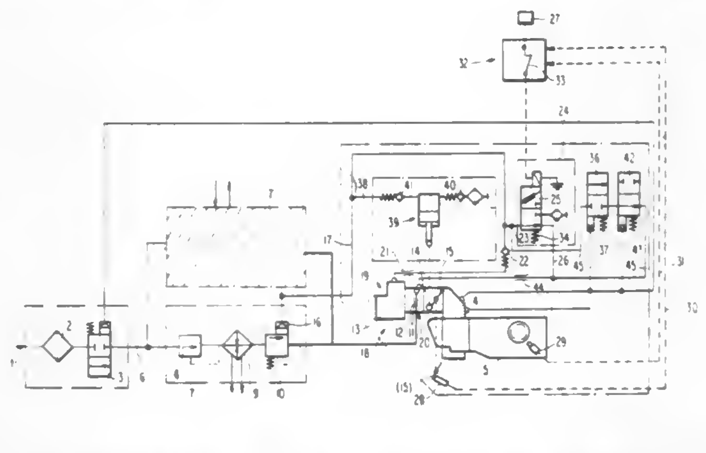
Horst Bergmann, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,914

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936422

Int. Cl.^{3} F02M ***13/08***

U.S. Cl. 123—527 **17 Claims**



1. A gas-operated internal combustion engine which includes an air-gas mixer means, a volume control valve means for controlling a supply of gas to the mixer means, means arranged forwardly of the mixer means for supplying an air charge to the engine, pressure equalizing connection means arranged between a rear of the volume control valve means and the air charge supplying means, and a check valve means arranged between the air charge supplying means and the volume control valve means, the check valve means being adapted to open in a direction toward the air charge supplying means, characterized in that a conduit means branches off from the pressure equalizing connection means at a point between the air charge supplying means and the check valve means, the conduit means extends to an intake manifold of the engine, a valve means is arranged in the conduit means for controlling communication between the pressure equalizing connection means and the intake manifold, and in that a positioning of the valve means in the conduit means is controllable by vacuum of the intake manifold such that with a high value intake manifold vacuum the valve means in the conduit means is in a closed position blocking the conduit means and with a low value intake manifold vacuum the valve means in the conduit means is in an open position communicating the pressure equalizing connection means with the intake manifold under a throttling effect.

4,368,714
FUEL INJECTION APPARATUS

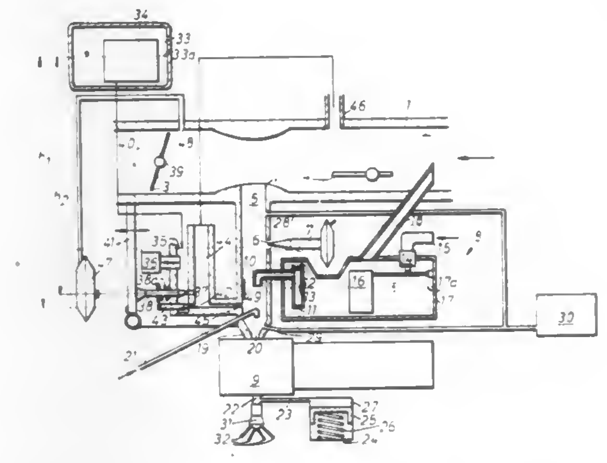
Klaus Emmenthal; Otto Schäfer, both of Wolfsburg; Rudolf-Helmut Strozyk, Helmstedt, and Wolfgang Wehling, Brunswick, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,493

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2738992

Int. Cl.^{3} F02M ***69/08***

U.S. Cl. 123—531 **21 Claims**



1. Apparatus for continuously injecting fuel into an internal combustion engine, wherein a main intake pipe includes an arbitrarily adjustable throttle flap arranged therein and a venturi disposed upstream of said throttle flap, said fuel injection apparatus comprising, in combination:

- (a) an air channel connected at one end to said intake pipe at the narrowest point of said venturi and having at its opposite end a narrowed cross section forming an inlet for a fuel delivery pump;
- (b) a fuel delivery pump connected to receive fuel mixed with air which passes through said narrowed cross section of said air channel, said pump being operative to supply a fuel-air mixture even under conditions of maximum engine load;
- (c) fuel metering means for supplying fuel to said air channel in dependence upon air pressure in said air channel, said air pressure being dependent upon the pressure at said narrowest point of the venturi, said fuel metering means having fuel exit openings which are directed toward said narrowed cross section of said air channel; and
- (d) means responsive to the operating condition of the internal combustion engine for supplying additional air to said air channel for selectively raising the air pressure in said air channel, thereby to reduce the supply of fuel delivered from said fuel metering means to said air channel, the additional air supplying means being operable such that a mixture of both fuel and air is provided to said pump over the entire load range of said engine, wherein the additional air supplying means includes a nozzle communicating with atmosphere, said nozzle being arranged upstream of said fuel exit openings, and an adjustment means for controlling the internal cross section of the additional air nozzle in dependence upon the said operating condition of the internal combustion engine.

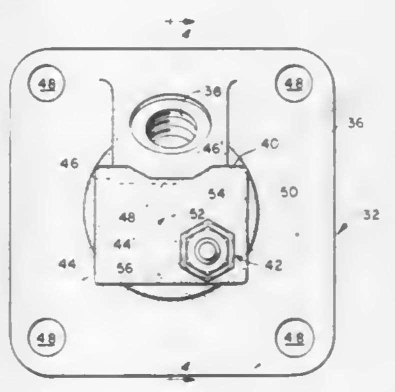
4,368,715
FUEL BURNER FOR HEATING INTERNAL COMBUSTION ENGINE INTAKE AIR

Terry L. Molewyk, and Joseph M. Johnson, both of Nashville, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1980, Ser. No. 221,769

Int. Cl.^{3} F02M ***31/00***

U.S. Cl. 123—550 **17 Claims**



1. A burner assembly for liquid fuel of a type having a tendency to develop meltable wax deposits at low ambient temperature, comprising

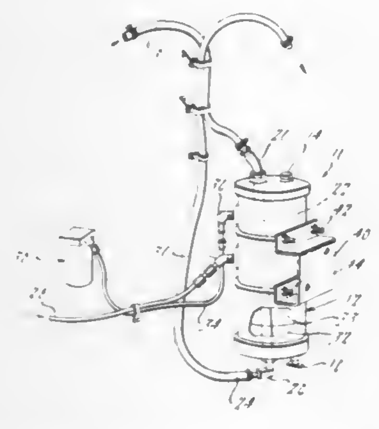
- (a) fuel burner means for burning the liquid fuel;
- (b) a housing connected with said fuel burner means and containing a fuel passage through which fuel flows from a source of fuel toward said fuel burner means and further containing a heat receiving cavity of predetermined size;
- (c) heat generating means suitable for radiating heat into ambient air upon electrical energization and having a rated level of electrical energization for designating a maximum safe level of energization when said heat generating means is used to radiate heat into ambient air and being positioned within said heat receiving cavity for generating sufficient heat upon a predetermined level of electrical energization substantially greater than said rated level to melt wax deposits formed in said fuel passage, said heat generating means including an outer heat conducting portion which expands from a first size in which a clearance exists between the interior walls of said heat receiving cavity and said outer heat conducting portion to a second size in which said outer heat conducting portion comes in direct contact with the interior walls of said heat receiving cavity whenever said heat generating means is energized for a predetermined minimum time at said predetermined level; and
- (d) electrical energization means connected with said heat generating means for supplying said predetermined level of electrical energization to said heat generating means.

7. A burner assembly for liquid fuel of a type having a tendency to develop meltable wax deposits at low ambient temperature, comprising:

- (a) a housing containing a combustion zone and a fuel passage

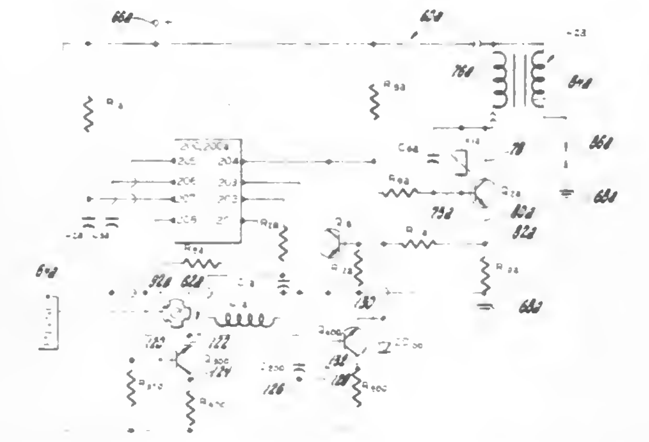
through which fuel flows from a source of fuel toward the combustion zone and further containing a cavity of predetermined size for receiving a source of heat;
(b) heat generating means positioned within said cavity for generating heat upon electrical energization to melt wax deposits formed in said fuel passage;
(c) nozzle means for spraying fuel into the combustion zone;
(d) a supply port means for supplying fuel to said housing; and
(e) a drain port means for draining away the portion of fuel supplied to said housing by said supply port means which is not sprayed by said nozzle means; wherein said fuel passage includes a supply branch extending from said supply port means toward said nozzle means and a drain branch extending between said supply branch and said drain port means and further wherein said fuel passage includes a fuel supply cavity formed below said heat receiving cavity and a central branch extending vertically from said fuel supply cavity toward said nozzle means, said supply branch including one supply leg positioned above said heat receiving cavity and extending horizontally inwardly toward the central portion of said housing and a second supply leg extending vertically from said one supply leg toward said fuel supply cavity, said central branch and said second supply leg residing generally in a vertical plane arranged in parallel orientation with respect to the longitudinal axis of said heat receiving cavity.

4,368,716
FUEL PROCESSOR APPARATUS FOR DIESEL POWERED VEHICLES
Leland L. Davis, Saline, Mich., assignor to Davco, Inc., Ann Arbor, Mich.
Filed Sep. 19, 1980, Ser. No. 188,875
Int. Cl.³ F02M *31/00;* B01D *23/00*
U.S. Cl. 123—557 **8 Claims**



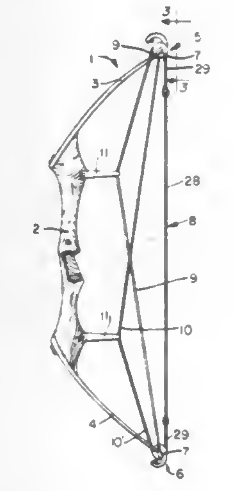
1. A fuel processor means for use with diesel engines on diesel trucks, automobiles, and the like, and whereby said fuel processor is operative to preheat the diesel fuel and to separate out water-impurities from the diesel fuel, comprising,
a vertically oriented elongated tubular vessel means for separating water out of the fuel,
inlet conduit means near the top of said vessel to introduce hot engine coolant liquid to the vessel,
another conduit means passing through a central portion of said vessel for transmitting the hot coolant liquid therethrough,
outlet conduit means for recirculating the coolant liquid back through the engine cooling system,
a second inlet conduit means for introducing fuel to the interior of the vessel near the midpoint thereof for flow therethrough and such that this inlet is above the level of water-impurities being collected in the vessel,
a second outlet conduit means for the fuel located near the top of the vessel for transmitting the water-free fuel to the engine,
drain means at the bottom of the vessel for draining out water-impurities which collect therein,
and means near the top of the vessel for venting the vessel when desired.

4,368,717
AUTOMATIC SHUT-OFF CIRCUIT FOR ELECTRONIC IGNITION SYSTEM
William J. Roberts, Toledo, Ohio, and Gerald M. Owen, Hartselle, Ala., assignors to Eltra Corporation, Toledo, Ohio
Filed Aug. 7, 1980, Ser. No. 175,978
Int. Cl.³ F02P *11/00*
U.S. Cl. 123—632 **1 Claim**



1. An electronic ignition system for use with an engine having a rotating member, including:
means for producing an ignition control signal in stepwise response to the position of said rotating member;
an ignition coil having a primary winding and a secondary coil magnetically coupled to said primary winding for causing an ignition impulse in response to a change in flux in said ignition coil, said flux being responsive to current through said primary winding;
means for supplying said current;
means for controlling said flow of current through said primary winding in response to said ignition control signal;
means for regulating said flow of current through said primary winding responsive at least in part to said flow of current;
automatic means for causing said means for regulating said flow of current to block said flow of current when said ignition control signal remains in a first predetermined state for a predetermined time;
said automatic means including timing means and threshold means;
said timing means being reset when said ignition control signal is in a second predetermined state;
said timing means producing a gradually increasing timing signal magnitude, said timing means becoming effective upon said means for regulating when the magnitude of said timing signal exceeds a threshold of said threshold means, said flow of current being blocked when said timing signal is effective upon said means for regulating for a second predetermined time;
said timing means being a capacitor;
said threshold means being a transistor having a control terminal electrically connected to said capacitor;
said system including means for resetting said timing means by discharging said capacitor;
said means for controlling including a first solid-state device connected in series with said primary winding;
said first solid-state device having a control terminal responsive to said ignition control signal;
said means for regulating including a second solid-state device shunting said control terminal;
said first solid-state device being a second transistor having controlled terminals connected directly electrically in series with said primary winding of said ignition coil, said control terminal being a base terminal of said second transistor;
said second solid-state device being a third transistor having a first controlled terminal directly connected to an electrical ground, and a second controlled terminal resistively connected to said base terminal of said second transistor, said third transistor including a base terminal directly connected to a controlled terminal of said threshold means.

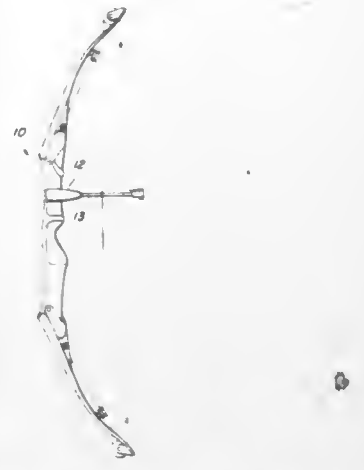
4,368,718
COMPOUND BOW WITH TWO-TRACK LEVER CAMS
Gary Simonds, Gainesville, Fla., and Arnold D. McKee, Hartford, Ill., assignors to Victor United, Inc., Chicago, Ill.
Filed Jun. 22, 1981, Ser. No. 275,627
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—23 R **16 Claims**



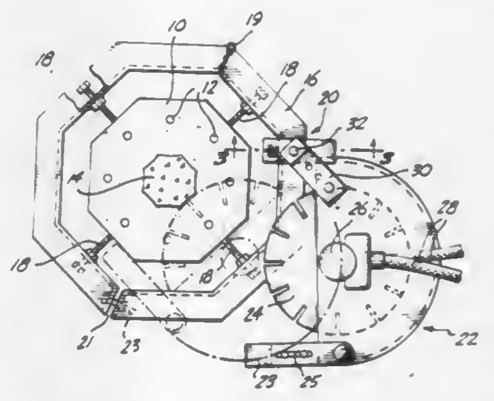
1. In a compound bow including a handle, upper and lower limbs extending from said handle and each having a tip, pivot support means mounted adjacent each said limb tip, a cam member eccentrically mounted for pivotal displacement upon each said pivot support means, a bowstring spanning and engaging said two cam members, a pair of tension cables, each said tension cable having a cam portion engaging one said cam member and an anchor portion secured relative an opposite said cam member, the improvement comprising; said cam members each including a bowstring segment and an adjacent tension cable segment, said cam member having an eccentrically disposed bore, said pivot support means disposed through said cam member bore, said tension cable segment provided with an outer curved periphery having a track, said bowstring segment including an arcuately extending hook section provided with an outer periphery having a track, said bowstring having opposite free end portions respectively disposed in said hook section tracks of said two cam members, and said tension cable cam portions respectively disposed in said tension cable segment tracks of said two cam members.

4,368,719
ARCHERY CLICKER
John Christopher, 2321 Grant, Blair, Nebr. 68008
Filed Nov. 13, 1980, Ser. No. 206,683
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—88 **16 Claims**

1. A clicker adapted for use with a compound bow and positioned for interacting with the rearside of a connecting section of the bow string, comprising an elongated cable guard extension rod mountable on the bow to extend rearwardly therefrom between the operative section and connecting sections of the bow string; a clicker body mounted on the rearmost end of said rod; an elongated spring carried at one end on said body; spring rest means to support the other end of said spring in a stressed position; a snap landing zone for the spring adjacent said spring rest; said other end of the spring being cam-shaped to engage with a connecting section of the bow string and being supported in a cocked position on the rest in the path through which the connecting section of the string moves when the archer pulls the operative section of the string to shoot an arrow whereby the engagement of the connecting section of the string against the cam-shaped end of the spring moves the spring from said rest so that said cam-shaped end of the spring snaps against said snap landing zone to produce an audible signal when the operative section of the string has been drawn rearwardly a measured distance to produce the desired tension for shooting an arrow.



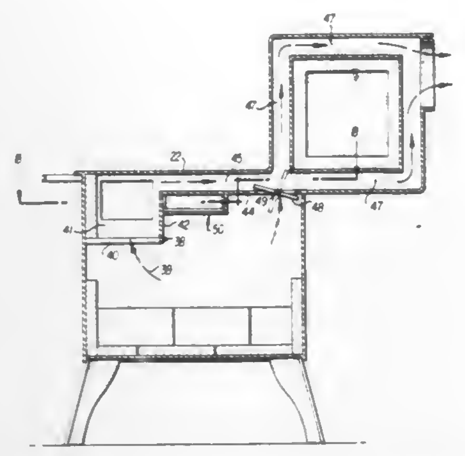
4,368,720
METHOD AND APPARATUS FOR CUTTING CONCRETE COLUMNS
Allen Destree, 5218 92nd SW., Everett, Wash. 98204
Continuation of Ser. No. 82,954, Oct. 9, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 273,717
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—14 **10 Claims**



1. A tool for severing an elongated concrete member having a central axis comprising:
a pivotally movable circular abrasive saw means;
track means for supporting and guiding said abrasive saw means, said track means being hinged and separable at one point to allow said track means to be installed from the side of said member; said track means engaging and substantially encircling said member and having support surface means thereon; and
track engaging saw support means movable along said track means to a plurality of peripheral positions, said saw support pivotally supporting said saw means and permitting said saw means to cut into said elongated concrete member by pivotal movement toward said central axis of said member, said saw support means having a low friction support pad means for slidably engaging said support surface of said track means, whereby said saw means is pivotally and slidably positioned upon said track means for sequentially cutting a circumferential kerf into the periphery of said elongated concrete member.

4,368,721
WOODBURNING STOVE

Eugene A. Kroupa, R.R. #2, P.O. Box 1830, Oliver, British Columbia, Canada (VOH 170)
Filed Feb. 28, 1980, Ser. No. 125,629
Int. Cl.³ F24C *1/14;* F24B *3/00*
U.S. Cl. 126—4 **20 Claims**



1. A wood burning stove comprising an airtight body having a lower firebox unit and an upper oven unit, the oven unit being in vertically offset relationship to the firebox unit so as to have an air passage within one of its walls overlapping one of the walls of the firebox unit;

a main fire door at the front of the firebox unit;

a closeable air inlet opening near the top of the front of the firebox unit in communication with an air inlet duct running generally horizontally across the top of the interior of firebox unit and then vertically downwardly along the back wall of the interior of the firebox unit;

a generally horizontal cooking top on said firebox unit;

a baffle within the upper portion of the firebox unit and extending generally parallel to the cooking top to define an exit smoke path across the top of the interior of the main firebox and extending toward the junction with said vertically offset oven unit;

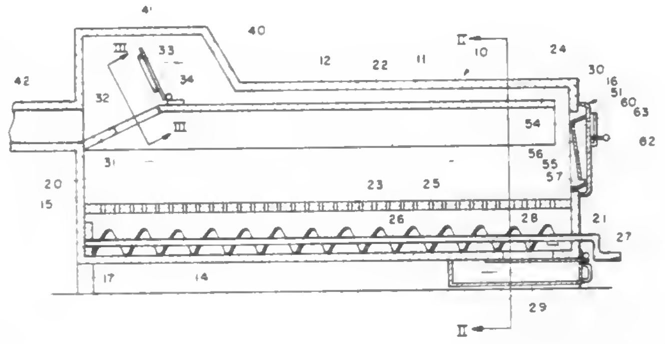
said baffle having a first perforate portion remote from the said junction defining an auxiliary firebox in the upper portion of the main firebox and directly below said cooking top; said baffle having a second imperforate portion adjacent the connection with said oven unit;

said oven unit having a smoke outlet in its upper portion remote from the junction with the firebox unit and open passages in its walls therebetween so that smoke can flow freely from said main firebox unit, through said auxiliary firebox, under the cooking top and through the open passages to the smoke outlet.

4,368,722
DEVICE AND METHOD FOR CONVERTING WOOD INTO THERMAL ENERGY

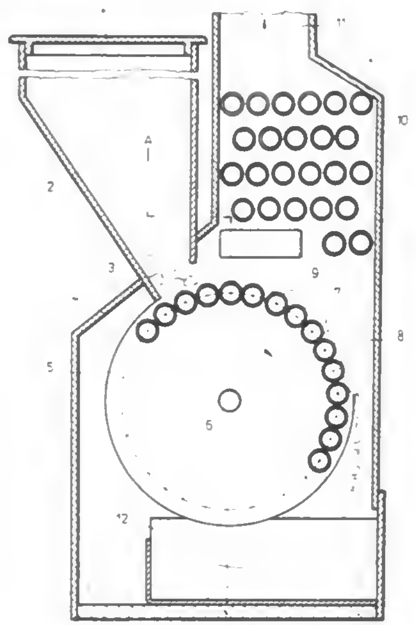
Richard A. Lynch, 9009 Conservation, N.E., Ada, Mich. 49301
Filed Aug. 15, 1979, Ser. No. 66,645
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **8 Claims**

1. A device for burning wood for the purpose of generating thermal energy, said device having a shell enclosing a front to back rectangular elongated chamber having a horizontal plate closing the top thereof, an elongated baffle secured to and forming a seal with the back and sides of said shell and dividing said chamber into a combustion chamber and an exhaust gas passage; the front and major portion of said baffle being parallel with said plate; the front end of said baffle being adjacent to and spaced from the front of said chamber to provide a restricted throat for movement of combustion gases from said combustion chamber into said passage and forming the only discharge opening for gases from said combustion chamber during normal firing mode; a horizontal perforate grate, an ash collecting chamber beneath said grate having means sealing it against entry of combustion air, means for introducing combustion air in controlled amounts into said combustion chamber, said means being the only inlet for combustion air for said combustion chamber and characterized in that it is elongated laterally of the combustion chamber and has a downwardly extending air passage having an elongated slot-like inlet port at the top and a downwardly opening outlet port at the bottom and a directional guide vane below and adjacent to said outlet curved to extend inwardly and discharge rearwardly, the inner end of said vane being parallel to and substantially in the same horizontal plane as to the top of said grate; said outlet port and said vane extending a major portion of the width of the combustion chamber for discharging rearwardly parallel to and substantially the full width of the grate a ribbon-like stream of air substantially at the surface of said grate; a damper for closing said inlet port, adjustable means for controlling the position of said damper.



4,368,723
HEATING APPARATUS FOR BURNING LUMPY FUELS, FIRST OF ALL TO MEET THE HEAT DEMAND OF FAMILY HOMES AND INDIVIDUAL FLATS, OR A SMALL GROUP OF THEM

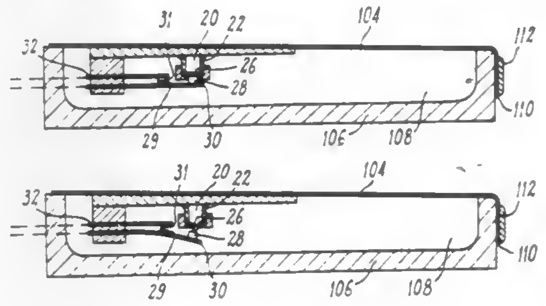
Ernö Birö, and Ernö Birö, both of Urbantsokk u. 37, Györ, Hungary
Filed Mar. 10, 1981, Ser. No. 242,316
Claims priority, application Hungary, Mar. 11, 1980, 564
Int. Cl.³ F23H *9/02*
U.S. Cl. 126—181 **6 Claims**



1. Heating apparatus for burning lumpy fuel, including a rotary grate means, driving mechanism for said grate means, the grate means comprising a plurality of open, hollow tube-shaped grate elements (4) provided with air outlet openings, said grate elements are arranged along an endless cylindrical mantle surface of said grate means, adjacently lying ones of said tube-shaped grate elements being fixed to each other at their side portions for forming said cylindrical surface, said air outlet openings being provided on the outwardly lying surface of said tube-shaped grate elements, an air inlet head (16) fitted to at least one of the front ends of the grate means and communicating with at least one of said tube-shaped elements.

4,368,724
AUTOMATIC ANTI-FREEZE SYSTEM FOR SOLAR WATER HEATERS

André Bonnet, 17-19, rue A. France, Vincennes, France (94300)
Filed Jun. 10, 1980, Ser. No. 158,134
Claims priority, application France, Jun. 29, 1979, 79 16850; Mar. 14, 1980, 80 05721
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—420 **6 Claims**



1. A solar energy water heater system comprising:

a solar energy collector adapted to be positioned in an exterior location to be exposed to solar energy;

means for supplying water to said solar energy collector to be heated therein and for discharging heater water from said solar energy collector;

drain means for draining water within said solar energy collector; and

means for, when the exterior temperature, initially higher than the freezing point of water, falls below said water freezing point, automatically operating said drain means to drain all said water from said solar energy collector, said automatic operating means being located separately and spaced from said solar energy collector and comprising:

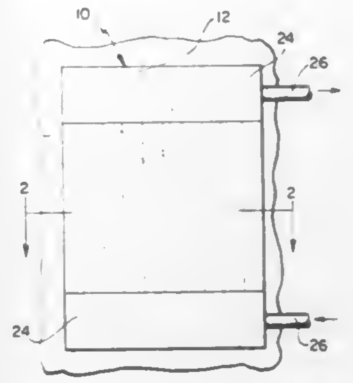
a small-size container containing therein water, said container being closed by a membrane;

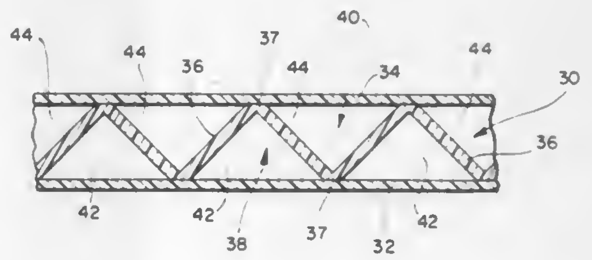
heat exchange means, having a surface in direct contact with the exterior atmospheric air, for providing heat exchange between said exterior atmospheric air and said water in said small-size container, whereby when the temperature of said exterior atmospheric air lowers to said water freezing point said water in said small-size container freezes, thereby resulting in a variation in volume of said water in said small-size container and flexing outwardly said membrane; and

means, connected to said drain means and responsive to said volume variation, for detecting said volume variation and for generating a drain electrical signal in response thereto to automatically operate said drain means to drain all said water from said solar energy collector, said detecting and generating means comprising an electrical switch movable to a first switching position by said membrane flexing outwardly, said membrane deflecting inwardly in response to melting of said frozen water in said container upon said exterior temperature reaching the melting point of ice, and said electrical switch being movable to a second switching position by such inward deflection of said membrane for generating a fill electrical signal to automatically operate said drain means to allow refilling of water into said solar energy collector.

4,368,725
SOLAR ENERGY COLLECTOR

Michael McClintock, 162 Commercial St., Boston, Mass. 02109
Filed Nov. 7, 1977, Ser. No. 849,521
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 **12 Claims**





1. A solar window for use with at least a partially enclosed structure and mounted with respect thereto so as to receive light rays thereon, said window comprising a pair of substantially transparent panels disposed in opposed position to each other and defining at least one fluid receiving chamber therebetween, one of said panels including a plurality of generally parallel grooves having sidewalls disposed at an angle such that light attempting to pass through said window in the direction of said one panel towards said other panel is substantially total internally reflected away from said one panel by means of total internal reflection, and wherein said grooves are formed within said one panel, said one panel formed of a material having a substantially higher index of refraction than that of a first fluid in said chamber, including means for introducing a second fluid into said chamber, said second fluid having an index of refraction closer to that of said one panel such that the critical angle of incidence for said one panel material to support total reflection of radiation passing from said one panel towards said other panel cannot take place such that radiation may freely pass through said window in both directions.

4,368,726
SOLAR HEATING PANEL

Robert L. Ellsworth, Granada Hills, Calif., assignor to Fortin Laminating Corporation, Granada Hills, Calif.
Filed Oct. 3, 1980, Ser. No. 193,546
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—445 **8 Claims**

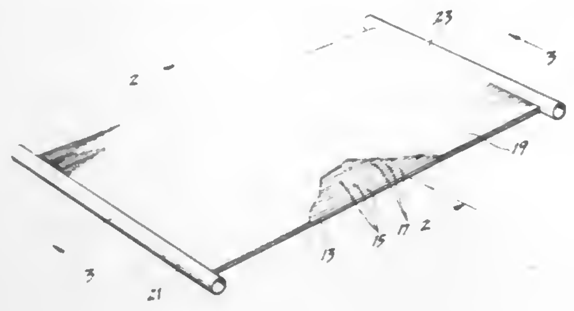
1. A solar panel comprising:

a self-supporting heat insulative substrate having two ends and a multiplicity of substantially parallel grooves formed on one side of said substrate between said ends with structurally supporting ribs spaced therebetween;

a flexible thin heat conductive foil formed of a first metal material attached to and supported by said ribs of said insulative substrate and covering said multiplicity of grooves on one side of said substrate to form fluid conducting channels, said thin flexible heat conductive foil transmitting heat energy incident thereon to fluid flowing in said fluid flowing conduits;

a pair of thin foil strips formed of a second metal material different from said first metal material, one of said strips attached to said one side of said substrate adjacent each of said ends of said substrate and the other one of said pair of strips attached to the other side of said substrate adjacent each of said ends of said substrate; and

a fluid conducting manifold formed from said second metal material attached to each end of said substrate and communicating with said fluid conducting channels, said fluid conducting manifold having a slot therealong, said slot having one edge soldered to said one of said foil strips attached to said one side of said substrate and the other edge soldered to said other one of said foil strips attached to the other side of said insulative substrate whereby one fluid conducting manifold introduces fluid into said fluid conducting channels and the other fluid conducting manifold receives heated fluid therefrom.



4,368,727

PORTABLE COOKING APPARATUS

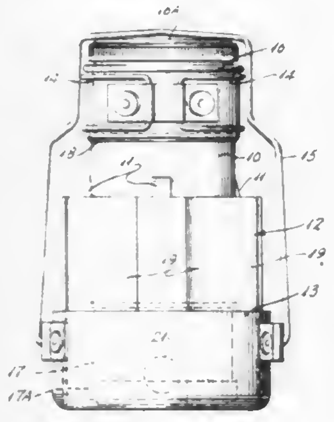
Michael G. Higgins, and Howard S. Ward, both of 19, High St., Camberley, Surrey GU15 3RB, England

Filed Nov. 13, 1980, Ser. No. 206,566

Claims priority, application United Kingdom, Nov. 13, 1979, 7939178; Oct. 1, 1980, 8031675

Int. Cl.^{3} A24B *3/00*

U.S. Cl. 126—25 C **10 Claims**



1. A portable cooking apparatus comprising a container having a lower end part to be heated, and a tunnel member arranged to receive at its upper end region the lower end part of the container and to receive at its lower end region a burner, the container and the tunnel member being formed with projection and recess means, respectively, which in one position engage and hold the container in an elevated position wherein the container rests with its lower end spaced above the burner to be heated by the burner flame, and in another position allow the container to move to a lower position wherein the lower end of the container will extinguish the burner flame.

4,368,728

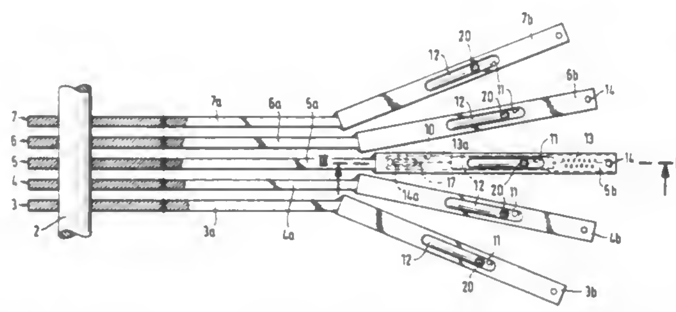
APPLIANCE FOR TRAINING FINGER JOINTS

Max Pasbrig, Orselina, Switzerland, assignor to Lacrex Brevetti S.A., Orselina, Switzerland

Filed Nov. 12, 1980, Ser. No. 205,984

Int. Cl.^{3} A61H *1/00*

U.S. Cl. 128—26 **5 Claims**



1. In an appliance for training finger joints, comprising:

a housing,

a plurality of guides mounted in said housing and each of which is movable up and down transversely to its longitudinal direction,

a plurality of sleeve carriers slidably mounted on respective ones of said guides,

a plurality of finger sleeves, which extend on top of said housing and are secured to respective ones of said sleeve carriers, and

drive means for reciprocating said guides up and down with said sleeve carriers and finger sleeves and for reciprocating said sleeve carriers with said finger sleeves along said guides,

the improvement comprising:

a shaft mounted in said housing for rotation about a first axis,

said drive means comprising a motor for rotating said shaft,

a plurality of eccentric cam wheels non-rotatably mounted on said shaft,

a plurality of levers pivoted in said housing on a common second axis parallel to and spaced rearwardly from said first axis,

each of said levers having a forward portion spaced forwardly from said first axis and constituting one of said guides and formed with a longitudinal groove, which receives one of said sleeve carriers, and

each of said levers riding directly on the periphery of one of said cam wheels at a location spaced between said groove and said second axis,

the forward portion of each of said levers being formed with a longitudinal bore,

each of said levers having a top face formed with a longitudinal slot, which opens into said bore in an intermediate portion of its length to form said groove together with said intermediate portion,

each of said sleeve carriers consisting of a pin, which is longitudinally slidably mounted in one of said bores in said intermediate portion thereof,

a stud secured to each of said pins and extending laterally therefrom through the adjacent one of said slots and carrying one of said finger sleeves,

each of said bores containing a tension spring, which has a forward end secured to the lever near its forward end and a rear end portion secured to the forward end of the associated pin,

a plurality of ropes, each of which is secured at one end to the rear end of one of said pins, the other end of each of said ropes being secured to said housing, each of said ropes being trained around first and second pulleys,

each of said levers being formed with a slot that opens into a rear lower portion of said bore,

each of said first pulleys being mounted in one of said slots,

a pulley carrier secured to each of said levers at its forward end, and

each of said second pulleys being mounted in one of said pulley carriers.

4,368,729

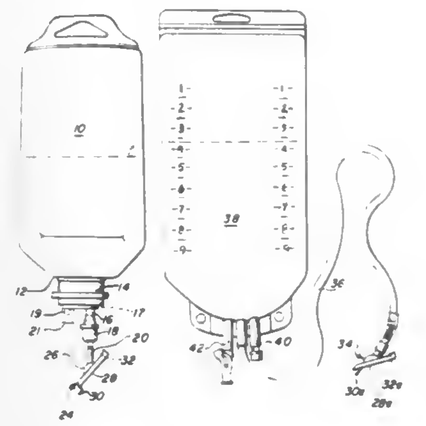
ASEPTIC SYSTEM FOR TOTAL PARENTERAL NUTRITION AND THE LIKE

Luc M. Dossin, Braine l'Alleud, Belgium, assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 14, 1980, Ser. No. 196,966

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—214 D **11 Claims**



1. A flexible, collapsible container for holding sterile solution and for transferring and receiving solutions in a sterile manner, which comprises a closure carried on said container, a tubular port passing therethrough, and a connector member carried on said tubular port for providing sealed connection between said connector member and a corresponding connector member, said connector member comprising housing means defining a transparent wall portion and a thermoplastic, opaque wall portion positioned as part of the wall of said housing means, and means for connecting said housing means to a housing means of the corresponding connector member having a corresponding thermoplastic wall portion in such a manner as to bring the respective wall portions together into facing contact whereby, upon exposure of the connected housings to radiant energy, the wall portions in facing contact can fuse together and open an aperture through said contacting wall portions, to provide a connection between the interiors of the respective housings, said tubular port defining a diaphragm sealing flow through the bore of said tubular port, said connector member being carried by a tubular cannula defining an inwardly-pointed spike adapted to penetrate said puncturable diaphragm means and a flexible, tubular boot member sealed to said tubular port and also sealingly carrying said cannula therein, the improvement comprising, in combination:

the flexible, tubular boot member defining an outer end portion including a terminal portion sealed to said cannula, an annular radial portion extending radially outwardly in substantially normal relation to the axis of said cannula, and curving to join a generally cylindrical portion, which joins the remainder of the flexible, tubular boot member, said tubular boot member further including an annular ridge projecting outwardly and positioned circumferentially about a central portion of said boot member for substantially preventing the outward expansion of said generally cylindrical portion upon inward deflection of said annular radial portion.

4,368,730

INTRAVENOUS CATHETER

Nigel Sharrock, 500 E. 85th St., New York, N.Y. 10028

Filed Feb. 12, 1981, Ser. No. 233,696

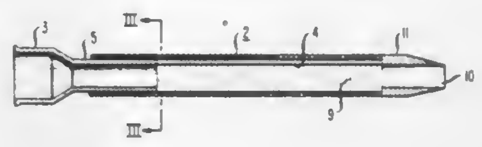
Int. Cl.^{3} A61M *5/00, 25/00*

U.S. Cl. 604—158 **8 Claims**

1. An intravenous catheter assembly having a distal portion for insertion into the lumen of a vein of a patient and a proximal portion, the catheter assembly being CHARACTERIZED IN THAT there are provided:

cannular termination means formed of a metallic material and disposed on the distal portion of the catheter assembly, said cannular termination means having respective proximal and distal portions in axial alignment with each other to produce a substantially cylindrical lumen therethrough;

flexible cannular means having a distal end connected to said proximal portion of said termination means, said flexible cannular means being formed of helically wound wire so as to form a flexible lumen in axial alignment with said lumen of said cannular termination means;



fitting means disposed on the proximal portion of the catheter assembly, and having a respective distal portion for affording communication with a proximal portion of said flexible cannular means; and

retention means disposed within said flexible cannular means, said retention means being mechanically connected at a distal end thereof to said proximal portion of said cannular termination means, and at a proximal end thereof to said distal portion of said fitting means for reinforcing said flexible cannular means along its length, between said cannular termination means and said fitting means.

4,368,731

PISTOL-TYPE SYRINGE

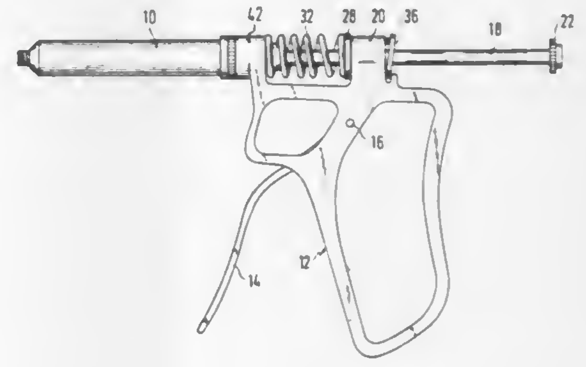
Heinrich W. Schramm, Schweriner Strasse 24, D-4803 Steinhagen, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,690

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 8003633[U]; Sep. 8, 1980, 8023910[U]

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—215 **13 Claims**



1. A pistol-type syringe for injecting the contents of an ampoule having therein a piston which discharges the contents upon axial displacement, said syringe comprising:

a handle member having an upper portion with a first generally flat frontal surface and having an axial bore extending therethrough;

an elongated plunger member longitudinally displaceably positioned in the bore;

means, associated with the upper portion of said handle member, for holding an ampoule in a position forward of said handle member and substantially coaxial with said plunger;

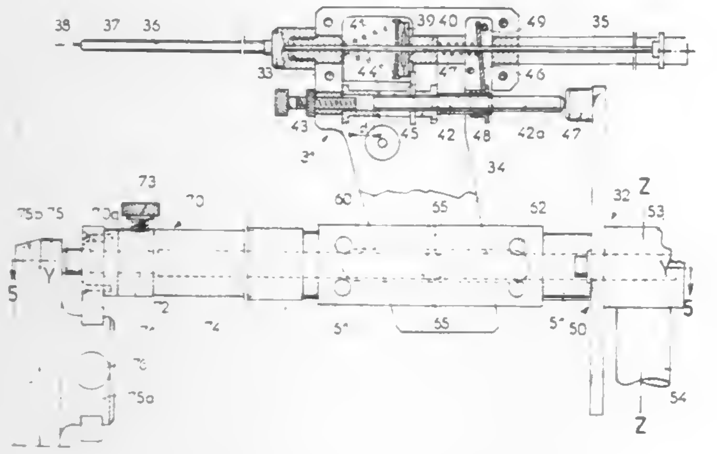
a generally disk-shaped first pressure piece having an aperture therein which is slightly larger than the outer circumference of said plunger member, said first pressure piece being slidably positioned on said plunger member and having a rest position defined by said first surface of said upper portion of said handle member, said rest position being generally perpendicular to the axis of said bore; and

an actuating lever pivotably mounted on said handle, the upper end of said lever being adapted upon pivoting of said lever to exert a force on said pressure piece in a direction generally parallel to said plunger member and at a position on said first pressure piece spaced radially outwardly from said plunger member.

4,368,732
ARTIFICIAL INSEMINATION DEVICE FOR AVICULTURE

Bertrand Cassou, Saint Symphorien les Bruyeres, 61300 L'Aigle, France; Lucien Bonnet, Monnaie, France; Jean P. Brillard, Monnaie, France; Jacques Courtemanche, Monnaie, France, and Michel de Reviers, Monnaie, all of France, assignors to Bertrand Cassou; Maurice Cassou and Robert Cassou, all of L'Aigle, France

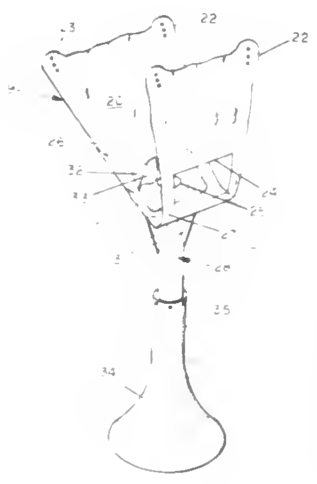
Filed Apr. 1, 1981, Ser. No. 250,958
Claims priority, application France, Jun. 16, 1980, 80 13332
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—235 20 Claims



1. An artificial insemination device for small animals, comprising a hollow cylindrical body, a plunger-rod slidably mounted in the body and projecting from a first end of the body, a periodic actuating means, a step-by-step advancing means cooperative with the plunger-rod and comprising an advancing element which is provided with an aperture and is mounted on the plunger-rod with a small clearance between the advancing element aperture and the plunger-rod and which bears against the periodic actuating means, which actuating means is mounted to be movable in translation relative to the body in a direction parallel to the plunger-rod between a first position and a second position, return means cooperative with the actuating means to return the actuating means to said first position, the hollow cylindrical body being adapted to receive at a second end thereof opposed to said first end a semen reservoir-tube, means associated with said second end of the body for maintaining the reservoir tube on the body, a stop means mounted to be adjustable in position relative to the body in a direction substantially parallel to the plunger-rod, said actuating means being in bearing relation to said stop means in said second position.

4,368,733
INVALID FECES COLLECTING AND EXAMINATION DEVICE FOR MEDICAL STUDY OF STOOL AND EXAMINATION OF THE GENITALIA

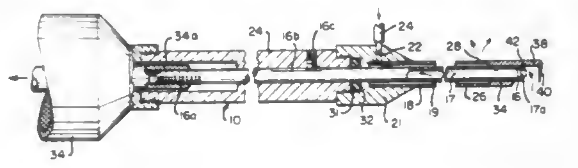
John D. Sanidas, 101 Dexter St., Denver, Colo. 80220
Filed Nov. 7, 1977, Ser. No. 849,475
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 6 Claims



1. An invalid feces collecting device for medical study of stool and for encircling attachment to a patient reclining on an apertured mattress hospital bed and/or apertured seat chair comprising a panel of soft flexible material having a reduced midsection and flared opposing ends, a generally rectangular opening in said panel and of a size for exposing and providing examination access to the genitalia when said ends encircle the patient, means on and for interconnecting said ends, a generally circular anal opening in said panel spaced from and reduced in size with respect to said genitalia examining opening and of a size to be alignable with the anus, funnel shaped tubular chute means of soft flexible material on and depending from said panel and surrounding said anal opening, said chute having an open discharge end, adhesive means on said panel adjacent and generally rectangularly surrounding said anal opening for conformably adhering said opening area to the area around the anus, and transparent collecting bag means removably interconnected by disconnectable connecting means to said chute discharge end whereby feces entering through said anal opening will be discharged through said chute means and collected by said bag means for visual inspection therethrough and laboratory study, and whereupon removal of said bag permits rectal examinations.

4,368,734
SURGICAL INSTRUMENT

Anton Banko, Bronx, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.
Filed Jan. 27, 1978, Ser. No. 872,944
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 20 Claims



1. A surgical instrument for crushing and severing material from an object comprising:

first and second elongated members, one of said members being tubular with an open end and having a cutting surface formed at least partially around said open end thereof,

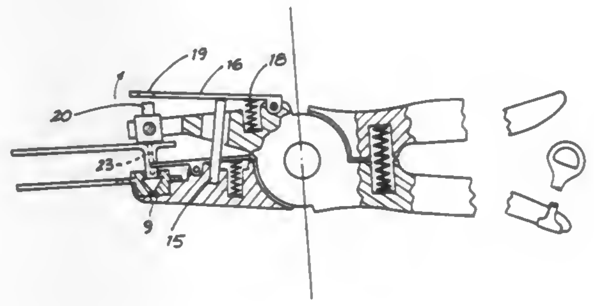
said first and second members being telescopically mounted relative to each other,

the other of said members having a gripping implement thereon which is shaped with a hook having an end which terminates in an acute angle for gripping the material of the object, the face of said gripping implement opposing said cutting surface having a portion which opposes and overlies a portion of said cutting surface so that the two can be brought into an abutting relationship without moving said gripping implement into the open end of said one member,

means for moving said first and second members longitudinally relative to each other so that the gripping element moves the material against the cutting surface to crush the material against said cutting surface and to sever it with at least a part of the severed material being moved into said open end of said one member.

4,368,735
ANIMAL EAR TAG APPLICATORS

David B. Filmer, Newport, Australia, assignor to Agri Plastics International Pty. Limited, Newport, Australia
Filed Feb. 27, 1980, Ser. No. 125,062
Claims priority, application Australia, Mar. 9, 1979, PD7978
Int. Cl.³ A01K *11/00*
U.S. Cl. 128—330 2 Claims



1. An applicator for an animal ear tag, said applicator including first and second jaw members, first and second handles respectively extending from and being integral with said first and second jaw members with the handles and jaw members being pivotally interconnected to perform a pliers-type action, spring means biassing the handles away from each other, a pin member pivotally mounted on said first jaw member for movement between an engage position directed toward the second jaw member and a release position, a recess and aligned aperture in said second jaw member to receive said pin member in said engage position, a locking bar pivotally mounted on a side of said first jaw member remote from said second jaw member and having an aperture dimensioned to seat over an extension of said pin and lock said pin in the engage position when the jaw members are open, a release rod mounted on the second jaw member and directed towards the first jaw member, said release rod being arranged to engage the locking bar when the jaw members are closed and pivot said locking bar to unseat the aperture from the pin extension and thereby permit pivotal movement of said pin to the release position, a plate pivotally mounted on the second jaw member, one end of said plate being slotted and said plate being spring biassed to urge said slotted end toward the second jaw member to overlie the recess and aperture and provide a passage for said pin member.

4,368,736
ANASTOMOTIC FITTING

Robert L. Kaster, 2730 Vagabond La., Plymouth, Minn. 55447
Filed Nov. 17, 1980, Ser. No. 207,677
Int. Cl.³ A61B *17/11*
U.S. Cl. 128—334 C 16 Claims

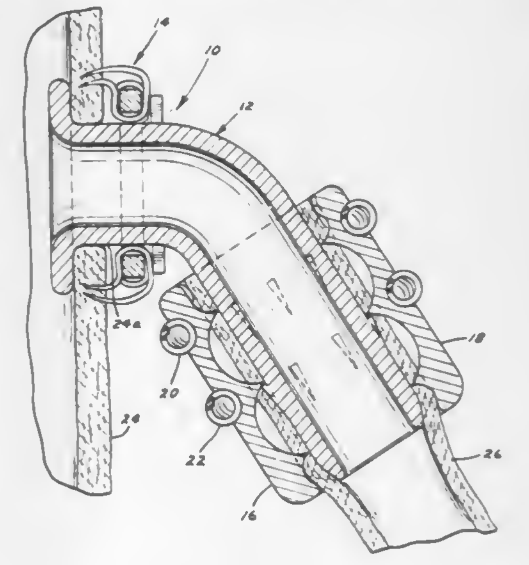
1. Anastomotic fitting for reconnecting a vessel or connecting a vessel of a first diameter to a vessel of a second diameter comprising:

a. means for engaging in a hole between an inner and outer wall of a first diameter vessel including an inflow orifice and at least one outflow orifice, and means for holding a second diameter vessel at said outflow orifice, said engaging means including a flanged tube, an aperture in a flange at said inflow orifice, plurality of radial wall attachment ring abutments extending outwardly from said tube and adjacent but spaced from said flange, and a plurality of circumferential rows of alternating geometrically configured outward extending projections about a distal portion of said outflow orifice end of said tube;

b. means for securing said engagement means to said wall of said vessel of said first diameter including a plurality of independently rotatable dual tined anchor attachment means supported on a ring of predetermined geometrical cross section adjacent said flange and spaced by spacers alternating with each of said tined means and adjacent to said engaging means, said securing means being positionable from an unengaged position to an engaged position into the wall of said vessel of said first diameter by rotating each of said dual tined anchor attachment means about said ring;

c. means for collaring said vessel of said second diameter to said outflow orifice of said engagement means, said collaring means including two cylindrical mirror-image halves, at least two circumferential rim projections extending inwardly from interior surfaces of said halves, and at least two recessed grooves about outer circumferences of said halves; and,

d. means for securing said collar means adjacent said outflow orifice with said vessel of said second diameter about said recessed grooves of said collar means therebetween whereby said anastomotic fitting provides a surgical connection between said vessel of said first diameter and said vessel of said second diameter.



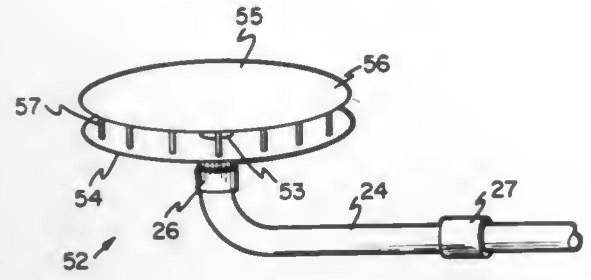
4,368,737
IMPLANTABLE CATHETER

Stephen R. Ash, Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.
Filed Jul. 7, 1980, Ser. No. 166,578
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—175 19 Claims

1. An implantable catheter for peritoneal access, said catheter comprising:

an elongated tubular member one portion of which is adapted to extend into the peritoneal cavity of the body of a user to an end within said cavity, and a second portion which is adapted to be external of the body of a said user; and

a terminating member having first and second walls each of which is spaced with respect to the other at least at central and outer portions to thereby form a passage therebetween with said passage being maintained by reinforcing means engaging each of said first and second walls, said outer portions having access means for opening said passage externally of said catheter, and said central portion of said first wall having means defining an opening therein for engaging said end of said one portion of said tubular member so that said passage established between said first and second walls is in communication with the interior of said tubular member with said passage being substantially normal with respect to the axis of said end of said tubular member when said tubular member is in engagement with said means defining said opening in said first wall.



4,368,738
CANNULA

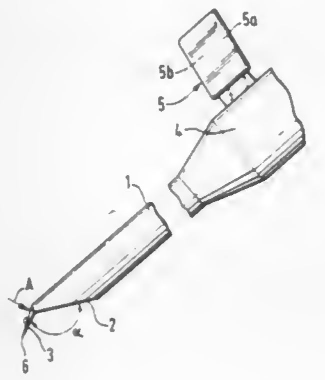
Bernd Tersteegen, and Gunter van Endert, both of Karlstrasse 17-19, 4000 Dusseldorf 1, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,357

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013384

Int. Cl.^{3} A61M *25/00*

U.S. Cl. 604—180 **10 Claims**



1. A dialysis cannula having an obliquely sharpened point formed by an oblique ground surface, wherein the point comprises a front portion disposed at an obtuse angle with respect to the ground surface.

4,368,739
LONG INTESTINAL CATHETER

Richard L. Nelson, Jr., 1142 Noyes St., Evanston, Ill. 60201

Continuation of Ser. No. 58,607, Jul. 18, 1979, abandoned. This application Apr. 29, 1981, Ser. No. 258,686

Int. Cl.^{3} A61M *25/00*

U.S. Cl. 604—54 **14 Claims**

1. A catheter for insertion into the jejunum via the stomach and the duodenum, said catheter comprising:

a flexible tube having upstream and downstream ends connected by a lumen;

opening means adjacent each end of said tube;

a first inflatable balloon surrounding said tube adjacent its downstream end;

means for introducing an inflating gas into said first balloon;

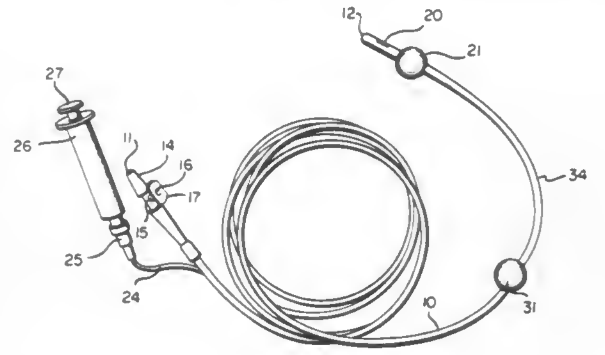
a second inflatable balloon surrounding said tube at a location spaced a fixed predetermined distance from said first balloon;

all of the balloons on said catheter being spaced apart and in non-abutting, non-overlapping relation with any other balloon in all conditions of inflation of said balloons;

each of said balloons comprising means manually manipulable to advance said catheter through the duodenum;

means comprising said predetermined distance between said first and second inflatable balloons for placing the second balloon at an accessible location in the gastrointestinal tract, upstream of the retroperitoneal portion of the duodenum, where the second balloon can be manually manipulated to advance the catheter through the duodenum whenever the first balloon is inaccessible in said retroperitoneal portion, and for placing said first balloon at an accessible portion of the gastrointestinal tract, downstream of said retroperitoneal portion, where the first balloon can be manually manipulated to advance the catheter through the duodenum whenever the second balloon is inaccessible in the retroperitoneal portion;

and means for introducing an inflating gas into said second balloon.



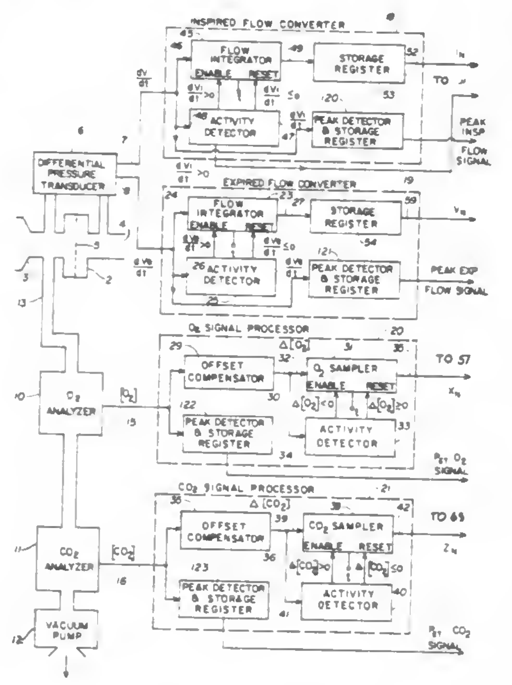
4,368,740
PHYSIOLOGIC ANALYZER

Andy S. Binder, 1487 Crestline Dr., Santa Barbara, Calif.

Filed Nov. 3, 1980, Ser. No. 203,355

Int. Cl.^{3} A61B *5/08*

U.S. Cl. 128—718 **11 Claims**



1. A physiologic analyzer comprising:

means continuously sensing the flow rate of expired breath and providing an expired flow signal proportional thereto;

means continuously sensing the proportion of oxygen in inspired and expired breath and providing an oxygen concentration signal proportional thereto;

means continuously sensing the proportion of carbon dioxide in inspired and expired breath and providing a carbon dioxide concentration signal proportional thereto;

an expiratory flow integrator enabled only during expiratory breath and having its input connected to said expiratory flow signal and which samples and integrates said expiratory flow signal at intervals of t seconds and provides at its output a series of signals V_0 through V_n where V_n is proportional to the volume expired during the time elapsed between t_{n-1} and t_n;

an expiratory oxygen concentration sampler which is enabled only when oxygen concentration deviates from the inspired value and which samples oxygen concentration every t seconds and provides at its output a series of signals X_0 through X_n proportional to successive instantaneous values of said oxygen concentration;

an expiratory carbon dioxide concentration sampler which is enabled only when carbon dioxide concentration deviates from the inspired value and which samples carbon dioxide concentration every t seconds and provides at its output a series of signals Z_O through Z_n proportional to successive instantaneous values of said carbon dioxide concentrations.

4,368,741
DEVICE FOR ROLLING OF CIGARETTES

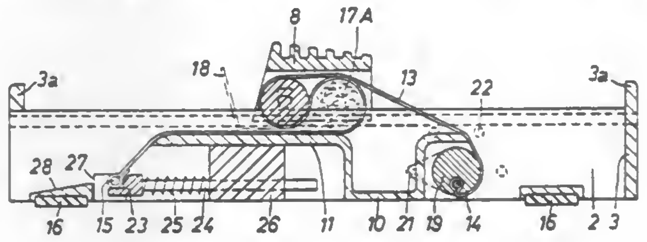
Helmut Meinunger, Radevormwald, Fed. Rep. of Germany, assignor to Gizeh-Werk GmbH, Bergneustadt, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,330

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2915042

Int. Cl.^{3} A24C *5/40, 5/42, 5/44*

U.S. Cl. 131—55 **6 Claims**



1. Device for rolling of cigarettes with a flat basic structure open on the top, in which there is disposed a belt moving around a cylinder, characterized in that the cylinder is rotatably arranged in a slidable member alongside an upper edge of the basic structure, and that transverse to the direction of movement, under the belt, there is a recess, which at its upper edge, terminates into flat tables, and wherein the belt is connected to a shaft rotatably mounted in the basic structure for adjusting the length of the belt and thereby adjusting the diameter of cigarettes rolled by the device.

4,368,742
APPARATUS FOR REPLENISHING THE SUPPLIES OF FILTER ROD SECTIONS IN THE MAGAZINES OF FILTER TIPPING MACHINES

Gunter Wahle, Reinbek, and Alois Kasparek, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Korber & Co. KG., Hamburg, Fed. Rep. of Germany

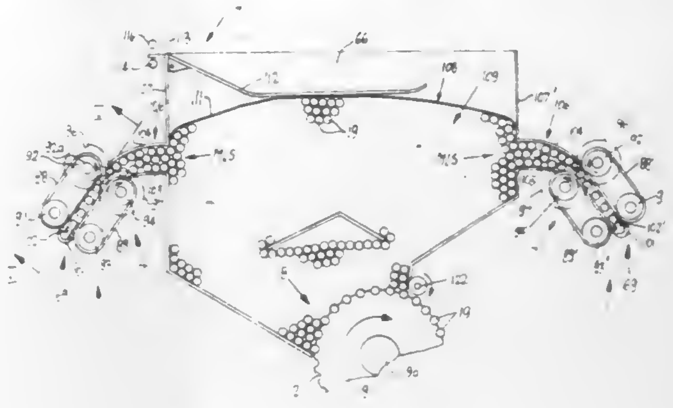
Filed Jan. 27, 1981, Ser. No. 228,966

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003912

Int. Cl.^{3} A24C *5/47, 5/00*

U.S. Cl. 131—88 **15 Claims**

1. Apparatus for replenishing the supply of filter rod sections in the magazine of a processing machine, such as a filter tipping machine, wherein the magazine comprises a plurality of spaced-apart portions and is normally filled to a predetermined level, comprising at least one source of filter rod sections; discrete first and second pneumatic conveyors for axial transport of filter rod sections, said conveyors having inlets adjacent to said source and outlets adjacent to said magazine; discrete first and second propelling units including means for delivering filter rod sections from said source into the inlets of the respective conveyors; and discrete first and second receiving units, each of said receiving units having means for accepting filter rod sections from the outlet of the respective pneumatic conveyor, deflecting means for converting the thus accepted filter rod sections into at least one row wherein the sections advance sideways, and means for feeding such row from the respective deflecting means into one of said spaced-apart portions of said magazine in a region below said predetermined level so that a row which is introduced into one portion of said magazine by one of said feeding means does not interfere with introduction of a row into another portion of said magazine by the other of said feeding means.



4,368,743
METHOD AND MACHINE FOR TREATING UNITING BANDS IN FILTER TIPPING MACHINES OR THE LIKE

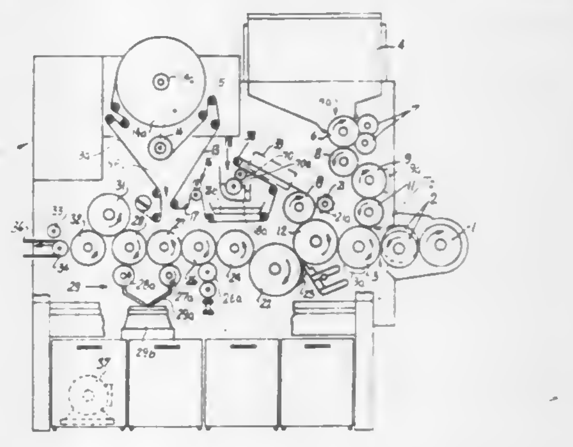
Karl-Heinz Barbe, and Kurt Wamser, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,455

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006510

Int. Cl.^{3} A24C *5/47, 5/56, 5/58*

U.S. Cl. 131—88 **27 Claims**

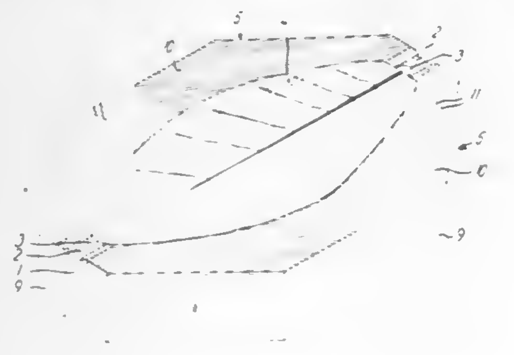


1. A method of connecting rod-shaped smokers' products with rod-shaped filter plugs, especially for connecting cigarettes with filter mouthpieces, comprising the steps of assembling smoker's products and filter plugs into a series of groups of coaxial rod-shaped articles; coating, at a first station, at least a portion of one side of a continuous web of wrapping material with a web adhesive which contains an evaporable liquid; subdividing the coated web into a succession of discrete uniting bands; applying successive uniting bands to successive

groups of said series at a second station; transporting the material of the web at a variable speed between said first and second stations; and effecting evaporation of a predetermined percentage of liquid from the adhesive on the material of the web between said first and second stations, including supplying to the adhesive heat in quantities varying as a function of changes in said speed.

4,368,744
DEVICE FOR SPREADING WHOLE TOBACCO LEAVES

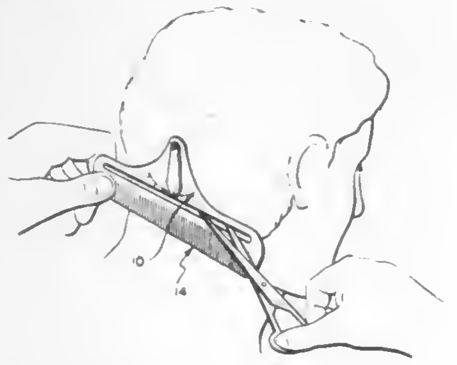
Ian Kjaer, Hadsund; Hans J. Moeller, Harlev J, and Niels E. Mortensen, Gistrup, all of Denmark, assignors to Skandinavisk Tobakskompagnie A/S, Soborg, Denmark
Filed Apr. 28, 1981, Ser. No. 258,445
Claims priority, application Denmark, May 12, 1980, 2071/80
Int. Cl.³ A24C *1/02, 1/04, 1/26*
U.S. Cl. 131—324 **6 Claims**



1. A device for spreading whole tobacco leaves, comprising a table constituted by a perforated wall of a suction box, and an air-permeable shield including at least two sections that are movable between a relatively closed position in which they together cover said perforated wall with the exception of a central elongated area thereof, for receiving the mid rib portion of the tobacco leaf to be spread, and a relatively open position in which the width of said area of the perforated wall is increased to correspond at least to the width of the spread tobacco leaf.

4,368,745
PRECISION COMB

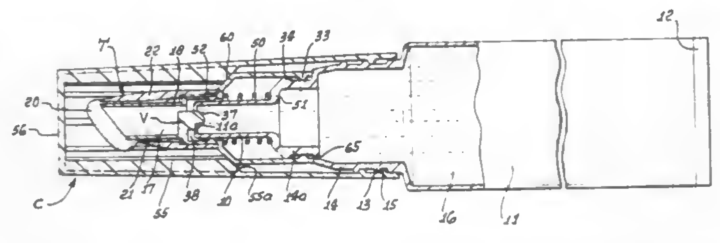
Patrick J. McGuffey, 1 S. 289 Ingersoll La., Villa Park, Ill. 60181
Filed Jul. 6, 1981, Ser. No. 280,446
Int. Cl.³ A45D *24/36*
U.S. Cl. 132—45 A **2 Claims**



1. A precision comb for trimming bangs, necklines and to angle the hair comprising, in combination, a body portion including a plurality of comb teeth, and angle indicating means affixed to said body portion for indicating the angular disposition of said comb, whereby the user of the comb can easily and quickly determine the angle at which the comb is being held, said angle indicating means comprising a pendulum pivotally secured to said body portion so as to normally be vertically disposed when said comb is horizontally disposed, indicia on said body portion in operative relationship with said pendulum for visually indicating the angular disposition of said comb, and a slot in said body portion for receiving therethrough a scissors for cutting the hair, said slot extending horizontally parallel with said plurality of comb teeth.

4,368,746
VALVED COSMETIC APPLICATOR

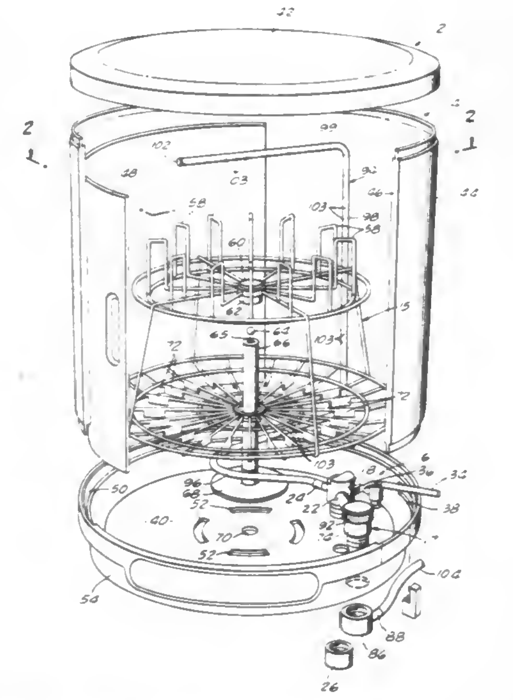
Steven D. Spatz, 201 S. Yale, Apt. 37, Hemet, Calif. 92343
Filed Jun. 1, 1981, Ser. No. 268,391
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 **13 Claims**



1. In an applicator for fluent material: A dispensing container for the fluent material; an applicator tip movable axially on said container and extending forwardly of said container and having a passage for fluent material dispensed from said container, said tip having a forward outlet at the end of said passage; valve means within said passage disposed inwardly of said outlet for preventing and permitting flow of fluent material from said container to said passage; a removable cap disposed over said container and tip to enclose said tip and its passage; and means responsive to application of said cap to said container for moving said tip axially of said container to close said valve means to prevent flow of fluent material from said container into said passage.

4,368,747
DISHWASHER

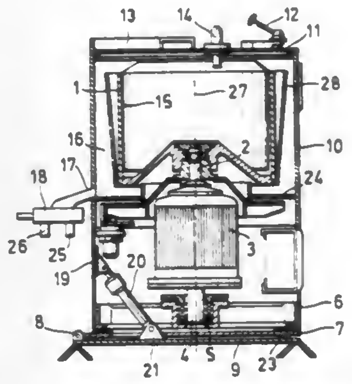
Frank J. P. Taylor, 18662 Mac Arthur Blvd., Irvine, Calif. 92715
Filed Nov. 13, 1980, Ser. No. 205,710
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—93 **12 Claims**



1. A rotatable dishwasher, comprising:
(a) a housing;
(b) a rack rotatably mounted within said housing, said rack being adapted to support articles to be washed;
(c) jet means for directing a jet of water in the direction of said rack to impart rotational movement thereto, said jet means comprising:
  (i) a first collimated jet means for emitting a collimated stream of water in the direction of said rack for initiating rotation of said rack; and
  (ii) a second non-rotatable spray jet means for sustaining rotation of said rack; and
  (iii) control means for controllably and simultaneously regulating the flow of water between said first collimated jet means and said second spray jet means whereby the force of the stream of water directed at said rack can be controllably decreased after rotation of said rack is initiated while the force of the water eminating from said spray jet means is correspondingly increased thereby sustaining uniform rotation of said rack;
(d) dosing means adapted to cooperate with said second spray jet means for dosing with soap water flowing through said second spray jet means.

4,368,748
DEVICE FOR DEGREASING, TUMBLING AND WASHING OF INDUSTRIALLY MANUFACTURED OBJECTS

Richard Steimel, Frankfurt Strasse 134, 5202 Hennef/Sieg, Fed. Rep. of Germany
Division of Ser. No. 114,091, Jun. 29, 1979, Pat. No. 4,314,856. This application Oct. 26, 1981, Ser. No. 315,207
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748615
Int. Cl.³ B08B *3/08*
U.S. Cl. 134—96 **17 Claims**

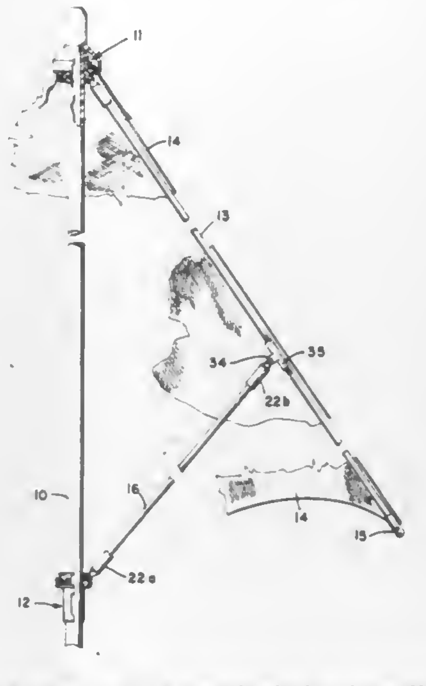


1. A centrifuge for degreasing, tumbling and washing of industrially manufactured objects, comprising a rotary centrifuge drum having a vertical axis of rotation; means for feeding cleaning and rinsing agents into said drum; a catch housing surrounding said drum and having a bottom; means for tilting the centrifuge and returning it to a vertical position; and means for discharging the remaining cleaning and rinsing agents from said drum, said discharging means being located at said bottom of said catch housing in such a manner that the discharge will be at the lowest point when said centrifuge drum is tilted, said discharging means including a two-way valve connectable to a reservoir for a removed liquid an/or with a reservoir for the cleaning and rinsing agent.

4,368,749
WIRELESS UMBRELLA FRAME

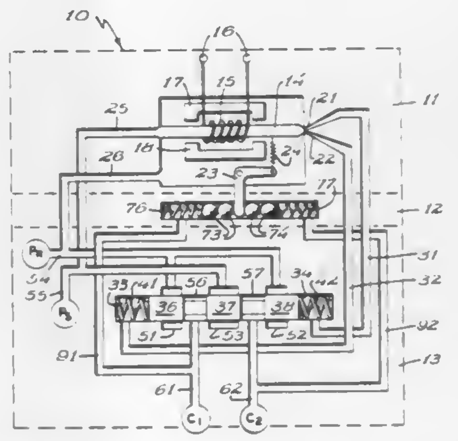
James M. Lindler, and Joe B. Bailey, Jr., both of Lexington, S.C., assignors to The Shakespeare Company, Columbia, S.C.
Filed Dec. 22, 1978, Ser. No. 972,522
Int. Cl.³ A45B *25/02*
U.S. Cl. 135—20 R **3 Claims**

1. In an umbrella having a central shaft and an expansible and foldable membrane, an upper mounting member fixed on the shaft and a lower mounting member slidable on the shaft, a circumferential series of ribs supporting said membrane and having their inner ends pivotally connected to said upper mounting member, a circumferential series of stretcher rods having their inner ends pivotally connected to said lower mounting member and their outer ends pivoted to intermediate portions of said ribs, the improvement comprising retainer plates movable on said shaft and cooperating with said upper and lower mounting members to lock said inner ends of said ribs and said stretcher rods respectively in pivotally connected relation with said mounting members, each mounting member having peripheral cam lugs and each retainer plate having peripheral wings with openings adapted to snap over and lockingly engage said lugs.



4,368,750
BALL-TYPE FEEDBACK MOTOR FOR SERVOVALVES

Robert V. Burton, Minneapolis, Minn., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Apr. 28, 1978, Ser. No. 901,362
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—85 **15 Claims**

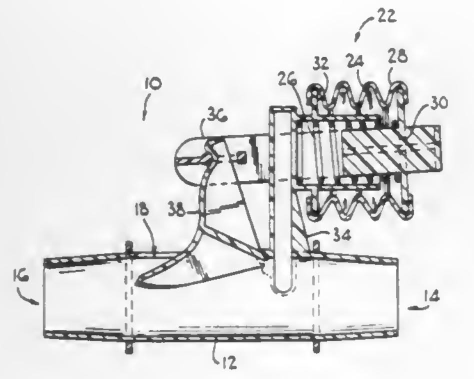


11. A fluidic servovalve comprising:
pilot stage valve means having a movable element and a first output, said first output supplying a control fluid dependent upon said movable element;
boost valve means having a bore and a spool located within said bore, said spool having first and second lands and a middle land between said first and second lands, sad first and second lands defining first and second control chambers connected to said first output, a first output chamber defined by said first and middle lands within said bore, and a second output chamber defined by said second and middle lands within said bore; and,
feedback ball-type motor means connected to said first and second output chambers of said boost valve means, said feedback ball-type motor means having balls responsive to

said output fluid from said boost valve means and acting against said movable element for repositioning said movable element in response to said output fluid.

4,368,751
VALVE

Fernand L. O. J. Chauvier, 7 Caribou Rd., Selcourt, Springs, Transvaal Province, South Africa
Division of Ser. No. 153,447, May 27, 1980, Pat. No. 4,317,243, which is a continuation of Ser. No. 965,862, Dec. 4, 1978, abandoned. This application Jun. 18, 1981, Ser. No. 274,817
Claims priority, application South Africa, Dec. 3, 1977, 77/7426
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—98 13 Claims



1. A valve for controlling the flow of fluid, said valve comprising

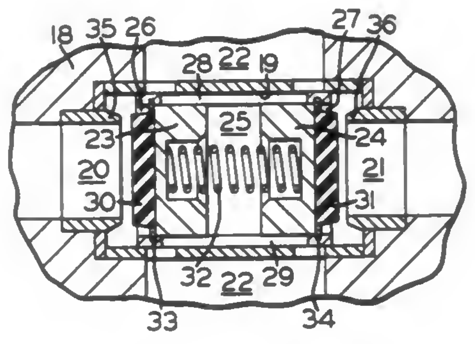
a housing said housing including structure that defines a main inlet opening, an outlet opening connectable to a suction source, and an auxiliary inlet opening,

a closure mounted to said housing for opening and closing said auxiliary opening, said closure being operable to move between a closed position at which said auxiliary opening is closed by said closure, an intermediate open position at which said auxiliary opening is partially opened by said closure, and a full open position at which said auxiliary opening is substantially completely opened by said closure, and

a variable bias device connected with said closure for inducing said closure to move toward its full open position in response to reduced fluid flow through said auxiliary opening which results from exterior blockage of said auxiliary opening, said bias device being operable to bias said closure to its closed position when there is no fluid flow through any of said openings, said bias device being operable to decrease the closing bias force exerted on said closure below that established when there is no fluid flow for the purpose of opening said closure to its intermediate open position when there is fluid flow through all of said openings without substantial exterior blockage of said auxiliary opening, and said bias device being operable to decrease the closing bias force exerted on said closure below that required for opening said closure to its intermediate open position as the fluid flow through said auxiliary opening decreases in response to at least a partial exterior blockage of said auxiliary opening, said closure thereby being moved toward said full open position in response to said exterior blockage for inducing increased fluid flow through said auxiliary opening to clear said exterior blockage from said auxiliary opening.

4,368,752
COMPOUND CHECK VALVE

Hideo Tamamori, and Rikisaburo Nagai, both of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan
Filed Aug. 4, 1980, Ser. No. 174,995
Int. Cl.³ F16K *15/02*
U.S. Cl. 137—112 **3 Claims**



1. A compound check valve comprising,

(a) a housing having a coaxial bore formed therein with a fluid pressure inlet port at each end thereof and a delivery port opening to said bore between the ends thereof,

(b) a valve carrier unit coaxially positioned and reciprocably movable within said bore and of sufficient length to span the opening of said delivery port into said bore,

(c) a pair of piston-like valve mounts, one operably positioned at each end of said valve carrier unit in facing relation to the inlet ports, said valve mounts being axially movable relative to the carier unit and to each other for controlling communication between the inlet ports and the delivery port,

(d) a valve element mounted on each valve mount at the end facing the corresponding inlet port,

(e) biasing means compressibly interposed between said valve mounts in a chamber formed cooperatively by and between said valve mounts within said valve carrier unit for urging said valve mounts in opposite axial directions,

(f) a pair of annular stop rings, one disposed adjacent each end of said valve carrier unit for limiting outward axial movement of said valve mounts with respect to said valve carrier unit,

(g) cooperating passageways comprising longitudinal passageways formed axially in said valve carrier unit and inlet passageways formed by the outer end of each valve mount and element for at times providing communication between one or both inlet ports and said delivery port,

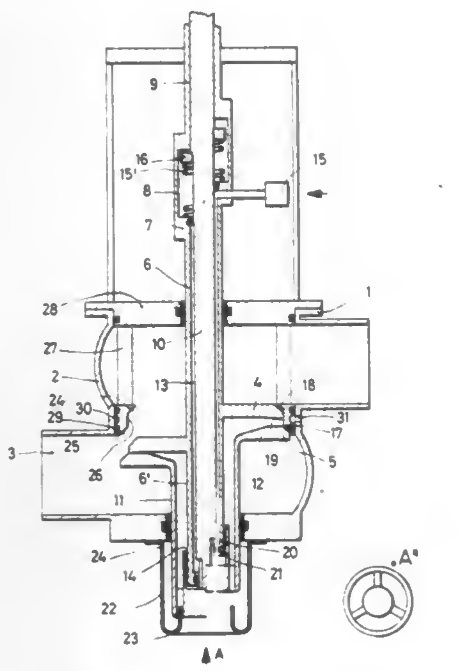
(h) said carrier unit and said valve mounts being positioned by said biasing means, in the absence of fluid pressure at both inlet ports, to a neutral position in which communication between said inlet ports and said delivery port is cut off by said carrier unit,

(i) said valve mounts and said carrier unit being operable, in response to fluid pressure at both inlet ports, to a first or a second fluid pressure delivery position for establishing communication between the inlet port having the higher fluid pressure and said delivery port, and

(j) said valve mounts being also operable to a third delivery position, in response to substantially equal fluid pressures at both said inlet ports, for establishing communication between both inlet ports and said delivery port through said cooperating passageways.

4,368,753
DOUBLE-SEAT VALVE UNIT LEAKAGE CONTROL

Wolfgang Bräkelmann, Unna-Lünern, and Günter Smusch, Werne, both of Fed. Rep. of Germany, assignors to Holstein & Kappert GmbH, Dortmund, Fed. Rep. of Germany
Filed Jun. 2, 1981, Ser. No. 269,831
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1981, 3030989
Int. Cl.³ B08B *9/02;* **F17D** *3/01*
U.S. Cl. 137—240 **10 Claims**



1. A double-seat valve unit with a leakage control comprising a housing having an upright axis and provided with two seats; upper and lower valve plates cooperating with said seats and movable independently of one another from above downwardly to an open position in which said valve plates abut against one another and bound an inner chamber therebetween and also movable upwardly to a closed position in which they abut against said seats, said upper valve plate being smaller and said lower valve plate being greater; means for supplying a cleaning fluid; two adjusting bars each connected with a respective one of said valve plates so as to move the same and arranged so that the adjusting bar of said lower valve plate extends through the interior of the adjusting bar of said upper valve plate and an annular gap is formed therebetween, said means for supplying a cleaning fluid communicating with said gap for passing the cleaning fluid through the latter; a leakage conduit communicating said inner chamber formed between said valve plate with open air and having a portion located in said housing and partially movable outwardly of said housing in said open position, said lower valve plate forming a return valve; and movement securing means arranged to guarantee unobjectionable movement of said valve plates and provided on the adjusting bar of said lower seat, which extends inside the adjusting bar of said upper seat, said movement securing means being located below said seats.

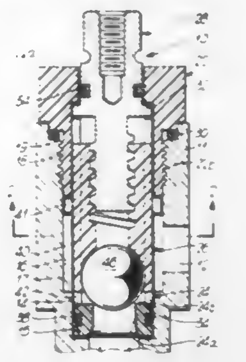
4,368,754
WASHERLESS VALVE STRUCTURE PARTICULARLY FOR FAUCETS

Joseph S. Roberts, Brockville, Canada, assignor to Jamaica Manufacturing (Canada) Co., Ltd., Canada
Filed Sep. 23, 1980, Ser. No. 190,172
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **7 Claims**

1. A valve structure for insertion into a housing having an open outer end, an axial inlet for liquid at an inner end and having a side outlet, the valve structure comprising:

a bonnet with means for retaining said bonnet on the open end of the housing, said bonnet having an internal shoulder and means for providing a seal between said bonnet and the housing,

a sleeve member insertable into the housing through said open end and arranged to be non-rotatably secured within said housing by the bonnet, said sleeve member being formed as an integral molding of plastics material and including an annular inner end portion forming a valve seat and a main, straight-walled cylindrical portion extending from said valve seat and being provided with longitudinal, straight sided slots which extend through the thickness of said cylindrical portion from an outer end of the sleeve member down to said valve seat and which are the sole apertures by which fluid can flow from the inlet to the outlet via the valve seat when the valve structure is in place in the housing,



a plunger slidable within said cylindrical portion and having projections slidable within said slots to prevent rotation of the plunger within the sleeve member, said plunger being formed of plastics material and having at its inner end a valve member arranged to engage said valve seat with axial movement of the plunger to close the valve, said plunger being insertable into the outer end of the sleeve member and having an internal screw thread communicating with the outer end thereof, and

a stem held for rotation without axial movement by the internal shoulder of the bonnet, said stem having a threaded portion engaging the internal screw thread of the plunger for moving said plunger on rotation of the stem to open and close the valve, sealing means being provided between the stem and the bonnet beyond the outer end of the sleeve member.

4,368,755
VALVE ASSEMBLY

Robert W. King, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio
Continuation of Ser. No. 971,309, Dec. 20, 1978, abandoned. This application Dec. 23, 1980, Ser. No. 219,849
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—512.3 **36 Claims**

1. An improved pressure responsive valve assembly comprising:

a valve plate having an inner surface in part defining a compression chamber;

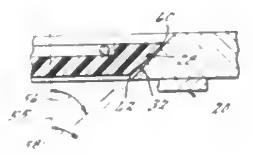
a discharge valve seat opening extending through said valve plate, said valve seat opening being defined by an outwardly diverging conical sidewall;

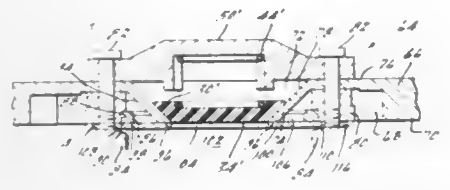
a frusto conical discharge valve member disposed within said opening and having a peripheral edge surface of conical configuration adapted to sealingly engage said sidewall of said valve seat opening,

said conical peripheral edge surface of said discharge valve member having an included angle when unstressed which is greater than the included angle of said conical sidewall of said valve seat opening; and

spring means guiding and biasing said valve member toward said valve seal opening,

said spring means directly engaging said valve member on a portion thereof facing away from said compression chamber and constituting the sole guide for said valve member as it moves toward and away from said valve seat opening.

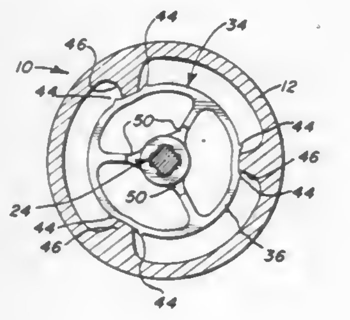




4,368,756
CHECK VALVE

Donald E. Carlson, deceased, late of Highland Park, Ill. (by Myrna N. Carlson, executrix), assignor to Mark Controls Corporation, Lake Zurich, Ill.

Continuation of Ser. No. 969,128, Dec. 13, 1978, abandoned.
This application Jan. 12, 1981, Ser. No. 223,991
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—541 **10 Claims**



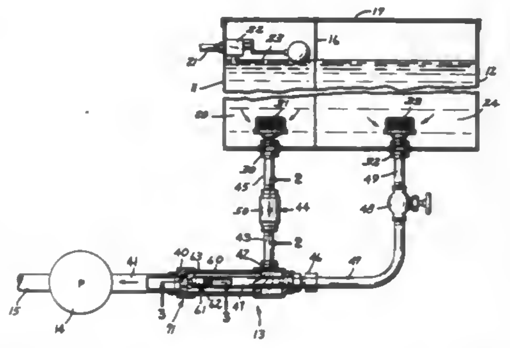
1. A valve for controlling fluid flow in a fluid system comprising:
an elongated body including an internal bore and a fluid inlet and a fluid outlet in fluid communication with said bore;
a valve seat defined by said bore;
a valve element adapted to move longitudinally in said bore and to engage said valve seat in the valve closed condition, said valve element including a valve stem; and
means for guiding the longitudinal movement of said valve stem in said bore, said guiding means including a continuous annular flexible rim adapted to be inserted in said bore and to be frictionally engaged thereby, said rim having axially spaced first and second ends, a guide hub for encircling said stem, and a plurality of circumferentially spaced radial webs extending from said hub to said rim, said webs being disposed between the first and second ends of said rim, said rim having a predetermined effective outer diameter that is larger than the effective inner diameter of said bore prior to insertion of said guiding means into said bore to define an interference fit therebetween, the engagement between said bore and said rim cooperating to deform said rim inwardly in a portion thereof spaced angularly from said radial webs to retain said guiding means against movement relative to said bore, said webs remaining substantially undeformed so as to retain said guide hub in position to receive the stem of said valve element.

4,368,757
CLEANING APPARATUS AND METHOD

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed Sep. 29, 1980, Ser. No. 191,838
Int. Cl.³ B08B *3/00*
U.S. Cl. 137—565 **10 Claims**

1. Pressure cleaning apparatus for use with a nozzle, which comprises:
a first container filled with primary liquid;
a second container filled with secondary liquid;
a relatively greater amount of primary liquid then secondary liquid being required during pressure cleaning;
means for maintaining the primary liquid at a substantially constant predetermined level in said first container, said second container being filled initially to substantially the same liquid level;
a pump located beneath said first and second containers, said pump having an inlet and an outlet connected to the nozzle;

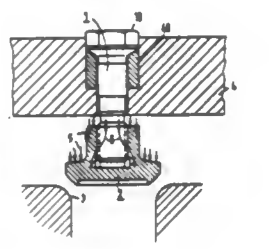


mixer means for mixing said primary and secondary liquids, said mixer means including a first inlet disposed between a second inlet and an outlet connected to the inlet of said pump;
first spring-biased, normally closed check valve means connected between the first inlet of said mixer means and said first container for preventing backflow into said first container; and
second free-floating check valve means disposed within said mixer means and connected between the second inlet of said mixer means and said second container for controlling backflow into said second container such that the level of secondary liquid therein tends to seek the same level as that of the primary liquid in said first container after operation of said pump.

4,368,758
DEVICE FOR CONTROLLING A STEAM OR GAS TURBINE

Rudolf Wickl, Wesel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,464
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938763
Int. Cl.³ F16K *1/00*
U.S. Cl. 137—601 **5 Claims**

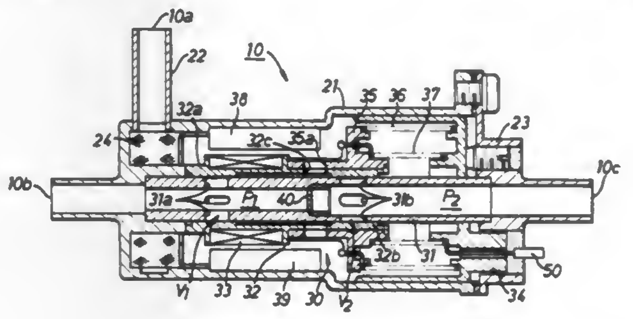


1. In a device for controlling a steam or gas turbine, including a valve beam for actuating at least two control valves, the valve cones of which are hung by lifting heads at the ends of their valve stems resting on seats in the valve beam, the seats in the valve beam having conical shape, the improvement comprising:
(a) each valve stem including an integral lifting head at one end and a male thread at the other;
(b) each valve cone having a blind hole containing female threads, said stems screwed into said female threads of the valve cones; and
(c) each valve cone having, on its side facing the lifting head, an integral nut neck of conical shape, tapered toward the lifting head, which extends over the supporting area of said female screw threads.

4,368,759
ELECTROMAGNETIC FLOW CONTROL VALVE UNIT

Motonobu Akagi, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 3, 1980, Ser. No. 212,619
Claims priority, application Japan, Dec. 11, 1979, 54-160588
Int. Cl.³ F16K *11/07*
U.S. Cl. 137—625.48 **4 Claims**

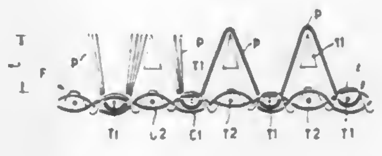


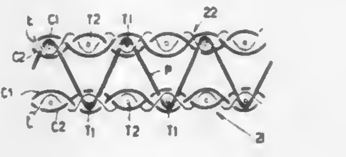
1. An electromagnetic flow control valve unit comprising:
a housing provided with an inlet port and first and second outlet ports;
a longitudinal tubular core arranged within said housing and connected at its opposite ends to said first and second outlet ports, said tubular core being provided therein with a partition member which subdivides the interior of said core into first and second passages respectively opening into said first and second outlet ports and further provided with first and second axial holes permitting each fluid flow between said inlet port and said first outlet port across said first passage and between said inlet port and said second outlet port across said second passage; and
a linear motor of the moving-coil type including a permanent magnet arranged within said housing to provide magnetic flux, a bobbin axially slidable on said tubular core, a moving-coil wound around said bobbin and arranged across the magnetic flux of said magnet to generate a linear force on said bobbin in accordance with an electric current applied thereto from an electric circuit, and resilient means for biasing said bobbin to its original position and connecting said moving-coil to said electric circuit;
said bobbin formed at its inner periphery with axially spaced first and second valve parts and at its peripheral wall with a radial hole between said first and second valve parts, said first valve part cooperating with said first axial hole to provide a first flow control valve for controlling fluid communication between said inlet port and said first outlet port across said first passage, and said second valve part cooperating with said second axial hole to provide a second flow control valve for controlling fluid communication between said inlet port and said second outlet port across said radial hole and said second passage, and said first and second flow control valves arranged to be simultaneously closed and opened in accordance with axial movement of said bobbin.

4,368,760
PILE FABRIC AND METHOD FOR MANUFACTURE THEREOF

Siegwart K. Frommert, Korschenbroich, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed Aug. 4, 1980, Ser. No. 174,897
Claims priority, application France, Aug. 20, 1979, 79 20931
Int. Cl.³ D03D *27/10, 27/06, 19/00*
U.S. Cl. 139—397 **10 Claims**



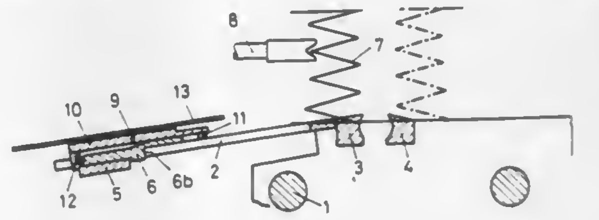


1. Warp pile fabric comprising a ground weave of warp yarns crossed with weft yarns on which are situated, on the reverse side of the fabric, the tops of pile yarn loops secured by warp yarns of gauze-weave type, the branches of said loops passing through the thickness of the ground weave, between the warp and weft yarns and extending, at the front side of the weave, over a certain length to produce the effect of pile, wherein the parts of each pile yarn loop adjacent the tops of said loops are firmly pinched against one side of a warp yarn of the ground weave by one of the said warp yarns of gauze-weave type which is provided by an extra yarn referred to as "leno yarn" forming a first loop, the top of which lies on the same weft yarn of the ground weave as the top of the pile yarn loop and against this pile yarn, but on the front side of the ground weave, and a second loop, the top of which lies on an adjacent weft yarn, on the other side of said warp yarn and also on the front side of the ground weave, the two aforesaid loops of leno yarn being interconnected by an intermediate part of this yarn which passes under said warp yarn, on the reverse side of the ground weave.

4,368,761
CENTERING DEVICE FOR A SPRING CORE MOUNTING MACHINE

Walter Spühl, St. Gallen, Switzerland, assignor to Spühl, AG, St. Gallen, Switzerland

Filed Sep. 23, 1980, Ser. No. 190,042
Int. Cl.³ B21F *21/00, 45/00*
U.S. Cl. 140—92.8 **5 Claims**



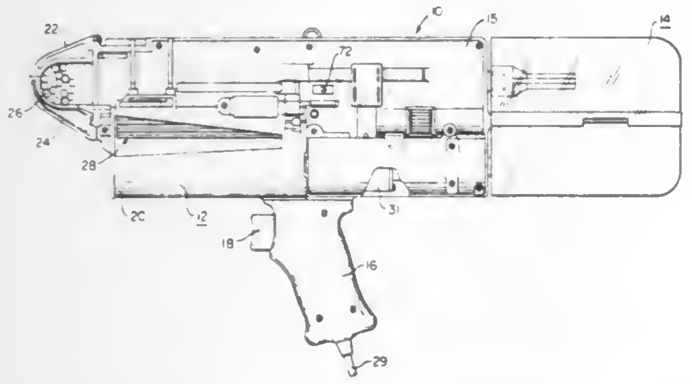
1. A feeding device for springs having opposite offset portions and for use in feeding such springs to a spring core fabricating machine:
said device including a guide immovably positioned relative to a fixed jaw of said machine;

a slide movable longitudinally of said guide;
a gripping device carried by said slide and operative to grip an offset portion of one of said springs; and,
drive means for sequentially moving said slide and the supported gripping device in opposite directions longitudinally of said guides, whereby said springs are selectively movable in forward and reverse directions relatively to said jaws.

4,368,762
TIE SENSING APPARATUS IN A BUNDLING TIE APPLYING TOOL

Joseph Peterpaul, West Orange, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Nov. 3, 1980, Ser. No. 203,691
Int. Cl.^{3} B21F *9/02*
U.S. Cl. 140—93 A **20 Claims**

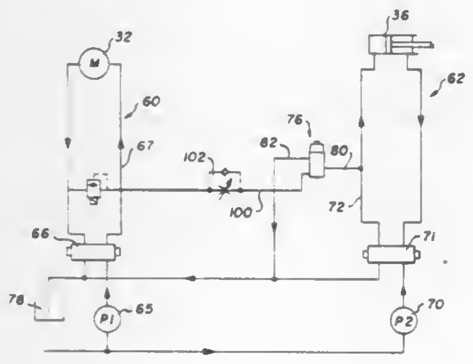


1. In a tool for applying an elongate bundling tie to a plurality of articles to be bundled, said tool being of the type having a housing and supporting means within said housing for supporting a bundling tie thereon, a tie sensing apparatus comprising:
a movable member within said housing for movably supporting a bundling tie therein;
sensor means for sensing presence and absence of a tie on said supporting means and for producing first and second outputs, respectively, in response thereto; and
means responsive to one of said first and second outputs for preventing movement of said movable member.

4,368,763
APPARATUS FOR CONTROLLED CUTTING DOWN OF TREES

George H. Eaton, 1115 Sutton Pl., West Vancouver, British Columbia, Canada (V7S 2L3)

Filed Jan. 12, 1981, Ser. No. 224,708
Int. Cl.^{3} A01G *23/08*
U.S. Cl. 144—34 R **3 Claims**

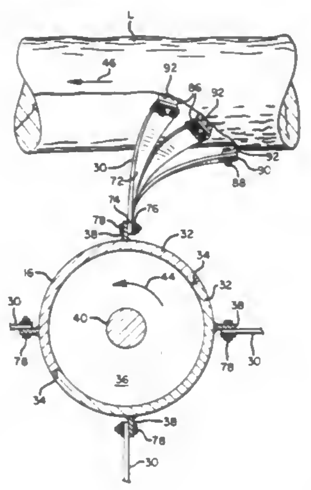


1. Apparatus for cutting down trees in a controlled manner, comprising:
a base having an elongate anvil projecting therefrom,
a cutter bar on the base opposed to the anvil and mounted for movement towards and away from said anvil,
a saw chain operatively mounted on the cutter bar for cutting action thereon,
a hydraulic motor carried by the base and operatively connected to the saw chain to move said chain in the cutting action,
a first hydraulic circuit comprising said motor, a pump and a first pressure line between the pump and the motor,
a hydraulic cylinder connected between the base and the cutter bar for moving said bar forward towards the anvil during the cutting action of the saw chain and away from the anvil,
a second hydraulic circuit comprising said cylinder, a pump and a second pressure line between the cylinder and the pump,
a by-pass valve separate from said second pressure line and connected thereto and operable during movement of the cutter bar and saw chain towards the anvil to selectively direct hydrauic fluid from the second circuit without restricting the flow of fluid through said second circuit,
operating means for the valve to control the flow of fluid from the second pressure line between zero and sufficient to stop the hydraulic cylinder, and
a third line from the first pressure line to said valve operating means to increase and decrease the flow of fluid through the by-pass valve in accordance with increases and decreases respectively in the pressure of fluid in said first line to control the pressure inversely in the feed line of the cylinder, whereby the rate of movement of the cutter bar with the saw chain is controlled by the load on the saw chain during the cutting action thereof.

4,368,764
ROTARY MULTIPLE LOG DEBARKER

Arnold N. Peterson; Dale A. Peterson, both of Pleasant Hill, and Lawrence A. Sprague, Dexter, all of Oreg., assignors to Wilber Peterson & Sons, Inc., Pleasant Hill, Oreg.

Filed Jan. 15, 1982, Ser. No. 339,720
Int. Cl.^{3} B27L *1/00*
U.S. Cl. 144—208 J **15 Claims**

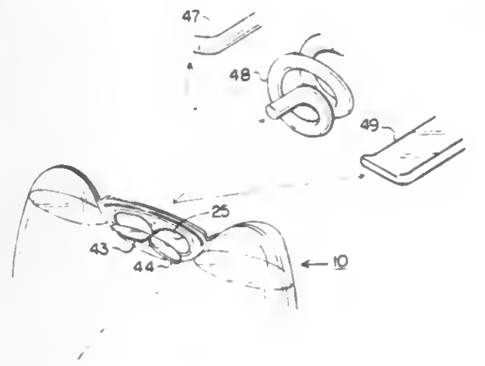


10. In an apparatus for debarking a log
a drum;
means to rotate the drum;
a torsionally resistant elastomer element secured to the drum and positioned to extend radially under centrifugal force;
a cutting element having a broad cutting edge attached adjacent the outer end of the elastomer element so that upon rotation of the drum the cutting edge of the cutting element aligns with and impacts the bark-carrying surface of the log to scrape bark therefrom; and
means to move the elastomer element bearing the cutting element and the bark-carrying surface of the log relative to each other to advance the elastomer element along the bark-carrying surface.

4,368,765
FLEXIBLE BAG WITH RECESSED SCRAPLESS HANGER

Mark E. Larkin, Lindenhurst, and Edward S. Tripp, Grayslake, both of Ill., assignors to Abbott Laboratories, North Chicago, IL 60064

Filed Dec. 12, 1980, Ser. No. 215,969
Int. Cl.^{3} B65D *33/10, 33/14*
U.S. Cl. 150—1 **13 Claims**



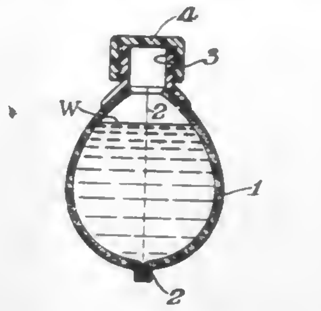
1. A scrapless hanger construction for a flexible collapsible container for medical fluids composed of a flexible, inert, plastic material, said container comprising:
a body section defined by front, back, side and opposing end wall portions;
a hanger section provided at one end and disposed within the confines of one said end wall portion, said hanger section having a planar surface and defined by tear and hinge lines; .
said tear line defined by a curved central tear portion terminating in a tear point, said tear line further including oppositely positioned straight portions and curved portions terminating at points spaced from but facing said tear point and at an upwardly extending angle to provide said hinge line with respect thereto to provide two tab portions which are easily displaced from said planar surface to result in a hanger aperture;
said hinge line further constructed and arranged to provide an outward biasing of said tab portions; and
a tubular passageway extending from the opposing end wall portion and in communication with the inside of said body section;
so that when it is desired to support said container from a support hanger, said tab portions are easily displaced from said planar surface and said hanger section will be accommodated by said hanger aperture without interference from said tab portions.

4,368,766
SELF-COOLING WATER CONTAINER

Haruo Nomi, Okayama, Japan, assignor to Junkosha Company, Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 220,171
Claims priority, application Japan, Dec. 24, 1979, 54-179005[U]
Int. Cl.^{3} B65D *30/02*
U.S. Cl. 150—1 **3 Claims**

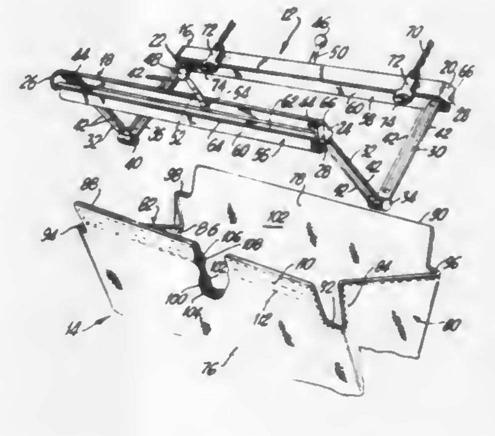
1. An improved self-cooling water container having a mouth and a removable cap attached to a porous bag in which said water is contained, wherein the improvement comprises said bag made of a water repellent, water vapor permeable porous resin material having continuous pores, the maximum pore size being in the range of 0.1 to 50 microns, and ethanol bubble point in the range of about 0.2 to about 3.0 kg/cm^2.



4,368,767
READILY ASSEMBLABLE POCKETBOOK

Leonard Friedman, 190 Kelly Blvd., Staten Island, N.Y. 10314

Filed Jan. 9, 1981, Ser. No. 223,859
Int. Cl.^{3} A45C *13/04*
U.S. Cl. 150—29 **4 Claims**

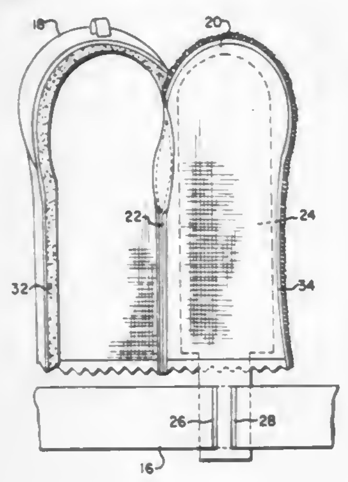


1. A pocketbook comprising a hinged frame construction, a pouch supported therefrom, and clamping means disposed on said frame construction and cooperative with portions of said pouch for supporting and releasably retaining said pouch on said frame construction;
said frame construction including opposing support bars interconnected at their respective ends by folding arms, said clamping means including a clamping bar pivotally coupled with respect to each said support bar, each said support bar being spaced from its respective clamping bar, each clamping bar being rotatable between an open position to provide an entry channel between each said support bar and its respective clamping bar for receiving therein a respective one of said portions of said pouch, and a closed position wherein each respective pouch portion is retained clamped between an associated one of said support bars and its respective clamping bar;
transverse end plates provided at respective ends of each of said support bars, an aperture provided in each end plate, and pivot pins longitudinally extending from respective opposite ends of each clamping bar and being received in a respective one of the apertures in said end plates so that a pivot arrangement is provided between said support bars and said clamping bars;
said pouch including side walls, and said pouch portions including upwardly directed extensions from said side walls; said side walls being wider than said extensions so as to laterally extend beyond said extensions to provide shoulder portions which serve as stops for the entry of said extensions into said channels;
a compressible cord longitudinally disposed across each of said extensions and being capable of entry into said channels in said open position of said clamping bars, and being incapable of exit in said closed position thereof;

each said compressible cord being sandwiched between two layers of pouch material secured together to define said extensions, each said cord being retained in a longitudinal channel provided between said two layers to provide a compressible rib across each of said extensions;
each said clamping bar being substantially L-shaped in transverse cross section, a vertex part of each said clamping bar providing a recess for said compressible rib when each said clamping bar is in said closed position to thereby retain each said compressible rib and extension when in said closed position;
each said entry channel having a space less than thickness of each said compressible rib to require each said rib to be compressed as each said rib passes through said entry channel in order to prevent each said rib from passing back out of said entry channel without exerting a force thereon; and
each said recess having a space less than said thickness of each said compressible rib so that legs of each of said L-shaped clamping bars squeeze and hold each said rib tightly clamped in place between its associated clamping bar and support bar when in said closed position.

4,368,768
GOLF CLUB COVER ASSEMBLY

Edward F. Cunko, Jr., 99 Vernon St., Belle Vernon, Pa. 15012
Filed Jul. 27, 1981, Ser. No. 287,220
Int. Cl.³ A63B *55/00, 57/00*
U.S. Cl. 150—52 G **5 Claims**

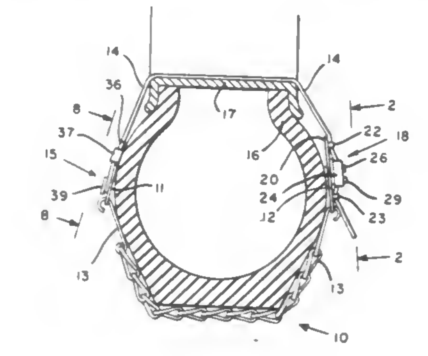


1. A golf club cover comprising an elongated pouch formed from flexible sheet material and having a lower open end through which the shank portion of a golf club extends, a pocket formed in one side of said pouch and extending along the longitudinal length thereof, a substantially rigid stay extending into said pocket and having a lower end projecting from the pocket adjacent the lower open end of the pouch, and means for securing said lower end of the stay to the upper portion of a golf bag whereby the pouch will remain in an upright position when a golf club is removed therefrom.

4,368,769
TIRE CHAIN

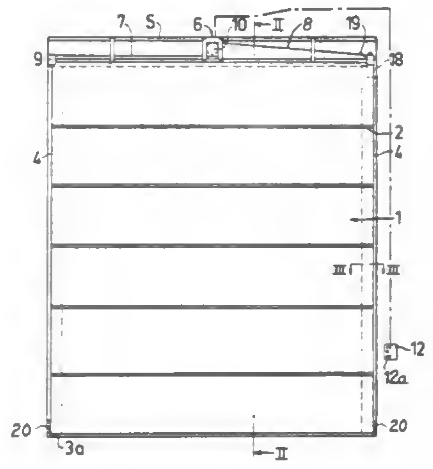
Jerome L. Rookasin, 52 Ryegate Ter., Monroe, Conn. 06468
Filed Dec. 4, 1980, Ser. No. 212,961
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—218 **7 Claims**

1. A strap chain adapted to be fastened through the rim and around the tire of a vehicle to improve the traction thereof, comprising at least one length of chain, opposed retainer plates attached to each end of said length of chain, a length of flexible metallic cable of round cross-section having one end attached to one of said plates and of sufficient length to enable the other free end thereof to pass through the slot in the rim of a vehicle wheel and be engaged by cable-engaging means present on the other of said plates, said cable-engaging means comprising at least one cam element which is pivotally-attached to said other plate and is biased for movement against another element in the direction of withdrawal of said cable to provide a pressure nip into which said cable can be easily inserted and tightened because of reverse rotation of said cam element but from which said cable cannot be withdrawn because of the confinement of said cable in the nip between said cam element and said other element, said cam element having a toothed surface which is adapted to engage and lock said cable in said nip, and being manually reverse-rotatable to unlock said cable from said nip, and retainer means adapted to overlie and hold said cable, adjacent its said other end, down against said other plate within said nip to prevent movement of said cable away from said plate and dislodgement from said nip as a result of vibration during use.



4,368,770
DOOR, PREFERABLY FOR INDUSTRIAL BUILDINGS

Torbjorn Ulfhielm, Skelleftea, Sweden, assignor to UTEC AB of Fack, Sweden
Continuation-in-part of Ser. No. 70,966, Aug. 30, 1979, which is a continuation of Ser. No. 894,158, Apr. 6, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,803
Int. Cl.³ A47H *5/00*
U.S. Cl. 160—84 R **5 Claims**

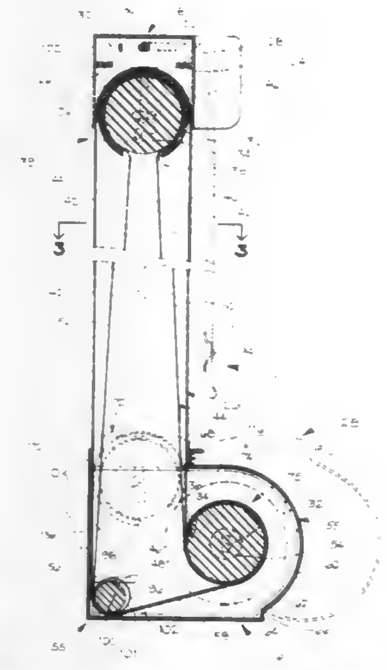


1. A release and lock mechanism for use in a door having a leaf of flexible material and held in suspension for raising and lowering within an opening by at two lines attached one to each end of the lower portion of the door leaf and connected to a hoist means, the ends of the leaf being guided in substantially U-shaped guide bars having lateral flanges, the guide bars being attached to the vertical defining surfaces of the door opening and the two lines extending to the hoist means each within a guide bar, said release and lock mechanism being connected intermediate the end of each line and the respective end of the lower portion of the door leaf and comprising: a vertically movable rod for connection to a respective line, a spring disposed in surrounding relation to said rod, and a locking mechanism in operable connection with said rod and actuated by said spring to a locking position in response to a predetermined decrease in load on the respective line, said

mechanism being released from said locking position when the load on the respective line overcomes the force of the spring, said locking mechanism including at least two dogs pivoted in crosswise arrangement on a common shaft for disposition intermediate the lateral flanges of the associated guide bar and connected by links to the rod in movable relation to said shaft, said locking mechanism upon actuation providing an opposing outward expansion of both ends of each dog for creating two vertically spaced apart points of frictional engagement with each of the lateral flanges of the associated guide bars at any vertical position of the lower portion of the door leaf relative to the guide bars when the door leaf is mounted therein, said outward expansion of both ends of each dog thereby causing a fast condition of the door leaf against movement either up or down relative to the guide bars.

4,368,771
MOVABLE INSULATION APPARATUS

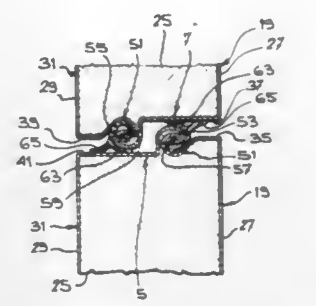
Thomas P. Hopper, R.R. #1, Box 689, Blue Hills Rd., Durham, Conn. 06422
Filed Jun. 4, 1981, Ser. No. 270,627
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—121 R **45 Claims**



1. Movable insulation apparatus for selectably covering and uncovering an opening, such as a window, door or the like, in a wall of a building to control the amounts of heat energy and light transmitted through said opening, said opening having a foot, a head situated above said foot, and height and width; said movable insulation apparatus comprising:
sheet means having a leading end and a trailing end, width at least equal to the width of said opening and length at least equal to twice the height of said opening;
a retracting roller rotatably mounted and spanning the width of said opening at said foot, said trailing end of said sheet means being attached to said roller and said leading end of such sheet being secured in the region of said foot;
motor means for urging said roller in one angular direction to retract said sheet means thereon;
means for supporting said sheet intermediate its ends, spanning the width of said opening and mounted for reciprocal movement between an open position in the region of said foot and a closed position in the region of said head of said opening, said sheet means passing around said support means to define two sheet layers extending between the region of said foot and said support means, said support means further being mounted for pivoted movement about the horizontal axis thereof to prevent abrasion of said sheet means thereon.

4,368,772
SECTIONAL DOOR PANEL

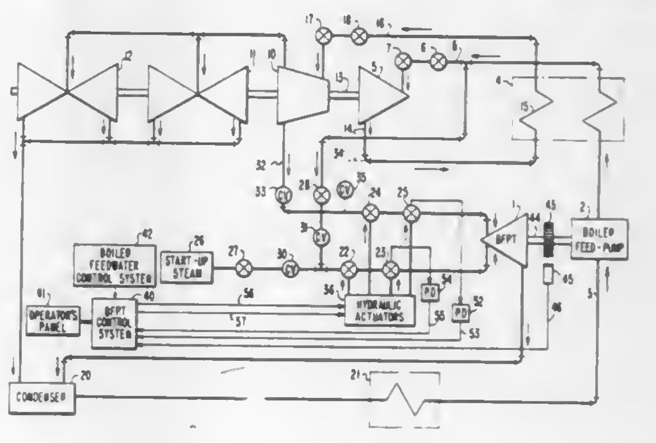
Louis Bouthillier, 2170 Bellerive Blvd., Carignan, Quebec, Canada (J3L 3P9)
Filed Sep. 16, 1980, Ser. No. 187,782
Int. Cl.³ E06B *9/00, 3/12*
U.S. Cl. 160—232 **8 Claims**



1. A panel for use in a sectional door, said panel comprising:
an elongated insulating core having a pair of faces and upper and lower sides;
a first metallic skin on one face of said insulating core, said first skin having upper and lower ends crimped back towards themselves to form a first pair of open loops opening toward said first skin;
a second metallic skin on the other face of said insulating core, said second skin having upper and lower ends crimped to form a second pair of open loops opening toward said second skin; and
an insulating deformable element inserted at said upper and lower sides of said core between said first and second metallic skins to prevent said skins from touching and thus to minimize heat conduction between the same, wherein said first skin is connected to said second skin by hooking said ends of said first pair of open loops into the opening of said second pair of open loops with said insulating element positioned between said ends of said first and second pairs of loops.

4,368,773
BOILER FEED PUMP TURBINE CONTROL SYSTEM

Robert L. Frater, Aston, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 21, 1980, Ser. No. 142,195
Int. Cl.³ F22D *5/32*
U.S. Cl. 60—667 **8 Claims**



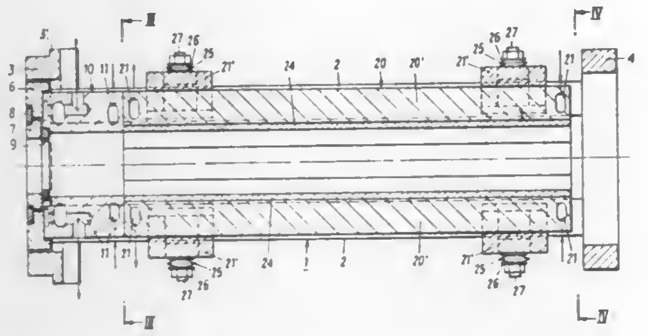
1. In a boiler feed pump turbine control system for controlling flow of feedwater pumped from a source to a boiler by a boiler feed pump driven by a turbine, by controlling the speed of said turbine in accordance with a turbine speed setter signal, for turbine speeds below a certain value, and in accordance with a boiler control turbine speed signal provided by a boiler feedwater control system, for turbine speeds above said value and within a certain speed range, and wherein the lower valued one of said signals is compared with an actual turbine

speed signal to generate a speed correcting error signal, the improvement comprising:

- (A) means for generating said speed setter signal;
- (B) a tracking circuit;
- (C) means for providing said speed setter and boiler control speed signals to said tracking circuit;
- (D) said tracking circuit including means for comparing said speed setter and boiler control speed signals for generating a tracking error signal in accordance with the difference between them;
- (E) tracking correction means responsive to said tracking error signal and operable to vary said speed setter signal to reduce said difference; and
- (F) means for operating said turbine in accordance with said speed setter signal in the event of failure of said boiler control turbine speed signal.

4,368,774
MOULD FOR THE HORIZONTAL CONTINUOUS CASTING OF METALS

Alfred Adamec, Tschudigasse 16, 1220 Vienna, and Roland Leder, Alseggerstrasse 19, 1180 Vienna, both of Austria
Filed Jul. 23, 1980, Ser. No. 171,530
Claims priority, application Austria, Sep. 24, 1979, 6249/79
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—418 **13 Claims**



1. Mould for the horizontal production of a continuous casting of metals comprising a first mould part which is adapted to have an intensive cooling effect on the metal being cast and which has a reduced inflow cross-section for the said metal relative to the casting cavity; a support frame; a second mould part connected downstream of said first mould part and which is formed by several elements carried by the support frame, the elements being movable radially relative to the support frame; moving means cooperative with said support frame and second mould part elements and actuable for moving said second mould part elements apart radially far enough that during the withdrawing movement of the continuous casting that the part of the continuous casting entering and located in the second mould part is freed during its withdrawing movement from the elements of the second mould part; springs which act on the elements of the second mould part, the elements being radially displaceable against the action of the springs and being displaceable towards each other by means of these springs, in which said frame comprises frame rails alternating circumferentially with said elements and the springs act between each element of the second mould part and the circumferentially flanking pair of rails.

4,368,775
HYDRAULIC POWER EQUIPMENT

John D. Ward, 997 East Athens St., Altadena, Calif. 91001
Filed Mar. 3, 1980, Ser. No. 126,608
Int. Cl.³ F28F *9/22*
U.S. Cl. 165—1 **10 Claims**

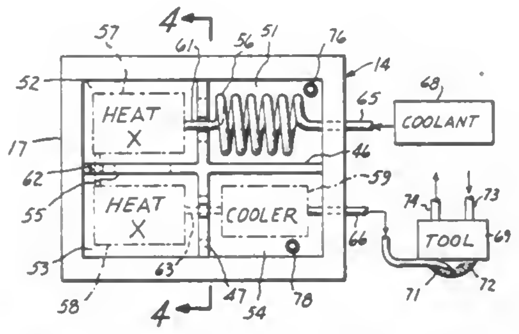
1. In a method of circulating a liquid in a reservoir, the improvement comprising in combination the steps of:

providing a rectangular shell for said reservoir;

providing first and second partition means to form with said shell a first rectangular chamber in a first corner region of the shell, a second rectangular chamber in a second corner region of the shell, a third rectangular chamber in a third corner region of the shell, and a fourth rectangular chamber in a fourth corner region of the shell and adjacent said first chamber, said partition means being made impervious between said first and fourth chambers and being apertured between said first and second, said second and third, and said third and fourth chambers;

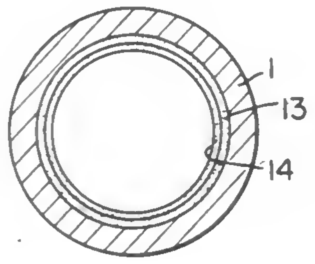
flowing the liquid serially through said first, second, third and fourth chambers via said apertured partition means; and

subjecting said flowing liquid to a heat exchange in said first, second, third and fourth chambers.



4,368,776
ALUMINUM HEAT EXCHANGER

Junichi Negita, Hekinan; Yuichiro Yamada, Kariya; Hideaki Kaneko, Tokyo, and Takao Ogino, Yokohama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nihon Pakerizing Co., Ltd., Tokyo, both of, Japan
Filed Jun. 11, 1981, Ser. No. 272,765
Claims priority, application Japan, Jun. 17, 1980, 55/81882
Int. Cl.³ F28F *19/02*
U.S. Cl. 165—133 **9 Claims**

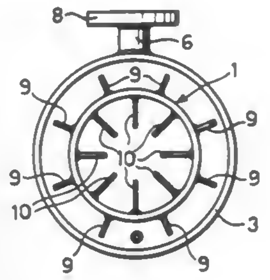


1. An aluminum heat exchanger comprising a plurality of aluminum tubes through which a heat exchange medium containing at least water is circulated, each of said tubes having its inner surface coated with a zinc-diffused layer and a waterproof resin coating of at least 3 μ in thickness formed on said zinc-diffused layer.

5. An aluminum heat exchanger comprising a plurality of aluminum tubes through which a heat exchange medium containing at least water is circulated, each of said tubes having its inner surface coated with a zinc-diffused layer, a phosphoric acid-chromate coating film formed on said zinc-diffused layer and a water-proof resin coating of at least 3 μ in thickness formed on said phosphoric acid-chromate coating film.

4,368,777
GAS-LIQUID HEAT EXCHANGER

Giacomo Grasso, Moncalieri, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy
Filed Feb. 10, 1981, Ser. No. 233,258
Claims priority, application Italy, Feb. 18, 1980, 67242 A/80
Int. Cl.³ F28D *7/10*
U.S. Cl. 165—154 **1 Claim**

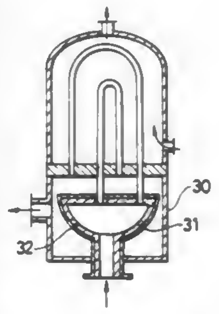


1. Gas-liquid heat exchanger particularly for the production of hot or superheated water by means of exhaust gases emitted by a thermal treatment furnace, comprising an internal tubular element for the passage of the gases and an external tubular element coaxially surrounding the internal tubular element so as to define an annular chamber, characterized by the following combination of characteristics:

- (a) the annular chamber is intended to be traversed by the liquid to be heated in counter-current to the flow of the gases in the internal tubular element,
- (b) the internal tubular element is provided on its external surface and on tis internal surface with a plurality of radial fins, angularly equidistant from each other, each of which extends parallel to the axis of the internal tubular element for a substantial portion of the length of the latter,
- (c) each radial fin has a radial height decreasing linearly in the opposite direction to that of the flow of the fluid intended to come into contact with the fin, and
- (d) each of the radial fins which projects from the external surface of the internal tubular element is arranged in an angular position intermediate the two radial fins adjacent to it which project from the internal surface of the internal tubular element.

4,368,778
HEAT EXCHANGER WITH U-TUBES

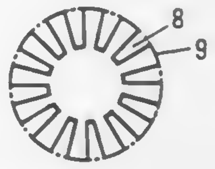
Yoshinori Nishimura; Takayuki Kaneko, both of Chiba; Jun Zamma, Yachiyo, and Youichi Nakajima, Chiba, all of Japan, assignors to Toyo Engineering Corporation, Japan
Filed Oct. 14, 1980, Ser. No. 196,627
Claims priority, application Japan, Jan. 30, 1980, 55-8743
Int. Cl.³ F28D *7/06*
U.S. Cl. 165—158 **4 Claims**



1. A heat exchanger comprising a shell defining a space which is adapted to contain a first fluid, a tube sheet connected to said shell for closing said space, a plurality of tubes provided in said shell each having an inlet end extending through said shell to admit therein a hot second fluid for exchanging heat with the first fluid, means defining a main chamber connected to said sheet and provided with an outlet port for the second fluid, said main chamber being positioned on the side of said tube sheet opposite said shell, each of said tubes having an outlet end extending through said sheet for the second fluid and opening into said main chamber, said main chamber containing a separate chamber section spaced from said tube sheet, said separate section being provided therein with an inlet port for the hot second fluid and connected to said tube inlet ends which pass through said tube sheet, said tube sheet inlet ends and said tube outlet ends being arranged in rows and columns through said tube sheet with inlet ends alternating with outlet ends of said tubes in said rows and columns to minimize thermal stress in said tube sheet.

4,368,779
COMPACT HEAT EXCHANGER

Alexandre Rojey, Garches, and Georges Cohen, Le Pecq, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Filed May 2, 1980, Ser. No. 145,651
Claims priority, application France, May 2, 1979, 79 11529
Int. Cl.³ F28F *7/00*
U.S. Cl. 165—165 **15 Claims**



1. A heat exchanger of high specific surface comprising:

a body made up of a plurality of stacked perforated sheets, each of said stacked perforated sheets having at least a portion thereof comprised of heat-conducting material, and arranged in a manner such that the perforations of each of said sheets are superposed to define continuous channels, whereby first and second fluids trasmitted through the heat exchanger to participate in a heat exchange are circulated respectively through said channels;

ribs extending within the perimeter of at least some of the perforations in the sheets, and said ribs comprising a series of spaced solid sections comprised of the heat-conducting material of said sheets to thereby provide an increased specific contact area with said first and second fluids circulating therethrough; and

respective inlet and outlet distribution systems associated with said continuous channels for circulating said first and second fluids into and out of their respective heat exchanger channels.

4,368,780
KICKOVER TOOL

David T. Merritt, Celina, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Aug. 14, 1981, Ser. No. 292,781
Int. Cl.³ E21B *23/03*
U.S. Cl. 166—117.5 **8 Claims**

1. A kickover tool comprising,

an elongate housing,

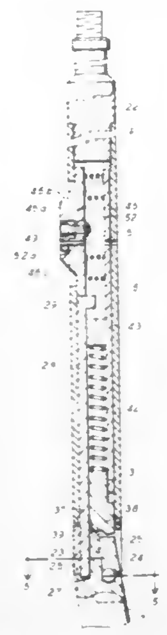
a tool carrier pivoted to said housing,

an actuator reciprocably mounted relative to said housing,

a locator key reciprocably mounted relative to said housing and associated with said actuator,

said key when arrested in movement effecting relative movement between said housing and actuator upon continued movement of said housing and rotation of said tool carrier to kicked-over position, and

a single two-position detent having two cooperative parts, each part containing two detent surfaces each of which alternately abuts the two detent surfaces of the other part



and releasably holds said tool carrier in either aligned or kickover position relative to said housing.

4,368,781

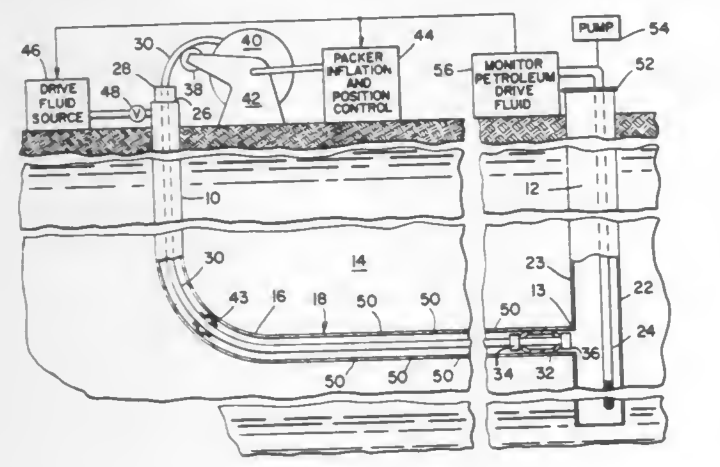
METHOD OF RECOVERING VISCOUS PETROLEUM EMPLOYING HEATED SUBSURFACE PERFORATED CASING CONTAINING A MOVABLE DIVERTER

Donald J. Anderson, Newport Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 20, 1980, Ser. No. 198,514

Int. Cl.³ E21B *36/00, 43/12, 43/24*

U.S. Cl. 166—252 **9 Claims**


DRIVE FLUID SOURCE
PACKER INFLATION AND POSITION CONTROL
MONITOR PETROLEUM DRIVE FLUID
PUMP

1. A method of assisting the recovery of viscous petroleum from a petroleum-containing formation comprising:
(a) forming a generally horizontal hole through a petroleum-containing formation;
(b) inserting a solid-wall, hollow tubular member into said generally horizontal hole to provide a continuous flow path through said formation;
(c) perforating said tubular member;
(d) flowing a hot fluid through the interior of said tubular member to heat viscous petroleum in said formation outside said tubular member to reduce the viscosity of at least a portion of the petroleum adjacent the outside of said tubular member to provide a potential passage for fluid flow through said formation adjacent the outside of said tubular member;
(e) positioning a movable diverter within said tubular member;
(f) injecting a drive fluid into said formation through said perforations and into said passage adjacent the outside of said tubular member to promote movement of the petroleum through said passage adjacent the outside of said tubular member to a recovery position for recovery from said formation;
(g) monitoring the production of petroleum and drive fluid at said recovery position;
(h) and positioning said diverter within said tubular member to selectively control the injection of drive fluid through said perforations to maintain said passage adjacent the outside of said tubular member and promote movement of said petroleum.

4,368,782

ON/OFF SPRINKLER HEAD WITH TEMPERATURE RESPONSIVE EXHAUST PORT VALVE

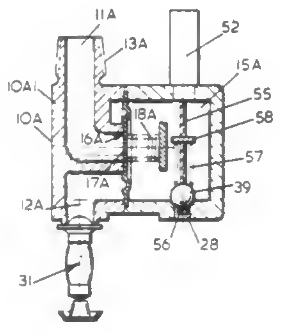
Geddes A. Bray, Moston, England, assignor to Mather & Platt Limited, Manchester, England

Filed Feb. 26, 1980, Ser. No. 124,670

Claims priority, application United Kingdom, Feb. 28, 1979, 7906982

Int. Cl.³ A62C *37/20*

U.S. Cl. 169—90 **1 Claim**



1. An on/off sprinkler comprising:
a two-part body with one body part defining an L-shaped fire extinguishant inlet passage and an inverted L-shaped fire extinguishant outlet passage, the passages being axially spaced with the outlet opening of the inlet passage and the inlet opening of the outlet passage lying in a common vertical plane, and with the other body part defining with said one body part a communicating chamber between the inlet and outlet passages disposed laterally of said common vertical plane and having upper and lower walls with an exhaust port in the latter;
a flexible diaphragm clamped between the two body parts and lying in said common vertical plane normally to isolate the inlet and outlet passages from the chamber save for a leakage path between the inlet passage and the chamber, whereby an extinguishant pressure balance is attained at both sides of the diaphragm and from one another;
a wall within the chamber parallel with the flexible diaphragm;
a compression spring arranged between the wall and the flexible diaphragm serving to urge the flexible diaphragm into its isolating position;
a wax motor mounted externally of the other body part on the upper wall in vertical alignment with the exhaust port;
a piston rod extending into the chamber from the wax motor and being operable thereby;
a valve member freely mounted on the piston rod and normally serving to close the exhaust port, which valve member is movable by the wax motor and piston rod—
(A) away from the exhaust port to open the exhaust port upon attainment of a first predetermined temperature value to cause extinguishant pressure imbalance with consequent movement of the diaphragm to connect the inlet and outlet passages, and
(B) back towards the exhaust port to close same upon attainment of a predetermined second temperature value;

a flange on the piston rod spaced from the valve member; and
a spring surrounding the piston rod and arranged between the flange and the valve member and serving to urge the latter in the direction of the exhaust port.

4,368,783

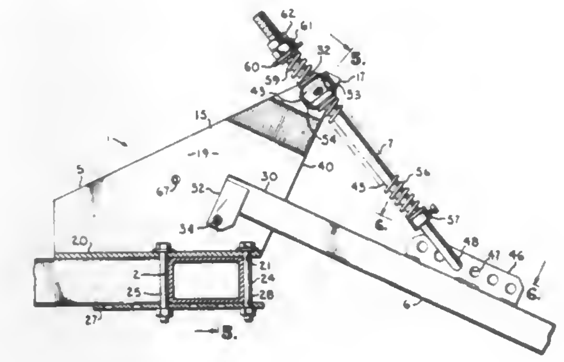
UNIVERSAL AUXILIARY IMPLEMENT MOUNT

Kenneth A. Hake, and Nelson J. Palen, both of Tipton, Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed Aug. 26, 1980, Ser. No. 181,637

Int. Cl.³ A01B *19/02*

U.S. Cl. 172—705 **9 Claims**



1. An auxiliary implement mount adapted for selective positioning on an implement tool bar; said mount comprising:
(a) a plate member having spaced first and second portions; a connecting means for mounting said plate member generally transversely to the longitudinal axis of said tool bar;
(b) a longitudinal draw tongue having first and second ends; said draw tongue for connecting an auxiliary tool to said tool bar; said draw tongue including a plurality of longitudinal spaced receiving apertures generally transversely positioned relative to the longitudinal axis of said draw tongue between said first and second ends;
(c) pivot means for mounting said draw tongue near said first end thereof to said plate member first portion;
(d) a bearing member pivotally mounted on said plate member second portion; and
(e) a biasing rod having a first end reciprocally mounted in said bearing member and a second end; said second end including a generally right angle portion for selectively and detachably inserting into one of said receiving apertures and for pivotally connecting to said draw tongue;
(f) said bearing member being self aligning and having an inner bearing portion swivelably captured within an outer bearing race and permitting reciprocation of said biasing rod through said inner bearing portion and pivoting of said inner bearing member relative to said outer bearing race such that detachment and reattachment of said biasing rod relative to said draw tongue is facilitated.

4,368,784

POWER SCREWDRIVER

Steffen Wünsch, Dettenhausen, and Heinz Walz, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

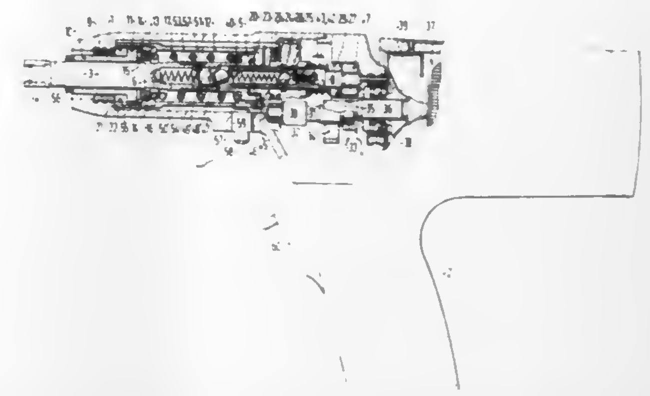
Filed Apr. 15, 1981, Ser. No. 254,386

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015423

Int. Cl.³ B25B *21/02*

U.S. Cl. 173—12 **22 Claims**

1. A power screwdriver, comprising a housing; a drive motor; a tool holder arranged in said housing to support a tool and having an axis; a driving coupling arranged in said housing between said drive motor and said tool holder and including a driving coupling part driven by said motor, and a driven coupling part arranged to be connected with and disconnected from said driving part; and a locking coupling arranged in said housing between said driving coupling and said tool holder, said couplings being arranged so that when said tool holder is pressed against a screw to be driven and displaces inwardly of said housing, said coupling parts of said driving coupling are connected with one another and torque from said motor is transmitted to said tool holder, when thereafter a limit torque is attained, said locking coupling is overrun and because of this said driving coupling part of said driving coupling is arrested



in a position in which it is disconnected from said driven coupling part and the transmission of torque from said motor to said tool holder is interrupted, and when said tool holder is pressed stronger against the screw and further displaces inwardly of said housing, said driven coupling part of said driving coupling displaces and follows said driving coupling part so as to be connected with the latter and to again provide for transmission of the torque from said motor to said tool holder.

4,368,785

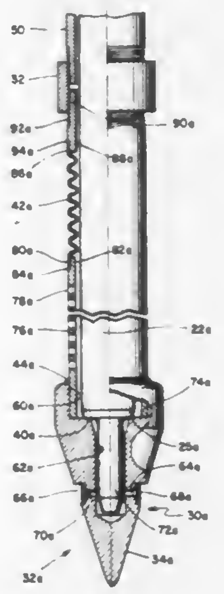
WELL POINT AND METHOD OF DRIVING SAME

John T. Gondek, P.O. Box 21013, Minneapolis, Minn. 55421

Filed Jul. 31, 1980, Ser. No. 174,038

Int. Cl.³ E21B *7/20*

U.S. Cl. 175—21 **8 Claims**



1. In combination, a well point comprising a head having a downwardly extending or conical tip thereon, an upwardly facing anvil portion and a vertical passage extending partially therethrough in a downward direction into said tip, said vertical passage extending partially therethrough in a downward direction into said tip, said vertical passage beginning at the elevation of said anvil portion, and at least one passage extending generally laterally from a location adjacent the lower end of said vertical passage to form an outlet port in said tapered or conical tip for liquid introduced into said vertical passage via its upper end, said tapered or conical tip being formed with a circumferential groove containing said outlet port therein, a drive rod having a lower end for forcefully striking said anvil portion to drive said well point downwardly into the ground

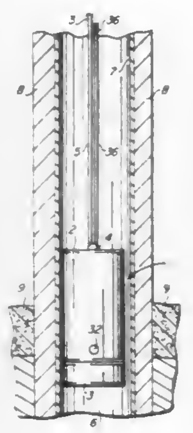
or soil, said drive rod having a piston extending integrally downwardly from the lower end thereof into said vertical passage for forcing liquid from said vertical passage, and an elastic band in said groove for normally closing said outlet port, said band expanding sufficiently to allow liquid to be discharged through said outlet port when sufficient pressure is developed by said piston when said drive rod is lowered.

8. The method of sinking a well casing comprising the steps of providing a well point head having a tapered or conical tip thereon, said head having an anvil portion near said tip, resilient means secured to said head and extending upwardly to the lower end of a pipe section, the upper end of said resilient means being secured to the lower end of said pipe section, and repeatedly raising and lowering a drive rod to repeatedly strike said anvil portion to cause repeated elongations of said resilient means and incremental downward advancement of said head and said pipe section by reason of the impact forces delivered to said anvil portion by said drive rod, coupling an additional pipe section to the upper end of said first pipe section, and further repeatedly striking said anvil portion to cause further repeated elongations of said resilient means, the repeated elongations of said resilient means incrementally pulling said pipe sections downwardly under tension.

4,368,786

DOWNHOLE DRILLING APPARATUS

James E. Cousins, 1821 Bayou Dr., Shreveport, La. 71105
Filed Apr. 2, 1981, Ser. No. 250,160
Int. Cl.^{3} E21B *4/04, 4/18, 17/046*
U.S. Cl. 175—78 **19 Claims**



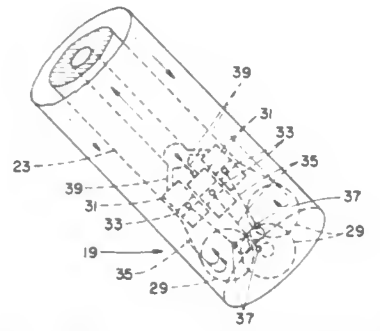
1. A downhole drilling apparatus for boring holes in a production interval of an oil or gas well comprising:

(a) a tubular housing having a diameter of sufficient size to fit in said well;
(b) at least one guide tube having one end attached to the wall of said housing and the opposite end curving upward to define a 90 degree arc, and terminating at a point opposite and above said one end;
(c) a plurality of drilling segments positioned in said at least one guide tube, each of said segments having a round head and multiple, exterior splines and exterior spline slots tapering in spaced relationship from said head to a tip, and further comprising multiple interior splines and interior spline slots for registering with said exterior splines and said exterior spline slots, respectively, of adjacent ones of said drilling segments, and interlocking said drilling segments in stacked relationship to form a drill string in said at least one guide tube;
(d) drill bit means cooperating with the bottom one of said drilling segments in said drill string; and
(e) drive means slidably mounted in said tubular housing and cooperating with the top one of said drilling segments and resting on said drill string to effect rotation of said drill string and boring of said drill bit means and said drill string into said production interval of said well responsive to slidable descent of said drive means in said tubular housing.

4,368,787

ARRANGEMENT FOR REMOVING BOREHOLE CUTTINGS BY REVERSE CIRCULATION WITH A DOWNHOLE BIT-POWERED PUMP

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 1, 1980, Ser. No. 211,871
Int. Cl.^{3} E21B *7/04, 7/16, 7/18, 10/08*
U.S. Cl. 175—319 **4 Claims**

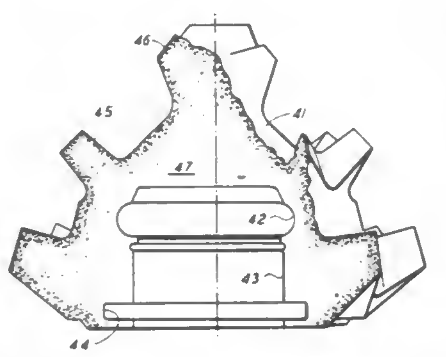


1. Apparatus for rotary drilling a wellbore into the earth designed to mitigate differential sticking of the drill string, comprising, a drill string having sections of drill pipe connected together and a drill bit with rotating roller cones at the lower end thereof, and means for mitigating differential sticking of the drill string in the wellbore including means for removing cuttings generated during the drilling operation by reverse circulating drilling fluid down the annulus surrounding the drill string and up the center of the string by at least one piston operated pump which is driven by a rod linkage to a rotating portion of one of said roller cones.

4,368,788

METAL CUTTING TOOLS UTILIZING GRADIENT COMPOSITES

Eric F. Drake, Pearland, Tex., assignor to Reed Rock Bit Company, Houston, Tex.
Filed Sep. 10, 1980, Ser. No. 185,694
Int. Cl.^{3} E21B *10/08*
U.S. Cl. 175—374 **21 Claims**



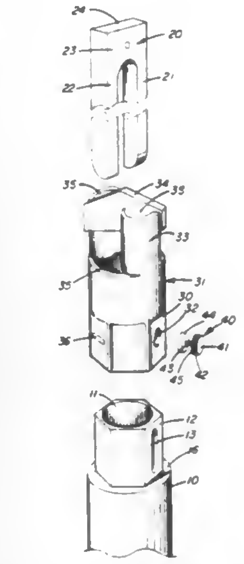
1. A cutter for rock cutting tools including a cutter body comprising:

an exterior cutter surface region having cutting means thereon; and,
an interior cavity having bearing surface means therein;
said cutter body having a portion of substantial thickness comprising a densified powder metallurgical composite of at least two varying phases, said composite having a substantially continuous mechanical property gradient through said body portion.

4,368,789

DRILLING APPARATUS

Thomas M. Orr, Greensburg, and Paul V. Baker, Indiana, both of Pa., assignors to Orr . . . Screw Machine Products, Inc., Greensburg, Pa.
Filed Nov. 3, 1980, Ser. No. 203,494
Int. Cl.^{3} E21B *10/38, 12/00*
U.S. Cl. 175—418 **10 Claims**

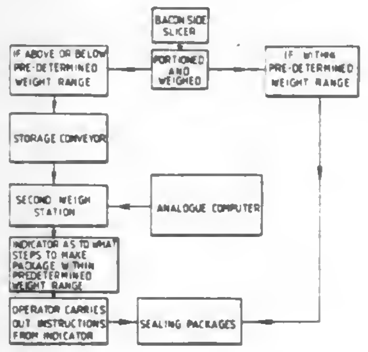


1. A drill bit having a tip and a shank attached thereto, a cutting element carried by said tip, said shank being hollow and open at an end to form a socket adapted to fit on the end of a drill steel, an elongated slot formed in said shank and at least one hole formed in said shank, said elongated slot and said hole being located in the same transverse plane through said shank, whereby said slot is adapted to receive a protrusion on a drill steel and said hole is adapted to receive a retainer which extends into said hollow shank.

4,368,790

STATISTICAL WEIGHING

Donald C. A. Ives, Hemingford Grey, England, assignor to Danepak Limited, Norfolk, England
Filed Jan. 28, 1981, Ser. No. 229,089
Claims priority, application European Pat. Off., Dec. 29, 1980, 80304730.7
Int. Cl.^{3} G01G *19/52, 15/02*
U.S. Cl. 177—50 **10 Claims**


BACON SIDE SLICER
IF ABOVE OR BELOW PRE-DETERMINED WEIGHT RANGE
PORTIONED AND WEIGHED
IF WITHIN PRE-DETERMINED WEIGHT RANGE
STORAGE CONVEYOR
SECOND WEIGH STATION
ANALOGUE COMPUTER
INDICATOR AS TO WHAT STEPS TO MAKE PACKAGE WITHIN PREDETERMINED WEIGHT RANGE
OPERATOR CARRIES OUT INSTRUCTIONS FROM INDICATOR
SEALING PACKAGES

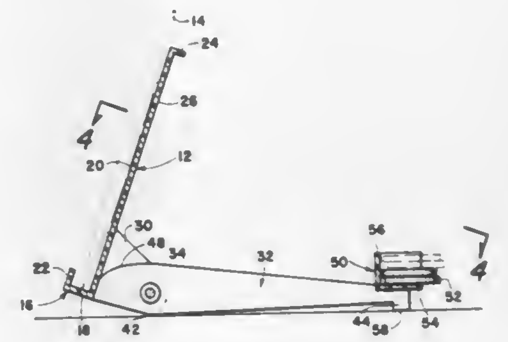
1. An apparatus for packaging articles to provide a package of a predetermined weight range which comprises a first weigh station, means for feeding packages to said station to determine whether said packages are within the said predetermined range or whether within predetermined limits above or below the said predetermined range, a second weigh station, means for feeding the packages which are not within said predetermined weight range to the second weigh station and means operable at said second weigh station to indicate to an operator the steps to be taken to ensure that the packages fall within said predetermined weight range, said means operable at said second weigh station being controlled by a computer which is supplied with:

(a) a stated pack weight,
(b) the average slice count per pack,
(c) predetermined make weight (plus or minus) ranges and
(d) a (k) factor as herein defined.

4,368,791

POSTAGE ESTIMATOR DEVICE

James M. Jackson, 4167 S. Wheeling, Tulsa, Okla. 74104
Filed Oct. 14, 1980, Ser. No. 196,624
Int. Cl.^{3} G01G *1/18*
U.S. Cl. 177—126 **2 Claims**



1. A device for estimating postage requirements for envelopes and comprising holder plate means adapted for disposition on a horizontal surface for receiving the envelope thereagainst and supporting the envelope by gravity during the estimating operation, lever means having one end pivotally secured to the holder plate means and movable between collapsed and extended positions with respect to the holder plate means, recess means provided on the outer end of the lever means for receiving selected weighted elements therein, fulcrum means provided on said lever means between the recess means and the holder means whereby the weighted elements counterbalance a known weight carried by the holder plate means, said counterbalancing providing a determination of approximate postage requirements for the envelope disposed in the holder means, the lever means being provided with means limiting the pivotal movement thereof in one direction for controlling the extended position of the lever means whereby said fulcrum means is properly positioned with respect to the holder means for said counterbalance operation, said recess means comprising open housing means for receiving said weighted elements therein, the open housing means comprising substantially flat plate means for receiving the weighted means thereon, and arcuate wall means extending outwardly from said plate means for receiving the weighted means thereagainst, and wherein the holder means comprises a substantially flat plate for receiving the planar configuration of the envelope thereagainst, said flat plate being disposed at an angle with respect to the vertical in the extended position of the lever means whereby gravity acts on the envelope for facilitating retaining of the envelope in a substantially upright position against said flat plate during a postage estimating operation, and wherein said holder means includes trough means extending longitudinally along the lower edge thereof in the extended position of the lever means for receiving the lower edge of the envelope therein during a postage estimation operation.

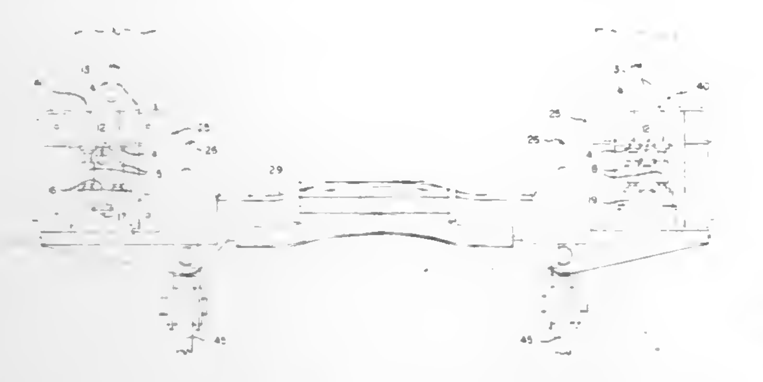
4,368,792

WEIGHING SYSTEM

John C. Ottle, Alliance, Ohio, assignor to The Alliance Machine Company, Alliance, Ohio
Filed Jul. 10, 1981, Ser. No. 282,034
Int. Cl.^{3} G01G *19/18*
U.S. Cl. 177—147 **7 Claims**

1. A weighing system for a ladle handling apparatus comprising an elongate ladle hanger, a sheave basket in each end of

said ladle hanger, a plurality of fixed load cells and a plurality of movable load cells, said fixed cells and said movable cells being operably connected to form a 3-point system, each of said fixed cells being one of two legs of the system and one or more of the movable cells being said third leg, said cells being mounted on said sheave baskets at opposite ends of said ladle hanger, vertical guide pads on said sheave baskets and guide means on said ends of said ladle hanger engaging the guide pads on the basket to permit limited relative vertical movement but substantially prevent non-vertical movement, said cells being in operable contact with loadbearing surfaces on said ladle hanger, means connecting said cells to an averaging device, and means for recording said average.



4,368,793
COMBINATION CAR SYSTEM

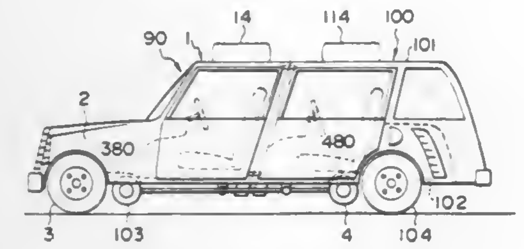
Isao Igarashi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1980, Ser. No. 207,451

Claims priority, application Japan, Nov. 16, 1979, 54-148470

Int. Cl.³ B60D *7/00;* **B60K** *26/04;* **B62D** *63/00*

U.S. Cl. 180—14 R **18 Claims**



1. A combination car system, comprising

a first car, capable of running independently, comprising a first pair of front wheels by which said first car is driven, a first pair of rear wheels, a first engine, a first braking system, and a first transmission; said first engine, said first braking system, and said first transmission, when said first car is running independently, being controlled from said first car; and

a second car, capable of running independently, comprising a second pair of front wheels, a second pair of rear wheels by which said second car is driven, a second engine, a second braking system, and a second transmission; ssaid second engine, said second braking system, and said second transmission, when said second car is running independently, being controlled from said second car;

said first car and said second car being couplable together into a coupled car which runs on said first pair of front wheels of said first car and said second pair of rear wheels of said second car, with said first pair of rear wheels of said first car and said second pair of front wheels of said second car being removed from road contact and with said second pair of front wheels of said second car positioned below said first car; at that time:

the operation of said first engine of said first car being coupled to the operation of said second engine of said second car, so that the combined operation of both said first engine and said second engine is controlled from said first car;

the operation of said first braking system of said first car being coupled to the operation of said braking system of said second car, so that the combined operation of said first braking system and said second braking system is controlled from said first car;

and said second transmission of said second car being controlled from said first car;

whereby said combination car system as a whole may be operated by a person sitting in said first car.

4,368,794
AUXILIARY POWER STEERING FOR MOTOR VEHICLES

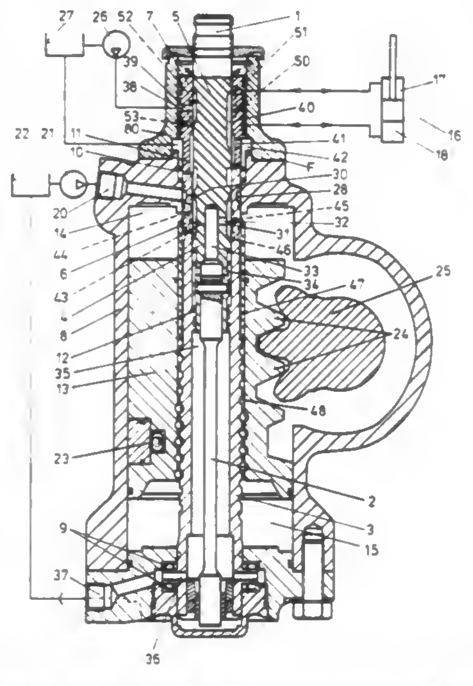
Dieter Elser, Essingen-Lauterburg, and Heinrich Holub, Schwabisch Gmund, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 148,046

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918975

Int. Cl.³ B62D *5/08, 5/10*

U.S. Cl. 180—133 **6 Claims**



3. For use in a dual power steering system having two separate servomotors (**13** and **16**) respectively supplied with pressurized fluid from separate pumps (**21** and **26**) through separate control circuits to jointly perform vehicle steering operations in response to rotation of a common steering spindle (**1**) rotatably mounted within and axially projecting from a steering gear housing (**8**) associated with one of the servomotors (**13**), a steering control valve assembly comprising, first rotatable valve means (**4–6**) mounted within the housing on said common steering spindle for controlling said supply of fluid from one of the pumps (**21**), second rotatable valve means (**5–7**) mounted on said common steering spindle externally of the housing in axially spaced relation to said first valve means and operatively coupled thereto for controlling said supply of fluid from the other of the pumps (**26**), and auxiliary housing means (**80**) for enclosing the second valve means in coaxial relation to the common steering spindle, said one of the servomotors including a piston (**13**) reciprocably mounted within the steering gear housing, a tubular shaft (**3**) torsionally coupled to the steering spindle within the housing and means (**23**) drivingly connecting the tubular shaft to the piston for rotation thereof in response to reciprocation of the piston, said first valve means including a control valve sleeve (**6**) formed in one piece with said tubular shaft, said first and second valve means further including axial passage grooves (**31,40**) formed in the common steering spindle.

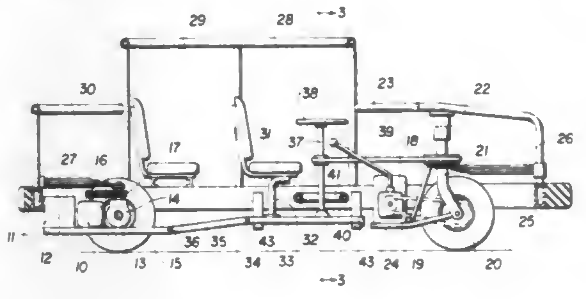
4,368,795
ECONOMY SAFETY PASSENGER VEHICLE

Hubert Tidwell, Edgewood Villa, Apt. 112, 530 W. 200 South, Price, Utah 84501

Continuation-in-part of Ser. No. 87,731, Oct. 24, 1979, Pat. No. 4,283,074. This application May 5, 1981, Ser. No. 260,848

Int. Cl.³ B62D *9/02, 61/08*

U.S. Cl. 180—212 **7 Claims**



1. A vehicle comprising a rear wheel drive means and a separate and independent front wheel drive means, a frame and body unit including a passenger compartment, front and rear spring means suspending the frame and body unit yieldingly from the rear wheel and front wheel drive means, a driver's seat and a steering column on a level frame portion of the rear wheel drive means, steering gear means interconnecting the steering column with a steering fork of the front wheel drive means, means rockably mounting the steering column on said level frame portion, and rigid reaction means connected with said frame and body unit and straddling said steering column near and above said means rockably mounting the steering column, whereby lateral tilting of the steering column will rock said frame and body unit relative to said rear wheel drive means when the vehicle is rounding a curve.

4,368,796
APPARATUS FOR THE OPERATION AND CONTROL OF THE TILT OF THE BODY OF A VEHICLE

Pierre Patin, 16 boulevard de l'Hopital, 75005 Paris, France

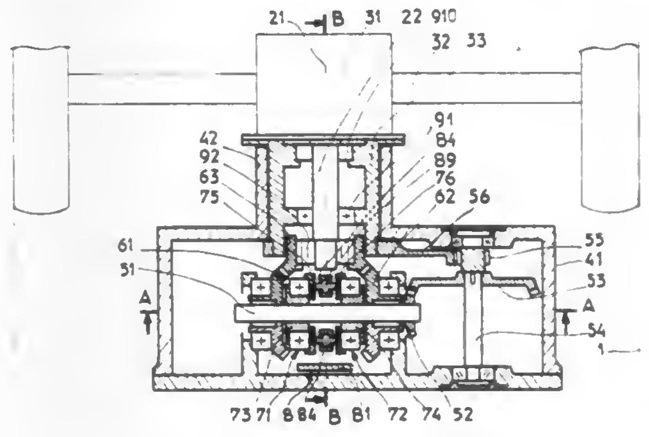
PCT No. PCT/FR79/00019, § 371 Date Oct. 24, 1979, § 102(e) Date Oct. 24, 1979, PCT Pub. No. WO79/00686, PCT Pub. Date Sep. 20, 1979

PCT Filed Mar. 1, 1979, Ser. No. 174,522

Claims priority, application France, Mar. 2, 1978, 78 05978

Int. Cl.³ B62D *61/08*

U.S. Cl. 180—215 **13 Claims**



1. A device for operation and control of the tilt of an articulated vehicle driven by a motor and comprising a body, a front guide wheel and a set of running wheels carried by an articulated chassis on the body around a substantially horizontal articulation axis and located in the median plane passing through the center of gravity of said body, by means of a support piece integral with said chassis and on which is provided an exterior cylindrical support cooperating with an interior cylindrical support provided on a housing integral with said body, said device for controlling tilt comprising a drive shaft rotating in a bearing carried by said support piece integral with said chassis and rotated at high speed in a uniform direction, a gear fixed to said chassis, a pendular mass mounted to oscillate on said body around an axis when subjected to centrifugal force, a rocking mechanism supported on said fixed gear and driven by said drive shaft, said rocking mechanism being mounted on said housing integral with said body and comprising: a driving pinion rotatably connected to said drive shaft through the intermediary of a free wheel permitting said driving pinion to turn faster than said drive shaft; a secondary shaft adapted to be rotatably driven in two directions by said driving pinion responsive to two disengageable coupling means, each comprising a gear loosely mounted on said housing and means for progressive engagement of said gear with said secondary shaft, said gears being driven in rotation in opposite directions by said driving pinion; a gearing down system of an assembly of gears interposed between a pinion supported on said secondary drive shaft and a pinion in mesh with said gear fixed to said chassis; and a force-multiplier system actuated by said pendular mass to control the progressive engagement with said secondary drive shaft of one of two gears capable of operating the rotation of said rocking mechanism in the direction enabling a median plane of the latter to be brought back parallel to the direction passing through the axis of oscillation and the center of gravity of said pendular mass.

4,368,797
ROW-CROP FRONT AND REAR WHEEL DRIVE ARTICULATED TRACTOR FOR HEAVY-DUTY OPERATIONS

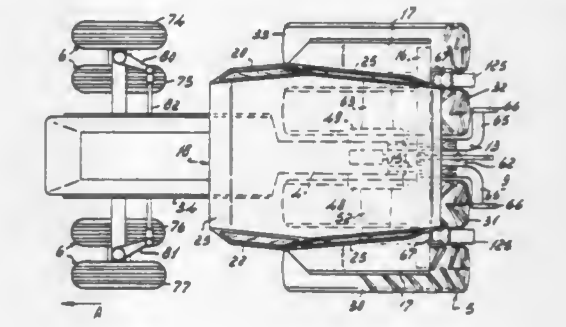
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Division of Ser. No. 894,153, Apr. 6, 1978, Pat. No. 4,206,825, which is a continuation of Ser. No. 653,514, Jan. 29, 1976, abandoned. This application Mar. 10, 1980, Ser. No. 128,933

Claims priority, application Netherlands, Jan. 30, 1975, 7801075

Int. Cl.³ B60K *17/30*

U.S. Cl. 180—235 **15 Claims**



1. A row-crop front and rear wheel drive articulated agricultural tractor which comprises:

a power plant of not less than substantially one hundred horsepower;

a body which has a front body portion and a rear body portion, a horizontal axle on each said body portion and a plurality of supporting wheels mounted on each said axle, each said rear wheel being aligned behind a corresponding one of said front wheels, all of said wheels being driven by said power plant;

an articulation joint connecting said front and rear body portions whereby said portions are pivotable relative to each other about a substantially vertical axis;

a housing for said power plant mounted on said front body portion directly forward of at least some of said front wheels;

fuel tanks mounted on each side of said housing whereby they are disposed directly forward of at least some of said front wheels;

a cab containing a seat and controls for an operator mounted on said rear body portion;

a ladder to enable the operator to climb in and out of said cab which is located on said rear body portion between said wheels and at the front aspect of said cab and immediately behind said vertical axis of said articulation joint as seen in side elevation, said vertical axis of said articulation joint being located substantially between the rearmost aspects of said front wheels as seen in side elevation.

4,368,798

AUTOMATIC CONTROL DEVICE OF AN INFINITELY VARIABLE TRANSMISSION GEAR DRIVEN BY AN INTERNAL COMBUSTION ENGINE, ESPECIALLY FOR MOTORIZED VEHICLES

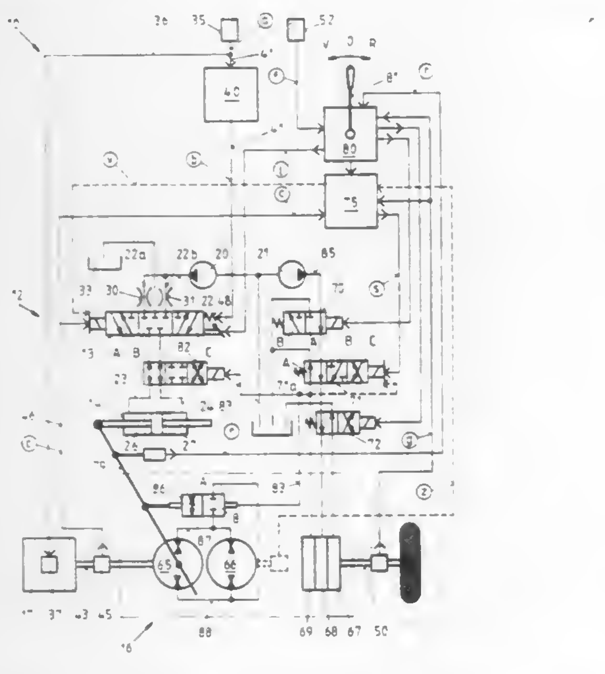
Michael Meyerle, Meckenbeuren, and Friedrich Ehrlinger, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,082

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934269

Int. Cl.³ B60K *41/12*

U.S. Cl. 180—307 **9 Claims**



1. In a motor vehicle transmission system for a vehicle having driven wheels, said system comprising:

an internal combustion engine having a throttle valve;

a steplessly variable hydrostatic transmission provided with a first unit connected to said engine and adapted to be driven thereby, and a second unit connected to said first unit by a pair of pressure lines;

a speed selection gear transmission connected to said second unit and having a plurality of clutches selectively operable to set output speed ranges, said gear transmission having an output shaft connectible to the wheels of the vehicle;

an accelerator pedal adapted to generate an accelerator travel signal and connected to said throttle valve for adjusting the opening thereof; and

a servomechanism including a servovalve responsive to said signal, and a servomotor connected to said servovalve and operatively linked with said hydrostatic transmission for controlling the ratio thereof,

the improvement wherein:

said signal is applied to said throttle valve by a first control line and to said servovalve by a second control line;

an engine characteristic storage means interposed in one of said control lines and storing an optimum fuel consumption curve characteristic of said engine for modifying said accelerator travel signal in accordance with said optimum consumption curve;

a standstill cutoff valve provided with a selector device for inactivating all of said clutches in a standstill position of said vehicle;

means for deriving a driving engine speed signal (c) from said engine and an output speed signal (g/z) from a location between said second unit and said wheel; and

a speed comparator for comparing said signals (c) and (g/z) to operate a changeover valve and switch-over actuation from one of said clutches to another of said clutches.

4,368,799

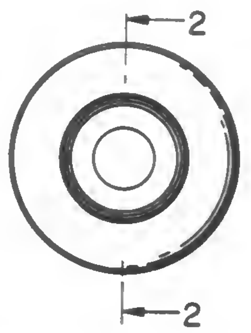
STRAIGHT-THROUGH FLOW MUFFLER

Wayne M. Wagner, Apple Valley, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Oct. 16, 1980, Ser. No. 197,506

Int. Cl.³ F01N *1/02, 1/08*

U.S. Cl. 181—255 **10 Claims**



1. A muffler, comprising:

(a) a housing defining a longitudinal chamber having an inlet and an outlet;

(b) means including tubular conduit means between said inlet and outlet providing an exhaust flow path through said muffler;

(c) a pair of nozzle members, each having a mouth, a portion converging to a throat, and a portion diverging from the throat to an outlet;

(d) means mounting said pair of nozzle members in series in said tubular conduit means;

(e) means including a pair of spaced, imperforate baffles positioned adjacent said pair of nozzle members to define a plurality of attenuation chambers along said conduit means; and

(f) resonator means including a pattern of perforations in said tubular conduit means providing communication between said conduit means and each attenuation chamber.

4,368,800

SCAFFOLDING APPARATUS

Robert L. Campbell, P.O. Box 691, Big Bar, Calif. 96010

Filed Mar. 16, 1978, Ser. No. 887,027

Int. Cl.³ E04G *3/10, 5/08*

U.S. Cl. 182—82 **17 Claims**

1. A support bracket usable in pairs for supporting a working plank or scaffolding adapted for attachment to a vertical structural scaffold member that comprises a conventional timber member with side faces and fore and aft edges comprising:

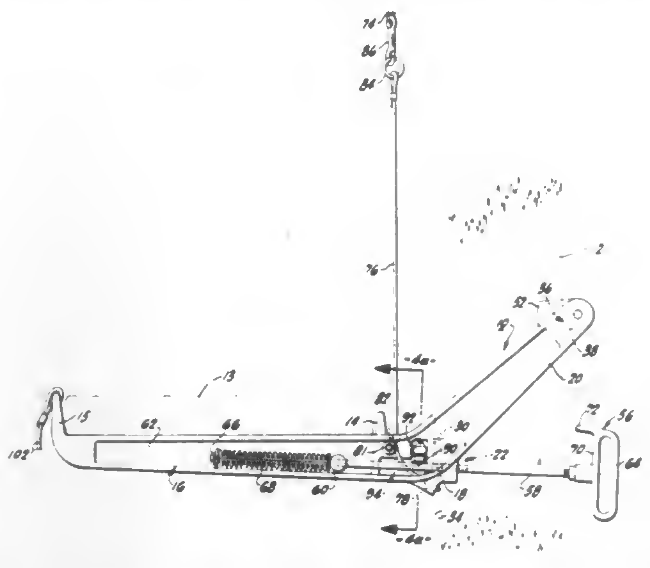
a bracket member attachable to a vertical timber member having:

a. a base portion with a bearing means for contacting the fore edge of the timber member;

b. a leg member extending substantially horizontally from said base portion away from the fore edge of the timber member adapted to support one end of a working plank;

c. a foot member extending at an upward angle from horizontal in a generally opposite direction from said leg member and adjacent the side face of the timber member, said foot member having a bearing means for contacting the aft edge of the timber member;

d. clamping means for exerting a clamping force against the aft edge of the timber member directed substantially at said bearing means of said base portion, wherein said clamping means is spring loaded and selectively releasable and includes a handle for manual release of the clamping force against the aft edge of the timber member.



4,368,801

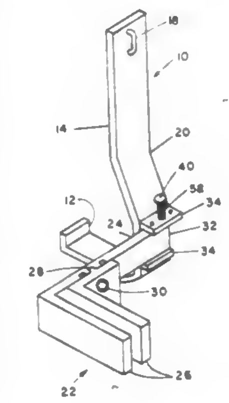
COLUMN CLIMBING DEVICE

Delmar D. Lewis, Rte #2, Letts, Iowa 52754

Filed Mar. 9, 1981, Ser. No. 241,797

Int. Cl.³ A63B *27/04*

U.S. Cl. 182—134 **6 Claims**



1. A climbing device of the class described, including a base member having means for the attachment to a climber's foot, a gripper member carried by the base member and having a pair of jaws spaced apart fore-and-aft as respects the length of the climber's foot for gripping the flange of a column, characterized in that the gripping member is L-shaped as seen from above, having a first part adapted to lie alongside the inner side of the climber's foot and a second part fixed to the first part and constituting the jaws, the first part has a free end opposite to the jaws and is mounted thereat on the base member by an upright pivot member for selective swinging between a climbing position in which the jaws extend laterally inwardly of the climber's foot for gripping a column flange and a retracted position in which the jaws extend laterally outwardly and behind the heel of the climber's foot, and means is provided for selectively securing the gripping member to the base member in either of said positions.

4,368,802

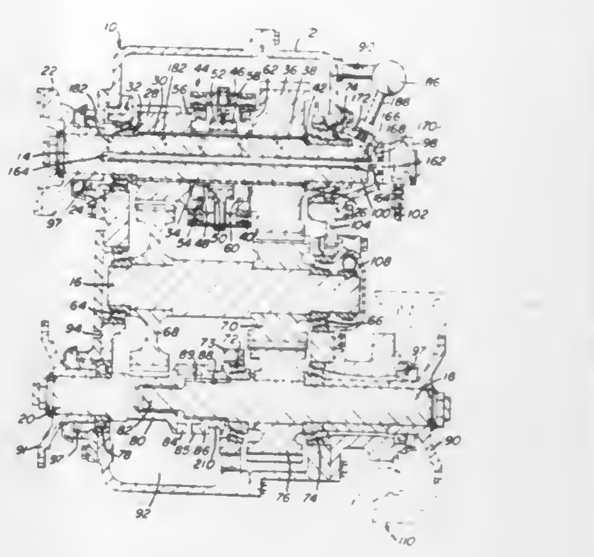
PRESSURIZED LUBRICATION SYSTEM

Louis C. Grabill, Madison Heights; Joseph L. Malkowski, Troy, and Calvin G. Wells, Warren, all of Mich., assignors to Rockwell International Corporation

Filed Jul. 3, 1980, Ser. No. 165,800

Int. Cl.³ F16H *1/44*

U.S. Cl. 184—6.12 **6 Claims**



1. A pressurized lubrication system for a rotatable power shaft having a plurality of elements mounted thereon for independent rotation relative to said power shaft comprising:

said power shaft having a free end and being mounted for rotation within a housing;

said power shaft having a central bore with an open end thereof at said free end and including radial passages extending from said bore to be capable of providing lubricating oil to said plurality of elements;

a pump mounted on said housing and having a drive shaft coaxially aligned with said power shaft;

said drive shaft extending into said housing and being coupled to said free end of said power shaft to cause said pump to be operated by rotation of said power shaft;

said pump being capable of taking a suction from an oil reservoir and discharging lubricating oil under pressure to the interior of said housing in a region thereof at said free end of said power shaft; and

means for sealing between said housing and said free end of said power shaft to define said region of said interior of said housing,

whereby said pump is capable of providing said lubricating oil under pressure to said region, said central bore and said radial passages throughout rotation of said power shaft.

4,368,803

APPARATUS FOR DISPENSING FLUID ONTO A MOVING MECHANICAL SYSTEM

Robert M. Dombroski, McFarland, and Jerry C. Sitzman, Madison, both of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.

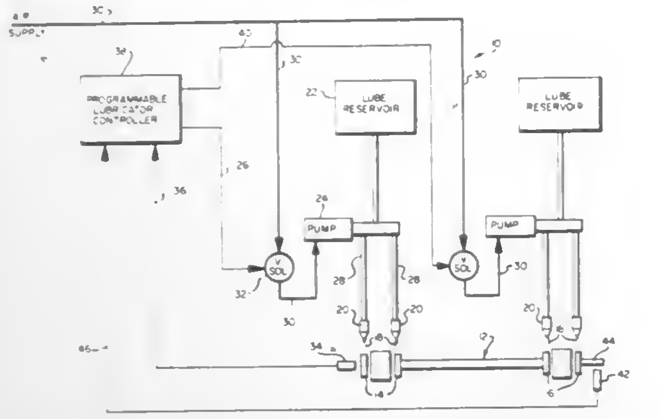
Filed Aug. 7, 1980, Ser. No. 176,110

Int. Cl.³ F16N *29/00*

U.S. Cl. 184—15 B **22 Claims**

15. A method of dispensing fluid onto selected points of a movable mechanical system independent of the speed of movement of said mechanical system past a detector positioned to sense the movement of a designated portion of said system and to provide actuating signals to actuate a fluid dispenser, said method comprising the steps of:

measuring the respective time interval between movement of two successive designated portions of said mechanical system past said detector; and

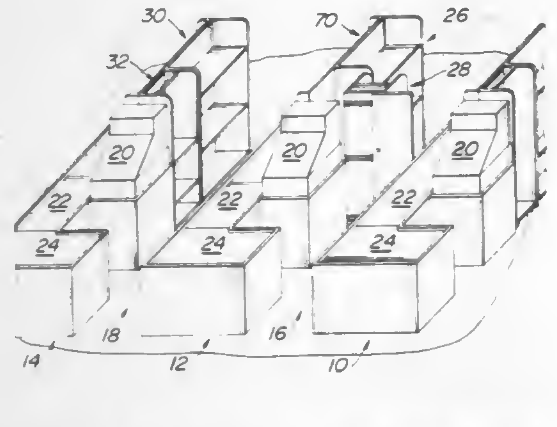


proportionally delaying application of said actuating signals in response to said measured respective time interval.

4,368,804
CHECK OUT LANE DISPLAY BARRIER

William A. Cole, Wyncote, Pa., assignor to Diane Mfg. Co., Philadelphia, Pa.

Filed Nov. 21, 1980, Ser. No. 209,245
Int. Cl.³ A47D *5/00*
U.S. Cl. 186—57 10 Claims



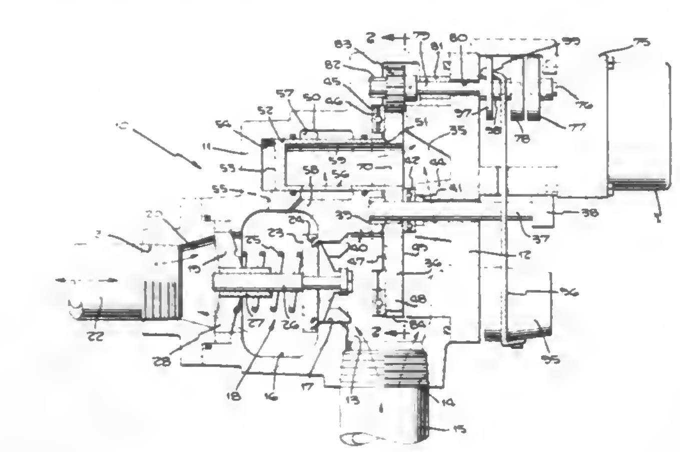
8. A check out lane barrier for use along a check out lane comprising a stationary shelf display and a movable shelf display disposed alongside one another, each display facing a first direction so that goods thereon are accessible by a person in the lane, means supporting the movable display for movement to a position so as to be generally perpendicular to the stationary display and for facilitating movement of the movable display in a second direction which is generally perpendicular to said first direction so that the movable display does not conceal any portion of the shelves on the stationary display.

4,368,805
HYDRAULIC CONTROL UNIT FOR ELEVATORS

Glen A. Rued, Montrose, Calif., assignor to Elevator Equipment Company, Los Angeles, Calif.

Filed Dec. 15, 1980, Ser. No. 216,130
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—17 22 Claims

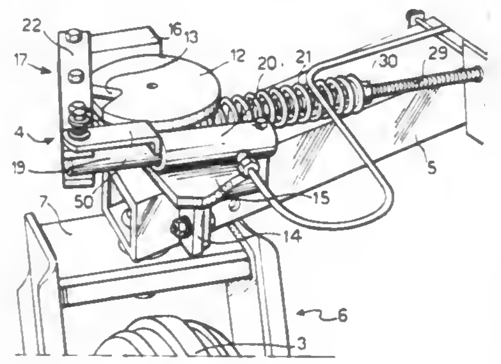
1. A hydraulic elevator control unit for operation with an electric cab demand circuit, a reservoir, a pump, a jack consisting of a cylinder and piston, and a cab for movement by said piston, said unit comprising housing means providing an inflow passage and pump connection thereto, an outflow passage and a jack connection thereto, a bypass passage in operating communication with said first two passages, and a return flow passage, cover means for said housing means adapted to enclose said passages, a first valve seat element for said bypass passage and a second valve seat element for said return passage, an elevator cab direction controller comprising a valve closure member having a transversely slidable movement relative to said valve seat elements, said valve closure member having an orifice therein and having a plurality of transversely slidable operative positions, a first of said positions being one wherein said closure member is operative to close both of said valve seat elements wherein said cab is in upward motion, a second of said positions being one wherein said closure member is operative to open said second valve seat element to said return passage wherein said cab is stationary and a third of said positions being one wherein said closure member is operative to open both said first and second valve seat elements for communication with each other wherein said cab is in downward motion.



4,368,806
CASTOR WHEEL SUPPORT ASSEMBLY FOR AN AGRICULTURAL MACHINE

Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy

Filed Oct. 28, 1980, Ser. No. 201,114
Claims priority, application Italy, Nov. 9, 1979, 53725/79[U]
Int. Cl.³ F16D *65/14*
U.S. Cl. 188—2 R 5 Claims



1. In an agricultural machine having a chassis and at least one castor wheel supporting said chassis, an assembly for the support of said castor wheel comprising:

an arm fixed to the chassis of the agricultural machine,

a wheel support member rotatably mounting said castor wheel for rotation about its axis, said support member being, in turn, supported said arm for rotation about a vertical axis, and

remotely controllable locking means for preventing rotation of said wheel support member about the said vertical axis, said locking means comprising:

a disk element fast for rotation with the wheel support member and formed to define at least one notch in its periphery,

a restraint element carried by the said arm and displaceable between a rest position and a working position in which the said restraint element is engaged in the said notch so as to prevent rotation of the disk element, and thus also of the wheel support member, about the said vertical axis,

resilient means urging said restraint element into its working position,

means for controlling the displacement of the restraint element between its working position and its rest position,

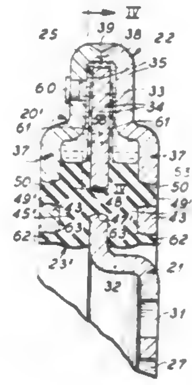
a support element fixed to the said arm, and

a support lever articulated at one end on the said support element about a vertical axis, the said restraint element comprising a vertical-axis roller carried by the support lever, and the said control means being arranged to control rotation of the support lever about its point of articulation, so as to cause displacement of the said roller between its rest position and its working position.

4,368,807
RUBBER/VISCOUS TORSIONAL VIBRATION DAMPERS

Ronald L. McLean, Tonawanda, and Gordon W. Kamman, Elma, both of N.Y., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Feb. 7, 1980, Ser. No. 119,218
Int. Cl.³ F16F *7/10*
U.S. Cl. 188—379 10 Claims



3. A tuned rubber/viscous torsional vibration damper assembly having supporting rotor disk means with a radially outwardly extending circular body and a radially inner hub portion adapted to be secured to a rotary member such as a crankshaft subject to vibrations to be damped by the damper, said body being located concentrically within a radially inwardly opening annular working chamber of an annular inertia mass, said body dividing said working chamber into axially opposite sides, a viscous damping medium in each opposite side of said chamber between shear film spaced cooperatively confronting working surfaces of said body and said inertia mass, and said inertia mass having concentric annular grooves at opposite sides and facing axially toward said body radially inwardly adjacent to the opening from said chamber, there being elastic tuning spring, spacing and sealing rubber rings coupling surface areas on said inertia mass in said grooves with opposing surface areas on said body, comprising:

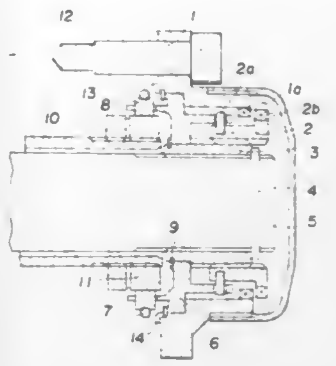
a circumferentially spaced plurality of rubber fingers extending radially from said rubber rings and secured fixedly to certain of said working surfaces in each axial side of said working chamber;

said fingers being of a thickness less than the shear film space between said working surfaces in each side of said working chamber, and functioning as spacers or bumpers to prevent direct contact between said working surfaces in the event of axial load or displacement forces tending to move said rotor disk and said inertia mass axially relative to one another.

4,368,808
HUB CLUTCH

Masao Teraoka, Sano, Japan, assignor to Tochigi-Fuji Sangyo Kabushiki Kaisha, Tochi, Japan

Filed Jul. 28, 1980, Ser. No. 172,852
Int. Cl.³ F16D *11/10*
U.S. Cl. 192—36 5 Claims



1. A hub clutch for use in a wheel drive assembly of a four-wheel drive vehicle, the assembly being of the type including a drive shaft selectively operable in a driving mode and rotating to transmit a rotational driving force and in a non-driving mode to interrupt such rotational driving force, and a hub positively driven when the drive shaft is in the driving mode thereof and freely rotatable when the drive shaft is in the non-driving mode thereof, said hub clutch comprising:

a sleeve drive clutch member adapted to be fixed to a drive shaft to rotate therewith during the driving mode thereof;

a driven clutch member positioned radially outwardly of said drive clutch member and adapted to be fixed to a hub;

a slide clutch member positioned radially between said drive clutch member and said driven clutch member, said slide clutch member being mounted on said drive clutch member for rotation therewith and for axial movement relative thereto between an engaged first position in engagement with said driven clutch member, thereby to transmit rotation of said drive clutch member to said driven clutch member, and a disengaged second position out of engagement with said driven clutch member;

a retainer mounted for rotation with said slide clutch member and adapted to be mounted on a nonrotatable portion of the assembly;

brake means for applying a predetermined braking pressure to said retainer, thereby for retarding rotation of said retainer and creating a limited relative rotation between said slide clutch member and said retainer; and

cam means associated with said slide clutch member and said retainer for, upon rotation of said drive clutch member and said slide clutch member and the operation of said brake means to create said limited relative rotation between said slide clutch member and said retainer, moving said slide clutch member axially from said disengaged second position to said engaged first position, and for, upon interruption of rotation of drive clutch member by the drive shaft and the supply of a rotation force to said driven clutch member and the operation of said brake means to create said limited relative rotation between said slide clutch member and said retainer, moving said slide clutch member axially from said engaged first position to said disengaged second position, said cam means comprising a curved guide groove formed in one of said retainer or said slide clutch member and a pin member fixed to the other of said retainer or said slide clutch member, said pin member extending into said guide groove, such that upon said limited relative rotation between said slide clutch member and said retainer said pin member follows the curve of said guide groove, thereby achieving axial movement of said slide clutch member.

4,368,809
GRIP ROLLER OVERRUNNING CLUTCH

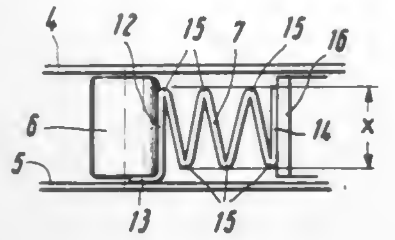
Horst Husmann, Osloss, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,815

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928587

Int. Cl.^{3} F16D *15/00, 41/07*

U.S. Cl. 192—45 **2 Claims**



1. In a grip roller overrunning clutch including grip rollers with associated pressure springs that have one of their ends facing and loading the grip rollers in the gripping direction, a first clutch part provided with grip ramps for the grip rollers, a second clutch part provided with a cylindrical running surface for the grip rollers, and chamber-forming components having lateral boundary walls holding the grip rollers and pressure springs in place, the pressure springs being composed of band springs folded so that in the assembled state the outer boundary surfaces of the folds extend in the peripheral direction of the cylindrical running surface and are at substantially the same distance therefrom, the improvement wherein centering means are provided at the ends of the band springs that face the grip roller for positively engaging the rollers to constantly maintain a distance between the band springs and the lateral boundary walls of the chamber-forming components during the overrunning operation.

4,368,810
FRICTION CLUTCH

Paul Maucher, Sasbach; Karl Keck, Leutesheim, and Dieter Pretzel, Bühl, all of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

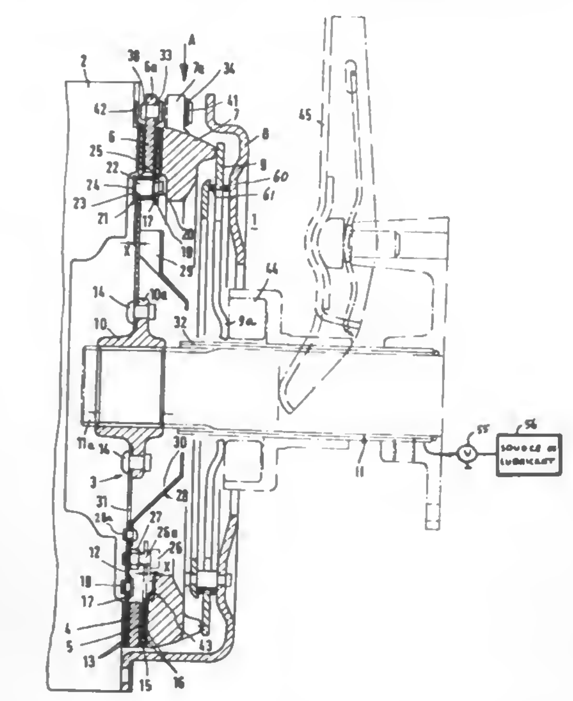
Filed Aug. 6, 1980, Ser. No. 175,870

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2932009

Int. Cl.^{3} F16D *13/69, 13/74*

U.S. Cl. 192—70.28 **39 Claims**

1. In a friction clutch, particularly for automotive vehicles, the combination of a rotary clutch plate including a pair of spaced-apart coaxial friction discs and a spacer disc therebetween; and torque transmitting means for coupling said friction discs to each other so that the friction discs share all rotary movements and are free to move axially relative to each other, said coupling means comprising a plurality of deformable coupling elements and means for fixedly securing each of said coupling elements to each of said friction discs.



4,368,811
FRICTION CLUTCH

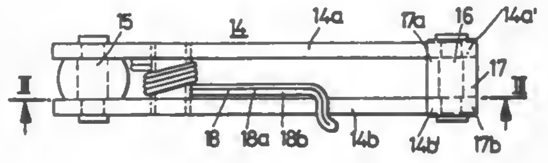
Oswald Dubiel, and Dieter Pretzel, both of Bühl, Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Division of Ser. No. 26,079, Apr. 2, 1979, Pat. No. 4,256,210, which is a division of Ser. No. 836,974, Sep. 27, 1977, Pat. No. 4,162,002. This application Dec. 1, 1980, Ser. No. 211,581

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643863

Int. Cl.^{3} F16D *13/71*

U.S. Cl. 192—99 A **5 Claims**



1. Friction clutch having a housing and levers mounted on the housing for actuating at least one pressure plate, the levers engaging the pressure plate through a connecting linkage, the levers being formed of at least two sheetmetal members and at least two connecting members firmly linking said sheetmetal members to one another, the levers being disposed substantially radially to the housing and carrying, in vicinity of the inner end thereof and between said sheetmetal members thereat, a run-up member responsive to the action of an actuating member for actuating the pressure plate, each of the levers being an assembly of two plate-shaped side walls, said side walls being two sheetmetal members extending in a plane perpendicular to the rotational plane of the clutch, and including a spring member disposed, at least for the most part, between both of said sheetmetal members.

4,368,812
CLUTCH PLATE

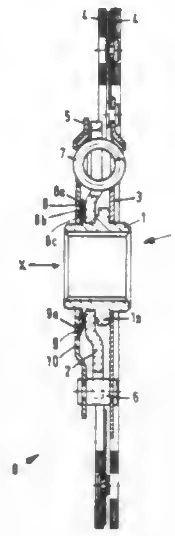
Klaus Steeg, Bühl, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,160

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934135; Jun. 13, 1980, 3922212

Int. Cl.^{3} F16D *3/14*

U.S. Cl. 192—106.2 **30 Claims**



1. A clutch plate, particularly for use in friction clutches of automotive vehicles, comprising coaxial driving and driven units which are rotatable relative to each other within a given range; resiliently deformable torque transmitting means interposed between said units; and a deformable damping device which is directly coupled to one of said units and is in direct frictional engagement with the other of said units to frictionally oppose rotation of said units relative to each other, at least within a portion of said range.

4,368,813
DISTRIBUTION CHUTE CONTROL APPARATUS AND METHOD

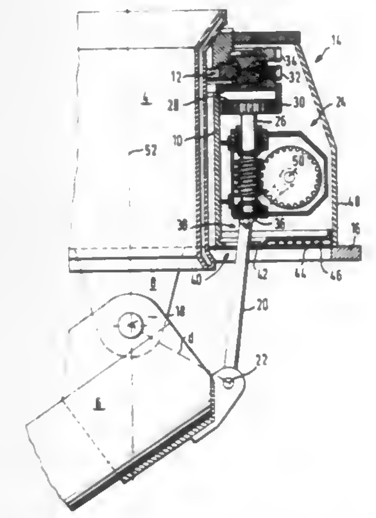
Pierre Mailliet, Howald, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Feb. 10, 1981, Ser. No. 233,139

Claims priority, application Luxembourg, Feb. 15, 1980, 82173

Int. Cl.^{3} C21B *7/16*

U.S. Cl. 193—3 **10 Claims**



1. An improved control for a steerable charge distribution chute of a charging device for furnaces of the type having a tubular feed channel which guides charge material delivered thereto under the influence of gravity onto a first end of the steerable charge distribution chute, the feed channel having an axis and being circumscribed by an extension of the furnace wall, the improved control device comprising:

rotatable casing means, said casing means being coaxial with and circumscribing the feed channel, said casing means cooperating with the furnace wall extension which circumscribes the feed channel to define a chamber therebetween;

means pivotally supporting the distribution chute from said casing means whereby the chute will rotate with said casing means, said supporting means positioning the chute such that the first end thereto is beneath the feed channel;

flange means affixed to said casing means, said flange means extending outwardly from said casing means toward the furnace wall extension;

heat shield means, said heat shield means being affixed to the furnace wall extension and extending inwardly therefrom, said heat shield means cooperating with said flange means to define the lower end of said chamber;

control rod means, said control rod means being pivotally connected at a first end to the distribution chute, said control rod means extending through said flange means into said chamber, movements of said control rod changing the angle of inclination of the rotatable distribution chute;

means for delivering distribution chute inclination angle command signals into said chamber, said signal delivering means including means rotatable about a first axis oriented generally parallelly with the feed channel axis;

motion translating means positioned within said chamber, said motion translating means being coupled to said signal delivering means and converting rotation of said rotatable means about said first axis to rotation of an output shaft about a second axis which is generally transverse to a plane defined by said first axis and the feed channel axis;

connecting rod means for coupling said motion translating output shaft to the second end of said control rod, said connecting rod means being articulated to the said second end of said control rod whereby rotation of said motion translating means output shaft about said second axis will impart forces having components directed parallely with the feed channel axis to said to control rod means whereby said control rod means will cause the distribution chute to pivot about said supporting means; and

means partly disposed within said chamber for causing rotation of said casing means.

4,368,814
APPARATUS FOR FRANKING MAIL

Raymond L. Bannister, Richmond, England, assignor to Pitney Bowes Inc., Stamford, Conn.

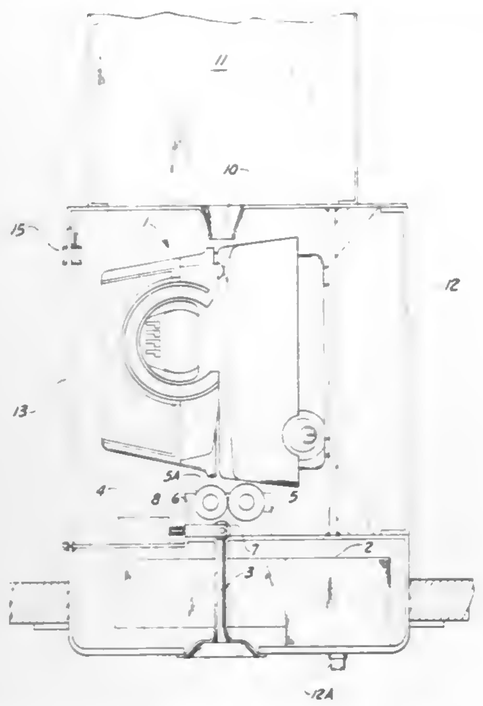
Continuation-in-part of Ser. No. 903,289, May 4, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,091

Int. Cl.^{3} G07F *17/42*

U.S. Cl. 194—1 A **6 Claims**

1. Coin-freed apparatus for franking mail, comprising a cabinet having entry slots for the introduction of mail and coins respectively, a franking machine mounted in said cabinet and automatically operable to mark each item of mail fed thereto with a stamp of the same predetermined value and conveying mechanism operable in response to the insertion of a coin of at least said predetermined value, to convey an item of mail, introduced into the appropriate entry slot, through said franking machine, said conveying mechanism including a gate normally closing the inner end of said mail slot and connected to a solenoid which is energized to open said gate upon

insertion of an appropriate coin in the coin slot, one end of said gate being provided with a rotatable roller which contacts one



surface of a mail item passing through the mail slot when the gate is open.

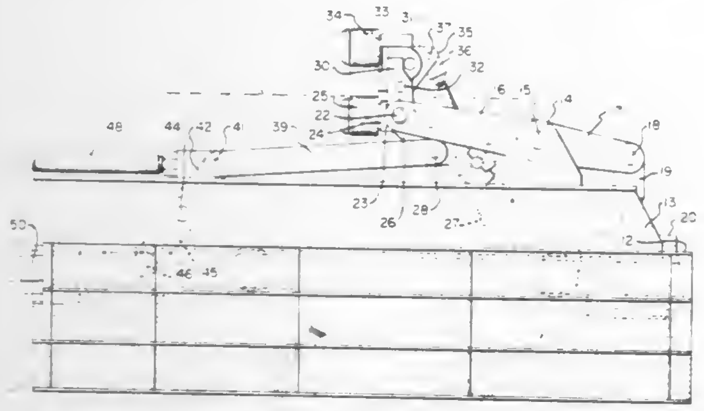
4,368,815
BILLET TURNING MECHANISM

Frank Kvasnicka, Pittsburgh, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 26, 1980, Ser. No. 191,310

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—413 **14 Claims**



1. Apparatus for turning a billet in place on a mill table about its longitudinal axis comprising a car mounted for movement below the mill table transversely thereof, a U-shaped billet-turning head mounted on the car normal thereto for rotation about an axis crosswise of the car at the bottom of the U, and single means connected with the billet-turning head and with the car for rotating the billet-turning head with respect to the car from an upright position to a sideways position and simultaneously moving the car in the direction opposite the direction of rotation of the billet-turning head, whereby the billet is rotated without being translated laterally with respect to the mill table.

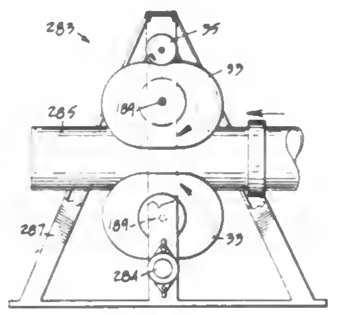
4,368,816
COACTING BAG ROLLERS

William H. Albee, 1524 Spring Brook Rd., Walnut Creek, Calif. 94596

Division of Ser. No. 866,773, Jan. 3, 1978, abandoned. This application Oct. 10, 1980, Ser. No. 195,771

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—624 **1 Claim**



1. A pneumatic roller system for exerting lineal pulling forces of pipe strings and other lineal objects through frictional gripping therewith, said system compromising,

a fixed frame means, capable of being anchored to resist said pulling forces,

a pair of flexible-walled, fluid-distensible, axially elongated bag rollers containing inelastic circumferential reinforcing cords and inelastic longitudinal-radial reinforcing cords, each bag roller incorporating an axle connected to the ends of the bag roller and mounted "wringer fashion" for rotation in said frame means transverse and vertical to the direction of said pipe string and such that each bag roller wraps around at least 15% of the circumference of said pipe string trough-like for a distance equal to at least 20% of the nominal diameter of said bag roller,

a pair of load-supporting frictional drive rollers mounted for rotation in said frame means parallel to the axes of rotation of the bag rollers, each drive roller being operationally associated with a related one of said bar rollers on the side of the bag roller opposite to said pipe string and wherein the drive roller indents into and forms the bag roller into two lobular halves which wrap around at least 15% of the drive roller so that the two opposing load supporting drive rollers exert a clamping force through the air pressure within the bag rollers on to said pipe string and wherein the drive rollers transmit driving force by frictional contact to the tread portions of said bag rollers which act similar to tractor treads by rolling around the two air distended lobes to pull the pipe string through lineal encircling frictional contact.

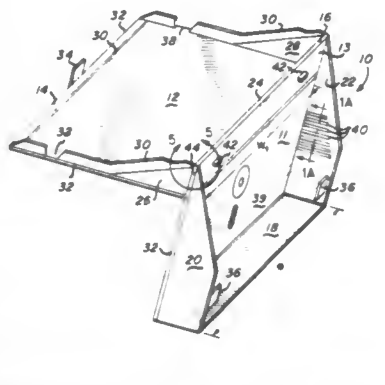
4,368,817
UNITARY HINGED BOX-TYPE CONTAINER

Louis Temesvary, Los Altos, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 20, 1980, Ser. No. 198,640

Int. Cl.³ B65D *43/24, 43/16, 21/02*

U.S. Cl. 206—45.2 **9 Claims**



1. A hinged box-type container comprising:

a bottom portion;

a top portion adapted for mating in abutting relationship with the bottom portion to form an enclosed volume;

hinge means connecting one edge of the top portion with one edge of the bottom portion such that the top portion may be pivoted about the hinge while remaining interconnected with the bottom portion from a closed position to an open position; and

open position locking means formed to one of said portions for holding the bottom portion firmly to said top portion including a pair of parallel opposing protuberances extending from the sides of the bottom portion of the container near the back thereof and further including a pair of gallows clasps extending outward from the back corners and integrally formed with the top portion including a flexible gallows shaped extension having a post member attached to the top portion and a perpendicular arm member at the end of said post member and further having a restraining bulge at the end of the arm member thereof for flexibly snapping over the protuberance on the side of the bottom portion of the container when the top portion is rotated about the hinge means approximately 270° from the closed position whereby the bottom portion and the top portion establish a stable structure with the interiors of the portions exposed.

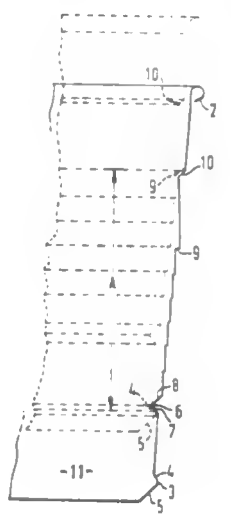
4,368,818
CUPS FOR HOLDING INGREDIENTS FOR DRINKS

Robert H. Day, Brachnell, England, and Gonzalo D. Vidal-Meza, Peoria, Ill., assignors to Mono Containers (U.K.) Limited, Middlesex, England

Filed Apr. 13, 1981, Ser. No. 253,377

Int. Cl.³ B65D *21/02, 85/72;* **F28F** *3/08, 3/04*

U.S. Cl. 206—217 **10 Claims**



1. A cup of the kind of which a number may be assembled to form a stack of such cups with a space between the bases of adjacent cups in the stack, which space may be used for the packing of a beverage ingredient: wherein the outer surface of the side wall of the cup has near the base of the cup an annular outwardly projecting ridge including an upper surface which tapers conically upwardly and inwardly to form a first sealing surface, and the inner surface of the side wall has spaced about but near the outward projection an annular inwardly projecting ridge including a lower surface which tapers downwardly and outwardly to form a second sealing surface; and wherein the outer surface of the side wall has an outwardly extending abutment near the top of the cup and the inner surface of the side wall has an inwardly extending abutment spaced above but near the outward abutment; the arrangement being constructed such that when one cup is stacked inside a further such cup the first sealing surface of the upper cup engages beneath the second sealing surface of the lower cup to seal and thus isolate an ingredient in the space between the bottoms of the two cups and to resiliently resist separation of the two cups, the inward abutment of the lower cup engages beneath the outward abutment of the upper cup to resist further downward movement of the upper cup, and the side wall of the upper cup between the first sealing surface and the outward abutment is in tension whereas the side wall of the lower cup between the second sealing surface and the inward abutment is in compression.

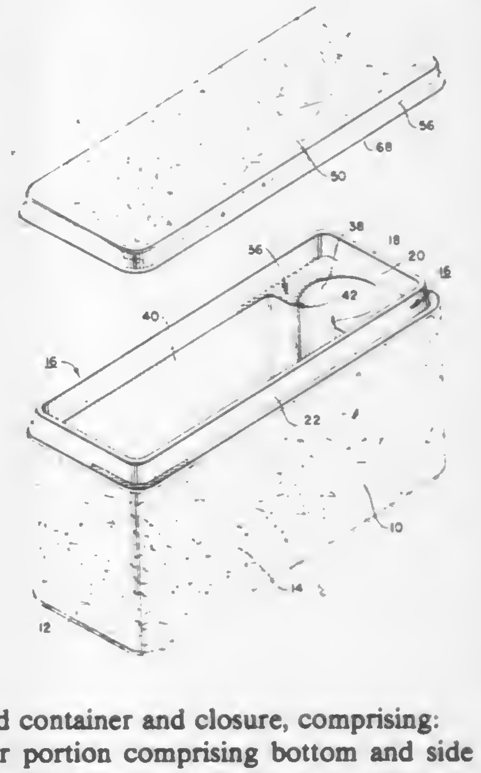
4,368,819
INSULATED CONTAINER AND CLOSURE

Harvey Durham, P.O. Box 164, Manila, Ark. 72442

Filed Mar. 16, 1981, Ser. No. 244,195

Int. Cl.³ B65D *43/06, 90/04, 90/06*

U.S. Cl. 206—545 **6 Claims**



1. An insulated container and closure, comprising:

(a) a container portion comprising bottom and side walls having insulating material sealed therein, the upper periphery of the container side walls supporting an upwardly extending tongue therearound having a triangular cross section with upwardly converging side surfaces;

(b) a closure portion comprising a lid panel having insulating material therein, and having a downwardly bifurcated flange therearound, the flange in cross section comprising two downwardly extending legs defining therebetween a tongue-receiving groove, the legs having opposed inside surfaces diverging downwardly at an angle therebetween less than the angle between said upwardly converging side surfaces of the tongue; and

(c) the tongue being made of polypropylene plastic material and the angle of each of its side surfaces with respect to vertical being about 8 degrees, and the flange being made of polyethylene plastic material and the angle of each of its inside surfaces with respect to vertical being about 6 degrees, the difference in angle between the inside surfaces of the groove and the side surfaces of the tongue, and the plastic materials of which the surfaces are made, being selected to provide compression of said inside surfaces against said side surfaces with a coefficient of friction therebetween sufficient to retain the flange on the tongue.

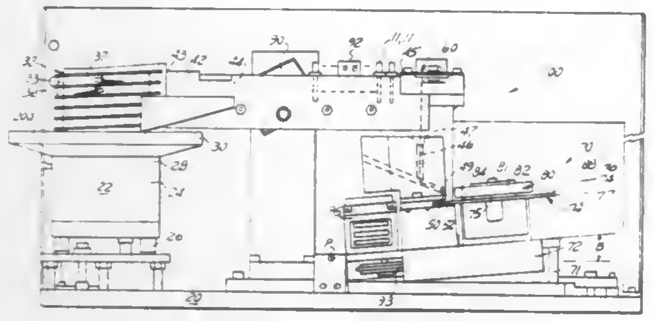
4,368,820
APPARATUS FOR SORTING ELECTRICAL CONTACT PIECES

Herbert K. Uhlig, Bainbridge, and August M. Zegelbrier, Harpursville, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 26, 1981, Ser. No. 277,760

Int. Cl.³ B07C *5/02*

U.S. Cl. 209—540 **19 Claims**



1. An apparatus (**100**) for sorting electrical contact pieces (**11,11'**) of the type having an elongated body with a medial collar (**14**) and characterized that when placed on an inclined surface deformed ones of the contact pieces (**11'**) will not roll sidewise and undeformed ones of the contact pieces (**11**) will roll sidewise, the apparatus characterized by:
a support frame (**72**);
a circular table (**74**) rotatably mounted to the support frame, the table having a center (**75**), an outer rim (**77**), a substantially flat tabletop (**76**) inclined to the horizon and a central hole (**78**) for discharging undeformed contact pieces from the tabletop;
a circular platform (**80**) concentrically mounted above the table, the platform having a substantially flat bottom surface (**84**) disposed in parallel, spaced-apart relation to the tabletop to define an opening (**86**) sized to receive undeformed ones of the contact pieces which roll therebetween and a radial wall (**82**), the diameter of the platform being less than that of the table so as to expose an annulus (**88**) on the tabletop between the rim and the radial wall; and
a prime-mover (**94**) for continuously rotating the table.

4,368,821
ARRANGEMENT FOR MOUNTING PRINTED CIRCUIT BOARDS, PARTITIONS AND THE LIKE IN A HOUSING

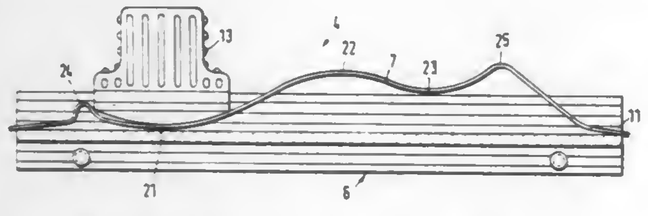
Horst Haseke, Minden, Fed. Rep. of Germany, assignor to Rose Elektrotechnik GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 196,142

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021655

Int. Cl.³ H05K *7/12*

U.S. Cl. 211—41 **12 Claims**



1. An arrangement for mounting objects, particularly printed circuits, mounting partitions, in a housing having walls provided with a plurality of guide grooves, the arrangement comprising an elongated supporting member arranged to be inserted into and withdrawn out of the housing and to extend transversely of the guide grooves between two opposite guide grooves of the housing, said supporting member having receiving means for releasably mounting an object, and a longitudinal groove extending in direction of elongation of said supporting member; a tensionable spring member having two end portions arranged in said longitudinal groove of said supporting member so that in relaxed condition said spring member has a length substantially corresponding to that of said supporting member and in tensioned condition said spring member projects with its end portions outwardly beyond said supporting member to engage in the opposite guide grooves of the housing; and actuating means arranged to displace in said supporting member transversely to the guide grooves and to thereby relax or tension said spring member.

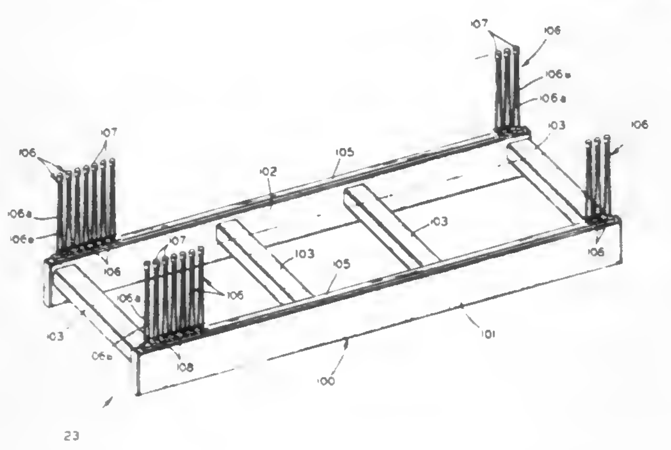
4,368,822
MATERIAL HANDLING METHOD AND APPARATUS

Joseph O. Kramer; Otto V. Young, both of Toledo; Charles E. Banner, and John D. Schuster, both of Sylvania, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Division of Ser. No. 121,795, Feb. 15, 1980, Pat. No. 4,320,826. This application Jun. 3, 1981, Ser. No. 270,154

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—41 **5 Claims**



1. A rack especially adapted for supporting a plurality of curved glass sheets in a spaced, upright attitude comprising: a frame including a pair of longitudinally extending structural members disposed in spaced parallel relation to each other and transversely extending cross members connecting said longitudinal members together; support members affixed to the upper surfaces of said longitudinal members, respectively, and extending lengthwise thereof; a first row of longitudinally spaced peg assemblies rigidly secured to one of said support members; a second row of longitudinally spaced peg assemblies rigidly secured to the other of said support members; each of said peg assemblies comprising a pair of pegs extending upwardly from the associated support member at a slight angle relative to a true vertical in converging relation toward each other; and a pad formed of resiliently yieldable material affixed to said support member between each adjacent pair of peg assemblies.

4,368,823
HANGING NECKTIE HOLDER

Irwin W. Beckwith, Box 45, 1617 Columbia Tpke., Castleton, N.Y. 12033

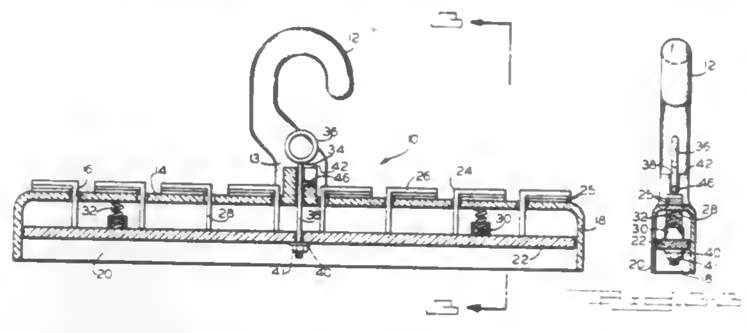
Filed Mar. 2, 1981, Ser. No. 239,178

Int. Cl.³ A47F *5/08*

U.S. Cl. 211—113 **7 Claims**

1. A hanging necktie holder comprised of:
a crossarm having a top surface upon which a plurality of ties may be draped, said crossarm having a plurality of apertures therein;
a plurality of tie clamps slideably mounted through the apertures of the crossarm at preselected intervals along said top surface, each clamp being operable between a closed position for securing a tie between itself and said top surface and an open position for permitting ties to be inserted between itself and said top surface or removed therefrom;

means attached to the crossarm for hanging the necktie holder from a suspension bar; and
means for simultaneously moving the tie clamps between their opened and closed positions, said means being mounted on the holder sufficiently close to the hanging means to be operable by a single human hand while it is grasping the hanging means.



4,368,824
SAFE LOAD INDICATOR

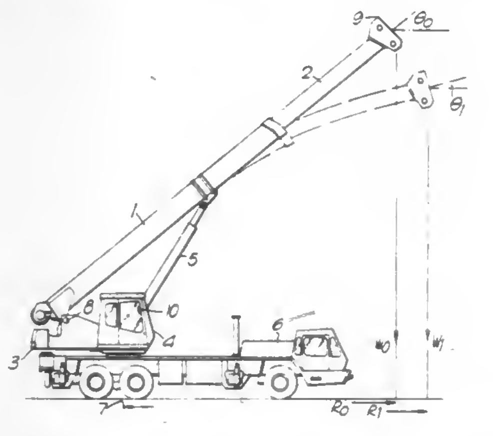
William R. Thomasson, Houghton-le-Spring, England, assignor to Coles Cranes Limited, England

Filed May 13, 1980, Ser. No. 149,376

Claims priority, application United Kingdom, May 18, 1979, 7917405

Int. Cl.³ G08B *21/00*

U.S. Cl. 212—150 **21 Claims**



1. A crane with a crane jib having a data processing system comprising,
a microprocessor,
means for measuring an angle of elevation of said crane jib at the base of said jib,
transmitting means transmitting said base angle to said microprocessor,
means for measuring an angle of elevation of said crane jib at the head of said jib,
transmitting means transmitting said head angle to said microprocessor,
means for measuring the length of said jib from jib base to jib head,
transmitting means transmitting said length to said microprocessor,
said microprocessor being enabled to receive and process data corresponding to said angles and length so as to determine mathematically a true deflected form of said crane jib,
whereby actual jib radius can be calculated.

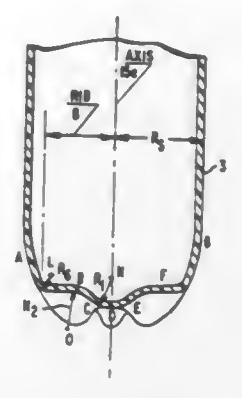
4,368,825
SELF-STANDING BOTTLE STRUCTURE

Richard M. Motill, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 28, 1980, Ser. No. 211,175

Int. Cl.³ B65D *1/02*

U.S. Cl. 215—1 C **3 Claims**



1. A container of thermoplastic material for pressurized fluid materials adapted to arrest tensile and bending stresses when subjected to internal fluid pressure and heat comprising:
(a) a generally cylindrical sidewall portion having an opening at its upper end,
(b) a bottom portion of the other end of said sidewall portion,
(c) said bottom portion comprising a lower sidewall portion in the form of a modified hemispherical shape of constant radius,
(d) a central base portion, having an upwardly projecting concave surface,
(e) an intermediate portion interconnecting said base portion and said modified hemispherical shape,
(f) a plurality of upwardly projecting elongated radial ribs between a plurality of legs in said intermediate portion, said ribs projecting inwardly to said central base portion and projecting outwardly to said hemispherical shape, meeting said hemispherical shape in a smoothly merging junction, said radial ribs consisting essentially of a curve of three radii,
(g) the outer surface wall of said legs being of smoothly arcuate projecting downward convex shape and extending from said hemispherical shape to said base center, said legs terminating in a rounded portion of said hemispherical shape forming feet which lie in a plane normal to the central axis of the said container.

4,368,826
BOTTLES WITH ATTACHED HANDLES AND A METHOD OF FORMING THE SAME

Mortimer S. Thompson, 32 Oxford St., Arlington, Mass. 02174

Division of Ser. No. 40,865, May 21, 1979, Pat. No. 4,273,246, which is a continuation-in-part of Ser. No. 28,886, Apr. 10, 1979, Pat. No. 4,280,859, which is a continuation of Ser. No. 877,603, Feb. 14, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,079

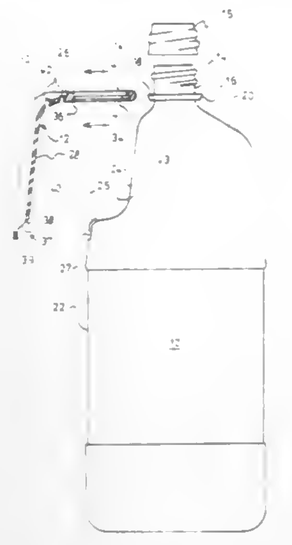
The portion of the term of this patent subsequent to Jun. 16, 1997, has been disclaimed.

Int. Cl.³ B65D *23/10*

U.S. Cl. 215—100 A **18 Claims**

1. A bottle and a handle for gripping, carrying and pouring which is attached thereto, wherein the bottle includes a relatively narrow neck portion with a neck ring thereon, and a sidewall extending from said neck portion having integral attachment means thereon, and wherein the handle is a separate member which is positioned substantially within the breadth of the bottle, and includes a substantially horizontal portion having a bore therethrough in which there is an annular shoulder snap-fitted onto said neck ring to attach said por-

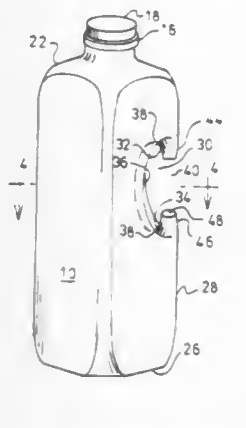
tion thereto, and a substantially vertical portion that has attachment means thereon which coact with said attachment



means on said sidewall of the bottle for affixing said vertical portion thereto.

4,368,827
CONTAINER WITH INTEGRAL HANDLE AND METHOD OF FORMING SAME

Mortimer S. Thompson, P.O. Box 454, Arlington, Mass. 02174
Continuation-in-part of Ser. No. 40,864, May 21, 1979, Pat. No. 4,257,525, and a continuation-in-part of Ser. No. 28,886, Apr. 10, 1979, Pat. No. 4,280,859, which is a continuation of Ser. No. 877,603, Feb. 14, 1978, abandoned. This application Mar. 20, 1981, Ser. No. 246,045
Int. Cl.³ B65D *23/10*
U.S. Cl. 215—100 A **20 Claims**



1. A container having pouring means and a wall extending from said means, comprising a recess in the wall which forms a space for finger placement in the wall and within said recess, and an integral handle including opposing, integral, spaced apart means extending from the wall into and essentially within said recess adapted to be gripped for lifting, carrying and pouring from the container.

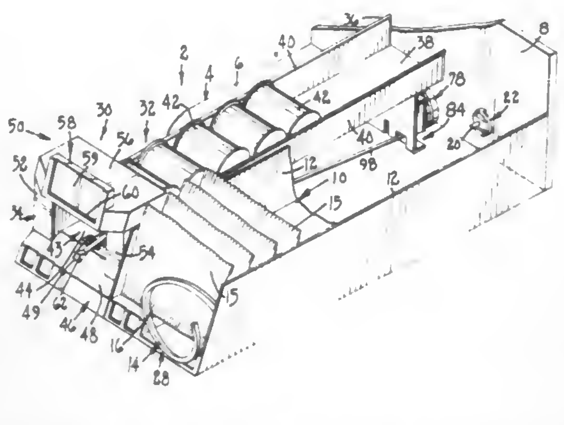
4,368,828
SEALING COMPOSITIONS

David N. Samuel, and Kenneth M. Sinnott, both of Cambridgeshire, England, assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Jun. 26, 1981, Ser. No. 277,551
Claims priority, application United Kingdom, Sep. 25, 1980, 8030987
Int. Cl.³ B65D *21/02*
U.S. Cl. 220—81 R **1 Claim**

1. A container having a closure sealed to it by a seal that includes a gasket that has been formed from a composition comprising a latex of a rubbery polymer and in which has been dispersed a filler including crush resistant glass beads having a particle size of about 1 to about 200 microns.

4,368,829
CAN DISPENSING UNIT FOR SPIRAL VENDOR

Joseph A. Lotspeich, Inver Grove Heights, and Douglas G. Lennartson, Coon Rapids, both of Minn., assignors to Gross-Given Manufacturing Company, St. Paul, Minn.
Filed May 27, 1980, Ser. No. 153,406
Int. Cl.³ G07F *11/30, 11/36*
U.S. Cl. 221—75 **8 Claims**



1. An improved vending machine of the type having a housing, a plurality of dispensing coils located respectively in corresponding dispensing channels in the housing, each coil having a plurality of convolutions between which a plurality of products to be vended are received, each coil further having a discharge end which is spaced from one wall of the housing to define a discharge space into which each of the products contained in the coil are ejected, and motor means extending into each of the dispensing channels and releasably connected to each of the dispensing coils for rotating the coils in a dispensing direction; wherein the improvement relates to an auxiliary can dispensing unit which can be selectively used in any of the dispensing channels in place of the helical coil therein for dispensing canned products, wherein the can dispensing unit comprises:

(a) an inclined track having a front discharge end adjacent the discharge space and a distal rear end, wherein the inclined track slopes upwardly from the discharge end and is of sufficient width to allow the cans to be stacked one behind the other such that the cans roll down the track towards the discharge end;

(b) dispensing means located at the discharge end of the track for dispensing one can at a time from the discharge end to allow the dispensed can to fall down into the discharge space, wherein the dispensing means comprises a pivotal control member located in the inclined track adjacent the discharge end, and wherein the control member has first and second can stops spaced apart in the direction of the track, wherein the can control member is pivotal about a substantially horizontal axis from a first position in which the first stop is interposed into the path of a first can to prevent the first can from moving off the discharge end of the track, to a second position in which the first stop is removed from engagement with the first can to allow release of the first can while the second stop is moved upwardly to a position in front of the remaining cans on the track to prevent them from being dispensed with the first can, whereby only one can at a time is dispensed during movement of the control member from its first to its second position;

(c) a longitudinal connecting rod extending from the pivotal control member towards the rear end of the inclined track, wherein the connecting rod is connected to the pivotal control member at such a location that longitudinal reciprocation of the connecting rod will pivot the control member from its first to its second position and back again; and

(d) a dispensing cam releasably coupled to the motor means for rotation thereby, wherein the dispensing cam includes a cam track in which one end of the connecting rod is received, and wherein the cam track is shaped such that rotation of the cam longitudinally reciprocates the connecting rod to pivot the control member, said cam further including means for locating the dispensing cam in an initial position in which the pivotal control member is in its first position for preventing the discharge of any cans from the inclined track, said locating means comprising:

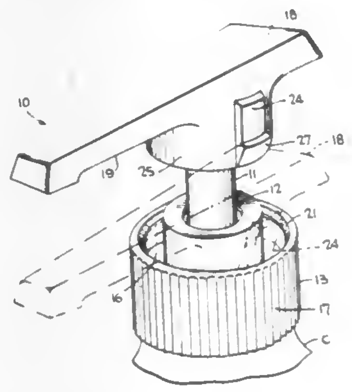
(i) a leaf spring mounted on the rear end of the track;

(ii) wherein the cam includes an aperture into which the leaf spring extends when the cam is in its initial position; and

(iii) wherein the leaf spring generates a holding force with the aperture which is sufficiently strong to locate and hold the cam in its first position but which is not sufficiently strong to prevent the cam from being rotated by the motor means.

4,368,830
LOCKING MEANS FOR LIQUID DISPENSERS

Edward K. Soughers, Huntington Beach, Calif., assignor to Diamond International Corporation, New York, N.Y.
Filed Dec. 18, 1980, Ser. No. 217,743
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—321 **6 Claims**

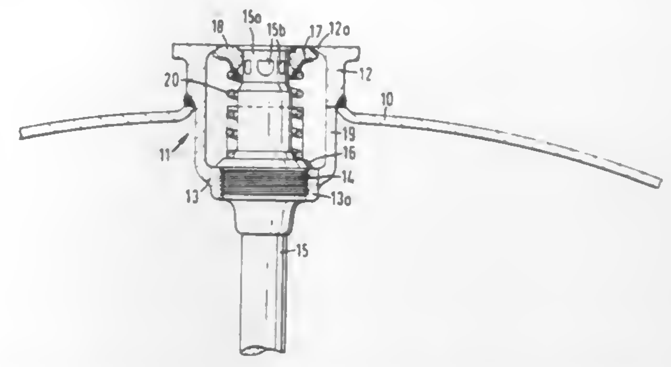


1. In a dispensing pump of the type in which a pump plunger is disposed for reciprocation through an opening in the closure cap of a container for a product to be dispensed by said pump through a discharge head on said plunger, means for locking said plunger against reciprocation, comprising, an inwardly extending lip portion on said cap, at least one locking element on a side wall of said discharge head, said element having a locking pawl thereon for engagement with said lip portion in a locking position of said plunger, said element being mounted on said side wall for manual movement thereof from said locking position to an unlocking position wherein said locking pawl is out of engagement with said lip portion, and means comprising an opening in said side wall defining a retaining edge, and a catch element on said locking element engageable with said edge for retaining said locking element in said unlocking position to avoid any interference between said locking pawl and said lip during plunger reciprocation.

4,368,831
BEER KEG TAPPING ASSEMBLY

Victor S. Bailey, Teddington, England, assignor to Grundy (Teddington) Limited, Middlesex, England
Filed Feb. 12, 1980, Ser. No. 120,789
Int. Cl.³ B65D *83/00;* **B67D** *1/04*
U.S. Cl. 222—400.7 **3 Claims**

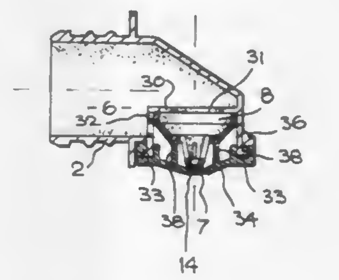
1. A cask for pressurised liquid said cask having a housing integrally secured to the top wall of the cask at a bung hole outlet to upstand therearound, said housing comprising an integral skirt depending into the cask and an integral body upstanding from the cask, said body having a flange forming a coupling member to engage a liquid dispensing head, said skirt having an inturned flange at its lower end, a liquid extractor tube extending from the bottom of the cask up into the housing, a bush secured to said extractor tube and connecting said tube to said inturned flange, the diameter of the bush around the extractor tube being of less diameter than the diameter of an aperture in the upper end of said body of the housing thereby enabling the extractor tube to be withdrawn through said



body, said extractor tube including a head portion located with said housing above said bush, a ring seal and loading spring located in said housing and positioned around said extractor tube, a seat within and located around the aperture in the upper end of the body of said housing, a peripheral part of said seal engaging said seat, the top end of said extractor tube head being embraced by said ring seal, said spring urging said ring seal into engagement with the seat.

4,368,832
FLUID DISPENSING VALVE HAVING A DEFORMABLE DIAPHRAGM

Louis J. Lambert, 96 Sutherland Rd., Beecroft, New South Wales, 2119, Australia
Filed Jul. 18, 1980, Ser. No. 170,163
Claims priority, application Australia, Jul. 30, 1979, PD9778
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—509 **1 Claim**



1. A liquid-dispensing diaphragm valve comprising a valve casing defining a conduit having an interior wall, one end of which is in communication with the interior of a container for liquid and the other end of which is in communication with an aperture constituting a valve seat; a deformable, resilient, substantially conical diaphragm having an apex and accommodated within said conduit and having, extending abouts its base, an annular skirt having means to prevent rotation thereof and which fits into said conduit so that said diaphragm is disposed in a plane normal to the longitudinal axis of said conduit and further having a boss-like valve element with its base on said apex and projecting axially therefrom, said valve element being adapted to sealingly engage with said valve seat when the valve is in the closed position, said diaphragm being provided with at least one opening therethrough immediately adjacent the base of the valve element; said valve seat being an aperture located centrally in a cap member disposed in a plane parallel to that of said diaphragm and rotatably engageable with an outlet port of said conduit, said diaphragm having at least two protuberances circumferentially spaced apart and projecting outwardly from said apex and parallel to said valve

element but to a lesser axial extent than said valve element wherein said protuberances are radially spaced between the interior wall of the conduit and the valve element, said protuberances having at their distal ends camming surfaces, each having a tooth-like profile, the plane of each of said camming surfaces being at an acute angle to the axis of the valve element; said cap member having at least two circumferentially spaced apart annular, inclined, inwardly-directed camming surfaces surrounding said central aperture, radially spaced between the interior wall of the conduit and the valve element and co-acting with the camming surfaces of said diaphragm protuberances; the arrangement being such that rotation of said cap member causes the annular camming surfaces of the said cap member to slidably move over the co-acting camming surfaces of said diaphragm to thereby displace said valve element from said valve seat, against the biasing force of said resilient diaphragm, and thus to provide a number of openings defined between the circumferentially spaced apart co-acting camming surfaces; thereby allowing liquid to flow from the interior of said container into said conduit, through said at least one opening in said diaphragm, through the defined openings between caming surfaces and out through said valve seat for discharge therefrom.

4,368,833

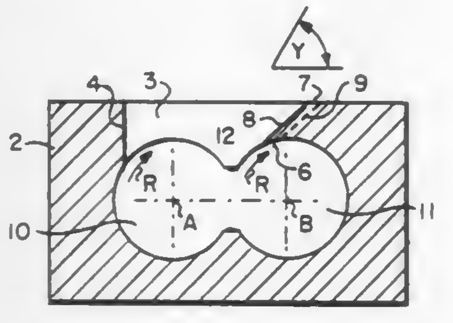
ANTI-BRIDGING PORT FOR CO-ROTATIONAL SCREW MACHINE

George W. Burker, Yorktown, N.Y., assignor to Werner & Pfleiderer Corporation, Ramsey, N.J.

Filed Jun. 8, 1981, Ser. No. 271,714

Int. Cl.³ B65G *33/18*

U.S. Cl. 222—575 **11 Claims**



1. In a housing for a co-rotational twin screw machine for longitudinally conveying non-free flowing material, the housing having two intersecting cylindrical bores for receiving two intermeshing screws and means forming at least one port thereover, the improvement wherein the means forms an anti-bridging port comprising one planar longitudinal side wall having the lower edge thereof disposed adjacent the intersecting area of the two bores and wherein the side wall slopes outwardly from the lower edge above one bore at about 60° to 90° with respect to the horizontal plane and extends approximately tangentially with respect to said one bore.

4,368,834

PREHEATING DEVICE FOR STOPPER-TYPE TUNDISHES

Jean-Charles Daussan; Gerard Daussan, both of Metz, and Andre Daussan, Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

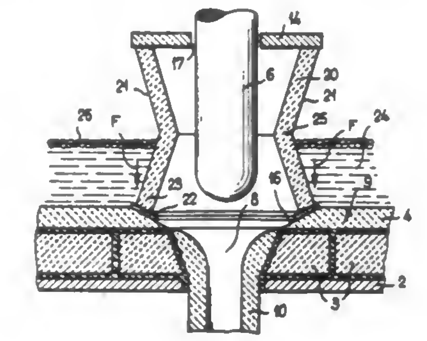
Filed Oct. 3, 1977, Ser. No. 839,286

Claims priority, application France, Oct. 14, 1976, 76 30912

Int. Cl.³ B22D *41/10*

U.S. Cl. 222—593 **5 Claims**

1. A preheating device for a tundish having a bottom wall and lateral walls and comprising at least one stopper which is capable of moving towards a casting outlet formed in said bottom wall, said casting outlet being formed with a casting nozzle extending outwardly from said bottom wall, said preheating device comprising a burner adapted to be introduced into said casting nozzle for preheating said casting outlet and said stopper, and a casing of refractory heat insulating material around the casting outlet so as to surround the free end of said stopper, said casing having a lateral wall comprising an upper end portion having an opening for the insertion of said stopper and a lower end portion which is flared-out towards the bottom wall of said tundish.



4,368,835

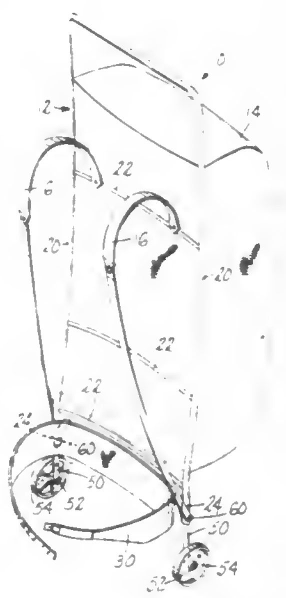
BACK CARRIER

Arthur D. Murphy, 439 Coe Ave., East Haven, Conn. 06512

Filed Nov. 21, 1980, Ser. No. 208,996

Int. Cl.³ B62B *1/20*

U.S. Cl. 224—153 **7 Claims**



1. In a back carrier of the type having two substantially parallel tubular support members adapted to be fitted generally vertically to the back of a person, said members having tubular lower ends, wherein the improvement comprises: two support shafts, each of said shafts inserted into the lower end of one of said support members; each of said shafts supporting an axle extending therefrom; two wheels, each rotatably mounted on one of said axles, means for securing said shafts in said members and means slidably mounted to at least one of said support shafts for engaging the wheel on said support shaft and preventing rotation thereof.

4,368,836

SHEET FEEDING APPARATUS

James A. Meeker; Christopher J. Jackson, and Rick D. Watson, all of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

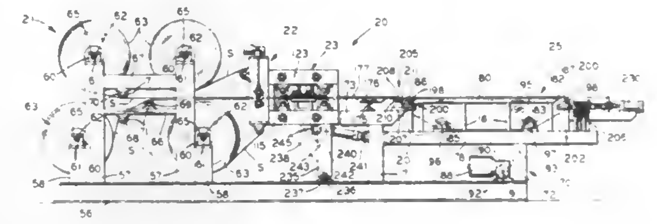
Filed Oct. 20, 1980, Ser. No. 198,845

Int. Cl.³ B65H *17/34*

U.S. Cl. 226—172 **8 Claims**

6. An apparatus for feeding continuous sheet material in a predetermined path comprising: a frame, means on said frame

for guiding sheet material in a generally horizontal plane, a feed head mounted on said frame immediately downstream of said guiding means, said feed head comprising a pair of opposed conveyor belts movable in unison in orbital paths, said conveyor belts having planar, work engaging active runs disposed in an opposed, spaced relation and movable in the same direction, means urging the active run of one of said conveyor belts relative to the active run of the other of said conveyor belts in a direction generally normal to the path of movement of the sheet material to provide a tractive force advancing said sheet material therebetween in said path of movement, said tractive force being distributed uniformly over large sheet engaging surface areas of said belts, a table adjacent the outlet end of said feed head for supporting a sheet supporting frame assembly having spaced apart clamping assemblies with springs biasing said clamping assemblies apart, said table having means for compressing said clamping assemblies toward each other against the bias of said springs.



4,368,837

WEB FEED SECTION

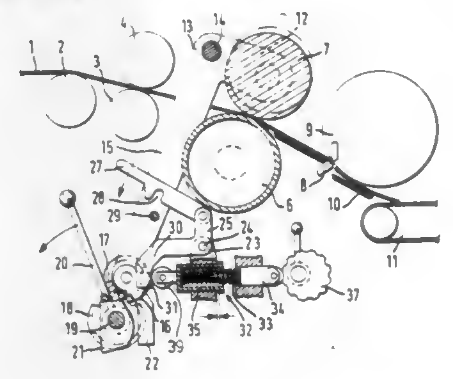
Jakob Bodewein, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 212,927

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948842

Int. Cl.³ B65H *17/22*

U.S. Cl. 226—176 **8 Claims**



1. In a web feed section comprising a bottom feed roll, a top feed roll, and actuator means for adjusting the contact pressure between said rolls, the improvement wherein the actuator means includes a mechanical energy-storing device and means for reversing the direction of the force of said energy-storing device, said reversing means operatively connecting the energy-storing device with one of said rolls.

4,368,838

BLIND RIVETING MACHINE

David J. Sheffield, Hemel Hempstead, and John W. C. Saxon, Sawtry, both of England, assignors to Aerpat A.G., Zug, Switzerland

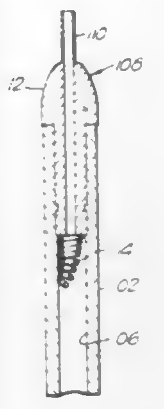
Filed Jun. 17, 1980, Ser. No. 160,195

Claims priority, application United Kingdom, Jun. 20, 1979, 7921486

Int. Cl.³ B21J *15/34*

U.S. Cl. 227—55 **10 Claims**

1. A blind riveting machine comprising abutment means for supporting a rivet during a rivet-setting operation, a mandrel having a stem and an enlarged head at one end of the stem, gripping and pulling means for releasably gripping the stem of the mandrel and moving the mandrel rearwardly relative to the abutment means through a stroke of sufficient length to pull the head of the mandrel entirely through the bore of a tubular rivet supported by the abutment means and thereby set the rivet and thereafter to release the mandrel to allow a further rivet to pass along the stem of the mandrel towards the head, and reciprocable means for advancing a further rivet along the mandrel to the setting station after the setting of the first mentioned rivet and the release of the mandrel, and moving the mandrel forwardly to a position in which the head of the mandrel is spaced forwardly of the abutment means by a distance which is at least sufficient to accommodate the further rivet to be set and then moving the mandrel rearwardly so that the head engages the further rivet at the setting station before the gripping and pulling means again grips the mandrel stem.



4,368,839

FASTENER APPLYING DEVICE HAVING A PLURALITY OF SLIDERS

Kouichi Okamura, Fukuoka; Nobuya Mizumura, Kawanishi, and Ei Nigorikawa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Mabuchi Co., Ltd., Kanagawa, both of, Japan

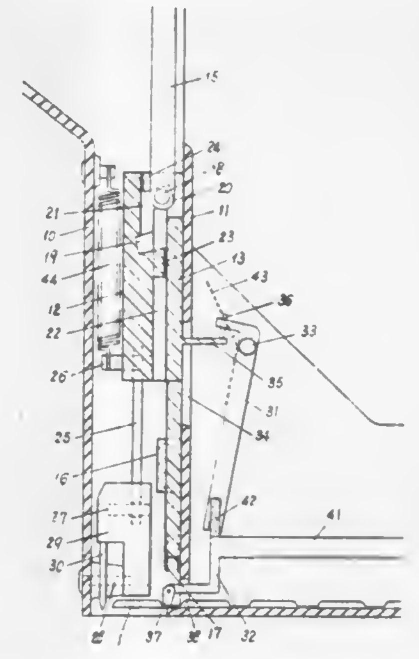
PCT No. PCT/JP79/00233, § 371 Date May 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00555, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 3, 1979, Ser. No. 197,350

Claims priority, application Japan, Sep. 12, 1978, 53-112595

Int. Cl.³ B25C *5/02, 5/16*

U.S. Cl. 227—91 **8 Claims**



1. A device for applying to an article such as a packaging box a fastener having a flat main plate and a pair of turnable pieces hingedly connected to the main plate and each having a piercing nail, the device comprising:

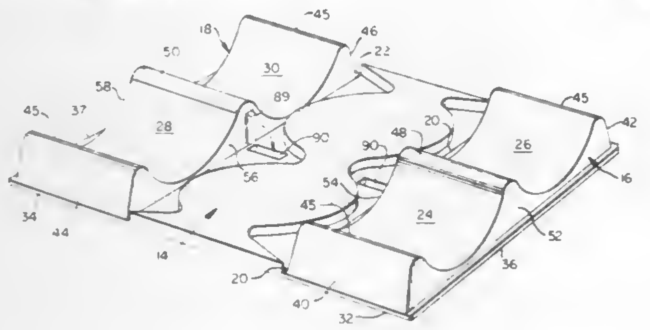
- a framework;
- a first slider reciprocably carried by the framework and having an outer end provided with a cutting blade adapted to cut the fastener from a strip of connected fasteners;
- a second slider reciprocably carried by the framework, a pair of pivotable members carried by the framework and adapted to engage the pair of turnable pieces of a fastener, and means for pivoting the pair of members in response to reciprocating movement of the second slider;

and means for driving the first and the second sliders one at a time in succession on fastener cutting and applying movements, respectively, whereby a fastener is cut from the strip of fasteners by the cutting blade of the first slider and the turnable pieces of the cut fastener are thereafter engaged and moved by the pair of pivotable members to force the piercing nails into the article.

4,368,840
PACKAGING CONTAINER

John Pardo, Yonkers, N.Y., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Apr. 3, 1981, Ser. No. 250,866
Int. Cl.^{3} B65D *1/24*
U.S. Cl. 229—2.5 R **2 Claims**

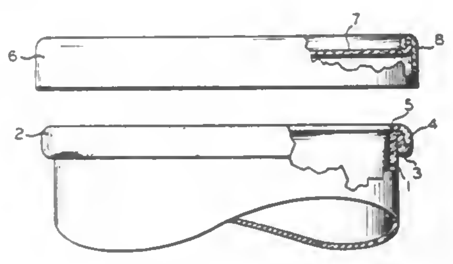


1. A one piece foldable packaging container for protecting fragile articles carried thereby, the container being formed from a one piece sheet of plastic material and comprising:
- (a) a generally rectangular tray portion of the sheet;
- (b) a raised bottom extending upwardly from the plane of the tray in a portion of the bottom thereof, said portion at least partially conforming to the shape of the articles to be carried and protected;
- (c) a pair of hinges in the sheet, one along each side of the tray;
- (d) a pair of side portions of the sheet connected to the tray portion by the hinges;
- (e) article protecting areas in the side portions raised from a plane of the sheet and forming at least a pair of article protection projections in each side portion, the projections forming a pair of cylindrical recesses with a diameter slightly larger than the articles to be protected connected by a bridging bulge;
- (f) an arrangement for locking each side wall portion in a position perpendicular to a plane of the tray, the locking arrangement comprising:
  - (i) bulbous tongue and widening groove locking elements;
  - (ii) one of the locking elements being on the sides of the tray adjacent the hinge line, and
  - (iii) the other of the locking elements being on each side portion and positioned under the bridging bulge to mate with the portion in the tray when the plane of the side portion is perpendicular to the plane of the tray portion to lock such portion in such position and protect contents.

4,368,841
PAPER CONTAINER

William Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1980, Ser. No. 175,980
Int. Cl.^{3} B65D *8/08, 3/28*
U.S. Cl. 229—5.5 **4 Claims**

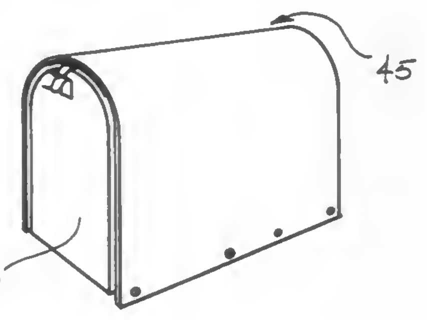


1. A container comprising a generally circular or frustoconical tubular paperboard sidewall having a closed bottom wherein the upper end of said sidewall has been folded outwardly and downwardly and outwardly and then upwardly back upon itself so as to form a rim of three thicknesses of said sidewall paperboard surrounding the open upper end of the container, said free edge of the upper end of the sidewall being folded over so that said free edge rests above in vertical alignment with the innermost portion of the sidewall layer.

4,368,842
MAILBOX PROTECTOR

William DeLange, III, 5628 Foxboro Trail, Springfield, Mo. 65804

Filed Apr. 21, 1980, Ser. No. 142,250
Int. Cl.^{3} B65D *91/00*
U.S. Cl. 232—17 **4 Claims**

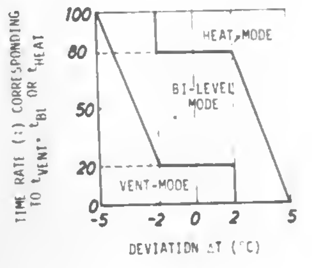


1. The combination of a rural type mail box having a flanged exterior bottom cavity, a bolster plate positioned in said cavity and an impact resistant cage exteriorly surrounding said mail box, said cage comprising a plurality of spaced horizontal impact resistant structural members extending from the front to the rear of said mail box, the bottom horizontal structural member on each side of said mail box being adjacent to a flange of said cavity and a plurality of spaced impact resistant members each being formed into an arch extending over the top of the mail box with the legs of each arch terminating at the base of the mail box, each horizontal member being rigidly fastened to each arch member and with each bottom horizontal member being rigidly fastened to an adjacent flange on the mail box and to the bolster plate in said bottom cavity, said horizontal members and said arch members each having an impact resistance equivalent at least to cold rolled steel member of ⅛ inch thickness and 1½ inch width.

4,368,843
AIR CONDITIONER CONTROL METHOD AND APPARATUS

Yasuhito Kai, Kariya; Teiichi Nabeta, Okazaki, and Akio Takemi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 7, 1981, Ser. No. 252,002
Claims priority, application Japan, Apr. 11, 1980, 55-48194
Int. Cl.^{3} F24F *7/00;* G05D *23/00*
U.S. Cl. 236—49 **8 Claims**



1. A method of automatically controlling an air conditioner which supplies an air flow into a compartment or other region, the air conditioner comprising air flow temperature control means for adjusting the actual temperature in said compartment or other region to a desired value and maintaining it at said desired value; and air flow direction control means arranged to be adjusted to a first position in which the air flow is directed to a second portion in said compartment or other region; the method comprising the steps of:
- (a) detecting a deviation between the actual temperature in said compartment or other region and said desired value;
- (b) calculating first and second periods of time respectively for maintaining the air flow direction toward the first and second portions in said compartment or other region in relation to said detection deviation;
- (c) producing a first output signal indicative of the calculated first period of time and successively producing a second output signal indicative of the calculated second period of time upon lapse of the calculated first period of time;
- (d) adjusting said air flow direction control means to its first position in response to said first output signal and maintaining it at the adjusted position during the calculated first period of time; and
- (e) adjusting said air flow direction control means to its second position in response to said second output signal and maintaining it at the adjusted position during the calculated second period of time; said first and second output signals being repetitively produced to adjust said air flow direction control means from its first position to its second position.

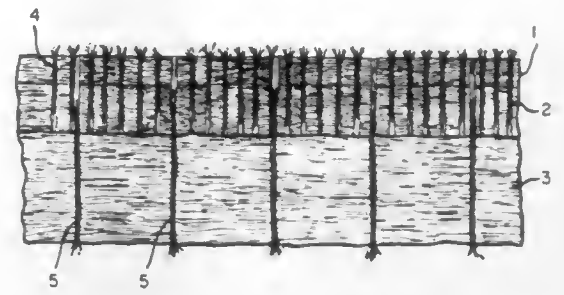
4,368,844
RAILROAD SUPPORT FABRIC

Donald F. Miller, Hendersonville, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 6, 1981, Ser. No. 308,995
Int. Cl.^{3} E01B *1/00*
U.S. Cl. 238—2 **9 Claims**

1. A laminar construction suitable for use as a geotextile support in a railroad bed consisting essentially of (1) a lamella of bonded nonwoven polypropylene fibers having a weight per square yard between about 6 and 18 oz, (2) a lamella of nylon fibers having a weight per square yard between about 2 and 6 oz, (3) and a lamella of bonded nonwoven polypropylene fibers having a weight per square yard between about 1 to 3 oz, said nylon lamella being located between said bonded nonwoven polypropylene fiber lamellae, said laminar construction being held together by localized areas of penetrations of fibers of one lamella into and/or through another, said laminar construction having a thickness of between 32 and 250 mils.

9. In a railroad bed which comprises a set of metal rails, mounted on railroad ties, said ties being supported by ballast, and said ballast being supported by earth, the improvement

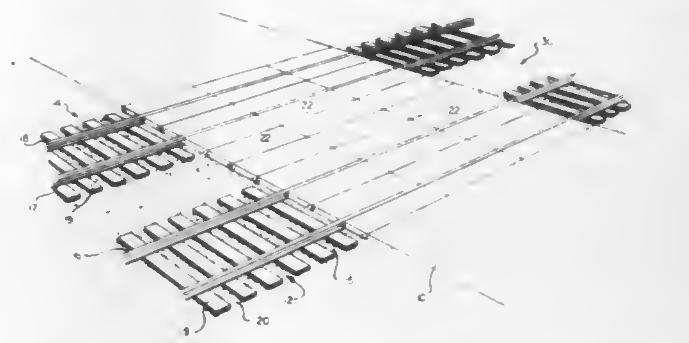


which comprises the laminate of claim 1 located between the ballast and the earth.

4,368,845
RAILROAD CROSSING STRUCTURE

John A. Perry, McHenry; Frank M. Perry, Wonder Lake, and Gerald P. Konczyk, Schaumburg, all of Ill., assignors to Park Rubber Company, Lake Zurich, Ill.

Filed Mar. 2, 1981, Ser. No. 239,325
Int. Cl.^{3} E01C *9/004*
U.S. Cl. 238—8 **8 Claims**



1. A railroad crossing structure for use with a highway railroad crossing having at least two sets of tracks with a devil strip between them, each of said sets of tracks having a pair of spaced, substantially parallel rails, a plurality of elongated ties subtending and supporting said rails and being disposed transversely thereof, each of said plurality of elongated ties being comprised of a short tie extending beneath said pair of rails of one set of tracks and a longer tie which spans said devil strip and extends beneath said pair of rails of the other one of said set of tracks, the positioning of said short tie and said longer tie of each adjacent elongated tie being alternated, whereby a unitary crossing structure is provided, means for securing said rails to said ties, and a plurality of elastomeric pads secured atop and supported by said ties, said plurality of elastomeric pads being proportioned to span said devil strip and to abut against the one rail of each track adjacent said devil strip, whereby the devil strip between adjacent sets of tracks is provided with an elastomeric surface.

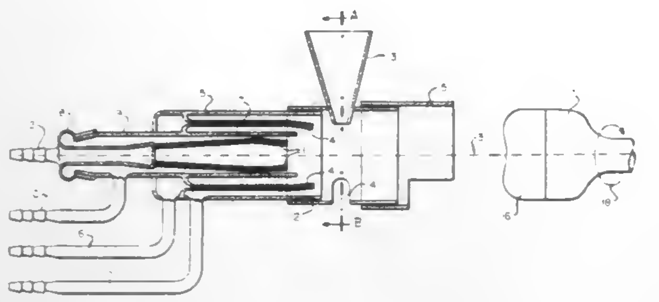
4,368,846
MELTING BURNER MADE OF VITREOUS SILICA FOR THE PRODUCTION OF MASSIVE VITREOUS SILICA

Karlheinz Rau, Hanau; Horst Lorenz, Buchköbel; Oswald Huth; Lothar Volkmann, both of Hanau, and Kurt Stenzel, Oberursel, all of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

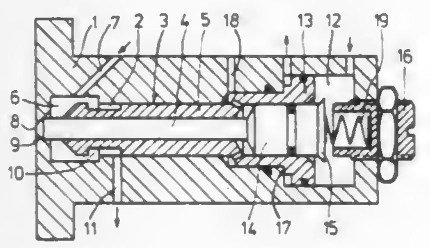
Filed Dec. 10, 1980, Ser. No. 214,860
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952038
Int. Cl.^{3} B05C *5/04*
U.S. Cl. 239—85 **12 Claims**

1. In a melting apparatus for the production of massive

vitreous silica comprising a tubular jacket within which is disposed at least one propulsion jet which is to be enveloped by a stream of hydrogen, said tubular jacket projecting beyond the forward end of said propulsion jet, said apparatus further comprising, ahead of the forward end of the propulsion jet, and viewed in the direction of gas flow, a laterally disposed feeding device for feeding silica particles into said apparatus, the improvement wherein said propulsion jet, at least at its forward end, is inclined toward the tubular jacket axis, is surrounded by a plurality of oxygen fed heating jets which form a jet jacket, said heating jets having discharge orifices, said discharge orifices projecting beyond the forward end of said propulsion jet, said jet jacket in turn being surrounded by said tubular jacket, the space between said jet jacket and said tubular jacket and the space between said propulsion jet and said jet jacket being in gaseous communication with the source of hydrogen and said heating jets and said propulsion jet being in gaseous communication with a source of oxygen.

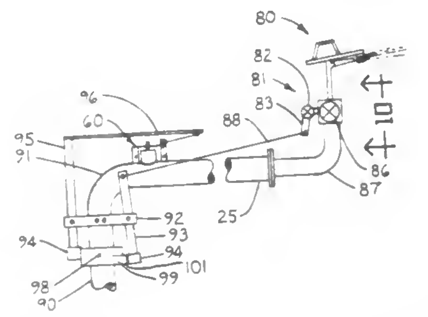


4,368,847
INJECTION NOZZLE FOR MIXHEADS
Heinrich Ersfeld, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 4, 1981, Ser. No. 259,872
Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018381
Int. Cl.^{3} B05B *9/00*
U.S. Cl. 239—125 **2 Claims**



1. An injection nozzle for mixheads for the production of foams or solids from at least two flowable reaction components comprising a nozzle housing with a nozzle needle guided in it which is provided with a positive control and cooperates with a nozzle opening, wherein a feed pipe and a return pipe end upstream of the nozzle opening in said nozzle housing and wherein said nozzle needle in its closed position connects said feed pipe and said return pipe to each other via a connecting channel, characterized in that said nozzle needle is divided into a needle core and a needle sleeve which surrounds said needle core and is guided on it, wherein said needle core cooperates with said nozzle opening and is pin-less in design and wherein said needle sleeve is provided with said connecting channel; and in that, when switching over from injection to return, said needle core is located in the closed position sooner than said needle sleeve in the return position, and when switching over from return to injection said needle sleeve adopts the interruption position before said needle core occupies the open position.

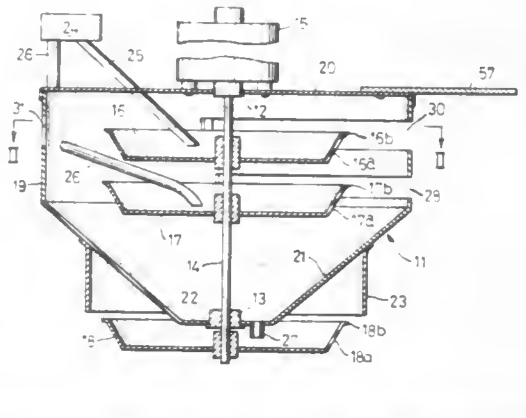
4,368,848
SELF PROPELLED IRRIGATION SYSTEMS
Robert R. Emrich, Box I, Indianola, Nebr. 69034
Filed Mar. 10, 1980, Ser. No. 129,088
Int. Cl.^{3} B05B *3/02*
U.S. Cl. 239—177 **1 Claim**



1. An improved stopping means for a self-propelled center pivot irrigation system having a fixed center pivot; a radially extending distributed pipeling; means for supplying irrigation water to said pipeline; sprinkler means operably disposed along said distribution pipeline; a pressure sensitive control device for terminating the delivery of water at a preselected minimum pressure condition in said distribution pipeline; a plurality of wheel mounted moveable carriages disposed to support said pipeline at spaced intervals; drive means for independently moving said carriages; and alignment sensing means for actuating said drive means; the improvement comprising;

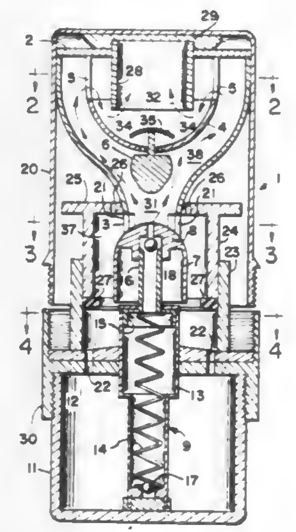
(a) at least one dump valve located along said pipeline for releasing the pressure in said pipeline;
(b) actuation means for tripping said dump valve;
(c) a cam ring operably attached to said fixed center pivot with preselected cam positions;
(d) a lever arm operably connected to said cam ring and pivotally attached to said irrigation pipeline proximate to said cam ring;
(e) tension means operably connected between said lever arm and said dump valve actuating means to trip said dump valve when a cam on said cam ring engages said lever arm.

4,368,849
SPRAY APPARATUS
Horstine Farmery, North Newbald, England, assignor to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 29, 1977, Ser. No. 811,310
Claims priority, application United Kingdom, Jun. 18, 1976, 25287/76
Int. Cl.^{3} B05B *3/08*
U.S. Cl. 239—222 **16 Claims**



1. Apparatus for distributing flowable material over a base surface comprising a mask, first and second rotary members disposed in said mask, a third rotary member disposed exteriorly of said mask, means for rotating said rotary members, means for supplying flowable material to said first rotary member and to said second rotary member, mask means arranged to interrupt 40% to 60% of the flowable material centrifuged from said first and second rotary members at locations spaced about the rotational axes of said members, and means for conducting such interrupted flowable material to the third rotary member.

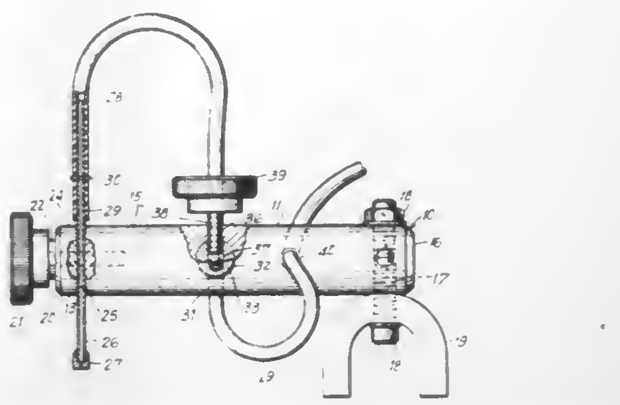
4,368,850
DRY AEROSOL GENERATOR
George Szekely, 7 Pamela La., Rochester, N.Y. 14618
Filed Jan. 17, 1980, Ser. No. 112,887
Int. Cl.^{3} B05B *9/043*
U.S. Cl. 239—333 **13 Claims**



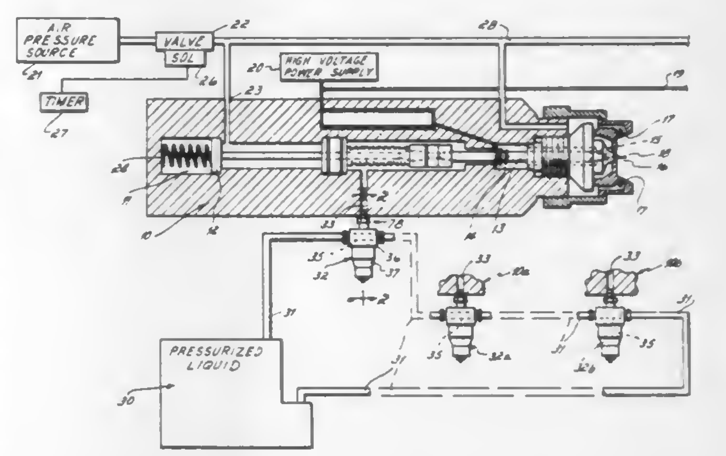
1. An aerosol generator comprising a housing, means for containing a supply of liquid in said housing, a nozzle in said housing, said nozzle having a spray outlet, means in said housing defining a chamber for air, a propulsion passage in the vicinity of the nozzle, outlet means providing communication between said chamber and said propulsion passage, and means for simultaneously pumping pressurized liquid from said containing means through said nozzle and injecting pressurized air from said chamber into said propulsion passage to combine in said propulsion passage in the formation of an aerosol, said simultaneous pumping means comprising means forming pistons facing the air in said chamber and the liquid in said containing means, said pistons being interconnected for simultaneous relative movement with respect to said air chamber and liquid containing means, said air chamber means comprising a first pair of tubes in telescoping relationship, a cover for said chamber on one of said tubes providing said air chamber piston, a second pair of tubes in telescoping relationship, one of said second tubes being disposed in said liquid containing means for receiving the liquid therein, the other of said second pair of tubes being fixedly connected to said nozzle, said liquid piston being disposed in and moveable with one of said second pair of tubes, and said cover and nozzle being fixedly connected for conjoint movement.

4,368,851
NEEDLE STREAM VALVE
Paul Karlan, 511 Center Ave., Mamaroneck, N.Y. 10543
Filed May 8, 1980, Ser. No. 147,846
Int. Cl.^{3} B05B *1/30*
U.S. Cl. 239—581 **2 Claims**

1. In a system for supplying a liquid coolant to a cutting tool, an improved needle stream valve assembly comprising: a generally elongated valve body, said valve body having a medially disposed transversely extending bore, and a cylindrical bushing disposed in said bore, said bushing having a first axially disposed bore and a second transversely disposed bore communicating therewith; a segment of hollow flexible tubing disposed in said first bore, and a rigid sphere of corresponding diameter disposed in said second bore; screw means carried by said valve body and adjustably pressing said sphere against said tube segment to control the flow of fluid therethrough; said valve body having a first end, and means carried by said first end for attaching said body to a machine tool; said valve body having a second end, a support member adjustably mounted upon said second end for rotation about the principal axis of said valve body, a hollow tube carried by said support member having a nozzle on one end thereof, said tube having a second end, and a second flexible tube segment having a first end communicating with said second end of said hollow tube, and a second end thereof communicating with said first flexible tube segment.



4,368,852
COMBINATION SPRAY GUN AND PRESSURE REGULATOR
William J. Sharp, Wakeman; Harold D. Beam, Kipton, and William A. Armstrong, Greenwich, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Mar. 23, 1981, Ser. No. 246,743
Int. Cl.^{3} B05B *5/02, 7/12*
U.S. Cl. 239—695 **10 Claims**



1. In combination, an electrostatic spray gun and a pressure regulator for controlling the pressure of liquid dispensed from the gun,

said spray gun comprising a non-metallic, low capacitance gun body, a liquid material flow passage in the gun body terminating in an outlet orifice, and a selectively operable valve contained within the gun body for controlling the emission of spray material from said orifice, said spray gun further including means for applying an electrical charge to spray material as it is emitted from said spray gun,

said pressure regulator comprising a regulator body physically attached to and supported from said gun body, said regulator body being made from non-metallic, low capacitance material, said pressure regulator having a first straight line flow passage therethrough so as to minimize pressure drop of liquid flowing through said regulator via said first flow passage, said pressure regulator having a second passage intersecting said first passage for connecting said first passage to said liquid material flow passage in the gun body, said second passage including pressure regulator valve means therein for regulating the pressure of liquid supplied from said straight line flow passage through said second passage to said flow passage in the gun body.

4,368,853
ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

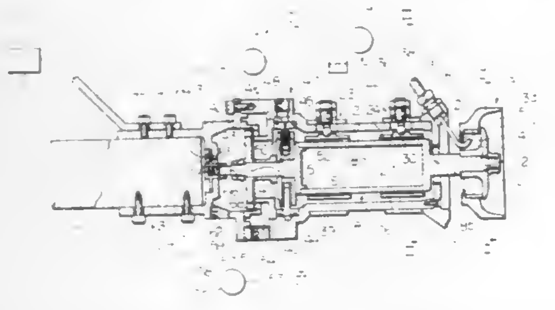
Teru Morishita, Shizuoka; Matuyosi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 28, 1980, Ser. No. 153,850

Claims priority, application Japan, Feb. 19, 1980, 55-18450

Int. Cl.^{3} B05B ***5/04;*** **F16C** ***27/00, 32/06***

U.S. Cl. 239—703 **20 Claims**



1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

a metallic rotary shaft rotatably arranged in said metallic housing and having a front end and a rear end, said rotary shaft further having a hollow shaft portion having a predetermined hollow portion diameter, said hollow shaft portion being axially contiguous with first and second solid shaft portions at said front and rear ends, respectively, said first and second solid shaft portions having respective solid portion diameters, said hollow portion diameter being larger than said solid portion diameters;

a cup shaped metallic spray head fixed onto said first solid shaft portion at said front end of said rotary shaft and having a cup shaped inner wall;

feeding means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

non-contact type radial bearing means arranged in said metallic housing and arranged with respect to said metallic rotary shaft so as to be adjacent to said hollow shaft portion of said rotary shaft for radially supporting said rotary shaft under a non-contacting state;

non-contact type thrust bearing means arranged in said metallic housing and arranged with respect to said metallic rotary shaft so as to be adjacent to said second solid shaft portion for axially supporting said metallic rotary shaft under a non-contacting state;

terminal means for receiving a negative high voltage, said terminal means being connected to said housing; and

electrode means arranged in said housing and electrically connecting said terminal means to said spray head.

4,368,854
YARN FEEDER MOTOR CONTROL

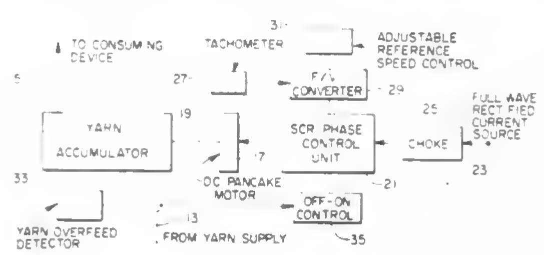
Rene J. Valois, Woonsocket, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Jan. 29, 1982, Ser. No. 344,195

Int. Cl.^{3} B65H ***51/20***

U.S. Cl. 242—47.01 **9 Claims**

1. A yarn feeding system comprising a yarn source, yarn accumulating means operable to remove from said supply and accumulate a generally predetermined amount of yarn, intermittently active yarn withdrawing means for periodically from said accumulating means removing a length of yarn less than the predetermined amount accumulated thereon, operating means for said accumulating means to operate the same to reaccumulate yarn to replace the withdrawn length and maintain in said accumulating means said predetermined quantity and being responsive to said detecting means to temporarily interrupt said accumulation, said operating means including a low inductance DC motor for driving said yarn accumulating means and an electric circuit for supplying current to said motor which comprises a source of a full wave rectified AC current connected to said motor, comparing means for comparing the actual output speed of said motor with a predetermined reference motor speed and producing an output signal when the actual motor speed deviates from said reference speed, an SCR control unit activated by the output signal from said comparator to control the passage of said rectified current through said circuit to said motor to maintain the actual motor speed for driving said accumulating means at said reference speed, and electrical choke means connected in series with said motor and current source to increase the available torque delivered by said motor at a given current level controlled by said SCR unit.



4,368,855
WEB-CUTTING APPARATUS

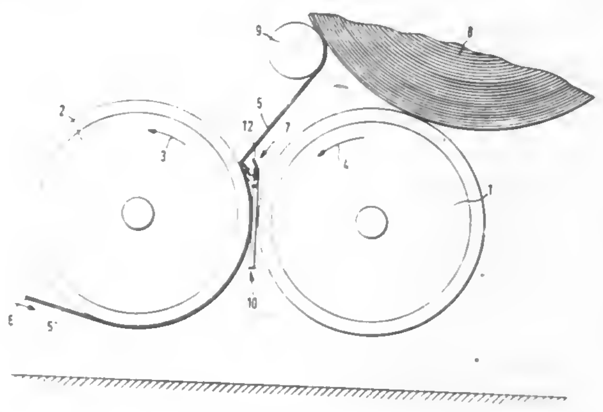
Herbert Schönmeier, Dusseldorf, and Ewald G. Welp, Erkrath, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 235,258

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005426

Int. Cl.^{3} B65H ***19/20, 17/08***

U.S. Cl. 242—56 R **8 Claims**



1. In a web winding apparatus comprising a pair of spaced support rolls for a core tube to be placed thereon, means for delivering a web to a core tube supported on said rolls, and means for cutting the web when it is desired to replace the core tube, the improvement wherein said cutting means comprises an elongated blade extending longitudinally of the rolls, and means for moving said blade between advanced and retracted positions in the space between said rolls so as to contact for cutting said web in advanced position and to withdraw said blade into retracted position between cuttings, the blade advancing means includes means for tilting said blade when it arrives in advanced position.

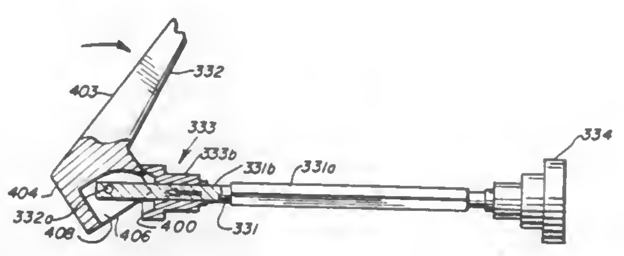
4,368,856
FOLDING CRANK HANDLE FOR A FISHING REEL

Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jun. 1, 1981, Ser. No. 269,356

Int. Cl.^{3} A01K ***89/00***

U.S. Cl. 242—84.1 J **10 Claims**



1. In a fishing reel having a housing, a crank handle having a cylindrical base, a crank rod pivoted to the base of the handle and passing into the housing, the crank rod being free for axial movement and being rotatable by the crank handle for retrieving a fishing line, bearing sleeve means mounted in the housing to support the crank rod for rotation, and crank handle supporting means seated in the bearing sleeve means and permitting the crank rod to rotatably and slidably support the crank handle for rotation, the improvement comprising:

the base on the handle having a base face, projecting means on the base;

a supporting face on the handle supporting means to bear against the base face on the handle to support the crank handle for rotation, and a receptacle in the supporting face to receive the projecting means when the crank handle is folded toward the housing.

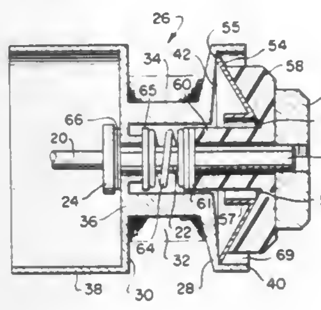
4,368,857
FISHING REEL DRAG

Lionel C. Jacob, and G. Wirth Yarborough, both of Mobile, Ala., assignors to Cool Spool, Inc., Mobile, Ala.

Filed Jan. 9, 1981, Ser. No. 223,807

Int. Cl.^{3} A01K ***89/01, 89/02***

U.S. Cl. 242—84.5 A **6 Claims**



1. In a fishing reel having a spool including a hub with axially spaced inboard and outboard flanges to define an annular line storage recess, the reel also having a shaft concentric with and extending through said hub, said spool being rotatable relative to said shaft, an improved drag mechanism for restraining relative rotation of said spool and said shaft, said drag mechanism comprising:

a first brake element defining a central aperture and having an exterior frustoconical friction surface to provide said first element with opposite major and minor ends of relatively large and small diameters, respectively, said major end of said first element being secured to said outboard spool flange for rotation with said spool;

a second brake element secured against rotation relative to said shaft and having an interior frustoconical friction surface complementary to the shape of the friction surface on said first brake element, said second brake element including a hub extending through the central aperture of said first brake element; and

adjustable means for urging the friction surfaces of said first and second brake elements into contact with each other.

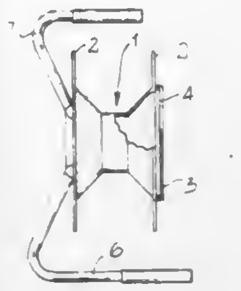
4,368,858
PORTABLE DRUM REEL

Gustav Salomon, 135 Hanassi St., Haifa, Israel

Filed Aug. 5, 1980, Ser. No. 175,822

Int. Cl.^{3} B65H ***17/46, 49/00***

U.S. Cl. 242—129.5 **3 Claims**



1. A portable drum reel for transporting an elongate member having end portions carrying fixtures, said drum reel comprising:

a drum portion for supporting the elongate member in a condition wound thereabout, said drum portion having an end defining an aperture for receiving a fixture carried by one of the end portions when not in use; and

first and second oppositely disposed flanges flanking the drum portion, the first of the flanges having a slit formed therein extending inwardly from an outer peripheral edge of the flange and merging with said aperture, said slit receiving therethrough said one of the end portions of said elongate member so that the fixture carried by said one end portion is positionable exterior of the drum portion prior to winding of the elongate member about the drum portion, the fixture carried by said one end portion being accessible at all times, the fixture carried by the other of said end portions being accessible by unwinding said other end portion from said drum portion.

4,368,859
BOBBIN ENGAGING AND LIFTING MECHANISM

Heinz H. Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,160

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951301

Int. Cl.^{3} B65H ***49/02;*** **D03J** ***5/08***

U.S. Cl. 242—130 **7 Claims**

1. A mechanism for engaging a bobbin (**10**) carrying a web (**34**) a packaging material and raising said bobbin from a rest position on a support (**12**) to a working position whereat the web may be withdrawn, comprising:

(a) a pair of yoke arms (**17,18**) disposed in a common plane for straddling a bobbin,

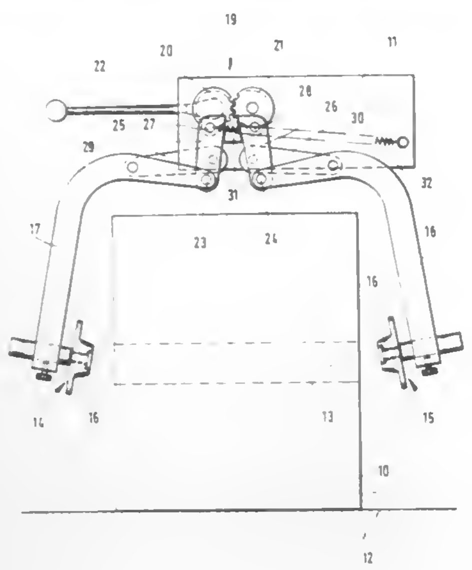
(b) a pair of clamping jaws (**14,15**) individually and rotatably mounted on one end of said yoke arms for laterally and axially engaging said bobbin,

(c) a mounting plate (**11**),

(d) movable first pivot means (**29,30**) mounting each yoke arm to said mounting plate intermediate its ends,

(e) rotatable drive means (**20,21**) mounted on said mounting plate, and

(f) movable second pivot means (**25,26**) eccentrically coupling said drive means to other ends of said yoke arms, whereby the continuous rotation of said drive means successively pivots the one ends of the yoke arms inwardly to bring the clamping jaws into engagement with the bobbin and thereafter raises the yoke arms and engaged bobbin from a rest position to a rotatable working position.



4,368,860

MAGNETIC RECORDING TAPE CASSETTE

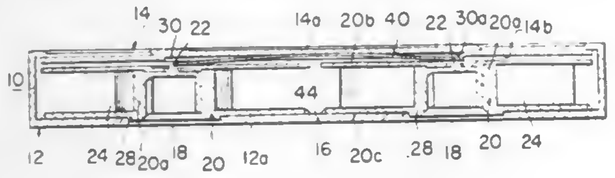
Shinichi Goto, Takatsuki, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,112

Claims priority, application Japan, Dec. 6, 1979, 54-169596[U]; Dec. 29, 1979, 54-181636[U]

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—199 **7 Claims**



1. A magnetic recording tape cassette comprising,

a bottom case and a top case, said bottom case being assembled with said top case to provide a tape chamber therebetween,

one or more tape roll members mounted in the tape chamber on the bottom wall of the bottom case, each of said tape roll members including a hub having a magnetic recording tape wound thereon and provided with a top projection for pivoting the hub, a resilient spring-biased member fixed to the undersurface of the top wall of the top case and having one or more arms with the free ends thereof extending to the top projection of the corresponding hubs to resiliently, rotatably fix the hubs in position, and

a recess disposed in the undersurface of the top wall of the top case for accommodating the fixed portion of the spring member, said recess having a depth substantially equal to or larger than the thickness of the spring plate so as to position the resilient spring member to prevent contact of the intermediate portion of the resilient spring member onto the top surface of the tape roll member, said recess extending to at least a position corresponding to the maximum diameter of the tape roll member.

4,368,861

FRAME CONNECTING MEMBER OF A KITE

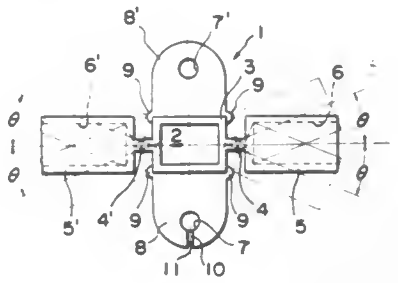
Hiroshi Ohsato, 23-3, 2-chome, Higashi-Mukojima, Sumida-ku, Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 218,015

Claims priority, application Japan, Nov. 7, 1980, 55-159244[U]

Int. Cl.³ B64C *31/06;* **F16D** *1/00*

U.S. Cl. 244—153 R **4 Claims**



1. A frame connecting member for a kite comprising a unitary body formed of elastic material including:

a main body having oppositely extending projections and a central base portion between said projections, having a through hole extending in a longitudinal direction for receiving a longitudinally extending frame member along a longitudinal axis, said projections each having kite string mounting holes formed therein;

first and second lateral support members respectively extending along a lateral line extending perpendicularly to said longitudinal direction, said first and second lateral support members each having opposite first and second sides, said first and second lateral support members also having laterally extending holes opening at their respective first sides for receiving laterally extending frame members along a lateral axis; and

first and second elastic connection pieces respectively connecting said second sides of said first and second lateral support members to opposite sides of said central base portion of said main body such that said first and second lateral support members are elastically tiltable about said longitudinal axis through a predetermined angle θ to opposite sides of said lateral axis;

said main body comprising means for contacting said first and second lateral support members when said first and second lateral support members are tilted, to limit the degree of said tilting to said predetermined angle θ to opposite sides of said lateral axis.

4,368,862

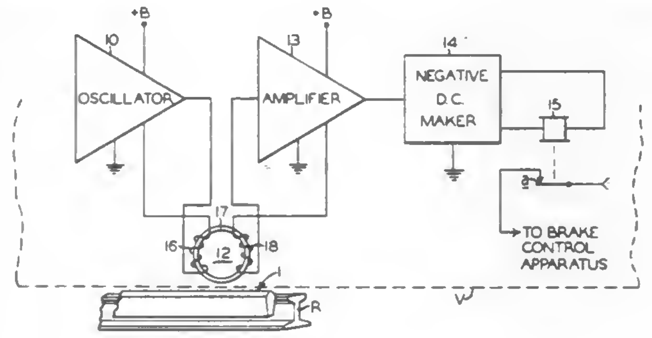
FAIL-SAFE MAGNETIC SENSING ARRANGEMENT

Reed H. Grundy, Murrysville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Dec. 22, 1980, Ser. No. 219,282

Int. Cl.³ B61L *1/16, 21/00*

U.S. Cl. 246—28 R **8 Claims**



1. A fail-safe sensing arrangement comprising, first and second devices movable relative to each other, said first device including a permanent magnet structure, said second device including an electronic circuit having an input means for producing a.c. signals, a saturable means coupled to said input means, and an output means coupled to said saturable means whereby said a.c. signals are normally transformer coupled from said input means to said output means by said saturable means except when said saturable means is saturated by said permanent magnet structure so that said input means and said a.c. signals are decoupled from said output means which signifies that said second device is in the vicinity of said first device.

4,368,863

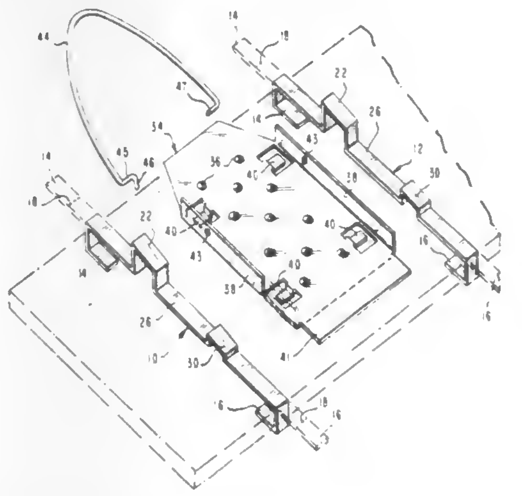
IRON HOLDER

John N. Gentile, Box 377-K Noyack Rd., Sag Harbor, N.Y. 11963

Filed Aug. 1, 1980, Ser. No. 174,679

Int. Cl.³ D06F *79/02*

U.S. Cl. 248—117.7 **9 Claims**



1. An iron holder kit comprising:

a pair of straps having ends which can be bent to engage an ironing board, each of said straps having one or more raised portions thereon the surfaces of which are inclined with respect to the longitudinal axis of the strap;

a plate having spaced-apart side walls and a plurality of tabs below and spaced from the lower edge of said side walls, said straps adapted to fit in the space between the tabs and the lower edge of the side walls, said plate having a raised heel portion;

an elastic U-shaped element one end of which is bent inwardly, the other end of which is bent inwardly and downwardly forming a projection;

means on said plate for receiving the ends of said elements.

4,368,864

ISOLATING FOOT PAD OR MOUNT

Richard D. Tobey, Beavercreek, Ohio, assignor to Tech Products Corporation, Dayton, Ohio

Filed Sep. 24, 1980, Ser. No. 190,349

Int. Cl.³ A47B *91/00*

U.S. Cl. 248—188.9 **3 Claims**

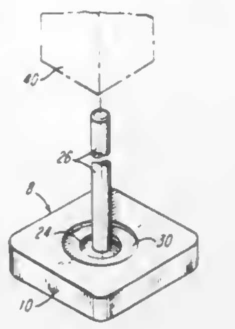
1. A mount unit for support of a piece of equipment or furniture or the like upon a floor comprising:

a housing having a lower portion adapted to rest upon a floor, the lower portion of the housing being of elastomeric material, the housing having an upper portion provided with an opening therein, the opening having a given area,

support means forming an arcuate concave support surface within the housing the support means resting upon the elastomeric material,

a stem extending through the opening in the upper portion of the housing, the stem having a cross-sectional area at the opening which is considerably less than the given area of the opening, the stem being adapted to support a piece of equipment or furniture or the like,

a base joined to the stem within the housing and having an arcuate convex surface resting upon the arcuate concave support surface, the arcuate convex surface having a curvature which is complementary to the curvature of the arcuate concave support surface, the area of the arcuate concave support surface being considerably greater than the area of the arcuate convex surface of the base, the stem thus being laterally and angularly movable within the opening in the housing as the stem supports a piece of equipment or furniture or the like, the base thus being laterally and angularly movable with respect to the support surface, so that as the housing rests upon a floor the base and the stem may assume any one of a multiplicity of positions with respect to the housing and the housing may assume any one of a multiplicity of angles with respect to the piece of equipment or furniture or the like.



4,368,865

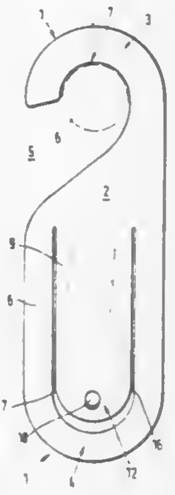
DEVICE FOR SUSPENSION OF TENNIS RACKETS OR THE LIKE

Uwe Kolbe, Am Walde 3, D-2211 Oelixdorf, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,421

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—214 **21 Claims**



1. A hanger for tennis rackets or like commodities, comprising a plate-like body having a hook-shaped end portion for suspending the same, said body further including a deformable inner section, and an outer section which substantially entirely surrounds said inner section and has two elongated legs flanking said inner section, said outer section comprising reinforcing means for enhancing the rigidity thereof, and said reinforcing means being provided on and extending lengthwise of at least one of said legs, one of said sections but not the other having at least one projection adapted to engage and suspend a commodity, and said one projection having a free end, said sections being resiliently movable relative to one another between a first position in which said free end is located intermediate said sections so as to permit suspension of a commodity from said

projection and a second position in which said sections cooperate to clamp the commodity.

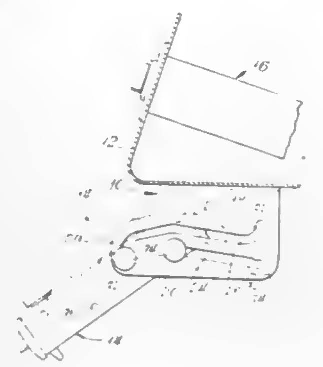
4,368,866
MOUNTING BRACKET AND MOUNTING ARRANGEMENT

Keith F. Urban, Elk Grove Village, Ill., assignor to International Jensen Incorporated, Schiller Park, Ill.

Filed Jun. 27, 1980, Ser. No. 163,709

Int. Cl.^{3} E04G *3/00*

U.S. Cl. 248—286 **10 Claims**



1. An arrangement for displaceably mounting a device upon a disparate surface, comprising:
- a. a mounting bracket for stationing of the device, said bracket having a base plate for fastening of the mounting bracket to the disparate surface,
- b. a pair of opposed, complementary flat arms depending from opposite ends of the base plate, each of said arms extending on an opposite side of the device,
- c. means for guiding displacement of the device on the mounting bracket, said guiding means comprising:
  - i. a first, generally straight channel in each said arm shaped to engage the stationed device,
  - ii. a second, generally serpentine channel in each said arm spaced from said first channel and shaped to engage the stationed device,
- d. a pair of pins protruding from opposite sides of said device, one of said pins engaging one of said channels and the other of said pins engaging the other of said channels,
- e. at least one of said pins protruding through the associated channel, and further including a head engaged upon said protruding pin, said pin being threadedly engaged within the device such that said head can be tightened against said arm to lock said pin and said device at a desired location along said channel, and
- f. means for fastening of the mounting bracket to a disparate surface.

4,368,867
TILT BASE FOR A CRT DISPLAY TERMINAL

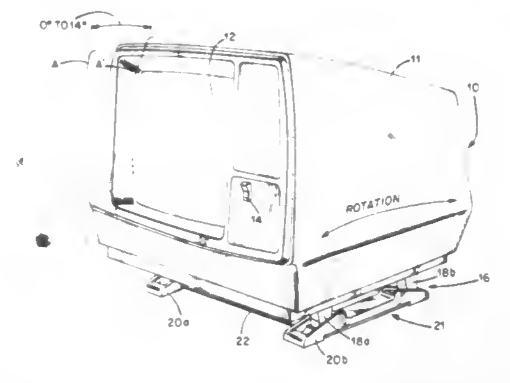
Robert A. Pendleton, Dedham; John E. Edfors, Townsend; Leonard G. Whitford, Wakefield, and Walter J. Conroy, Acton, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 29, 1981, Ser. No. 278,287

Int. Cl.^{3} A47B *91/00*

U.S. Cl. 248—346 **47 Claims**

1. A tilt base assembly for supporting a CRT display terminal unit having a predetermined center of gravity characteristic for providing a wide range of operator viewing angles, said assembly comprising:
- pairs of elongated feet adapted to be positioned on the bottom of said terminal unit at predetermined front and rear locations selected in accordance with said predetermined center of gravity characteristic so as to provide said wide range of viewing angles; and
- a base member including:
  - a plate; and
  - a pair of trapezoidal shaped base members, each of said base members being attached to said plate at predetermined positions for enabling the positioning of said pairs of feet attached to said unit equidistant front and rear from said center of gravity along a reference plane which is perpendicular to the direction of movement so as to minimize gravity forces established by said said predetermined center of gravity characteristic of said unit and each of said base members including front and rear ramp portions, at least said front ramp portions having a series of indentations for enabling said unit to be moved by an operator to a corresponding number of viewing angle positions within said wide range.



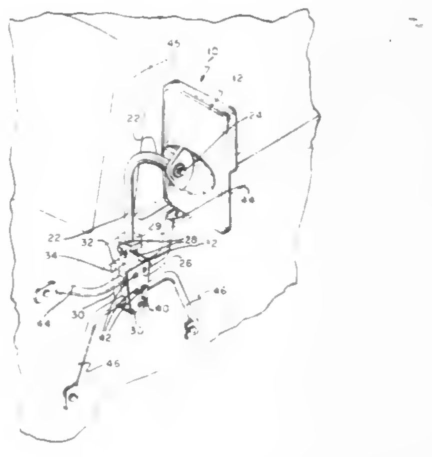
4,368,868
BREAK-AWAY REARVIEW MIRROR AND BRACKET

Milfred W. Urban, 1819 N. Edwards, Wichita, Kans. 67203

Filed Sep. 2, 1980, Ser. No. 183,366

Int. Cl.^{3} F16M *13/00;* **A47G** *1/24*

U.S. Cl. 248—549 **8 Claims**



1. A break-away rearview mirror comprising a mirror means, a mirror bracket means attached to said mirror means, a molded synthetic resin bracket means comprising a generally hollow structure having a hollow threaded neck for receiving therethrough said mirror bracket means and a pair of generally rectangular mating box-like members, each including a pair of end walls and a pair of side walls, an end wall of each pair of box-like members including a protruding essentially hollow semi-cylindrical structural defining a portion of said threaded neck such that when said box-like members mate, the threads on each portion of said threaded neck are aligned when the threaded neck is formed, a means for attaching said mirror bracket means to said molded bracket means to hold said mirror means in an upright position, and a mounting bracket means connecting to said molded bracket means to mount said combined mirror means-mirror bracket means-molded bracket means on an automobile, truck, or the like, said mounting bracket means having a structural portion of same being encased within said synthetic resin bracket means, said combined mirror means-mirror bracket means breaking-away from said molded synthetic resin bracket means upon impact.

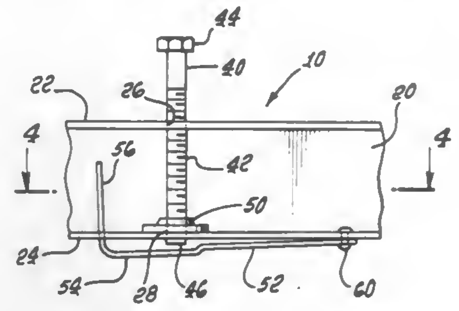
4,368,869
LEVELER FOR DISHWASHER AND THE LIKE

Aaron E. Gelvezon, Fullerton, and Alphonso Merino, South Gate, both of Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.

Filed Sep. 15, 1980, Ser. No. 187,416

Int. Cl.^{3} F16M *7/00, 11/24*

U.S. Cl. 248—656 **4 Claims**



1. In a leveler for supporting and leveling a dishwasher or the like having an integral frame, the combination of:
- a bottom rail fixed in said frame and having a lower surface with first and second openings through said surface;
- a generally L-shaped resilient member;
- means mounting said member on said rail at said lower surface with one arm of said L parallel to said surface and with the other arm of said L passing upward through said first opening to limit lateral movement of said member; and
- a bolt mounted in said second opening and threadedly moveable downward to engage said member between said member and said rail and between said mounting means and said first opening, with said frame resting on said member.

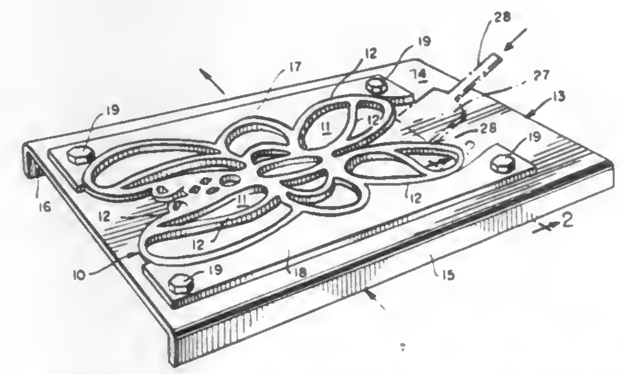
4,368,870
MOLDING ASSEMBLY FOR PLASTIC DECORATIONS

Gregory A. Greb, Melrose Park; Raymond W. Spitza, Northlake, and Robert R. Moe, La Grange, all of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Aug. 31, 1981, Ser. No. 296,579

Int. Cl.^{3} B29C *1/00, 5/00*

U.S. Cl. 249—102 **8 Claims**



1. An assembly for molding plastic decorations resembling stained glass miniatures, comprising:
- a. a horizontally-extending support plate;
- b. a flat shallow horizontally-extending frame positioned on the upper surface of said plate, said frame providing at least one opening therethrough enclosed of its sides by ribs of said frame for receiving and retaining liquified thermoplastic composition; and
- c. a pair of holding fixtures extending along oppositely-disposed sides of said frame and engaging outer rib portions thereof, said fixtures being adjustably secured to said plate so that they can be precisely positioned on said plate in relation to said frame outer ribs portions, said fixtures providing inner edge portions conforming to the shape of said outer rib portions, said fixtures inner edge portions releasably engaging the facing sides of said frame rib portions, said engagement providing a snap-in and snap-out relation between said frame and said holding fixtures.

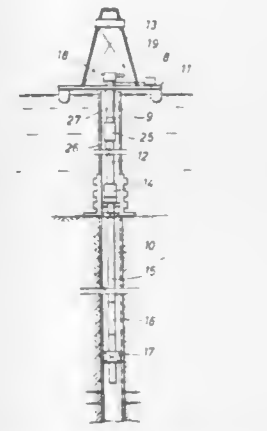
4,368,871
LUBRICATOR VALVE APPARATUS

David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 838,684, Oct. 3, 1977, Pat. No. 4,197,879. This application May 21, 1979, Ser. No. 40,838

Int. Cl.^{3} F16K *31/122*

U.S. Cl. 251—58 **3 Claims**



1. Lubricator valve apparatus adapted for use in a well testing operation, comprising: an elongated valve body adapted for connection in the pipe string; a tubular structure fixedly mounted in said valve body and defining a flow passage extending longitudinally therethrough; a valve seat on said tubular structure surrounding said flow passage; a ball valve element mounted on said tubular structure and rotatable with respect to said valve seat between positions opening and closing said flow passage; an actuator sleeve slidable relatively along said tubular structure between spaced longitudinal positions and carrying eccentric means for rotating said ball valve element; hydraulic means cooperable with cylinder means in said body for shifting said actuator sleeve to one of said longitudinally spaced positions only in response to the pressure of a first control fluid and for shifting said actuator sleeve to the other of said longitudinally spaced positions only in response to the pressure of a second control fluid; and releasable latch means cooperatively arranged on said actuator sleeve and said valve body for holding said actuator sleeve in each of said longitudinally spaced positions to correspondingly maintain said ball valve element in each of the open and the closed positions, said latch means being releasable only in response to the application of a predetermined control fluid pressure to said hydraulic means in each of the open and closed positions.

4,368,872
PRESSURE FLUID REGULATING VALVE, PARTICULARLY PRESSURE REDUCING VALVE

Götz D. Machat, Lohr, Fed. Rep. of Germany, assignor to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,677

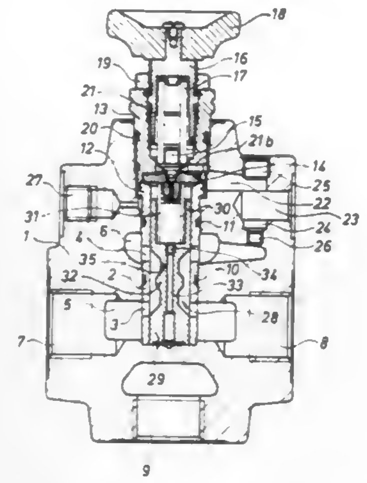
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949231

Int. Cl.^{3} F16K *31/363*

U.S. Cl. 251—63 **2 Claims**

1. A pressure fluid regulating valve, particularly a pressure reducing valve, comprising a valve body defining a bore, an inlet port and an outlet port opening in an axially spaced relationship into the bore, a sliding spool axially movable in the bore, the spool being formed with end piston areas bounding a recessed portion interconnecting in at least a central axis position of the spool said inlet and said outlet port, and an intermediate trapezoidal flange provided in said recessed portion, the

diameter of said flange being smaller than that of said bore, the end walls of said recessed portion sloping towards said flange to permit a substantially uniform flow through said recess in



any axial position of said spool; said spool having a central bore interconnecting the end faces of said piston areas and communicating with said recessed portion in the range of said outlet port.

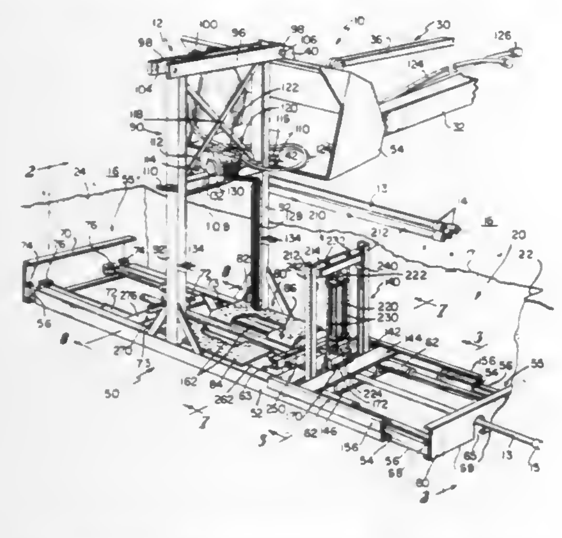
4,368,873
VEHICULAR MOUNTED PIPE PRESSER

Robert G. Perry, 3000 Ashwood Dr., Evansville, Ind. 47711

Filed Sep. 14, 1979, Ser. No. 75,702

Int. Cl.³ E02F *5/10;* E03F *3/06;* F16L *1/02*

U.S. Cl. 254—29 R **21 Claims**



1. An apparatus for maneuvering pipe through the ground comprising a frame, front and rear feet movably carried by the frame for engaging opposed surfaces, each surface being transverse to movement of the pipe, a housing movably carried by the frame for receiving the pipe, pipe-clamping means carried on the housing for clamping the pipe, a first hydraulic system for moving the rear foot in first and second directions, a second hydraulic system for moving the front foot in the first and second directions, first and second control means for actuating the first and second hydraulic systems, respectively, to move the rear foot in the second direction to engage one of the surfaces and to move the front foot in the first direction to engage the other surface thereby stabilizing the frame between the surfaces, a third hydraulic system for moving the housing and pipe-clamping means in the first and second directions, a third control means for actuating the third hydraulic system to move the housing and pipe-clamping means in the first direction to apply a force needed to move the pipe through the ground in the first direction, fluid-communicating means between the first direction, fluid-communicating means between the first and third hydraulic systems for allowing fluid to pass from the third system to the first system and from the first system to the third system, an increase in the force in the first direction needed to move the pipe causing fluid to pass from the third hydraulic system to the first hydraulic system to move the rear foot in the second direction and apply a corresponding force to the one surface, the fluid-communicating means allowing fluid to pass from the first hydraulic system to the third hydraulic system to continuously balance the forces in the first and second directions.

14. An apparatus for maneuvering pipe through the ground comprising a stationary frame structure, a surface-engaging frame structure supported by the stationary frame structure for engaging a surface transverse to movement of the pipe and a hydraulically controlled assembly for moving the pipe, the assembly including a housing movably carried by the stationary frame for receiving the pipe, a first double-acting piston and cylinder mechanism for moving the housing, control means for actuating the first double-acting piston and cylinder mechanism to move the housing, two parallel guides mounted to the housing, a cross member slidably carried by the guides to allow movement thereof relative to the housing, first stop means for limiting downward movement of the cross member, means in the housing for clamping the pipe, the clamping means including upper and lower clamp jaws, a second double-acting piston and cylinder mechanism for moving the jaws, means for connecting one end of the second piston and cylinder mechanism to the upper clamp jaw, means for connecting the other end of the second piston and cylinder mechanism to the cross member, means for connecting the lower clamp jaw to the cross member, control means for actuating the second piston and cylinder mechanism to move the upper clamp jaw and cross member in opposite directions relative to the housing and to move the lower clamp jaw in the same direction as the cross member, second stop means for limiting downward movement of the upper clamp jaw, the upper and lower jaws cooperating with the housing to capture a portion of the pipe received by the housing, clamping actuation of the second piston and cylinder mechanism moving the upper clamp jaw downward until it is stopped by the second stop means and thereafter moving the cross member and lower clamp jaw upward to clamp the pipe in the housing, and unclamping actuation of the second piston and cylinder mechanism moving the cross member and lower clamp jaw downward until the cross member is stopped by the first stop means and thereafter moving the upper clamp jaw upward to release the pipe.

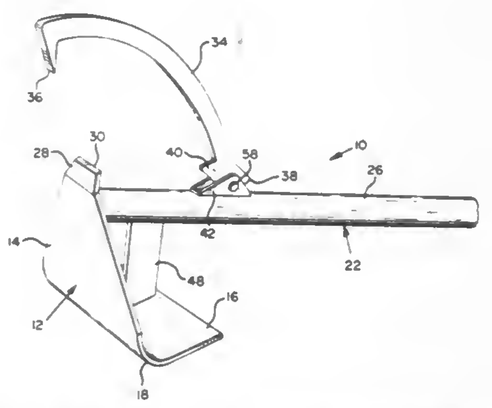
4,368,874
LOG LIFTER

David J. Weisgerber, Gresham, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 174,877, Aug. 4, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,134

Int. Cl.³ B65G *7/12*

U.S. Cl. 254—131 **7 Claims**



1. A log lifter adapted to be manually operated for raising logs, comprising:

an L-shaped unitary flat metal base plate having a continuous undersurface, said base plate including a planar sole portion disposed substantially horizontally with respect to the ground when said log lifter is in an initial log engaging position, a lateral blade portion extending forwardly of said sole portion to provide a horizontal log engaging edge, a substantially vertical heel portion at the remote end of said base plate from said blade portion, and a smoothly curved portion joining the sole portion to the heel portion adapting said base plate to roll rearwardly after engagement of said log by said blade portion,

and an operating handle secured to the forward top surface of the sole portion next adjacent the blade portion and slanting rearwardly therefrom, said sole portion extending horizontally therefrom toward said curved portion well rearwardly of said handle to maintain an initial substantially horizontal attitude of said sole portion with said handle slanting rearwardly, said handle being mounted at an angle to said sole portion for adapting said blade portion to be urged up under the near side of a log and adapting the log to be supported against said handle, said angle being acute between said handle and said sole portion as it extends rearwardly from said blade portion,

said blade portion and said sole portion where it adjoins said blade portion having a narrow width comparable to the diameter of said handle where it is secured to said sole portion, said base plate flaring outwardly in trapezoidal manner over the length of said sole portion from said narrow width at said blade portion to a width at said curved portion and at said heel portion which is several times the width of said handle where the latter is secured to said sole portion,

said handle being provided on the forward side thereof with a pivotally connected outwardly curved log hook arm for engaging the upper side of said log.

4,368,875
FENCE SUPPORT STRUCTURE, ESPECIALLY FOR EQUESTRIAN SHOW JUMPING

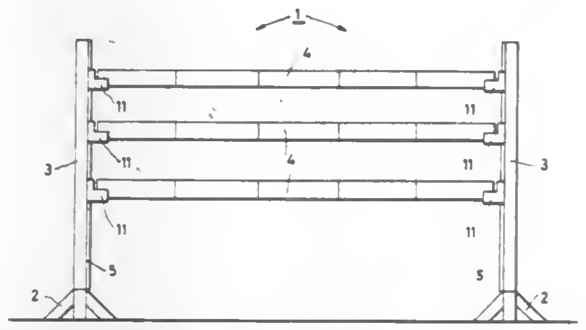
Juergen Weiss, Rhens, and Vinzenz Neisius, Ochtendung, both of Fed. Rep. of Germany, assignors to Aluteam Sport- und Freizeit GmbH, Mayen, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 196,153

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 8007230[U]

Int. Cl.³ E04H *17/14;* A63K *3/04;* A63B *5/00*

U.S. Cl. 256—59 **14 Claims**



1. A fence support structure, especially for equestrian show jumping, comprising upright post means (3) for supporting horizontal bar means (4) forming an obstacle, obstacle holding means (11) including adjustment means (15, 20) for securing said obstacle holding means to said upright post means, comprising in combination sectional first rail type guide means (5) operatively associated with said upright post means (3) alongside the side thereof facing said obstacle holding means (11), said obstacle holding means including second guide means (12) for slidably engaging said first rail type guide means for sliding up and down said upright post means (3), each of said first and second guide means including interlocking means (9, 10, 12) for holding the obstacle support means against disengagement from the first rail type guide means in a horizontal direction as defined by said bar means (4), said sectional first rail type guide means (5) comprising a row of aligned holes (7), said adjustment means (15, 20) including bolt means (15, 20) movable relative to said adjustment means and fitting into any one of said holes, spring bias means (14) operatively arranged between said bolt means and said obstacle holding means for normally biasing said bolt means to engage into one of said holes, whereby the obstacle holding means are held at an elevation along said upright post means substantially as determined by the engaged hole, and whereby said obstacle holding means are adjustable along said upright post means when said bolt means are withdrawn from said engaged hole, whereby the side of the upright post means facing away from said obstacle holding means remains free of any obstructions.

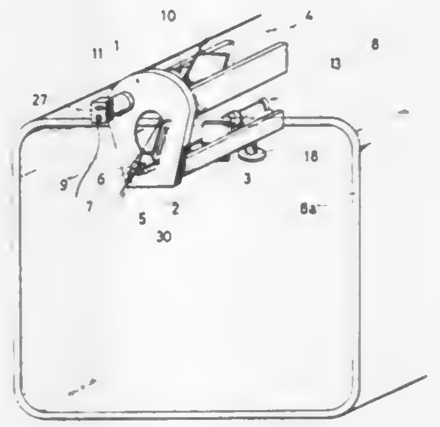
4,368,876
SELF-PROPELLING BEVEL FUSION-CUTTING MACHINE

Hiroshi Kataoka, Takarazuka, Japan, assignor to Koei Machine Co., Ltd., Osaka, Japan

Filed Apr. 30, 1981, Ser. No. 259,059

Int. Cl.³ B23K *7/04*

U.S. Cl. 266—54 **1 Claim**



1. A self-propelling bevel fusion-cutting machine comprising a machine main body which holds a fusion-cutter for effecting the bevel fusion-cutting of the end face of a pipe, traveling guide rollers which roll on said pipe end face, an outer roller which rolls circumferentially on the inner peripheral surface of the pipe, and an inner roller which rolls circumferentially on the outer peripheral surface of the pipe, the arrangement being such that the machine main body is movable circumferentially along the pipe end face by means of said rollers, either said outer roller or said inner roller being arranged so that it can be urged against and moved away from the peripheral surface of the pipe, one of said rollers being connected to a drive source mounted on said machine main body so as to be thereby driven for rotation, said rotatably driven roller having a substantial width and the diameter of the portion of said roller located nearer to the pipe end face being greater than that of its portion located remote therefrom.

4,368,877
SYSTEM FOR MONITORING SLAG THICKNESS AND CONSISTENCY IN REFINING CRUCIBLE

Jean Baumert, Esch-sur-Alzette, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Sep. 18, 1980, Ser. No. 188,572

Claims priority, application Luxembourg, Sep. 29, 1979, 81740

Int. Cl.³ C21B *7/24*

U.S. Cl. 266—99 **18 Claims**

1. In a steel-refining system having:

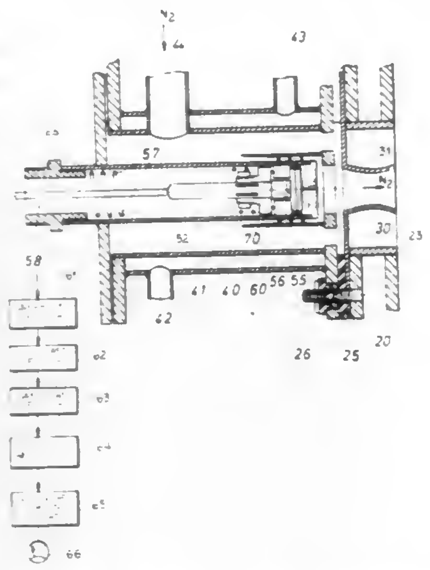
a crucible having an upwardly open mouth and containing a steel melt covered by slag,

an oxygen lance directed downwardly into said mouth at said melt,

a hood fitting downwardly over said mouth and having a hood wall formed by a multiplicity of tubes, and means for circulating a coolant through said tubes, the improvement comprising:

a tubular hood-wall extension formed by said tubes, having an outer end, and centered on an axis trained on said melt;

a holder mounted on said outer end of said extension;



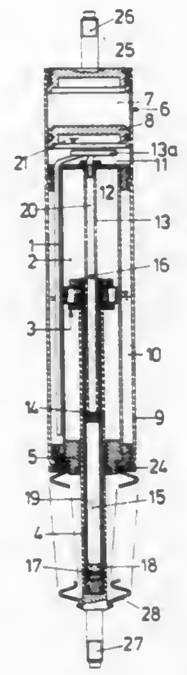
a sound transducer carried by said holder and directed along said axis at said melt; and

circuit means connected to said transducer for determining slag thickness by means of the sound detected by said transducer.

4,368,878
SELF PUMPING, HYDROPNEUMATIC, TELESCOPIC, SPRING DAMPING DEVICE WITH INTERNAL LEVEL REGULATION

Theo Meller; Heinz Knecht; Ewald Kohberg, and Karl-Heinz Löhr, all of Eitorf, Fed. Rep. of Germany, assignors to Boge GmbH, Eitorf, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,725
Int. Cl.^{3} F16F *9/18*
U.S. Cl. 267—64.17 **9 Claims**

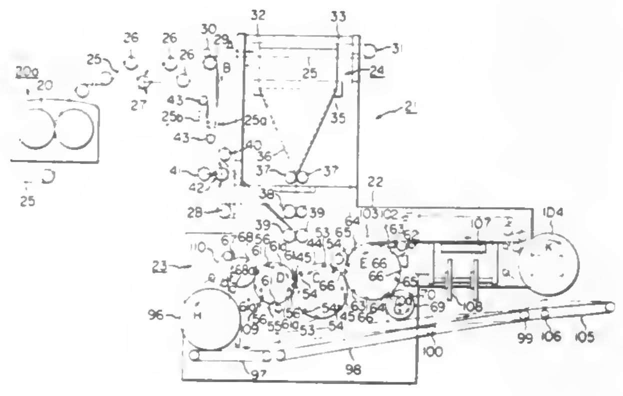


1. A self-pumping, hydropneumatic, telescopic, spring damping device with internal level regulation, especially for automotive vehicles, comprising: a working cylinder with an oil filled working chamber and a working piston slidably borne therein and provided with damping devices, said working piston being carried at the end of a hollow piston rod that passes sealingly from the working cylinder, a gas cushion in a gas spring chamber which is connected with the working chamber and which pressurizes the oil in the working chamber, an oil reservoir chamber defined by an outer jacket tube which encloses the working chamber and has a free surface between oil and gas in the reservoir, a hollow pump rod elastically borne on a partition, which pump rod is communicated at one end with the oil reservoir chamber below the surface of the oil, said pump rod at its other end having a pump suction valve and cooperating with a pump chamber disposed in the hollow piston rod for level regulation, such that as a function of the in and out spring motions oil is delivered from the oil reservoir chamber into the working chamber, a control opening in the pump rod such that, when the desired oil level is exceeded, oil can flow from the work chamber into the oil reservoir chamber via the control opening, a pump discharge valve disposed on the end of the pump chamber which is remote from the partition, said pump discharge valve being located in a control sleeve located in a piston rod cavity between the piston rod and the pump rod, said control sleeve forming passages which lead from a pump outlet valve to the working chamber, the end of said control sleeve toward said partition forming a control edge for said control opening, and a separating body of solid material movably disposed in the gas spring chamber in the region of the interface between the oil and gas, said device being characterized in that said separating body of solid material comprises a separating piston guided by a seal at its periphery in said gas spring chamber, said gas spring chamber being connected axially to the working chamber in the region of said partition which bears the pump rod and being communicated with said work chamber via at least one passage in said partition, the partition itself in the region of the working chamber being elastic, a pump suction tube fluidly communicating a pump rod cavity with the oil reservoir chamber below the surface of the oil, said pump suction tube being constructed and arranged so as to be yieldable with respect to movements of said partition, and said separating piston presenting a recess on its face toward said partition, in which recess, upon disposition of the separating piston in the region of the partition, the pump suction tube can be received.

4,368,879
CUTTING AND FOLDING APPARATUS IN ROTARY PRESS

Toshio Hoshi, Toride, Japan, assignor to Komori Printing Machinery Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 161,782
Int. Cl.^{3} B41F *13/58*
U.S. Cl. 270—6 **12 Claims**



1. A rotary press including a plate cylinder for printing a web travelling at a predetermined linear speed, and a web feed section for receiving the printed web from the plate cylinder and feeding the web to a cutting and folding section at the predetermined linear speed, said cutting and folding section comprising: a folding cylinder positioned on one side of the web and having a diameter about two times as large as the diameter of the plate cylinder; a collecting cylinder disposed on the opposite side of said web forming a nip with said folding cylinder and having a diameter about 1.5 times as large as the diameter of the plate cylinder; a gripping cylinder disposed at a side of said folding cylinder remote from said collecting cylinder for removing sheets from the folding cylinder and having a diameter about 2 times as large as the diameter of the plate cylinder; a pin cylinder disposed adjacent said collecting cylinder for removing sheets from the collecting cylinder and having the same diameter as the plate cylinder; a cutting means disposed at the circumference of said folding cylinder and collecting cylinder operable to cut the printed sheet and to hold the cut edge at each half revolution of said folding cylinder; a first gripping means disposed at the circumference of said folding cylinder and gripping cylinder to grip said printed sheet cut by said cutting means at the central portion of said sheet and to transfer said sheet between said folding cylinder and gripping cylinder; and a second gripping means disposed at the circumference of said collecting cylinder and pin cylinder to transfer said printed sheet between both said cylinders.

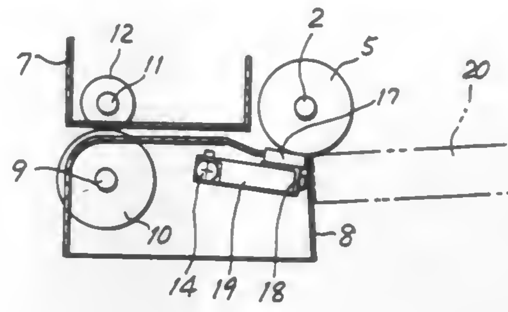
10. A rotary press including a plate cylinder for printing a web travelling at a predetermined linear speed, and a web feed section for receiving the printed web from the plate cylinder and feeding the web to a cutting and folding section at the predetermined linear speed, said cutting and folding section comprising: a folding cylinder positioned on one side of the web and having a diameter twice as large as the diameter of the plate cylinder and rotatable at a circumferential speed same as the linear speed of the travelling web; a collecting cylinder disposed on the opposite side of said web forming a nip with said folding cylinder and having a diameter 1.5 times as large as the diameter of the plate cylinder, said collecting cylinder being rotatable at the same circumferential speed as and in a direction inverse of the folding cylinder; a pin cylinder disposed adjacent said collecting cylinder for removing sheets therefrom and having the same diameter as the plate cylinder, said pin cylinder being rotatable at the same circumferential speed as and in a direction inverse of said collecting cylinder; two cutting and holding means and two first cutting knives alternately and equidistantly mounted on the circumference of said folding cylinder, each one of said cutting and holding means being adapted to release its hold at a predetermined position; three first holding members circumferentially equally spaced on said collecting cylinder each first holding member being cooperative with one of said cutting and holding means and said first cutting knives and operable to release its hold at each two revolutions of said collecting cylinder, so that the web fed between said folding and collecting cylinders from the web feed section is transversely severed successively at each revolution of said folding cylinder into 2n-number of second severed sheets each having a length half the circumferential length of the plate cylinder, said second severed sheets being successively held by said first holding members and carried by said collecting cylinder such that every third one of the second severed sheets is superimposed on the first one; a second holding member provided on said pin cylinder to receive said two superimposed second sheets carried by the collecting cylinder and to deliver said superimposed sheets to a first delivery location.

4,368,880
MACHINE FOR FEEDING SHEETS OF PAPER

Masaaki Shimizu, c/o Horizon Co., Ltd., 5-10, Kuze Oyabu-cho, Minami-ku, Kyoto, Japan

Filed Aug. 13, 1980, Ser. No. 177,732
Int. Cl.^{3} B65H *3/52*
U.S. Cl. 271—121 **6 Claims**

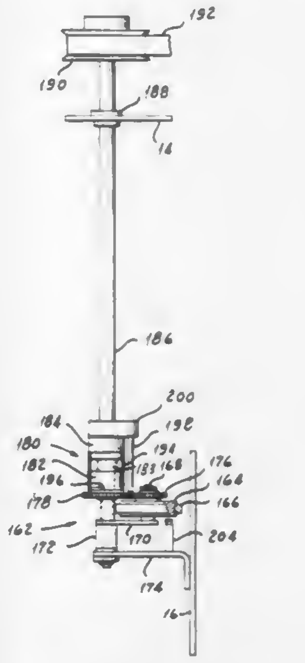
1. A paper feeding machine for feeding sheets one by one from a stack comprising a roller located adjacent said stack and rotatable in a predetermined direction to feed sheets from said stack, a friction plate so arranged as to cooperate with said roller to nip therebetween the edge of a sheet to be fed, a member pivotable about an axis and so arranged as to cause said friction plate to be pressed against said roller, said axis being positioned below said roller and at the downstream side of said roller in the direction of feeding said sheet, and biasing means associated with said pivotable member to bias said friction plate toward said roller, said biasing means and said pivotable member being constructed and arranged so that said biasing force is constant and unrelated to the number of sheets in said stack.



4,368,881
FRICTION PAPER FEEDER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Continuation of Ser. No. 52,405, Jun. 27, 1979, abandoned. This application Nov. 27, 1981, Ser. No. 325,601
Int. Cl.^{3} B65H *3/52*
U.S. Cl. 271—122 **5 Claims**



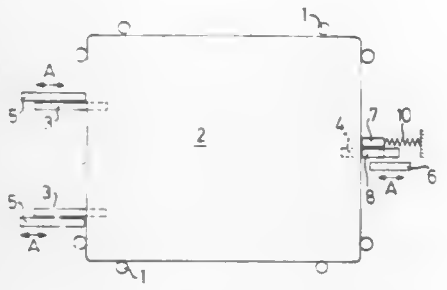
1. Apparatus for feeding sheets including in combination a feed roller, means for driving said feed roller in a certain direction of rotation, a retarding roller, an arm rotatably supporting said retarding roller, said arm being mounted on a pivot axis for movement of said retarding roller into and out of engagement with said feed roller, a rotary member disposed on said pivot axis, means carried by said arm for coupling said member to said retarding roller, and means for rotating said member in such a direction as to tend to rotate said retarding roller in said certain direction, one of said rotating means and said coupling means including means for limiting the torque transmitted to said retarding roller, said pivot axis being so located that said rotary member exerts a torque on said coupling means about said axis tending to urge said retarding roller into engagement with said feed roller.

4. Sheet feeding apparatus including in combination a feed roller, means for rotating the feed roller in a certain direction, a retarding roller, means mounting one of said rollers for movement into and out of engagement with the other of said rollers, and means for tending to rotate the retarding roller in said direction with a predetermined torque, said latter rotating means including a resilient torsion element, means for maintaining a predetermined minimum angular deflection of said torsion element, means for coupling one end of said torsion

element to said retarding roller, means for irrotatably supporting the other end of said torsion element, and means responsive to a predetermined angular deflection of said torsion element in excess of said minimum deflection for disengaging one of said coupling means and said irrotatable supporting means.

4,368,882
DEVICE FOR SEPARATING AN END BLANK FROM A STACK OF BLANKS

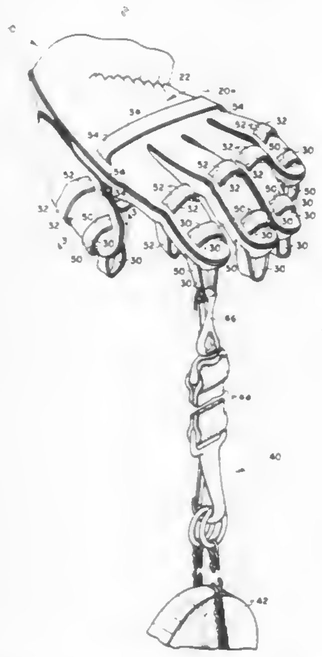
Arne I. Rönbeck, Olofström, Sweden, assignor to AB Volvo, Gothenburg, Sweden
Filed Dec. 19, 1980, Ser. No. 218,092
Claims priority, application Sweden, Dec. 21, 1979, 7910601
Int. Cl.^{3} B65H *3/46*
U.S. Cl. 271—135 **5 Claims**



1. A device for separating an end blank from a stack of blanks, comprising a stacking rack having at least two drivable feeder teeth, at least two supports arranged to lie against the outer side of an end blank, a said support and feeder tooth being located in close proximity to each other at each of two opposite sides of an end blank in the stack, a fixed abutment at one of said two sides of the end blank, a said support opposite the abutment being displaceable in a direction perpendicular to the plane of the blanks, the feeder teeth being adapted to move an end blank laterally in the stack.

4,368,883
WEIGHTED EXERCISE GLOVE

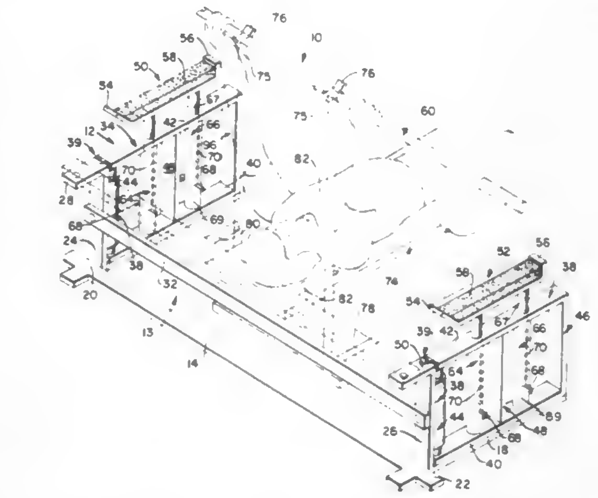
Gary Tiktin, Apt. 403W, 27500 Bishop Pk. Dr., Willoughby Hills, Ohio 44092
Continuation-in-part of Ser. No. 50,544, Jun. 21, 1979, Pat. No. 4,253,660. This application Mar. 3, 1981, Ser. No. 240,080
Int. Cl.^{3} A63B *21/18, 23/00*
U.S. Cl. 272—67 **9 Claims**



1. An exercise appliance including a glove, a weight, releasable attaching means for supporting the weight, at least one band-type connection means provided at a selected location on the glove and extending through openings formed in the glove for receiving the releasable attaching means, said releasable attaching means releasably coupling the weight to the glove at the selected location, the weight including a strap and a heavy body, said heavy body being supported on the strap, the releasable attaching means being connected to the strap at a location spaced from the body.

4,368,884
SAFETY BENCH PRESSING APPARATUS

Randy G. Colvin, 8100 Sands Point, Apt. 1906, Houston, Tex. 77036
Filed Jan. 27, 1981, Ser. No. 228,720
Int. Cl.^{3} A63B *13/00*
U.S. Cl. 272—123 **8 Claims**



1. A safety bench pressing apparatus comprising:

(a) a horizontal bench extending longitudinally in a first direction;

(b) a three sided frame, the first side having a first horizontally disposed member having first and second ends, the second and third sides respectively having first and second vertically extending sections, the first vertically extending section being joined to the first horizontally disposed member at a position in proximity to the first end and the second vertically extending section being joined to the first horizontally disposed member at a position in proximity to the second end, the first and second vertically extending sections projecting from the horizontally disposed member in a direction parallel to the bench in the first direction, the bench being located between the first and second vertically extending sections;

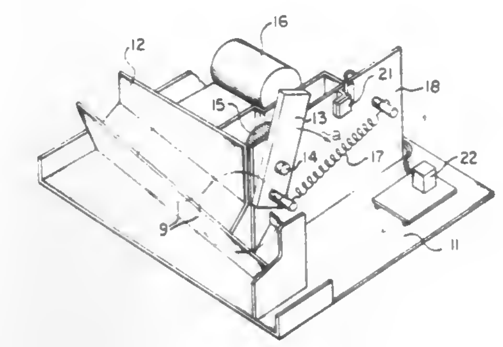
(c) means for connecting the frame to the bench to form a unitary structure;

(d) a first horizontal support mounted in the first vertically extending section which extends parallel to the first vertical section and a second horizontal support mounted in the second vertically extending section which extends parallel to the second vertical section, each horizontal support having first and second ends and having a length which is equal to or greater than the distance between the face, neck and chest cavity of a person who is horizontally disposed on the exercising bench which is disposed between the first and second sections and being positioned with respect to the first and second vertical sections such that one end of each horizontal support is directly above the face of the lifter and the other end is directly above the chest cavity or a part of the body below the chest cavity; and

(e) means for retaining a barbell associated with each horizontal support to prevent a barbell from rolling off of each horizontal support.

4,368,885
SPRING TYPE BALL EMITTING APPARATUS

Masayasu Katada; Yuko Imai, both of Atsugi, and Tsugio Hirabayashi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 13, 1980, Ser. No. 206,375
Claims priority, application Japan, Apr. 4, 1980, 55-44123
Int. Cl.^{3} F41B *7/00*
U.S. Cl. 273—29 A **9 Claims**



1. A ball emitting apparatus, comprising:

(a) rotating arm means for emitting a ball;

(b) spring means connected to said rotating arm means for storing a rotating force to make said rotating arm means emit the ball when the arm means passes a predetermined point in its rotation;

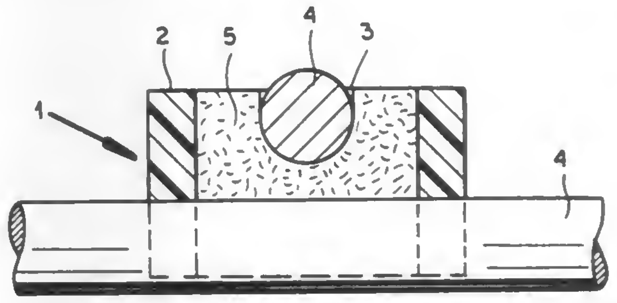
(c) a motor connected to rotate said rotating arm means;

(d) detector means for detecting a predetermined rotating range of said rotating arm means before emitting the ball beginning prior to and inclusive of said predetermined point; and

(e) power source control means for controlling the rotation of said motor and including a power switch for said motor and means for continuing rotation of the motor when said power switch is opened and said detector means detects that said rotating arm means is positioned in said predetermined rotating range, the control means stopping rotation of the arm means when the ball is emitted and the arm means is no longer in the predetermined range.

4,368,886
INSERTS FOR THE CROSSING POINTS OF TENNIS RACKET STRINGING

Roland Graf, Beckmanngasse 38/14, 1150 Wien, Austria
Filed Jul. 13, 1981, Ser. No. 283,005
Claims priority, application Austria, Jul. 18, 1980, 3746/80
Int. Cl.^{3} A63B *51/00*
U.S. Cl. 273—73 D **7 Claims**



1. A tennis racket comprising:

a handle;

a frame of generally oval outline fixed on said handle;

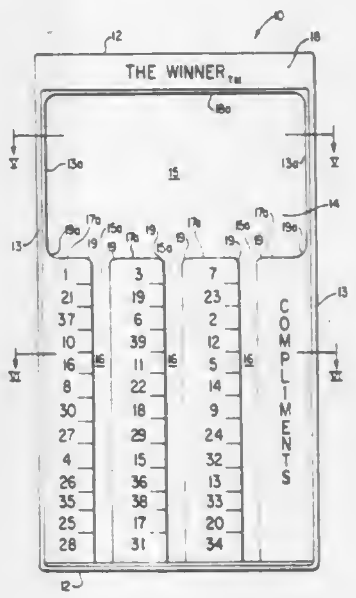
stringing in said frame including arrays of strings running transverse to one another and forming crossing points; and

respective inserts provided at at least some of said crossing points between the strings forming same, said inserts each comprising:

an absorbent pad impregnated with a liquid lubricant in the form of an oil for reducing friction between the strings at said crossing points, said pads being of a sufficiently soft consistency to allow adjacent strings to contact one another through the respective pads at said crossing points.

4,368,887
RANDOM SELECTOR

John Gamble, 440 Rathburn Rd., Etobicoke, Ontario M9C 3S7, Canada
Filed Mar. 17, 1981, Ser. No. 244,667
Claims priority, application Canada, Nov. 7, 1980, 364306
Int. Cl.^{3} A63F *7/04*
U.S. Cl. 273—144 B **22 Claims**



1. A selector device for the random selection of a small set of elements from a larger set of elements comprising:

(a) a flat, generally rectangular parallelepiped enclosure including a base, two side walls, two end walls, and a transparent cover;

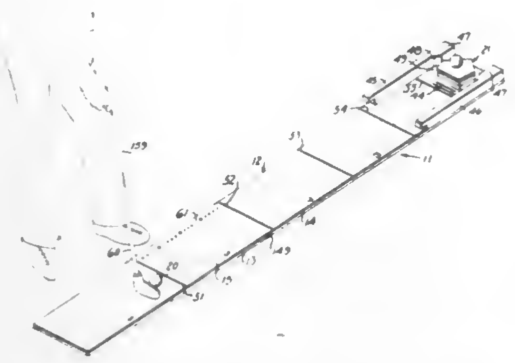
(b) a rectangular upper chamber having an upper wall, two parallel side walls and a lower wall provided in said enclosure situated in the space between said base and said cover, said upper chamber containing a plurality of balls therein, said plurality of balls being equal in number to said larger set of elements, a smaller plurality of said balls, equal in number to said smaller set of elements, having a significantly different appearance from the first plurality of balls;

(c) a plurality of discrete longitudinally-extending parallel channels connected to said upper chamber through a like plurality of apertures in the lower wall, the channels being disposed in the lower portion of said enclosure, said channels being slightly wider than the diameter of said balls, the lower edges of said parallel side walls of said upper chamber being connected to said lower wall by means of rounded-off corners of approximately the same diameter as the balls, the apertures leading to said channels being provided with rounded corners, thereby providing each channel with an unimpeded entry mouth from said upper chamber; and

(d) a like plurality of spaced-apart different indicia arranged in longitudinal rows each along a respective selected one of said channels, such indicia being spaced apart a distance equal to the diameter of said balls, the number of said indicia being equal to the number of said balls.

4,368,888
GOLF PUTTING DEVICE

Gerald J. Ren, 653 Massachusetts Ave., Riverside, Calif. 92507
Filed Feb. 9, 1981, Ser. No. 233,019
Int. Cl.^{3} A63B *69/36*
U.S. Cl. 273—176 FB **5 Claims**



1. A portable putting device for use with a ball and putting club, comprising:

an elongate strip forming a putting surface,

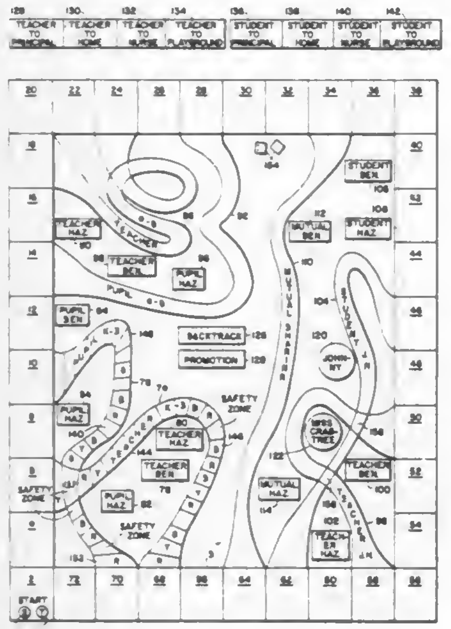
a rebound block adjacent one end of said strip, said block having a plurality of planar rebound faces of different widths, and

means for securing said block to said strip to position any of said rebound faces at right angles to the length of the strip whereby to rebound said ball along said strip, said means comprising clamping means for clamping the rebound block to the strip in different positions about a vertical axis extending through said block and said strip,

said rebound faces comprising chords of a circle having its center coincident with said axis.

4,368,889
GAME APPARATUS FOR SIMULATING SCHOOL EXPERIENCE

Louis M. Reker, Jr., 8501 N. 59th Ave., Glendale, Ariz. 85301
Continuation of Ser. No. 17,475, Mar. 5, 1979, abandoned. This application Jul. 7, 1981, Ser. No. 281,127
Int. Cl.^{3} A63F *3/00*
U.S. Cl. 273—243 **10 Claims**



1. A school simulation game, imitative of teacher and student experience wherein players can assume teacher and student roles, comprising:

a game board having an upper surface;

at least a first type player game piece having the identity of a teacher representing a first type player;

at least a second type player game piece having the identity of a student representing a second type player;

a chance device partially determining movement of said game pieces of said game board;

a first plurality of sets of Hazard Cards for impeding the progress of a recipient first type player;

a second plurality of sets of Hazard Cards for impeding the progress of a recipient second type player;

a first plurality of sets of Benefit Cards for enhancing the progress of a recipient first type player;

a plurality of Influence Cards for altering a recipient Player's progress;

said game board further comprising:

a first circuitous path of player movement located on said upper surface, said first path including a first plurality of successive player landing sites therealong having instructions thereon;

first and second pluralities of individually unique paths respectively for said first and second type players;

each of said first plurality of paths having a first category of landing sites directing a player represented by one of said game pieces on one of said first category landing sites to draw one of a first particular one of said sets of said first plurality of sets of Hazard Cards;

said first category of landing sites of said first plurality of paths having an association with said first particular one of said sets of said first plurality of sets of Hazard Cards;

each of said first plurality of paths further having a second category of landing sites directing a player represented by one of said game pieces on one of said second category landing sites to draw one of a first particular one of said sets of said first plurality of sets of Benefit Cards;

said second category of landing sites of said first plurality of paths having an association with said first particular one of said first plurality of sets of Benefit Cards;

each of said second plurality of paths having a first category of landing sites directing a player represented by one of said game pieces of one of said first category landing sites to draw one of a first particular one of said sets of said second plurality of sets of Hazard Cards;

said first category of landing sites of said second plurality of paths having an association with said first particular one of said sets of said second plurality of sets of Hazard Cards;

each of said second plurality of paths having a second category of landing sites directing a player represented by one of said game pieces on one of said second category landing sites to draw one of a first particular one of said sets of said second plurality of sets of Benefit Cards; and

said second category of landing sites of said second plurality of paths having an association with said first particular one of said second plurality of sets of Benefit Cards; and

each of said first and second pluralities of paths having a third category of landing sites permitting a player represented by a piece on one of said third category of landing sites to influence another player by directing said another player to draw one of said Influence Cards.

4,368,890
PADDLE GAME APPARATUS

John W. Horstman, Maple Grove, and George L. Hanson, Minneapolis, both of Minn., assignors to Global Games Unlimited, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 142,346, Apr. 21, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,590
Int. Cl.^{3} A63B *59/00, 67/00*
U.S. Cl. 273—328 **7 Claims**

1. In combination with a ball having a specified diameter, an athletic tool, comprising:

a handle member having opposite ends;

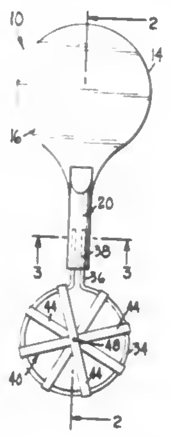
a paddle member having a first planar surface, mounted at a first opposite end of said handle member;

a frame mounted at a second opposite end of said handle member; and

a stocking member comprising a plurality of woven nylon straps, each having opposite ends and being suspended from said frame by said opposite ends, said straps being coated with a polyurethane type material to impart to them a measure of rigidity;

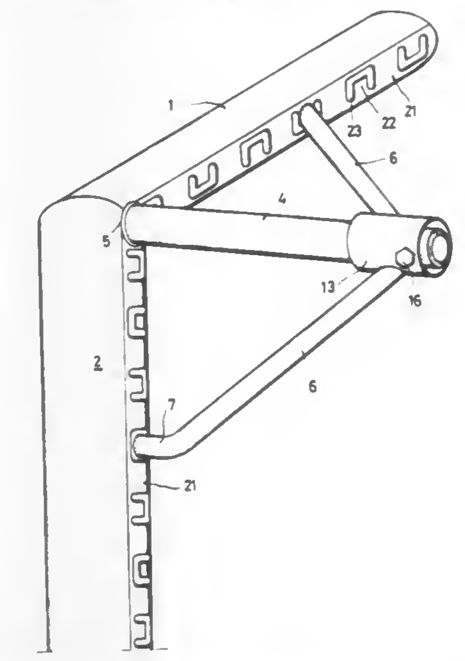
wherein said stocking member will tend to remain on a side of said frame on which it is initially disposed unless struck by the ball to urge it onto the other side of said frame;

and wherein, when the ball is received in said basket, said rigidity will preclude difficulty in a player impelling the ball out of said basket.



4,368,891
GOAL FRAME

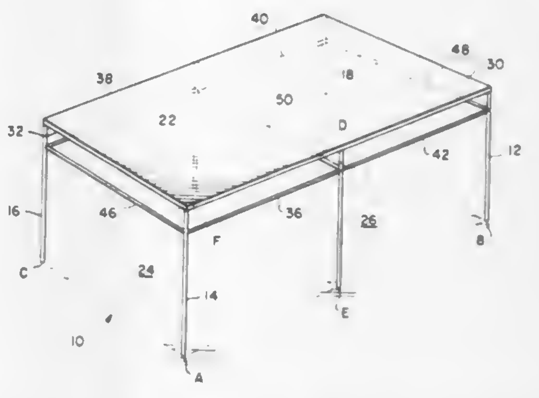
Vinzenz Neisius, Ochtendung, Fed. Rep. of Germany, assignor to AluTeam Sport and Freizeit GmbH, Koblenz, Fed. Rep. of Germany
Filed Jan. 15, 1982, Ser. No. 339,375
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101325
Int. Cl.^{3} A63B *63/02*
U.S. Cl. 273—400 **12 Claims**



1. In a goal frame for games, assembled of light metal sections comprising a bar section and post sections formed of mitered hollow sections firmly interconnected by internally located corner angles which are disposed in the area of the miters, and are formed of double T-sections, there being provided in the corner area of the assembled sections, a holding device for the support of the net and there further being provided, in the longitudinal direction of the section walls pointing towards the backside of the goal, a slot in which are disposed mutually spaced hooks to fasten the net and the ends of the post sections being insertable into ground sockets, the improvement which comprises a supporting tube, welded perpendicular to the web plane of the mitered double T-sections of the corner angles joined to each other, on their respective miter center which passes through an opening left free by the bar and post sections after having been inserted over the corner angle so that said supporting tube projects in the direction of the backside of the goal and its free end is respectively supported by said bar and post sections by braces provided in pairs in the form of tubular hollow sections the one end of said braces being fastened to the supporting tube by means disposed transverse to said supporting tube while the other end is bent at right angles towards the bar and post sections, which ends are inserted in openings in the bar and post sections, which ends are inserted in openings in the bar and post sections and in the corner angle and are retained therein, exerting tension forces in the direction of the miters of the bar and post sections.

4,368,892
SWAT BALL GAME APPARATUS

William P. White, Rte. 2, Box 16A, Wedowee, Ala. 36278
Filed Sep. 25, 1981, Ser. No. 305,705
Int. Cl.^{3} A63B *71/02*
U.S. Cl. 273—411 **3 Claims**



1. Apparatus for use in playing a hand swat ball game, said apparatus comprising in combination, four upstanding end court supports to form the four corners of a rectangular playing court, a pair of upstanding mid court supports, each one of the pair bisecting the lengthwise side of the playing court thereby dividing the playing court into two equal playing areas, a backboard affixed to the top ends of the six supports and generally coextensive therewith, a center ricochet bar positioned between the pair of mid court supports, said center ricochet bar being spaced from and parallel to the backboard, said playing court being flat and parallel to the backboard whereby with at least one player in each of the two playing areas, a player in a first area strikes the swat ball with his hand and directs it through a fair play zone defined by the backboard, the center ricochet bar and contiguous portions of the mid court supports, and into a second playing area, so that the other player may strike the ball so that it will pass through the fair play zone and into the first playing area, play on both sides to be restricted to the first and second playing areas.

4,368,893
MANHOLE INFILTRATION DISK AND SEAL ASSEMBLY

Stanley Gagas, 127 Alpine Ter., Shawano, Wis. 54166
Filed Sep. 10, 1981, Ser. No. 301,029
Int. Cl.^{3} F16J *15/10;* **E02D** *29/14*
U.S. Cl. 277—12 **7 Claims**

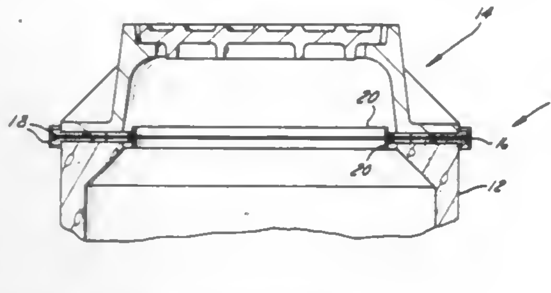
1. A manhole infiltration disk adapted to be positioned between a manhole and a manhole cover assembly,

said disk comprising a flat circular plate having an open center,

a first flange secured to the outer periphery of said plate,

a second flange secured to the inner periphery of said circular plate,

said circular plate having an outside diameter greater than the outside diameter of said manhole cover assembly and an inside diameter less than the inside diameter of said manhole cover assembly whereby said manhole cover assembly is restricted from lateral movement with respect to the manhole.



4,368,894
REINFORCED SEALING RINGS FOR PIPE JOINTS

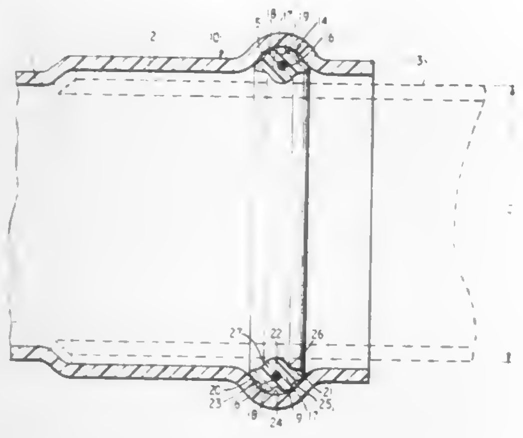
Gunnar Parmann, Alvoy, Norway, assignor to Rieber & Son, Bergen, Norway

Filed May 19, 1981, Ser. No. 265,245

Claims priority, application Norway, May 22, 1980, 801521

Int. Cl.^{3} F16J *15/12, 15/32*

U.S. Cl. 277—166 **9 Claims**



1. Reinforced sealing ring for reception in a pipe joint between an annular groove-carrying socket end and an insert end, said sealing ring consisting of a main body of elastically yielding material having an unsplit reinforcing steel ring embedded therein, said main body having an outer surface which is substantially convexly curved in the axial direction of said sealing ring and having a largest external diameter between 1.08D+16 mm and 1.04D+8 mm where D constitutes the diameter of the pipe and said steel ring having a cross-sectional diameter or thickness of between 0.01D+2 mm and 0.005D+1 mm and being located in a central and/or radially outer cross-sectional portion of said main body.

4,368,895
SHAFT SEALING DEVICE UTILIZING A NON-UNIFORM GROOVE DEPTH

Kouichi Okamoto, Kobe, and Masaki Sakuyama, Ashiya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 212,044

Int. Cl.^{3} F16J *15/40, 15/44*

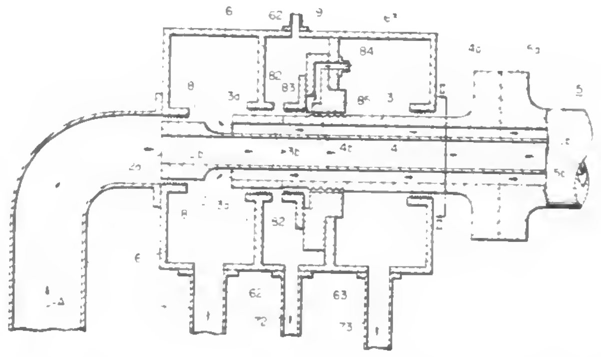
U.S. Cl. 277—203 **8 Claims**

1. A shaft sealing device comprising:

a rotary shaft in an outer wall of which a thread is formed in such a manner that a groove depth thereof changes in an axial direction, said groove depth on the high pressure side of said thread being larger than that on the low pressure side of said thread;

a stationary wall which confronts said thread;

a radius of each of said grooves being such that a differential pressure P_E existing between a bottom of each of said grooves and a surface of said stationary wall adjacent each of said grooves is less than a fluid pressure at said surface of said stationary wall adjacent each of said grooves so that seal breakdown is prevented, said differential pressure being created by rotation of said shaft.



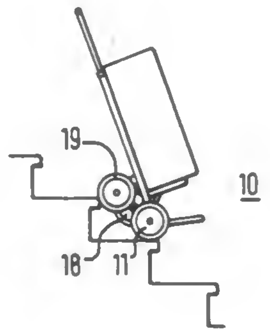
4,368,896
HAND TROLLEY

Victoriano M. Ortega, Calle Palencia No. 25, Madrid-20, Spain

Filed Oct. 24, 1980, Ser. No. 200,337

Int. Cl.^{3} B62B *5/02*

U.S. Cl. 280—5.24 **3 Claims**



1. A hand trolley comprising:

a frame having a lower end and an upper end for supporting a load;

a sub-frame fixed to said frame;

first, second and third pairs of mutually coaxial wheels, each having substantially the same radius, said first pair of wheels being rotatably mounted to said sub-frame at said lower end of said frame so as to be ground engaging;

a handle fixed to said frame, said frame having a part extending upwardly from said first pair of wheels to said handle; and

first, second and third respectively parallel shafts, successively spaced from each other by a distance slightly greater than said radius of each of said first, second and third pairs of wheels, each horizontally mounted to said sub-frame in a plane which extends upwardly and rearwardly to form an acute angle with said upwardly extending part of said frame, opposite ends of each of said first, second and third shafts being located at symmetrically opposite sides of said said sub-frame;

said first, second and third pairs of wheels being respectively rotatably mounted to said opposite ends of each of said first, second and third shafts;

said acute angle being fixed at approximately 30° so that when said hand trolley is moved along a smooth surface, said second and third pairs of wheels are normally out of contact with said surface, and are operative to support said frame when said hand trolley is ascending or descending stairs, said radius being of such a magnitude that each pair of at least two of said first, second, and third pairs of wheels simultaneously engages a different step when ascending or descending said stairs.

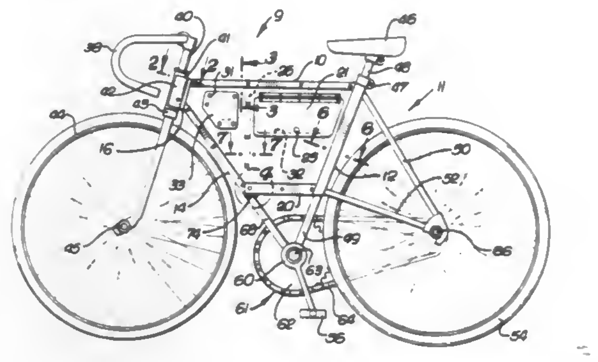
4,368,897
BICYCLE FRAME STRUCTURE

Charles B. Brown, 1115 5th St., Santa Monica, Calif. 90403

Filed Jan. 9, 1981, Ser. No. 223,907

Int. Cl.^{3} B62J *7/02;* **B62K** *3/02*

U.S. Cl. 280—202 **18 Claims**



17. In a bicycle having a frame, front and rear wheels supported by the frame, and propulsion means, a support frame structure, comprising:

load bearing means forming at least a portion of said bicycle frame for supporting structural loads, and for defining at least a portion of a storage compartment, said load bearing means comprising at least one channel member having a generally U-shaped cross section to enclose at least one of the top, front, bottom, and rear of the storage compartment;

wall means for cooperating with said load bearing means for defining the storage compartment; and

attachment means for securing said wall means to said load bearing means.

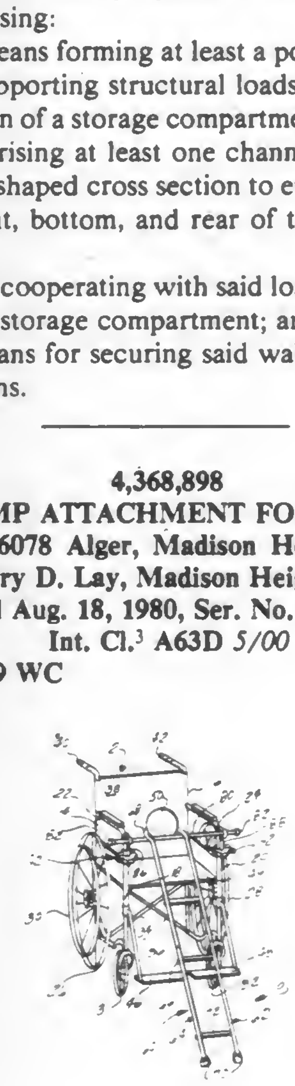
4,368,898
BOWLING RAMP ATTACHMENT FOR WHEELCHAIRS

Larry D. Lay, 26078 Alger, Madison Heights, Mich. 48071, assignor to Larry D. Lay, Madison Heights, Mich.

Filed Aug. 18, 1980, Ser. No. 178,952

Int. Cl.^{3} A63D *5/00*

U.S. Cl. 280—289 WC **13 Claims**



9. A bowling assistance device for attachment to an ambulatory assistance device for non or partially ambulatory people comprising:

means for guiding a ball from the arm area of the user of said ambulatory assistance device to the floor; and

means for slidingly securing said guiding means to said ambulatory assistance device such that said guiding means is movable laterally across the front of said ambulatory assistance device, said securing means including:

a cross bar extending laterally across the front of said ambulatory assistance device;

first means for slidingly attaching said cross bar to said ambulatory assistance device such that said cross bar is movable laterally across the front of said ambulatory assistance device; and

second means for slidably attaching the guiding means to said cross bar.

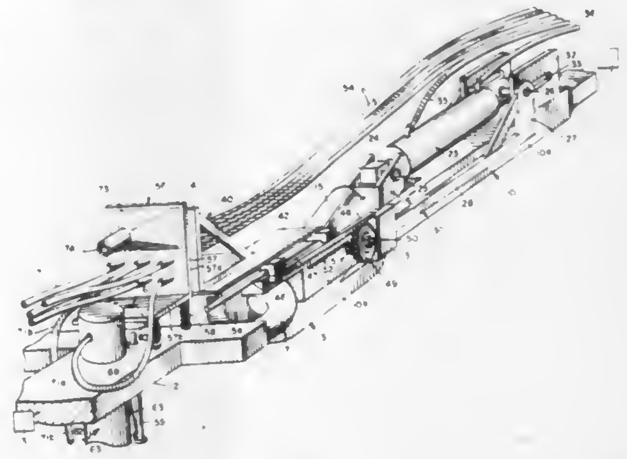
4,368,899
HITCH MECHANISM FOR TRACTORS AND IMPLEMENTS

Edward A. Smalley, Woodward; Mark J. Boguski, Duncan, both of Okla.; Todd A. Casey, Buhler, and Dwight D. Chipperfield, McDonald, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Mar. 16, 1981, Ser. No. 244,124

Int. Cl.^{3} B60D *1/08, 1/10*

U.S. Cl. 280—477 **24 Claims**



1. A tractor hitch for connecting a tractor to an implement to be drawn thereby, comprising a tractor drawbar having a shank portion and a rear end portion; a slide member slidably mounted upon said shank portion for rearward and forward movement therealong; means for limiting the extent of sliding movement of said slide member along said shank portion; a hook member pivotally mounted upon said rear end portion of said drawbar for pivotal movement in a vertical plane between lowered and raised positions, said hook member having a rear hook section that projects upwardly when said hook member is raised and having a front section providing a lever arm; an expandable-contractable power drive assembly disposed along said shank portion and operatively connected to both said lever arm and said slide member for (a) raising said hook member and urging said slide member rearwardly when said assembly is contracted, and (b) directing said slide member forwardly and urging said hook member towards its lowered position when said assembly is expanded; said front section of said hook member also having a heel portion and having a recess between said heel portion and said lever arm for receiving a portion of said slide member when said slide member is extended rearwardly and said hook member is raised, said heel portion being engagable with said slide member to (a) block entry of said slide member into said recess, while said assembly is contracting, until said hook member is fully raised, and (b) prevent lowering of said hook member, while said assembly is being expanded, until said slide member is withdrawn from said recess.

4,368,900
MINIMIZER SYSTEM OF VIBRATIONAL MOVEMENTS OF A MASS

Hans Beusse, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,191

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943486

Int. Cl.^{3} B60G *17/00*

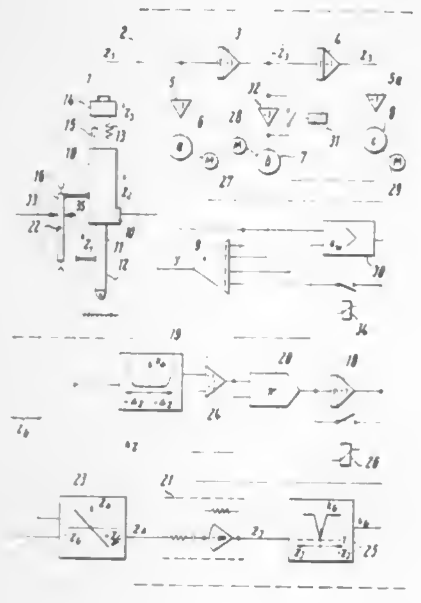
U.S. Cl. 280—707 **11 Claims**

1. A system for minimizing vibration movements of a mass, comprising linearly and actively displaceable means including members movable relative to each other, means for operatively connecting said displaceable means to said mass, control means

(**10′**) operatively connected to said displaceable means for controlling the operation of said displaceable means in response to an electrical control signal (y), frequency responsive electrical circuit means for producing said electrical control signal (y), said frequency responsive electrical circuit means comprising acceleration measuring means (**1**) operatively connected to said mass for producing an electrical signal corresponding to the acceleration of said mass, first and second signal integrating means (**3, 4**) connected in series to said acceleration measuring means for providing a series circuit delivering said acceleration signal, a speed signal, and a displacement signal in that order, first adjustable potentiometer means (**6**) operatively connected to said series circuit to provide a first coefficient signal (1), second adjustable potentiometer means (**7**) operatively connected to said first integrating means (**3**) to provide a second coefficient signal (b), third adjustable potentiometer means operatively connected to said second integrating means to provide a third coefficient signal (c), and summing amplifier means (**9**) operatively interconnecting said potentiometer means and said control means (**10′**) for imposing on said displaceable means a frequency dependent response characteristic whereby the movable members of said displaceable means move relative to each other with a speed which is proportional to said electrical control signal (y), said system further comprising displacement transducer means (**16, 16′, 33**) operatively interposed between said relatively movable members of said displaceable means, and function control means (**17, 18, 19, 20**) operatively interconnecting said displacement transducer means (**16, 16′, 33**) and said summing amplifier means (**9**) for producing a fourth coefficient signal (k), whereby one of said movable members (**11**) of said displaceable means may be returned into a central or zero position relative to another member of said displaceable means with a relatively large time constant $\sqrt{K/T}$ satisfying the equation:

$$F_{31} = \frac{1 + \frac{k}{T} \cdot \frac{1}{p^2}}{\frac{a}{T} \cdot p + \left(1 + \frac{b}{T}\right) + \frac{c}{T} \cdot \frac{1}{p} + \frac{k}{T} \cdot \frac{1}{p^2}}$$

wherein F_{31} is the frequency dependent ratio between the characteristic excursions Z_3/Z_1 occurring in response to harmonic excitations by an operator p, and wherein the coefficient values "a, b, c, and k" are freely selectable coefficients.



4,368,901
KNEEPAD STRUCTURE

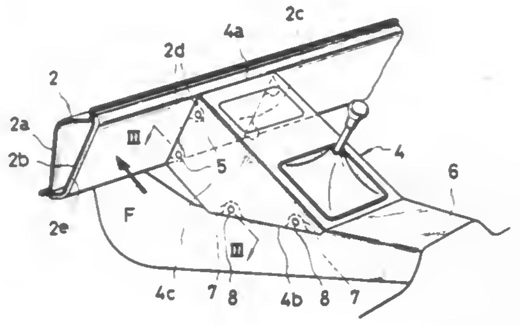
Seiichiro Kojima, Ohramachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 132,479

Claims priority, application Japan, Mar. 20, 1979, 54-36467[U]; Mar. 27, 1979, 54-39421[U]

Int. Cl.³ B60R *21/04*

U.S. Cl. 280—748 **12 Claims**



1. A kneepad for use in an automobile having inner sides of two wall members respectively on opposite interior sides of the automobile, an instrument panel in the interior of the automobile and a center console box in the interior attached centrally to a floor of the automobile, comprising
   a substantially thin-walled, light-weight kneepad integrally mountable at one end thereof to one of said inner sides of one of the wall members of the automobile and at another end of at least a portion thereof to said console box, and
   said kneepad is integral and continuous with respect to itself from said one inner side to said console box and extends along a lower edge of, is spaced apart from and unattached with respect to said instrument panel.

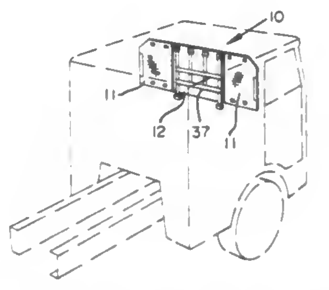
4,368,902
COMBINATION CURTAIN AND RESTRAINT SYSTEM FOR A VEHICLE BUNK

Philip R. McDowell, Tracy, Calif., assignor to Paccar Inc., Bellevue, Wash.

Filed Nov. 24, 1980, Ser. No. 209,993

Int. Cl.³ B62D *33/04*

U.S. Cl. 280—749 **16 Claims**



1. A combination curtain and restraint system for a sleeping compartment associated with a truck cab, comprising:
   structural means associated with the cab for suspending the curtain and restraint system;
   a flexible, openable curtain panel suspended from its top and there secured to said structural means, the panel having an inside surface facing into the sleeping compartment;
   restraint straps extending down from the top of the curtain panel, secured to the structural means and positioned adjacent to the inside surface of the curtain panel but hanging independently therefrom and transverse straps attached to and extending between the restraint straps to form a web-like structure;
   means for selectively connecting the restraint straps to the inside of the curtain panel only near its bottom when the curtain panel is to be closed and secured, comprising band means forming loops on the inside surface of the curtain panel for insertion of the restraint straps therethrough; and
   fastening means for securing the lower ends of the straps to structure connected to the cab;
   whereby the lower end of the curtain panel is secured by connection of the restraint straps to the inside of the curtain panel near its bottom, and by securing of the fastening means at the lower end of the straps, and whereby an occupant of the sleeping compartment can conveniently secure the restraint straps, with or without the curtain panel, from inside the bunk.

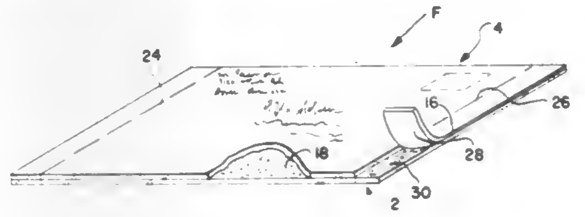
4,368,903
TEAR-OFF POSTAL RECEIPT FORM

John H. Jones, Westfield, N.J., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jun. 30, 1980, Ser. No. 164,329

Int. Cl.³ B65D *65/28;* **G09F** *3/00*

U.S. Cl. 283—21 **6 Claims**



1. A tear-off composite card for attachment to a support surface, comprising:
   (a) a base member formed of a rectangular sheet of relatively light stock material including a rectangular main portion and an adjacent detachable margin portion,
   (b) a top member superposed on the base member and including a matching rectangular sheet of relatively light stock material of matching size with that of the base member and including a main portion and an adjacent detachable margin,
   (c) the main portions and the margin portions of the base member and the top member being the same size and disposed in superposed relation with respect to each other,
   (d) a layer of adhesive disposed between the superposed main portions of the base and top members to provide a single relatively thick and stiff composite card suitable for card use,
   (e) a layer of contact adhesive on the surface of one of the two superposed margin portions,
   (f) a layer of release material on the surface of the margin portion of the other of the two superposed members in contact with the contact adhesive, and
   (g) each of the margin portions being separable from its adjacent main portion by a weakened line, whereby the margin portion containing the release material can be peeled off the composite card to expose the contact glue surface on the opposing margin portion to permit affixing of the composite card to a package, and the subsequent removal of the composite card from the package when desired by tearing it free of the margin portion having the contact glue surface.

4,368,904
CONNECTION FITTING

Werner Lanz, Wetzikon, Switzerland, assignor to PMA, Elektro AG, Wetzikon, Switzerland

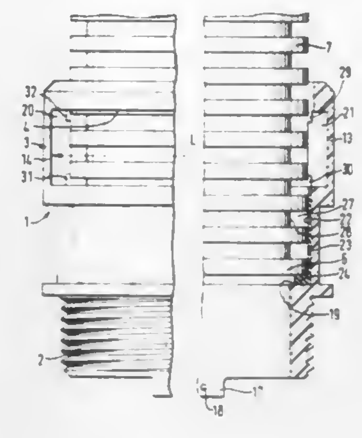
Filed Feb. 28, 1980, Ser. No. 125,628

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2908337

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—175 **7 Claims**

1. A connector fitting for flexible corrugated tubing having parallel, spaced, coaxial corrugations defining parallel spaced grooves, said connector fitting comprising a bushing having a housing, a threaded part and an end piece, said end piece being intermediate said housing and threaded part, said housing accommodating the end of a length of corrugated tubing having at least one opening and two apertures opposite said opening receiving a locking element, said end piece having the length of several corrugations, wherein the locking element is generally C-shaped and has resilient legs, means to retain said locking element in said housing and a plurality of ribs formed on the inside of said legs which ribs are each of a thickness approximately corresponding to the grooves between adjacent corrugations of the tubing wherein said locking element surrounds said tubing, said ribs engage said grooves and wherein said opening is at least as wide as the distance between the outermost surfaces of the legs of the locking element.



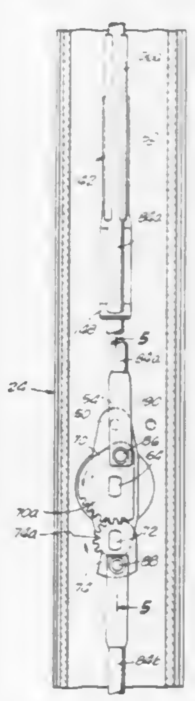
4,368,905
EXIT DOOR LOCKING MECHANISM HAVING MULTIPLE BOLTS

Aaron M. Hirschbein, Diamond Bar, Calif., assignor to Adams Rite Manufacturing Co., Glendale, Calif.

Filed Jul. 21, 1980, Ser. No. 170,405

Int. Cl.³ E05C *9/04, 9/12*

U.S. Cl. 292—5 **18 Claims**



1. A lock mechanism for an exit door having a tubular stile frame member extending along its swinging edge, and with top and bottom bolt mechanism, comprising:
   (a) lever means positioned in the tubular stile, including a pair of separate rotatably mounted levers;
   (b) rod structures in the stile respectively connecting said levers with the top and bottom bolt mechanisms, the top bolt mechanism including a fixed keeper member on a top

header frame and a horizontally swingable latch member mounted on the door to be engaged with said keeper member when the door is in a closed position, said latch member being swingable into a released position with respect to said keeper member to permit the door to be opened;

(c) a driving connection between said levers;

(d) a rotatable driver shaft mounting one of said levers;

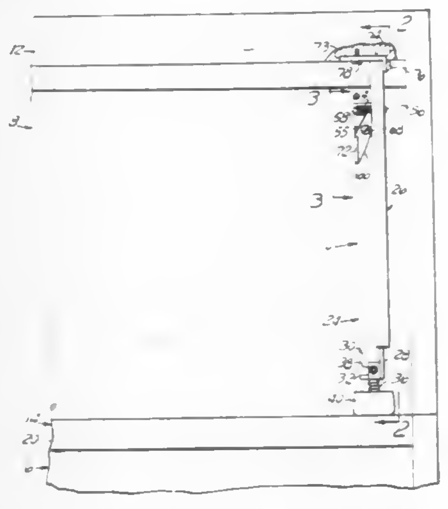
(e) said lever means being normally operative by said driver shaft in one direction to axially move said rod structures away from each other to effect one operating condition of the bolt mechanisms; and

(f) manually operable means accessible from the inner side of the door for rotating said levers by said drive shaft in an opposite direction to axially move said rod structures towards each other to effect another operating condition of the bolt mechanisms, including a rotatably mounted actuating shaft releasably connectable in axial alignment with said driver shaft.

4,368,906

ADJUSTABLE LOCKING DEVICE FOR RELATIVELY SLIDING DOUBLE CLOSURES

Wade L. Briggs, 1511 First St., Apt. 819, Detroit, Mich. 48226
Filed Aug. 14, 1980, Ser. No. 177,891
Int. Cl.³ E05C *17/30*
U.S. Cl. 292—305 2 Claims



1. An adjustable locking device for a closure slideable in a stationary closure frame, said locking device comprising:

(a) an elongate stationary bar,

(b) securing means at one end of said stationary bar to secure said bar to a stationary closure frame,

(c) an elongate relatively movable bar disposed in longitudinal sliding relation to said stationary bar,

(d) means for guiding said bars in longitudinal reciprocation relative to one another,

(e) a locking element movably mounted on said movable bar for motion into and out of locking engagement with said stationary bar,

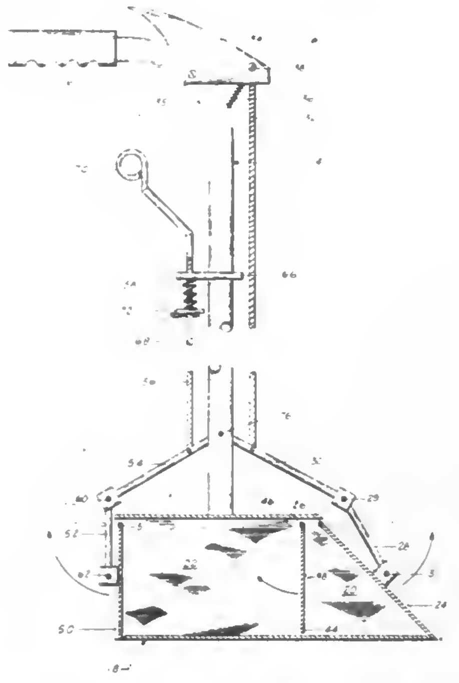
(f) a longitudinally spaced locking-element-receiving means on said stationary bar for selective reception of said locking element, and

(g) means on said movable bar to abut a slideable closure to limit the movement of said closure relative to a stationary closure frame, said last means comprising a fine adjustment means movably connected to the opposite end of said movable bar remote from said securing means.

4,368,907

APPARATUS FOR PICKING UP ANIMAL WASTE

Bernard M. Ross, 3855 McDonald Ave., St. Louis, Mo. 63116
Filed Sep. 11, 1981, Ser. No. 301,223
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 BA 20 Claims



1. A device for use in gathering and removing animal waste and other debris comprising a container body having first and second compartments formed therein, said container body having first and second end portions and a central opening extending therebetween, handle means attached to and extending upwardly from said container body, a first closure member pivotally mounted to the container body adjacent to the first end portion thereof to control access to said first compartment, said first closure member being movable relative to said first end portion between a position closing the first compartment and an open position angularly related thereto, a second closure member disposed at an intermediate location between the first and second end portions of the container body across said central opening separating the container body into said first and second compartments, said second closure member being movable between a normally closed position separating the first and second compartments and an open position angularly related thereto for allowing passage of the waste debris from said first compartment into said second compartment, a third closure member pivotally mounted on the container body adjacent to the second end portion thereof to control access to and exit from said second compartment, said third closure member being movable relative to said second end portion between a position closing the second compartment and an open position angularly related thereto, and separate operator means supported on said handle means operatively engageable with said first and third closure members for selectively controlling the opening and closing of said first and third closure members.

4,368,908

VACUUM HANDLING FIXTURE

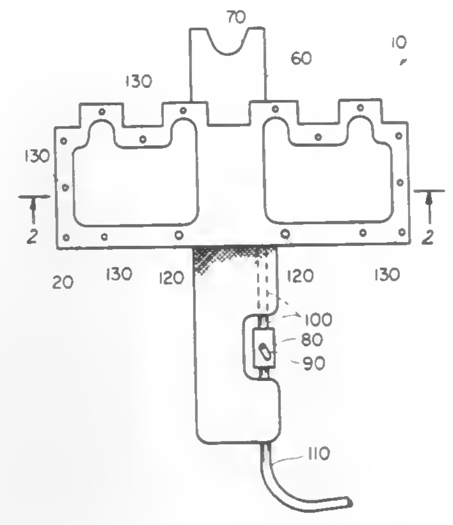
Alfred F. Gentzel, Jr., Bridgewater, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 8, 1980, Ser. No. 214,236
Int. Cl.³ B66C *1/02*
U.S. Cl. 294—64 R 7 Claims

1. A vacuum fixture comprising

a pair of plates hermetically sealed together with a vacuum space between them and with a plurality of suction holes in one plate which provide communication between said vacuum space and the outside world, said one plate being adapted to carry a sheet or body seated thereon and held thereon by suction operating through said suction holes,

a handle secured to said plates and having guide means at one end thereof,

tubing carried by said handle and communicating with said vacuum space, and

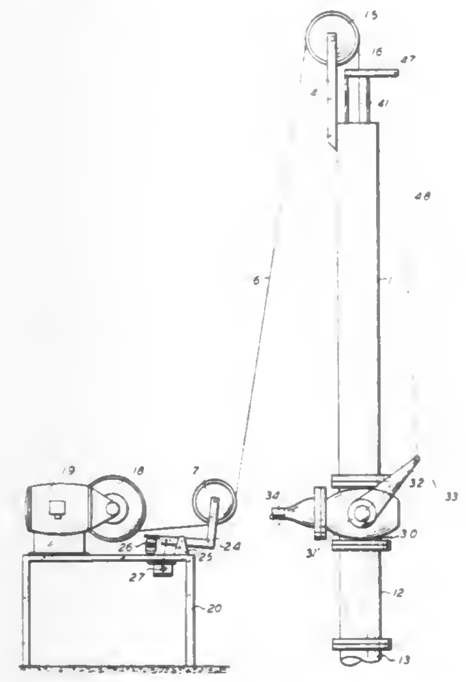


a control valve carried by said handle and disposed between said tubing and a suction source.

4,368,909

OIL WELL BAILER APPARATUS

Granison T. Alexander, Jr., New Orleans, La., assignor to Chromalloy American Corporation, St. Louis, Mo.
Filed Mar. 30, 1981, Ser. No. 249,103
Int. Cl.³ F04B *17/00*
U.S. Cl. 294—69 R 5 Claims



1. In an oil well bailer apparatus, the combination comprising:

an elongated housing adapted for mounting on the top of the wellhead of the well to be bailed;

a pulley supported on an upper portion of said housing for supporting a cable thereon;

seal means sealing the upper end of said housing against fluid escape;

a bail bucket arranged for up and down movement in said housing and well for raising oil from the bottom of said well to said housing;

a cable connected to an upper portion of said bail bucket and passing upwardly through said seal means and over said pulley for raising and lowering said bail bucket in said well to thereby lift oil to said housing;

means for selectively paying out and taking up said cable to effect alternate raising and lowering of said bail bucket in said well;

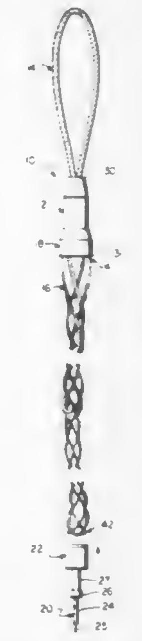
valve means connected to a lower portion of said housing for normally sealingly closing said housing to prevent escape of fluids therefrom and to permit passage of said bail bucket therethrough and movable to an open position to divert oil from said housing;

and operator means associated with said bail bucket and said housing for moving said valve means to the open position and dumping oil from said bail bucket incident to the arrival of said bucket at the end of the upward travel thereof in said housing.

4,368,910

GRIP FOR PULLING FIBER OPTIC CABLE AND METHOD OF INSERTING THE CABLE INTO THE GRIP

Alfred W. Fidrych, Stonington, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.
Filed Dec. 8, 1980, Ser. No. 213,856
Int. Cl.³ F16L *3/00*
U.S. Cl. 294—86 CG 19 Claims



1. A grip for pulling fragile cable having a fragile terminal end, the grip comprising:

a hollow protective sheath having an inwardly tapering lead end and a tail end, said tail end being open for the reception of the fragile terminal end of the fragile cable therein,

said sheath comprising an elongated wall of substantially circular cross-sectional shape providing an unobstructed elongated chamber of substantially cylindrical shape communicating with the open tail end,

said wall having a smooth inner surface encasing the fragile terminal end of the cable inserted into said chamber, thereby protecting the fragile terminal end against external objects during pulling of the cable by the grip;

a pulling device;

means for coupling said pulling device to said lead end of said protective sheath;

a wire mesh sleeve having a lead end and a tail end; and

means for coupling said lead end of said wire mesh sleeve to said tail end of said protective sheath outside of said smooth inner surface, the fragile cable being receivable in and grippable by said wire mesh sleeve.

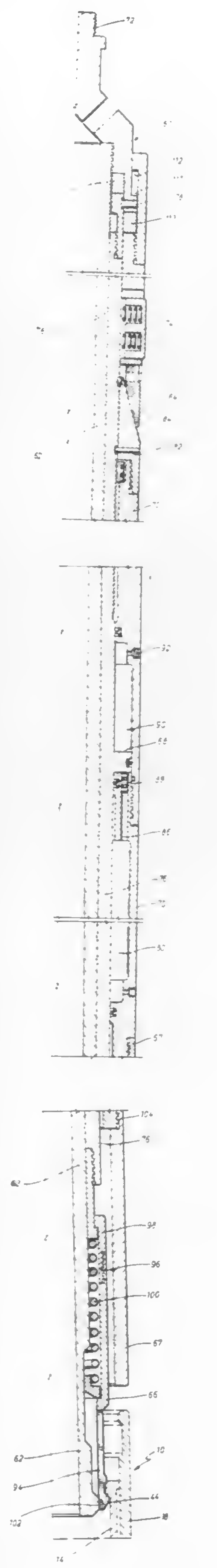
4,368,911
SUBSURFACE CONDUIT SETTING AND PULLING TOOL

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Sep. 2, 1980, Ser. No. 183,117

Int. Cl.³ E21B *23/00*

U.S. Cl. 294—86.15 **6 Claims**



1. A tool for setting in or pulling from a conduit a subsurface tool having a pair of actuating shoulders which are moved relative to each other comprising,

a tubular body,

slip means telescopically positioned on the exterior of the body for engaging the interior of the conduit,

means on said slip means and body for expanding said slip means on upwardly movement of the body,

first and second shoulder members for engaging said actuating shoulders,

coacting piston and cylinder means mounted on said body and releasably locked together, one of said piston and cylinder means is connected to the first shoulder member and the second of said piston and cylinder means is connected to the second shoulder member,

means for actuating said piston and cylinder means by movement of said body for moving said actuating shoulders relative to each other.

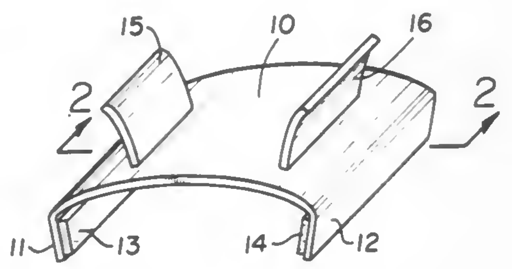
4,368,912
SLIDE HOLDER AND TRANSFER DEVICE

Leonard Holtz, 418 Jordan St., Oceanside, N.Y. 11572

Filed Dec. 4, 1980, Ser. No. 213,090

Int. Cl.³ A44B *21/00;* B66C *1/48*

U.S. Cl. 294—87 R **12 Claims**



1. A slide holder and transfer system including a group of rigid generally flat and generally rectangular photographic slides arranged in a stack, the side, top and bottom edges of said slides defining the generally rectangular shape thereof, and a device for receiving, releasably holding and transferring the slides in a stacked condition, the receiving, holding and transferring device comprising:

a first generally rectangular resilient biasing member normally in a given profile shape which is upwardly bowed over the whole surface thereof so as to be convex, and being resiliently bendable against an inherent biassing force to a deformed profile shape wherein the convex shape is varied, for bridging the stack of slides over one of the top or bottom edge of each generally rectangular slide of said stack of slides, and over the length or height of said stack of slides;

a pair of spaced apart elongated side gripping members coupled to and extending from opposite sides of said first member and extending from said first member a distance substantially less than the length of the sides of the slides, said side gripping members being adapted to grip the top side edge portion of each and every slide in said stack of slides on respective opposite side edges of said slides with the substantially flat faces of said slides substantially perpendicular to said elongated side gripping members, said first member always overlying the top ends of said slides and resiliently biasing said side gripping members toward a first relative position in which said side gripping members are spaced apart a substantial distance which is less than the length of the top and bottom edge of each of said slides, and said side gripping members being adapted to be

5

movable relative to each other to a second relative position by resilient flexing of said first member to its deformed profile shape, said second relative position of said side gripping members being a position in which said side gripping members are spaced apart a distance greater than said length of the top and bottom edge of each of said slides, said side gripping members being biassed toward said first relative position by said inherent biassing force of said first member even when they are in said second relative position; and

a pair of spaced apart upstanding manual gripping means extending substantially perpendicularly upward directly from said first member and being integral with said first member for being manually gripped and moved toward each other to flex said first member to said deformed profile shape against said inherent bias thereof to cause said side gripping members to move apart to said second relative position in which said spacing between said side gripping members exceeds said length of the top or bottom edge of each of said slides, said side gripping members being resiliently biased by said first member towards said first position so that after release of said manual gripping means, said side gripping members resiliently move toward their said first position to clamp the upper side edge portions of said slides of said stack between said side gripping members such that said slides are held in a stack by said side gripping members.

4,368,913
INDUSTRIAL ROBOT HAVING A GRIPPING DEVICE

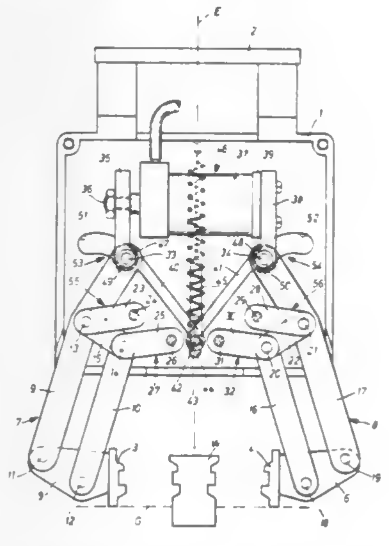
Karl-Heinz Brockmann, Langensohl; Karl P. Mölder, Gonbach, and Gerd Wauer, Kaiserslautern, all of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinenfabrik GmbH, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,802

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937061

Int. Cl.³ B66C *1/00*

U.S. Cl. 294—106 **8 Claims**



1. An industrial robot gripping device for gripping workpieces having opposite contoured faces, comprising a housing, first and second parallel linkages arranged symmetrically on said housing, each including a respective first and second coupler link, each coupler link carrying a respective clamping part with a face of a configuration comparable to a respective contour face of the workpiece, said first and second parallel linkages also including first and second outer and inner crank links parallel to each other and articulated at their one ends to said coupler links and having opposite parts, said first and second linkages also including guide rod members pivoted on said housing and having opposite ends pivoted to said opposite parts of said first and second outer and inner crank links and also include first and second connecting flaps interconnecting said outer ends of said guide rod members at their articulation to said first and second outer and inner crank links, said outer crank links having extending portions extending beyond said connecting flaps and having outer ends with a joint pin, a guide groove in said housing symmetrically arranged on each side of said housing into which a respective joint is confined for movement, a central elongated slot defined in said housing between said guide grooves, a return pin movable in said slot, spring means urging said pin in a return direction, first and second connecting rods extending between said return pin and said joint pin, and drive means to move said joint pin in said groove to move said first and second parallel linkages and to thereby move said clamping jaws toward and away from a workpiece positioned therebetween.

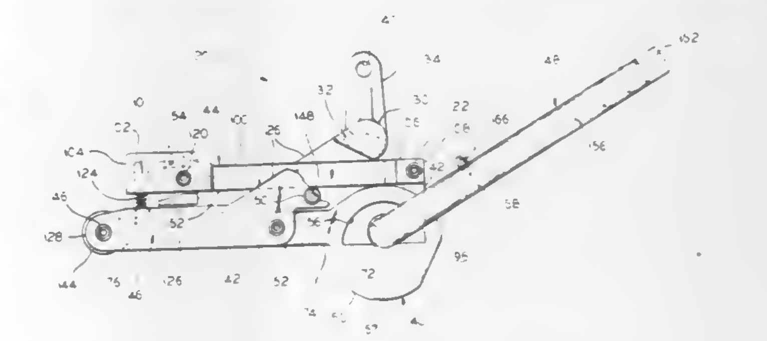
4,368,914
PICKUP UNIT FOR RELEASABLE CONNECTION TO A PARTIALLY EMBEDDED MEMBER

Robert E. Truitt, Carson, Calif., and Homer E. Berry, Parsons, Kans., assignors to Superior Concrete Accessories, Inc., San Diego, Calif.

Filed Jan. 12, 1981, Ser. No. 224,324

Int. Cl.³ B66C *1/36*

U.S. Cl. 294—83 R **9 Claims**



1. In a pickup unit for releasable connection to an anchor insert embedded in a body, such insert having an exposed head portion and a reduced shank portion extending from the head portion and into the body, wherein the pickup unit includes a connecting member rotatable adjacent to such insert head portion, said connecting member having a recess of the bayonet slot type receiving the insert head portion captive within the connecting member while the insert shank portion extends outwardly therefrom upon relative rotation between the connecting member and the insert in one direction, and said connecting member releasing the insert head portion upon such relative rotation in the opposite direction, and a latch mounted for in and out movement relative to the recess for respectively preventing and permitting relative movement of the insert head portion out of the recess, the improvement which comprises:

lever means movably connected to said connecting member,

means for coupling said lever means and said latch,

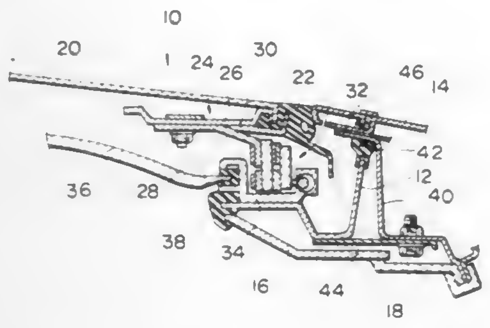
and

means for engaging said lever means with such body,

whereby a force may be applied to said lever means for moving the same relative to said connecting member, thereby to cooperatively move said latch outwardly relative to said recess and rotate said connecting member for releasing the pickup unit from the insert.

4,368,915
AUTOMOTIVE VEHICLE SUNROOF WATER DRAIN FITTING STRUCTURE

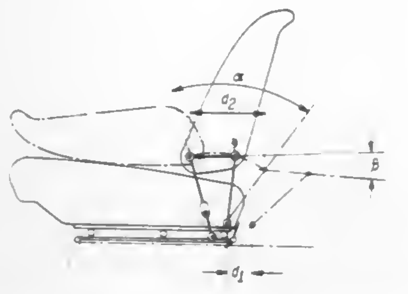
Hiromasa Torii, Koganei, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jul. 29, 1980, Ser. No. 173,317
Claims priority, application Japan, Jul. 31, 1979, 54-106325[U]
Int. Cl.³ B60J *7/00*
U.S. Cl. 296—213 10 Claims



1. A drainage structure for an automotive vehicle sunroof assembly, comprising:
- (a) a water drain container extending around the sunroof assembly and having as integral parts thereof
  - (1) an essentially horizontal first section defining the bottom of said container;
  - (2) a second section parallel to and positioned above said first section; and
  - (3) a third section connecting said first and second sections and having an opening therein;
- (b) and a hollow open-ended water drain fitting received in said opening and arranged in parallel relationship with said first and second sections, said first and second sections being spaced vertically one from the other so as to define lower and upper essentially horizontal flanges to which said drain fitting is fixedly secured at circumferentialy spaced lower and upper portions respectively, said lower and upper flanges respectively extending rigidly from the lower and upper ends of said opening to provide structural support for said drain fitting.

4,368,916
LONGITUDINAL ADJUSTMENT DEVICE FOR THE FOLDING SEAT OF AN AUTOMOBILE

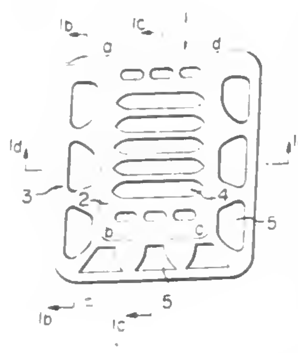
Serge Blasin, Le Plessis Robinson, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Jul. 2, 1980, Ser. No. 164,529
Claims priority, application France, Jul. 4, 1979, 79 17316
Int. Cl.³ B60N *1/10*
U.S. Cl. 297—341 3 Claims



1. A device for the longitudinal adjustment of a folding automobile seat of the type having a longitudinally adjustable back connected to the seat bed by rods and means for fixing said seat back in use position, comprising:
- at least one first rod having one end pivotally connected to said seat back;
- at least one second rod having one end pivotally connected to a fixing bolt selectively engageable with said seat back; and
- a third rod connected between each said one end of said at least one first rod and said fixing bolt, whereby said rods move said seat back into longitudinal adjustment with respect to said seat bed, wherein said seat is slidingly connected to the body of said automobile by a first slide means fixed to said automobile body and a second slide means engaged with said first slide means and fixed to said seat, and wherein each said first rod is also pivotally connected to said first slide means and each said second rod is pivotally connected to said second slide means, and wherein each said first rod confines an axis fixed to said seat bed.

4,368,917
VEHICLE SEAT MEMBER INTEGRALLY FORMED OF SYNTHETIC RESIN MATERIAL

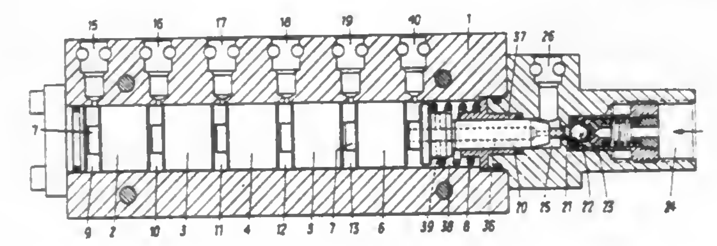
Muneharu Urai, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,754
Claims priority, application Japan, Dec. 27, 1978, 53-160051
Int. Cl.³ A47C *7/02*
U.S. Cl. 297—452 10 Claims



1. A seat member for use in a vehicle comprising a single support structure integrally formed of a synthetic resin material, said support structure including a center support portion formed with a plurality of openings to provide resiliency, and edge portions extending gradually upward at an angle from at least the outer side edges of said center support portion, the size of the openings and the thickness of the support and edge portions varying inversely with the normal load applied thereto, a plurality of openings being formed in said edge portions to provide additional resiliency.

4,368,918
PROCESS AND APPARATUS FOR CONTROLLING THE WATER SUPPLY TO THE CUTTING HEAD OF A CUTTING MACHINE

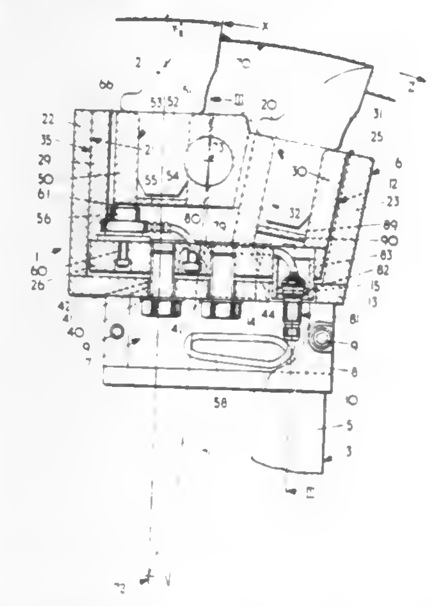
Erich Dröscher, Scheifling; Herwig Wrulich, Zeltweg; Alfred Zitz, Zeltweg, and Otto Schetina, Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria
Filed Dec. 17, 1980, Ser. No. 217,502
Claims priority, application Austria, Jan. 23, 1980, 361/80
Int. Cl.³ E21C *35/22*
U.S. Cl. 299—1 4 Claims



1. Apparatus for controlling water flow to a cutting head of a cutting machine of the kind which has a plurality of hydraulically operated components, said apparatus comprising: a normally closed water control valve assembly having an inlet adapted to be connected to a source of water under pressure and an outlet adapted to be connected to a cutting head of a cutting machine, a hollow control cylinder; a plurality of axially aligned independently slidable control pistons disposed in said cylinder, said pistons being engageable with each other and the ends of said pistons and said cylinder forming a working space for each piston; biasing means biasing all said pistons in a given direction; a hydraulic connection corresponding to and in communication with each working space, each of said connections being adapted to be connected to a different hydraulic component of a cutting machine, the arrangement being such that fluid pressure applied to the working spaces tends to move the pistons against the bias of said biasing means, said pistons during such movement acting directly or indirectly to open said water control valve assembly.

4,368,919
HOLDER ASSEMBLIES FOR SENSITIZED CUTTER TOOLS ON MINING MACHINES

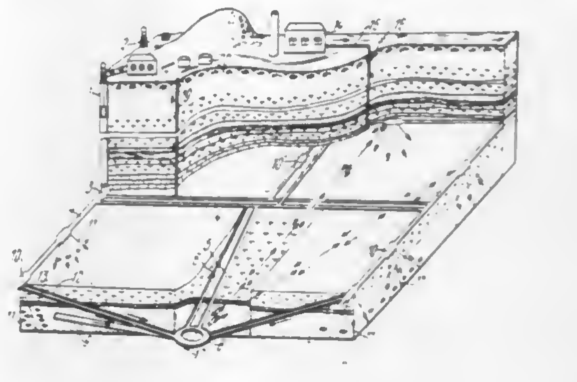
Raymond A. Whittaker; Raymond Lukaszewicz, and John A. Ford, all of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England
Filed Feb. 10, 1981, Ser. No. 233,145
Claims priority, application United Kingdom, Feb. 26, 1980, 8006400
Int. Cl.³ E21C *35/08*
U.S. Cl. 299—1 6 Claims



1. A holder assembly for a sensitized cutter tool on a cutter head of a mining machine, comprising a cutter tool holder component for the sensitized cutter tool, an outer component for mounting on the cutter head and defining a recess, an inner component engageable within the recess by movement in at least one direction, pivot mounting means for attaching said cutter tool holder component to the inner component, the outer component defining an abutment face within the recess for engagement by a corresponding abutment face defined by the inner component, the abutment faces being inclined to said at least one direction of movement, and mechanical means for fixedly retaining the inner and outer components in position with the two abutment faces in engagement.

4,368,920
METHOD OF THERMAL-MINE WORKING OF OIL RESERVOIR

Vladimir P. Tabakov, ulitsa Sofii Kovalevskoi, 4a, kv. 125, Moscow, and Alexandr I. Obrezkov, poselok Yarega, ulitsa Neftyanikov, 1, kv. 14, Komi ASSR, Ukhta, both of U.S.S.R.
Filed Aug. 21, 1980, Ser. No. 179,978
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 1 Claim



1. A method of mine working an oil reservoir, comprising the steps of:
- providing a set of underground mine workings including at least one injection gallery and a recovery gallery;
- drilling injection wells into the oil-bearing formation from said injection gallery and drilling recovery wells into the formation from said recovery gallery;
- drilling at least one auxiliary well directly connecting said recovery gallery and said injection gallery through the oil-bearing formation;
- mounting in said auxiliary well a pipe line spaced from the walls of said auxiliary well;
- positively feeding a heat carrier into the oil-bearing formation through said injection wells, to heat up the formation to a temperature at which the oil in the oil-bearing formation attains the required fluidity;
- withdrawing oil with associated water from the oil-bearing formation into said recovery gallery through said recovery wells;
- effecting separation of the oil and associated water directly within said recovery gallery;
- conveying the thus obtained associated water via said pipe line in said auxiliary well to said injection gallery, to feed this water through said injection wells into the oil-bearing formation;
- simultaneously recovering oil and associated water issuing from the formation adjoining said auxiliary well into said recovery gallery, through said space between said pipe line in said auxiliary well and the walls of said auxiliary well; and
- conveying oil separated from associated water from said recovery gallery through the mine workings to the ground surface.

4,368,921
NON-SUBSIDENCE METHOD FOR DEVELOPING AN IN SITU OIL SHALE RETORT

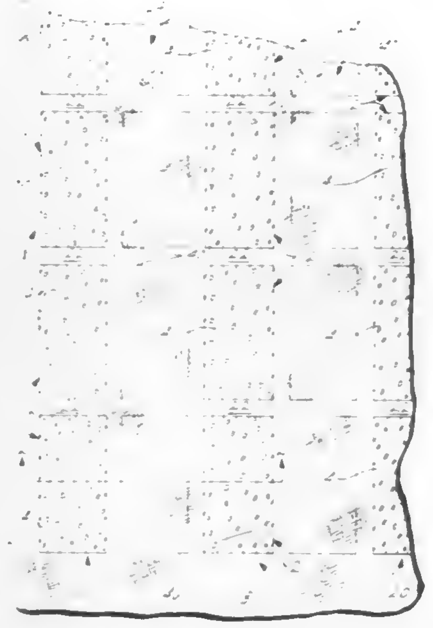
Ned M. Hutchins, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Mar. 2, 1981, Ser. No. 239,593
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 15 Claims

8. A method for controlling subsidence of overburden and for recovering liquid and gaseous products from a system of in situ oil shale retorts, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, in which an intervening zone of unfragmented formation is left between at least one first spent in situ oil shale retort and at least one second spent in situ oil shale retort in which retorting operations have previously been conducted, such a

spent in situ retort containing a fragmented permeable mass of spent oil shale particles, the method comprising the steps of:

introducing stabilizing material into void spaces in such first and second spent in situ retorts for increasing the average compression strength of such spent in situ retorts;

forming at least one intervening in situ oil shale retort in the intervening zone of unfragmented formation, such an intervening retort containing a fragmented permeable mass of formation particles containing oil shale;



leaving a substantially vertical barrier pillar of unfragmented formation surrounding the intervening retort, the vertical barrier pillar of unfragmented formation being of sufficient thickness to inhibit gas flow from the intervening retort to the first and second spent retorts; and

retorting such an intervening in situ retort for producing liquid and gaseous products, the barrier pillar combining with the first and second spent in situ retorts providing support for overburden above such an intervening retort without substantial uncontrolled subsidence of overburden during the operating life of such an intervening retort.

4,368,922

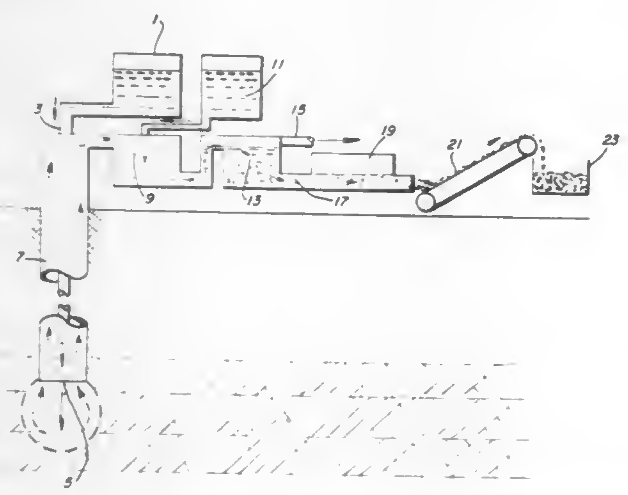
METHOD FOR SOLUTION MINING OF COMPLEX CARBONACEOUS MATERIALS

Adley W. Hemphill, Baltimore; Joseph T. Lundquist, Jr., Columbia, and Carl V. McDaniel, Laurel, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 2, 1980, Ser. No. 212,215

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—5 **6 Claims**



1. A method of mining coal situated as strata beneath an overburden comprising:

(a) sinking a hole from the surface through the overburden into the strata;

(b) passing a basic coal solvent down into a hole and into the strata;

(c) dissolving or suspending at least a portion of the coal into the coal solvent;

(d) removing the coal solvent to the surface;

(e) adjusting the pH of the coal solvent to a pH of about 3 to precipitate solids;

(f) adding a flocculant to cause said precipitated solids to settle; and

(g) recovering the precipitated solids.

4,368,923

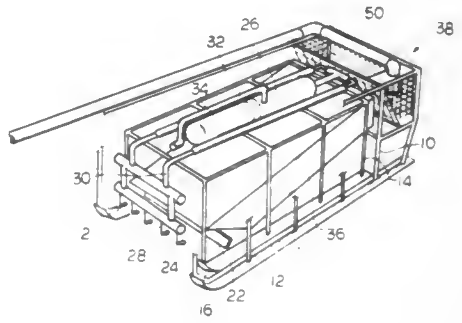
NODULE COLLECTOR

Keiji Handa, Sakura, and Norio Yamakado, Tokyo, both of Japan, assignors to Director-General of Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,463

Int. Cl.³ E02F *3/94*

U.S. Cl. 299—8 **5 Claims**



1. An apparatus for recovering mineral nodules from the seafloor, comprising:

an outer frame having a bottom portion formed into a sledge so that said outer frame can travel on the seafloor;

an inner frame disposed within said outer frame and having a bottom portion formed into a sledge;

a joint member connecting the front end of said inner frame to a leading end portion of said outer frame so that said inner frame may be trailed by said outer frame on the seafloor;

a buoyant member provided on said inner frame to prevent said inner frame sinking into the seafloor;

a collecting chamber provided at the trailing end of said outer frame;

a transversely oriented cutting blade secured to said inner frame and projected from the bottom of said inner frame so that the seafloor surface may be raised by said cutting blade when said outer frame travels on the seafloor;

a longitudinally extending duct provided on said inner frame having one end open adjacent to said cutting blade and the other end open adjacent to said collecting chamber;

a plurality of transversely arranged jet nozzles secured to said inner frame and adapted to jet water therefrom;

said collecting chamber, cutting blade and jet nozzles being so arranged that the summit of the seafloor raised by said cutting blade may be scoured and introduced into said collecting chamber through said duct by water jetted from said nozzles; and

a pump member mounted on said outer frame for feeding water to said jet nozzles.

4,368,924

DRIVING SHIELD

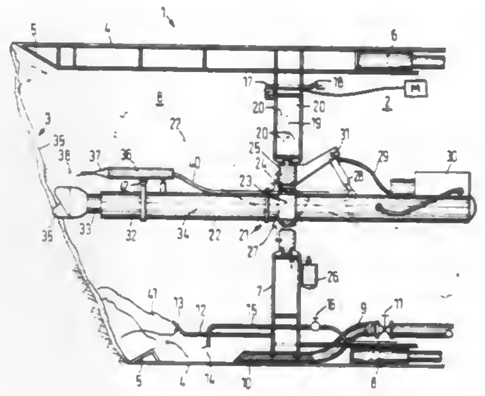
Manfred Nussbaumer, Leonberg-Ezach, Fed. Rep. of Germany, assignor to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,813

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015580

Int. Cl.³ E21D *9/08*

U.S. Cl. 299—33 **12 Claims**



1. A driving shield for use in working or mining a face wall of a gallery, said driving shield comprising:

a shield shell;

a transverse wall arranged in said shield shell, said face wall, said shield shell, and said transverse wall delimiting a work chamber, said transverse wall being provided with a pneumatic pressure duct;

a removal arm pivotably journalled on said transverse arm in said pressure duct;

a removal tool provided on said removal arm for removing material from said face wall;

a discharge conduit arranged in the bottom of said shield shell for the discharge from said work chamber of material removed from said face wall;

a pneumatic conduit which passes through said transverse wall into said work chamber for producing a support pressure therein;

a device for applying sealing medium, said device being movably coupled with said removal arm; and

an application nozzle operatively associated with said application device for receiving sealing medium therefrom and effecting application thereof onto said face wall in the immediate vicinity of said removal tool.

4,368,925

CUTTER DRUM ASSEMBLY FOR A LONGWALL MINING MACHINE

Heinrich Honke, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschienfabrik und Eisengiesserei, m.b.H., Bochum, Fed. Rep. of Germany

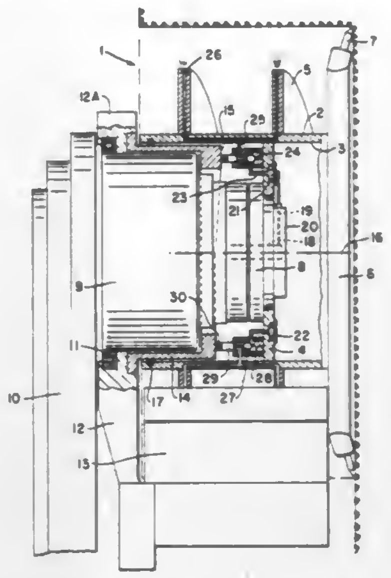
Filed Mar. 4, 1981, Ser. No. 240,506

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009771

Int. Cl.³ E21C *35/20, 35/22*

U.S. Cl. 299—45 **4 Claims**

1. In a shearer drum assembly for a mining machine having nozzles on its periphery for delivering liquid under pressure to a face area being mined, the combination of a cowl pivotal around the axis of the drum assembly, valves spaced around the periphery of the drum assembly for controlling the flow of liquid to said nozzles, and cam means pivotal with said cowl and arranged to actuate said valves such that at any time liquid is delivered only from those nozzles essentially diametrically opposite the cowl.



4,368,926

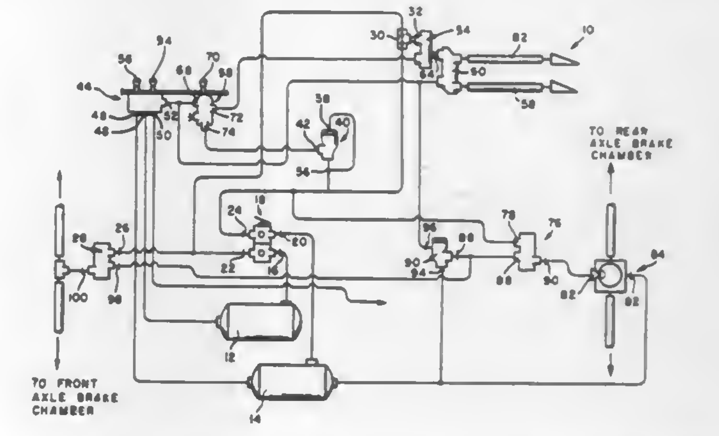
BRAKE PROPORTIONING SYSTEM

Roy E. Bartholomew, Elyria, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 29, 1980, Ser. No. 191,600

Int. Cl.³ B60T *13/00*

U.S. Cl. 303—7 **9 Claims**



1. In a fluid pressure braking system for an articulated vehicle having a towed unit and a towing unit, a source of fluid pressure carried by the towing unit, a supply line interconnecting said units for communicating fluid pressure from the towing unit to the towed unit, a service line interconnecting said units for communicating a service brake actuating signal to the towed unit when a brake application is effected, said towing unit having service brakes and a service brake actuating system controlling said service brakes and the pressure level in said service line when a brake application is effected, characterized in that said service brake actuating system includes proportioning valve means having an oulet connected to said service line, and an inlet communicated to said pressure source when a brake application is effected, said proportioning valve means including operator-activated mechanism shiftable from a first condition in which the proportioning valve means proportions communication between said inlet and outlet to establish a proportionally lower pressure level at the outlet than at the inlet over at least a portion of the range of brake actuating pressures of the service actuating system, said mechanism being shiftable to a second condition permitting substantially uninhibited communication through said proportioning valve means wherein the pressures at the inlet and outlet of the latter are substantially the same throughout the range of brake actuating pressures, said operator-activated mechanism including

pressure responsive means responsive to the pressure level in said service brake actuating system to reset said operator-activated mechanism from said first condition to said second condition when the pressure level in said service brake actuating system exceeds a predetermined level.

4,368,927

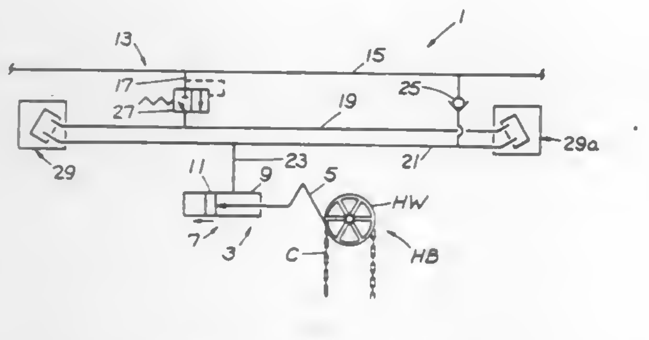
HAND BRAKE RELEASE APPARATUS

Robert H. Billingsley, St. Louis; Steven L. Jantzen, St. Charles, and James R. Zimmerle, O'Fallon, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 7, 1981, Ser. No. 261,403

Int. Cl.^{3} B60T *15/36*

U.S. Cl. 303—18 **15 Claims**



1. Apparatus for automatically releasing a railroad car hand brake comprising:

hand brake release means normally maintaining the hand brake in its applied position; air pressure activated means acting on the release means to force the release means to release the hand brake; an air conduit directing pressurized air from a pressurized air source to the air pressure activated means; valve means connected in the air line and responsive to the source air pressure, the valve means being normally closed, but opening when the source air pressure reaches a level sufficient to release the air brakes on the car; and draft load sensing means positioned in the air line between the valve means and the air pressure activated means, the draft load sensing means normally blocking the air line, but unblocking it when a sufficiently great draft load is sensed so the air pressure activated means can force the release means to release the hand brake whereby the hand brake is released only if source air pressure is sufficiently high and the draft load on the railroad car is sufficiently great.

4,368,928

INERTIAL HAND BRAKE RELEASE APPARATUS

Robert H. Billingsley, St. Louis; Steven L. Jantzen, St. Charles, and James R. Zimmerle, O'Fallon, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

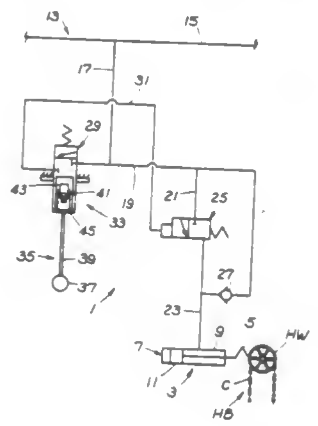
Filed May 7, 1981, Ser. No. 261,404

Int. Cl.^{3} B60T *15/36*

U.S. Cl. 303—18 **10 Claims**

1. Apparatus for automatically releasing a railroad car hand brake comprising:

hand brake release means normally maintaining the hand brake in its applied position; air pressure activated means acting on the release means to force the release means to release the hand brake; an air conduit directing pressurized air from a pressurized air source to the air pressure activated means; a normally closed first valve means connected in the air conduit between the source and the air pressure activated means; a normally closed second valve means connected in the air conduit between the source and a control inlet of the first valve means; means for sensing an inertial load on the car and for opening the second valve means when the inertial load sensed exceeds a predetermined value, opening of the second valve means causing the first valve means to open; air pressure directed to the control inlet of the first valve means through the second valve means, when said second valve means is open opening the first valve means if the air pressure level is sufficiently great to release the air brakes of the car; and the air pressure activated means to force the release means to release the hand brake whereby the hand brake is released only if source pressure is sufficiently high and the inertial load sensed exceeds the acceleration factor.



4,368,929

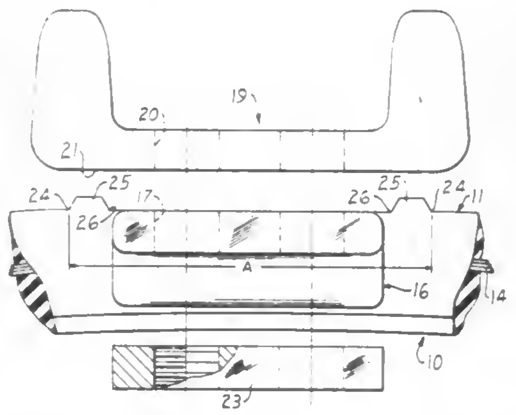
SEALED TRACK BELT ARRANGEMENT

Marvin E. Beyers, Peoria; Anthony E. Kirn, Pekin, and Robert W. Untz, Hanna City, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 794,167, May 5, 1977, abandoned. This application Oct. 28, 1981, Ser. No. 315,772

Int. Cl.^{3} B62D *55/24*

U.S. Cl. 305—11 **3 Claims**



1. In a flexible track belt (10) adapted to be positioned circumferentially about a pneumatic tire carcass (12), said flexible track belt (10) having an elastomeric belt (11), a plurality of track shoes (19), and a plurality of means for attaching each of said track shoes (19) at a respective preselected shoe site (S) to said elastomeric belt (11), said attaching means including a keeper member (16) positioned at each shoe site (S), said elastomeric belt (11) having a spaced pair of raised elastomer transversely extending ribs (25) positioned within each of said shoe sites (S) on opposed sides of said keeper member (16), the improvement comprising:

said elastomeric belt (11) having first and second planar surfaces positioned immediately adjacent each of said shoe sites (S) and extending transverse said elastomeric belt (11) and along a respective rib (25), each of said ribs (25) being completely covered by a shoe (19) and each of said planar surfaces extending outwardly from a respective shoe (19) in the attached position of the shoe (19) at said site (S), said shoes (19) having a generally planar surface in contact with the elastomeric belt (11) in the installed position of the shoes (19) on the elastomeric belt (11), and said ribs (25) being of a construction sufficient to be maintained in forcible contact with the shoe (19) over the entire length of the rib (25) during flexing of the elastomeric belt (11) and to generate a raised rib of elastomer contiguous to the leading and trailing edges of said shoe in the planar surfaces of the belt (11) in response to connecting the track shoe (19) to the keeper member (16).

4,368,930

GUIDING DEVICE PROVIDED WITH GUIDE-BLOCKS

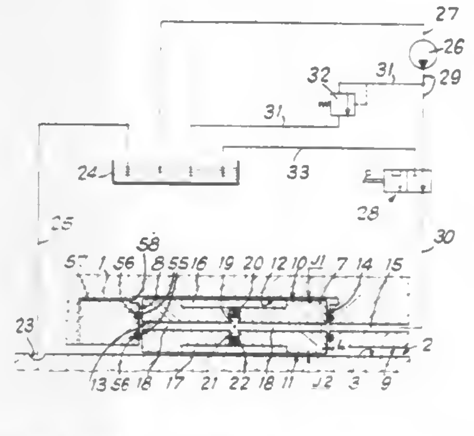
Pierre J. M. Duchaine, Ville D'Avray, France, assignor to Centre d'Etudes et de Recherches de la Machine-Outil (C.E.R.-M.O.), France

Continuation of Ser. No. 960,854, Nov. 15, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,518

Claims priority, application France, Nov. 30, 1977, 77 36136

Int. Cl.^{3} F16C *29/02, 32/06*

U.S. Cl. 308—5 R **2 Claims**



1. A guiding device comprising:

support means including a first substantially planar guiding surface;

a movable body adapted to be guided on said support means and including a second substantially planar guiding surface;

a plurality of hydrostatic guide blocks disposed between said first and second guiding surfaces, each said guide block including a first hydrostatic bearing portion connected to a source of pressurized fluid for slidably connecting one of said movable body and said support means to the respective guide block, each said first bearing portion including a flow restriction for restricting the flow of fluid from said source to the respective first bearing portion; a second hydrostatic bearing portion on said guide block connected to said source of pressurized fluid; and plural radial pipes connecting the outside of each respective guide block to the first and second hydrostatic bearing portions thereof; and

a single pipe in said movable body associated with each of said guide blocks for connecting the source of pressurized fluid to means delivering said fluid to said plural radial pipes at the outside of each respective guide block.

4,368,931

SELF ALIGNING PRESS IN BEARING STRUCTURES

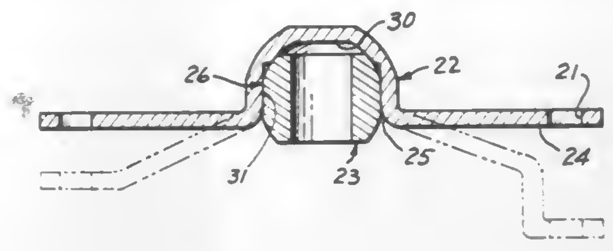
William A. Casler, and Phillip E. Saurenman, both of Pasadena, Calif., assignors to Plus Manufacturing Co., Inc., South El Monte, Calif.

Filed Jul. 24, 1980, Ser. No. 171,729

Int. Cl.^{3} F16C *25/04*

U.S. Cl. 384—192 **16 Claims**

1. A self-aligning press-in bearing structure comprising: a mounting member having a face, and in the face a receptacle, said receptacle being concave and open at one end, and having an inner peripheral wall with a nominal diameter; and a bearing member adapted to receive a shaft and accommodate itself to the axis of said shaft when the angle between said axis of the shaft and a nominal axis of said bearing member is of the order of about 5° or less, said bearing member having an outer wall which in a central region has a nominal major diameter approximately equal to that of the said inner wall, said inner and outer walls having noncircular portions making with one another at least a net fit, whereby to permit only limited rotation of said bearing in planes including said axis, and substantially preventing rotation of said bearing around said axis, both of the limitations being exerted at said diameters where the radial load is reacted, resistance to the axial load thereby being exerted only by the receptacle.



4,368,932

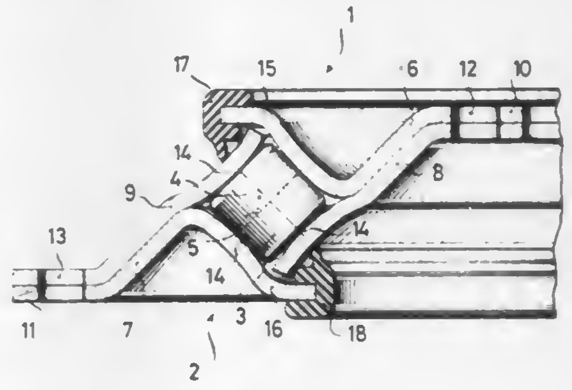
SHEET-METAL RING MOUNT FOR ANTI-FRICTION BEARING

Heinrich Wolzenburg, Dortmund, Fed. Rep. of Germany, assignor to Estel Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,488

Int. Cl.^{3} F16C *33/58*

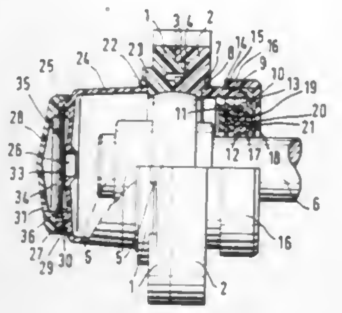
U.S. Cl. 308—227 **4 Claims**



1. Sheet-metal ring mount for anti-friction bearings, comprising an inner ring and an outer ring each composed of two sheet metal annuli, one of said annuli of each ring having a first annular flange portion and radially thereof a first annular race portion of V-shaped configuration and the other of said annuli having a second annular flange portion overlapping said first annular flange portion and a second annular angled-off portion with reference to said second annular flange portion and extending along and past one arm of the V of the first annular race portion so as to surround with another arm of the V two sides of an annular race the other two sides of which are surrounded by the similarly configurated other ring; and a plurality of anti-friction rollers received in said track, successive ones of said rollers being turnable about axes of rotation which extend normal to one another.

4,368,933
HOUSING OF A BEARING WITH A PRESSURE-COMPENSATING ARRANGEMENT

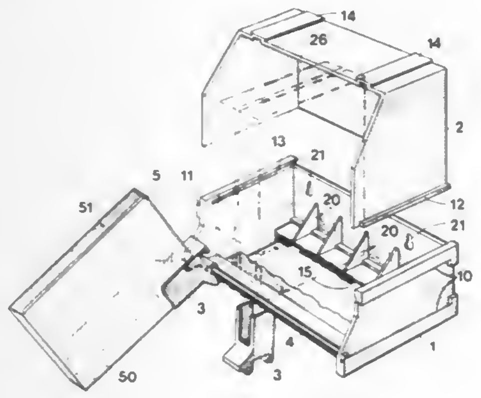
Alfons Motsch, Bergneustadt, Fed. Rep. of Germany, assignor to Kuhbier GmbH & Co., Wipperfürth, Fed. Rep. of Germany
Filed Sep. 14, 1981, Ser. No. 302,070
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036287
Int. Cl.³ F16C *35/02*
U.S. Cl. 308—245 **16 Claims**



1. In a bearing housing having two parts connected to each other and receiving a bearing mounted on a shaft, a combination comprising means on said shaft for sealing the housing against lubrication oil leakage, and pressure-compensating means mounted at the side of the housing opposite to that carrying said sealing means; said pressure-compensating means including an enclosure connected to one of said parts and a cover closing said housing and connected to said enclosure, said cover being spaced from said enclosure to form a space therebetween, and an elastic diaphragm interposed in said space and formed with a number of perforations arranged in communication with ambient air, said diaphragm being operative for compensation of over pressure which may occur in said housing due to the spinning movement of lubrication oil particles contained in said housing during operation.

4,368,934
STORAGE CABINET FOR CASSETTES BOXES

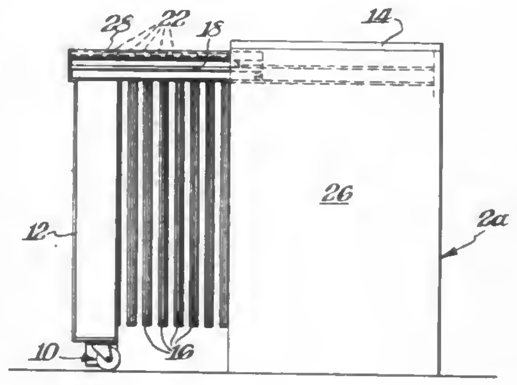
Giles N. Somers, Geneva, Switzerland, assignor to Claire Corporation AG, Zoug, Switzerland
PCT No. PCT/CH79/00042, § 371 Date Nov. 21, 1979, § 102(e) Date Nov. 20, 1979, PCT Pub. No. W079/00804, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 16, 1979, Ser. No. 170,671
Claims priority, application Switzerland, Mar. 21, 1978, 3085/78; Mar. 9, 1979, 2288/79
Int. Cl.³ A47B *81/06*
U.S. Cl. 312—13 **4 Claims**



1. Coffer for cassette boxes of the type comprising two parts pivotally mounted one on the other, a first one of these parts comprising means for retaining a cassette on it and the second one forming a cover for closing the cassette box, said coffer comprising at least one swinging member having means for cooperating with the said first part of at least one cassette box, for maintaining said first part on said swinging member, means defining a rotation axis for at least one such swinging member on the coffer, the said axis being located so that the swinging member is movable between a first position where a cassette box retained on it is retracted into the coffer, and a second position where said cassette box is entirely out of the coffer and openable for introducing and removing the cassette without separating the box from the swinging member, each said swinging member being arranged for receiving and retaining the said first part of a pair of cassette boxes, back to back with their covers openable on two opposite sides.

4,368,935
VERTICAL FILING SYSTEM

David A. White, Folcroft, Pa., assignor to United Filing Corporation, Claymont, Del.
Filed Sep. 16, 1980, Ser. No. 187,946
Int. Cl.³ A47B *63/00*
U.S. Cl. 312—184 **6 Claims**



1. A vertical filing system wherein filed documents are suspended vertically on a plurality of coacting, substantially horizontal pins, said pins and associated components of the filing system being contained in a filing cabinet which may be either a top opening type or a drawer opening type cabinet, said filing system comprising:

a plurality of substantially horizontal and substantially parallel file bars having pins extending perpendicularly through said bars and protruding outwardly therefrom, the pins extending from any one bar being offset from the pins of any other adjacent bar,

the space between each pair of said bars being used to file documents therein by hanging said documents on the said pins extending into said space from each bar at each end of said space, and

means for slideably moving said file bars toward and away from each other within said cabinet, and

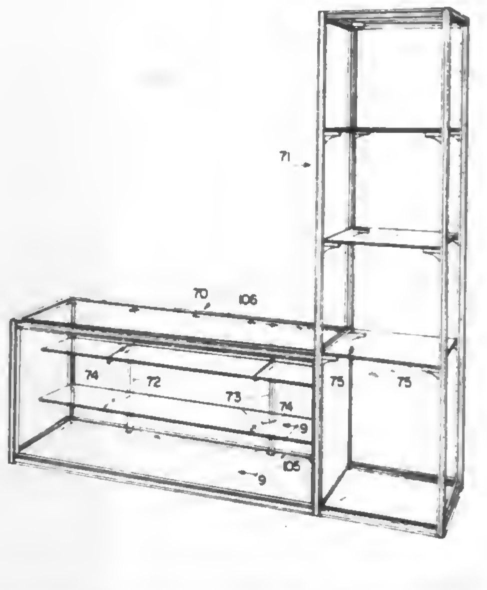
means to vary the possible separation distace between any two of said file bars from a minimum, specified, closed distance to an intermediate, specified, search distance and to a maximum, specified, open distance,

the lengths of said pins being such that, when the file bars are at said minimum closed distance, or at said intermediate search distance, said pins extending into said space from one said bar overlap said pins extending in the opposite direction into said space from an adjacent bar, thereby prohibiting the fall or removal of filed documents from said space and providing effective storing thereof, and

the lengths of said pins being such that, when the file bars are at said maximum, open distance, said pins extending into said space from one said bar do not overlap said pins extending in the opposite direction into said space from an adjacent bar, wherein said pins are located on each said filing bar and openings are placed in each said bar through which pins of adjacent bars can extend such that, on each bar other than the first and last bar, the pin-opening sequence is pin-opening-opening across the entire bar, the first and last bars having pins and openings to accomodate the internal bars, thereby providing for vertical filing or removal of said documents within or from said space.

4,368,936
GLASS PANEL SUPPORT STRUCTURE

Anthony C. Worrallo, 15 Sprott Rd., Kohimarama, Auckland 5, New Zealand
Continuation of Ser. No. 176,248, Aug. 7, 1980. This application Oct. 2, 1981, Ser. No. 308,108
Claims priority, application New Zealand, Aug. 8, 1979, 191240
Int. Cl.³ A47B *43/00;* F16B *12/00*
U.S. Cl. 312—257 A **14 Claims**

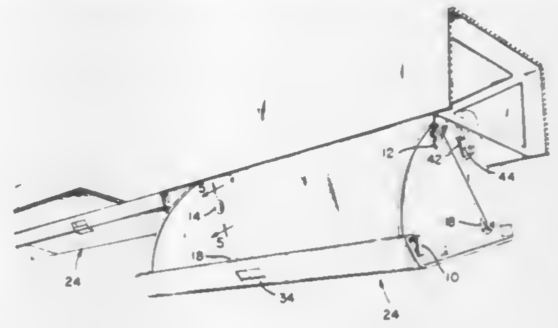


1. An apparatus for supporting and retaining a panel comprising
a plurality of elongated members each having
a substantially flat upper surface, and
means defining an elongated recess extending inwardly from said surface, said recess having inwardly protruding lips at both sides;
means for supporting said elongated members in a substantially rigid structural relationship with the members defining a closed polygon and with the flat upper surfaces thereof lying in substantially the same plane;
a plurality of retainers, at least one for each of said elongated members, each of said retainers including
a flanged portion insertable in said elongated recess,
a flat portion fixedly attached to said flanged portion and having a surface for lying in contact with the flat upper surface of one of said elongated members, and
a retainer wall protruding from the opposite side of said flat portion from said flanged portion for engaging an edge of a panel,
whereby a panel having a polygonal shape matching the polygon defined by said members can be placed on and retained by the assembly of elongated members and retainers.

4,368,937
OVERHEAD STOWAGE BIN MECHANISM

Mark A. Palombo, Edmonds, and Arthur Walkden, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Feb. 17, 1981, Ser. No. 235,215
Int. Cl.³ A47B *49/00;* B65D *43/24;* F16B *39/00*
U.S. Cl. 312—325 **8 Claims**

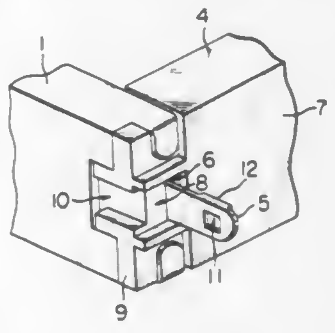
1. In combination with a stowage bin assembly of the type comprising a fixed supporting structure and a stowage bin having a pair of spaced generally parallel sidewalls, said bin being supported from said structure by first and second pivotal mounting means with said first and second pivotal mounting means each including (i) a first arm pivotally secured adjacent its outboard end to said supporting structure and pivotally secured adjacent its inboard end to the outer surface of a respective one of said spaced generally parallel bin sidewalls, (ii) a second arm pivotally secured adjacent its inboard end to the outer surface of said respective one of said spaced generally parallel sidewalls at a point spaced from and below the point of pivotal connection of said first arm to said bin sidewall, and (iii) interconnecting means pivotally secured to the outboard end of said second arm and to said first arm at a point intermediate its inboard and outboard ends whereby said first arms, second arms, interconnecting means, and the associated bin sidewalls define a pair of four-bar linkage assemblies interconnecting said bin to said supporting structure with freedom for relative pivoting movement with respect thereto about the points of pivotal connection of said outboard ends of said first arms to said support structure between a first stowed upper position and a second lower open accessible position permitting of loading and/or unloading of material to be stowed in said bin; an improved self-aligning bearing assembly means for pivotally yet removably interconnecting the inboard ends of at least said first arms to respective different ones of said bin sidewalls whereby said bearing assembly means may be readily assembled and/or disassembled from the interior of said bin so as to



permit ease of installation and/or removal of said bin from said supporting structure, said improved self-aligning bearing assembly means comprising: a housing mounted on the interior of each of said bin sidewalls and extending laterally through said sidewalls, said housings carrying needle bearing elements defining an elongated axle hole passing through each of said bin sidewalls; an axle bolt having a threaded end portion extending laterally and outwardly through each of said axle holes defined by said needle bearing elements; and, a self-locking threaded bolt mounted on the inboard end of each of said first arms cooperating with, and removably fastened to, the threaded portion of said axle bolt so as to form a pair of self-aligning bearing assemblies pivotally interconnecting the inboard ends of said first arms to the outer surfaces of respective different ones of said bin sidewalls and permitting of disassembly and/or reassembly of said self-aligning bearing assemblies by unthreading and/or threading said axle bolts from said self-locking bolts from the interior of said bin.

4,368,938
SMALL ELECTRIC MOTOR

Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Japan
Filed Sep. 11, 1980, Ser. No. 186,059
Claims priority, application Japan, Sep. 26, 1979, 54-133009[U]
Int. Cl.³ H01R *27/00*
U.S. Cl. 339—31 R **3 Claims**



1. A small electric motor construction for facilitating an

electrical connection to a power supply terminal (**13**), comprising:

a case including an end wall (**7**) having a terminal through hole (**6**) therein;

a motor supported in said case having a resilient bendable conductive motor terminal (**5**) extending out of said case through said through hole; said case having a side wall (**9**) adjacent the hole (**6**) which meets said end wall at a corner and extends perpendicularly to said end wall;

both said end wall (**7**) and said side wall (**9**) having an interconnecting recess area (**8**, **10**) extending from a location on an opposite side of said terminal (**5**) of said end wall and around said corner into said side wall;

said conductive terminal being made of material which is readily bendable and being selectively bendable away from said side wall to resiliently engage with a supply terminal substantially aligned with said motor terminal and disposed at right angles to said end wall, and also being selectively bendable at substantially right angles into the recess (**8**) of said end wall (**7**) to engage with a supply terminal which is disposed parallel to said end wall, and also being selectively bendable in substantially U-shape into the recess (**10**) of said side wall (**9**) to engage with a power supply terminal laterally offset from said motor terminal; said recess (**10**) of said side wall being of sufficient length to receive said U-shape motor terminal; said motor terminal comprising an electrically conductive metal plate.

4,368,939

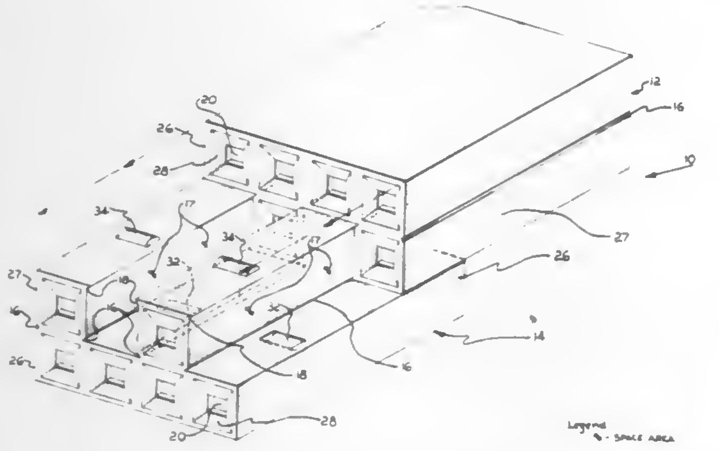
MODULAR CONNECTOR HOUSING

Wilhelmus T. M. Foederer, Best, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1980, Ser. No. 141,666

Int. Cl.³ H01R *13/48*

U.S. Cl. 339—59 M **5 Claims**



1. A dielectric connector housing comprising at least two identical modules slidably engaged together, each module having a first complete row of blocks and at least one second row of intermittently spaced apart blocks integrally molded to said first row of blocks, each space of one module adapted to receive a corresponding block from the other module, each block containing a terminal receiving channel open at both ends and adapted to receive an electrical terminal.

4,368,940

MULTIPURPOSE COAXIAL CONNECTOR

Shigekata Sugiura, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,706

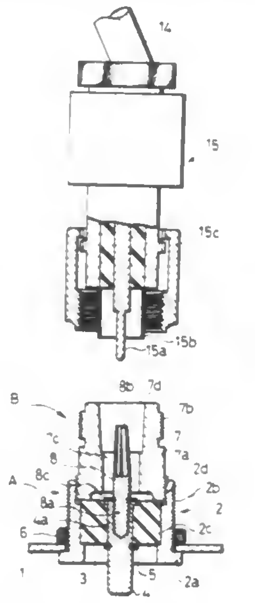
Claims priority, application Japan, Mar. 16, 1979, 54-34019[U]

Int. Cl.³ H01R *17/12*

U.S. Cl. 339—177 E **4 Claims**

1. In a connector assembly comprising a main body adapted to be attached to a terminal of an electric apparatus; means including a connecting member attachable to the main body for receiving a plug connected to a coaxial cable for connecting said cable electrically to said terminal; and means including an adapter attachable to said main body for connecting a component other than said plug to said terminal; whereby a coaxial connector for receiving said plug can be formed at the terminal of said electric apparatus by means of said main body and said connecting member, or a connector for attaching a component other than said plug can be formed at the terminal of said electric apparatus by means of said main body and said adapter;

the improvement wherein said main body is comprised of a cylindrical member having a hollow portion receiving a first spacer member holding a central conductor, said hollow portion having an external thread on its outer surface and an internal thread on its inner surface, and said adapter is comprised of a locator ring adapted to be threaded onto said external thread, a cap adapted to be threaded onto said internal thread, and a second spacer member and a sealing member received in said cap, said cap being threaded onto said main body to bring said second spacer of said adapter and said first spacer of said main body into pressed contact and to sandwich said sealing member between said second spacer and said cap.



4,368,941

ELECTRICAL JACK FRAME

Ronald G. Martin, Apple Valley, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Mar. 6, 1980, Ser. No. 127,769

Int. Cl.³ H01R *17/18*

U.S. Cl. 339—183 **5 Claims**

1. A jack frame for an electrical jack of the type having a plurality of jack springs and adapted for side-by-side mounting in an electrical jack panel, said jack frame being cast as an integral unit and comprising:

a jack sleeve mounting section having a rearward surface, a generally flat forward surface and a pair of side edges;

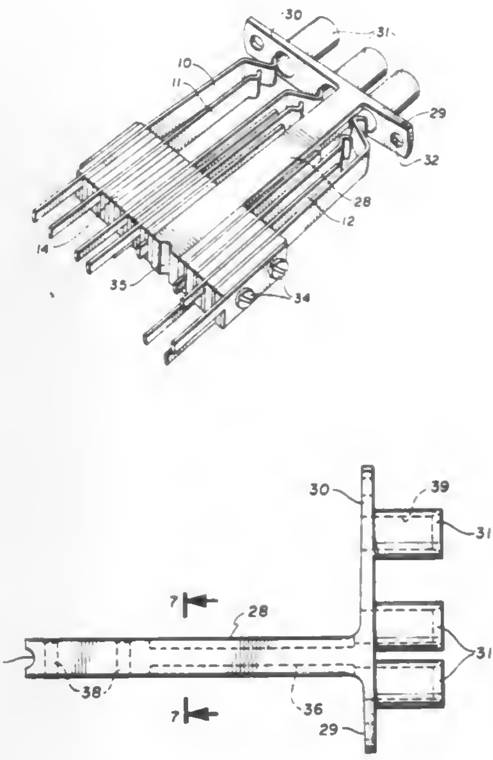
at least two jack sleeve members integrally cast with said forward surface and extending outwardly at right angles therefrom, said jack sleeve members being generally cylindrical members and having a generally cylindrical opening extending therethrough;

an elongated jack spring mounting section integrally cast with said rearward surface of said jack sleeve mounting section between said pair of side edges and between two adjacent jack sleeve members, said elongated jack spring mounting section including first and second opposing edges and extending outwardly at right angles from said rearward surface in a direction opposite said jack sleeve members such that said first and second opposing edges

are substantially flush with respect to said pair of side edges;

means near the outer end of said jack spring mounting section for mounting a plurality of jack springs; and

said elongated jack spring mounting section further including a pair of integrally cast reinforcement ribs extending laterally otwardly in opposite directions from each of said first and second opposing edges such that one of the reinforcement ribs of each of said pairs of reinforcement ribs includes a portion extending past a projected extension of the cylindrical opening of one of said two adjacent jack sleeve members and the other reinforcement rib of each of said pairs of reinforcement ribs includes a portion extending past a projected extension of the cylindrical opening of the other of said two adjacent jack sleeve members .



4,368,942

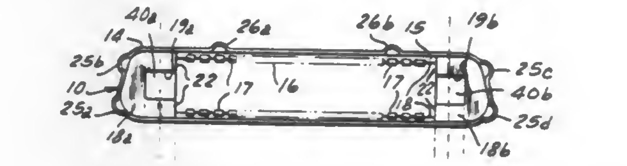
KEYED CONNECTOR TO PREVENT INTERMATING WITH A STANDARD CONNECTOR

Istvan Mathe, and Alan H. Kasper, both of Cicero, Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 767,799, Feb. 11, 1977, abandoned. This application Feb. 9, 1978, Ser. No. 876,326

Int. Cl.³ H01R *13/64*

U.S. Cl. 339—186 M **9 Claims**



1. A connection system comprising: a keyed plug and matable keyed receptacle; a similar given standard receptacle and matable given standard plug each non-matable to the keyed plug and keyed receptacle, respectively; said given receptacle and plug each having a base means retaining a contact mounting insert with a given standard length contact supporting means defined by end walls spaced a given standard length by a contact supporting wall, said keyed plug and keyed receptacle each having

(a) a base means;

(b) a contact mounting insert retained on the base means, said insert having contacts and a contact supporting means defined by end walls spaced by a contact supporting wall;

(c) keying means adjacent at least one end of the contact supporting wall, said keying means having a beginning portion means beginning at a point shorter than at least one end of the given standard length contact supporting means of the given standard receptacle and plug and terminating at an end portion means longer than said one end of the given standard length contact supporting means of the given standard receptacle and plug when the contacts of the keyed plug and receptacle are otherwise aligned for insertion with the otherwise matable contacts of the respective given receptacle and plug, said keyed plug and receptacle being otherwise matable with the given receptacle and plug but for the keying means;

(d) said keying means beginning portion means preventing mating between the keyed receptacle and the given standard plug; and

(e) said keying means end portion means preventing mating between the keyed plug and the given standard receptacle.

4,368,943

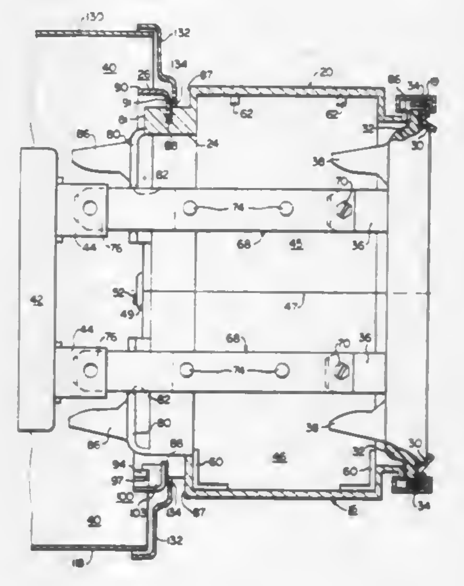
AUXILIARY EQUIPMENT ENCLOSURE UNIT FOR WATTHOUR METER SOCKETS

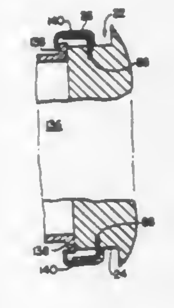
Steven B. Davis, St. Mathews Township, Wake County, N.C.; Forrest E. Coyle, Penn Hills, and Denis E. Bedel, Ross Township, Allegeheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 7, 1980, Ser. No. 128,221

Int. Cl.³ H01R *13/20*

U.S. Cl. 339—198 M **27 Claims**





1. An auxiliary equipment enclosure unit mountable both at a ring-type watthour meter socket having a sealing ring and at a ringless-type watthour meter socket having an enclosure cover, said enclosure unit comprising:

a hollow body defining a housing portion adapted to receive separate equipment devices therein; and

an adaptive socket attachment assembly including a mounting extension extending axially from the rear end of said housing portion and having an outer periphery circumscribing an area less than the vertical cross sectional area of said housing portion with said mounting extension including a circumferential groove, said adaptive socket attachment assembly further including a resiliently expandable and removable retainer means resiliently positionable in said circumferential groove so as to be axially confined therein,

said enclosure unit, when mounted to a ring-type watthour meter socket, being mounted in an abutting relationship to said ring-type watthour meter socket, with said retainer means being maintained in a predetermined radially overlapping relationship with the sealing ring of said ring-type watthour meter socket such that said sealing ring retains said enclosure unit at said ring-type meter socket,

said enclosure unit, when mounted at a ringless-type meter socket having both said mounting extension and said retainer member inserted in said ringless-type watthour meter socket such that the enclosure cover thereof retains said enclosure unit at said ringless-type meter socket.

4,368,944

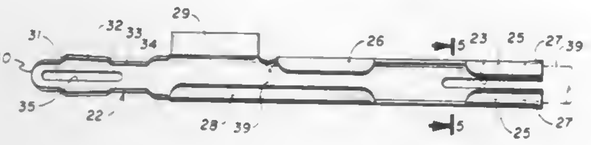
TERMINAL CONSTRUCTION

David M. DeYoung, Bloomington, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Continuation of Ser. No. 178,802, Aug. 18, 1980, abandoned. This application Sep. 8, 1980, Ser. No. 184,766

Int. Cl.^{3} H01R *13/40*

U.S. Cl. 339—221 R **25 Claims**



1. A terminal for insertion into an opening in a printed circuit board or the like comprising a partially rolled up terminal end having first and second spaced apart side edges including:

- a first end section having an effective width less than the diameter of said opening;
- a second section integrally joined with said first end section and having an elongated terminal retaining ramp means with at least a portion having an effective width greater than the diameter of said opening;
- means for providing resiliency to said second section comprising an elongated, longitudinally extending closed loop slot disposed within said terminal end and extending throughout at least a substantial portion of said second section.

4,368,945

INFRARED REFLECTING LAMINATED GLASS FOR AUTOMOBILE

Yoshitugu Fujimori, Tokorozawa; Masataka Kumata, Tokyo, and Mamoru Mizuhashi, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd. and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

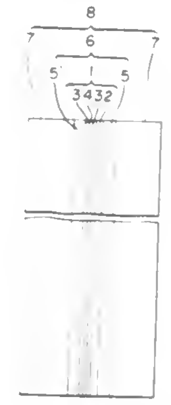
Filed Aug. 6, 1980, Ser. No. 175,696

Claims priority, application Japan, Aug. 28, 1979, 54-108620

Int. Cl.^{3} G02B *5/28, 5/22*

U.S. Cl. 350—1.7 **6 Claims**

1. An infrared reflecting laminated glass having more than 70% transmission of visible rays comprising a pair of glass sheets with flexible laminated interlayer films wherein said laminated interlayer films comprise a pair of polyvinyl butyral interlayer films which hold an infrared reflecting plastic film, said infrared reflecting plastic film formed by sequentially coating, on a plastic film, a tungsten oxide layer having a thickness of 180 Å to 500 Å or 1400 Å to 1600 Å, a silver layer having a thickness of 80 Å to 150 Å and a tungsten oxide layer having a thickness of 180 Å to 500 Å or 1400 Å to 1600 Å



wherein at least one of said polyvinyl butyral interlayer films incorporate an ultraviolet absorbent.

4,368,946

INFORMATION RECORDING METHOD AND APPARATUS

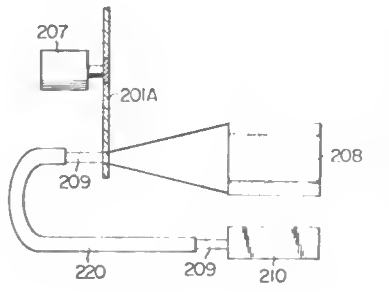
Yutaka Kaneko, Kawasaki, and Mitsuhisa Fukuda, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Division of Ser. No. 16,101, Feb. 28, 1979, Pat. No. 4,298,244. This application Oct. 15, 1980, Ser. No. 197,203

Claims priority, application Japan, Feb. 28, 1978, 53-22468; May 19, 1978, 53-59810; Jun. 20, 1978, 53-74723

Int. Cl.^{3} G03H *1/22;* **G02B** *5/14*

U.S. Cl. 350—3.78 **3 Claims**



1. In an information recording apparatus in which a recording member having multiple small area holograms containing character information arranged in a circle is rotated about the central axis of the circle and a selected one of said holograms containing character information to be reproduced is brought into a reproduction position, and said character information to be recorded is reproduced on a reading plane of an image sensor, the improvement comprising:

- a reproduction light source for projecting reproduction light forming a parallel laser beam with a predetermined beam diameter, having a wavelength λa, and
- a flexible, condensing photo-transmitter, the refractive index distribution coefficient of which with respect to said wavelength λo is $[g(\lambda o)]^2$ and whose length is

$$(2n+1)\frac{2\pi}{g(\lambda o)},$$

where n is zero or a positive integer, and which is disposed between said reproduction light source and said reproduction position and is capable of transmitting said reproduction light from an incoming end surface to an outgoing end surface of said light condensing photo-transmitter, with said outgoing end surface positioned in proximity to said reproduction position, and said reproduction light coming from said outgoing end surface, and said reproduction position being adjustable by use of the flexibility of said light condensing phototransmitter.

4,368,947

TURRET CONDENSER FOR MICROSCOPES

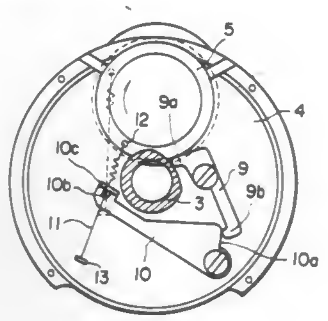
Makoto Yoshinaga, and Yutaka Takabayashi, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,504

Claims priority, application Japan, Nov. 13, 1979, 54-146835

Int. Cl.^{3} G02B *21/14*

U.S. Cl. 350—509 **3 Claims**



1. In a turret condenser for microscope comprising a condenser lens, an aperture stop means arranged below said condenser lens and aligned with said condenser lens, and a rotatable turret arranged between said condenser lens and aperture stop means and having a hole and a plurality of ring slits capable of being aligned with said condenser lens in turn when said turret is rotated, the improvement comprising a cam having a predetermined shape and secured to said turret to rotate concentrically with said turret, lever means having an end being in contact with said cam and a free end, and a spring passing through said free end of said lever means and having one end connected to said aperture stop means, said free end of said lever means being engaged with the other end of said spring to fully open said aperture stop when one of said plurality of ring slits is aligned with said condenser lens by the rotation of said turret.

4,368,948

OPTICAL FIBER CONNECTOR AND METHOD

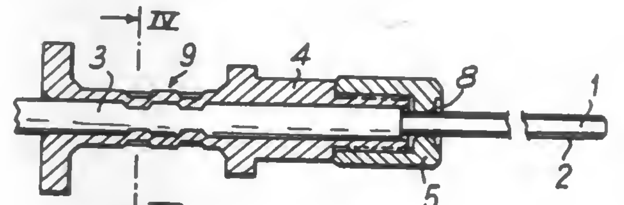
Jean-Bernard Despouys, Paris, France, assignor to Radiall, Rosny-Sous-Bois, France

Filed Nov. 13, 1979, Ser. No. 93,916

Claims priority, application France, Nov. 13, 1978, 78 31953

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 350—96.20 **7 Claims**



1. A process of connecting an optical monofiber in a connector ferrule comprising the steps of, providing an optical monofiber having a core, a silicone casing extending around said core, and an external protective sheath extending around said silicone casing, stripping the protective sheath from an end of the fiber without removing said casing to provide a stripped end, providing a connector ferrule unit devoid of adjustable parts, said ferrule unit having a front end and a rearward end, said front end comprising a narrow central passage having the shape of a volume of revolution around the axis of the ferrule which is convex toward the interior of the passage, said passage having a diameter slightly less than the diameter of the silicone casing of the fiber to slightly compress the casing when the fiber is inserted in the passage, said passage opening onto an end spot face at the front face of the ferrule, inserting the fiber into the ferrule unit to a position in which a portion of the stripped end within the ferrule unit is slightly compressed within the central passage thereof and a length of the stripped end projects from the front end of the ferrule unit and an unstripped portion of the fiber still having the external sheath is within the connector ferrule unit, fixing the connector ferrule unit to the unstripped portion of the fiber, and then severing the stripped portion of the fiber at a precise predetermined location closely adjacent to the front end of the connector ferrule unit to provide an optical end face of the fiber at a precise position adjacent to the front end of, and fixed with respect to the connector ferrule unit.

4,368,949

COUPLING DEVICE FOR TERMINALS HAVING LIGHT-CONDUCTIVE FILAMENTS

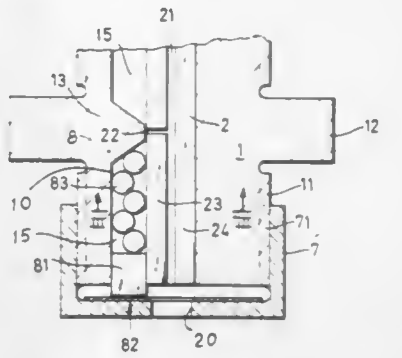
Bernhard Schmidt, Neunkirchen, Fed. Rep. of Germany, assignor to Felten & Guilleaume Carlswerk AG, Cologne, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,239

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1979, 2950853

Int. Cl.^{3} G02B *7/26*

U.S. Cl. 350—96.21 **23 Claims**



1. A coupling device for coupling the terminals of a pair of light-conductive filaments, comprising a housing having an open-ended recess; clamping means inserted in said recess, said clamping means including an elongated body having a bore to receive opposite ends of a pair of terminals of light-conductive filaments to be connected, said elongated body being formed with two generally parallel longitudinal extensions defining an elongated slot therebetween, said housing having in the region of each end portion of said recess at least one groove including one portion extending outwardly from said recess in a direction transverse to the longitudinal central plane of said recess, and another portion extending generally parallel to said recess; cap means mounted on said housing at each end of said recess; and pressure-transmitting means located in said groove in contact with said elongated body and adapted to be engaged by the respective cap means whereby, upon turning movement of said cap means in a sense threading the same onto said housing, said cap means exert axial pressure upon said pressure-transmitting means which transmits said pressure to said extensions so that the same clamp the terminals to be connected.

4,368,950

IMAGE OBSERVATION DEVICE HAVING GLASS PILED HALF MIRROR

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Mfg., Co., Ltd., Kyoto, Japan

Filed Nov. 25, 1980, Ser. No. 210,314

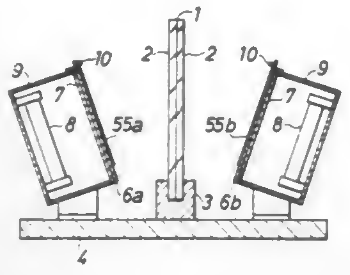
Claims priority, application Japan, Dec. 1, 1979, 54-166524[U]

Int. Cl.^{3} G02B *27/10*

U.S. Cl. 350—174 **2 Claims**

1. An image observation device having a glass piled half mirror, for observation of a plurality of images in superposition to each other, said half mirror including two transparent bodies

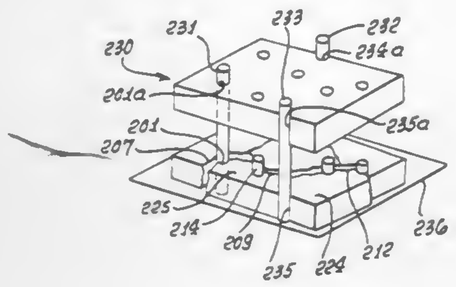
of equal optical property and substantially equal thickness constituting both side portions thereof sandwiching a half mirror surface therebetween, said plurality of images being disposed in symmetry with respect to a plane of symmetry constituted by said half mirror surface, and a pair of light source boxes disposed in symmetry with respect to said plane of symmetry, each box being adapted to hold one image plate producing one of said plurality of images and having a light source therein and a filter thereon, said filters being of different colors complementary to each other, said light sources being adapted to illuminate said image plates through said filters.



4,368,951

METHOD OF MAKING A MOLD FOR A SEGMENTED MIRROR

C. James Blom, 203 Fairway Dr., Bakersfield, Calif. 93309
Continuation-in-part of Ser. No. 109,970, Jan. 7, 1980, abandoned. This application Feb. 10, 1981, Ser. No. 233,106
Int. Cl.^{3} G02B *5/08*
U.S. Cl. 350—320 **8 Claims**

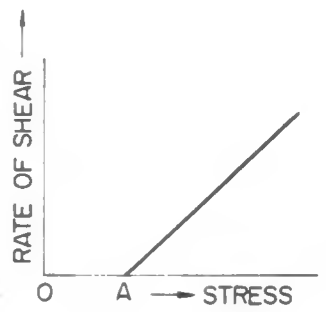


1. In the method of providing a myriad of irregularly outlined surfaces carried by a support to form a mold, certain of said surfaces dimensionally offset from one another in a common longitudinal direction generally parallel to incident radiation to be reflected, said surfaces corresponding to radiation reflecting surfaces each oriented in such a way that as a group that collectively reflect radiation essentially as if they were a continuous reflecting surface, the steps that include:
(a) cutting irregularly outlined segments of a body to form said irregularly outlined surfaces, facing in said longitudinal direction, and to form spaces between the segments,
(b) longitudinally translating said segments in said common longitudinal direction relatively toward a conforming surface while blocking lateral displacement of said segments, thereby maintaining said spaces and bringing said segments into a position wherein the segment surfaces touch said conforming surface,
(c) and thereafter fixing said segments in said position to form the mold.

4,368,952

MAGNETIC DISPLAY PANEL USING REVERSAL MAGNETISM

Yasuzo Murata, Kanagawa, and Hiroshi Sato, Hiratsuka, both of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 10, 1980, Ser. No. 214,905
Claims priority, application Japan, Dec. 11, 1979, 54-159809
Int. Cl.^{3} G02F *1/01*
U.S. Cl. 350—362 **18 Claims**

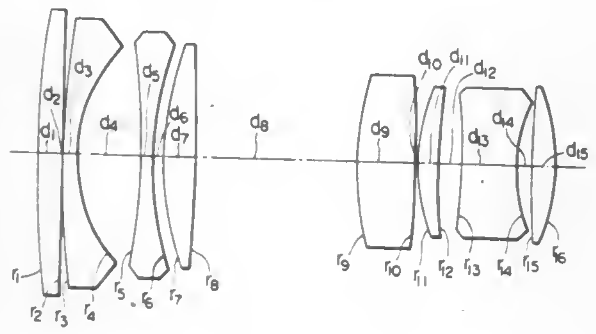


1. A magnetic reversal type display panel comprising:
two opposed surface plates and a liquid dispersion sealed in the space between said surface plates, said liquid dispersion comprising fine reversible magnetic display grains having magnetic poles of opposite signs tinged with different colors, a dispersion medium and a fine grain thickener, wherein:
(A) said fine reversible magnetic display grains have a residual magnetic moment within the range of from 0.2 to 10 emu/g and a coercive force of not less than 500 oersteds, and
(B) said liquid dispersion has a yield value of not less than 5.0 dynes/cm^2.

4,368,953

ZOOM LENS SYSTEM

Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 7, 1980, Ser. No. 166,683
Claims priority, application Japan, Jul. 12, 1979, 54-88429
Int. Cl.^{3} G02B *15/16*
U.S. Cl. 350—426 **9 Claims**



1. A zoom lens system comprising a front lens group consisting of a first positive lens component, a second negative meniscus lens component, a third negative lens component and a fourth positive lens component, and a rear lens group consisting of a fifth positive lens component, a sixth positive lens component, a seventh negative lens component and an eighth positive lens component, said zoom lens system being so designed as to perform zooming operation by varying the airspace reserved between said front and rear lens groups and to satisfy the following conditions (1) through (6):

$$1.8 < r_1/|f_F| < 3.5 \quad (1)$$
$$1.8 < r_3/|f_F| < 4.5 \quad (2)$$

-continued

$$0.03 < \frac{1}{n_1} - \frac{1}{n_2} + \frac{1}{n_3} \Big) /2 \quad (3)$$

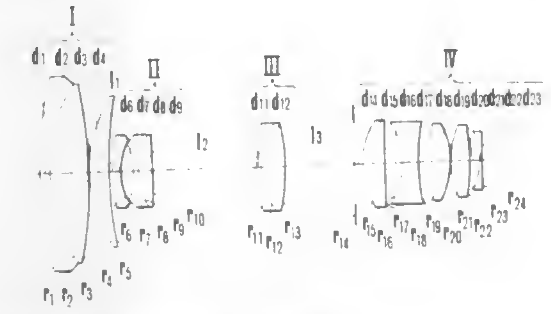
$$1.75 < n_7 \quad (4)$$
$$50 < (\nu_2 + \nu_3)/2 \quad (5)$$
$$0.18 < (d_3 + d_4 + d_5)/|f_F| < 0.3 \quad (6)$$
$$1.68 < n_4 \quad (7)$$
$$3 < |r_8|/|f_F| \quad (8)$$
$$0.35 < (d_9 + d_{13})/f_R < 0.5 \quad (9)$$

wherein the reference symbol r_1 represents radius of curvature on the object side surface of said first lens component, the reference symbol r_3 designates radius of curvature on the object side surface of said second lens component, the reference symbol r_8 designates radius of curvature on the image side surface of said fourth lens component, the reference symbols n_1, n_2, n_3, n_4 and n_7 denote refractive indices of said first, second, third, fourth and seventh lens components respectively, the reference numerals ν_2 and ν_3 represent Abbe's numbers of said second and third lens components respectively, the reference symbols d_3 and d_5 designate thicknesses of said second and third lens components respectively, the reference symbol d_4 denotes said airspace reserved between said second and third lens components, the reference symbols d_9 and d_{13} denote thicknesses of said fifth and seventh lens components respectively, the reference symbol f_F represents focal length of said front lens group, and the reference symbol f_R represents focal length of said rear lens group.

4,368,954

COMPACT ZOOM OBJECTIVE

Sadahiko Tsuji, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 2, 1980, Ser. No. 155,171
Claims priority, application Japan, Jun. 4, 1979, 54-69616
Int. Cl.^{3} G02B *15/18*
U.S. Cl. 350—427 **6 Claims**

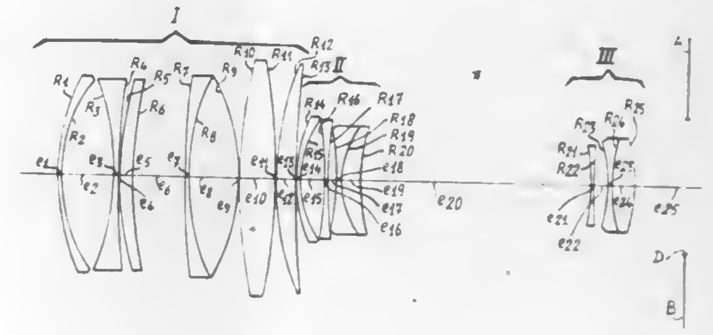


1. A compact zoom lens comprising:
a movable first lens group having a positive power;
a movable second lens group having a negative power and arranged to the rear of said first lens group;
a third lens group having a positive power and arranged to the rear of said second lens group; and
a fixed fourth lens group for image formation having a negative power and arranged to the rear of said third lens group,
said fourth lens group consisting of a positive first lens of convex forward surface counting from the front, negative second lens of concave forward surface, a positive third lens, a biconvex positive fourth lens, and a negative fifth lens of concave forward surface and satisfying the following conditions:
(1) $0.75F_{IV} < r_{15} < 0.95F_{IV}$
(2) $0.85F_{IV} < |r_{17}| < 1.2F_{IV}, r_{17} < 0$
(3) $2F_{IV} < |r_{22}| < 3.5F_{IV}, r_{22} < 0$
(4) $0.8F_{IV} < |r_{23}| < 1F_{IV}, r_{23} < 0$
(5) $20 < \nu_{18} 21\ 30$
(6) $20 < \nu_{24} < 30$
where F_{IV} is the focal length of the fourth lens group; r_{15} is the radius of curvature of the front surface of the positive first lens; r_{17} is the radius of curavature of the front surface of the negative second lens; r_{22} is the radius of curvature of the rear surface of the positive fourth lens; r_{23} is the radius of curavature of the front surface of the negative fifth lens; ν_{18} is the Abbe number of the negative second lens; and ν_{24} is the Abbe number of the negative fifth lens.

4,368,955

VARIABLE-FOCAL-LENGTH OBJECTIVE

André Masson, Saint-Heand, France, assignor to Etablissements Pierre Angenieux, Saint-Heand, France
Filed Jun. 2, 1980, Ser. No. 155,480
Claims priority, application France, Jun. 26, 1979, 79 16373
Int. Cl.^{3} G02B *15/16*
U.S. Cl. 350—427 **7 Claims**



1. A variable-focal-length objective consisting of two movable groups of lens elements which are capable of displacement along the axis and placed between two other stationary groups of lens elements, the displacement of said two movable groups and solely of said two groups being such as to produce a variation of the focal distance and to maintain the image in a fixed plane in respect of any object located at distances chosen at will between finite values and infinity or focusing distance in front of the first stationary group of lenses, wherein:
the two movable groups are divergent and each takes part in the total variation of magnification, each elementary magnification being such as to have a minimum and maximum absolute value during the variation, the ratio of maximum value to minimum value being higher than 1:1;
only one of the two movable groups which does not pass through a magnification of unity performs both a magnification function and an additional focussing function;
the other movable group which may pass through a position corresponding to a magnification of unity performs only a magnification function, said other movable group being nearest the stationary element on the object side;
each movable group comprises at least three lens elements in the case of one group and two lens elements in the case of the other group.

4,368,956

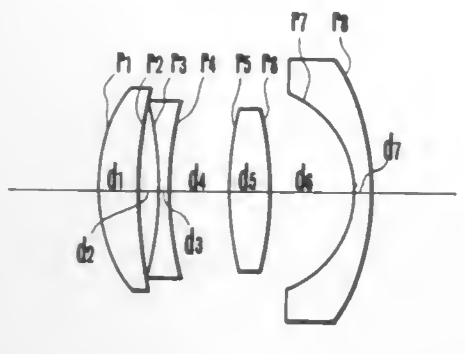
COMPACT PHOTOGRAPHIC OBJECTIVE

Yasuyuki Yamada, Tokyo, and Kikuo Momiyama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Japan
Filed Dec. 22, 1980, Ser. No. 218,576
Claims priority, application Japan, Dec. 27, 1979, 54-172405
Int. Cl.^{3} G02B *3/04, 9/34*
U.S. Cl. 350—432 **5 Claims**

1. A compact photographic objective comprising:
from the front,
a first positive meniscus lens convex toward the front and forming a surface toward the rear,
a second negative lens forming a surface toward the front,
a third positive lens,
a fourth negative meniscus lens having a surface concave toward the front, the concave surface being aspheric,
said first, second, third, and fourth lenses together forming a system having an axial direction and a focal length f,

the opposing surfaces of the first and second lenses forming an air lens having a focal length fA, the values f and fA being related so that

$$-1.5f < fA < -0.5f,$$



taking the axial direction an an x-axis, a direction perpendicular to the optical axis as a y-axis, the forward direction of the light as positive, and the intersection of the vertex of one of the lenses and the x-axis as an origin, the aspheric surface being defined by the following formula for the x-axis directional difference Δx between the aspheric surface and an ideal spherical surface, the latter of which contributes to the determination of the focal length:

$$\Delta x = \frac{\left(\frac{1}{r_7^*}\right) y^2}{1 + \sqrt{1 - \left(\frac{y}{r_7^*}\right)^2}} + a_1y^2 + a_2y^4 + a_3y^6 + \dots$$

$$+ b_1y^3 + b_2y^5 + \dots - \frac{\left(\frac{1}{r_7}\right) y^2}{1 + \sqrt{1 - \left(\frac{y}{r_7}\right)^2}}$$

where r_7 is the radius of curvature of the paraxial region of the front surface of the 4th lens; r_7^* is the radius of curvature of the reference aspherical surface of the lens defined by $r_7 = 1/(1/r_7^* + 2a)$; ai are the even coefficients of the aspheric surface; and bi are the odd coefficients of the aspheric surface, whereby letting Δx $(0.7r_7)$ denote the value of Δx at the height r_7x0.7 in y coordinate, and $\Delta x(0.5r_7)$ the value of Δx at the height of r_7x0.5, and the condition

$$4.5 \times 10^{-4} < \left| \frac{\Delta x(0.7r_7)}{f} \right| < 4.0 \times 10^{-3}$$

$$6.5 \times 10^{-5} < \left| \frac{\Delta x(0.5r_7)}{f} \right| < 1.0 \times 10^{-3}$$

$$0.1 < \frac{D_6}{f} < 0.25$$

being satisfied.

4,368,957

WIDE APERTURE OBJECTIVE LENS

Ramalinga R. Chirra, Santa Monica, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Oct. 31, 1980, Ser. No. 202,841

Int. Cl.^{3} G02B *9/34*

U.S. Cl. 350—469 **6 Claims**

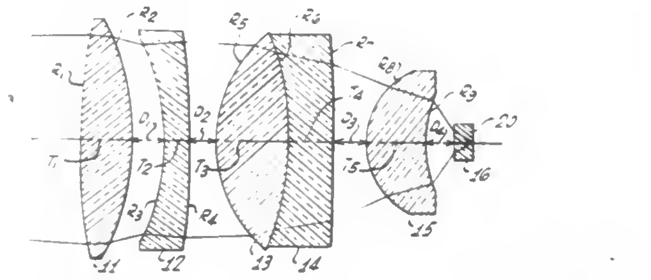
1. A light-weight, wide-aperture objective lens for use in an optical disc recording system, said lens comprising:

a first lens element of the double-convex type;

a second lens element being of the negative meniscus type, having its concave surface facing said first lens element and spaced therefrom;

a third lens element, being of the double-convex type, and spaced from said second lens element;

a fourth lens element being of the negative meniscus type and having its concave surface in surface contact with said third lens element; and



a fifth lens element, being of the positive meniscus type, having its convex surface toward said fourth lens element and spaced therefrom;

wherein, provided said fifth element is spaced by a preselected distance from a plastic layer having uniform thickness, of approximately 1.2 mm, light from said objective lens is refracted through the layer and focused substantially at the point of exit from the layer;

wherein said lens has radius, spacing and thickness dimensions approximately as follows:

Element	R_L(mm)	R_R(mm)	T(mm)	D(mm)
1	32.7	−15.0	3.6	1.8
2	−12.0	−38.4	1.5	1.8
3	10.2	−14.1	4.4	0
4	−14.1	−38.4	2.7	2.2
5	4.8	7.9	3.8	1.9

where:

the elements are numbered from left to right, the light entering element 1 first;

a positive radius means the center of curvature is to the right of the element;

a negative radius means the center of curvature is to the left of the element;

R_L = radius of left face of lens;

R_R = radius of right face of lens;

T = lens thickness at the central axis; and

D = distance to next lens element, at the axis;

and wherein said lens provides numerical aperture in the range from 0.7 to 0.8, and is color-corrected to accommodate a spectral range including light of wavelengths 478.5 nm and 496.5 nm.

4,368,958

ARRANGEMENT FOR DETERMINING THE POINTS OF PENETRATION OF EYEGLASS AREAS BY VISUAL AXES

Bernard J. P. Buget, 93, rue Nationale, Forbach, France

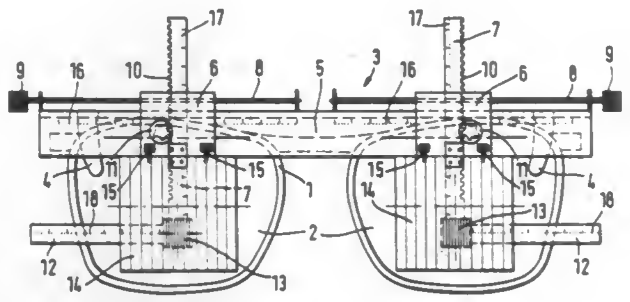
Filed Jun. 25, 1980, Ser. No. 162,744

Claims priority, application France, Apr. 23, 1979, 79 10729; Fed. Rep. of Germany, Apr. 23, 1980, 3015488

Int. Cl.^{3} A61B *3/10, 3/02, 3/10*

U.S. Cl. 351—204 **16 Claims**

1. An arrangement for determining the location relative to eyeglass frames of points at which visual axes penetrate through the two eyeglass areas of eyeglasses, comprising a sighting object having two concentric target zones each of which is visually distinguished from the adjacent regions of said object; a support; means for removably attaching said support to the eyeglass frame; means for locating said points, including a locating member for each of the eyeglass areas and means for mounting said locating members on said support for movement in substantial parallelism with the respective eyeglass areas toward a position of registry with the respective visual axis in which the thus moved locating member at least considerably obscures one of said target zones; shielding means including a shielding member for each of said locating members and each having a size exceeding that of the respective locating member; and means for positioning said shielding members across the visual axes of those eyes which are not being examined to obscure the one target zone for the non-examined dye, wherein each of said locating and shielding members is a polarized filter, and said sighting object includes a source of polarized light constituting said one target zone, and each of said polarized filters is so positioned that the polarization plane thereof extends substantially at right angles to that of the polarized light emanating from said one target zone.



4,368,959

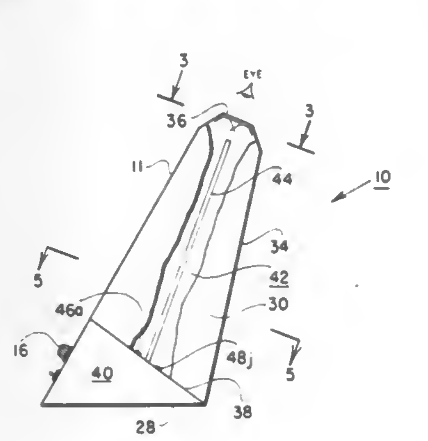
APPARATUS FOR AND METHOD OF TESTING VISION

Robert J. D'Amato, 911 Forest Rd., Lancaster, Pa. 17601

Filed Nov. 19, 1980, Ser. No. 208,361

Int. Cl.^{3} A61B *3/02*

U.S. Cl. 351—243 **10 Claims**



1. A method of testing vision comprising of the steps of:

a. providing two separate similar images, each image being adapted to be energized to produce light;

b. presenting a separate one of said images in the same field of view to each eye, respectively, of a person being tested, whereby each eye sees only one of said images, respectively;

c. strobing by intermittently energizing, respectively, each of said images at the same frequency to cause said images to produce intermittent light;

d. delaying the strobing of one of said images with respect to the other of said images by a controllable-length time interval; and

e. varying the length of said time interval, whereby a person with unimpaired optic nerves will see both of said energized images simultaneously when said time interval is zero, and a person with an impaired optic nerve will see both of said energized images simultaneously when said time interval is greater than zero.

4,368,960

CAMERA WITH DEVICE FOR ILLUMINATING A MARK ON A FILM EDGE

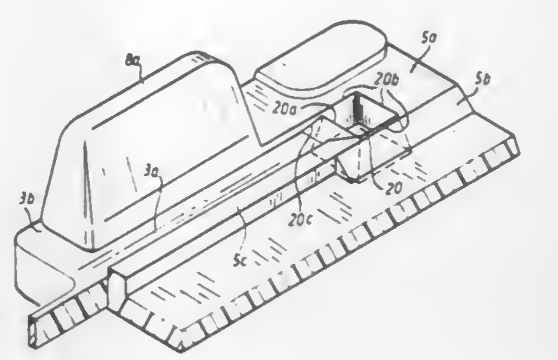
Herbert Wilsch, and Johann Zanner, both of Unterhaching, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,518

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030874

Int. Cl.^{3} G03B *21/50*

U.S. Cl. 352—92 **4 Claims**



1. A camera comprising film transport means for gradually advancing a one edge perforated light sensitive film over a picture gate, said transport means having a support face; and means for illuminating a mark on the film, said illuminating means including an opening formed in said support face at a side of a not perforated edge of the film, said opening forming first edges on said support face and a second edge which faces toward the picture gate and lies deeper than said first edges of said opening.

4,368,961

SCENE-START AND -END REFERENCED INDICATOR ARRANGEMENT FOR PROJECTOR STORING SCENE-START AND -END FRAME COUNTS

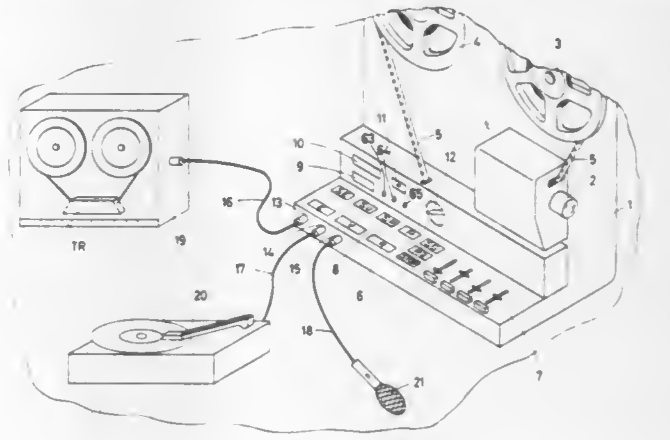
Gerd Mattes, Schorndorf, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,846

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1977, 2717912

Int. Cl.^{3} G03B *21/00*

U.S. Cl. 352—129 **9 Claims**



1. In a sound motion-picture film projector including a forwards-backwards frame counter operative for ascertaining frame count during both forwards and reverse transport operations and means activatable by the operator for commanding the automatic storage of frame counts which are to define the starts and ends of scenes to be worked on, an indicator arrangement for indicating position relative to stored frame counts, the indicator arrangement comprising two indicators, one operative for indicating that the frame count is lower than a prede-

termined stored frame count and the other operative for indicating that the frame count is higher than the predetermined stored frame count.

4,368,962

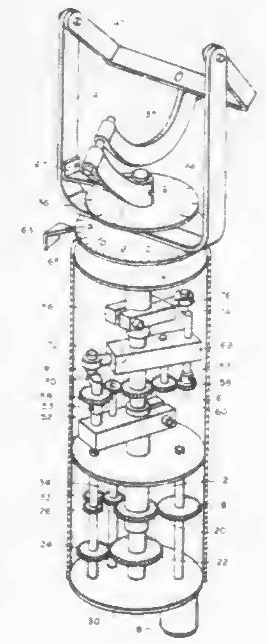
SOLAR TRACKING APPARATUS AND SYSTEM

Donald E. Hultberg, 629 Quail Dr., Los Angeles, Calif. 90065

Continuation-in-part of Ser. No. 130,194, Mar. 13, 1980, abandoned, which is a continuation of Ser. No. 923,881, Jul. 12, 1978, abandoned. This application Jan. 30, 1981, Ser. No. 229,667

Int. Cl.^{3} G03B *21/00*

U.S. Cl. 353—3 **29 Claims**



1. An automatic solar tracking apparatus comprising:

a first rotatable shaft means;

mounting means mounting said first rotatable shaft means parallel to the axis of rotation of the earth;

a yoke rigidly attached to said first shaft;

first rotating means for providing open loop rotation to said first rotatable shaft means at a substantially uniform and continuous rate of one revolution per mean solar day;

correcting means for correcting the rotational rate of said first rotatable shaft means an amount equal to the equation-of-time anomaly so as to accurately follow the hour-angle motion of the sun;

support means mounted on said yoke rotatable about an axis perpendicular to the rotational axis of said first rotatable shaft means;

a second rotatable shaft means;

linking means linking said support means to said second rotatable shaft means;

second rotating means adapted to provide open-loop rotation to said second rotatable shaft means at a substantially uniform and continuous rate of one revolution per siderial day so that differential rotational rates of said second shaft and said corrected first shaft cause said linking means to automatically oscillate said support means by an amount substantially equal to the yearly declination motion of the sun.

4,368,963

MULTICOLOR IMAGE OR PICTURE PROJECTING SYSTEM USING ELECTRONICALLY CONTROLLED SLIDES

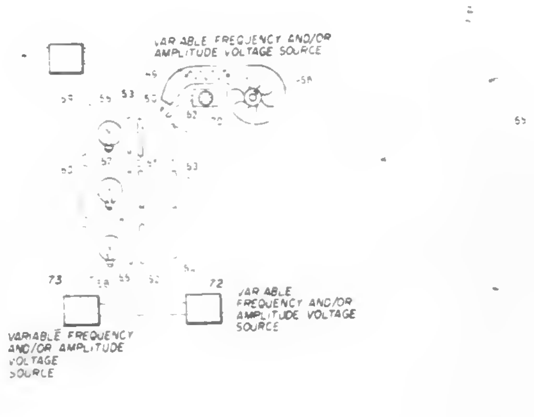
Michael Stolov, 25 Hapoel St., Nof-Yam, Herzlia, Israel

Continuation-in-part of Ser. No. 943,982, Dec. 11, 1978, Pat. No. 4,222,641. This application May 14, 1979, Ser. No. 38,844

Claims priority, application Israel, Jun. 29, 1978, 55032

Int. Cl.^{3} G02F *1/13;* G03B *21/10, 21/26*

U.S. Cl. 353—31 **11 Claims**


VARIABLE FREQUENCY AND/OR AMPLITUDE VOLTAGE SOURCE
53
57
73
72
VARIABLE FREQUENCY AND/OR AMPLITUDE VOLTAGE SOURCE
VARIABLE FREQUENCY AND/OR AMPLITUDE VOLTAGE SOURCE

1. A multicolor electronically dynamic image or picture system for projecting enlarged, changeable or moving colored images or pictures without using any fixed image transparency; a liquid crystal, multiple individual color, on screen registry, electronic dynamic image generation system comprising:

a plurality of light sources;

a corresponding plurality of individual liquid crystal means positioned to receive light from said light sources, respectively; said plurality of liquid crystal means are transmissive liquid crystal means, and said liquid crystal means include means to modulate the light intensity which they transmit;

said light diffusing means positioned between said light sources and said liquid crystal means;

a corresponding plurality of electronic means for selectively individually energizing respective ones of said plurality of liquid crystal means each independently of the energizing of all of the others of said plurality of liquid crystal means solely to effect respective portions of an image or picture to be projected, the system being free of any fixed image transparency; said plurality of electronic means comprise respective voltage supply means coupled to respective ones of said liquid crystal means for energizing same with voltages of changeable frequency to thereby modulate the light intensity of composite elements of the image or picture independently;

a corresponding plurality of filters at least two of which pass different colors to color respective corresponding light beams which are to pass respectively through said liquid crystal means from said light sources;

screen means; and

at least a corresponding plurality of projecting means for projecting the light beams passed through each respective one of said liquid crystal means, said light diffusing means, and said color filter onto said screen means in registry with each other;

whereby an electronically generated enlarged, real, changeable or moving color image or picture made up of the projected individual single color electronically generated images from each said respective set of said liquid crystal means, said light diffusing means, and said color filter can appear on said screen means without the use of any fixed image transparency.

4,368,964

SLIDE PROJECTOR WITH STATIONARY SLIDE MAGAZINES AND AUTOMATIC SLIDE CHANGER

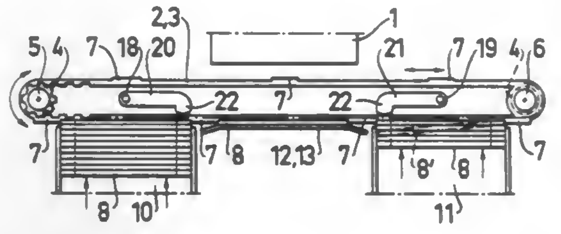
Ulf R. Carlson, Gothenburg, Sweden, assignor to Victor Hassel Blad Aktiebilag, Gothenburg, Sweden

Filed Aug. 7, 1980, Ser. No. 176,148

Claims priority, application Sweden, Aug. 29, 1979, 7907194

Int. Cl.^{3} G03B *23/08*

U.S. Cl. 353—113 **5 Claims**



1. In a slide projector having an optical pathway comprising first and second slide magazines for housing individual slides mounted in slide frames, said first and second magazines being located on opposite sides of the optical pathway of the slide projector, each of said first and second magazines including a feed and discharge opening for receiving and discharging said slide frames, said opening being located in the focal plane of the slide projector, and a reversible slide transport device for transporting the slide frames between said first and second magazines through said respective feed and discharge openings, via the projection position of said projector for projecting said individual slides, the improvement wherein said slide transport device comprises

first and second toothed belts located in said focal plane,

first and second gear wheels attached on first and second axles, respectively, said axles being located, respectively, outside said first and second magazines, in a direction perpendicular to said optical pathway, said toothed belts being stretched over said gear wheels, at least one of said first and second axles being driven, and,

a plurality of external dog members carried on the periphery of each of said first and second belts, said dog members being spaced one from the other a distance corresponding to the width of one of said slide frames, said toothed belts each having a length which corresponds to an integer number of slide frame divisions,

whereby, when said toothed belts are driven in one direction by said axles and gear wheels, said slide frames will be individually transported in said plane by and in engagement between consecutive of said dog members from said first slide magazine to said second slide magazines, via said projection position, and when said toothed belts are driven in the opposite direction by said axles and gear wheels said slide frames will be individually transported in said focal plane by and in engagement between consecutive of said dog members from said second slide magazine to said first slide magazine, via said projection position.

4,368,965

PHOTOMETRIC ASSEMBLY FOR CAMERA

Kazuyuki Nemoto, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Apr. 13, 1981, Ser. No. 253,722

Claims priority, application Japan, Jul. 7, 1980, 55-92401

Int. Cl.^{3} G03B *7/08*

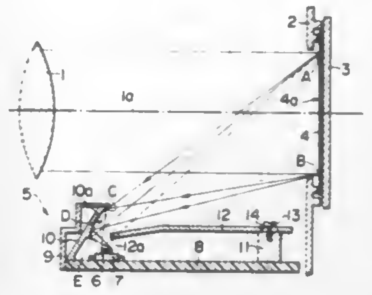
U.S. Cl. 354—23 R **9 Claims**

1. A photometric assembly for a camera, comprising:

a photoelectric transducer element disposed within a camera for the purpose of photometry;

a reflecting member disposed out of a taking path in a camera for directing light from an object being photographed which passes through a taking lens and is reflected by a blind surface of a focal plane shutter or a film surface toward the transducer element, the reflecting member being disposed adjacent to the transducer element;

and a shield member disposed at least partially above said transducer element in said camera for preventing a direct



impingement of the light reflected from the blind surface or the film surface onto the transducer element so that only light directed from said reflecting member impinges said transducer element.

4,368,966

PHOTOGRAPHIC SYSTEM INCLUDING REMOTE CONTROLLABLE FLASH UNIT

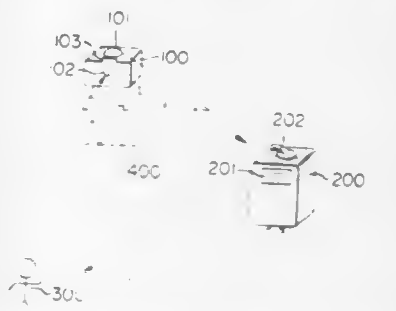
Nobuyoshi Hagyuda, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,024

Claims priority, application Japan, Sep. 24, 1980, 55-132646

Int. Cl.^{3} G03B *15/05;* H05B *41/34*

U.S. Cl. 354—33 **10 Claims**



1. A photographic system including a camera capable to generate a signal in synchronism with an exposure operation, said photographic system comprising:

(a) a flash unit comprising:

flash means operable to fire to illuminate an object; photoelectric conversion means operable to generate outputs corresponding to variation of intensity of incident light; and control means having timer means and operable to actuate said flash means in response to a second output of said conversion means generated within a pre-determined time period subsequent to the first output of said conversion means and to terminate the operation of said flash means in response to a third output of said conversion means generated after the actuation of said flash means, and

(b) a controller comprising:

means for receiving the light from said object illuminated by said flash means and integrating the quantity of the received light; and

light emitting means for carrying out a first firing in response to said synchronous signal, a second firing within said pre-determined time period after said first firing and a third firing in response to said integrating means, said firings being conducted toward said flash unit.

4,368,967

CAMERA DATA RECORDING DEVICE

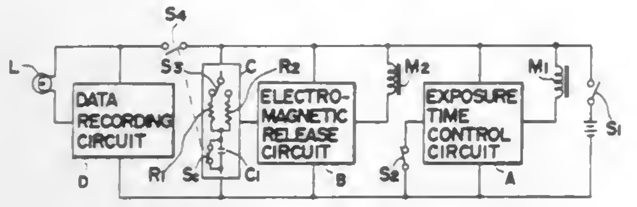
Toshinori Imura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 1, 1981, Ser. No. 279,490

Claims priority, application Japan, Jul. 1, 1980, 55-90442

Int. Cl.^{3} G03B *9/64, 17/24*

U.S. Cl. 354—106 **15 Claims**


S4
L
S3
C
R2
M2
M1
DATA RECORDING CIRCUIT
ELECTRO-MAGNETIC RELEASE CIRCUIT
EXPOSURE TIME CONTROL CIRCUIT
S1
D
R1
S6
C1
B
S2
A

1. In a camera including a shutter movable between a releasably locked charged position and a discharged position through a shutter open exposure positive and a shutter release member, a data recording mechanism comprising:

a data illumination lamp;

a means responsive to the actuation of said shutter release member for energizing said lamp for a predetermined time interval; and

means for releasing said shutter from its locked charged position following the termination of said lamp energizing predetermined time interval.

4,368,968

PHOTOGRAPHIC APPARATUS

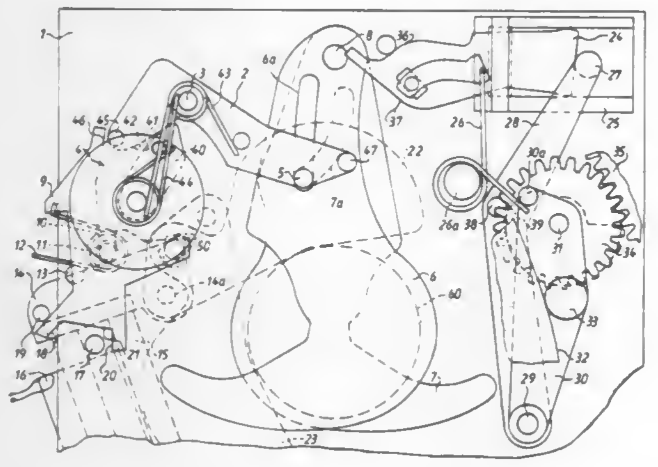
Leonhard Huber, Glonn; Adolf Höfler, Unterföhring, and Eberhard Escales, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,185

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030900

Int. Cl.^{3} G03B *15/05*

U.S. Cl. 354—133 **14 Claims**



1. In a photographic apparatus for operation with a flash unit, the combination of means defining an opening; light-admitting means operable to expose at least a portion of said opening; means for operating said light-admitting means including a first member movable to and from a predetermined position corresponding to the maximum rate of admission of light via said opening; closing means operable to close said opening; means for operating said closing means including a second member movable to and from a second predetermined position to initiate the closing of said opening as a result of movement from said second predetermined position; and synchronizing switch means for the flash unit, said switch means comprising first contact means and second contact means movable into engagement with said first contact means, to thereby effect the firing of the flash unit, by at least one of said operating means so that said switch means is closed when said first member reaches its predetermined position prior to movement of said second member from the second predetermined position or when said second member leaves its predetermined position before said first member reaches the first predetermined position.

4,368,969

APPARATUS FOR GUIDING FINITE FILM STRIP PORTIONS DURING THEIR CONVEYANCE

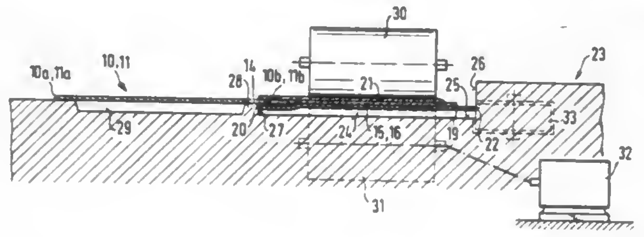
Michael Baschung, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Nov. 4, 1981, Ser. No. 318,252

Claims priority, application Switzerland, Nov. 7, 1980, 8283/80

Int. Cl.^{3} G03D *3/13;* **G03B** *27/52*

U.S. Cl. 354—339 **9 Claims**



1. In an apparatus for guiding finite film strip portions during their conveyance through a photographic developing or copying plant, wherein the film strip portions are individually attached, spaced from one another, to a common carrier strap and project laterally only from a first longitudinal edge of such strap, resulting in a composite unit, and wherein the apparatus comprises guiding means having a first longitudinal guiding edge for guidingly engaging a second longitudinal edge of said carrier strap opposite said first edge thereof,

the improvement of said guiding means comprising a second longitudinal guiding edge of such configuration and location in said apparatus that it is adapted for engaging said first longitudinal carrier strap edge.

4,368,970

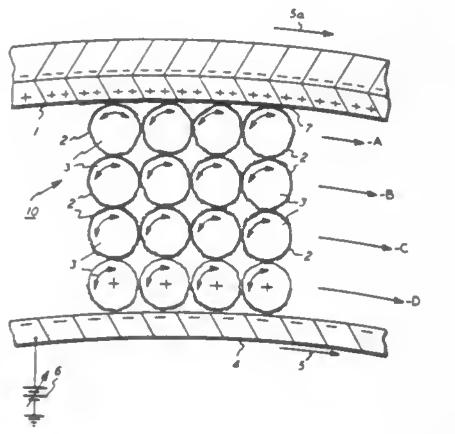
DEVELOPMENT PROCESS AND APPARATUS

Dan A. Hays, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 155,804, Jun. 2, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 304,528

Int. Cl.^{3} G03G *15/08*

U.S. Cl. 355—3 DD **25 Claims**



1. An electrostatographic imaging apparatus comprised of an imaging means, a charging means, an exposure means, a development means, and a fixing means, the improvement residing in the development means comprising in operative relationship a tensioned deflected flexible imaging means; a transporting means; a development zone situated between the imaging means and the transporting means; the development

zone containing therein electrically insulating toner particles, and electrically insulating magnetic carrier particles, means for causing the flexible imaging means to move at a speed of from about 5 cm/sec, to about 50 cm/sec, means for causing the transporting means to move at a speed of from about 6 cm/sec to about 100 cm/sec, the means for imaging and the means for transporting moving at different speeds; and the means for imaging and the means for transporting having a distance therebetween of from about 0.05 millimeters to about 1.5 millimeters.

4,368,971

DEVELOPING DEVICE

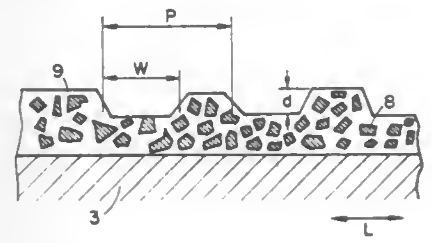
Tsuyoshi Watanabe; Kimio Nakahata, both of Kawasaki; Fumitaka Kan, Tokyo, and Masaaki Sakurai, Hanno, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,084

Claims priority, application Japan, Oct. 9, 1980, 55-141184

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 DD **6 Claims**



1. A developing device for forming a developed image on an image bearing member, said device comprising:

developer supporting means formed of a nonmagnetic material and having a surface for receipt and conveyance of developer thereon;

magnetic field producing means surrounded by said developer supporting means; and

means for supplying developer to said developer supporting means, wherein the developer conveying surface of said developer supporting means is positioned adjacent to said developer supply means and is provided with plating containing grains therein.

4,368,972

VERY HIGH SPEED DUPLICATOR WITH FINISHING FUNCTION

Raymond A. Naramore, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 15, 1981, Ser. No. 254,343

Int. Cl.^{3} G03G *15/00*

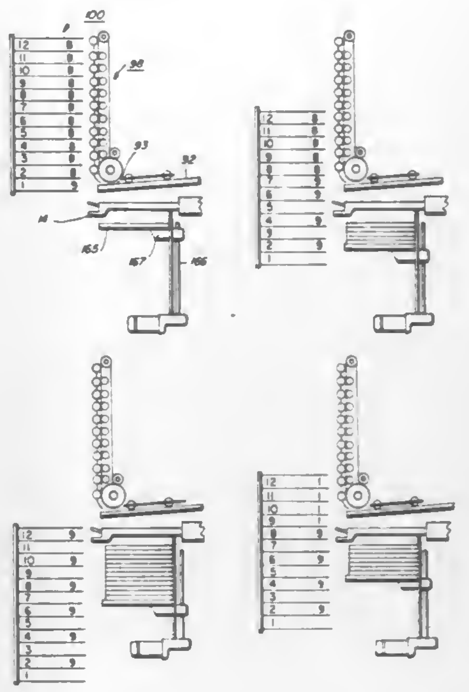
U.S. Cl. 355—14 SH **10 Claims**

1. In a reproduction system having a processor for reproduction information to be copied on copy sheets in either simplex or duplex modes of operation and means for producing the information in the form of an individual light image for one or both sides of a copy sheet, each light image being produced a predetermined number of times in succession before a different succeeding light image is produced the same predetermined number of times, thereby effecting the production of copy sheets of the same predetermined number at any one time, the improvement including:

an array of sheet collecting bins arranged to receive copy sheets and to collate the same into sets of copies of different images,

means for transporting a plurality of the copy sheets from said predetermined number to said collecting bins at the rate of one sheet per bin while said array is held in a fixed position,

means for producing movement of said array of bins from said fixed position, and



means for transporting at least one of the copy sheets from said predetermined number to said collecting bins while said array has been moved from said fixed position.

4,368,973

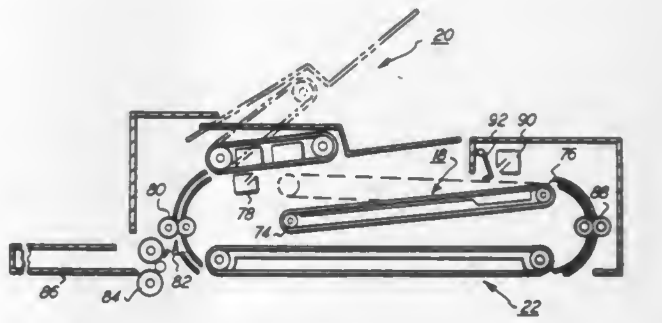
RECIRCULATING DOCUMENT FEEDER

Morton Silverberg, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 8, 1981, Ser. No. 223,538

Int. Cl.^{3} G03G *15/04;* **B65H** *1/30, 3/12, 31/08*

U.S. Cl. 355—3 SH **12 Claims**



1. An apparatus for moving documents in a recirculating path from a stack to an imaging station, including:

means for supporting the stack;

means for feeding successive uppermost documents from the stack, said feeding means being mounted pivotably to move from an inoperative position remote from said supporting means for changing the stack of documents on said supporting means to an operative position for feeding the uppermost document from the stack, said supporting means being mounted pivotably to position successive uppermost documents adjacent said feeding means with said feeding means being in the operative position;

means for directing a flow of pressurized air onto the leading marginal region of the uppermost document being fed by said feeding means to facilitate separation of the uppermost document from the remainder of the documents of the stack on said supporting means;

means for spacing the trailing marginal region of the stack of documents from said supporting means and depressing the leading marginal region of the document being returned to said supporting means beneath the remaining documents thereon; and means for transporting documents from said feeding means to the imaging station and returning the documents to the bottom of the stack on said supporting means.

4,368,974

ILLUMINATING SYSTEM FOR PRODUCING PRINTS ON VARIABLE CONTRAST PHOTOSENSITIVE MATERIAL, FILTER STRIP FOR SAID SYSTEM AND LAMPHOUSE COMPRISING THE SAME

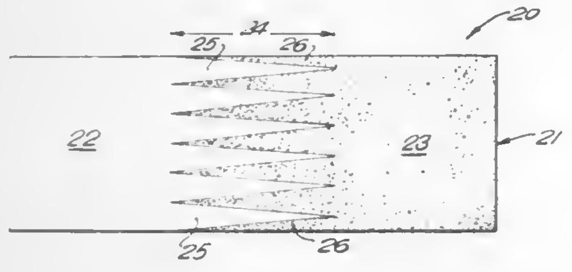
Jack H. Coote, Rochford, and Arthur P. Jenkins, London, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 28, 1981, Ser. No. 258,269

Claims priority, application United Kingdom, May 2, 1980, 8014655; Sep. 5, 1980, 8028727

Int. Cl.³ G03B *27/72, 27/76*

U.S. Cl. 355—35 **16 Claims**



15. An elongated two-colour light-transmitting filter strip, a first zone of the length of which transmits light in a first of two mutually exclusive wavebands, a last zone of which transmits light in the second of two mutually exclusive wavebands and a middle zone, intermediate, and next-adjacent each of said first and last zones of said strip, comprising a first element which transmits light in the first of the two mutually exclusive wavebands and a second element which transmits light in the second of the two mutually exclusive wavebands, the elements having equal areas and being so arranged that there is a progressive change in the transmission of light in the two mutually exclusive wavebands along the middle zone of the strip and being so arranged that the strip is free from any single line of demarcation dividing said first zone of the filter from said last zone of the filter, said filter strip further comprising a colourless transparent support base and two wedges coated on said base and overlapping in said middle zone of the filter strip to form together a length of uniform thickness, one of said wedges constituting said first light-transmitting element and the other wedge constituting said second light-transmitting element, each of the two wedges having attached to their thick ends a length of coating of uniform thickness which constitute the first and the last zone of the filter strip on said support base.

4,368,975

PROJECTION DEVICE

Yoshiya Matsui, Yokohama; Setsuo Minami, Kawasaki; Noritaka Mochizuki, Yokohama; Isao Harumoto, Yokosuka; Atsuo Tsunoda, Fuchu; Shiro Hirai, Tama, and Masami Ohkubo, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,835

Claims priority, application Japan, Mar. 14, 1980, 55/32525

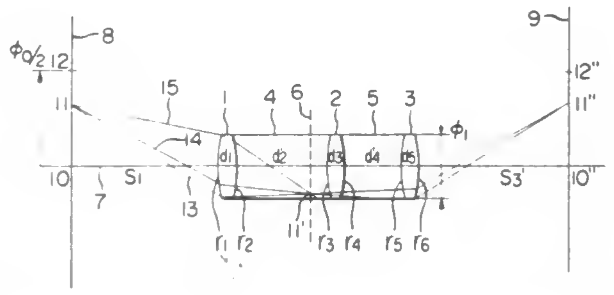
Int. Cl.³ G03B *27/48, 27/50*

U.S. Cl. 355—50 **7 Claims**

1. A projection device comprising:

a plurality of element lens systems each including three lenses arranged in the direction of the optical axis for projecting a portion of the object plane onto a predetermined portion on the image plane at the erect one-to-one magnification through an intermediate image, said element lens systems being arranged in a plane perpendicular to the optical axis with a predetermined interval therebetween in a predetermined direction, the intermediate lens lying between the object side lens and the image plane side lens of each of said element lens systems being deviated from the position of the intermediate image in the direction of the optical axis; and

a light absorbing member, provided between said lens systems, for attenuating and extinguishing any light rays beyond the effective lens diameter area to define aperture eclipse to provide Gaussian light intensity distributions on the image plane of said element lens systems, which distributions are superposed one upon another so that the exposure distribution in the predetermined direction is uniform on the image plane.



4,368,976

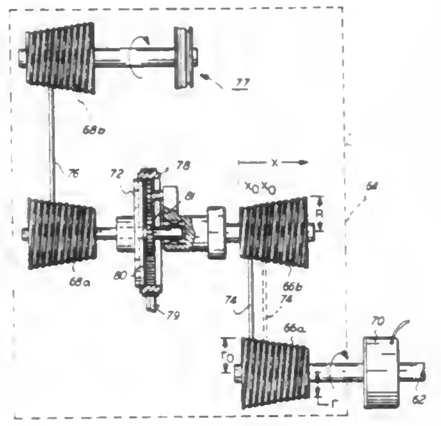
VARIABLE SPEED SCANNING SYSTEM

David K. Shogren, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 9, 1981, Ser. No. 241,968

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—55 **7 Claims**



1. A variable magnification reproduction machine for providing a continuously variable range of document magnification comprising:

a platen for supporting a document,

image receptor means for receiving a flowing light image of said document;

optics for directing said image along an optical path to said image receptor means, and

scan means for providing a controlled relative speed of movement between said platen and said optics to control the magnification or reduction of said image in relation to said document; said scan means including:

a first pair of conical capstans drivingly connected by an endless belt which wraps around spiraling grooves along said capstans' length;

means for coupling and decoupling an input capstan of said first pair to a constant speed motion source to rotate said input capstan;

a second pair of conical capstans drivingly connected by a second endless belt which wraps around spiraling grooves along the second pair of capstans;

an output shaft coupled to an output capstan of said second pair of capstans;

a shaft for connecting a non-input capstan of said first pair with a non-output capstan of said second pair so that rotation of said first pair by said constant speed source produces a rotation in said output shaft, and

means for providing relative rotation between the non-input capstan of said first pair and the non-output capstan of said second pair when said means for decoupling disengages said input capstan from the constant speed motion so that the speed of rotation of said output shaft is varied when said input capstan is again coupled to said constant speed source.

4,368,977

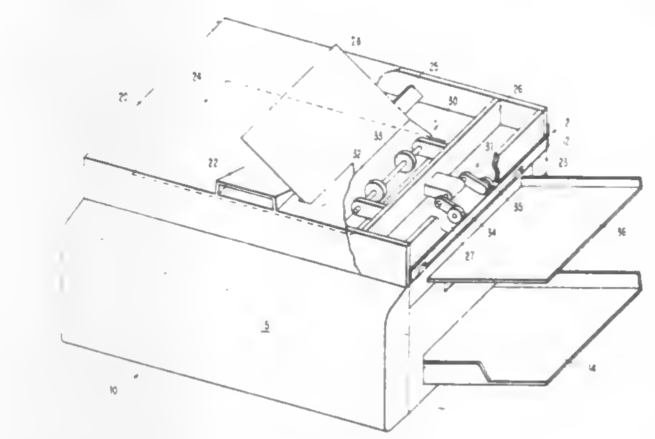
DOCUMENT EJECTOR APPARATUS AND METHOD USEFUL FOR COPIERS

Nelson K. Arter, Longmont; Michael D. Avritt, Boulder; William C. Dodt, Broomfield, and Marion J. Herman, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1981, Ser. No. 265,517

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **15 Claims**



1. In a copier having a base with a scan window and a carriage adapted for receiving documents to be copied on a surface thereof with the carriage mounted for reciprocal motion over said copier base, including a scan movement during which the document is passed over said scan window, and a reverse movement during which said carriage is returned to a home position, an improvement for said copier of a document ejector comprising:

means operable at the end of said scan movement for engaging the document on said carriage surface and removing the document from said carriage surface, and

means enabled by said carriage movement for driving said document engaging means for propelling the document in a direction away from said carriage surface.

4,368,978

IMAGE SCANNING SYSTEM

Tokuichi Tsunekawa, Yokohama; Makoto Masunaga, Tokyo; Kazuya Hosoe, Machida; Yukichi Niwa; Mitsutoshi Owada, both of Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 25,544, Mar. 30, 1979, Pat. No. 4,283,137. This application Jul. 8, 1980, Ser. No. 166,962

Claims priority, application Japan, Mar. 31, 1978, 53-38566

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.³ G01C *3/10;* **G03B** *7/08, 7/00*

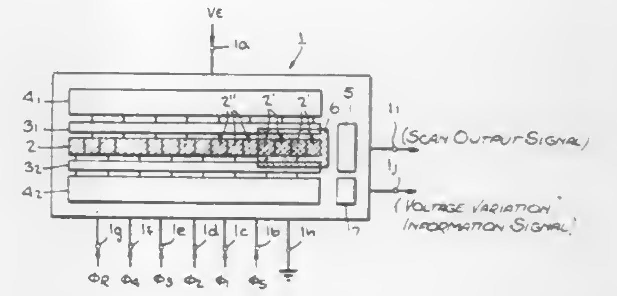
U.S. Cl. 356—1 **14 Claims**

1. In a focusing system, a focus detecting device comprising:

(A) signal integration type image scanning means for scanning a detection image of an object onto which the focusing system should be focused and for producing a scanned image signal representative of said detection image, said scanning means integrating each signal over a controlled signal integration time;

(B) drive means for repetitively driving said image scanning means so that said scanning means repetitively scans said detection image and produces the scanned image signals repetitively;

(C) integration control means for controlling, on the basis of each of the scanned image signals repetitively produced by said image scanning means, the signal integration time of said image scanning means in each of the repetitive drives of the scanning means by said drive means, said integration control means including data hold means for successively holding data indicative of the integration time of said scanning means in each of the repetitive drives by said drive means;



(D) circuit means for receiving and processing the scanned image signal produced by said scanning means and for detecting the focusing condition of the focusing system onto the object;

(E) light emitting display means coupled to said circuit means for displaying the focusing condition of the focusing system onto the object by emitting a light; and

(F) display light control means coupled to said display means and said integration control means for controlling the intensity of the display light to be emitted from the display means on the basis of the signal integration time indication data held in said data hold means in said integration control means.

4,368,979

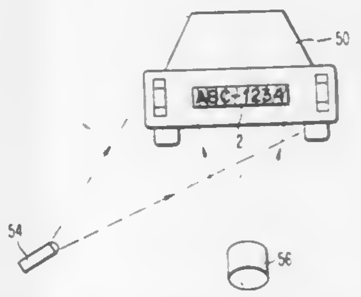
AUTOMOBILE IDENTIFICATION SYSTEM

Hartwig Ruell, Mt. Laurel, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed May 22, 1980, Ser. No. 152,512

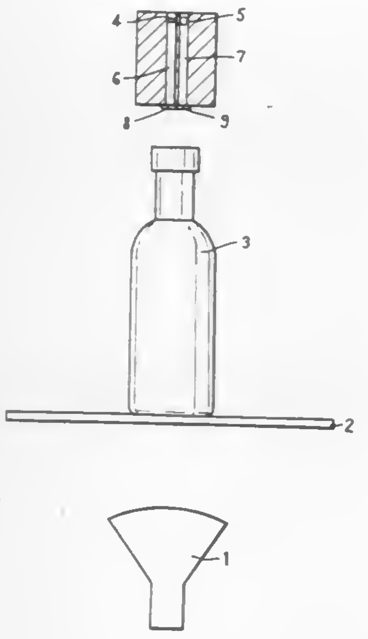
Int. Cl.³ G06K *9/74;* **G09F** *7/00;* **B60R** *13/10*

U.S. Cl. 356—71 **27 Claims**



1. In an identification system for an automobile, said system having an automobile license plate provided with clear information which is readable by the unaided human eye for identification of said automobile, the improvement comprising an additional information carrier which contains a coded information not decodable with the unaided human eye and which can be affixed on said automobile.

4,368,980
APPARATUS FOR DETECTING AN AQUEOUS LIQUID IN BOTTLES AND CONTAINERS
Phillip J. E. Aldred, 34 East St., Saffron Waldon, Essex; Peter J. Taylor, 31 Old Forge Way, Sawston, Cambridgeshire, and Bryan W. Kenzie, 6 Emsons Close, Linton, Cambridgeshire, all of England
Filed Jun. 23, 1980, Ser. No. 162,257
Claims priority, application United Kingdom, Jun. 28, 1979, 7922502
Int. Cl.³ G01N *21/90;* B07C *5/342*
U.S. Cl. 356—240 **4 Claims**

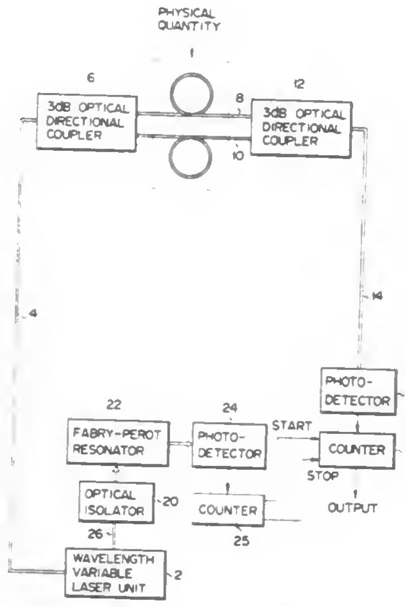


1. Apparatus for inspecting intermixed clear and differently colored translucent bottles prior to filling with a beverage and including means for detecting the presence of an aqueous liquid residue left in both clear and differently colored translucent bottles from a preceding washing operation, said detector means comprising
- (a) means for directing, through an area of the bottle wall against which any such residue collects energy in two parts of the spectrum in and near the infra-red region, in one of which parts water is relatively transparent and in the other of which parts water is more strongly absorbent,
- (b) first and second radiant energy detectors and associated collimator tube means arranged to receive radiant energy which has passed through substantially the same part of said area of the bottle wall,
- (c) filter means associated with said detectors for causing said first and second detectors to produce respective signal outputs of intensities corresponding to the intensities of the energy in said one part and said other part of the spectrum respectively,
- (d) comparator means for comparing the said signal outputs and producing a comparator signal corresponding to the ratio of the intensities of said output signals and
- (e) responder means responsive to said comparator signal and operative to produce a bottle reject signal, independent of bottle color, upon the comparator signal ratio:

intensity of output signal from said second
detector/intensity of output signal from said first
detector

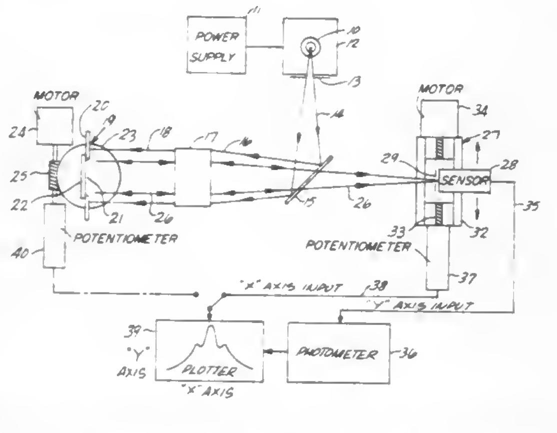
falling below a predetermined value.

4,368,981
OPTICAL SENSING SYSTEM
Takeshi Ozeki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jul. 29, 1980, Ser. No. 173,421
Claims priority, application Japan, Jul. 30, 1979, 54/96060
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—352 **11 Claims**



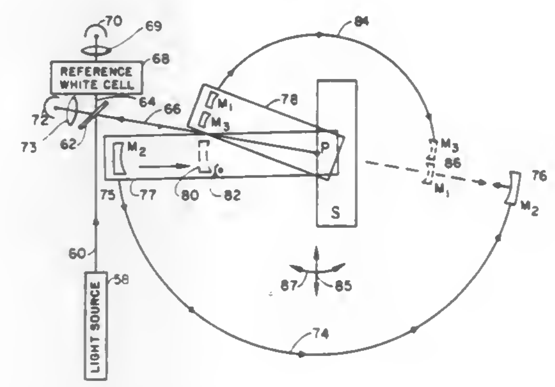
1. An optical sensing system comprising:
- means for generating a coherent light beam whose wavelength is monotonically varied with time over a predetermined range;
- means for transferring the coherent light beam;
- means for dividing the light beam transferred into two beams;
- means for sensing a physical quantity which produces a phase difference between the two beams;
- means for synthesizing the two beams to produce an amplitude-modulated optical signal;
- means for transfering the produced optical signal; and
- means for detecting an amplitude variation of the optical signal transferred, as a function of the physical quantity.

4,368,982
RETROREFLECTOMETER
Donald E. Van Arnam, Ontario; Earl W. McFeaters, La Crescenta, and Richard R. Baggarley, Arcadia, all of Calif., assignors to Avery International Corporation, San Marino, Calif.
Filed Jun. 9, 1980, Ser. No. 157,791
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—445 **15 Claims**



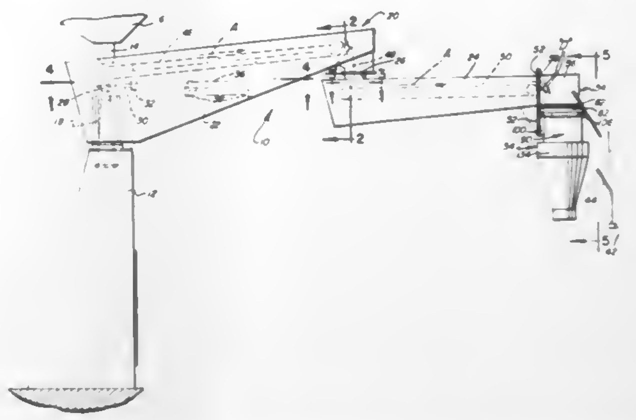
1. Apparatus for measuring retroreflective properties of a surface, the apparatus comprising:
- (a) a light source for providing a beam of light;
- (b) support means for supporting a surface being evaluated for its retroreflective properties, positioned to enable the beam of light to strike the surface being evaluated, which support means is capable of rotating for changing the angle of incidence of the light striking the supported surface being evaluated;
- (c) a beamsplitter for reflecting the beam of light from the light source to the surface being evaluated and transmitting light retroreflected from the surface;
- (d) a lens, positioned between the beamsplitter and said surface, for collimating the beam of light reflected from the beamsplitter and focusing the light retroreflected from the surface being evaluated;
- (e) a sensor for detecting and measuring the intensity of retroreflected light positioned at a distance from the lens at or about equal to the focal distance of the lens;
- (f) means for moving the sensor across the focal point of the lens to change the angle of divergence at which the sensor detects such retroreflected light and adapted to cooperate with rotation of said support means to simultaneously change the measured angle of divergence with the angle of incidence; and
- (g) means for displaying the intensity of light detected by the sensor.

4,368,983
ABSOLUTE REFLECTOMETER
Harold E. Bennett, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 13, 1980, Ser. No. 206,331
Int. Cl.³ G01N *21/55*
U.S. Cl. 356—445 **8 Claims**



1. An absolute reflectometer for a sample mirror or lens comprising:
- a light source emitting a light beam along an optical path;
- a beam splitter placed in said light beam for dividing said light beam into two paths, one of which illuminates said sample about a point;
- a White cell placed in the other of said two paths for establishing a reference level of light intensity;
- a spherical mirror placed so that said mirror's radius of curvature is on the surface of the sample mirror at said point of illumination to reflect light from said beamsplitter via said sample mirror back to said sample mirror and through said beamsplitter;
- a detector placed in the path of light retroreflected through said beamsplitter for measuring the intensity of said retroreflected light; and
- a pivoted arm mounted to said sample mirror for providing a path length for reflection of light when said sample mirror is removed which is equal to the path length when said sample mirror is present.

4,368,984
MIXER APPARATUS
Leslie D. Rikker, Oak Forest, Ill., assignor to National Engineering Company, Chicago, Ill.
Filed Dec. 12, 1977, Ser. No. 859,329
Int. Cl.³ B28C *3/00;* B01F *7/20, 15/02*
U.S. Cl. 366—15 **24 Claims**

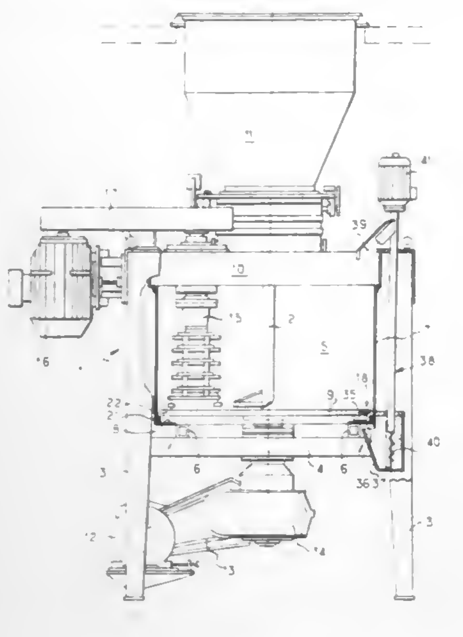


1. A mixing device for dispensing a mixture of molding sand and binder onto a mold forming pattern comprising:
- a mixing chamber having an inlet for receiving sand adjacent an upper level and a discharge outlet for said mixture adjacent a lower level;
- a rotor mounted to rotate on a downwardly extending, central axis of said chamber including an elongated shaft extending between said inlet and outlet;
- metering means dividing said chamber into upper and lower sections for controlling the flow rate of material toward said outlet;
- said rotor including upper and lower sets of longitudinally extending blades, means for pivotally mounting said upper and lower sets of blades on axes which are parallel to and spaced radially outwardly from said central axis, said sets of blades spaced respectively above and below said metering means, said blades including elongated free outer edges extending along and spaced inwardly of and in close proximity with an adjacent inside wall surface of said upper and lower sections of said chamber, respectively, when said outer edges are at maximum spacing from said central axis, for forcefully moving said mixture around said surface and mashing said material outwardly against the same with a layer of said mixture maintained between said blades and said inside wall surface.

4,368,985
MIXER FOR GRANULAR PRODUCTS, IN PARTICULAR FOR FOUNDRY SAND
Henri A. Churlaud, Brunoy, France, assignor to Societe Anonyme des Etablissements Ph. Bonvillain & E. Ronceray, Choisy-le-Roi, France
Filed Jan. 13, 1981, Ser. No. 224,670
Claims priority, application France, Jan. 24, 1980, 80 01512
Int. Cl.³ B28C *5/16;* B01F *7/16*
U.S. Cl. 366—28 **7 Claims**

1. A mixer for granular products, in particular for foundry sand, of the type comprising a cylindrical tank having a fixed lateral wall and a rotary bottom rotatably mounted inside the lower part of the fixed lateral wall, characterized in that the rotary bottom (9) comprises a peripheral collar (18) overhanging a lateral face (19) on an outer edge of said bottom and forming an annular gap (20) with the lateral wall (7) of the tank (5), in that an annular projection (21) carried by the lateral wall of the tank extends under the collar (18) and defines therewith an annular chamber (22) extending between the lateral face (19) and the lateral wall (7), and in that the chamber (22)

communicates with the tank (**5**) through the annular gap (**20**) and emerges under the rotary bottom (**9**) into an annular slit



(**23**) provided between the lateral face (**19**) and the projection (**21**), this slit being narrower than the gap (**20**).

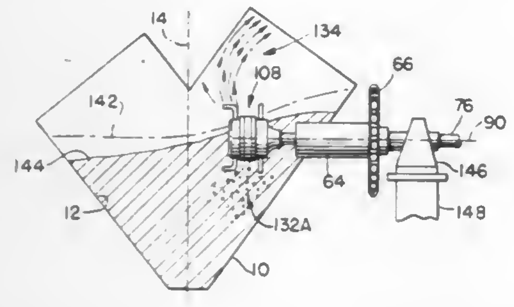
4,368,986
DUAL SHELL BLENDER WITH INTENSIFIER

John J. Fischer, Stroudsburg, Pa., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Oct. 6, 1980, Ser. No. 194,406

Int. Cl.³ B01F *9/08*

U.S. Cl. 366—170 **14 Claims**



1. A blending apparatus comprising a material container including a pair of hollow blending legs joined together at one end along a common plane to form an apex portion, said hollow legs defining an interior blending space and being divergent from said common plane along intersecting axes each of which forms an acute angle with said common plane, means for mounting said container for rotation about a rotation axis in the plane of the intersecting axes of said legs, means for rotating said container about said rotation axis whereby said apex portion repetitively moves between an uppermost position and a lower most position, an intensifier assembly in said interior blending space for blending different materials placed in said interior blending space, an intensifier drive shaft for rotating said intensifier assembly about said rotation axis, said intensifier assembly having a disc assembly and at least two L-shaped rods arranged to displace material towards said common plane upon rotation of said assembly, such that whenever said apex portion is at an uppermost position, the intensifier assembly throws said displaced material across said common plane, and whenever said apex portion is at its lowermost position, the intensifier throws said displaced material into contact with a wall of said material container, the contact occurring before the material has reached said common plane and causing the material to be deflected away from said common plane and said intensifier assembly is symmetric with respect to the axis of rotation, said L-shaped rods being supported at an end of the intensifier assembly remote from said intensifier drive shaft, said intensifier assembly further including at least first and second straight dispersion rods adjacent the end of the intensifier assembly connected to the intensifier drive shaft, the straight dispersion rods being colinear with each other and coplanar with the shafts of the L-shaped rods.

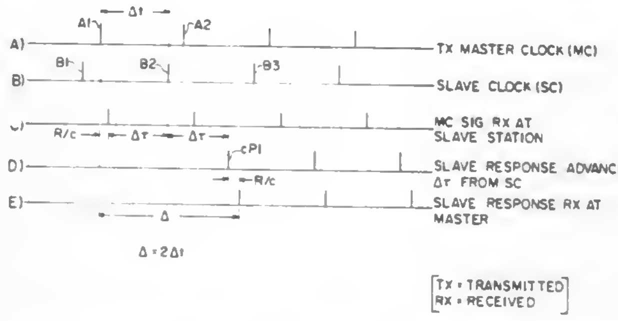
4,368,987
CONJUGATE-PHASE, REMOTE-CLOCK SYNCHRONIZER

William M. Waters, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1980, Ser. No. 163,001

Int. Cl.³ G04C *11/00;* **H04J** *3/06*

U.S. Cl. 368—46 **12 Claims**



1. A method for determining the time reading of a remote-station clock at a first clock station, each station having a clock producing a train of clock pulses, both trains having substantially the same frequency but being different in time phase by an amount Δt, the method comprising the steps of:

transmitting a clock pulse, called the originator pulse, from the first station to start the timing sequence;

receiving at the remote station the originator pulse and utilizing the received pulse to form a conjugate-phase pulse from the remote-station clock;

transmitting the conjugate-phase pulse to the first station and receiving it there;

measuring at the first station the time difference Δ between the time of reception of the conjugate-phase pulse and the time of generation of the originator pulse; and

determining the difference in time phase Δt between the time reading of the remote-station clock and the first-station clock according to the relationship $\Delta t = \Delta/2$.

4,368,988
ELECTRONIC TIMEPIECE HAVING RECORDING FUNCTION

Iwao Tahara, Higashiyamato; Toshiharu Aihara, Kodaira; Naoki Takahashi, Fussa; Yushin Matsuo, Chofu, all of Japan; Takuo Wakabayashi, deceased, late of Saitama, Japan, and by Shigemasa Wakabayashi, legal representative, Nagano, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,499

Claims priority, application Japan, Dec. 12, 1979, 54-161814; Dec. 25, 1979, 54-168733

Int. Cl.³ G04B *21/08;* **G11C** *13/00*

U.S. Cl. 368—63 **3 Claims**

1. An electronic timepiece having recording function comprising:

a time counting means for producing time information through the counting of a reference frequency signal;

time display means for displaying said time information produced from said time counting means;

alarm time memory means including a plurality of memory sections for memorizing different alarm times;

first operation switch means for selecting one of the different alarm times stored in said alarm time memory means;

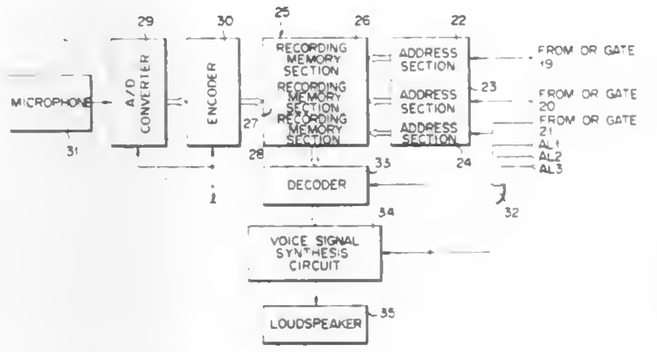
alarm time display means coupled to said first operation switch means for displaying the alarm time selected by the operation of said first operation switch means;

semiconductor memory means having a plurality of memory sections each adapted to be selected for cooperation with a desired one of said memory sections of said alarm time memory means, said memory sections of said semiconductor memory means being each capable of storing voice data of an externally coupled voice;

second operation switch means for enabling writing voice data in each of said memory sections of said semiconductor memory means;

voice data writing control means coupled to said second operation switch means and to said semiconductor memory means for writing said voice data of an externally coupled voice into memory sections of said semiconductor memory means in response to the operation of said second operation switch means, said voice data writing control means including conversion means for converting an externally coupled voice input into voice data, supply means coupled to said conversion means for supplying operation order signals to said conversion means in response to the operation of said second operation switch means, and selection and indication means coupled to said second operation switch means for selecting and indicating the memory section corresponding to an alarm time displayed on said alarm time display means,in response to the operation of said second operation switch means; and

voice reproducing means coupled to said semiconductor memory means for reading out voice data stored in one of the memory sections of said semiconductor memory means and reproducing the corresponding recorded voice when said time information obtained from said time counting means coincides with an alarm time stored in a corresponding one of the memory sections of said alarm time memory means.



4,368,989
ELECTRONIC TIMEPIECE HAVING A SYSTEM FOR AUDIBLE GENERATION OF A MELODY

Hideyuki Kawashima, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,354

Claims priority, application Japan, Aug. 24, 1979, 54-107185; Dec. 25, 1979, 54-167534

Int. Cl.³ G04B *23/02;* **G04C** *19/00;* **G10G** *3/04*

U.S. Cl. 368—74 **15 Claims**

1. In an electronic timepiece including means for generating a standard frequency timebase signal and timekeeping circuit means for generating signals indicative of current time information from said timebase signal, a system for audible generation of a melody, comprising:

externally actuated input means for manual input in a sequential manner of melody information specifying each of a sequence of notes and rests which constitute said melody;

melody memory circuit means for storing said melody information which is sequentially input from said externally actuated input means;

read-out means for sequentially reading out said melody information stored in said memory means specifying said notes and rests of said melody and comprising an address counter whose count contents designate an address of said random access memory means;

drive signal generating means responsive to said melody information for generating a drive signal comprising a series of electrical signals each corresponding to a note of said melody;

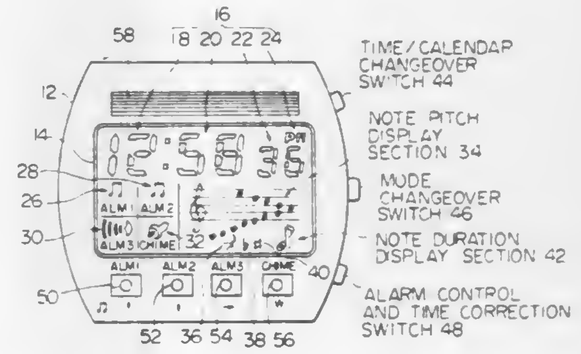
sound generating means coupled to receive said drive signal;

a source of a melody enabling signal;

externally actuated monitor switch means for starting and stopping audible generation of said melody at any desired point in the sequence of notes comprising said melody, by controlling said address counter and said first and second control circuit means; and

electro-optical display means for displaying the current address of said melody memory circuit contained in said address counter;

said externally actuated input means comprising externally actuatable note pitch selection switch means;


16
58
18
20
22
24
TIME/CALENDAR CHANGEOVER SWITCH 44
12
14
NOTE PITCH DISPLAY SECTION 34
28
26
MODE CHANGEOVER SWITCH 46
30
NOTE DURATION DISPLAY SECTION 42
ALM1
ALM2
ALM3
CHIME
32
40
50
ALARM CONTROL AND TIME CORRECTION SWITCH 48
52
36
54
38
56

an externally actuatable note duration selection switch;

an externally actuatable write-in switch;

a note pitch input counter, responsive to actuation of said note pitch selection switch means for having a count therein incremented and decremented; and

a note duration input counter, responsive to actuation of said note duration selection switch for having a count therein incremented;

said melody memory circuit means being responsive to actuation of said write-in switch for having the current counts of said note pitch input counter and said note duration input counter stored in a predetermined memory location therein;

said read-out means being responsive to said melody enabling signal for sequentially reading out said melody information from said melody memory circuit means, whereby said drive signal is applied to said sound generating means to thereby reproduce said melody audibly.

4,368,990
ELECTRONIC TIMEPIECE

Makoto Ueda; Masaharu Shida, and Akira Torisawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Continuation of Ser. No. 898,535, Apr. 20, 1978, Pat. No. 4,209,971. This application Mar. 10, 1980, Ser. No. 128,402

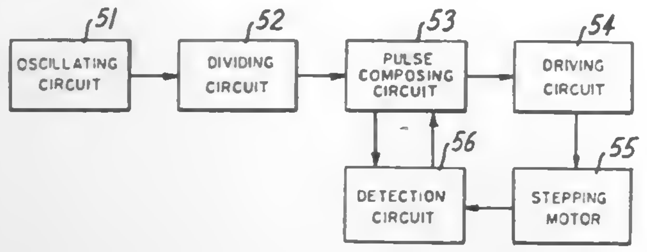
Claims priority, application Japan, Apr. 23, 1977, 52-47093

Int. Cl.³ G04F *5/00;* **G04C** *3/00*

U.S. Cl. 368—157 **5 Claims**

1. In an analog electronic timepiece: a stepping motor having a stator, a drive coil wound on the stator, and a rotor rotationally driven in a stepwise manner in response to driving pulses applied to the drive coil; circuit means for periodically producing normal driving pulses sufficient to drive the stepping motor under normal loading and insufficient to drive the stepping motor under worst case loading, and correction driving pulses sufficient to drive the stepping motor under worst case loading; driving circuit means connected to receive the normal driving pulses and the correction driving pulses for

applying the same to the drive coil; and detecting means for detecting whether or not the rotor has rotated after each normal driving pulse is applied to the drive coil and coacting with the circuit means for effecting the application of a correction driving pulse to the drive coil in response to detection of non-rotation of the rotor, said detecting means comprising a resistance element, switching means for momentarily switching the resistance element into connection with the drive coil after the application of each normal driving pulse to the drive coil so that the voltage induced in the drive coil by the movement of the rotor causes current flow in the resistance element indicative of rotation or non-rotation of the rotor, and means for discriminating between rotation and non-rotation of the rotor by measuring the voltage across the resistance element.



4,368,991

APPARATUS FOR DIFFERENTIAL THERMAL ANALYSIS

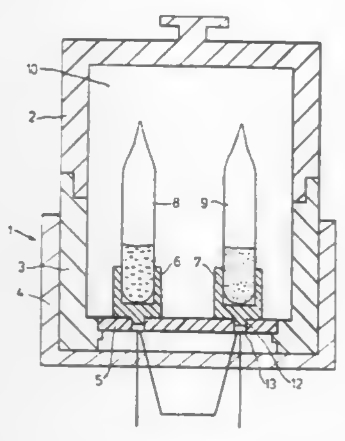
Gunter Hentze, Carl Leverkus-Str. 4, 5068 Odenthal, Fed. Rep. of Germany (D 5068), assignor to Gunter Hentze, Odenthal, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 229,875

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004810

Int. Cl.³ G01K *17/00;* **G01N** *25/00*

U.S. Cl. 374—12 **3 Claims**



1. Apparatus for differential thermal analysis, consisting of a furnace with holders to receive vessels sealed on all sides for samples and reference substances and with temperature sensors, which are in good thermal contact with the vessels, characterized in that the holders consist of a metal cylinder open on one side, whose inner diameter is adjusted to the outer diameter of the vessels, and whose bottom is in good thermal contact via a base plate with the furnace and is provided with pegs or grooves for centering on the base plate and sensors arranged on the base plate in the immediate vicinity of the cylinder bottom.

4,368,992

RIBBON CASSETTE FOR TYPEWRITER WITH TENSION PRODUCING LOCKING DEVICE

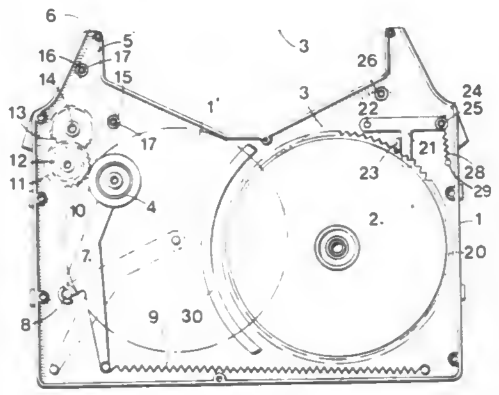
Gustave Gagnebin, Yverdon, Switzerland, assignor to Hermes Precisa International, Yverdon, Switzerland

Filed Sep. 9, 1981, Ser. No. 300,679

Claims priority, application Switzerland, Oct. 9, 1980, 7534/80

Int. Cl.³ B41J *32/00*

U.S. Cl. 400—196 **4 Claims**



1. A typewriter ribbon cassette for a typewriter, comprising a casing enclosing a delivery spool on which a ribbon is wound, a receiving spool co-operating with drive means and adapted to receive the used ribbon, the ribbon in passing from the delivery spool to the receiving spool following a path wherein a part thereof extends outside the casing, means provided to produce a tension in the ribbon between the two spools, said means comprising an angular locking device for the delivery spool, characterized in that the locking device comprises a locking lever pivoted on the casing and including a locking catch adapted to engage between the teeth of a toothed wheel angularly secured with the delivery spool, said locking lever being biased by the action of spring means exerting an elastic force thereon to engage said locking catch in the teeth of said toothed wheel, a pulley on said locking lever over which passes a loop formed by the printing ribbon, guide means for said loop comprising a return pulley on said casing and passages in the open ends of oppositely disposed extensions of said casing whereby said loop is guided in such a manner that the tension of the ribbon operates in the opposite direction to the elastic force for disengaging the catch from the toothing, the arm of the locking lever between the pivot point and the pulley on said locking lever being greater than the distance of the arm of the lever from said pivot point and said catch.

4,368,993

REPLACEABLE ASSEMBLY FOR MULTICOLOR PRINTING

Robert L. Brass, Westport, Conn., and John F. Frega, Holmdel, N.J., assignors to Centronics Data Computer Corporation, Hudson, N.H.

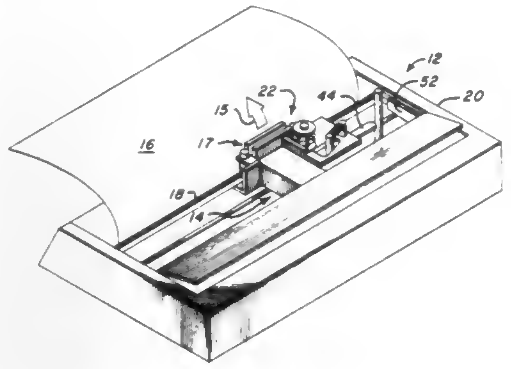
Filed Apr. 30, 1981, Ser. No. 259,459

Int. Cl.³ B41J *35/14, 35/20*

U.S. Cl. 400—216.2 **12 Claims**

1. In a printer with a printhead that travels horizontally in a path adjacent a sheet of paper and a printing ribbon that moves between the printhead and the paper, the ribbon having at least two discrete, longitudinally extending portions each impregnated with an ink of a different color, the improvement comprising

- a frame,
- means for mounting said frame on said printhead to allow a vertical movement of the frame with respect to the printhead,
- guide means carried on said frame for directing the ribbon to a position between the printhead and the paper, and
- mechanical means secured to said frame for transforming a generally linear motion of said frame along said path into a vertical movement of said frame, guide means and the length of ribbon carried in said frame and guide means between at least two predetermined, stable vertical positions, each of said positions placing one of said ribbon color portions before said printhead to print in the color of that portion,
- said mechanical means comprising
- an opposed pair of generally cylindrical cams that are mutually rotatable about a common, vertical axis of rotation, and each having a cam surface formed on their opposed end faces, said cam surfaces being operatively engaged with one another so that said mutual rotation carries said cam surfaces through a rotating, sliding engagement that moves said cams and said frame on which said cams are secured between said at least two predetermined vertical positions, one of said cams being fixed against rotation and the other of said cams being rotatable in response to a displacement of said print head along said path.



4,368,994

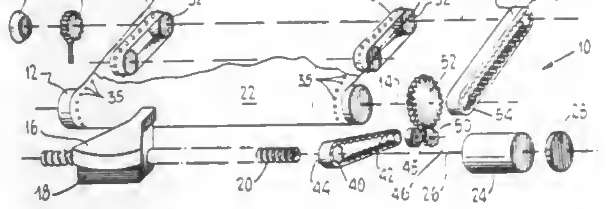
SINGLE SERVO DRIVEN PRINTER

David F. Sweeney, Alamo, Calif., assignor to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 695,884, Jul. 14, 1976, abandoned, which is a continuation of Ser. No. 619,729, Oct. 6, 1975, abandoned, which is a continuation of Ser. No. 465,972, May 1, 1974, abandoned. This application Jun. 20, 1979, Ser. No. 63,871

Int. Cl.³ B11J *19/00*

U.S. Cl. 400—320 **3 Claims**



1. A printer having a platen and a print head for printing characters on record media comprising:

- means establishing on said platen preselected margins for said record media;
- a carriage having said print head secured thereto;
- a lead screw arranged in uninterrupted driving engagement with said carriage and rotatable so as to transport said carriage and said print head transversely back and forth across said preselected margins for said record media on said platen;
- a servo motor permanently mechanically secured in uninterrupted driving engagement with said lead screw so as to continuously drive the lead screw upon actuation thereof to provide the sole means for controlling the position of said print head transversely across said record media;
- said transport of said print head by said servo motor occurring in selected printing mode segments within said preselected margins for said record media, and other selected non-printing mode segments of transport of said print head occurring when said print head occupies positions beyond said predetermined margins;
- said print head being actuated only during said selected printing mode segments of transport of said print head within said preselected margins for said record media;
- record media transport means for transporting said record media relative to the platen for line-by-line and column printing; and
- means for connecting and disconnecting said record media transport means with said servo motor;
- said means for connecting and disconnecting said record media transport means with said servo motor being engageable and disengageable with said servo motor only during said other selected non-printing mode segments of transport of said print head.

4,368,995

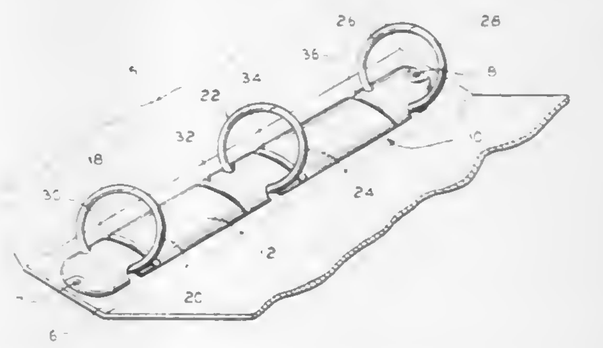
RING MECHANISM FOR LOOSE-LEAF BINDERS

Lewis Cohen, 205 The Bridle Path, Don Mills, Ontario, Canada (M3C 2P6)

Filed Sep. 23, 1980, Ser. No. 190,072

Int. Cl.³ B42F *13/20*

U.S. Cl. 402—39 **5 Claims**



1. An apparatus for storing paper having apertures near the edge of the paper, comprising: a resilient base plate, said base plate having a curled lip along each of its longitudinal edges; a pair of blades extending side by side under said base plate between said curled lips, the combined width of said blades being slightly greater than the distance between said curled lips, said blades also each having at least one slot along its periphery with said lip; at least one rib extending laterally across the underside of said base plate and engaging said blades at said slots; and at least one pair of ring members for insertion through said paper apertures and for retaining said paper, each of said ring members fixed to a different one of said blades and meeting in a releasable juncture above said base plate, whereby the engagement of said blades and rib resists mutual longitudinal displacement of the blades.

4,368,996

PENETRAMETER POSITIONER FOR BORE-SIDE RADIOGRAPHY OF TUBES

Earl V. Davis, and Billy E. Foster, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 118,379, Feb. 2, 1980, abandoned. This application Jan. 27, 1981, Ser. No. 228,838

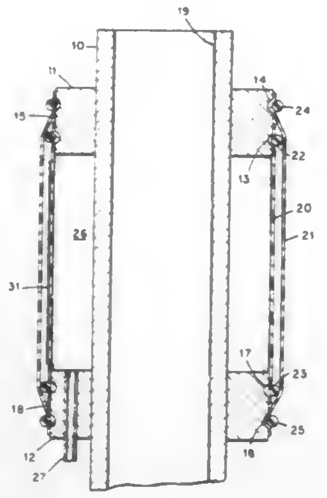
Int. Cl.³ F16D *1/08*

U.S. Cl. 403—5 **6 Claims**

1. Apparatus for positioning an object adjacent a wall comprising:

- a tube;
- a pair of elastic sleeves concentrically disposed around said tube adjacent one end thereof, the ends of said sleeves being secured to said tube and said sleeves intermediate their ends being expandable outwardly from said tube,

said object which is to be positioned adjacent said wall being disposed between said sleeves; and



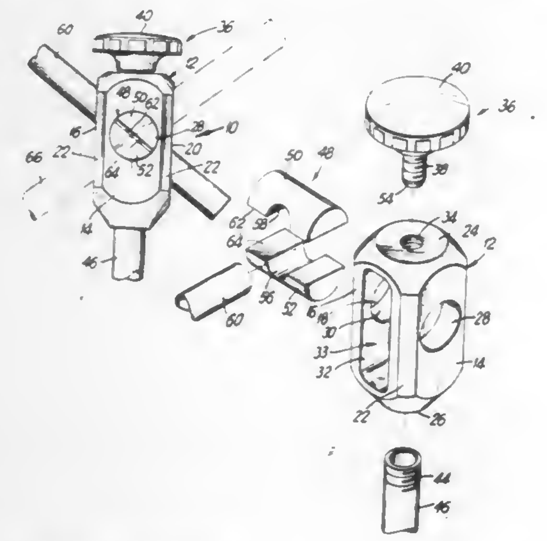
means for expanding said sleeves outwardly from said tube to move said object adjacent said wall.

4,368,997

PIVOT JOINT

Sami Shemtov, Brooklyn, N.Y., assignor to Berger Industries, Inc., Maspeth, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,989
Int. Cl.³ F16B *7/06, 7/10*
U.S. Cl. 403—59 **12 Claims**



1. A pivot joint comprising:

a housing member provided with a pair of opposing coaxially aligned bores and an elongated channel transverse to said bores and in communication with said bores;

a cylindrical member rotatably positioned in said bores and extending across said channel, said cylindrical member being longitudinally split to provide a pair of clamping sections having a double-D configuration;

a passageway extending through said cylindrical member transverse to its axis and spanning across the split to define opposing concave bearing surfaces for receiving an axially adjustable rod therethrough; and

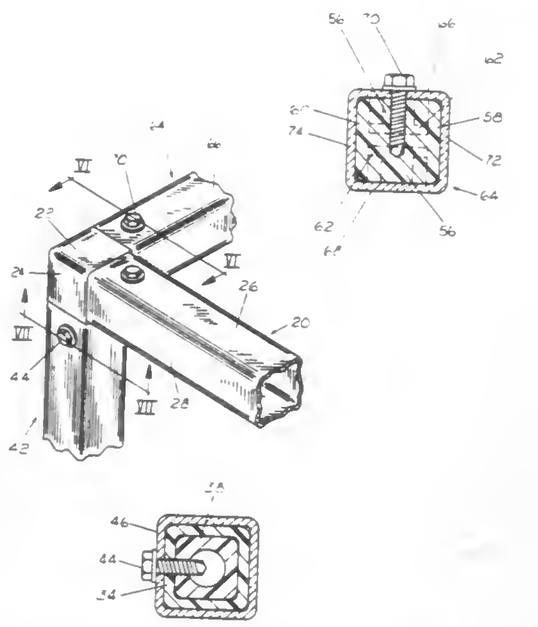
locking means extending into said housing member for locking said clamping sections together in a desired rotational orientation within said bores, thereby securely clamping the rod in a desired angular orientation and axial extension.

4,368,998

TUBE ASSEMBLING DEVICE

James J. Pestoor, Kalamazoo, Mich., assignor to Corners, Ltd., Kalamazoo, Mich.

Filed Mar. 18, 1981, Ser. No. 245,025
Int. Cl.³ F16D *1/00, 3/00;* **F16L** *41/00*
U.S. Cl. 403—171 **19 Claims**



1. A tube assembling device for square tubes which comprises:

a hollow base member;

a first square-shaped hollow coupling member projecting from and integral with said base member and having side walls substantially coincident with the walls of said base member, the hollow of said base member and the hollow of said first coupling member comprising a common bore which is open only at the free end of said first coupling member;

a second coupling member comprising parallel side walls integral with and projecting from said base member to and integral with an end wall; and

a transverse partition parallel with said end wall and integral with and connecting the mid-portions of said side walls; the side and end walls of said second coupling member and said transverse partition extending to and terminating in parallel planes which are normal to said base member, and said partition having a thickness, at least in the transverse or axial mid-portion thereof, which is substantially greater than the thickness of said side and end walls.

4,368,999

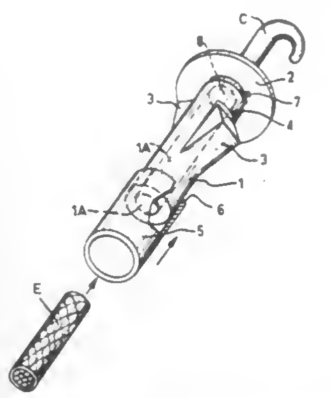
COUPLING OR CONNECTING END PART FOR FLEXIBLE ELEMENTS SUCH AS CABLES, WIRES OR OTHER ELEMENTS

Henri Morel, Maule, France, assignor to ITW deFrance, Beauchamp, France

Filed Jun. 6, 1980, Ser. No. 156,976
Claims priority, application France, Jun. 13, 1979, 79 15135
Int. Cl.³ F16B *2/10*
U.S. Cl. 403—283 **12 Claims**

1. A device adapted to be attached to an elongated flexible article having a predetermined cross sectional configuration comprising a first member adapted to receive an end of the elongated flexible article and a second member adapted to circumscribe the first member and slide relative thereto; said first member including a portion completely circumscribing said article and having a bore substantially conforming in cross sectional configuration to the cross sectional configuration of the article, said first member having at least one lateral opening therein and an integrally formed flexible locking means adapted to have a portion thereof extend through said at least one opening into said bore, said portion of said locking means

having a thickness greater than the thickness of said first member in the area of said at least one opening and means on said portion of said locking means projecting inwardly towards said bore for engaging and resisting axial movement of said article relative to the longitudinal axis of said bore, latching means for securing said first member relative to said second member when it has been slid axially over said at least one opening, whereby when said second member is slid over said first member to the latched position the flexible locking means, along with inwardly projecting means, are flexed through said at least one opening by said second member into engagement with the elongated article to thereby engage and resist axial movement of the article relative to the device by embedment of a portion of the distal end of said locking means in said elongated article.

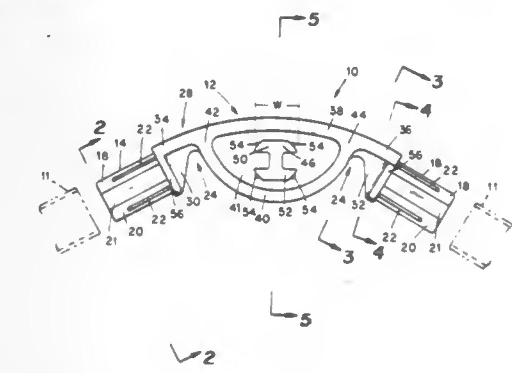


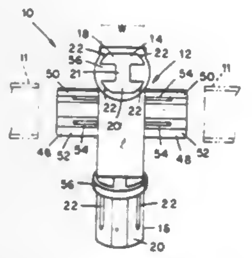
4,369,000

RELEASABLE JOINT CONNECTOR

J. C. Egnew, P.O. Box 425, Sterns, Ky. 42647

Filed Dec. 16, 1980, Ser. No. 216,955
Int. Cl.³ B25G *3/00;* **F16D** *1/00;* **F16G** *11/00*
U.S. Cl. 403—406 **17 Claims**





1. A releasable corner joint connector for coupling hollow structural members, comprising:

a central bridge member;

a first boss extending from one end of said central bridge member and adapted to be longitudinally received in one end of a hollow structural member with a press fit relationship;

a second boss extending from the opposite end of said central bridge member and adapted to be longitudinally received in one end of a hollow structural member with a press fit relationship; and,

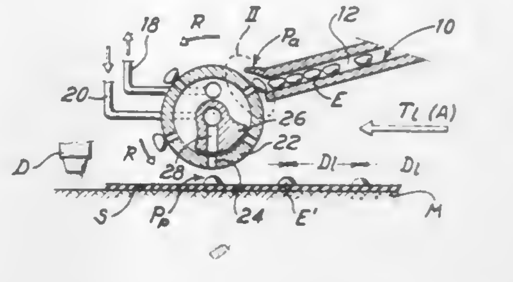
said central bridge member having at least one area of reduced cross-section to provide flexibility to said first boss and said second boss generally in the plane of said central bridge member.

4,369,001

METHOD FOR FORMING HIGHLY RETRO-REFLECTING ROADWAY SURFACE MARKING

Ludwig Eigenmann, POB 8, CH 6833 Vacallo, Switzerland

Continuation of Ser. No. 54,145, Jul. 2, 1979. This application May 4, 1981, Ser. No. 260,289
Claims priority, application Italy, Jul. 7, 1978, 25462 A/78
Int. Cl.³ E01C *23/16*
U.S. Cl. 404—94 **8 Claims**



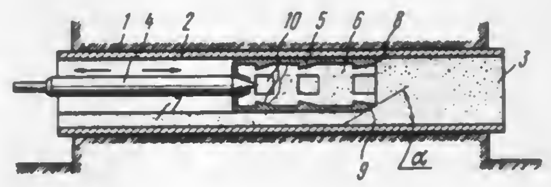
1. A method of forming retro-reflective traffic regulating signs on road surfaces, comprising the steps of spraying a marking layer of traffic wear-resistant and anti-skid material to a road surface in a direction lengthwise to the road surface; aligning retro-reflective elements in rows; and applying said preliminary aligned rows to said marking layer in a direction normal to the elongation of said marking layer and to the light beams emanating from vehicles travelling along the road surface.

4,369,002

METHOD OF EMPTYING PIPES DRIVEN INTO EARTH IN NONTRENCH LAYING AND DEVICE FOR CARRYING SAME INTO EFFECT

Alexandr D. Kostylev, ulitsa Derzhavina, 19, kv. 44.; Vladimir P. Gileta, ulitsa Bolshevistskaya, 175/3, kv. 68.; Vladimir A. Grigoraschenko, ulitsa Kamenskaya, 82, kv. 51.; Khaim B. Tkach, ulitsa Frunze, 67, kv. 272.; Valery A. Kozlov, ulitsa O. Dundicha, 3, kv. 204.; Anatoly V. Sukhushin, ulitsa Michurina, 21-a, kv. 9., all of Novosibirsk; Vladimir A. Bakunin, ulitsa Chkalova, 96, kv.5., and Mikhail J. Bondar, ulitsa Zhukovskogo, 22-a, kv. 4., both of Odessa, all of U.S.S.R.

Filed Jan. 26, 1981, Ser. No. 228,277
Int. Cl.³ E02D *29/10*
U.S. Cl. 405—184 **3 Claims**



1. A method of emptying pipes driven into earth in nontrench laying, which method is based on cyclic digging, picking up and removing spoil from a pipe and comprises the steps of:

digging soil in said pipe by means of a working element in the process of movement thereof along said pipe by vibratory shock loads;

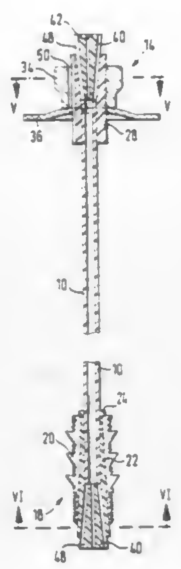
picking up spoil in the process of movement of said working element along said pipe by vibratory shock loads;

forming a spoil cushion, simultaneously with digging and picking up spoil, for taking up reaction loads set up by the movement of said working element;

withdrawing a spoil load, after it is picked up, from said pipe by reversing the direction of vibratory shock loads; and removing said spoil cushion upon completion of pipe emptying cycles.

4,369,003
ROCK ANCHORS

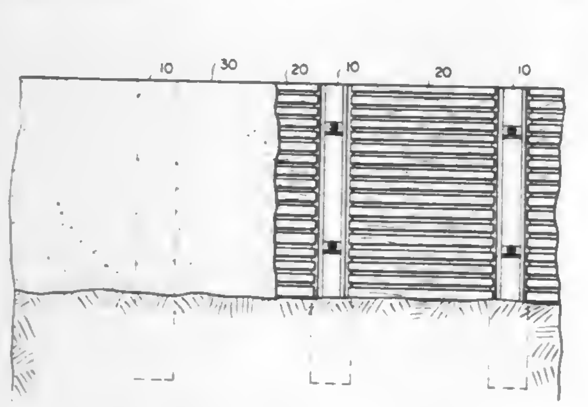
Frederick P. Brandstetter, Salzburg, Fed. Rep. of Germany, assignor to Gebirgssicherung GmbH, Salzburg, Austria
Filed Jan. 31, 1980, Ser. No. 117,091
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903694
Int. Cl.³ E21D *21/00*
U.S. Cl. 405—260 **14 Claims**



1. A rock anchor assembly comprising a tensioning element of constant diameter adapted to be inserted into a bore hole and clamped therein, the outer end thereof adapted to project from said bore hole and being adapted to be tensioned against a rock wall by means of an anchor plate, the inner end thereof for insertion into the bore hole being provided with a spreading jacket for clinging to the surface of said bore hole and being adapted for tensioning with the inner end of said tensioning element by means of a conical spreading wedge disposed around said tensioning element and secured thereto by means of a conical spreading wedge means disposed within the inner end of said tensioning element upon turning a clamp nut, said clamp nut being secured on a threaded tensioning jacket adapted for tensioning with the outer end of said tensioning element with the aid of conical tensioning wedge means disposed around said outer end upon turning the clamp nut.

4,369,004
EARTH RETAINING METHOD AND STRUCTURE

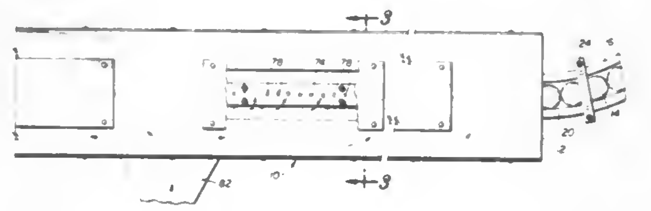
David E. Weatherby, Rockville, Md., assignor to Schnabel Foundation Company, Washington, D.C.
Filed Oct. 1, 1980, Ser. No. 192,695
Int. Cl.³ E02D *29/00*
U.S. Cl. 405—262 **21 Claims**



1. A method of constructing a wall for retaining an earthen mass comprising the steps of:
installing a plurality of laterally spaced sheet piles in the ground along the predetermined position of the wall to be constructed;
excavating a first stage of earth adjacent to said piles and said earthen mass to a depth above the bottom of said earthen mass;
installing temporary earth retaining means between said piles against the exposed face of said earthen mass;
installing and anchoring a plurality of tiebacks in said earthen mass, and connecting said tiebacks to said piles;
repeating the above excavating, temporary retaining and tieback installing steps sequentially in descending stages for the full height of said earthen mass;
placing a matrix of reinforcing bars adjacent to said piles and said temporary earth retaining means;
erecting wall forms adjacent to said reinforcing bars; and
pouring concrete between said forms and said piles and temporary retaining means to encase said reinforcing bars and form a permanent tied back wall.

4,369,005
AIR CONVEYOR

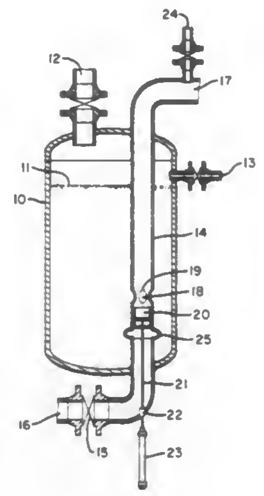
Ronald A. Lenhart, Lakewood, Colo., assignor to Precision Metal Fabricators, Inc., Arvada, Colo.
Continuation of Ser. No. 17,232, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 947,441, Oct. 2, 1978. This application Nov. 28, 1980, Ser. No. 211,248
Int. Cl.³ B65G *53/20*
U.S. Cl. 406—88 **27 Claims**



1. An air conveyor for the transfer of containers from one location to another while substantially avoiding contact therebetween which comprises:
a pair of elongated side walls held in spaced relation to define a channel with the side walls being spaced apart a distance slightly greater than the height of the container;
a top cooperating with the side walls to define an inverted U-shaped channel;
a plenum adapted to be connected to a source of air under pressure attached to either side wall in coextensive relation;
a plurality of openings through the side walls communicating the plenums with the channel and positioned essentially parallel to the lower extremity of the side walls, said openings comprising air jet nozzles angularly disposed to direct jets of air from said plenum forwardly against the containers and at a point just above the axis of rotation of the containers at rest; and,
the lower extremity of the U-shaped channel being open with guide rails attached to either side wall and spaced from the top a distance slightly greater than the diameter of the container to be worked upon, said channel being adapted to coact with the air from said nozzles and with the containers to establish and maintain a greater than ambient pressure of at least 0.02 inches of water or 0.00072 psi between adjacent containers.

4,369,006
PNEUMATIC CONVEYING SYSTEM

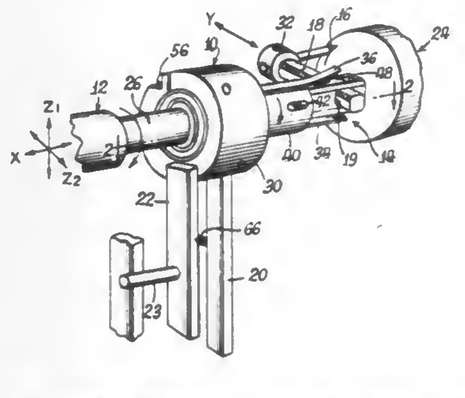
Wolfgang Grams, Herne, Fed. Rep. of Germany, assignor to Saarberg & Dr. C. Otto Gesellschaft fur Kohledruckvergasung mbH, Volklingen-Furstenhausen, Fed. Rep. of Germany
Filed Sep. 11, 1980, Ser. No. 186,222
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938323
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—93 **5 Claims**



1. In a pneumatic conveying system, a conveying pipe extending upwardly through a pressurized storage tank filled with fine-grained material, means for supplying gas under pressure to said storage tank ports in the wall of said conveying pipe which are embedded in said fine-grained material and through which the fine-grained material is forced by the pressure of said gas within the storage tank, means connecting one end of said conveying pipe to a source of gas under pressure whereby the pressurized gas in the conveying pipe will convey particulate material forced into the pipe through said ports, and a cylindrical valve member which bears against the inner wall of the conveying pipe and is movable between a position in which it closes the ports to a position in which the ports are uncovered.

4,369,007
FLY CUTTER TOOL

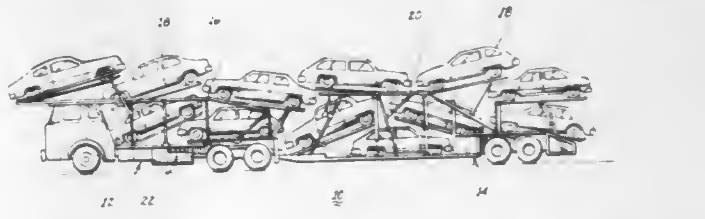
Edward Canady, 3244 N. Cicero, Chicago, Ill. 60641
Filed Apr. 7, 1980, Ser. No. 137,731
Int. Cl.³ B23C *3/02;* **B23B** *5/00*
U.S. Cl. 409—190 **7 Claims**



1. A rotary cutter assembly for machining operations comprising in operative combination:
(a) a first shaft adapted to be rotatably driven about its axis;
(b) means for holding a cutting tool mounted on said first shaft normal to said axis, said holding means being movable in a Y direction radially normal to said shaft axis;
(c) said cutting tool holder means includes an externally threaded second shaft having means for holding a cutting tool, and having means for preventing rotation of said second shaft, said second shaft being received in a radial hole in said first driven shaft;
(d) means for radially advancing said cutting tool holder mounted in association with said first shaft;
(e) means for actuating said radial advancing means disposed rotationally stationary during the rotation of said first shaft, and providing for motion of said cutting tool holder outwardly or inwardly in said radial direction responsive to selectable actuation thereof;
(f) said radially advancing means includes:
  (i) a Y-motion advancing member comprising a disc member having a central threaded aperture receiving said second threaded shaft, and said disc is disposed in a slot in said first shaft, and
  (ii) an axially slidable first lever mechanism engaging said disc member in a ratchet relationship; and
(g) said actuating means includes a second lever mechanism engaging said first lever mechanism.

4,369,008
VEHICLE TRANSPORT SYSTEM

Herbert E. Cooper, 2142 N. 24th Ave., Phoenix, Ariz. 85009
Filed Oct. 14, 1980, Ser. No. 196,220
Int. Cl.³ B60P *3/008*
U.S. Cl. 410—29.1 **16 Claims**



1. A truck tractor unit and an attachable trailer unit for compactly transporting a plurality of motor vehicles in stacked and overlapping relationship with one another, said truck tractor unit and trailer unit comprising in combination:
I. said truck tractor unit including superstructure comprising a first tier and a second tier, each of which tiers supports a plurality of motor vehicles;
A. said first tier comprising:
  1. a first pair of tracks for supporting a motor vehicle and first means for pivoting said first pair of tracks;
  2. a second pair of tracks for supporting a motor vehicle and second means for pivoting said second pair of tracks and for altering the elevation of said second pair of tracks;
  3. a third pair of tracks for supporting a motor vehicle and third means for pivoting said third pair of tracks and for altering the elevation of said third pair of tracks;
B. said second tier comprising:
  1. a fourth pair of tracks for supporting a motor vehicle and fourth means for pivoting said fourth pair of tracks;
  2. a fifth pair of tracks for supporting a motor vehicle;
II. said trailer unit including superstructure comprising a first tier and a second tier, each of which tiers supports a plurality of motor vehicles;
A. said first tier comprising:
  1. a sixth pair of tracks for supporting a motor vehicle, said sixth pair of tracks including:
    a. first means for interconnecting said sixth pair of tracks with said third pair of tracks during loading and unloading of the motor vehicles onto said first tier of said truck tractor unit; and
    b. sixth means for pivoting said sixth pair of tracks and for altering the elevation of said sixth pair of tracks;
  2. a seventh pair of tracks for supporting a vehicle, said seventh pair of tracks including seventh means for pivoting said seventh pair of tracks and for altering the elevation of said seventh pair of tracks;
  3. an eighth pair of tracks for supporting a motor vehicle, said eighth pair of tracks including eighth means for

pivoting said eighth pair of tracks and for altering the elevation of said eighth pair of tracks;

4. first ramp means extendable from said eighth pair of tracks to the ground during loading and unloading of the motor vehicles onto said first tiers of said truck tractor unit and said trailer unit;

B. said second tier comprising:

1. a ninth pair of tracks for supporting a motor vehicle, said ninth pair of tracks including:
    a. second means for interconnecting said ninth pair of tracks with said fifth pair of tracks during loading and unloading of the motor vehicles onto said second tier of said truck tractor unit;
2. a tenth pair of tracks for supporting a motor vehicle and means for pivoting said tenth pair of tracks and for altering the elevation of said tenth pair of tracks;
3. an eleventh pair of tracks for supporting a motor vehicle and means for pivoting said elevation pair of tracks to relocate said eleventh pair of tracks along said second tier;
4. a twelfth pair of tracks for supporting a motor vehicle; and
5. second ramp means extendable from said twelfth pair of tracks to the ground during loading and unloading of the motor vehicles onto said second tiers of said truck tractor unit and said trailer unit.

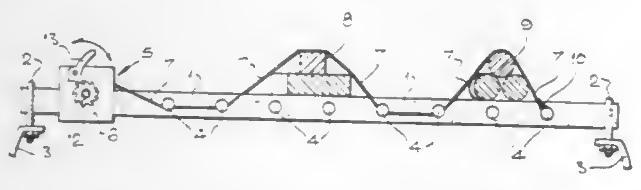
4,369,009
LOAD CARRYING SYSTEM

John Fulford, 10 Sunset Point Dr., Mittagong, N.S.W., 2575, Australia

Filed Jun. 6, 1980, Ser. No. 157,094

Int. Cl.³ B60P *7/06*

U.S. Cl. 410—35 **8 Claims**



1. A motor vehicle having a roof, a load-carrying system on said roof, said system comprising:

a pair of support elements securable transversely across said roof adjacent forward and rearward ends thereof respectively;

at least three spaced-apart belt-engaging pegs projecting horizontally from a side of each said support element;

reel means mounted at one end of each said support element, on the said side thereof, and each having a rotatable spindle to which is attached one end of a load-securing belt, said belt being retractable about said spindle and extendable to beyond the other end of said support element and having a peg-engaging loop on the end thereof remote from said spindle;

said belt and pegs being positioned so that a load carried upon said support elements and above said roof can be secured by each belt being pulled out from its associated reel means, passed beneath an adjacent belt-engaging peg, passed over said load, passed beneath a next-adjacent peg, its peg-engaging loop placed about a next-adjacent peg and said spindle rotated until said belt is taut;

a spindle-locking mechanism on each said reel means to maintain tension on each said belt.

4,369,010
REINFORCED VEHICLE FRAME AND TIE DOWN EYE STRUCTURE

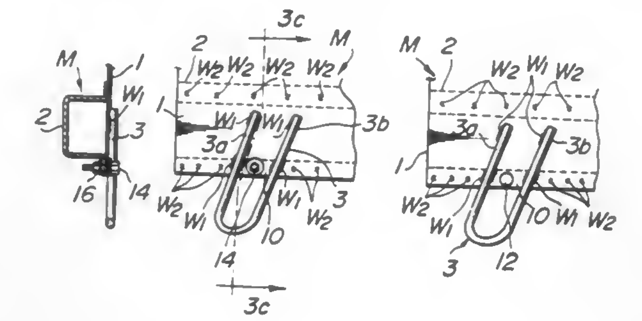
Hisao Ichinose, Yokohama; Shinji Katou, Fujisawa; Masashi Matsui, and Kouji Hori, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 20, 1980, Ser. No. 161,480

Claims priority, application Japan, Jul. 6, 1979, 54-86136

Int. Cl.³ A44B *13/00;* **B60P** *7/06;* **B61D** *45/00*

U.S. Cl. 410—101 **10 Claims**



1. An automobile body structure comprising a channel member with flanges extending outwardly at an open portion thereof, a plate welded to the flanges closing the channel member to form a beam member having a closed cross section, a U-shaped eye member welded to the plate and extending past an edge of one of the flanges, a bolt passing through said plate and one flange and between legs of the eye member to reinforce the beam member at points receiving stress applied to the eye member.

6. In an automobile body structure having a channel member with a flanged open side, a panel covering the open side of the channel member and being fixed to said flange to form a joint flange, a U-shaped member having legs welded to the panel and a bight extending beyond an edge of the joint flange to form an eye configured to receive means subjecting the U-shaped member to forces in transportation of the vehicle, the improvement comprising

an aperture formed in the joint flange between the legs of the U-shaped member,

a bolt selectively received in the aperture,

a nut connected to a bolt received in the aperture for reinforcingly clamping the panel and channel member flange between the nut and a head of the bolt, and said nut and bolt being primarily used over long distances of transportation.

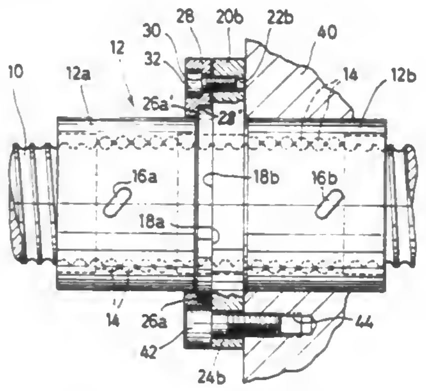
4,369,011
PRELOADED BALL SCREW ASSEMBLY

Helmut Ploss, Stuttgart, Fed. Rep. of Germany, assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jul. 31, 1980, Ser. No. 174,214

Int. Cl.³ F16B *39/12*

U.S. Cl. 411—223 **5 Claims**



1. A ball screw assembly comprising a screw having a ball groove, first and second axially alined nuts each having a ball groove, and balls located between the groove of said screw and the grooves of said nuts and adapted to circulate within said grooves, the improvement in said assembly comprising, a locking member having a clamping surface which faces generally axially toward said first nut, said second nut having a clamping surface which faces axially toward and which is adapted to frictionally engage the clamping surface of said locking member, and selectively releasable threaded means connecting said locking member to said first nut and operable when tightened to draw said locking member toward said first nut and to press the clamping surface of said locking member frictionally against the clamping surface of said second nut to prevent relative rotation between said nuts and to hold said balls in a preloaded condition in said grooves.

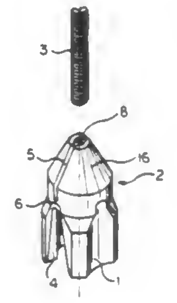
4,369,012
DEVICE FOR TIGHTENING OR BLOCKING OF AN OBJECT ON A ROD

Jean-Claude Bailet, Villefranche-sur-Mer, France, and Rocco De Bella, Ventimiglia, Italy, assignors to Siamp Cedap Reunies, Monaco, Monaco

Filed Nov. 26, 1979, Ser. No. 97,796

Int. Cl.³ F16B *37/08*

U.S. Cl. 411—437 **8 Claims**



1. A securing device, comprising a rod and an elongated hollow element composed unitarily of a tough elastic material and traversed longitudinally and centrally by said rod, said element being formed with a first pair of relatively large longitudinal slots terminating at one end of the element and a second pair of relatively narrow longitudinal slots terminating at the opposite end of said element, each of the slots of one pair being aligned with but separated from a slot of the other pair by a resilient bridge of said material whereby said bridges flank said rod, the aligned slots being disposed symmetrically with respect to a median longitudinal plane through said element whereby the relatively large slots define between them a pair of manually engageable members of a pincer adapted to be pressed together to spread jaws formed between the slots at said other end, said jaws being formed internally with formations generally transverse to the axis of said rod and complementary to formations provided on said rod whereby, upon release of said members, the formations on said jaws engage the hook upon said rod to secure said element against axial movement on said rod.

4,369,013
BOOKBINDING STRIPS

William H. Abildgaard, Los Altos Hills, and Charles T. Groswith, III, Los Altos, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 710,185, Jul. 30, 1976, abandoned, which is a continuation of Ser. No. 872,134, Oct. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 799,045, Feb. 13, 1969, Pat. No. 3,596,929. This application Apr. 21, 1980, Ser. No. 142,269

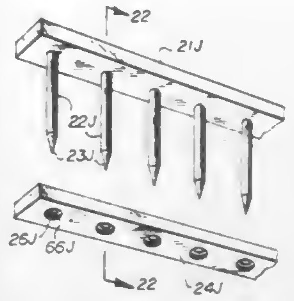
Int. Cl.³ B42B *5/08*

U.S. Cl. 412—38 **12 Claims**

1. For use in binding a stack of sheets each formed with a plurality of apertures, a first strip and a second strip formed with apertures,

said first strip having a first pressure-receiving surface and a second pressure-transmitting surface opposite said first surface, a plurality of longitudinally space-apart studs projecting upright from said second surface spaced along said first strip, and dimensioned and positioned to fit into said apertures in said second strip, said studs being smooth and of substantially uniform cross-section for their entire effective length

said second strip having a third pressure-receiving surface and a fourth pressure-transmitting surface opposite said third surface.



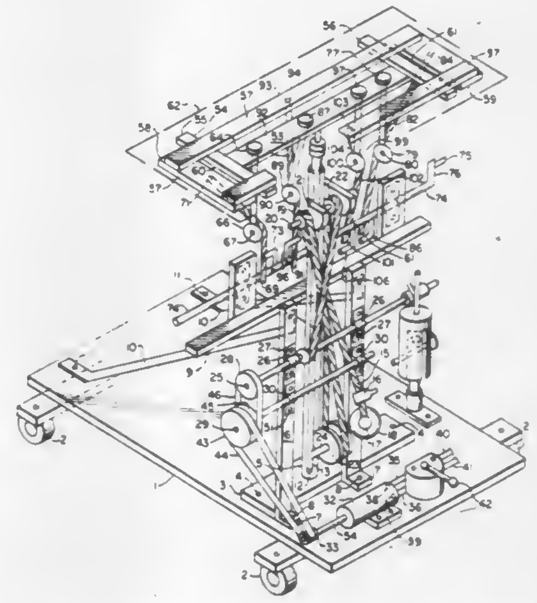
4,369,014
PANEL HANGER

B. N. Jolivet, 4410 Fortune La., Beaumont, Tex. 77705

Filed Feb. 25, 1980, Ser. No. 124,629

Int. Cl.³ E04G *21/14*

U.S. Cl. 414—11 **4 Claims**



1. In a panel hanger device having hoist means to elevate panels of building materials to the ceiling of a room including an I-frame mounted on top of said hoist means, drum shaft means, a wire rope coiled around said drum shaft means to elevate or lower said I-frame means, a sliding frame mounted on said I-frame with a panel mounted on said sliding frame, said drum means adapted to rotate and coil said wire rope means around said drum means to shift said sliding frame lengthwise to the right with said panel thereon over said I-frame controlled by said wire rope means wound around said drum means to place said panel in juxta position to the end of a panel already affixed to said ceiling.

4,369,015

APPARATUS FOR STACKING NOTE BOOKS OR THE LIKE

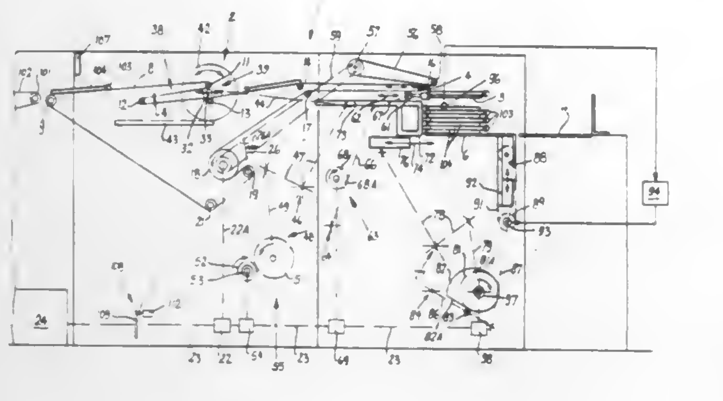
Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Continuation of Ser. No. 959,831, Nov. 13, 1978, Pat. No. 4,268,200. This application Oct. 16, 1980, Ser. No. 197,676

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752372

Int. Cl.³ B65G *57/081*

U.S. Cl. 414—31 **14 Claims**



1. Apparatus for manipulating substantially flat commodities, particularly pads each of which has a first side and a second side and first portion whose thickness deviates from the thickness of at least one second portion thereof, comprising a stacking device; means for transporting a succession of commodities in identical orientation in a predetermined direction and along a predetermined path wherein the first portion of each commodity extends transversely of said direction and one side of each commodity is located at a level above the other side of the respective commodity, said transporting means being arranged to advance the commodities on to said stacking device where successive commodities descend on top of each other to form a growing stack, said device comprising a platform for the growing stack of commodities; stop means disposed above said device and positioned to arrest successive commodities prior to descent onto said platform; means for moving said stop means between first and second positions; orientation changing means adjacent said path ahead of said device and comprising inverting means which is actuatable to invert each second commodity of said succession in said path; means for actuating said inverting means; and control means for synchronizing the operation of said actuating means and said moving means so that said stop means assumes one of said positions prior to engagement with commodities whose orientation remained unchanged and the other of said positions prior to engagement with commodities whose orientation has been changed by said inverting means, said control means comprising means for operating said moving means with a delay upon inversion of each second commodity by said inverting means.

4,369,016

TURBINE INTERMEDIATE CASE

William T. Dennison, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,417

Int. Cl.³ F01D *25/16*

U.S. Cl. 415—142 **12 Claims**

1. A turbine bearing support including:

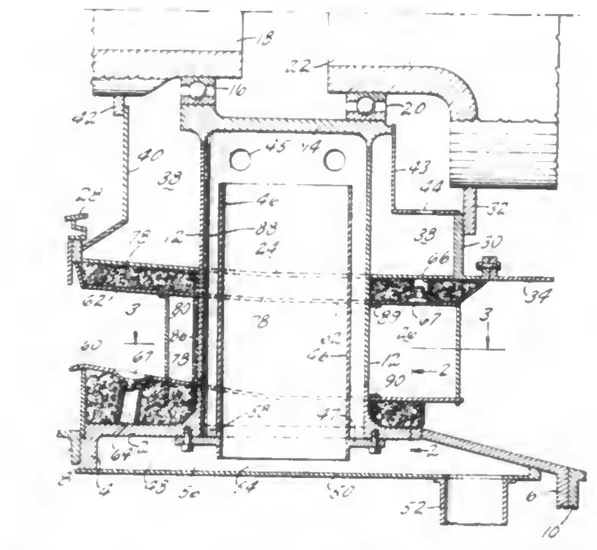
an outer case element;

an inner case element within and spaced from the outer case element;

a plurality of hollow struts extending radially inward from the outer case element and through the inner case element and secured to both;

a bearing support secured directly to and supported by the inner ends of the struts;

seals carried by said inner case element adjacent opposite ends; and



a turbine vane ring removably attached to the downstream end of the inner case element.

4,369,017

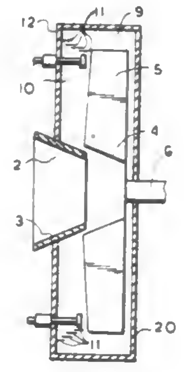
CENTRIFUGAL FAN

Gerardo P. V. Carlini, Gavilan 4552, Buenos Aires, Argentina

Filed May 22, 1981, Ser. No. 266,353

Int. Cl.³ F04D *27/00*

U.S. Cl. 415—157 **8 Claims**



1. A centrifugal fan, comprising a substantially cylindrical housing having a central axis and including lateral walls and an inlet port partially extending into said housing through one of said lateral walls; an impeller supported for rotation in said housing; partition means subdividing the interior of said housing into a main diffusing chamber surrounding said impeller and a diffusing antechamber surrounding said inlet port, said partition means including a substantially cylindrical partition member having a first end portion and a second end portion, said first end portion being fixedly connected to said one wall, said second end portion being spaced from said first end portion and extending therefrom toward said impeller, said partition member being displaceable within said housing in a direction parallel to said central axis between a position adjacent to said impeller and a plurality of positions remote from said impeller so as to define between said one wall and said impeller an annular space of differing width which communicates said main diffusing chamber with said diffusing antechamber.

4,369,018

ROTOR HEAD STRUCTURE WITH STACKED CONNECTING ELEMENTS, ESPECIALLY FOR A HELICOPTER

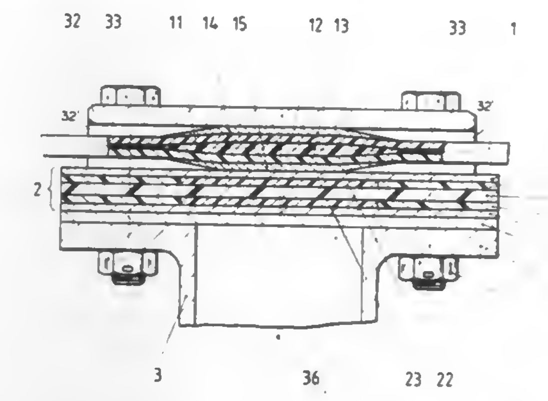
Klaus Brunsch, Weidach, and Franz Nowak, Taufkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,034

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929906

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—134 A **8 Claims**



1. A rotor head structure, especially for a helicopter having a drive shaft with a connecting flange, wherein diametrically opposite rotor blades are operatively interconnected by connecting elements of uni-directional fiber layers, wherein each connecting element (**1, 2**) comprises at least two uni-directional fiber layers (**12, 13; 22, 23**) and an intermediate ±β-fiber compound material layer (**11, 21**) interposed between said uni-directional fiber layers and adhesively bonded thereto, each of said intermediate layers (**11, 12**) having a radially inwardly increasing thickness portion, each of said intermediate layers comprising two lobed sections (**16, 26**) at each end and bridging means (**14′, 15′**) connecting the lobed sections to the increased thickness portion of the respective intermediate layer laterally outwardly on both sides of the respective connecting element, each of said intermediate layers thus forming a configuration resembling a cross-section similar to that of an I-beam, said intermediate layers being arranged in a cross-over relationship so that the lobed sections extend outwardly and substantially in parallel to the longitudinal edge of the respective connecting element for increasing the cooperating connecting surfaces, said bridging means providing a spacing (**52**) between the respective lobed section and the adjacent edge of the connecting element, said rotor head structure further comprising connecting cover means (**32**) and clamping means (**33, 34**) operatively extending through said lobed sections outside said uni-directional fiber layers for securing said lobed sections to said connecting flange (**31**), whereby a reduction of the cross-sectional area of the uni-directional fiber layers by the clamping means is avoided.

4,369,019

HELICOPTER ROTOR COMPRISING ELASTOMER JOINTS

Bruno Lovera, Cardano, and Santino Pancotti, Gallarate, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

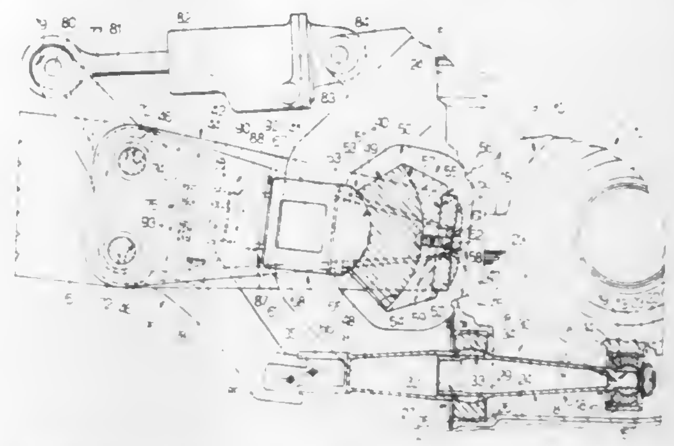
Filed Mar. 20, 1981, Ser. No. 245,721

Claims priority, application Italy, Apr. 3, 1980, 67517 A/80

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—134 A **8 Claims**

1. A helicopter rotor (**1**) comprising elastomer joints, which comprises a main shaft (**2**) provided upperly with a hub (**5**) in the form of a flat polygonal member extending radially outwards from said main shaft (**2**) and rigid therewith, said hub (**5**) comprising a plurality of through apertures (**40**) closed outwardly by a transverse arm (**41**) and supporting, at each of said apertures (**40**), a blade (**6**) extending outwards in a substantially radial direction and connected to said hub (**5**) by means of a yoke (**42**) extending through the relative said aperture (**40**) and connected to the relative said arm (**41**) by means of an elastomer joint (**43**); lever means (**76**) being rigidly connected to each of said yokes (**42**) and to each of said blades (**6**) in order to vary the pitch thereof; characterised in that said yoke (**42**) is constituted by a single substantially U-shaped piece comprising an intermediate curved portion (**45**) extending through the relative said aperture (**40**) and disposed with its concavity facing the relative said arm (**41**), first and second connection means (**58–60, 66–67**) being provided for connecting each of said elastomer joints (**43**) to the relative said intermediate curved portion (**45**) and to the relative said arm (**41**) respectively; and in that said lever means (**76**) define, between two opposing arms (**44**) of the relative said yoke (**42**) and together with said second connection means (**66, 67**), a chamber (**91**) housing a device (**92**) for controlling the flapping movements of the relative said blade (**6**); said control device (**92**) comprising two rocker members (**95, 105**) supported by said lever means (**76**) and rotatable, against the action of resilient means (**110**) about a substantially horizontal axis (**93**) perpendicular to the axis of the relative blade (**6**); each of said rocker members (**95, 105**) being arranged to cooperate with a relative first stop surface (**71**) carried by said second connection means and a second stop surface (**74**) carried by said lever means.



4,369,020

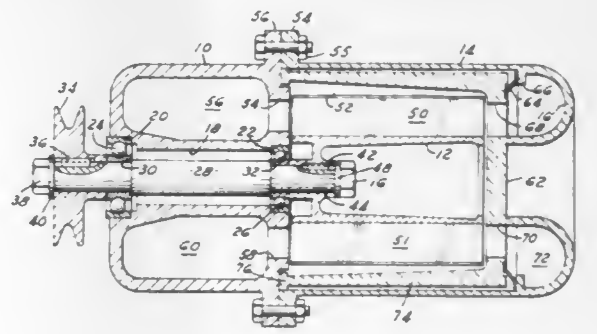
ROTOR SEAL FOR WAVE COMPRESSION TURBOCHARGER

Christian J. Rahnke, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 5, 1980, Ser. No. 146,589

Int. Cl.³ F04F *11/00*

U.S. Cl. 417—64 **7 Claims**



1. A turbocharger comprising:

a rotor mounted for rotation about an axis having surfaces at axially opposite ends;

a housing having a surface that is adjacent and spaced axially from a first end surface of the rotor;

a port plate located adjacent a second end surface of the rotor;

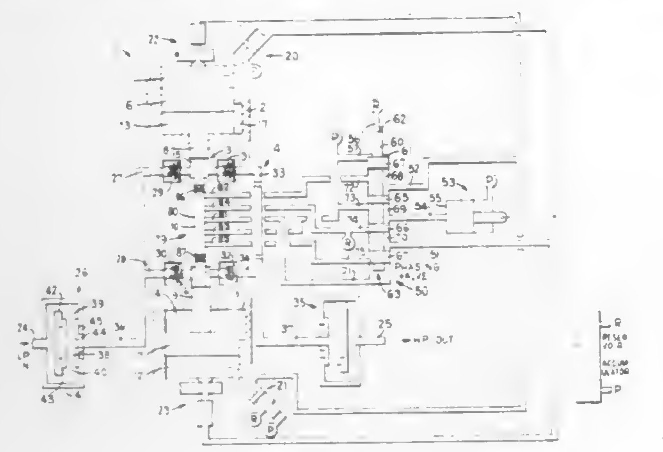
means resiliently urging the port plate toward the second end surface of the rotor; and

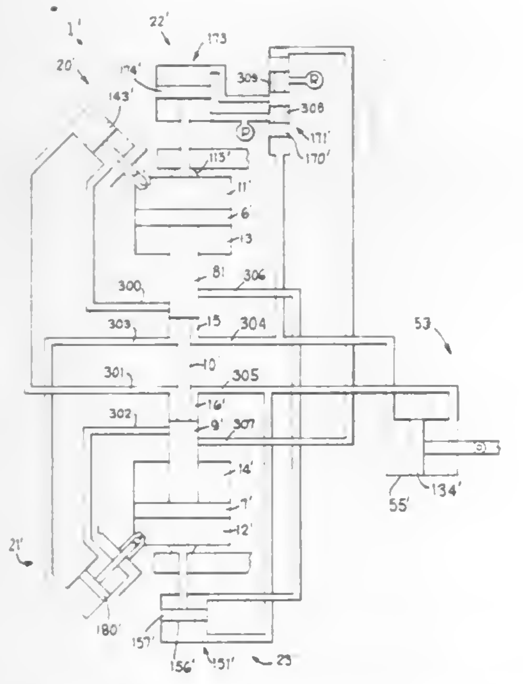
spacer means abutting the housing and the port plate, defining a predetermined axial length extending from the housing surface that is adjacent the first end surface of the rotor to the port plate, the rotor and the spacer being made of material having a coefficient of thermal expansion that is low in relation to the coefficient of the material from which the housing is made.

4,369,021

FREE-PISTON ENGINE PUMP

Richard P. Heintz, 1841 Oakland Dr., Kalamazoo, Mich. 49001
Filed May 16, 1980, Ser. No. 150,390
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—364 **42 Claims**



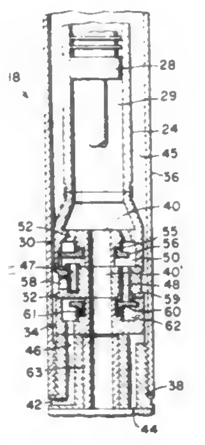


1. A free piston engine pump, comprising in combination: housing means defining therein first and second bore means; a main reciprocating member including first and second piston means slidably disposed in said first and second bore means respectively, and means for interconnecting said piston means for simultaneous reciprocating movement; each said piston means including a power piston coacting with the respective bore means to define a combustion chamber adjacent one end thereof, each said piston means also including a pumping piston fixed relative to the power piston and coacting with the respective bore means to define a pumping chamber adjacent the other end thereof; discharge passage means for discharging the exhaust gases from the combustion chamber, said discharge passage means comprising first and second exhaust passage means for removing exhaust products of combustion from the respective combustion chambers; common exhaust outlet means for discharging such exhaust products of combustion from the engine, and common exhaust valve means for controlling the connections of said respective passage means to said common exhaust outlet means; separate exhaust valve means associated with each of said respective combustion chambers for selectively opening the same to discharge exhaust products of combustion to said discharge passage means; and cooling means for delivering cooling air to said discharge passage means proximate said respective exhaust valve means, said cooling means comprising a common air intake means for receiving cooling air, separate cooling air passages for delivering cooling air to said respective exhaust passage means, and common cooling air control valve means for selectively delivering cooling air through said respective cooling air passages; and means for simultaneously operating said common exhaust valve means and said common cooling air control valve means.

4,369,022

VALVE ASSEMBLY FOR HYDRAULICALLY ACTUATED DOWNHOLE PUMPS

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760
Filed Aug. 5, 1980, Ser. No. 175,468
Int. Cl.³ F04B *21/06, 39/10*
U.S. Cl. 417—571 **7 Claims**



1. In a hydraulically actuated, downhole pump assembly having an engine which reciprocatingly drives a production pump piston within a pump barrel, with the pump piston being connected to the engine by a connecting rod, the combination with said pump piston and rod of a valve device which controls the flow of production fluid into and out of the pump barrel;

said valve device includes a valve plate having the form of a circular hub, said plate includes opposed upper and lower faces which are spaced apart by a sidewall; and axial bore extending through said plate for sealingly receiving the rod therethrough in a reciprocating manner, and a plurality of circumferentially spaced passageways extending through said plate such that the axial centerline thereof is parallel to and radially spaced from the axial centerline of said axial bore;

means forming an exhaust valve seat on said lower face at the end of each said passageway; a closure means for each said seat;

means forming a plurality of circumferentially spaced intake ports through said valve plate, each port includes a counterbore which is spaced from said radially spaced passageways and extend from said upper face and only partially through said plate and then radially outward through said sidewall, with there being one of said ports located between adjacent passageways;

means forming an intake valve seat at the end of each said port, a closure means for each said intake valve seat; means resiliently biasing each of said closure means into abutting engagement with the nearest adjacent seats;

each closure means being a valve element which is square in configuration, means forming an axial passageway through said element through which the rod is reciprocatingly received;

means, including sidewalls, forming an intake chamber on one side of the valve plate and an exhaust chamber on the opposed side of the valve plate;

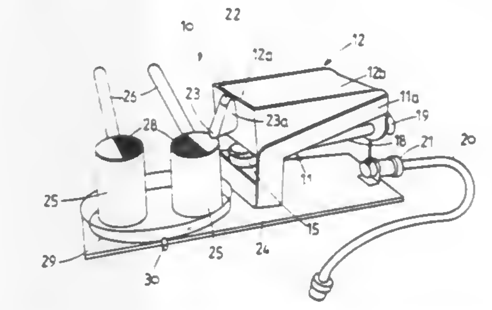
groove means formed in the sidewall of the chamber, said groove means are longitudinally disposed in spaced relation to the rod;

the corner of the valve element are slidably received within the groove means for preventing axial rotation of the valve element, so that the area of the valve element which is between the corner and the axial passageway is always oriented in a position to be biased into seated relationship respective to the nearest seat; and, the sides of the valve element located between adjacent corners cooperate with the sides of the nearest chamber to form a crescent shaped flow port through which fluid flows across the valve element.

4,369,023

SHOT MAKING APPARATUS

David S. Baker, 12 K Davies La., New Plymouth, New Zealand
Filed Aug. 4, 1980, Ser. No. 174,751
Claims priority, application New Zealand, Aug. 6, 1979, 191215
Int. Cl.³ B22F *9/08*
U.S. Cl. 425—10 **19 Claims**

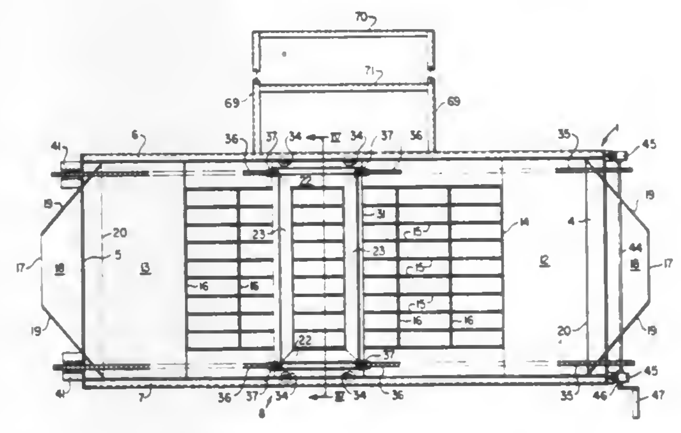


1. Shot making apparatus comprising a receptacle for lead, heating means, at least one nozzle for discharging molten lead in droplet form from the receptacle, a chute associated with said at least one nozzle, the heating means being disposed such as to heat the chute, said at least one nozzle and the lead in the receptacle, the chute being disposed at a spacing from and at a downwardly inclined angle to said at least one nozzle, and a container or containers for liquid coolant and lead droplets discharged from said at least one nozzle.

4,369,024

BRICK MOLDING MACHINE

Rodger Blackwood, R.R. #1, DeWinton, Alberta, and John G. Medway, Box 1210, High River, Alberta, both of Canada
Filed Jun. 15, 1981, Ser. No. 273,426
Claims priority, application Canada, Jun. 13, 1980, 353997
Int. Cl.³ B29C *17/00*
U.S. Cl. 425—112 **10 Claims**

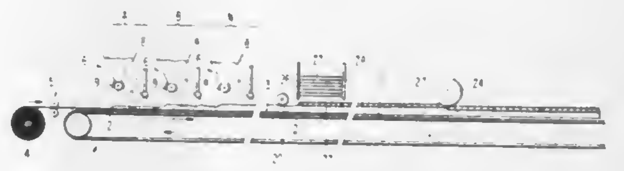


1. A brick molding machine comprising table means, said table means including a top and legs supporting said top; grid means in said top for defining sides of molds for molding bricks; shelf means beneath said grid means; carrier means on said shelf means for carrying a pallet; elevating means for moving said pallet carrier and a pallet from a rest position on said shelf to a molding position in which said pallet abuts the bottom of said grid means to define the bottom of said molds; hopper means for dispensing brick forming composition into said molds; and drive means for moving said hopper means along said table top above the molds.

4,369,025

APPARATUS FOR MANUFACTURING ELEMENTS BY MEANS OF A HARDENABLE BINDING AGENT TO WHICH A LIQUID IS ADDED

Francois P. von der Weid, Geneva, Switzerland, assignor to EPSI Brevets et Participations S.A., Fribourg, Switzerland
Continuation of Ser. No. 948,748, Oct. 5, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,228
Claims priority, application Switzerland, Feb. 13, 1978, 1551/78
Int. Cl.³ B29C *27/14*
U.S. Cl. 425—115 **8 Claims**



1. Apparatus for manufacturing solid strips of material from hardenable binding agent and a liquid, comprising;

endless belt conveyor means movable in one direction to support a length of said strip material;

a plurality of dispensing stations disposed above said conveyor belt means and along the length thereof, each station comprising;

first dispensing means to deposit a first uniform layer of dry powdered binding agent on said conveyor means while moving, said layer comprising a fraction of the thickness of the strip to be manufactured, and;

second dispensing means downstream of said first dispensing means to deposit an amount of said liquid necessary for the binding agent to set while the conveyor means is moving.

4,369,026

CONTROL OF THE FUEL/OXYGEN RATIO FOR A COMBUSTION PROCESS

John A. Morgan, and Henry K. Hachmuth, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 21, 1980, Ser. No. 123,230
Int. Cl.³ F23N *1/02*
U.S. Cl. 431—12 **9 Claims**

6. A method for maintaining a desired fuel-to-oxygen ratio in a combustion process when the flow rate of said fuel to said combustion process is substantially constant and for insuring that excess oxygen is provided to said combustion process during periods of changing fuel flow resulting from changes in the heat required from said combustion process, said method comprising the steps of:

establishing a first signal which is representative of the heat which must be supplied from said combustion process;

lagging said first signal to thereby establish a second signal;

differentiating said second signal with respect to time to thereby establish a third signal;

summing any positive portion of said third signal with said second signal to thereby establish a fourth signal;

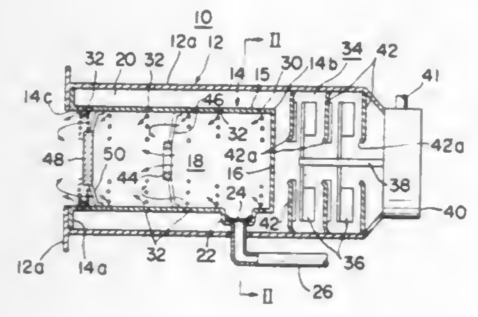
summing any negative portion of said third signal with said second signal to thereby establish a fifth signal;

manipulating the flow rate of fuel to said combustion process in response to said fifth signal; and

manipulating the flow rate of a fluid containing free oxygen to said combustion process in response to said fourth signal.

4,369,027
LIQUID FUEL COMBUSTION APPARATUS

Toshihiko Saito, Yokohama; Katsuyoshi Kumazawa, Kawasaki, and Moriyoshi Sakamoto, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 17, 1979, Ser. No. 58,161
Claims priority, application Japan, Jul. 19, 1978, 53-88123; Jul. 19, 1978, 53-88125; Aug. 31, 1978, 53-106672; Nov. 14, 1978, 53-140041; Dec. 8, 1978, 53-151717
Int. Cl.^{3} F23D *5/02*
U.S. Cl. 431—333 **5 Claims**



1. A liquid fuel combustion apparatus, comprising:

a horizontal combustion cylinder having a peripheral wall and first and second ends;

an end plate for closing said first end of said combustion cylinder, said second end of said combustion cylinder being open;

fuel supplying means comprising a fuel reservoir located at the lowermost portion of said combustion cylinder in the vicinity of said end plate;

a first plurality of annularly-arranged perforations in said peripheral wall adjacent said fuel reservoir;

an angularly shaped first flame holder means spaced from the peripheral wall of said combustion cylinder and located intermediate the length of said combustion cylinder;

a second plurality of annularly-arranged perforations in said peripheral wall on the downstream side of said first flame holder means;

a disc shaped second flame holder means located adjacent said open second end of said combustion cylinder;

a third plurality of annularly-arranged perforations in said peripheral wall on the upstream side of said second flame holder means;

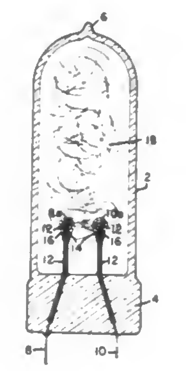
a fourth plurality of annularly-arranged perforations in said peripheral wall on the downstream side of said second flame holder means;

a housing enclosing said combustion cylinder, and being spaced from said cylinder to form an air stream conduction space between said cylinder and said housing; and

air supply means comprising a blower for blowing compressed air into said air stream conduction space.

4,369,028
PHOTOFLASH LAMP

Daniel W. Bricker, and John W. Shaffer, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Nov. 24, 1976, Ser. No. 744,540
Int. Cl.^{3} F21K *5/02*
U.S. Cl. 431—362 **14 Claims**



1. A photoflash lamp comprising:

an hermetically sealed, light-transmitting envelope;

a quantity of filamentary combustible material located within said envelope;

a combustion-supporting gas in said envelope;

and a non-filament type ignition means disposed in said envelope in operative relationship with respect to said combustible fill material and adapted to be ignited by a high voltage pulse, said ignition means including a pair of lead-in wires extending into said envelope in a spaced relationship, and a dried coating of primer material covering a portion of at least one of said lead-in wires within said envelope, said coating of primer material having been provided from a mixture comprising a particulate fuel, a binding agent, a solvent and an additive of finely divided inert material, said finely divided inert material being insoluble in said solvent and nonconductive and having a particle size of less than about 0.5 micron diameter, the particle size of said additive of inert material being substantially finer than the particle size of said fuel whereby said additive becomes distributed in the interstices between the larger fuel particles of the final mixture and the sensitivity and reliability of said primer material is significantly enhanced.

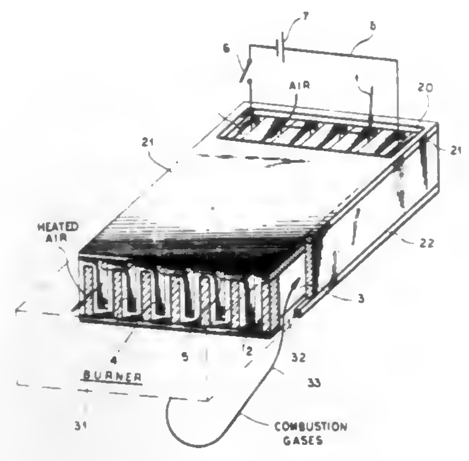
4,369,029
CERAMIC RECUPERATOR AND METHOD FOR THE HEATING OF COMBUSTION AIR

Siegfried Förster, Alsdorf, and Berthold Sack, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich GmbH, Julich, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 135,082
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912520
Int. Cl.^{3} F24H *7/00;* **F23D** *11/44;* **F24H** *3/00, 1/00*
U.S. Cl. 432—29 **8 Claims**

1. A ceramic recuperator comprising:

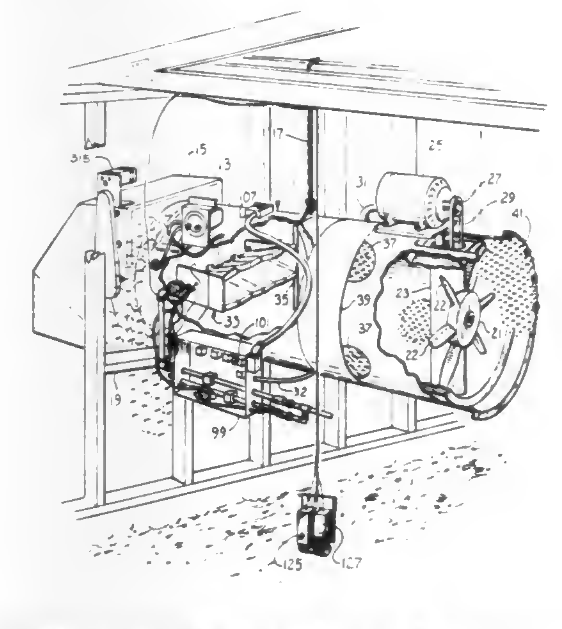
a ceramic body formed with passages for a hot combustion gas and combustion-sustaining air separated by ceramic walls through which indirect heat exchange between said air and said gas is effected, the air passages communicating with a burner for liquid fuel vaporized at least in part by heat of said air to permit combustion of the vaporized fuel in said air and production of said hot combustion gas; and

heating means on said body for preheating same prior to the inception of combustion for initial preheating of said air and prior to the passage of air through said body.



4,369,030
SYSTEM FOR CONTROLLED HEATING AND VENTILATING OF POULTRY HOUSES

Frank J. Siccardi, P.O. Box 242, Farmington, Ark. 72730
Continuation-in-part of Ser. No. 97,612, Nov. 27, 1979, Pat. No. 4,278,423. This application May 26, 1981, Ser. No. 266,638
Int. Cl.^{3} F27B *9/40;* **F24H** *1/00;* **F28F** *27/00*
U.S. Cl. 432—37 **14 Claims**



1. A heating-ventilating system for a poultry house with adjustable curtains for ventilation comprising

an air duct having an air intake and an exhaust opening,

a fan mounted near the exhaust opening therein,

a fuel burner mounted in said duct,

a starter fuel jet therefor,

a temperature sensor adapted to be placed in said poultry house out of the direct air flow from said fan,

means for controlling said fuel burner to operate only in response to a low temperature condition of said temperature sensor,

means for controlling said fan to operate in response to said temperature sensor,

a flame sensor in proximity to said starter fuel jet,

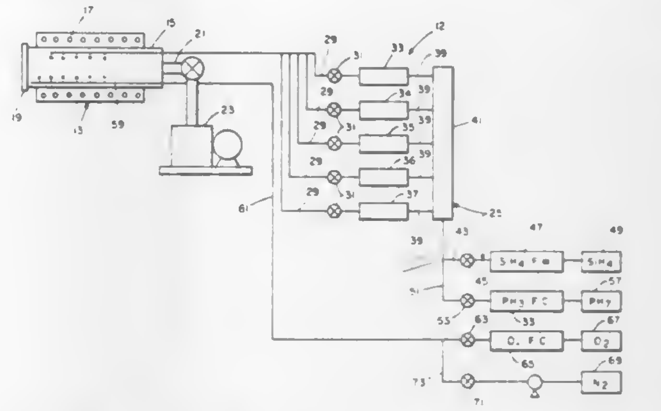
a valve for said fuel burner and control means for operating said valve responsive to said flame sensor,

a motor for raising and lowering said adjustable curtains, and

means for controlling said motor to raise said curtains when said burner is operative and to lower said curtains when said burner is inoperative and said fan is operative.

4,369,031
GAS CONTROL SYSTEM FOR CHEMICAL VAPOR DEPOSITION SYSTEM

Jon C. Goldman, Orange, and Robert E. Rappaport, Westminster, both of Calif., assignors to Thermco Products Corporation, Orange, Calif.
Filed Sep. 15, 1981, Ser. No. 302,003
Int. Cl.^{3} F27B *5/04;* **F27D** *19/00;* **B05C** *19/02*
U.S. Cl. 432—198 **14 Claims**



1. In a gas system the combination comprising a pair of controlled sources of gases to be mixed and introduced into a reaction zone, one of said gas sources being controlled by a source mass flow controller and the other source having a mass flow meter which provides an error signal when the flow through said meter departs from a preselected setpoint flow, said sources being connected to a mixing manifold for mixing said gases downstream of said controller and said meter, a plurality of gas injectors for delivering said mixed gases to areas in said reaction zone, said injectors being connected to said mixing manifold with mass flow controllers for controlling the flow of mixed gases to each of said injectors, said injector mass flow controllers being regulated by a common control having means to deliver a selected portion of the total flow through each of the various injectors under conditions of varying total flow of said mixed gases, said error signal being applied to said common control for said injector mass flow controllers to regulate said total flow of mixed gas to cause said flow through said meter to conform to said setpoint value.

4,369,032
REHEAT FURNACE

Kenneth F. Lowrance, II, Dyer, and Ferdinand Fiacco, Hebron, both of Ind., assignors to Inland Steel Company, Chicago, Ill.
Continuation of Ser. No. 54,007, Jul. 2, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,372
Int. Cl.^{3} F27D *1/00*
U.S. Cl. 432—247 **7 Claims**

1. A reheat furnace comprising:

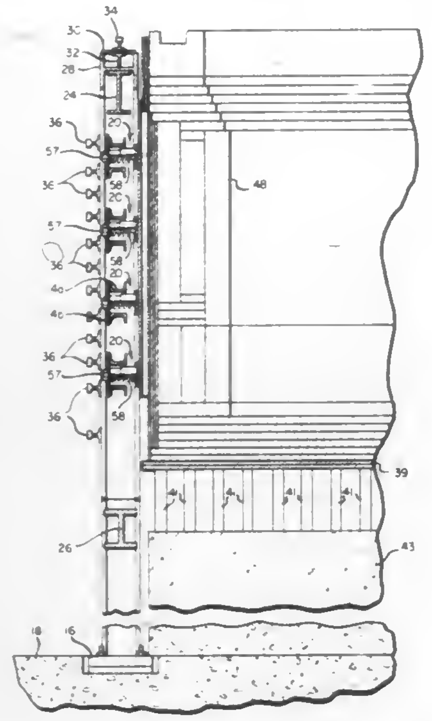
a rigid frame;

upright wall means defining a refractory element lined cavity disposed within said frame, said wall means including a binder structure between said refractory elements and said frame for limiting the relative movement of said refractory elements with respect to each other;

resilient means engaging said rigid frame and said binder structure for movably supporting said binder structure and resiliently urging said binder structure inwardly of said cavity, said resilient means being yieldable to accomodate deflection of said binder structure toward said frame without overloading the latter; and

sheild means disposed above said resilient means for protecting said resilient means from debris;

said shield means comprising a pair of shield members, one of said shield members being mounted on said frame and the other of said shield members being mounted on said binder structure, said shield members extending toward each other and overlapping with clearance therebetween



so as to maintain protection of said resilient means during deflection of said binder structure even when said binder structure is not parallel to said frame.

4,369,033

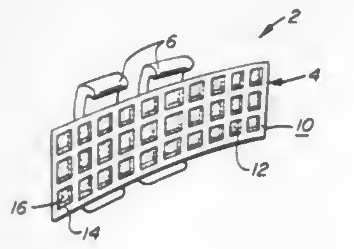
ORTHODONTIC BRACKET ASSEMBLY

David E. Webb, Jamul, and Lawrence F. Andrews, San Diego, both of Calif., assignors to "A"-Company, Inc., San Diego, Calif.

Filed Nov. 3, 1980, Ser. No. 203,826

Int. Cl.^{3} A61C *3/00*

U.S. Cl. 433—9 **8 Claims**



1. A cast orthodontic bracket for bonding to the surface of a tooth comprising:

an archwire bracket portion adapted to receive an archwire;

a pad portion attached to said archwire portion and having a tooth abutting surface opposite said archwire portion;

said tooth abutting surface having a plurality of cavities formed therein, said cavities having a top opening, a circumferential sidewall, and a bottom, said sidewall extending downwardly and outwardly toward said bottom and away from a central portion of said cavity so said cavity is smaller in all directions at said top than at said bottom; and

said cavities having irregular surfaces, a substantial portion of the remainder of said tooth abutting surface and of the surface of said bracket being a relatively smooth surfaces produced when said bracket is tumbled in an abrasive medium adapted so as not to smooth said irregular surfaces of said cavities.

4,369,034

DEVICE FOR PREVENTING THE INGRESS OF WATER INTO THE HEAD OF A DENTAL CONTRA-ANGLE

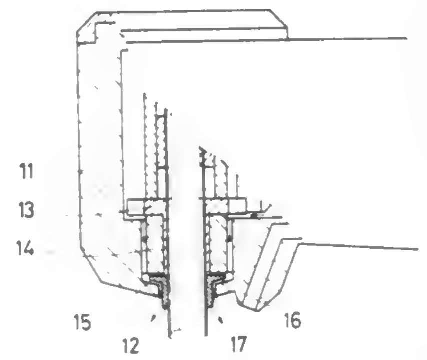
Marcel Garnier, Besancon, and Michel Seigneurin, St. Cergue, Douvaine, both of France, assignors to Micro-Mega S.A., France

Filed Apr. 22, 1981, Ser. No. 253,649

Claims priority, application France, May 13, 1980, 80 10722; Oct. 10, 1980, 80 21687

Int. Cl.^{3} A61C *1/05*

U.S. Cl. 433—115 **5 Claims**



1. A device for preventing the ingress of water into the head of a dental contra-angle in which the tool clamping chuck is rotatably driven, the head end on the tool side being closed by a wall in which a hole is formed to permit the passage of the tool, wherein the device comprises a cylindrical ring seal having a bore consistent with the tool shank diameter, said ring seal being adapted to turn with the shank and to be fitted within said head in axial alignment with said chuck, in the space left between said end wall and the outer end of said chuck, said ring seal extending with a relatively small clearance through said tool passage hole and being retained in said space by an integral flange having a greater diameter than said hole.

4,369,035

PROCESS AND APPARATUS FOR LIQUID TREATMENT OF FIBER MATERIAL

Fritz Karrer, Stockholm, Sweden; Alberto Pedretti, Rome, Italy, and Per G. Mellgren, Pointe Claire, Canada

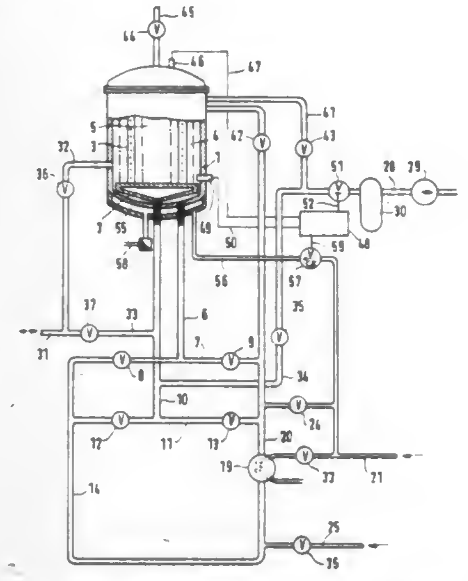
PCT No. PCT/EP80/00048, § 371 Date Mar. 5, 1981, § 102(e) Date Mar. 5, 1981, PCT Pub. No. WO81/00266, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 11, 1980, Ser. No. 243,955

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2928012; Oct. 5, 1979, 2940470

Int. Cl.^{3} D06L *3/00*

U.S. Cl. 8—101 **12 Claims**



1. Process for the liquid treatment of fiber material, of yarn, or textile piecegoods, or paper goods, wherein the fiber material is brought into a container and the fluid in preheated state is filled into the container, after the container has been evacuated, with the fiber material being impregnated thereby, including the step of controlled continuous partial topical evaporation to impart a motion to the fluid and thus bringing the fluid to act upon the fiber material without the requirement for mechanically induced flow.

4,369,036

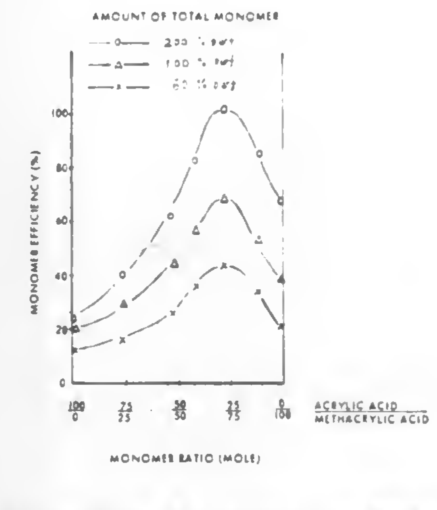
METHOD OF MODIFYING SYNTHETIC OR NATURAL POLYAMIDE PRODUCTS

Koichi Saito, Kusatsu; Tatsuku Kojima, Uji, and Yoshikazu Kosaka, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,032

Int. Cl.^{3} D06M *15/14*

U.S. Cl. 8—115.5 **12 Claims**



1. A method of modifying a synthetic polyamide product wherein a synthetic polyamide product is modified by means of graft polymerization is carried out on said product using a redox catalyst in an aqueous solution containing 5 to 60 mole% of acrylic acid and 95 to 40 mole % of methacrylic acid as the monomer and thereafter a carboxylic acid group in the product is converted into metal or ammonium salt thereof.

4,369,037

HAIR TREATMENT COSMETICS CONTAINING CATIONIC KERATIN DERIVATIVES

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

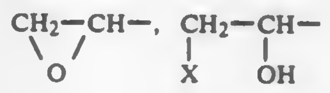
Filed Nov. 5, 1981, Ser. No. 318,419

Claims priority, application Japan, Nov. 19, 1980, 55-162900; Nov. 20, 1980, 55-163784

Int. Cl.^{3} C07G *7/00;* **C08H** *1/06*

U.S. Cl. 8—127.51 **8 Claims**

1. A cationic keratin derivative which is obtained by reacting a part or whole of functional groups of keratin with a cationizing agent which contains in its molecule a group or groups of the formula



or $CH_2{=}CH-$

wherein X represents a halogen atom, and a quaternary nitrogen atom.

4,369,038

TRANSFER-PRINTING PAPER, ITS MANUFACTURE AND USES

Wolfgang Mehl, Geneva, Switzerland, assignor to Ciba-Geigy Ltd., Basel, Switzerland

Filed Mar. 10, 1980, Ser. No. 128,420

Claims priority, application Switzerland, Mar. 12, 1979, 2316/79; Aug. 9, 1979, 7309/79

Int. Cl.^{3} B41M *3/12*

U.S. Cl. 8—471 **15 Claims**

1. Auxiliary supports of cellophane or paper carrying one or more pigments or dyestuffs which contain at least three benzenoid rings and which, at atmospheric pressure, change into the vapour state below 320° C., without substantial decomposition, characterised in that they comprise dyestuffs or pigments which are free from highly ionic groups—and which, at atmospheric pressure and in a transfer time of 35 seconds at 205° C. on cotton containing 8 to 10% of polyethylene glycol, give transfers, the optical density of which is (a) between 0.15 and at most 0.75 when the dyestuffs are present in amounts of 0.6 g to 1.2 g per m^2 in the coloured zone of the auxiliary support, and (b) less than half the density obtained with these same dyestuffs under the same transfer conditions, but at 235° C., a temperature at which under 50–120 mbar the said dyestuffs yield transfer prints with an optical density comparable to conventional transfer paper prints at 205° C. under atmospheric pressure.

4,369,039

DYEING OF POLYOLEFINS

Don M. Coates, Midlothian, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 11, 1982, Ser. No. 338,616

Int. Cl.^{3} D06P *1/645, 3/79, 1/653*

U.S. Cl. 8—513 **5 Claims**

1. An improved process for dyeing articles of unmodified polyolefin polymer, of the type wherein an aqueous dispersion, which is formed with a solvent dye dissolved in an organic liquid, is applied to the article and then the article is dried, wherein the improvement comprises the aqueous dispersion containing a fatty-acid-soluble dye, a fatty acid having 14 to 20 carbon atoms, and an amine having a pKa of at least 9 and a normal boiling point in the range of 50° to 150° C. the amine and acid being in a molar ratio of at least 2:1, and after applica-

tion of the dispersion to the article, volatilizing the amine therefrom.

4,369,040

HIGHLY CONCENTRATED, STORAGE-STABLE AND HEAT-RESISTANT, FLOWABLE AQUEOUS DISPERSION OF ACTIVE INGREDIENTS WHICH ARE SPARINGLY SOLUBLE OR INSOLUBLE IN WATER

Hans D. Kirner, Pratteln, and Jacques Wegmann, deceased, late of Bettingen, Switzerland (by Ruth Wegmann, Alex Wegman, Yvonnne Wegmann, heirs), assignors to Rohner AG Pratteln, Pratteln, Switzerland

Filed Feb. 20, 1981, Ser. No. 236,516

Claims priority, application Switzerland, Feb. 22, 1980, 1454/80

Int. Cl.^{3} C09B *67/04, 67/46, 67/40*

U.S. Cl. 8—527 **7 Claims**

1. A highly concentrated, storage-stable and heat-resistant, flowable, aqueous dispersion of active ingredients which are sparingly soluble or insoluble in water, which contains:

(a) from 30 to 60% by weight of one or more active ingredients which are sparingly soluble or insoluble in water and have a mean particle size of less than 5μ, said active ingredients being selected from the group consisting of dyes, dye intermediates, pigments and optical brighteners,
(b) from 0.1 to 5% by weight of a water-soluble poly-N-vinyl-lactam or a water-soluble copolymer of two or more different N-vinyl-lactams or a water-soluble copolymer of one or more N-vinyl-lactams and one or more other compounds copolymerizable with the N-vinyl-lactam,
(c) from 0.1 to 5% by weight of one or more water-soluble alkali metal salts or ammonium salts of an aromatic monosulfonic acid, disulfonic acid or trisulfonic acid, which acid may be substituted by alkyl groups of up to 8 carbon atoms or by a cycloalkyl group of up to 6 carbon atoms,
(d) from 0 to 30% by weight of one or more humectants and
(e) water.

4,369,041

TECHNIQUE FOR DYEING AND PRINTING OF TEXTILES WITH QUATERNARY AMMONIUM COMPOUND

Drahomir Dvorsky; Karel Cerovsky, both of Dvur Kralove nad Labem, and Jaromir Socha, Pardubice, all of Czechoslovakia, assignors to Vyzkumny ustav zuslechtovaci, Dvur Kralove nad Labem, Czechoslovakia

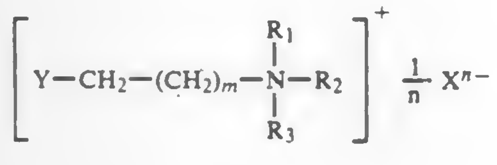
Filed May 12, 1981, Ser. No. 263,031

Claims priority, application Czechoslovakia, May 12, 1980, 3285-80; Jul. 1, 1980, 4685-80; Jul. 16, 1980, 5030-80

Int. Cl.^{3} C09B *67/00*

U.S. Cl. 8—532 **13 Claims**

1. Method for dyeing textile materials comprising cellulose fibers and blends thereof with polyester fibers which comprises the steps for dyeing said fibers and subjecting the dyed fibers to a high temperature fixation characterized in that the textile material is exposed to the action of a quaternary ammonium compound and an ammonia releasing substance selected from the group consisting of hexamethylene tetramine and ammonium carbonate at a temperature within the range of 180°-230° C., said quaternary ammonium compound being of the formula



$$\left[\begin{array}{c} \quad R_1 \\ Y-CH_2-(CH_2)_m-\overset{|}{\underset{|}{N}}-R_2 \\ \quad R_3 \end{array}\right]^{+} \frac{1}{n} X^{n-}$$

wherein

X is an anion of a strong acid,
Y represents a halogen atom,
n is an integer from 1-3,
m is an integer from 1-4,
R_1 and R_3 are selected from the group consisting of an alkyl group, a hydroxyalkyl group and a hydrogen atom, said alkyl and hydroxyalkyl having from 1-5 carbon atoms, and
R_2 is selected from the group consisting of an alkyl group, a hydroxyalkyl group, each of which has from 1-20 carbon atoms, an alkylaryl group having from 7-26 carbon atoms, and an aryl group of 6, 10 or 12 carbon atoms.

4,369,042

FUEL BRIQUETS

Hans G. Schäfer, Aachen; Axel Vogts, Eschweiler; Günter Poppel, Düren-Niederau, and Horst Schürmann, Düren, all of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Aug. 3, 1981, Ser. No. 289,527

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 3031630

Int. Cl.^{3} C10L *5/10*

U.S. Cl. 44—15 R **13 Claims**

1. Fuel briquets containing binding agents and additives, obtained by briquetting of approximately 80 to 99% by weight of an essentially solid fuel, approximately 0.1 to 19% by weight of a natural or synthetic binding agent and approximately 0.1 to 10% by weight, calculated on a dry basis, of a cationic resin obtained by reacting polyamines with halohydrin.

4,369,043

PROCESS FOR THE PREPARATION OF HIGH OCTANE VALUE SUBSTITUTE FUEL FOR A SPARK IGNITION TYPE INTERNAL COMBUSTION ENGINE

U. Yeon Han, Inchon, Rep. of Korea, assignor to Korea Kef Oil Industrial Co., Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 186,644, Sep. 12, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,492

Claims priority, application Rep. of Korea, Feb. 27, 1980, 804/76

Int. Cl.^{3} C10L *1/18*

U.S. Cl. 44—53 **.2 Claims**

1. A liquid fuel composition comprising in proportions by volume:

65.0% methanol;
0.6% stearic acid;
5.0% benzene;
20.0% water;
0.3% water+dextrin;
0.1% phenol;
5.0% of an accelerant comprising a mixture in proportions by weight of:
  0.70% of stearic methyl dichloride,
  0.35% ethylene dichloride,
  0.85% xylene,
  2.50% acetone and 0.57% aluminum stearate+acetone (1:40),
  0.02% lead acetate; and
4.0% antiknocking agent comprising oxalic acid (1 Kg)+dimethyl ether (20 liters).

4,369,044

LEVELING SYSTEM FOR DRY SEAL GASHOLDERS

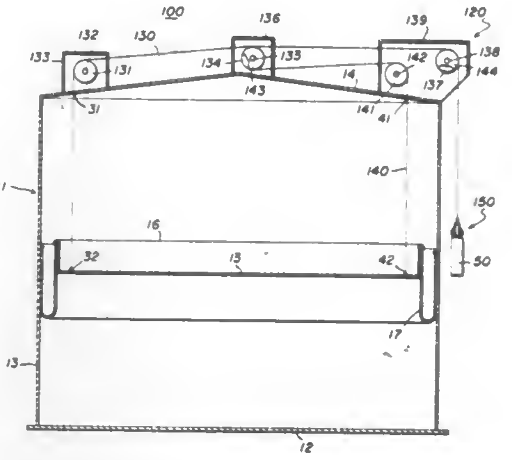
Milton W. Heisterberg, Flossmoor, Ill., assignor to GATX Tank Erection Corporation, Chicago, Ill.

Filed Mar. 23, 1981, Ser. No. 246,714

Int. Cl.^{3} F17B *1/18*

U.S. Cl. 48—176 **14 Claims**

1. In a piston leveling system for a cylindrical storage tank with a vertically movable piston, wherein the leveling system includes a vertically movable weight disposed outside the tank and adapted to be coupled to two spaced-apart support points on the piston respectively by two elongated flexible connectors, the improvement comprising: a coupling member, first means pivotally connecting the flexible connectors to said coupling member respectively at two spaced-apart connector attachment points thereon, second means pivotally connecting the weight to said coupling member at a weight attachment point thereon between and substantially equidistant from said connector attachment points, and indicating means for indicating whether or not said connector attachment points are in horizontal alignment.



4,369,045

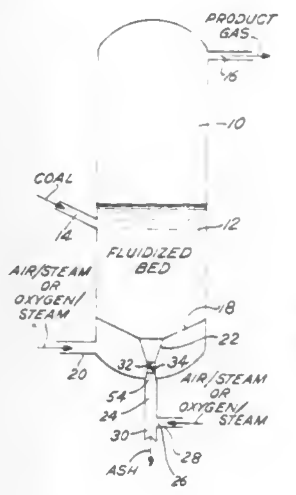
FLUIDIZED BED GASIFICATION PROCESS WITH AGGLOMERATED SOLIDS REMOVAL

Karl S. Vorres, Western Springs, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jul. 29, 1981, Ser. No. 288,158

Int. Cl.^{3} C10J *3/54*

U.S. Cl. 48—197 R **9 Claims**



1. A process for the conversion of solid hydrocarbonaceous particles to valuable gaseous components in a fluidized bed and withdrawing agglomerated solids from the bottom of the fluidized bed which comprises:

(a) passing said solid hydrocarbonaceous particles into said fluidized bed;
(b) contacting said solids with an upward flowing gaseous medium at conditions sufficient to form gaseous fuel components by a gasification reaction between the solids and the gaseous medium;
(c) passing a high velocity gas stream upward into the bottom of said fluidized bed through a venturi passage having an upwardly extending cone portion and a central constricted opening to contact and react with the solid material in the bottom portion of the fluidized bed at conditions sufficient to form agglomerated solids;
(d) withdrawing the agglomerated solids through said central constricted opening, said opening having at least one spiral ridge positioned on the interior surface of said constricted opening thereby permitting an increased rate of solid discharge through said passage and facilitating improved separation of agglomerated solids from unreacted solid hydrocarbonaceous material.

4,369,046

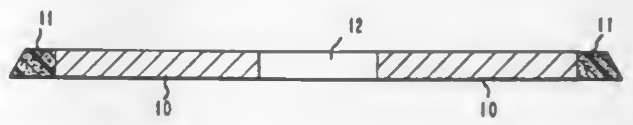
PROCESS FOR MAKING AN ABRASIVE GRINDING WHEEL

Dieter K. Bruschek, and Richard M. Levering, both of Wilmington, Del., assignors to Abrasives International N.V., Curacao, Netherlands

Continuation of Ser. No. 48,903, Jun. 15, 1979, abandoned, which is a continuation of Ser. No. 857,891, Dec. 6, 1977, abandoned, which is a continuation of Ser. No. 665,549, Mar. 10, 1976, abandoned. This application Oct. 10, 1980, Ser. No. 196,070

Int. Cl.^{3} C09K *3/14*

U.S. Cl. 51—298 **10 Claims**



1. A process for making an abrasive grinding wheel having a substantially homogeneous organic resin-bonded phase rim containing inert abrasive particles and a substantially homogeneous metal-bonded phase core so bonded together at their annular interface as to resist delamination as the rim is consumed during the useful life of the instrument which comprises precompacting

(a) said organic resin-bonded phase containing dispersed abrasive particles from a moldable resin mixture of between 100 volume percent and about 30 volume percent, based upon moldable material in said resin-bonded phase, of a substantially linear coalescible polyimide polymeric powder and, complementally, of up to about 70 volume percent of a moldable metal powder, based upon moldable material in said resin-bonded phase and
(b) said metal-bonded phase from a moldable metal mixture of between 100 volume percent and about 70 volume percent of moldable metal powder, based upon moldable material in said metal-bonded phase, and complementally, of up to about 30 volume percent, based upon moldable material in said metal-bonded phase, of a substantially linear coalescible polyimide polymeric powder,

to provide a preform unit wherein said phases are in interfacial contact along said annular interface, said moldable resin mixture being first pre-formed in a mold followed by pre-forming said moldable metal mixture in contact with said pre-formed moldable resin mixture in said mold, initially heating said preform unit to a temperature of about 100° C. to 300° C. in a vacuum for a time between fifteen minutes and five hours, and thereafter further heating said initially heated preform unit to a temperature of between about 350° C. and about 500° C. and conjointly applying a pressure to said further heated preform unit of between about 4,000 psi and about 50,000 psi for a period sufficient to cause coalescence of both said moldable resin and metal mixtures, and thereafter cooling the resulting shaped structure.

4,369,047

GAS SEPARATION FROM CRUDE OIL

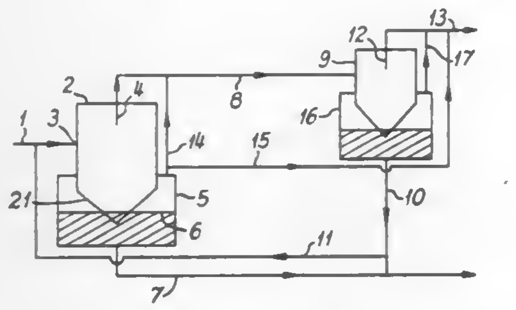
Hedley C. Arscott, Wallington; Jiri R. Nebrensky, East Molesey, and Christopher J. Wilson, Carshalton, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 960,714, Nov. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 917,791, Jun. 22, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 144,965

Claims priority, application United Kingdom, Jun. 23, 1977, 26305/77

Int. Cl.³ B01D *21/26*

U.S. Cl. 55—38 **5 Claims**



2. A process for separating a feed comprising crude oil containing gas dispersed therein so that the liquid is in the continuous phase into a liquid containing not more than 10% by volume of gas and a gas containing not more than 200 ppm by volume of liquid oil which process comprises:

(a) passing the feed under a pressure gradient into a first separator disposed substantially vertically, the first separator comprising a first vessel having an inlet for feed disposed so that feed introduced under a pressure gradient is caused to form a downwardly flowing vortex of liquid from which an upwardly flowing vortex of gas separates, the inlet having means for controllably adjusting the size thereof, an upper outlet for the vortex of gas comprising a pipe extending downwardly into the first vessel from the top thereof herein referred to as a vortex finder, the ratio of the diameter of the vortex finder to the diameter of the vessel in the region of the inlet being between about 0.40 and about 0.80, a lower outlet for the liquid, the first vessel having located therein below the inlet a downwardly extending conical surface for the downwardly flowing vortex of liquid, the vessel having an enlarged lower portion, the walls of the enlarged lower portion of the first vessel being spaced apart from the conical surface to define therebetween a disengaging chamber, the volume of which is at least equal to the volume defined by the conical surface, the disengaging chamber having an outlet for the discharge of separated gas and means for maintaining a minimum liquid level in the disengaging chamber to reduce the gas entrainment in the liquid discharge therefrom, and wherein there is located in the region of the lower end of the conical surface one or more baffles to engage the downwardly flowing vortex of liquid, and collecting the liquid containing not more than 10% by volume gas, and either

(b) passing the gas under a pressure gradient into a second separator disposed substantially vertically, the second separator comprising a second vessel having an inlet for feed disposed so that feed introduced under a pressure gradient is caused to form a downwardly flowing vortex of liquid from which an upwardly flowing vortex of gas separates, the inlet having means for controllably adjusting the size thereof, an upper outlet for the vortex of gas comprising a pipe extending downwardly into the second vessel from the top thereof herein referred to as a vortex finder, the ratio of the diameter of the vortex finder to the diameter of the vessel in the region of the inlet being between about 0.40 and about 0.80, a lower outlet for the liquid, the second vessel having located therein below the inlet a downwardly extending conical surface for the downwardly flowing vortex of liquid, the vessel having an enlarged lower portion, the walls of the enlarged lower portion of the second vessel being spaced apart from the conical surface to define therebetween a disengaging chamber, the volume of which is at least equal to the volume defined by the conical surface, the disengaging chamber having an outlet for the discharge of separated gas and means for maintaining a minimum liquid level in the disengaging chamber to reduce the gas entrainment in the liquid discharge therefrom, and wherein there is located in the region of the lower end of the conical surface one or more baffles to engage the downwardly flowing vortex of liquid, and withdrawing the gas containing less than 200 ppm by volume of liquid oil from the second vessel, or

(c) passing the gas into a gas scrubber to remove liquid oil therefrom and yield a gas containing less than 200 ppm by volume of liquid oil.

4,369,048

METHOD FOR TREATING GASEOUS EFFLUENTS EMITTED FROM A NUCLEAR REACTOR

Dallas T. Pence, 10665 Loire Ave., San Diego, Calif. 92131, assignor to Dallas T. Pence, San Diego, Calif.

Filed Jan. 28, 1980, Ser. No. 115,671

Int. Cl.³ 55 *DIG. 9;* C01B *23/00*

U.S. Cl. 55—66 **13 Claims**

1. In a process for treating the gaseous effluent emitted from a nuclear reactor, said effluent comprising hydrogen in gaseous admixture with krypton and xenon, a method for separating the hydrogen component of said gaseous effluent, comprising the step of directing said effluent through a column having absorbent material disposed therethrough and while maintaining said effluent at no greater than about ambient temperature and at about ambient pressure, said absorbent material comprising a synthetic mordenite zeolite.

4,369,049

VERTICAL DRIP SEPARATOR APPARATUS AND METHOD

Rodney T. Heath, 4901 E. Main St., Farmington, N. Mex. 87401

Filed Jan. 11, 1982, Ser. No. 338,515

Int. Cl.³ B01D *51/00*

U.S. Cl. 55—80 **13 Claims**

12. The method of separation of liquids from natural gas at a well head comprising the steps of:

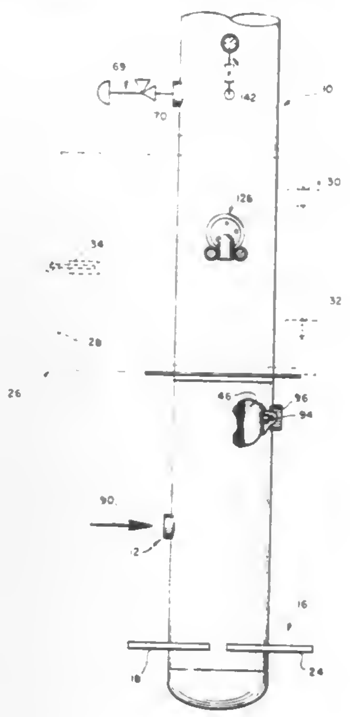
flowing natural gas from a supply line connected to the well head into a lowermost compartment located in the ground beneath the frost line to prevent freezing of liquids therewithin;

accumulating liquids in the bottom of the lowermost compartment until the liquids reach a predetermined maximum level while causing the natural gas to flow upwardly to an uppermost compartment located above ground level;

causing the natural gas to apply pressure to the upper surface of liquids accumulated in the bottom of the lowermost compartment when the liquids reach the predetermined maximum level and using only the pressure of the natural gas to cause upward flow of liquids to the uppermost compartment until the level of accumulated liquids is reduced below the predetermined maximum liquid level;

accumulating liquids in the uppermost compartment until there is a predetermined maximum liquid level therein while enabling upward flow of gas therein to a gas outlet opening therein and then removing liquids from the uppermost compartment until there is less than the predetermined maximum liquid level therein; and

heating the accumulated liquids in the uppermost compartment to prevent freezing thereof.



4,369,050

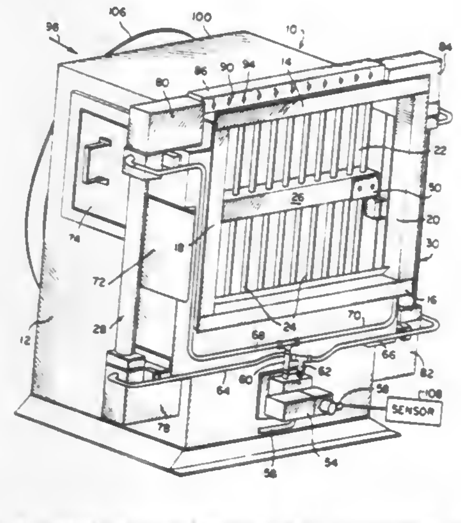
SELF CLEANING PAPER TRAP

William L. Leist, Middleton Village, N.J., assignor to The G. A. Kleissler Company, Edison, N.J.

Filed Mar. 19, 1981, Ser. No. 245,332

Int. Cl.³ B01D *46/48, 49/00*

U.S. Cl. 55—283 **14 Claims**



1. In a sheet material trap suitable for installation in an opening in the duct of an air handling system, the combination of

a housing including front and rear mountings, said front and rear mountings being connectable to the duct at each side of the opening,

the front and rear mountings defining a duct aligned air passage through the housing;

grid bar means having means affixed in the housing to obstruct part but not all of the said air passage,

said grid bar means comprising bars adapted to engage sheet materials travelling through the duct to prevent passage through the housing;

a wiper bar means reciprocal relative to said grid bar means to move the engaged sheet materials out of the air passage; and

actuator means to automatically reciprocate said wiper bar means, the actuator means comprising a spaced pair of actuators, each of said actuators including a cable secured to a portion of the wiper bar means to simultaneously move the wiper bar means in response to the occurrence of a predetermined condition.

4,369,051

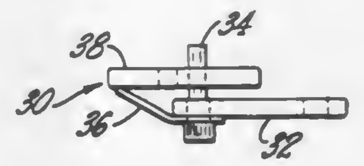
APPARATUS FOR HANDLING LINEAR ELEMENTS

Kantilal R. Parbhoo, Reynoldsburg, Ohio, and Fred McMinn, Pendleton, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 30, 1981, Ser. No. 288,387

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—10.1 **7 Claims**



1. Apparatus for producing continuous mineral filaments comprising:

a. means for supplying streams of molten mineral material for attenuation into filaments which are gathered into strands;

b. means for coating the filaments;

c. a guide member for gathering the filaments into side-by-side strands, the guide member having a locating hole;

d. support means for holding the guide member normal to the side-by-side strands, the support means comprising a support member, a pin member extending upwardly from the support member for positioning the guide member thereon at the locating hole, and an adjustable member extending from the support member and adapted to support the guide member so that the guide member is held normal to the side-by-side strands and above the support member by the pin and the adjustable member; and

e. means for attenuating the streams into fibers.

4,369,052

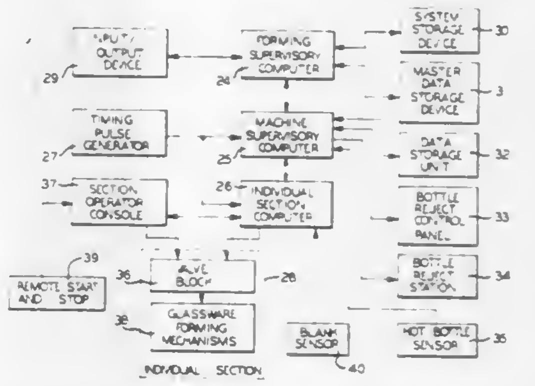
FORMING SUPERVISORY CONTROL MEANS FOR GLASSWARE FORMING MACHINES

Paul A. Hotmer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 19, 1981, Ser. No. 245,249

Int. Cl.³ C03B *9/40*

U.S. Cl. 65—160 **5 Claims**



1. A control system for a plurality of glassware forming machines each having a plurality of individual glassware forming sections, each section including glassware forming mechanisms for forming glassware articles from gobs of molten glass in a series of predetermined forming steps in response to a plurality of control signals and control means for generating the control signals, the control system comprising:

a first storage means for storing control programs defining the series of predetermined forming steps and for storing operating information from the individual sections;

a plurality of individual section control means, individual to each of the individual sections, for generating control signals to the glassware forming means in accordance with the control program and for generating operating signals representing operations of the glassware forming means;

a plurality of machine supervisory control means, each connected to one or more of said plurality of said individual section control means associated with one of the plurality of glassware forming machines, for loading said control programs into and reading said operating signals from said associated individual section control means; and

a forming supervisory control means connected between said first storage means and each of said machine supervisory control means for loading said control programs from said first storage means into said machine supervisory control means and for reading said operating signals from said machine supervisory control means into said first storage means.

4,369,053

ARRANGEMENT FOR ADJUSTING THE MASS OF THERMOPLASTIC GOBS FOR A MOLDING MACHINE

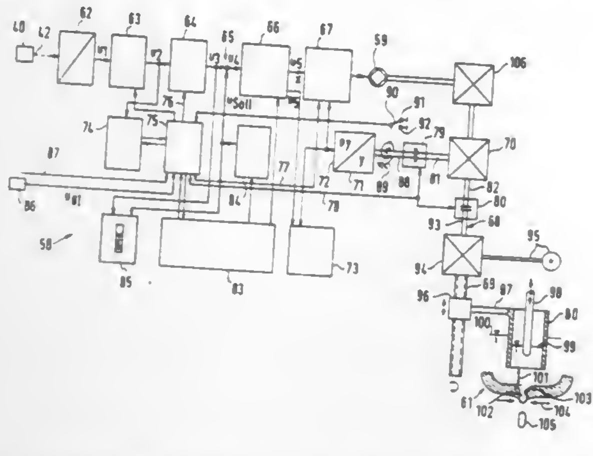
Kurt Becker, Obernkirchen; Gerhard Geisel, Bückeburg; Siegfried Schwarzer, Stöckse, and Hans-Georg Seidel, Rinteln, all of Fed. Rep. of Germany, assignors to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,852

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040762

Int. Cl.^{3} C03B *7/08, 7/14*

U.S. Cl. 65—164 **14 Claims**



1. An arrangement for adjusting the mass of gobs of thermoplastic material, especially molten glass, which are severed one after the other off a cord of the material issuing from a feeder, fed into the mold of a molding machine and by means of a pressing member which penetrates into the gobs deformed in a positive manner, with the maximum penetration depth achieved by the pressing member during each operating cycle being mechanically detected by a distance transducer, the distance transducer being connected to a metallic actuating element for a differential transformer at whose output is produced an electrical signal which is proportional to such respective maximum penetration depth and which is applied to a regulating circuit for control of a dosing structure which adjusts the mass of the gobs, characterized in that,

in the regulating circuit an output of the differential transformer is connected to a measurement transducer whose output is connected to a maximum-value storage, the output of the latter being connected to a sample-and-hold circuit whose output is connected via a summing junction to a PI- or PID-regulator, the output of the latter being connected to an adjusting motor which adjusts the dosing structure, furthermore including a drive train between the adjusting motor and an adjusting member for the dosing structure, the drive train being connected to a feedback transducer to which there is connected a rotary-angle-to-voltage transducer whose output is connected to the PI- or PID-regulator, the arrangement furthermore including a control and display panel connected to transmit signals to and receive signals from a control logic circuit, the control logic circuit having outputs connected to the maximum-value storage and to the sample-and-hold circuit, the control logic circuit having an input for receipt of a synchronizing signal derived from the operating cycles of a molding machine, the control and display panel being connected to means providing a desired-value voltage representing the optimum penetration depth for the pressing member, the desired-value voltage being applied to the summing junction.

4,369,054

FIBER/SLAG COMPOSITION

Leavie J. Shinholster, Jr., Rte. #4, Box 172, Northport, Ala. 35476, and Charles H. Tully-Wilkins, 277 Woodland Hills, Tuscaloosa, Ala. 35405

Continuation-in-part of Ser. No. 878,807, Feb. 17, 1978, abandoned. This application Nov. 27, 1978, Ser. No. 963,732

Int. Cl.^{3} C05F *11/00;* **A01C** *1/00;* **C10L** *5/40;* **D21H** *3/66*

U.S. Cl. 71—25 **22 Claims**

1. A composition comprising an interlocking admixture of pulped fibers and a slag characterized by an open pore structure.

4,369,055

COATED GRANULAR FERTILIZER CAPABLE OF CONTROLLING THE EFFECT OF TEMPERATURE UPON DISSOLUTION-OUT RATE

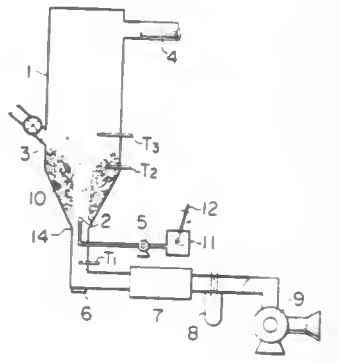
Toshio Fujita; Chigo Takahashi; Shigemitsu Yoshida, all of Fujishi, Japan, and Hirozo Shimizu, deceased, late of Iseharashi, Japan (by Fumiko Shimizu, executrix), assignors to Chissoasahi Fertilizer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 108,572, Dec. 31, 1979, abandoned, which is a continuation of Ser. No. 931,428, Aug. 7, 1978, abandoned. This application Sep. 3, 1981, Ser. No. 299,203

Claims priority, application Japan, Jan. 9, 1978, 53/980

Int. Cl.^{3} C05C *5/02*

U.S. Cl. 71—64.11 **1 Claim**



1. A coated granular fertilizer in which the influence of percentage of dissolution-out of the fertilizer component is controllable as a function of temperature; said fertilizer comprising solid fertilizer particles having a coating of controlled moisture permeability; said coating consisting essentially of:

(A) 20–60% by weight, based on the total weight of the coating, of a resinous material, and

(B) 40–80% by weight of finely divided, water-insoluble inorganic powder which is selected from the group consisting of talc, silica, calcium carbonate, diatomaceous earth, clay, Al_2O_3, MgO, CaO, and Fe_2O_3, said powder being uniformly distributed in said resinous material and having a particle size of $0.01\mu \sim 40\mu$; said resinous material (A) comprising at least 50% by weight based on the total amount of resinous material of a first component (M) selected from the group consisting of polyethylene, polypropylene, ethylene-propylene copolymer, ethylenevinyl acetate copolymer, polyvinylidene and vinylidene chloridevinyl chloride copolymer and a second component (N) selected from the group consisting of polystyrene and various waxes in an amount of from 0 to 50% by weight of the resinous material, said coating being formed by spraying a hot solution of said coating in a solvent onto said solid fertilizer particles, said solution of coating in solvent being characterized by being in a liquid state while hot but turning into a gel when cooled; and drying the coating instantaneously on the spot with hot air.

4,369,056

SUBSTITUTED PYRAZOLYLMETHYL-HALOACETANILIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Rudolf Thomas, Wuppertal; Thomas Schmidt, Haan; Jörg Stetter, Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

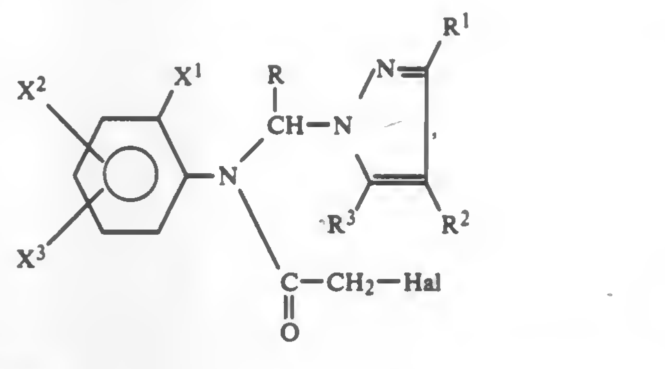
Continuation of Ser. No. 59,084, Jul. 19, 1979, abandoned. This application May 27, 1980, Ser. No. 153,310

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835156

Int. Cl.^{3} A01N *43/56;* **C07D** *231/12, 231/16, 231/18*

U.S. Cl. 71—92 **31 Claims**

1. Substituted N-pyrazolylmethyl-haloacetanilide compound of the formula



(I)

wherein

Hal is halogen;

R is cycloalkyl of from 3 to 6 carbon atoms, haloalkyl with up to 2 carbon atoms and up to 3 halogen atoms, alkoxyalkyl of from 1 to 4 carbon atoms in the alkyl part and from 1 to 4 carbon atoms in alkoxy part, alkenyl or alkynyl of from 2 to 4 carbon atoms each or optionally substituted phenyl the substitutents being selected from halogen, alkyl with 1 to 4 carbon atoms, haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, alkoxy and alkylthio with in either case up to 2 carbon atoms, cyano and nitro;

R^1, R^2 and R^3 are individually selected from hydrogen, alkyl, halogen or alkoxy with from 1 to 4 carbon atoms each; and

X^1, X^2 and X^3 are individually selected from hydrogen or alkyl with from 1 to 4 carbon atoms,

and the hydrochloric acid addition salts of such compounds.

31. Method of combating weeds which method comprises applying to an area of cultivation, an effective amount of a substituted N-pyrazolylmethyl-haloacetanilide compound as claimed in claim 1.

4,369,057

PLANT GROWTH INHIBITING COMPOSITION

Tsuneyuki Takeno; Tetsuji Iwasaki, both of Wakayama; Shiro Hojo, Sakaide, and Eiichi Kimura, Takamatsu, all of Japan, assignors to Kao Soap Co., Ltd. and Japan Hydrazine Company, Inc., both of Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,472

Claims priority, application Japan, Apr. 14, 1980, 55-48850

Int. Cl.^{3} A01N *43/58*

U.S. Cl. 71—92 **2 Claims**

1. A plant growth inhibiting composition comprising the choline salt of 6-hydroxy-3(2H)-pyridazinone and, as adjuvants, a polyoxyethylene oleyl ether, which is an addition product of oleyl alcohol with 2 to 35 mols of ethylene oxide, and a triethanolamine alkylsulfate having an alkyl group of 8 to 18 carbon atoms, wherein the weight ratio of said polyoxyethylene oleyl ether and triethanolamine alkylsulfate is from 1:1 to 1:0.5, and the weight ratio of said choline salt of 6-hydroxy-3(2H)-pyridazinone to said polyoxyethylene oleyl ether and triethanolamine alkylsulfate is from 1.36:1 to 5.2:1.

4,369,058

N-(HETEROCYCLICAMINOCARBONYL)ARYLSULFONAMIDES

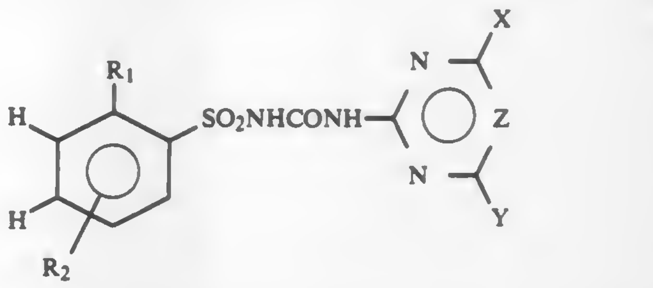
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 142,436, Apr. 21, 1980, abandoned, which is a division of Ser. No. 955,504, Oct. 27, 1978, Pat. No. 4,225,337, which is a continuation-in-part of Ser. No. 937,552, Sep. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 840,168, Oct. 6, 1977, abandoned. This application Mar. 11, 1981, Ser. No. 242,581

Int. Cl.^{3} C07D *239/69;* **A01N** *43/048*

U.S. Cl. 71—92 **37 Claims**

1. A compound selected from



(I)

wherein

R_1 is H, Cl, Br, F, alkyl of 1–4 carbon atoms, OCH_3, NO_2 or $R_{11}S(O)_m$;

R_2 is —NCO, —$NHCOOR_3$, —$NHCOSR_3$, —$NHCOR_3$, —$NHCONR_4R_5$ or —NR_6R_7;

R_3 is alkyl of 1–4 carbon atoms;

R_4 is H or CH_3;

R_5 is H, alkyl of 1–4 carbon atoms or methoxy;

R_6 is H or alkyl of 1–3 carbon atoms;

R_7 is H or alkyl of 1–3 carbon atoms; or

R_6 and R_7 taken together are

$$—(CH_2)_n— \text{or} —CH_2CH_2OCH_2CH_2—;$$

n is 4 or 5;

R_{11} is alkyl of 1–3 carbon atoms;

m is 0 or 2;

X is methyl, methoxy or ethoxy;

Y is methyl or methoxy; and

Z is CH;

provided that:

(a) when R_2 is ortho to the sulfonylureido group, then R_1 must be hydrogen and R_2 cannot —NCO;

(b) when R_5 is methoxy, R_4 is methyl;

(c) when R_2 is —NCO, the compound cannot be a salt.

4,369,059

PROCESS OF DIRECTLY REDUCING IRON OXIDE CONTAINING MATERIALS IN A ROTARY KILN

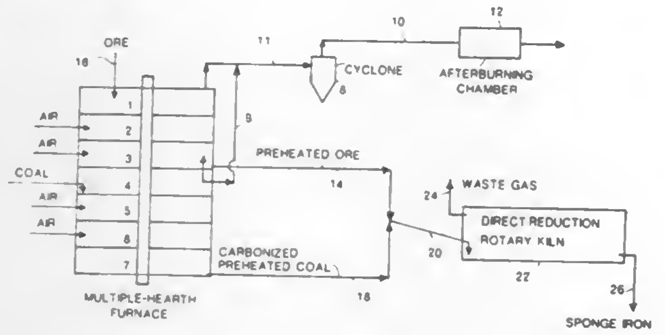
Gerd Elsenheimer, Frankfurt am Main, and Wolfram Schnabel, Hattersheim, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,958

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002225

Int. Cl.^{3} C21B *13/08*

U.S. Cl. 75—36 **4 Claims**



1. In a process of directly reducing iron oxide-containing materials by a treatment with solid carbonaceous reducing agent below the melting point of the charge in a rotary kiln, which comprises preheating the iron oxide-containing material and the carbonaceous reducing agent in a multiple-hearth furnace before they are charged to the rotary kiln and subjecting the reducing agent in the multiple-hearth furnace to an at least partial coking or an at least partial low-temperature carbonization, characterized in that the iron oxide-containing material is preheated in the upper part of the multiple-hearth furnace under substantially non-reducing conditions, the solid carbonaceous reducing agent is separately preheated in the lower part of the multiple-hearth furnace, and at least part of the gases produced by the low-temperature carbonization in the lower part are caused to flow in the upper part in a countercurrent to the iron oxide-containing material.

4,369,060

PROCESS OF REFINING OF A METAL BATH IN A CRUCIBLE WITH OXYGEN BLAST AT THE TOP AND CRUCIBLE USED

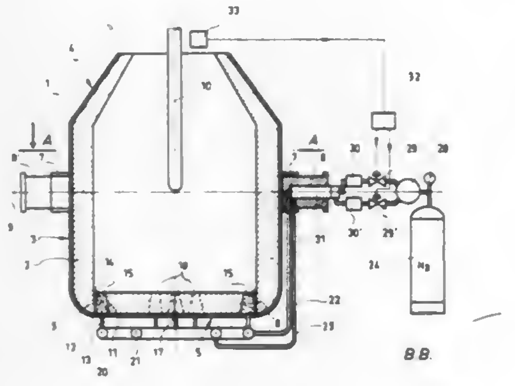
Paul Metz, Luxembourg; Francois Schleimer; Ferdinand Goedert, both of Esch; Lucien Lorang, Differdange; Romain Henrion, Esch, all of Luxembourg; Jean-Claude Grosjean, Semecourt, France; Guy Denier, Metz, France, and Claude Bauler, Carry-le-Rouet, France, assignors to Arbed S.A., Luxembourg, Luxembourg and Irsid, Saint-Germain-en-Laye, France

Filed Jan. 2, 1981, Ser. No. 222,512

Claims priority, application Luxembourg, Jan. 9, 1980, 82060

Int. Cl.^{3} C21C *5/48, 5/42*

U.S. Cl. 75—60 **10 Claims**



1. A process of refining a metal bath in a crucible, which is adapted to rotate between two tilted positions relative to a plane of rotation and includes a peripheral wall, a top and a bottom, by injecting an oxygen blast into the crucible at the top thereof, comprising injecting an agitating gas into the crucible at the periphery of the bottom thereof and in immediate proximity to said peripheral wall, the agitating gas being injected at the area of said bottom lying between two straight substantially parallel lines each representing the intersection of said bottom with the surface of the bath when the crucible is in one of its tilted positions.

4,369,061

RECOVERY OF PRECIOUS METALS FROM DIFFICULT ORES

Bernard J. Kerley, Jr., Santo Tomas Rt. Box 73, Sahuarita, Ariz. 85629

Continuation-in-part of Ser. No. 108,168, Dec. 28, 1979. This application Oct. 20, 1980, Ser. No. 200,057

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.^{3} C22B *11/04*

U.S. Cl. 75—103 **6 Claims**

1. In a method for the recovery of precious metals including gold and silver from an ore containing same, comprising lixiviating said precious metals from said ore using an ammonium thiosulfate liquor as the lixiviating agent in the presence of copper, followed by recovering said precious metals from said ammonium thiosulfate liquor, the improvement comprising:

maintaining the pH of said liquor during lixiviation at a value of at least 7.0 with ammonia, and simultaneously maintaining a sulfite ion concentration of at least 0.05%, by generation in situ by the addition of sulfur dioxide, and generating thiosulfate in situ as needed by the addition of elemental sulfur to the system.

4,369,062

METHOD OF MAKING BRIQUETTES AND PRODUCT

Robert R. Strange, 522 Lynnview Dr., Sagamore Hills, Ohio 44067

Filed Sep. 28, 1981, Ser. No. 306,296

Int. Cl.^{3} B22F *1/243, 1/245, 1/248, 3/06*

U.S. Cl. 75—256 **15 Claims**

1. The method of making briquettes adapted for use as feed stock in steel making furnaces, comprising forming a compressed mass by the steps of mixing metallic fines and metallic oxide fines in an amount of about 91% by weight of the total mass with about 2% of porous colloidal clay, then thoroughly mixing in about 3% of pitch residue, then mixing in about 2% of burnt lime fines and about 2% of molasses, and then cold compressing the mixture into briquettes, said metallic fines comprising about 50% of steel and iron fines and said oxide fines comprising about 41% of mill scale.

8. A briquette adapted for use as feed stock in steel-making furnaces, comprising about 50% by weight of steel and iron fines, about 41% of mill scale, about 2% porous colloidal clay, about 3% pitch residue, about 2% burnt lime fines, and about 2% molasses.

4,369,063

SILVER CONTAINING CONDUCTIVE COATINGS

Earsel McGowan, Jr., Washington, Pa., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,245

Int. Cl.^{3} C09D *5/24*

U.S. Cl. 106—1.14 **12 Claims**

1. In a conductive coating composition comprising from about 45-90%, by weight, of silver in particulate form, from about 1.5-25%, by weight, of a glass frit composition, and from about 5-50%, by weight, of a vehicle for said composition the improvement comprising from about 0.5-15%, by weight, of a selenium component.

4,369,064

NON-INFLAMMABLE FOAMABLE MOLDING COMPOSITIONS

Wulf von Bonin, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,009

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938874

Int. Cl.^{3} C09D *5/18*

U.S. Cl. 106—18.15 **9 Claims**

1. In non-inflammable foamable, intumescent moulding compositions comprising

(1) at least one carbonific,
(2) at least one catalyst,
(3) at least one blowing agent, and
(4) at least one filler
(5) the improvement consisting of ethylene diammonium phosphate as the catalyst (2) and hollow silicate beads as the filler (4), said beads being present in an amount of from 1 to 80% by weight, based on the moulding composition.

4,369,065

WATER BASED INK COMPOSITIONS USING ORGANIC ACID

Darryl W. Brixius, Upper Macungie Township, Lehigh County, Pa., assignor to Tarkett AB, Ronneby, Sweden

Continuation of Ser. No. 152,205, May 22, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,250

Int. Cl.^{3} C09D *11/14*

U.S. Cl. 106—27 **20 Claims**

1. Process for making aqueous, foam-growth-controlling printing ink composition of use in the chemical embossing of heat foamable and expandable resinous materials comprising:

(a) preneutralizing at least one acid component selected from the group consisting of:
  (i) organic carboxylic acid containing 2 to 12 carbon atoms and having at least two carboxyl groups or at least one carboxyl group and one amino or hydroxy group;
  (ii) anhydride of such acid; and
  (iii) acid halide or such acid;
  with basic neutralizing agent in an amount sufficient to neutralize the acid component; and
(b) mixing together in an aqueous medium;
  (i) said neutralized acid component;
  (ii) aqueous printing ink composition having a pH of from about 8 to 12; and
  (iii) pH controlling agent sufficient to maintain the pH of the foam-growth-controlling ink composition between about 8 and about 12.

4,369,066

PROCESS OF PRODUCTION OF COLLOIDAL MORTAR AND PRODUCT ACCORDING TO THIS PROCESS

Fernand Artois, Strassen; Raymond Linden, Differdange, and Alberg Feltler, Kopstal, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 158,778, Jun. 12, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,168

Claims priority, application Luxembourg, Jul. 17, 1979, 81524

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—98 **5 Claims**

1. A process of production of colloidal mortar, for use particularly in lining of shaped components of steel, such as conduit pipes, boilers and the like, comprising the steps of filling a mixer with water in proportion of 25 to 60% relative to the quantity of cement to be filled into the mixer; imparting to water a rotary motion by means of a rotary agitator so that the peripheral velocity at the external diameter of the agitator will amount to a minimum of 1500 m/minutes, charging the mixer with cement whilst maintaining the rotary motion of the agitator, or reducing it to half of said peripheral velocity, said mixture forming during said rotary motion a funnel-like profile having a center; adding to the mixture a proportion of 1 to 2 parts of sand relative to the quantity of cement in the mixer, the sand having a humidity of 5-15% and being fed into the mixer so that the wet sand will reach the center of said funnel-like profile formed by said mixture; and continuing agitation for about 2 minutes until the colloidal mortar is obtained.

4,369,067

METHOD OF AND PLANT FOR MANUFACTURING PULVEROUS OR GRANULAR MATERIAL

Torben Enkegaard, Copenhagen, Denmark, assignor to F. L. Smidth & Co.

Filed Dec. 10, 1980, Ser. No. 214,961

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—100 **12 Claims**

1. A method of manufacturing pulverous or granular materials in a plant supplied with raw material including a kiln for treating the raw material, cooling means coupled after said kiln for cooling the product treated in said kiln, a first preheater coupled before said kiln and heated with kiln exit gases, and a second preheater heated with spent cooling air, comprising feeding all of the raw material to said second preheater, conveying substantially all of the material preheated in said second preheater to said first preheater, and returning substantially all of the cooling air cooled in said second preheater to said cooling means for reuse therein.

4,369,068

GOLD CONTAINING PREPARATION FOR COATING METALLIC PARTS

Jürgen Hausselt, Langenselbold; Harry Schiwiora, Ispringen, and Manfred Stümke, Pforzheim, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,507

Int. Cl.^{3} C09D *5/38;* **A61K** *6/08*

U.S. Cl. 106—1.18 **18 Claims**

1. A gold-containing preparation suitable for coating fired on alloys in the dental art before the facing with ceramic compositions, said preparation consisting essentially of gold powder, an adhesive and a binder of an organic solvent and a resin, said binder being liquid at room temperature and able to be volatilized or burned at the firing temperature, there being present 50 to 95 weight % gold powder having a particle size below 30μ, 5 to 40 weight % of the binder and 1 to 20 weight % of a metal powder as adhesive, the metal powder having an average particle size of 10 to 27 microns greater than and a melting temperature above that of the gold powder.

4,369,069

GELATIN, METHOD FOR PRODUCING IT AND ITS USE

Wolfgang Graesser, Waldbrunn; Peter J. Koepff, Heidelberg, both of Fed. Rep. of Germany, and Ivan Tomka, Bourguillon, Switzerland, assignors to Deutsche Gelatine-Fabriken Stoess & Co. GmbH, Eberbach, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,253

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936835

Int. Cl.^{3} C09D *3/04*

U.S. Cl. 106—125 **23 Claims**

1. A gelatin comprising microgel, alpha-gelatin, oligomers of alpha-gelatin, and from 1 to less than 25% by weight of said gelatin, of fragments of alpha-gelatin having a molecular weight of no more than 9×10^4, said gelatin having a setting time of less than one minute measured at 16° C. and with 2.5 g gelatin in 1 dl water.

4,369,070

AQUEOUS DYESTUFF OR PIGMENT DISPERSIONS

Volker Aign, Monheim; Karlheinz Wolf, Leverkusen; Reinhold Hörnle, Cologne; Norbert Pusch, and Klaus Walz, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 884,955, Mar. 9, 1978, abandoned. This application Aug. 7, 1981, Ser. No. 290,998

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1977, 2711240

Int. Cl.³ C09C *3/08;* **C09D** *7/12;* **D06P** *1/607*

U.S. Cl. 106—308 N **3 Claims**

1. A pigment dispersion comprising a water-insoluble pigment and a water-soluble oxyalkylation product of the condensation product of (a) phenol or C_6–C_{12} alkylphenol, (b) C_6–C_{20} alkylamine or cyclohexylamine, and (c) formaldehyde, and 10 to 100 mols of ethylene oxide.

4,369,071

PROCESS AND ARRANGEMENT FOR INTRODUCING AN AUTOMATIC CLEANING MECHANISM INTO A GUN BARREL

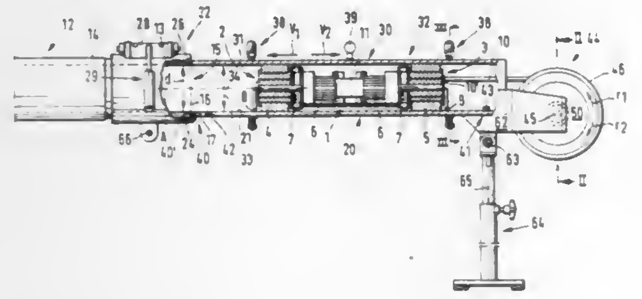
Jürgen Flach, Duesseldorf; Rigobert Opitz, Hamburg, and Karl W. Bethmann, Moers, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,645

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940082

Int. Cl.³ F41F *17/14*

U.S. Cl. 134—8 **7 Claims**



1. A process for introducing an automatic cleaning device into a gun barrel, wherein said cleaning device is adapted to reciprocably move along the longitudinal axis of the gun barrel between two end regions thereof, said cleaning device having a driving motor, driving rollers and a pair of rotating brush means adapted to rotate in mutually opposite directions for advancing and centering the cleaning device in the gun barrel by having the radially outer periphery of the brush means engage the interior gun barrel surface, said cleaning device being provided with sensing means to sense when the cleaning device reaches one of said two end regions, and being further provided with electrical conduit supply means disposed outside of the gun barrel adapted to supply energy to said driving motor via an electric cable, said pair of rotating brush means when rotating in mutually opposite directions do essentially not produce any turning moment about the longitudinal axis of the gun barrel due to frictional engagement with the internal walls thereof during the cleaning operation therein, comprising the steps of

- (a) coaxially detachably fastening a trough-like longitudinal member to the gun barrel, said trough-like member being at least as long as said cleaning device,
- (b) positioning the cleaning device on the trough-like longitudinal member;
- (c) mounting for a predetermined period of time an additional mating member on said trough-like member which forms therewith a composite pipe member which is coaxial with and of the same caliber as said gun barrel; and
- (d) moving said cleaning device into said gun barrel by means of said driving rollers by energizing the driving motor of said cleaning device via said electric conduit supply means.

4,369,072

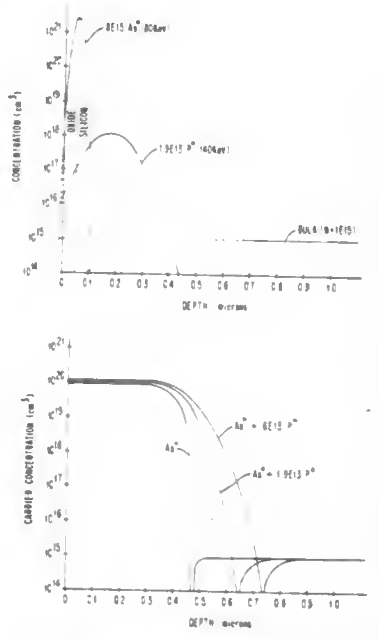
METHOD FOR FORMING IGFET DEVICES HAVING IMPROVED DRAIN VOLTAGE CHARACTERISTICS

Paul E. Bakeman, Jr., Shelburne, Vt.; Andres G. Fortino, Bryn Mawr, Pa.; Henry J. Geipel, Jr.; Jeffrey P. Kasold, both of Essex Junction, Vt., and Robert M. Quinn, South Burlington, Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,567

Int. Cl.³ H01L *21/263, 21/22, 7/00, 21/265*

U.S. Cl. 148—1.5 **12 Claims**



1. The method of providing p-n junction regions in a silicon semiconductor substrate of a predetermined first conductivity type having a predetermined impurity concentration, comprising the steps of:

providing an ion implantation inhibiting means over selected portions of a surface of said silicon substrate;

ion implanting first and second different impurities of a second conductivity determining type into said substrate, said first impurity being implanted at portions of said surface not provided with said inhibiting means, the implanting energy level of said first impurity providing a maximum concentration of said first impurity substantially at said surface and being of a dosage at least equal to that required to provide maximum solid solubility of said first impurity in said substrate, said second impurity being implanted into at least some of the same portions of said surface as said first impurity, the dosage of said second impurity being at least one order magnitude less than that of said first impurity, and

heating said substrate in an oxidizing atmosphere and then in a non-oxidizing atmosphere to cause thermal oxidation of the surface of the substrate and thermal diffusion of the implanted concentration profiles of said first and second impurities in said substrate to form a diffused p-n junction at a depth of less than one micron below the oxidized surface of said substrate, said junction having an electrically active impurity concentration profile including a first portion nearest said surface and extending to a depth greater than the depth of the maximum concentration of said second impurity as implanted, said first portion having a concentration substantially equal to the solid solubility of said first impurity in said substrate, a second intermediate concentration portion having a concentration less than that of said first portion and greater than the concentration of the superposition of expected diffused concentration profiles of either of said first and second impurities and a third portion having a concentration less than said second portion, whereby the sheet resistivity of said junction is determined substantially by said first portion of said profile and the maximum voltage limitations of said junction are determined substantially by said second portion of said profile.

4,369,073

METHOD FOR PROTECTING THE INNER SURFACE OF A COPPER ALLOY CONDENSER TUBE FROM CORROSION

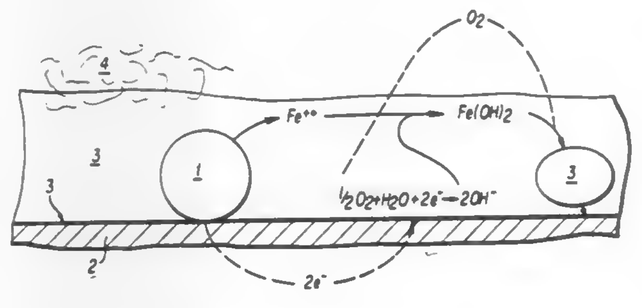
Toshio Fukutsuka; Kazutoshi Shimogori, both of Kobe; Etsuo Yamamoto, Osaka, and Kenji Miki, Himeji, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 21, 1981, Ser. No. 256,121

Claims priority, application Japan, Apr. 25, 1980, 55-55873; Feb. 13, 1981, 56-20334; Feb. 13, 1981, 56-20335; Feb. 13, 1981, 56-20336

Int. Cl.³ B05D *3/04, 1/02, 7/22, 3/12*

U.S. Cl. 148—6.14 R **17 Claims**



1. A method for protecting the inner surface of a copper alloy condenser tube from corrosion, said method comprises applying a thin layer of an acidic suspension containing iron powder onto the inner surface of the copper alloy condenser tube, and exposing said thin layer to an atmosphere of an oxidizing gas to form a film of an iron oxide on said inner surface.

4,369,074

METHOD OF PRODUCING BELLOWS FROM METAL ALLOYS

Mikhail N. Bodyako, Leninsky prospekt, 76, kv. 105, Minsk; Gennady P. Alexeev, ulitsa Nikolaeva, 19, kv. 117; Mikhail P. Goncharov, prospekt Stroitelei, 18, kv. 21, both of, Smolensk; Stanislav A. Astapchik, ulitsa Kalinovskogo, 56, kv. 79, Minsk; Oleg S. Zinkevich, ulitsa Chernyakhovskogo, 1, kv. 60; Margarita R. Kushelman, ulitsa Nikolaeva, 42, kv. 48, both of, Smolensk; Viktor V. Krylov-Ole-Firenko, Leninsky prospekt, 143, kv. 47, Minsk; Jury P. Minchenkov, ulitsa Dzerzhinskogo, 5, kv. 60, Smolensk; Viktor P. Bozhok, ulitsa Kalinina, 21, kv. 28, Minsk; Zoya M. Iedlinskaya, Kutuzovsky prospekt, 24, kv. 407, Moscow; Sergei M. Kashulin, ulitsa Gorkogo, 143, kv. 151, Minsk; Ljudmila M. Fursova, prospekt Kalinina, 43, kv. 8, Dnepropetrovsk; Vladimir M. Rozenberg, ulitsa Baikalskaya, 40/17, kv. 76, and Alla V. Chernikova, Otkrytoe shosse, 21, korpus 2, kv. 113, both of Moscow, all of U.S.S.R.

Filed Jun. 29, 1981, Ser. No. 278,482

Int. Cl.³ C21D *9/08*

U.S. Cl. 148—11.5 C **9 Claims**

1. A method of producing bellows from metal alloys comprising:

- (a) reeling a tubular workpiece to decrease the wall thickness thereof under volume deformation;
- (b) heating said reeled tubular workpiece at a rate of 100° to 800° C. per sec up to a temperature exceeding that of recrystallization of the alloy, the heating process being carried out by passing electric current through said tubular workpiece;
- (c) cooling said heated tubular workpiece down;
- (d) locally deforming the tubular workpiece wall in transverse direction to form annular grooves therein;
- (e) making corrugations by plastically deforming said tubular workpiece under axial compression and under excessive internal pressure produced therein;
- (f) heating the obtained corrugated workpiece at a rate of 25° to 100° C. per sec to a temperature at which finely dispersed phases of the alloy precipitate at a maximum rate, the heating process being carried out by passing electric current through said corrugated workpiece;
- (g) holding said corrugated workpiece for a time period of 0.5 to 120 min, during which time period finely dispersed phases of the alloy precipitate at a maximum rate.

4,369,075

METHOD OF MANUFACTURING PERMANENT MAGNET ALLOYS

Imaizumi Nobuo, and Aoe Masahiro, both of Tokyo, Japan, assignors to Namiki Precision Jewel Co., Ltd., Tokyo, Japan

PCT No. PCT/JP80/00038, § 371 Date Dec. 18, 1980, § 102(e) Date Dec. 3, 1980, PCT Pub. No. WO80/02297, PCT Pub. Date Oct. 30, 1980

PCT Filed Feb. 29, 1980, Ser. No. 220,023

Claims priority, application Japan, Apr. 18, 1979, 54-48333; Aug. 11, 1979, 54-102363

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—102 **9 Claims**

1. A process for manufacturing permanent magnet alloys characterized by the fact that an alloy of $R(Co_{1-x-y}Fe_xM_y)_z$ (R is one or more than one elements of Y, Ce, Nd, Pr, Sm, Eu, and M.M.; and M consists of one or more than one elements of Ti, Cr, Mn, Ni, Cu, Zr, Nb, Hf, Ta, and W; where M.M. is misch metal; $0.02 \leqq x \leqq 0.5$, $0.01 \leqq y \leqq 0.3$, $8.3 \leqq z \leqq 9.0$) is finely powdered and compression-molded in a magnetic field or without impressing a magnetic field; and the molded powder is sintered at a temperature of 1100°-1250° C. in vacuum or in an inert atmosphere; solid solution treated and, heat aged for 0.5-200 hours in the temperature range of 700°-800° C. in a further magnetic field.

4,369,076

PROCESS FOR PRODUCING MAGNETIC METAL POWDER

Tesshu Miyahara, Ohmiya; Yoshi Arai, Oyama, and Kazuo Kimura, Kazo, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo and Kawamura Institute of Chemical Research, Saitama, both of, Japan

Filed Jun. 18, 1981, Ser. No. 274,732

Claims priority, application Japan, Jun. 20, 1980, 55-82961

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—105 **5 Claims**

1. A process for producing a magnetic metal powder having improved oxidation resistance and magnetic properties, which comprises wetting a magnetic metal powder in an atmosphere of a non-oxidizing gas with a solution of a boron trialkoxide in a solvent being inert to the magnetic metal powder and capable of dissolving the boron trialkoxide; and thereafter evaporating off the solvent, wherein the amount of the boron trialkoxide is such that the amount of a substance finally adhering to the magnetic metal powder is 0.01 to 1 boron atom per metal atom.

4,369,077

METHOD OF MANUFACTURING AN ELECTROMAGNETIC CORE

Shigemasa Saito, Gyoda, Japan, assignor to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Oct. 24, 1980, Ser. No. 200,421

Claims priority, application Japan, Dec. 29, 1979, 54-171878; Dec. 29, 1979, 54-171879

Int. Cl.³ H01F *1/00*

U.S. Cl. 148—120 **9 Claims**

1. A method of manufacturing an electromagnetic core material comprising the steps of:

(a) hot-drawing a wire rod of mild steel containing about 0.01% or less by weight of carbon and an impurity content of less than about 0.31% by weight;
(b) cold-drawing the hot-drawn wire rod;
(c) annealing the cold-drawn wire rod; and
(d) finish-drawing the annealed wire rod at a work rate of about 10% or less.

4,369,078

PROCESS AND AN APPARATUS FOR CONVERTING LUMP-SIZE MATERIAL OF TITANIUM METAL OR ITS ALLOYS INTO POWDER-FORM MATERIAL AND PRESSINGS

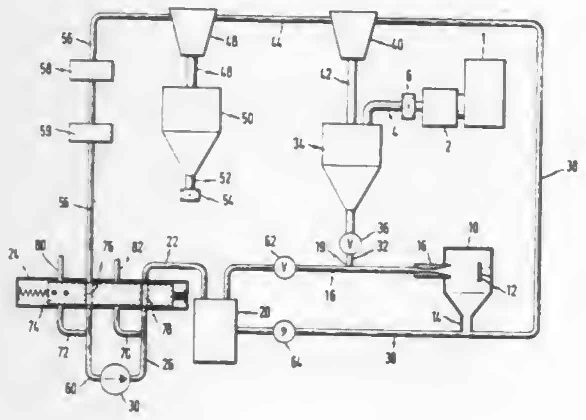
Christer Aslund, Torshälla, Sweden, assignor to NYBY Uddeholm AB, Torshälla, Sweden

Filed May 28, 1980, Ser. No. 154,020

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921593

Int. Cl.³ B22F *1/00*

U.S. Cl. 148—126 **17 Claims**



1. A process for converting lump-size material formed of titanium metal or its alloys into powder-form material which comprises the following steps wherein:

(a) the lump-size material is highly embrittled by being charged with hydrogen;
(b) the embrittled lump-size material is reduced in size within a device having means for impacting on the lump-size material;
(c) the initially size-reduced material having a particle size of below 10 mm is introduced into a jet stream of non-oxidizing gas;
(d) the jet stream containing the size-reduced material is caused to impinge on a baffle wall within a chamber; and
(e) the resulting fine powder is dehydrogenated at temperatures above 450° C. and under a vacuum of at least 10^{-1} Torr to convert the fine powder into a ductile state.

16. An apparatus for converting lump-size material of titanium or its alloys into powder-form material which comprises a furnace for charging the lump-size material with hydrogen, a size-reducing device having means for impacting on the lump-size material whereby the lump-size material is initially pulverized, a baffle chamber with a Venturi nozzle and a baffle plate, means for introducing the initially size-reduced particles obtained from the size-reducing device in a jet stream into the chamber via said nozzle to cause the particles to impinge on said plate, means for removing the resulting fine powder from the baffle chamber and means for transporting the fine powder from said chamber.

4,369,079

SOLID NON-AZIDE NITROGEN GAS GENERANT COMPOSITIONS

Graham C. Shaw, Garland, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Filed Dec. 31, 1980, Ser. No. 221,942

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **13 Claims**

1. A solid pellet for generating non-toxic, substantially moisture-free nitrogen gas consisting essentially of a metal salt of a non-hydrogen containing tetrazole compound selected from the group consisting of alkali metal salts, alkaline earth metal salts and admixtures thereof and an oxidizer containing nitrogen and a member selected from the group consisting of alkali metal nitrates, alkali metal nitrites, and admixtures thereof.

4,369,080

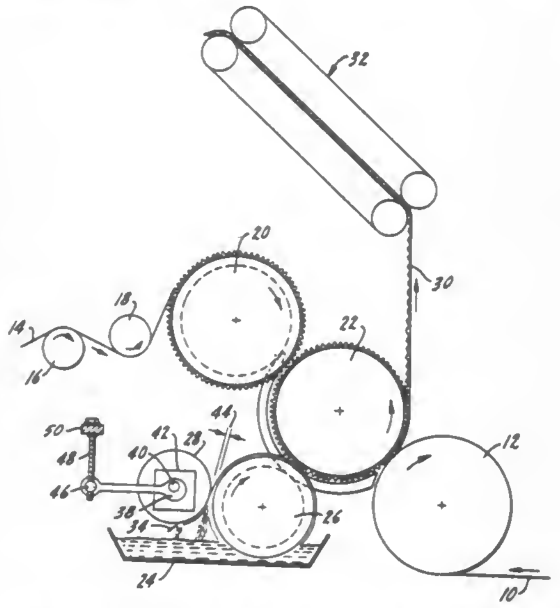
MEANS FOR SENSING AND CONTROLLING THE AMOUNT OF STARCH APPLIED TO FORM CORRUGATED BOARD

Keith R. Johnson, Orland Park, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed Mar. 5, 1981, Ser. No. 240,797

Int. Cl.³ B05B *1/00;* **G01R** *27/26*

U.S. Cl. 156—64 **18 Claims**



1. A means for sensing the amount of a liquid bonding agent applied to secure a corrugated medium to a liner, including a capacitance device, one plate of which is formed by a sensing surface positioned adjacent the corrugated medium, liner and applied liquid bonding agent, the other plate of said capacitance device being formed by the corrugated medium, liner applied liquid bonding agent, means for applying an electric signal to said sensing surface, and means for sensing variations in said signal caused by the amount of said liquid bonding agent applied to said corrugated medium and liner.

4,369,081

METHOD OF SECURING A FOAM LAYER TO A BELT

Thomas H. Curry, and William A. Luciano, both of Clifton Park, N.Y., assignors to Albany International Corp., Albany, N.Y.

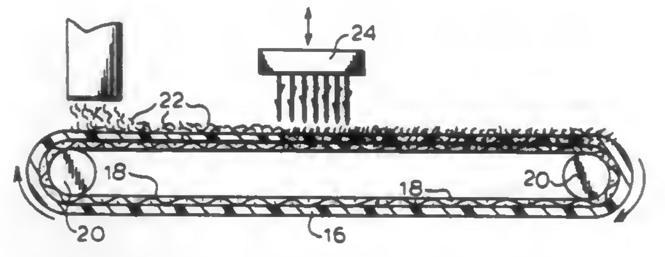
Filed Aug. 31, 1981, Ser. No. 298,029

Int. Cl.³ B32B *3/00;* **D04H** *1/08;* **B32B** *5/06*

U.S. Cl. 156—148 **13 Claims**

8. A method for manufacturing an endless laminated felt belt for papermaking, comprising the steps of:

providing a plurality of strips of foam having opposing edge portions;
joining the opposing edge portions of each respective strip to provide a plurality of endless foam belts;
securing the endless foam belts to each other along respective longitudinal edge portions to form a single endless foam belt;



positioning said single endless foam belt around an endless substrate fabric; and
needling a layer of batting through said single endless foam belt and said substrate fabric thereby producing an integral laminated belt.

4,369,082

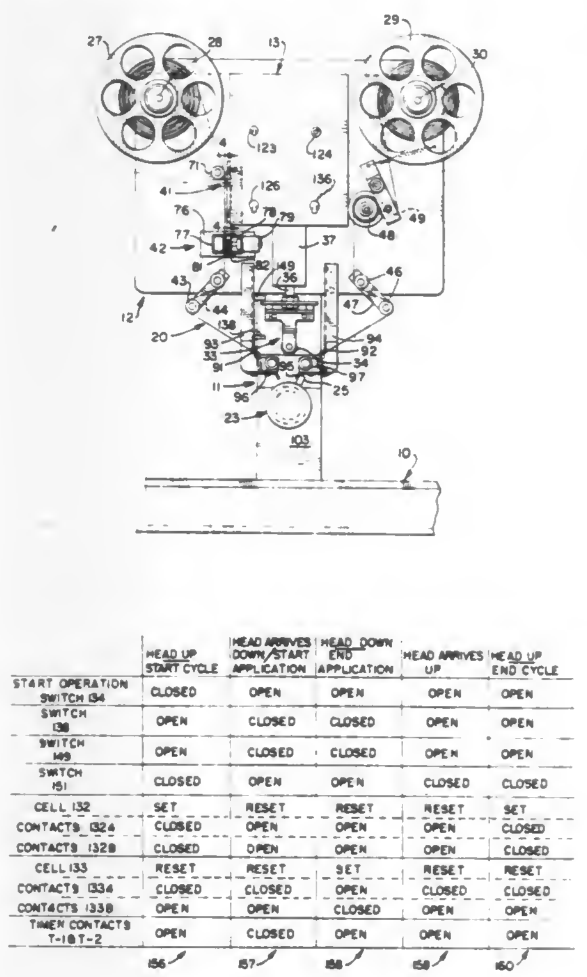
METHOD AND APPARATUS FOR APPLYING DECALS TO ARTICLES

Daniel Kerwin, Lombard, Ill., assignor to The Meyercord Co., Carol Stream, Ill.

Division of Ser. No. 166,818, Jul. 8, 1980, abandoned. This application Jun. 26, 1981, Ser. No. 277,696

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—238 **4 Claims**



	HEAD UP START CYCLE	HEAD ARRIVES DOWN/START APPLICATION	HEAD DOWN END APPLICATION	HEAD ARRIVES UP	HEAD UP END CYCLE
START OPERATION SWITCH 134	CLOSED	OPEN	OPEN	OPEN	OPEN
SWITCH 138	OPEN	CLOSED	CLOSED	OPEN	OPEN
SWITCH 149	OPEN	CLOSED	CLOSED	OPEN	OPEN
SWITCH 151	CLOSED	OPEN	OPEN	CLOSED	CLOSED
CELL 132	SET	RESET	RESET	RESET	SET
CONTACTS 132A	CLOSED	OPEN	OPEN	OPEN	CLOSED
CONTACTS 132B	CLOSED	OPEN	OPEN	OPEN	CLOSED
CELL 133	RESET	RESET	SET	RESET	RESET
CONTACTS 133A	CLOSED	CLOSED	OPEN	CLOSED	CLOSED
CONTACTS 133B	OPEN	OPEN	CLOSED	OPEN	OPEN
TIMER CONTACTS T-1&T-2	OPEN	CLOSED	OPEN	OPEN	OPEN
	156	157	158	159	160

1. A method of transferring a series of decals from an elongated web to a corresponding number of generally cylindrical articles in a machine including web drive means and web pressure means, the decals being substantially regularly spaced on the web, comprising the steps of rotatably mounting an article adjacent the web, activating the web pressure means to press the web against the article, activating said web drive means and thereby rolling a decal onto the article by simultaneously moving the web and rotating the article a distance approximately equal to the length of a decal and then stopping the web movement, inactivating the web pressure means and thereby moving the web away from the article, and then activating the web drive means and thereby moving the web a short distance to locate the next subsequent decal in position to be transferred to a next subsequent article.

4,369,083

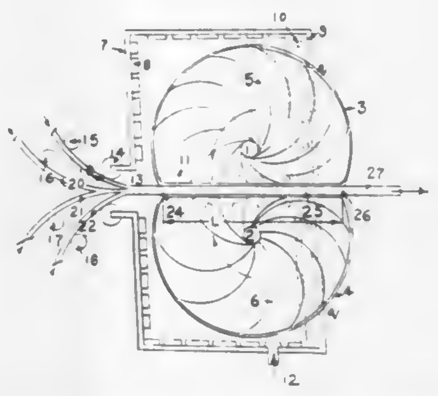
METHOD OF FORMING COMPOSITE LAMINATES

Nazeer Ahmed, and Myrna M. Ahmed, both of 2808 Via Anacapa, Palos Verdes Estates, Calif. 90274

Filed Dec. 15, 1980, Ser. No. 216,617

Int. Cl.³ C09J *5/02*

U.S. Cl. 156—307.3 **3 Claims**



1. A method of forming an elongated composite laminate, the method consisting of

providing a pair of cooperatively rotating annular wheels which are temporarily deformed radially against each other so as to cause a contact lengh L and a pressure p between them,
connecting each of said annular wheels to a rotating shaft by flexible means,
locating said annular wheels partially in a heated chamber such that between fifty and eighty percent of the contact length L is enclosed by the heated chamber,
keeping a positive pressure in the heated chamber by feeding compressed air into the heated chamber,
feeding a plurality of elongated composite plies into the said chamber by roller means, so that
said plies are clamped and carried by the annular wheels with no slippage between the annular wheels and the plies and are cured under sustained pressure and are subsequently cooled under sustained pressure and exit from between the annular wheels as an elongated cured laminate at a velocity substantially equal to the velocity of each of the elongated plies.

4,369,084

APPARATUS FOR PRODUCING INSULATING GLASS FILLED WITH A GAS OTHER THAN AIR

Peter Lisec, Behnhofstrasse 34, Amstetten-Hausmening (Niederosterreich), Austria

Filed Oct. 20, 1981, Ser. No. 313,188

Claims priority, application Austria, May 26, 1981, 2364/81

Int. Cl.³ C03C *27/00*

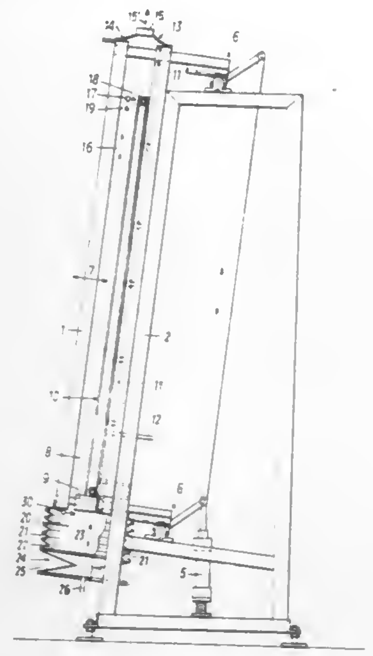
U.S. Cl. 156—382 **18 Claims**

1. In apparatus for producing insulating glass filled with a gas from uncompacted insulating glass, comprising

two substantially vertical planar plates, which are horizontally spaced apart to define between them a space adapted to receive uncompacted insulating glass, at least one of said plates being displaceable transversely to its plane relative to the other of said plates, each of said plates having a top horizontal edge and two substantially vertical edges, which edges are aligned with corresponding edges of the other of said plates, the improvement residing in that

sealing elements are associated with the top horizontal edges and each pair of corresponding substantially vertical edges of said plates,

each of said sealing elements is retractable to a non-sealing position and extensible to a sealing position and adapted to seal said space at said corresponding edges in said sealing position,



a horizontally elongated container is disposed under said plates and has a top rim, which is connected and sealed to said plates and defines an opening communicating with said space between said plates,

said container has a bottom member that is adapted to be lifted toward and lowered from said rim, and

lifting means are provided, which are operable to lift and lower said bottom member.

4,369,085
HAND-HELD LABELLING DEVICE

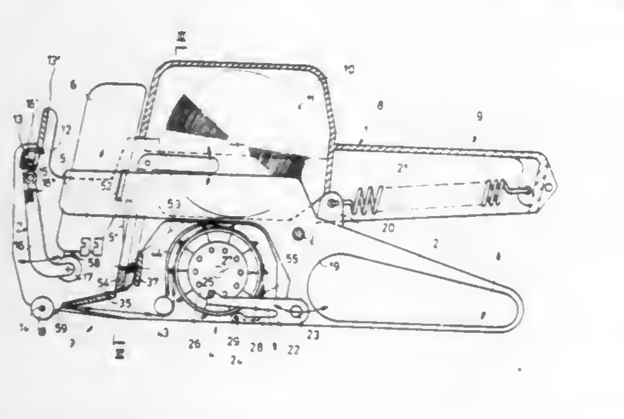
Klaus-Dieter Hermann, Ritterweg 17, D 6932 Hirschhorn, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,752

Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017555

Int. Cl.^{3} B65C *11/02*

U.S. Cl. 156—384 26 Claims



1. A hand-held labelling device for printing, and dispensing individual adhesive labels mounted on a backing strip and for applying such labels to articles to be labelled, and labels tape being guided from a reel of label tape via a counterplate to a deflecting edge and from the latter to transport means arranged in the area below the reel to label tape and comprising a transport wheel with backstop which positively engages the backing strip and which can be moved on step by step by means of an operating handle to transport the said strip, the deflecting edge being provided between the counterplate and the forward end opposite the operating handle and mounted together with the counterplate on a swing-out bottom mounted to pivot about a stationary pin provided in the rear bottom portion, the said device comprising further a pressure roller provided in front of the deflecting edge in the forward portion of the device opposite the said pin, characterized in that the transport means is designed as one unit and likewise fastened to the swing-out bottom, that the space in the casing between the bottom and the reel of label tape defined by the width of the labels is kept free of components of any type, and that the reel of label tape may be put loosely into the casing through the aperture opened by the swing-out bottom in its swung-away position.

4,369,086
BEAD SUPPLY APPARATUS

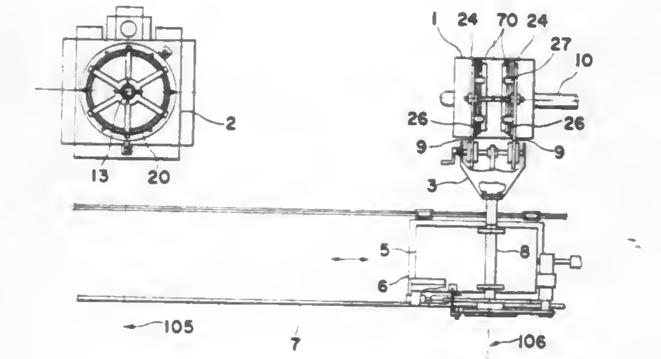
Kozo Nakahama, Kobe; Kazuo Kadomaru, Akashi, and Masuzo Okaniwa, Sakai, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Jan. 30, 1981, Ser. No. 229,843

Claims priority, application Japan, Jan. 31, 1980, 55-11312

Int. Cl.^{3} B29H *17/22*

U.S. Cl. 156—403 11 Claims



1. A bead manipulator adapted for use with a tire building former having a cylindrical construction including a central axis and a diameter selectively expandable or contractible and a bead stocker being arranged apart from the tire building former and including a stock pipe for stocking a plurality of beads concentrically and collectively inserted therein and a bead moving mechanism for moving beads stocked along the stock pipe, said stock pipe being positioned wherein a central axis thereof is perpendicular to a plane which includes said central axis of the tire building former comprising:

a bead setter for positioning each of a pair of beads to a predetermined position on the cylindrical structure of the tire building former;

a rotatable shaft including a central axis perpendicular to the plane which includes both central axes of the tire building former and of the stock pipe;

a pair of bead retaining means being supported from said rotatable shaft and being symmetrically disposed with respect to a plane passing through the central axis of the rotatable shaft, said bead retaining means being adapted to hold a pair of beads supplied one by one from the bead stocker and said pair of beads being parallel to each other and at a predetermined distance;

a posture controlling means for controlling the posture of the bead retaining means through rotating the rotatable shaft around the central axis thereof;

a lift mechanism for moving the retaining means up and down including a supporter for the rotatable shaft and a drive means for lifting the supporter relative to the bead stocker or the tire building former; and

a transfer means for transferring the bead setter between the bead stocker and the tire building former along a rail being parallel to the extension of the central axis of the tire building former.

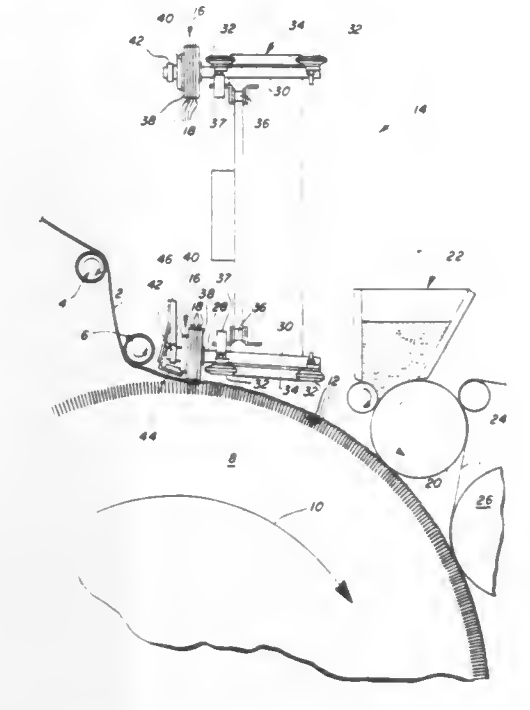
4,369,087
METHOD AND APPARATUS FOR MAKING PILE FABRICS

Dennis C. MacArthur, Kennesaw, Ga., assignor to Amoco Chemicals Corporation, Chicago, Ill.

Filed Dec. 1, 1980, Ser. No. 211,956

Int. Cl.^{3} D04H *11/08*

U.S. Cl. 156—435 12 Claims



1. In an apparatus for making pile fabrics, comprising

a movable support member which has a surface provided with a plurality of groves,

means for feeding textile material onto the grooved surface of the support member,

a plurality of rollers for folding the textile material, each of said rollers having at least one peripheral blade and a central axis of rotation,

means for carrying the rollers in a path which has a portion parallel to the grooved surface of the support member wherein the blades enter and move along the grooves to fold the textile material into the grooves,

and means for attaching the folded material to a backing sheet,

the improvement comprising

means independent of the textile material for rotating the rollers as they move along said path to prevent the rollers from pushing the textile material across the grooved surface of the support member.

4,369,088
APPARATUS FOR BINDING ARTICLE WITH ELONGATED BINDING MATERIAL IN CROSS SHAPE

Hiroshi Ohba, and Shigeo Horino, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 6, 1981, Ser. No. 318,857

Claims priority, application Japan, Nov. 11, 1980, 55-158531

Int. Cl.^{3} B32B *1/00*

U.S. Cl. 156—468 9 Claims

1. An apparatus for binding an article with an elongate binding material in the longitudinal and transverse directions in cross shape, comprising:

a push-in mechanism for pushing an article arranged in a first direction to a binding position along a push-in passage,

a binding mechanism for binding the article in the binding position with the binding material,

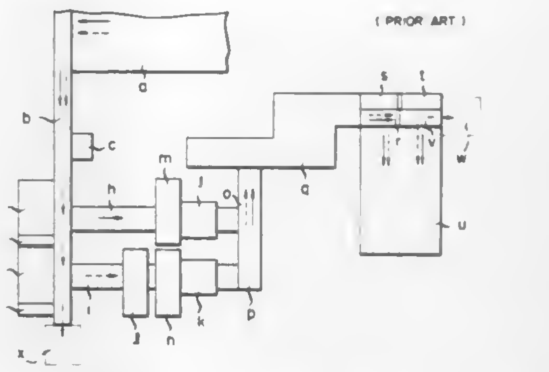
a cutting mechanism for cutting a trailing end of the binding material,

a mechanism for adhering the trailing end to an adjacent surface of the binding material,

a turning mechanism for turning the article disposed in the binding position by substantially 90 degrees, with one end portion of the article clamped by the turning mechanism, so as to bring the article back onto the push-in passage in a manner to be arranged in a second direction perpendicular to the first direction,

the article arranged in the second direction being pushed again in the binding position by said push-in mechanism along said push-in passage for binding again the article, which is kept arranged in the second direction, with the binding material by said binding mechanism so that binding is performed in cross shape, a trailing end of the binding material being cut by said cutting mechanism, and the trailing end of the binding material being adhered to an adjacent surface of the binding material, and

a take-up mechanism for feeding out the article bound in cross shape along an take-up passage.



4,369,089
APPARATUS FOR CHANGING THE LABEL MAGAZINE BOXES OF LABELLING MACHINES

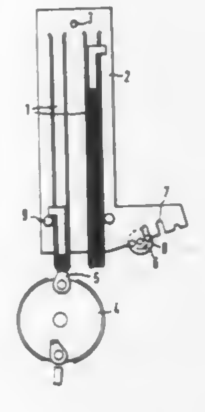
Hans-Werner Mohn, Kaarst, and Rudolf Zodrow, Düsseldorf, both of Fed. Rep. of Germany, assignors to Jagenberg-Werke AG, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,090

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016599

Int. Cl.^{3} B65C *9/02, 9/10*

U.S. Cl. 156—568 3 Claims



1. In a labelling machine including label pickup means, means for delivering to the machine articles to be labelled and for removing from the machine labelled articles, at least two boxes for labels disposed alongside one another, one of said boxes being in active position, means permitting retracting and advancing in label stacking direction of that label box which is in active position, and guide means for the boxes to permit them to move transversely to the direction in which labels are stacked in the boxes so as to take said one box out of active position and to put another box in active position, the improvement wherein said guide means comprises a common support for said boxes, and means mounting said support for pivoting to and fro about an axis at a right angle to the longitudinal direction of said boxes so that said support can be pivoted to

place any of said boxes or none of said boxes into active labelling position.

4,369,090

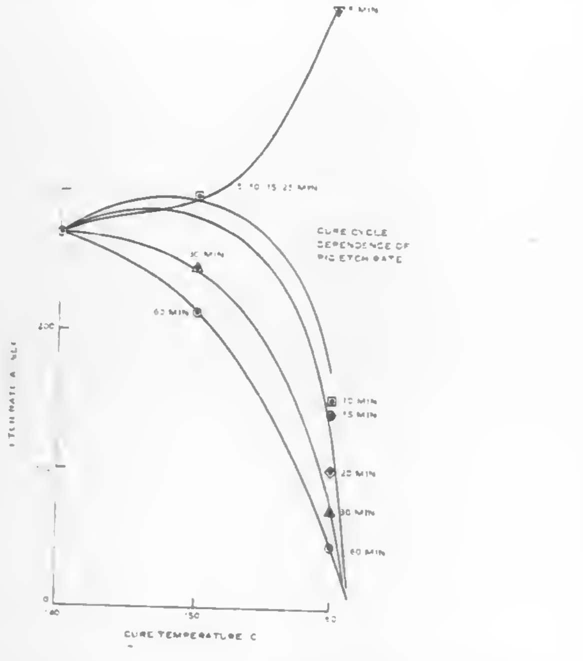
PROCESS FOR ETCHING SLOPED VIAS IN POLYIMIDE INSULATORS

Arthur M. Wilson, Richardson; David W. Laks, Dallas, both of Tex., and Stephen M. Davis, Oakland, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 6, 1980, Ser. No. 204,409

Int. Cl.³ B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—644 **2 Claims**



1. A method for the fabrication of a partially cured polyamic acid film having tapered apertures therein, comprising the steps of:

(a) forming a polyamic acid iso-indroquinazolinedione resin film on a suitable substrate;

(b) curing said film at or near its upper chronostatic temperature of 165° C.

(c) selectively masking the resultant cured film with an operational resist, and

(d) exposing the masked film to an etchant containing 10–25% by weight tetramethyl ammonium hydroxide whereby tapered apertures are etched in the more completely cured film.

4,369,091

METHOD AND APPARATUS FOR DRYING A LIQUID PRODUCT

Peter E. Solver, Virum, Denmark, assignor to A/S Niro Atomizer, Soborg, Denmark

PCT No. PCT/DK80/00030, § 371 Date Jan. 22, 1981, § 102(e) Date Jan. 15, 1981

PCT Filed May 22, 1980, Ser. No. 229,570

Claims priority, application Denmark, May 22, 1979, 2106/79

Int. Cl.³ B01D *1/16*

U.S. Cl. 159—4 CC **6 Claims**

5. A spray drying apparatus comprising:

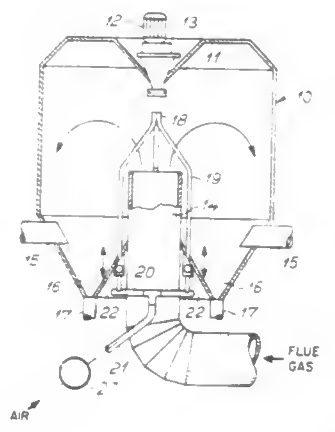
a drying chamber,

a rotary atomizing wheel arranged in the upper part of said drying chamber,

an inlet tube for a hot drying gas opening into said drying chamber at a first position below said atomizing wheel and spaced substantially therefrom, said inlet tube being directed towards the bottom side of said wheel such that the flow of hot drying gas is directed substantially coaxially with the atomizing wheel, and

an inlet communicating with a source of clearing gas free of solid matter and substantially colder than the drying gas, said clearing gas inlet being also directed towards the bottom side of said atomizing wheel and opening into the drying chamber at a second position substantially closer to said bottom side of the atomizing wheel than said first position, and

said clearing gas inlet comprising a plurality of tube sections each having a longitudinal axis defining an acute angle with the rotary axis of said atomizing wheel, the open upper ends of said tube sections each being positioned at a radial distance from the rotary axis of said atomizing wheel exceeding the maximum outer diameter of said wheel wherein the upper ends of said tube sections are mutually connected by an annular connecting member arranged coaxially with said atomizing wheel and having an inner diameter exceeding the maximum outer diameter of said wheel, and the inner diameter of said drying gas inlet tube exceeding the outer diameter of said atomizing wheel.



4,369,092

PROCESS FOR REMOVING MONOMER FROM VINYL CHLORIDE RESIN SLURRY BY STEAM TREATMENT AND APPARATUS EMPLOYED THEREFOR

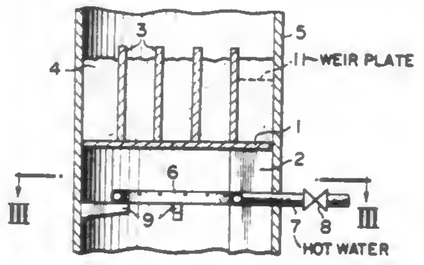
Kazuaki Nakano; Masaaki Fukuda; Kyuichi Mito, all of Minamatashi; Mikio Shinkai, Chibashi, and Shiro Aruga, Tokyo, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 30, 1980, Ser. No. 173,722

Claims priority, application Japan, Aug. 1, 1979, 54/98306

Int. Cl.³ B01D *1/14*

U.S. Cl. 159—47.1 **14 Claims**



1. In the process of removing vinyl chloride monomer from a vinyl chloride resin slurry by feeding said slurry into a zone provided with at least one perforated plate having a plurality of small holes and treating said slurry on said perforated plate with steam blown upwardly through said small holes,

the improvement which comprises, during said steam treatment, washing the lower surface of each said perforated plate with hot water injected against said lower surface of said perforated plate.

4,369,093

PROCESSES AND DEVICES FOR THE DISINTEGRATION OF CELLULOSE MATERIALS

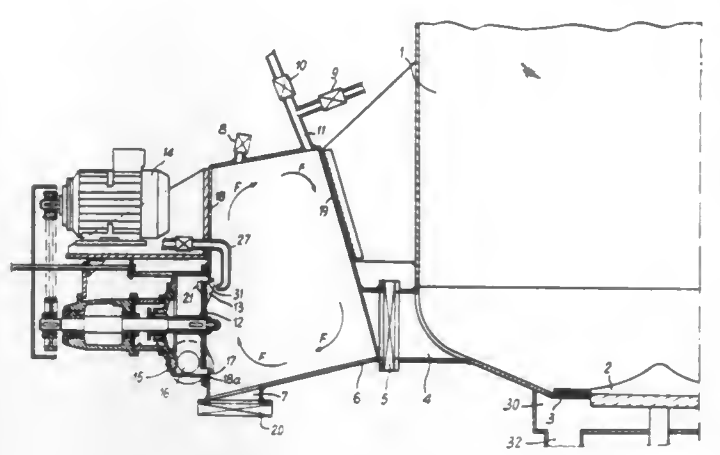
Jean P. Lamort, Vitry le Francois, France, assignor to E et M Lamort (Societe Anonyme), Vitry le Francois, France

Filed Nov. 5, 1979, Ser. No. 90,985

Claims priority, application France, Nov. 17, 1978, 78 32549

Int. Cl.³ D21C *9/00*

U.S. Cl. 162—246 **15 Claims**



1. A combination of a pulping machine and a device for the purification of a pulp and impurities mixture contained in the pulping machine, said device comprising an enclosed chamber; valve means interconnecting said chamber and the machine for selectively charging said chamber with the mixture; means for releasably pressurizing said chamber with gas; means for adding water to said chamber; means for stirring the contents of said chamber; means for extracting the pulp from the mixture in said chamber and for returning the pulp to the machine; and means for withdrawing the remaining impurities from the chamber.

4,369,094

METHOD OF PREVENTING THE ENTRY OF AIR INTO THE HOUSING OF A CHARGING DEVICE WHICH CONVEYS COAL

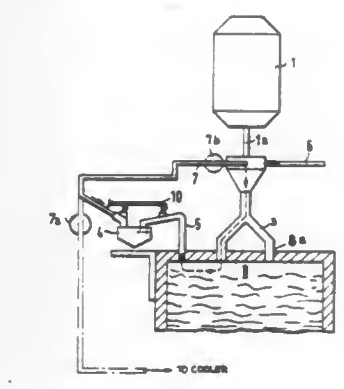
Claus Flockenhaus, Essen; Günter Gabriel, Datteln, both of Fed. Rep. of Germany; Günter Ziolkowski, deceased, late of Essen-Byfang, Fed. Rep. of Germany (by Dagmar Ziolkowski, heir); Paul-Heinz Heesen, Bochum, Fed. Rep. of Germany; Joachim F. Meckel, Heiligenhuas, Fed. Rep. of Germany, and Manfred Galow, Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Continuation of Ser. No. 93,711, Nov. 13, 1979, abandoned. This application Dec. 10, 1981, Ser. No. 329,565

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850103

Int. Cl.³ C10B *31/00, 41/00*

U.S. Cl. 201—41 **6 Claims**



1. A method of preventing the formation of explosive gas mixtures due to accidental entry of air and/or other gases into a mechanical charging device which has a mechanical conveyor which is surrounded by a housing and conveys coal directly from a bunker to and intermittently charges the coal into coke oven chambers through an outlet of the housing through which oven gases can enter the housing while air can enter through imperfect seals of the housing, comprising the steps of causing superheated steam to continuously flow directly through the housing of the mechanical conveyor in the coal conveying direction without performing coalcarrying functions; continuously discharging the steam from a downstream portion of the housing while no coal is being charged, and effecting condensation of the discharged steam outside the housing; and during charging of coal into a coke oven chamber admitting the steam with the coal through the outlet of the housing of the mechanical conveyor and into the chamber so that the steam blocks entry of gases through the outlet of the housing of the mechanical conveyor, and thereupon venting the steam into the coke oven main and effecting condensation of the steam.

4,369,095

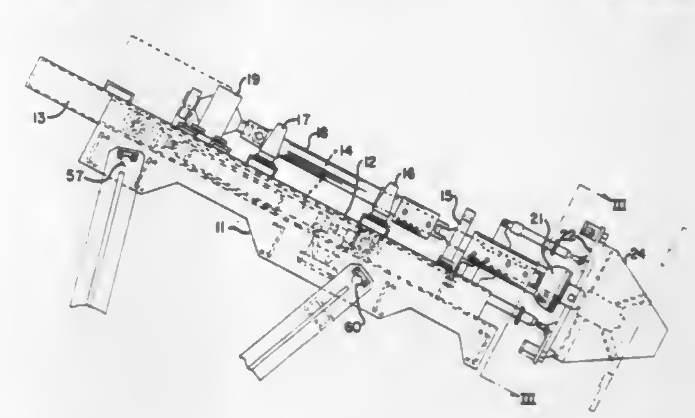
ASCENSION PIPE COVER SEAT CLEANER

Rajagopala Venkataramani, Berkeley Heights, and Raymond Levonaitis, Middlesex both of N.J., assignors to Wilputte Corporation, Murray Hill, N.J.

Filed Apr. 29, 1981, Ser. No. 258,726

Int. Cl.³ C10B *43/06*

U.S. Cl. 202—241 **8 Claims**



1. Apparatus for cleaning the cover seats of openings in ascension pipes of coke oven batteries comprising frame means adapted for mounting on a larry car, a rotatable shaft journaled in said frame means and connected through a universal joint with scraper means rotated by the shaft adapted to scrape the cover seat and with tapered centering means adapted to be inserted into an ascension pipe opening, said scraper means being freely rotatable with respect to said centering means, and spring loading means fixed to the shaft and biasing the scraper means, the points of fixation to the shaft and the scraper means being on opposite sides, respectively, of the universal joint adapted to maintain the scraper means in contact with the cover seat during possible angular misalignment of the shaft with the ascension pipe opening.

4,369,096

PROCESS FOR THE PURIFICATION OF EPOXIDES

Hermann Seifert, Cologne; Helmut Waldmann, Leverkusen; Rolf Wirthwein, Hanau, and Willi Hofen, Rodenbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Deutsche Gold und Silberscheideanstalt Vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Continuation of Ser. No. 13,758, Feb. 21, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,316

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810662

Int. Cl.³ B01D *3/34*

U.S. Cl. 203—58 **20 Claims**

1. A process for the purification of epoxides which comprises passing a feed stream consisting essentially of epoxide alone or in admixture with a solvent used in its preparation

which feed stream contains relative to the epoxide, up to 2% by weight of carbonyl compounds containing 1 to 5 C atoms, into the middle region of a distillation unit, passing in a compound which contains one or more NH_2 groups above the inlet of the epoxide-containing feed stream and taking off the purified epoxide as the top product, or in a side stream, above the point at which said compound containing at least one NH_2 group entering the distillation column so that the carbonyl content is reduced distillatively to less than 100 ppm.

4,369,097
METHOD AND APPARATUS OF DISTILLATION FOR READILY POLYMERIZABLE LIQUID

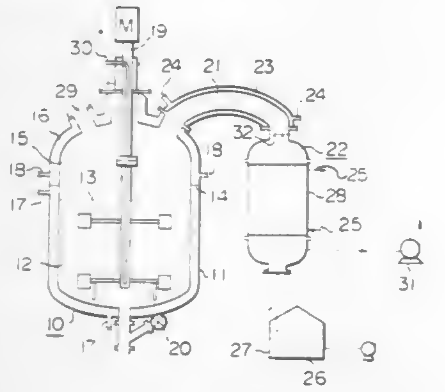
Satoshi Nezu, Oisomachi; Keijin Goto, and Seisuke Yano, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1981, Ser. No. 296,046

Claims priority, application Japan, Aug. 29, 1980, 55-118418; Aug. 29, 1980, 55-118419

Int. Cl.^{3} B01D *3/02*

U.S. Cl. 203—100 **3 Claims**



1. A method for distilling readily polymerizable liquid comprising the steps of:

(a) vaporizing the polymerizable liquid from a liquid phase containing the same in an evaporator by externally heating the liquid phase with a heating medium having a temperature of not more than 20° C. above the boiling point of the polymerizable liquid under the system pressure while the polymerizable liquid and a vapor are separately heated by means of separate external heating means mounted on an outer wall of the evaporator, the vertical location of the upper end of the heating means for the polymerizable liquid being located above the liquid level of the polymerizable liquid in the evaporator;

(b) superheating the vapor of the polymerizable liquid to a temperature from 5° to 50° C. above the dew point of the vapor under the system pressure by externally heating and introducing the vapor of the polymerizable liquid to the inlet of a condenser while the vapor is maintained in the superheated state; and, then,

(c) condensing the vapor in the condenser, while a portion of a condensed fraction is circulated to the inlet of the condenser, whereby a condensation surface thereof is wetted.

4,369,098
METHOD OF MANUFACTURING ABRASIVE ARTICLES

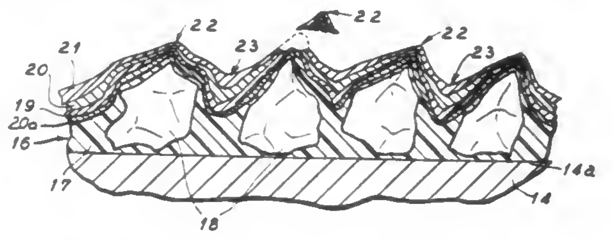
Harry P. Van Roeyen, Skokie, Ill., assignor to Barristo, Ltd., Chicago, Ill.

Filed Aug. 12, 1980, Ser. No. 177,456

Int. Cl.^{3} C25D *5/34, 5/48, 15/00*

U.S. Cl. 204—16 **29 Claims**

1. The method of making nail files which comprises stamping a steel sheet to form a blank with a header strip having a plurality of spaced fingers depending therefrom and connected thereto by narrow nibs, stripping oil and grease from the fingers, successively spray coating opposite faces of the fingers with slurries of abrasive granules in epoxide resins, skin curing each coating, stacking the thus coated skin cured blanks between paper sheets, finish curing the coatings on the blanks in the stack, cleaning the cured blanks, acid etching the cleaned blanks, rinsing the etched blanks, immersing the thus rinsed blanks in a stannous chloride accelerator bath, again rinsing the blanks, depositing an electroless thin nickel coating on the blanks, rinsing the nickel coated blanks, copper plating the rinsed nickel coated blanks, rinsing the copper coated blanks, nickel plating the rinsed copper plated blanks, chrome plating the rinsed nickel plated blanks, rinsing the chrome plated blanks, severing the nibs to remove the fingers from the header, and mounting handles on the nib ends of the blanks.



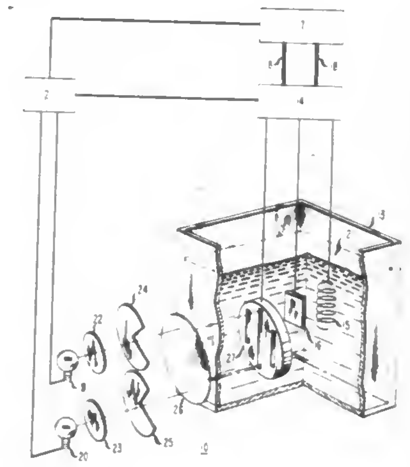
4,369,099
PHOTOELECTROCHEMICAL ETCHING OF SEMICONDUCTORS

Paul A. Kohl, and Frederick W. Ostermayer, Jr., both of Chatham, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 8, 1981, Ser. No. 223,356

Int. Cl.^{3} C25F *3/12*

U.S. Cl. 204—129.3 **32 Claims**



1. A process for fabricating devices comprising at least one compound semiconductor material selected from the group consisting of III-V and II-VI compound semiconductor material with a given band gap in which the compound semiconductor material is photoelectrochemically etched by a procedure comprising the step of passing electrical energy through a semiconductor electrode comprising compound semiconductor material, electrochemical solution and counter electrode characterized in that;

(a) the compound semiconductor material is p-type

(b) the electrical energy is applied to the semiconductor electrode in the form of pulses comprising reducing pulses and oxidizing pulses, in which said reducing pulses have a semiconductor electrode potential such as to reduce the semiconductor material and said oxidizing pulses have a semiconductor electrode potential such as to oxidize the semiconductor material;

(c) the electrochemical solution removes the reduction and oxidation products of the photoelectrochemical etching reaction; and

(d) the semiconductor material is irradiated by radiation with photon energy greater than the band gap of the semiconductor material.

4,369,100
METHOD FOR ENHANCING CHEMICAL REACTIONS

Harold T. Sawyer, 845 Via de la Paz, Los Angeles, Calif. 90272

Division of Ser. No. 837,041, Sep. 27, 1977, Pat. No. 4,168,295, and a continuation of Ser. No. 144,317, Apr. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 9,282, Feb. 2, 1979, abandoned, said Ser. No. 837,041, is a continuation-in-part of Ser. No. 633,818, Nov. 20, 1975, abandoned. This application Jul. 23, 1981, Ser. No. 285,952

Int. Cl.^{3} B01D *19/10*

U.S. Cl. 204—157.1 S **9 Claims**

1. A method for enhancing chemical activity in a continuous system comprising continuously circulating a predominately liquid mass through the system at a selected rate of flow, continuously introducing a chemical agent into the predominately liquid mass to form a predominately liquid composite mass, confining the flow of said composite mass to a stream of annular cross-sectional shape having an inflow at one end and an outflow at the other end, moving the composite mass in a freely flowing stream and at a substantially continuous rate from said inflow end to said outflow end, setting up a multiplicity of ultrasonic sources of resonance throughout the length and circumference of said stream and transmitting said resonance in radially inwardly converging directions toward and into the free flowing stream of said composite mass simultaneously and uniformly throughout the entire length and perimeter thereof, whereby to develop a condition of cavitation in the ultrasonic range while said composite mass is in transit, and then collecting the resulting combination of said composite mass at a discharge location.

4,369,101
APPARATUS FOR ELECTROPOLISHING TUBES

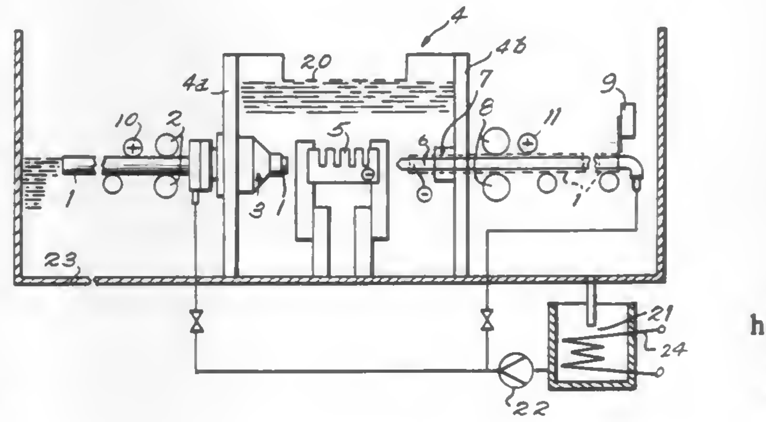
Willi Wolff, Kahl; Ottomar Pfahls, Gelnhausen, and Reinhold Schumacher, Babenhausen, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,576

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016795

Int. Cl.^{3} C25F *7/00;* C25D *17/00*

U.S. Cl. 204—224 R **4 Claims**



1. Apparatus for electropolishing the inner surface of a metallic tube comprising:

a metallic lance adapted to be inserted in the tube;

at least two electrically insulating spacer elements mounted on said lance in longitudinally spaced relation therealong, with the exposed surface of said lance between said elements constituting a metal cathode, said elements being of an overall dimension about the same as that of the interior diameter of the tube so that said elements serve to center said lance, and particularly said cathode, within said tube,

the forward one of said elements being constructed to provide passageways therethrough for the out flow of electrolyte from the annular space between said cathode and the tube, and

the rearward one of said elements and said lance being provided with passageways therethrough for flow of electrolyte from within said lance through said passageways and out of said rearward element forwardly toward said forward spacer element;

means connected to said lance rearwardly of said rearward element for supplying said lance passageway with liquid electrolyte a cell for containing liquid electrolyte with said lance projecting through a tube exit opening in the side wall of said cell with said rearward spacer element located substantially within said opening in closely spaced relation therewith;

a tubular structure projecting from said wall interiorly of said cell forwardly of said rearward spacer element whereby the flow of liquid electrolyte therefrom minimizes or prevents flow of electrolyte out of said cell through said exit opening when no tube is present;

means defining a tube entrance opening in the side wall of said cell opposite said exit opening; and

means for minimizing or preventing flow of electrolyte out of said entrance opening when no tube is present comprising means for directing a jet-like flow of electrolyte into said entrance opening.

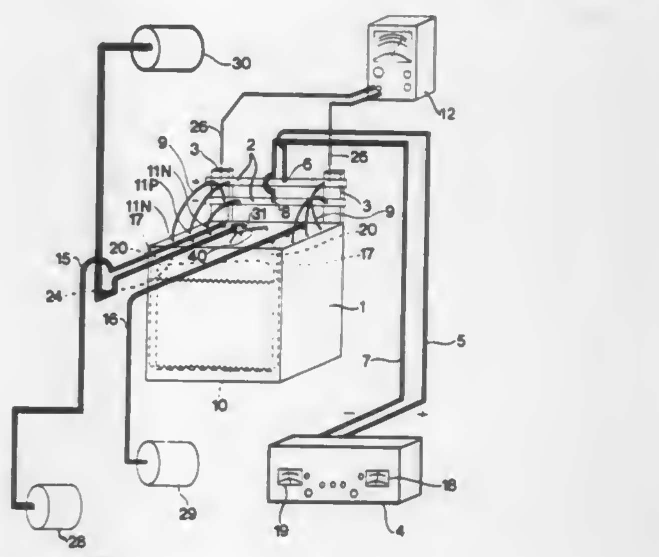
4,369,102
ELECTROLYSIS APPARATUS FOR DECOMPOSING WATER INTO HYDROGEN GAS AND OXYGEN GAS

Daniel T. Galluzzo, Jarrettsville, and Charles L. Dumler, Towson, both of Md., assignors to Hydor Corporation, Towson, Md.

Filed Nov. 25, 1980, Ser. No. 210,336

Int. Cl.^{3} C25B *15/08, 9/04, 13/02, 11/02*

U.S. Cl. 204—228 **39 Claims**



1. An electrolysis apparatus for decomposing water into hydrogen gas and oxygen gas, comprising:

means for housing water to be decomposed;

a plurality of symmetrically folded and sharply edged unipolar electrode means for decomposing the water held in the housing means;

a plurality of means for separating each of the plurality of a unipolar electrode means from one another; and

means for wiring the plurality of unipolar electrode means in parallel.

4,369,103
SOLID POLYMER ELECTROLYTE CELL

Preston S. White, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 120,247, Feb. 11, 1980, abandoned, and a continuation-in-part of Ser. No. 105,055, Dec. 19, 1979, abandoned. This application Aug. 14, 1981, Ser. No. 293,021

Int. Cl.^{3} C25B *9/00, 11/04, 13/04*

U.S. Cl. 204—252 **1 Claim**

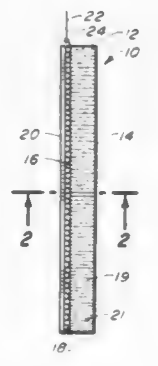
1. In an electrolytic cell divided into two electrolyte com-

partments by a permionic membrane, said electrolytic cell having an electrode pair of anodic electrocatalyst in contact with one surface of the permionic membrane and cathodic electrocatalyst in contact with the opposite surface thereof, the improvement wherein at least one member of said electrode pair comprises electrocatalyst particles adherent to the permionic membrane, said electrocatalyst particles being rendered adherent to the permionic membrane when a surface of the permionic membrane is in a thermoplastic form chosen from the group consisting of low alkyl esters of carboxylic acid resins, acid halides of carboxylic acid resins, and acid halides of sulfonic acid resins.

4,369,104
CONTINUOUS FILAMENT GRAPHITE COMPOSITE ELECTRODES

Don A. Beckley, Newport Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Oct. 22, 1979, Ser. No. 87,215
Int. Cl.^{3} C25B *11/12*
U.S. Cl. 204—286 **14 Claims**



1. An electrode comprising a shaped member having an electrode face and a rear face defining a thickness therebetween, said electrode comprising a composite of matrix resin surrounding spaced, parallel conductive graphite fibers each having first and second ends extending between said faces and having a diameter below thirty microns said composite including from 20 to 80% by volume of fibers, the balance being matrix resin; and

a metal conductive element applied to the rear face of the electrode and in electrical contact with said first fiber ends.

4,369,105
SUBSTITUTED COBALT OXIDE SPINELS

Donald L. Caldwell, and Mark J. Hazelrigg, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1981, Ser. No. 247,429
Int. Cl.^{3} C25B *11/06*
U.S. Cl. 204—290 F **20 Claims**

1. An electrically-conductive composite comprising an electrically-conductive substrate, an interface coating, and a monometal or polymetal cobalt spinel outer coating,

said interface coating comprising a layer of at least one metal oxide of the group consisting of lead oxide, tin oxide, antimony oxide, aluminum oxide, and indium oxide,

said monometal or polymetal cobalt spinel comprising at least one substituted cobalt oxide spinel conforming substantially to the empirical formula $M_xZ_yCo_{3-(x+y)}O_4$,

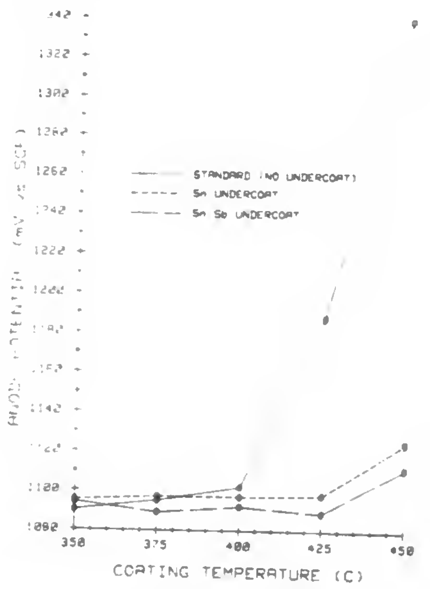
where M is at least one metal of the Groups IB, IIA, and IIB,

where Z is at least one metal of Group IA,

where x is greater than or equal to zero, but not greater than 1,

where y is greater than or equal to zero, but not greater than 0.5,

where (x+2y) is greater than or equal to zero, but not greater than 1, and where the amounts of M, Z, and Co are sufficient to substantially satisfy the valence requirements of oxygen in the spinel structure.



4,369,106
COAL LIQUEFACTION PROCESS

Clyde L. Aldridge, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 138,822, Apr. 10, 1980, abandoned. This application Mar. 16, 1981, Ser. No. 244,082
Int. Cl.^{3} C10G *1/06*
U.S. Cl. 208—10 **22 Claims**

1. In a process for the hydroconversion of coal in a diluent, which comprises the steps of:

(a) forming a mixture of coal, a diluent and a phenol-soluble metal compound wherein said metal compound comprises at least one metal constituent selected from the group consisting of Groups II, III, IVB, VB, VIB, VIIB, VIII and mixtures thereof of the Periodic Table of Elements;

(b) reacting the resulting mixture with a hydrogen-containing gas at hydroconversion conditions, said metal compound being converted to a catalyst within said mixture at said conditions, and

(c) recovering a normally liquid hydrocarbon product,

the improvement which comprises adding to said diluent an admixture comprising said metal compound and a liquid medium, said liquid medium comprising at least about 30 weight percent of at least one phenol, based on said liquid medium, and said metal compound comprising not more than about 50 weight percent of said admixture.

4,369,107
SEPARATION OF SUPER-ACID IN A COAL LIQUIFICATION PROCESS

Steven C. Amendola, 11 Thornwood Pl., Scarsdale, N.Y. 10583

Filed Jun. 19, 1981, Ser. No. 275,497
Int. Cl.^{3} C10G *1/06, 47/02;* C10J *1/20, 3/00*
U.S. Cl. 208—10 **12 Claims**

1. An improved process for rapidly converting essentially solid carbonaceous material to essentially liquid and gaseous hydrocarbon products, comprising a first phase of reacting said solid material with at least one acid to form carbon addition products, a second phase of reacting products of the first-phase reaction with a Lewis acid, halide-ion-acceptor (super-acid) system and hydrogen donor source (hydrogenation), and wherein the acid or acid combinations used in the first phase is capable of donating a negative ligand to the Lewis acid in the second phase in order to form carbonium ions, wherein the improvement comprises separating the components of the super-acid system from the hydrocarbon products by

a. Obtaining the fractions of the resulting hydrocarbon product which contain the super-acid system;

b. combining the fraction thus obtained with a salt capable of forming a heat, reversible, hydrocarbon insoluble, double salt with the components of the super-acid system;

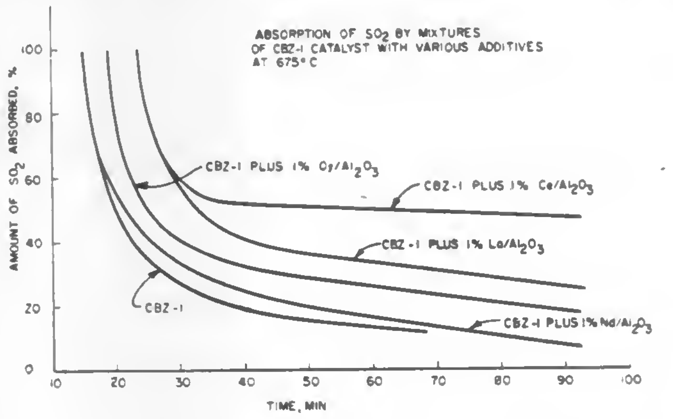
c. separating the insoluble double salts which form from the hydrocarbon product; and

d. heating the insoluble double salt to its decomposition point in order to volatize the components of the super-acid system.

4,369,108
PROCESS FOR REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Naperville; Eugene H. Hirschberg, Park Forest, and Frank S. Modica, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 29,264, Apr. 11, 1979. This application Jul. 31, 1981, Ser. No. 288,778
Int. Cl.^{3} C10G *11/05, 11/18*
U.S. Cl. 208—120 **29 Claims**



1. A process for removing sulfur oxides from a gas which comprises:

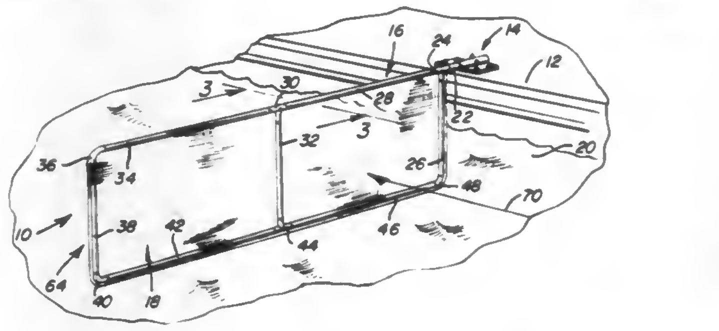
(a) absorbing sulfur oxides from the gas with an absorbent which comprises alumina in association with free or combined lanthanum at a temperature in the range from about 100° to about 900° C., wherein the ratio by weight of alumina to lanthanum is from about 1.0 to about 1,000; and

(b) removing said absorbed sulfur oxides from the absorbent as a sulfur-containing gas which comprises hydrogen sulfide by contacting said absorbent with a hydrocarbon in the presence of a hydrocarbon cracking catalyst at a temperature in the range from about 375° to about 900° C.

4,369,109
POOL SKIMMING NET

William F. Edge, 23 S. Ninth St., Quakertown, Pa. 18951

Filed Jan. 8, 1981, Ser. No. 223,275
Int. Cl.^{3} B01D *23/02*
U.S. Cl. 210—169 **7 Claims**



1. A pool skimming apparatus, said apparatus comprising:

net means for positioning in said pool to facilitate a skimming of floating debris from a surface portion of said pool, said net means being formed from two rectangularly-shaped portions of net juxtaposed one on top of the other and attached together along three edges thereof, said remaining edge of said net means being left open so as to form said net means into a sack-like structure having an open end;

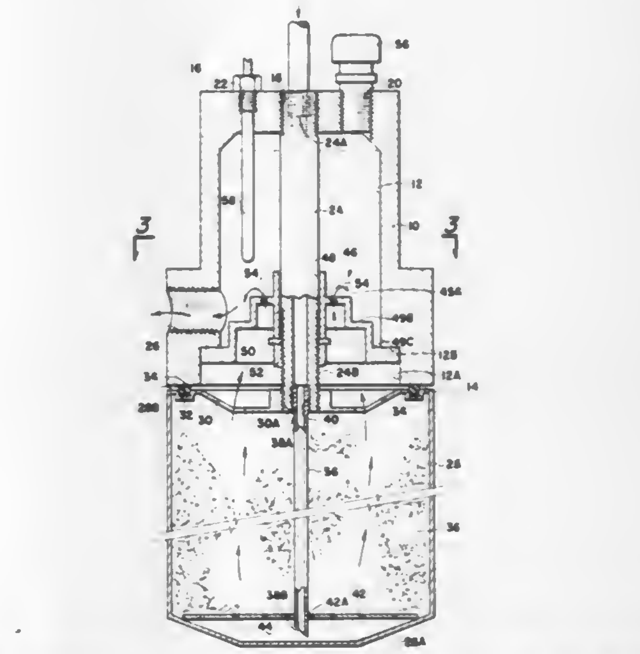
support means for supporting said net means in position within said pool, said support means including a rectangularly-shaped frame structure and a support arm extending therefrom, said rectangularly-shaped frame structure being formed from a plurality of longitudinally and vertically extending plastic tubular members fixedly secured together, said support arm similarly being formed from a plastic tubular member and being fixedly secured to said frame structure, said open end of said net means being positionable over a remote end of said frame structure so as to permit said net means to be slid over a substantial portion of said frame structure into a debris collecting position; and

connection means attachable to an edge of said pool for receiving said support arm of said support means, said connection means including a mounting a plate member having a support arm receiving portion, said support arm receiving portion including at least two apertures, said support arm having a spring-biased projection extending therefrom, said projection being receivable into one of said at least two apertures in said support arm receiving portion so as to facilitate a lockable positioning of said support means within said pool, said at least two apertures in said support arm receiving portion being positioned to facilitate a rotatable angular positioning of said support means.

4,369,110
OIL FILTER FOR USE ON INTERNAL COMBUSTION ENGINES

Robert A. Picek, Noble, Okla., assignor to David L. Priest, Norman; Harold L. Priest, Moore; Michael G. Priest, Noble and Bessie A. Rainer, Norman, all of, Okla.

Filed Aug. 13, 1981, Ser. No. 292,711
Int. Cl.^{3} B01D *35/18*
U.S. Cl. 210—180 **8 Claims**



1. An improved oil reconditioning device for use on internal combustion engines, comprising:

a body having an interior recess having means at one end to receive the attachment of a filter cartridge thereto, the body having an oil inlet and an oil outlet therein;

a needle member extending from said body portion centrally of said one end, the needle member being in communication with said oil inlet;

a filter cartridge having an open top end and a closed bottom end and having packing material homogeneously distributed across the full cross-sectional interior thereof, the cartridge being secured to said body so that the open top end is in sealed engagement with said one end of said body;

means of removably attaching said filter cartridge to said body, the needle member extending through and penetrating said packing as the cartridge is attached so that the outer end of the needle member is adjacent the cartridge interior bottom, the outer cylindrical surface of said needle member sealably engaging said packing material, whereby oil flows into said body oil inlet, through said needle member and into said cartridge adjacent the interior bottom thereof, through said packing and back into said body interior opening and out through said body oil outlet, solid contaminants being captured by said packing material.

4,369,111
ACTIVATED SLUDGE SYSTEM

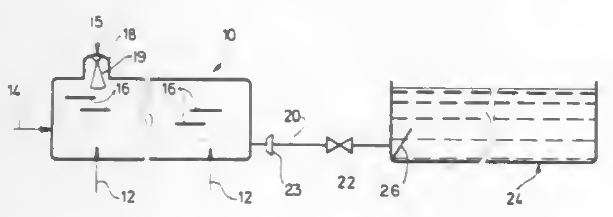
Markus Roediger, Stuttgart, Fed. Rep. of Germany, assignor to Techtransfer GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,172

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1980, 3025653

Int. Cl.^{3} C02F *3/20*

U.S. Cl. 210—199 **2 Claims**



1. In an activated sludge system comprising an aeration tank and a secondary settler reservoir, the improvement comprising the aeration tank being a generally sealed pressure reservoir (10) having means (14) for introducing sewage water therein, and including means (12) located in the bottom wall of said pressure reservoir (10) for independently introducing oxygenous gas under pressure at the bottom of said pressure reservoir to be dissolved in sewage water contained in said pressure reservoir (10) and further including means (16) positioned intermediate the bottom and top of said pressure reservoir (10) for delaying the upward traversal of the oxygenous gas through the sewage water contained in pressure reservoir (10), and having a dome (18) including means (15) for introducing sewage water therein, said dome containing oxygenous gas and an ejector (19) for simultaneously blending under pressure the oxygenous gas contained in said dome and said sewage water introduced therein and directly introducing this mixture into said pressurized reservoir (10) and further including conduit means (20), power generator (23), and pressure reducing valve (22), intermediate said pressure reservoir (10) and settler reservoir (24), said secondary settler reservoir being a flotation basin (24) including means (26) disposed at an angle to the horizontal of said basin (24) for diverting the water flowing from pressure reducing valve (22) and into said basin to effect upwardly flowing currents within said secondary settler reservoir, said power generator (23) partially driven by the existing fluid pressure difference between the pressure reservoir and flotation basin for providing oxygenous gas bubbles to the sewage water and conduit (20), and means for utilizing the pressurized oxygenous sewage water from the pressure reservoir to provide gas bubbles in the secondary settler reservoir for flotation of sludge.

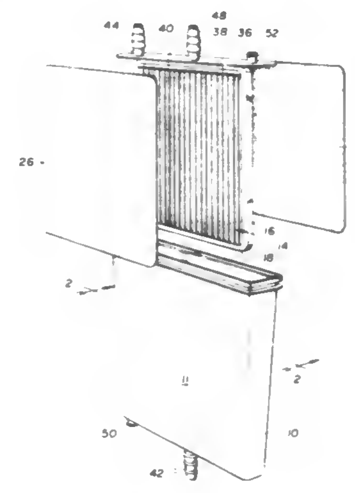
4,369,112
FILTER DEVICE

Monty E. Vincent, and Robert E. Corbett, both of Ann Arbor, Mich., assignors to Gelman Sciences Inc., Ann Arbor, Mich.

Filed Mar. 18, 1981, Ser. No. 244,849

Int. Cl.^{3} B01D *31/00*

U.S. Cl. 210—433.2 **5 Claims**



1. The filter device comprising a housing with elongated top and bottom walls and side walls which taper inwardly from top to bottom, said top wall having extending downwardly therefrom into the housing a generally flat filter membrane support with a quadrangular periphery, a pair of filter membranes being disposed on opposite sides of the support and sealingly bonded to its periphery, the support having a center portion with spaced coplanar surfaces on each of the two sides thereof adjacent the filter membranes to provide support for the center portions of the filter membranes, said top wall having an opening which extends through the periphery of the support and communicates with the space between the two filter membranes, and said top wall having at least one opening adjacent a side wall of the housing communicating with the space between the housing and the two membranes, the bottom wall and side walls of the housing being in the form of a unitary molding of organic polymeric material open at its upper end, and the top wall and the downwardly extending filter membrane support being formed of another molding of organic polymeric material bonded about the periphery of the top wall into the open end of the other molding.

4,369,113
HIGH STRENGTH SPIN-ON FILTER

Jack Stifelman, Minneapolis, Minn., assignor to Donaldson Company, Inc.

Filed Oct. 29, 1981, Ser. No. 316,144

Int. Cl.^{3} B01D *27/08*

U.S. Cl. 210—440 **23 Claims**

1. A spin-on filter, comprising:

a generally cylindrical housing with an open end and closed end;

a generally cylindrical filter element disposed within said housing, said filter element having an open end and a closed end;

a rigid cover disposed in the open end of said housing;

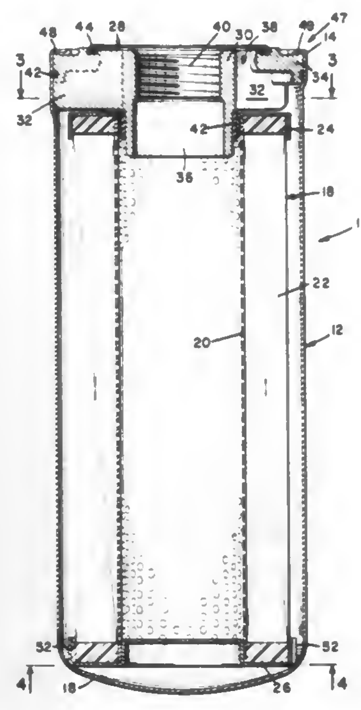
said cover being of unitary construction including a hub extending substantially into said housing and defining a first flow opening, a circular rim, and radial ribs connected between the hub and rim and defining second flow openings;

the open end of said housing surrounding and being folded inwardly over the periphery of the rim into a predetermined fold to interconnect said cover and housing;

a first seal between said cover and said housing;

a second seal between the open end of said filter element and said cover;

a third seal seated in a groove formed in the rim of the said cover and surrounding the flow openings; and



means formed on said cover for removably mounting the filter.

4,369,114
ADSORPTION PROCESS WITH RESIN TRANSFER

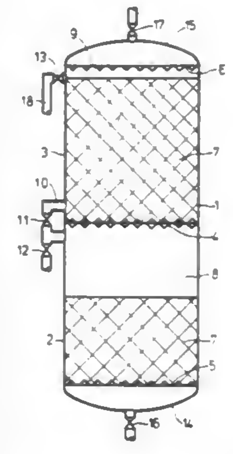
Günter Siegers, Bergish-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 198,745, Oct. 20, 1980, abandoned. This application May 26, 1981, Ser. No. 267,234

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1979, 2950875

Int. Cl.^{3} B01D *15/02, 23/24*

U.S. Cl. 210—661 **2 Claims**



1. In the countercurrent process for the treatment of liquids with an ion exchanger the volume of which decreases on charging and increases on regeneration, by charging this ion exchanger in upward flow, the lower part of the ion exchanger mass being in the form of a fluidized bed and the upper part being in the form of a fixed bed, regenerating the charged ion exchanger in downward flow and backwashing in upward flow, the improvement comprising

(a) distributing the ion exchanger within the ion exchange filter between 2 or 3 chambers which are separated from each other by trays which are permeable to liquid, and of which chambers adjacent chambers are connected to one another by a pipeline which permits the transfer of the ion exchanger and has a shut-off organ;

(b) conveying the ion exchanger into the individual chambers, or removing it from them, within the filter before and/or during the individual phases of operation, via the pipeline which permit transfer of the ion exchanger, in an amount such that during charging, the chamber through which the liquid to be treated flows last is filled to the extent of 80 to 98% by volume relative to the volume of the chamber, with ion exchanger in the form of a fixed bed, and that during regeneration, this chamber through which the liquid flowed last is uniformly filled to the extent of 80 to 100% by volume, relative to the chamber volume, with ion exchanger and that, during backwashing, the backwashing space in the chamber to be backwashed is 30 to 100% by volume, relative to the volume of the ion exchanger in the chamber to be backwashed; and

(c) using for transfer of the ion exchanger from one chamber into the other the liquid to be treated during charging, the regeneration agent during regeneration and the backwashing liquid during backwashing.

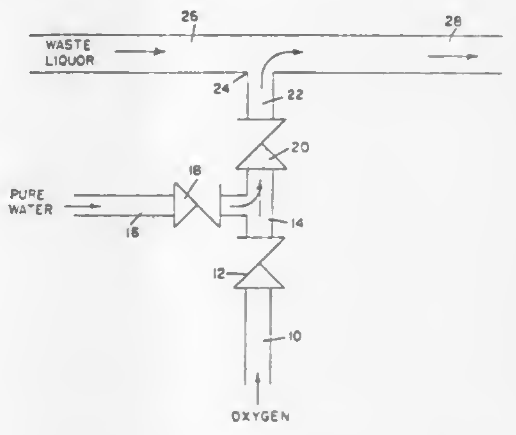
4,369,115
MIXING WASTE WITH OXYGEN IN A WET OXIDATION PROCESS

Gerald L. Bauer, Rothschild, Wis., assignor to Sterling Drug, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 91,111, Nov. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 80, Jan. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 834,232, Sep. 19, 1977, abandoned. This application Oct. 3, 1980, Ser. No. 193,615

Int. Cl.^{3} C02F *1/74*

U.S. Cl. 210—761 **2 Claims**



1. In a process for carrying out a wet oxidation of a waste liquor with oxygen or an oxygen enriched gas in a reactor, the improvement which comprises mixing said oxygen or oxygen enriched gas from an oxygen supply line with pure liquid water prior to adding oxygen or oxygen enriched gas to said waste liquor in order to prevent backflow of the waste liquor into the oxygen supply line, wherein the amount of liquid water remaining unevaporated after the mixing step is between one hundredth of a pound of water per pound of oxygen and ten pounds of water per pound of oxygen, and in which the mixture of oxygen or oxygen enriched gas and pure liquid water is added to the waste liquor before the latter is introduced into the reactor.

4,369,116
LIQUID FILTRATION METHOD

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724

Continuation-in-part of Ser. No. 833,644, Sep. 15, 1977, Pat. No. 4,207,378, which is a continuation-in-part of Ser. No. 342,535, Mar. 16, 1973, abandoned. This application Mar. 14, 1980, Ser. No. 130,413

Int. Cl.^{3} B01D *37/02*

U.S. Cl. 210—778 **14 Claims**

1. A method of filtering a liquid, which method comprises adding to the liquid a filtering aid effective amount of a filter

aid material consisting essentially of particulate expanded polymer formed by comminuting polymeric foam to eliminate substantially all closed cells of said foam and grading to a desired average particle size range smaller than 100 mesh and larger than about 700 mesh, and filtering the resulting liquid mixture through a filter medium.

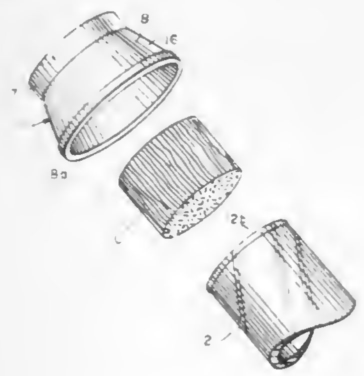
4,369,117
SERUM SEPARATING METHOD AND APPARATUS

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed May 12, 1980, Ser. No. 148,815

Int. Cl.^{3} B01D *21/26*

U.S. Cl. 210—782 **25 Claims**



19. A method of treating a coagulated sample of blood in an open-topped centrifuge tube to separate clear serum from the clot of fibrin and cellular components, comprising the steps of inserting a laterally-expandable, porous, cylindrical filter element into the open top of said tube and then centrifuging said tube and its contents to cause said element to descend towards the bottom of said tube behind said clot while allowing serum to flow upwardly into and through said element; said element being formed of a multiplicity of fibers randomly oriented primarily in a longitudinal direction and bonded together only at spaced-apart junctures; said fibers being composed of an inert polymeric material having a specific gravity greater than any of the constituents of said blood sample; said polymeric material of said fibers being cellulose acetate and said fibers being bonded together at said spaced-apart junctures by glycerol triacetate; and continuing said centrifugation until said filter element engages and compresses said clot within the lower portion of said tube.

4,369,118
PROCESS OF INHIBITING HAZE IN LUBRICATING OIL COMPOSITIONS

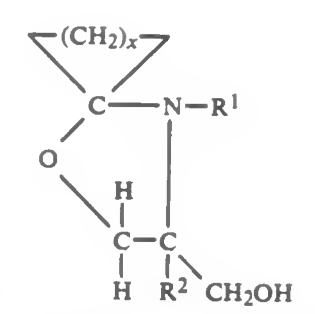
Jack Ryer, East Brunswick, and Ricardo Bloch, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 29, 1980, Ser. No. 220,457

Int. Cl.^{3} C10M *1/32*

U.S. Cl. 252—39 **5 Claims**

1. A process of inhibiting haze in an oil composition comprising a major amount of lubricating oil and 5 to 30 wt. % of copolymer V.I. improver comprising 30 to 80 wt. % ethylene and C_3 to C_{30} alpha olefin, having a number average molecular weight of about 10,000 to 200,000 having an insoluble metal contaminant which causes haze in said oil, said process comprising adding as a haze inhibitor about 0.005 to 1 wt. % of an oil soluble metal chelating compound which is a spiro-(cycloalkane-oxazolidine) characterized by the formula:



wherein: x is an integer of from 4 to 11; R^1 is hydrogen, methyl or ethyl; and R^2 is hydrogen, methyl or ethyl.

4,369,119
ANTIOXIDANT COMBINATIONS OF MOLYBDENUM COMPLEXES AND ORGANIC SULFUR COMPOUNDS FOR LUBRICATING OILS

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 3, 1981, Ser. No. 250,782

Int. Cl.^{3} C10M *1/38, 1/54*

U.S. Cl. 252—42.7 **16 Claims**

1. A lubricating oil additive comprising a combination of
(a) an oil soluble sulfur containing molybdenum complex prepared by (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improvers, or mixtures thereof to form a molybdenum complex wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom, and (2) reacting said complex with a sulfur containing compound in an amount to provide 0.1 to 4 atoms of sulfur per atom of molybdenum, and
(b) an oil soluble organic sulfur compound or mixtures thereof wherein the organic sulfur compound of component (b) is present in an amount of from 0.02 to 10 parts by weight per part by weight of the sulfur containing molybdenum complex.

4,369,120
REFRIGERATION LIQUID WITH LEAK INDICATOR AND PROCESS OF USING SAME

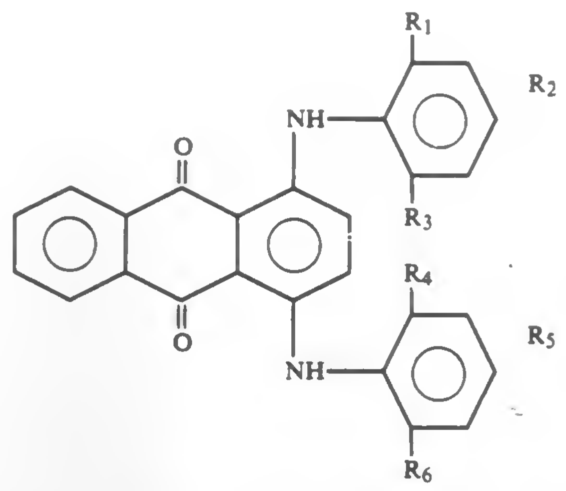
Dale E. Stelz, Goddard, Kans.; Wilson M. Whaley, Cary, and Frank I. Carroll, Durham, both of N.C., assignors to Racon Incorporated, Wichita, Kans.

Filed May 21, 1981, Ser. No. 265,697

Int. Cl.^{3} C09K *5/04*

U.S. Cl. 252—68 **11 Claims**

1. A blue liquid refrigerant composition capable of use as a leak indicator which comprises (a) at least one oil-soluble halocarbon selected from the group consisting of octafluoropropane, octafluorocyclobutane, chloroheptafluorocyclobutane and haloalkanes containing from one to two carbon atoms, from one to six fluorine atoms and from zero to three halogen atoms selected from the group consisting of chlorine and bromine and boiling at a temperature below about 30° C. at atmospheric pressure, and (b) an effective colorant amount of a blue anthraquinone dye corresponding to the formula



wherein R_1, R_3, R_4 and R_6 are each separately selected from the group consisting of methyl and ethyl, and R_2 and R_5 are each separately selected from the group consisting of hydrogen and methyl, and wherein the total number of carbon atoms in all the alkyl radicals attached to any anilino group in the dye does not exceed three.

4,369,121
METHOD AND COMPOSITION FOR THE CONTROL OF DUST

Joseph W. Callahan, Friendswood; Roy M. Christoffel, Dickinson, and Jack W. Horvath, Houston, all of Tex., assignors to Browning-Ferris Industries, Inc., Houston, Tex.

Filed Jun. 18, 1981, Ser. No. 274,745

Int. Cl.^{3} C11D *9/42*

U.S. Cl. 252—88 **6 Claims**

1. A method for reducing the escape of fine aggregate particles from the surface of loose aggregate materials comprising the step of applying to the surface of the aggregate material a uniformly dispersed aqueous solution consists essentially of from about 0.25 to about 2% by weight hydroxyalkylmethylcellulose wherein the alkyl group has from about 1 to about 5 carbon atoms and water.

4,369,122
VULCANIZATION ACCELERATION BASED ON MELAMINE DERIVATIVES, RUBBER COMPOSITIONS CONTAINING MELAMINE DERIVATIVES, AND A PROCESS FOR THE VULCANIZATION OF RUBBER

Rüdiger Schubart, Bergisch-Gladbach, and Ulrich Eholzer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

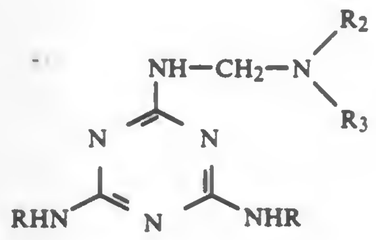
Filed Feb. 17, 1981, Ser. No. 234,944

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006803

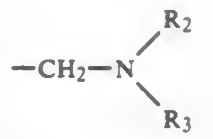
Int. Cl.^{3} C08K *5/34, 5/47;* C07D *251/70*

U.S. Cl. 252—182 **2 Claims**

1. A vulcanization accelerator for a rubber consisting of
(a) 0.1 to 2.0 parts by weight of a melamine derivative of the formula



wherein R is hydrogen or



$$-CH_2-N\begin{matrix}R_2\\R_3\end{matrix}$$

and R_2 and R_3, which may be identical or different, are hydrogen, a straight or branched chain C_1–C_4-alkyl or alkenyl group or a C_3–C_7, cycloalkyl group or R_2 and R_3 are linked through a C_2–C_{12}, alkylene bridge which may contain a hetero atom such as oxygen, sulphur or N-C_1–C_4, alkyl;
(b) 0.3–2.0 parts by weight of a thiazole accelerator and
(c) 0.01–1.0 parts by weight of a conventional accelerator per 100 parts by weight of rubber.

4,369,123
STABLE EMULSIONS OF SUBSTANTIALLY PURE ALKENYLSUCCINIC ACID AND THEIR PREPARATION

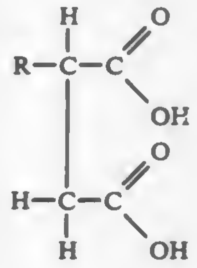
Charles M. Selwitz, Monroeville, and Johann G. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 19, 1980, Ser. No. 161,113

Int. Cl.^{3} B01J *13/00*

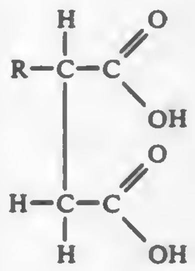
U.S. Cl. 252—312 **15 Claims**

1. A process for preparing an alkenylsuccinic acid-in-water emulsion which comprises
(a) heating a mixture of water and alkenylsuccinic acid, said alkenylsuccinic acid being greater than about 95 weight percent pure and having the formula



wherein R is an alkyl group having between about 26 and about 100 carbon atoms, at a temperature of between about 63° to about 150° C. for at least about 2 minutes,
(b) cooling the resultant mixture to a temperature in the range of between about 10° to below about 40° C.,
(c) vigorously stirring the cooled mixture while maintaining the temperature in the range of from about 10° to below about 50° C. for at least about 2 minutes thereby forming a stable emulsion wherein the average particle diameter of the emulsion particles is between about 2 and about 30 microns.

12. A stable emulsion comprising emulsion particles of alkenylsuccinic acid in water, said alkenylsuccinic acid being greater than 95 weight percent pure and having the formula



wherein R is an alkyl group having between about 26 and about 100 carbon atoms, said emulsion particles having an average particle diameter of between about 2 and about 30 microns.

4,369,124

HIGH VISCOSITY COMPLEXED AQUEOUS GELS AND METHODS AND ADDITIVES FOR FORMING SUCH GELS

Eugene A. Elphingstone, and John M. Dees, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Sep. 14, 1979, Ser. No. 75,481
Int. Cl.^{3} B01J *13/00*
U.S. Cl. 252—316 **9 Claims**

6. A method of forming a high viscosity complexed aqueous gel comprising the steps of:

combining an additive with water to form said complexed aqueous gelled fluid, said additive being comprised of:

a solid gelling agent selected from the group consisting of hydratable polysaccharides and hydratable synthetic polymers; and

a complexing agent selected from the group consisting of organic titanate monomers, homopolymers of such monomers and mixtures thereof present in said additive in an amount whereby the weight ratio of complexing agent to gelling agent in said additive is in the range of from about 0.01 to about 0.2, the monomers having the general formula:

$$Ti(-R_1-)_w(-R_2-)_x(-OH)_y(-O-)_z$$

wherein:

R_1 is a bidentate organic ligand having one covalent bond and one one coordinate covalent bond and having from 2 to 18 carbon atoms selected from the group consisting of α, β and γ hydroxy acids, α, β and γ hydroxy esters, α, β and γ hydroxy aldehydes, α, β and γ hydroxy ketones, α, β and γ hydroxy ethers, α, β and γ sulfur containing groups, and α, β and γ amines;

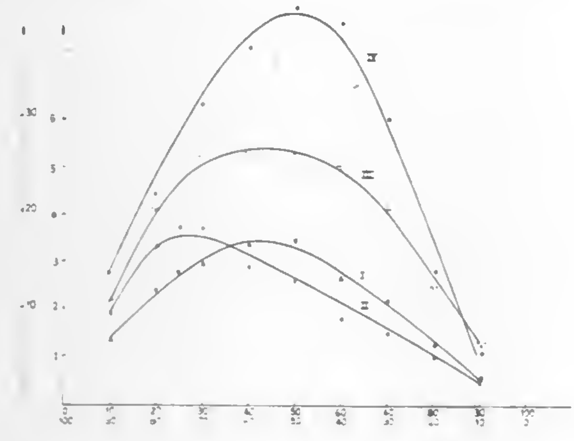
R_2 is a monodentate organic ligand having from 1 to 18 carbon atoms selected from the group consisting of alkoxy, aryloxy and other hydroxy organic groups;

w is an integer in the range of from 1 to 4;
x is 0 or an integer in the range of from 1 to 3;
y is 0 or an integer in the range of from 1 to 3; and
z is 0 or an integer in the range of from 1 to 3.

4,369,125

GELLING COMPOSITIONS HAVING A BASE OF GALACTOMANNANS AND XANTHAN

Horst Kragen, and Gerard Brigand, both of Carentan, France, assignors to C E C A-S.A., Velizy, France
Continuation of Ser. No. 935,944, Aug. 25, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,322
Claims priority, application France, Sep. 12, 1977, 77 27467
Int. Cl.^{3} B01J *13/00*
U.S. Cl. 252—316 **8 Claims**



1. A gelling composition consisting essentially of xanthan and a galactomannan gum selected from the group consisting of carob gum, tara gum, Espina Corona gum and mixtures thereof, wherein said xanthan has been subjected to a total or partial deacetylation treatment and wherein the ratio of deacetylated xanthan to galactomannan is from about 15/85 to 90/10.

5. A method of obtaining aqueous gels having a base of a galactomannan gum and xanthan, said galactomannan gum selected from the group consisting of carob gum, tara gum, Espina Corona gum and mixtures thereof, the method comprising the steps of subjecting the xanthan to a total or partial deacetylation treatment, mixing the deacetylated xanthan with the galactomannan at a ratio of from about 15/85 to 90/10; combining the resulting mixture with an aqueous phase; heating the resulting mixture to from about 75° to 90° C.; and cooling.

4,369,126

CHEMICAL BLOWING AGENT

Raymond J. Bathgate, Royston, England, assignor to FBC Limted, Hauxton, England
Filed Mar. 20, 1981, Ser. No. 246,044
Claims priority, application United Kingdom, Mar. 21, 1980, 80/09658
Int. Cl.^{3} C06D *5/06*
U.S. Cl. 252—350 **14 Claims**

1. A method for making a blowing agent composition which comprises a solid, thermally decomposable blowing agent and a solid activator for the blowing agent characterised in that a mixture of the blowing agent and the activator is comminuted until the mean particle size of the mixture is less than 5 micrometers.

4,369,127

BLOOD GAS CONTROL

Alan D. Cormier, Newburyport; Marvin Feil, Brookline, and Kenneth D. Legg, Wellesley, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.
Continuation-in-part of Ser. No. 170,600, Jul. 21, 1980, Pat. No. 4,299,728. This application Mar. 9, 1981, Ser. No. 241,600
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.^{3} G01N *33/48;* **C09K** *3/00;* **B01J** *13/00;* **G01N** *33/00*
U.S. Cl. 436—111 **21 Claims**

1. A blood gas control product comprising a sealed container and a liquid composition of matter in said container, said composition of matter comprising

a stable oil-in-water emulsion that includes water, a water insoluble non-protein organic compound material, and a non-ionic surfactant that is partially soluble in both said water and said compound material,

a pH buffering agent, and

a preservative present in a concentration sufficient to inhibit microbial growth in said blood gas control liquid without inpairing the quality control functions of said liquid, said preservative being substantially non-reactive with said buffering agent, said composition having a viscosity of less than ten centipoises and an oxygen solubility coefficient, at one atmosphere pressure and 25° C, of at least 10 ml O_2 per 100 ml liquid.

11. A blood gas control product comprising a sealed container and a liquid composition of matter in said container, said composition of matter comprising

a stable oil-in-water emulsion that comprises water, 5–40% by volume of a water-insoluble perfluorinated compound material, said emulsion having an oxygen solubility coefficient, at one atmosphere pressure and 25° C., of at least 10 ml O_2 per 100 ml liquid, and

0.25–10% by volume of a non-ionic fluorocarbon-based surfactant capable of emulsifying said perfluorinated compound material,

a pH buffering agent, and

a preservative present in a concentration sufficient to inhibit microbial growth in said blood gas control liquid without impairing the quality control functions of said liquid, said preservative being substantially non-reactive with said buffering agent,

said blood gas control liquid having a viscosity of less than ten centipoises, a pH in the range of 7.0 to 8.0, a partial pressure of CO_2 in the range of 15–80 mm Hg, and a partial pressure of O_2 in the range of 20–600 mm Hg.

4,369,128

CATALYST FOR OXIDATION

Fred Moseley, Cobham, United Kingdom, and Paul N. Dyer, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Apr. 22, 1981, Ser. No. 256,426
Claims priority, application United Kingdom, Apr. 22, 1980, 8013165; Mar. 17, 1981, 8108246
Int. Cl.^{3} B01J *31/22*
U.S. Cl. 252—429 R **8 Claims**

1. A catalyst formed by contacting hydrogen and oxygen with a liquid reaction mixture comprising water, an organic solvent which is a fluorocarbon, a halofluorocarbon, a perfluoroaliphatic ether, a perfluoroalkyl tertiary amine or a mixture thereof, and bis[tri(pentafluorophenyl)phosphine] palladium dichloride.

4,369,129

PRODUCTION OF RHENIUM-CONTAINING REFORMING CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 161,878, Jun. 25, 1980, abandoned. This application Apr. 10, 1981, Ser. No. 253,080
Int. Cl.^{3} B01J *27/02*
U.S. Cl. 252—439 **15 Claims**

1. In a process for the pretreatment and activation of a rhenium-containing reforming catalyst for use in the conversion of a naphtha feed by contact with said catalyst at reforming conditions, which steps include

contacting said catalyst with an oxygen-containing gas at temperature sufficient to form rhenium oxide,

contacting said rhenium oxide-containing catalyst with a stream of dry hydrogen gas, and

sulfiding said rhenium-containing catalyst

the improvement comprising

maintaining contact between said dry hydrogen gas and said catalyst until the moisture level of the gas stream leaving said catalyst is less than about 1000 ppm and the rhenium oxide approaches a substantially zero valence state.

4,369,130

COMPOSITION FOR REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Chesterton, Ind.; Eugene H. Hirschberg, Park Forest, and Frank Modica, Downers Grove, both of Ill., assignors to Standard Oil Company, Chicago, Ill.
Division of Ser. No. 29,264, Apr. 11, 1979. This application Dec. 29, 1980, Ser. No. 220,275
Int. Cl.^{3} B01J *29/06*
U.S. Cl. 252—455 Z **29 Claims**

1. A composition of matter prepared by the steps comprising:

(a) impregnating a particulate solid cracking catalyst comprising from about 0.5 to about 50 weight percent of a crystalline aluminosilicate zeolite distributed throughout a porous matrix with at least one rare earth metal compound selected from the group consisting of the compounds of lanthanum, cerium, praseodymium, samarium and dysprosium, wherein said matrix comprises from about 70 to about 100 weight percent alumina, and wherein the amount of said rare earth metal compound or compounds is sufficient to add from about 0.004 to about 10 weight percent of rare earth metal or metals, calculated as the metal or metals, to said particulate catalyst; and

(b) calcining said impregnated particulate catalyst at a temperature between about 200° and about 820° C.

7. A composition of matter comprising a particulate physical mixture of:

(a) a particulate solid cracking catalyst for cracking hydrocarbons comprising a crystalline aluminosilicate zeolite distributed throughout a porous matrix wherein said matrix comprises from about 70 to about 100 weight percent of alumina; and

(b) a particulate solid other than said cracking catalyst comprising at least one inorganic oxide selected from the group consisting of the oxides of aluminum, magnesium, zinc, titanium and calcium in association with at least one free or combined rare earth metal selected from the group consisting of lanthanum, cerium, praseodymium, samarium, and dysprosium, wherein the particulate solid other than cracking catalyst contains at least about 40 weight percent of said inorganic oxide or oxides, the ratio by weight of inorganic oxide or oxides to rare earth metal or metals is from about 1.0 to about 1,000, and said particulate solid other than cracking catalyst comprises from about 0.1 to about 50 weight percent of said particulate physical mixture.

4,369,131

ENHANCED CATALYST STABILITY FOR CYCLIC CO METHANATION OPERATIONS

Alan P. Risch, New Fairfield, Conn., and Jule A. Rabo, Armonk, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Jan. 30, 1981, Ser. No. 229,998
Int. Cl.^{3} B01J *23/78, 21/08*
U.S. Cl. 252—459 **28 Claims**

1. An improved catalyst formulation for use in the cyclic COthane process for the production of methane from CO-containing gas streams comprising: (1) a catalyst present substantially in its metal state and capable of catalyzing the disproportionation of carbon monoxide, (2) a catalyst support additive present in an amount within the range of from about 0.1% about 50% by weight based on the total weight of catalyst and support additive, (3) a binder present in an amount within the range of from about 1% to about 40% by weight of said binder based on the total weight of catalyst-support additive-binder, and (4) an alkali or alkaline earth dopant present in an amount within the range of from about 0.01% to about 10% by weight based on the total weight of the dopant and binder employed, said catalyst formulation being prepared by the process comprising:

(a) mixing said catalyst material and said catalyst support additive to form a catalyst-support additive composition prior to reduction of said catalyst to its metal state;

(b) adding said dopant material to the binder to form a dopant-binder mixture prior to mixing said binder with the catalyst-support additive composition;

(c) mixing said dopant-binder mixture with said catalyst-support additive composition; and

(d) reducing said catalyst substantially to its active metal state,

whereby said catalyst has enhanced stability for use in the cyclic COthane process.

5. The catalyst formulation of claim 1 in which said catalyst material comprises nickel.

6. The catalyst formulation of claim 1 in which said catalyst support additive comprises silica.

7. The catalyst formulation of claim 1 in which said binder comprises colloidal silica.

8. The catalyst formulation of claim 1 in which said dopant material comprises an alkali metal salt.

4,369,132
EXHAUST GAS PURIFYING CATALYST

Hiroo Kinoshita; Yoshihiro Suzuki, both of Toyota; Shoji Saruhashi, and Masayasu Sato, both of Shizuoka, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi and Cataler Industrial Co., Ltd., Shizuoka, both of, Japan

Filed Dec. 8, 1980, Ser. No. 214,322

Claims priority, application Japan, Jan. 18, 1980, 55-4130

Int. Cl.^{3} B01J *23/58*

U.S. Cl. 252—466 PT **14 Claims**

1. An exhaust gas purifying catalyst, comprising:

a carrier selected from the group consisting of cordierite, zircon, mullite, alumina, silica, alumina-silica, titania, magnesia and barium sulfate;

catalytic elements carried by said carrier comprising:

about 0.0001 to 1 mole of alkali metal oxide per 1 kg of catalyst; and

a plurality of Pt-family elements selected from the group consisting of Pt-Pd, Pt-Rh and Pt-Pd-Rh, containing over 50 weight % of Pt.

4,369,133
USE OF NORBORNYL ETHERS IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND COLOGNES

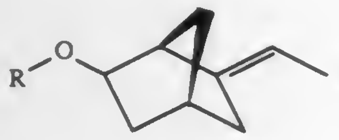
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 280,856, Jul. 6, 1981, abandoned, which is a division of Ser. No. 200,012, Oct. 23, 1980, Pat. No. 4,311,861. This application Dec. 29, 1981, Ser. No. 335,544

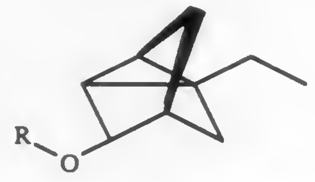
Int. Cl.^{3} C11B *9/00*

U.S. Cl. 252—522 R **5 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to a perfume base or a cologne base an organoleptic property-modifying quantity of at least one compound having a structure selected from the group consisting of:

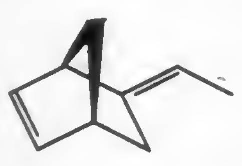


and



wherein "R" represents isopropyl; phenethyl; allyl; cyclohexyl; hydroxy alkyl or alkoxy alkyl and in each of the molecules "R" is the same.

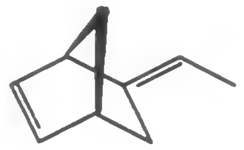
4. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to a perfume base or a cologne base an organoleptic property modifying quantity of a product comprising a composition of matter produced according to a process of intimately admixing ethylidene norbornene having the structure:



with an alcohol defined according to the structure:

R—OH

in the presence of a mineral acid catalyst or a Lewis acid catalyst and in the presence of an inert solvent or in the presence of an excess of the alcohol reactant, the reaction temperature varying from about 25° C. up to 120° C., the mole ratio of catalyst to ethylidene norbornene having the structure:



varying from about 1:99 up to about 1:10; the mole ratio of ethylidene norbornene reactant to alcohol having the structure:

R—OH

reactant varying from about 1:1 up to 1:2, the moiety "R" being selected from the group consisting of isopropyl; cyclohexyl; phenethyl; allyl; hydroxy alkyl and alkoxy alkyl.

4,369,134
CREAMY CLEANSING COMPOSITIONS

Katsuhiko Deguchi, Sakura; Masatoshi Arisawa, Matsudo; Atsuo Ishida, Chiba, and Katsuaki Ooshima, Tokyo, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,698

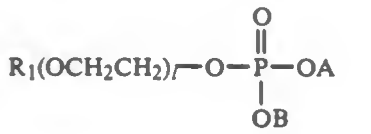
Claims priority, application Japan, Feb. 5, 1980, 55-12623; Apr. 3, 1980, 55-43710

Int. Cl.^{3} C11D *1/86, 3/075*

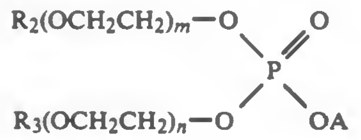
U.S. Cl. 252—526 **7 Claims**

1. A creamy cleansing composition comprising components:

(a) from 10 to 60% by weight of one or more phosphoric ester surfactants represented by the general formulas (I) or (II).



$$R_1(OCH_2CH_2)_l-O-\overset{\displaystyle O}{\overset{\|}{\underset{\underset{\displaystyle OB}{|}}{P}}}-OA \qquad \text{(I)}$$



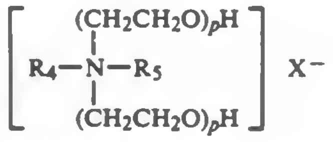
$$\begin{array}{l} R_2(OCH_2CH_2)_m-O \quad\; O \\ \qquad\qquad\qquad\quad \diagdown \;\, /\!\!/ \\ \qquad\qquad\qquad\qquad P \\ \qquad\qquad\qquad\quad / \;\; \diagdown \\ R_3(OCH_2CH_2)_n-O \quad\; OA \end{array} \qquad \text{(II)}$$

where each of R_1, R_2 and R_3 represents a saturated or unsaturated hydrocarbon group having from 8 to 18 carbon atoms, each of A and B represents a hydrogen atom, an alkali metal, ammonium or an alkanolamine having 2 or 3 carbon atoms, and each of l, m and n is 0 or an integer of from 1 to 10;

(b) from 0.5 to 15% by weight of an organic or inorganic salt, selected from the group consisting of an alkali metal, alkali earth metal or ammonium salt of carboxylic acid, hydroxycarboxylic acid, hydrochloric acid, hydrobromic acid, nitric acid, sulfuric acid, carbonic acid, phosphoric acid and thiocyanic acid;

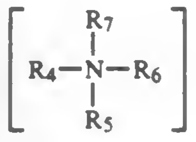
(c) from 0.5 to 15% by weight of polyethylene glycol having a molecular weight of from 4,000 to 10,000; and

(d) a surface active agent selected from the group consisting of (1) from 0.1 to 15% by weight of an ethylene oxide (at least 50 moles) addition type non-ionic surface active agent; (2) from 0.05 to 10% by weight of a cationic surface active agent represented by the general formula (III)



$$\left[\begin{array}{c} (CH_2CH_2O)_pH \\ | \\ R_4-N-R_5 \\ | \\ (CH_2CH_2O)_pH \end{array}\right] X^- \qquad \text{(III)}$$

where R_4 represents a saturated or unsaturated hydrocarbon group having from 8 to 18 carbon atoms, R_5 represents a methyl group or an ethyl group, X represents a halogen atom, and each of p and q represents an integer of from 1 to 15; and (3) from 0.05 to 10% by weight of a cationic surface active agent represented by the general formula (IV),



$$\left[\begin{array}{c} R_7 \\ | \\ R_4-N-R_6 \\ | \\ R_5 \end{array}\right] X^- \qquad \text{(IV)}$$

where R_6 represents a methyl group or an ethyl group, R_7 represents a saturated or unsaturated hydrocarbon group having from 8 to 18 carbon atoms, and R_4, R_5 and X have the same meanings as defined above.

4,369,135
ADHESIVE COMPOSITIONS

Albert W. Morgan, Collinsville, Ill., and Roland G. Ribaudo, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 47,426, Jun. 11, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 213,776

Int. Cl.^{3} C08F *8/30;* **C08L** *33/00;* **C09D** *3/74*

U.S. Cl. 524—294 **21 Claims**

1. An essentially non-aqueous composition prepared by mixing (A) organic plasticizer selected from polycarboxylates, (B) normally-solid copolymer of olefinically unsaturated monomers of which a subtantial proportion are maleic monomers selected from maleic anhydride, derivatives thereof which do not render said copolymer substantially soluble in said plasticizer below the melting point of said copolymer, and combinations thereof and (C) compatibilizer selected from monofunctional amides which react with at least a portion of said maleic monomers to render said copolymer essentially completely soluble in said composition and substantially soluble in said plasticizer at a temperature below the melting point of said copolymer.

4,369,136
POLY(ARYL ETHER) CONTAINING BLENDS

Lloyd M. Robeson; William D. Claus, Jr., both of Whitehouse Station, and Harvey L. Batleman, Bridgewater, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1980, Ser. No. 135,761

Int. Cl.^{3} C08L *51/04, 67/02*

U.S. Cl. 524—371 **28 Claims**

2. A molding composition comprising:

(a) from about 20 to about 90 weight percent of a poly(aryl ether) having recurring units of the formula:

O—E—O—E′—

wherein E is the residuum of a dihydric phenol and E′ is the residuum of a benzenoid compound having an inert electron withdrawing group in at least one of the positions ortho and para to the valence bonds wherein both of said residuum are valently bonded to the ether oxygens through aromatic carbon atoms,

(b) from about 10 to about 60 weight percent of a polyester,

(c) from about 1 to about 25 weight percent of an aromatic polycarbonate, and

(d) from about 15 to about 30 weight percent of a fiber reinforcement.

4,369,137
N-PROTECTED PENTAPEPTIDES USEFUL AS INTERMEDIATES IN THE PREPARATION OF THYMOPOIETIN PENTAPEPTIDE

George Heavner, Flemington, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 160,241, Jun. 17, 1980, Pat. No. 4,298,523. This application May 13, 1981, Ser. No. 263,250

Int. Cl.^{3} C07C *103/52*

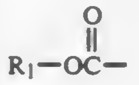
U.S. Cl. 260—112.5 R **3 Claims**

1. The protected pentapeptide of formula alpha-T-omega-T′-ARG-X-omega-U-Z-Y-TYR-R′ wherein:

R′ is OU or NH_2;

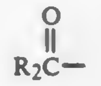
X is epsilon-T″-LYS and Y is VAL or X and Y are both SAR;

Z is ASP or GLU; and T and T″ are each a member selected from the group consisting of:



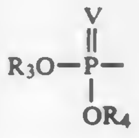
$$R_1-O\overset{\overset{\displaystyle O}{\|}}{C}- \qquad \text{(a)}$$

wherein R_1 is phenyl; tolyl; xylyl; adamantyl; allyl; beta-cyanoethyl; fluorenylmethyl; benzyl, benzyl wherein the phenyl ring is substituted with from one to three members selected from halo, nitro, loweralkyl, and loweralkoxy, diisopropylmethyl; diphenylmethyl; cyclohexyl; cyclopentyl; vinyl; t-butyl; t-amyl; dimethyltrifluoromethylmethyl; or dimethylbiphenylmethyl;



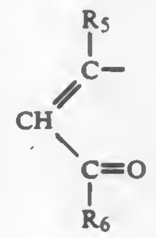
$$R_2\overset{\overset{\displaystyle O}{\|}}{C}- \qquad \text{(b)}$$

wherein R_2 is loweralkyl of two to four carbons or loweralkyl of one to four carbons substituted with from one to five halo groups;



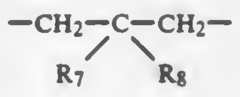
$$R_3O-\overset{\overset{\displaystyle V}{\|}}{\underset{\underset{\displaystyle OR_4}{|}}{P}}- \qquad \text{(c)}$$

wherein V is S or S or O and R_3 and R_4 are each benzyl or loweralkyl;



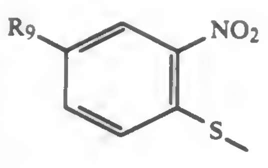
$$\begin{array}{l} \quad\;\; R_5 \\ \quad\;\;\; | \\ \quad\;\; C- \\ \;\; /\!\!/ \\ CH \\ \;\; \diagdown \\ \quad\;\; C{=}O \\ \quad\;\;\; | \\ \quad\;\; R_6 \end{array} \qquad \text{(d)}$$

wherein R_5 and R_6 taken individually are each loweralkyl or R_5 and R_6 taken together is



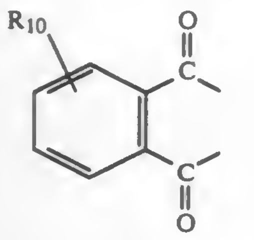
$$\begin{array}{c} -CH_2-C-CH_2- \\ /\;\;\diagdown \\ R_7 \qquad R_8 \end{array}$$

where R_7 and R_8 are each hydrogen or loweralkyl; and



(e)

wherein R_9 is hydrogen or nitro; and

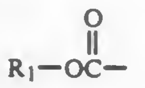


(f)

wherein R_{10} is hydrogen, methyl, halo, or nitro;

U is benzyl or benzyl in which the phenyl group is substituted with from one to three members each selected from halo, nitro, C_1-C_3 loweralkyl, and C_1-C_3 loweralkoxy; and

T′ is a member selected from the group consisting of



$$R_1-O\overset{O}{\overset{\|}{C}}-$$

wherein R_1 is as defined above, nitro, hydrochloride, p-methoxybenzylsulfonyl, and tosyl.

4,369,138

PARATHYROID RADIOIMMUNOASSAY

Arnold W. Lindall, Marine-on-St. Croix, Minn., assignor to Immuno Nuclear Corporation, Stillwater, Minn.

Division of Ser. No. 169,492, Jul. 15, 1980, Pat. No. 4,341,755. This application Sep. 16, 1981, Ser. No. 302,734

Int. Cl.^{3} C07C *103/52*

U.S. Cl. 260—112.5 R 8 Claims

1. A compound having the formula X^{64}-$hPTH^{65\text{-}84}$ wherein X is a member of the group consisting of histidyl, tyramyl, histamyl, and tyrosyl.

4,369,139

1-(p-METHOXY p-HYDROXY, AND p-BENZYLOXY BENZOYL)-2-PYRROLIDINONES

Emilio Kyburz, Reinach, and Werner Aschwanden, Ettingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 8,673, Feb. 2, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,906

Claims priority, application Switzerland, Feb. 10, 1978, 1403/78; Nov. 22, 1978, 11981/78

Int. Cl.^{3} C07D *207/27;* **A61D** *31/40*

U.S. Cl. 548—539 3 Claims

1. 1-(p-Methoxybenzoyl)-2-pyrrolidinone.
2. 1-(p-Hydroxybenzoyl)-2-pyrrolidinone.
3. 1-(p-Benzyloxybenzoyl)-2-pyrrolidinone.

4,369,140

PROCESS FOR PRODUCING HYDROANTHRAQUINONES

Tatsuyoshi Komatsu, Kamakura; Kenji Usui, Nihonbashi, and Shigeaki Numata, Yokohama, all of Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,784

Claims priority, application Japan, Jan. 25, 1980, 55/6894

Int. Cl.^{3} C07C *49/68*

U.S. Cl. 260—369 6 Claims

1. A process for production of hydroanthraquinones comprising mainly 1,4,4a,9a-tetrahydroanthraquinone by purifying crude hydroanthraquinones consisting essentially of (a) reacting naphthoquinone with a conjugated diolefin to obtain a reaction mixture containing hydroanthraquinones and quinhydrones by a Diels-Alder reaction, (b) directly oxidizing said resulting reaction mixture with an oxidizing agent in an inert organic solvent at 60° to 120° C. to decompose the quinhydrones; and (c) separating the crystallized hydroanthraquinones comprising mainly 1,4,4a,9a-tetrahydroanthraquinone substantially free from quinhydrones from said inert organic solvent.

4,369,141

PROCESS TO IMPROVE ISOCYANATE YIELD UPON PYROLYSIS OF A POLYFUNCTIONAL URETHANE WHICH HAS BEEN EXTRACTED WITH A COMBINATION OF HYDROCHLORIC ACID AND ALCOHOL

John F. Motier, Glen Mills, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 180,799, Aug. 25, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,951

Int. Cl.^{3} C07C *118/00, 125/07*

U.S. Cl. 260—453 P 3 Claims

1. In a process for the preparation of a mixture of diphenylmethane diisocyanates and polymethylene polyphenyl isocyanates by

(a) condensing ethyl-N-phenylcarbamate with formaldehyde in the presence of an acid to produce a condensate containing a mixture of diphenylmethane dicarbamates, diethyl esters thereof, and polymethylene polyphenyl carbamates, ethyl esters thereof, with by-product N-(alkoxycarbonyl)phenylaminomethylphenyl compounds, rearranging said N-(alkoxycarbonyl)phenylaminomethylphenyl compounds in said condensate with acid catalyst to obtain a pyrolysis feed mixture containing diphenylmethane dicarbamates, diethyl esters thereof, and polymethylene polyphenyl carbamates, ethyl esters thereof, with by-product amine and amine salt compounds resulting from the condensation and rearrangement, and

(b) thermally decomposing the carbamate moieties in the pyrolysis feed mixture to produce diphenylmethane diisocyanates and polymethylene polyphenyl isocyanates,

the improvement which comprises increasing the percent isocyanate content of said diphenylmethane diisocyanates and polymethylene polyphenyl isocyanates by prior to step (b) removing the amine and amine salt by-products by extracting the pyrolysis feed mixture at atmospheric pressure and at about ambient temperature for a period of from about 1 to 60 minutes with a solution of a monohydric alkanol having from 1 to 4 carbon atoms in the alkyl moiety and 15 to 37 percent aqueous hydrochloric acid, said alkanol to hydrochloric acid ratio being from about 0.2 to 1.5 parts of alkanol to each part of hydrogen chloride by weight in solution, said extraction solution being between about 0.2 to 3.0 parts by weight of alkanol and hydrochloric acid per part by weight of pyrolysis feed mixture, and then removing the alcohol-hydrochloric acid extract.

4,369,142

PROCESS FOR PRODUCING N-PHOSPHONOMETHYLGLYCINE

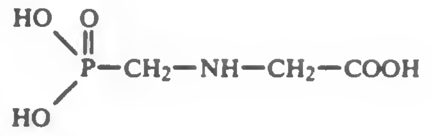
Hans Moser, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 3, 1981, Ser. No. 327,138

Int. Cl.^{3} C07F *9/38*

U.S. Cl. 260—502.5 F 11 Claims

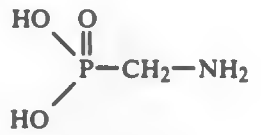
1. A process for producing N-phosphonomethylglycine of the formula I



$$(HO)_2\overset{O}{\overset{\|}{P}}-CH_2-NH-CH_2-COOH$$

(I)

by reacting aminomethanephosphonic acid of the formula II



$$(HO)_2\overset{O}{\overset{\|}{P}}-CH_2-NH_2$$

(II)

in an aqueous medium, with glyoxal of the formula III

$OHC-CHO$ (III)

in the presence of sulfur dioxide, and isolating the resulting product.

4,369,143

PROCESS FOR THE PREPARATION OF NAPHTHALENE-1,3,5-TRISULPHONIC ACID

Horst Behre; Heinz U. Blank, both of Odenthal, and Wolfgang Schenk, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 106,807, Dec. 26, 1979, abandoned. This application Jul. 28, 1981, Ser. No. 287,591

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901178

Int. Cl.^{3} C07C *143/24*

U.S. Cl. 260—505 C 9 Claims

1. Process for the preparation of naphthalene-1,3,5-trisulphonic acid from 1,5-disulphonated naphthalene, which comprises using 1,5-disulphonated naphthalene in the form of a reaction mixture which has been obtained by mixing naphthalene and SO_3 in the presence of methylene chloride at temperatures in the range of −10° to −5° C., the ratio of the SO_3 added to the naphthalene added having been in the range of 2.5 to 10 mols of SO_3 per mol of naphthalene during the entire addition, and sulfonating this reaction mixture at 60° to 110° C. in anhydrous sulphuric acid with oleum, with prior or concurrent separation of the methylene chloride.

4,369,144

PREPARATION AND USE OF ALKALI METAL ISETHIONATES FROM ETHIONIC ACID

Vincent Lamberti, Upper Saddle River, and Wilder F. Pease, Norwood, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,318

Int. Cl.^{3} C07C *143/02*

U.S. Cl. 260—513 R 5 Claims

1. A process for the preparation of alkali metal isethionates from ethionic acid, comprising the steps of:

(a) heating an aqueous solution containing about 20% to about 50% of ethionic acid at a temperature of about 80° C. to about 160° C. for a sufficient time to produce a solution of isethionic acid and sulfuric acid;

(b) neutralizing said aqueous solution with a mixture of calcium hydroxide and an alkali metal hydroxide, the amount of said hydroxides in said mixture being sufficient to substantially completely convert the sulfuric acid into hydrated calcium sulfate and the isethionic acid into an alkali metal isethionate; and

(c) separating the alkali metal isethionate from said neutralized solution.

4,369,145

PREPARATION OF FLUOROBENZENESULFONYL FLUORIDES BY EXCHANGE FLUORINATION

Gerard Soula, Meyzieu, France, assignor to Rhone-Poulenc Industries, Paris, France

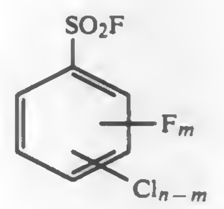
Filed Dec. 16, 1980, Ser. No. 216,914

Claims priority, application France, Dec. 20, 1979, 79 31220

Int. Cl.^{3} C07C *143/40*

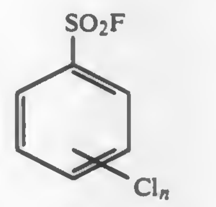
U.S. Cl. 260—543 F 17 Claims

1. A process for the preparation of a fluorobenzenesulfonyl fluoride having the structural formula:



(II)

wherein n ranges from 1 to 5, m ranges from 1 to 3 and the fluorine atoms m are ortho- and/or para- to the $—SO_2F$ moiety, comprising exchange fluorinating a chlorobenzenesulfonyl fluoride having the structural formula:



(I)

wherein n is as defined above, with an alkali metal fluoride, in an aprotic polar solvent and at a temperature ranging from about 100° C. to about 240° C., said exchange fluorination being conducted in the presence of at least one tertiary amine sequestering agent having the formula:

$N-CHR_1-CHR_2-O-CHR_3-CHR_4-O_n-R_5]_3$ (III)

where $0 \leqq n \leqq 10$, R_1, R_2, R_3 and R_4, which may be the same or different, are each hydrogen or lower alkyl, R_5 is alkyl or cycloalkyl having from 1 to 12 carbon atoms, phenyl, $—C_mH_{2m}—\phi$ or $C_mH_{2m+1}—\phi—$, with m ranging from about 1 to 12 and ϕ being phenyl.

4,369,146

METHOD FOR CHLORINATING THE CARBOXYLIC GROUP OF α-AMINOACIDS

Rodolfo Maggi; Gian P. Maggi, both of Milan, and Giuliano Marcon, Bulciago, all of Italy, assignors to Chimica Bulciago S.r.l., Bulciago, Italy

Continuation of Ser. No. 120,357, Feb. 11, 1980, abandoned. This application May 7, 1981, Ser. No. 261,516

Claims priority, application Italy, May 3, 1979, 22323 A/79

Int. Cl.^{3} C07C *51/60*

U.S. Cl. 260—544 N 4 Claims

1. A method for chlorinating the carboxylic group of an hydroxyphenylglycine essentially comprising the steps of:

suspending said hydroxyphenylglycine in at least one organic solvent;

treating the obtained suspension with gaseous HCl at room temperature to give the hydrochloride of said hydroxyphenylglycine;

chlorinating at 10° to 30° C. the said hydrochloride with an adduct of general formula $[XCl_2.R_1R_2NCHO]$ wherein X is SO or SO_2 and R_1 and R_2 are lower alkyl or aryl radicals.

4,369,147
PREPARATION OF NOVEL S-BROM-DITHIOPHOSPHORIC, DITHIOPHOSPHONIC AND DITHIOPHOSPHINIC ACID DERIVATIVES

Jan Michalski; Marek Potrzebowski, both of Lodz, and Andrzej Lopusinski, Pabianice, all of Poland, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

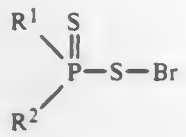
Filed Nov. 24, 1981, Ser. No. 324,492

Claims priority, application Poland, Dec. 10, 1980, 228376

Int. Cl.³ C07F *9/06, 9/22, 9/28, 9/65*

U.S. Cl. 260—935 **3 Claims**

1. A compound of the formula



in which

R^1 and R^2 each independently is an optionally substituted alkyl, aralkyl, aryl, alkoxy, aryloxy, aralkoxy, alkylthio, arylthio, aralkylthio, alkylamino, arylamino or aralkylamino radical.

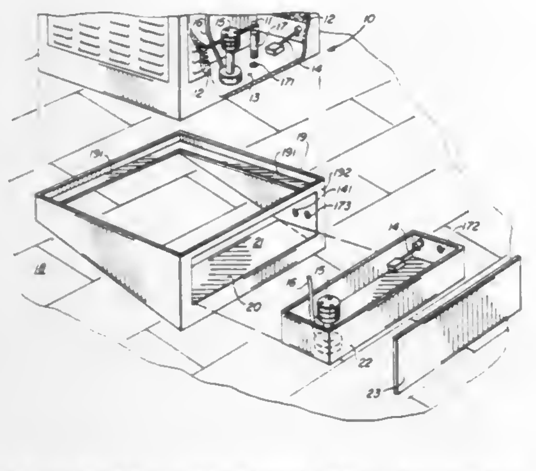
4,369,148
SUPPLANTARY RESERVOIR FOR EVAPORATIVE COOLER

Warren H. Hawkins, 3602 E. Monte Cristo, Phoenix, Ariz. 85032

Filed Jul. 20, 1981, Ser. No. 284,830

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—36 R **10 Claims**



1. In an evaporative cooler having means for passing air past and through evaporative cooling pads which pads are maintained saturated with water drawn by water circulating means from a reservoir forming part of the base of said cooler said water being maintained within said reservoir by a float controlled valve coupling a source of water to said reservoir said reservoir being further provided with means for draining water from the base of said reservoir when desired to do so, the improvement comprising:

a supplantary water retention vessel external to said evaporative cooler supplanting said reservoir and coupled thereto by said means for draining water from the base of said reservoir to preclude the accumulation and storage of water within said reservoir.

4,369,149
CARBURETOR FOR MODEL JET POWER PLANT

Robert S. Violett, 1373 Citrus Rd., Winter Springs, Fla. 32708

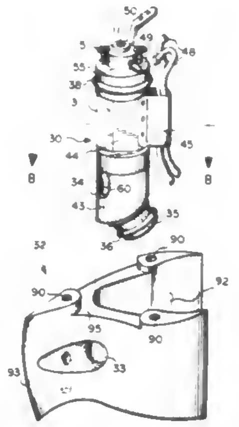
Filed May 29, 1981, Ser. No. 268,471

Int. Cl.³ F02M *9/08*

U.S. Cl. 261—44 A **9 Claims**

1. A carburetor for a model jet engine aircraft power plant, the power plant having a generally cylindrical duct, a single cylinder model aircraft engine having said cylinder oriented vertically immediately aft of said duct and a fan enclosed in said duct and driven by said engine, said engine having its fuel mixture inlet port forward of said cylinder, comprising:

an essentially cylindrical body having a lower end forming a throat section for insertion into said engine fuel mixture inlet port, and an upper section relieved to form a web having a leading edge thereof tapering to a sharp edge for directing airflow from said fan around said body toward



said engine cylinder, said body having a lower portion with a carburetor air opening in the forward portion thereof for receiving pressurized air from said fan; and

a fuel feed control disposed at the top of said body and external to said duct, said control including a needle valve for adjusting maximum fuel input, a throttle for varying the volume of fuel-air mixture to said engine, and a fuel-air ratio mixture control wherein all adjustments of said control are external to the airstream from said fan.

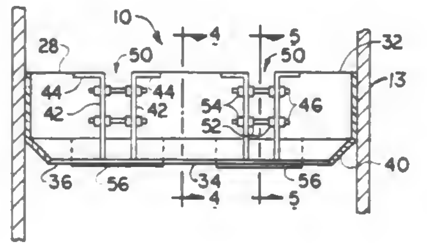
4,369,150
LIQUID WALL FLOW COLLECTOR FOR CHEMICAL PROCESS TOWER

Stephen M. Harper, Lake Jackson, Tex. assignor to The Dow Chemical Company

Filed Nov. 18, 1981, Ser. No. 322,504

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—97 **11 Claims**



1. An easily installable and removable liquid wall flow collector for use in a chemical process tower, wherein said tower liquid adheres to and flows down the inside of the tower's side walls but wherein it is desired to direct this liquid away from the tower side walls toward the center of the tower at least at some level in the tower, the interior of said tower's side walls at this level having a horizontal cross-section which is substantially circular in shape; said liquid wall flow collector being comprised of:

A. a plurality of annular segments adjustably connected together at their ends in such a fashion so as to form a horizontally-oriented segmented ring with small gaps existing between the ends of near abutting, adjacent annular segments, said ring being located within said tower at the tower level where it is desired to direct liquid flowing down the tower wall away from said tower wall, said annular segments being flexible with respect to said tower wall, said annular segments having a natural radius of curvature which is less than the average radius of curvature of the interior tower wall surface at that tower level where the wall flow liquid is to be directed away from the wall so that the ring may be easily assembled within the tower with said attaching means being such that the segments may be disconnected from each other for ease of passage in and out of said tower;

B. a ring diameter adjusting means connecting two adjacent flexible annular segments for spreading said flexible annular segments apart to expand the diameter of the ring formed by these segments sufficiently so that these segments are so pressed against the tower wall's internal peripherial surface at the tower level where the wall flow liquid is desired to be diverted until the annular segments sufficiently conform to the tower wall's surface thereat to form a leak-proof seal between said segments and said tower wall's surface and also to form a friction joint between said segments and said tower wall surface which is capable of supporting the liquid wall flow collector in the tower; and

C. a lip sealably and permanently attached to each of said annular segments, each lip extending radially inwardly from its corresponding annular segment at an acute angle from the downward vertical direction for a sufficient distance to divert liquid flowing down the tower wall to the desired area within the tower.

4,369,151
FREEZING ORGANIC PARTICULATE SLURRIES

Robert Smith-Johannsen, Incline Village, Nev., assignor to Ramu International, Incline Village, Nev.

Filed Dec. 11, 1980, Ser. No. 215,399

Int. Cl.³ B01J *13/00*

U.S. Cl. 264—28 **12 Claims**

1. The process of freezing biological matter which comprises inserting the biological matter into a container having its walls wetted with a non-toxic hydrophobic liquid and while the walls of the container are still wet, freezing the biological matter.

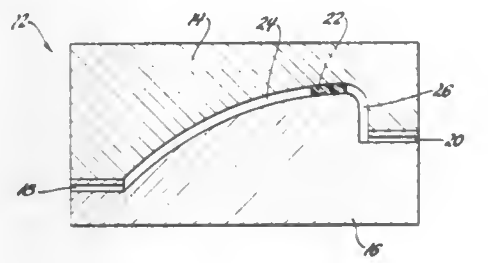
4,369,152
MOLDING METHOD

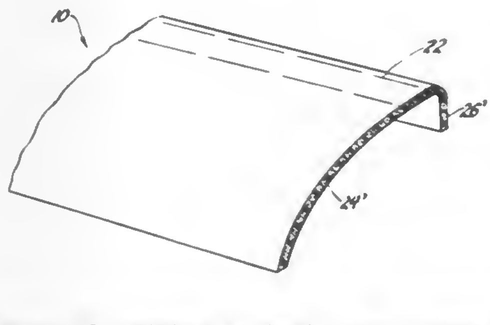
John D. Gray, Rochester; Robert W. Dietrich, Dover, and Peter A. Weller, Durham, all of N.H., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 24, 1979, Ser. No. 60,230

Int. Cl.³ B29F *1/10*

U.S. Cl. 264—46.4 **5 Claims**





1. A method of molding a plastic component in a mold having a mold cavity comprising the steps of: placing a permeable barrier material in the mold cavity to divide the cavity into first and second portions, filling the first portion of the cavity with plastic material while filling the second portion of the cavity with plastic material to permeate the barrier material with plastic material from both portions of the cavity whereby the barrier material defines a transition zone and is encapsulated in the plastic component.

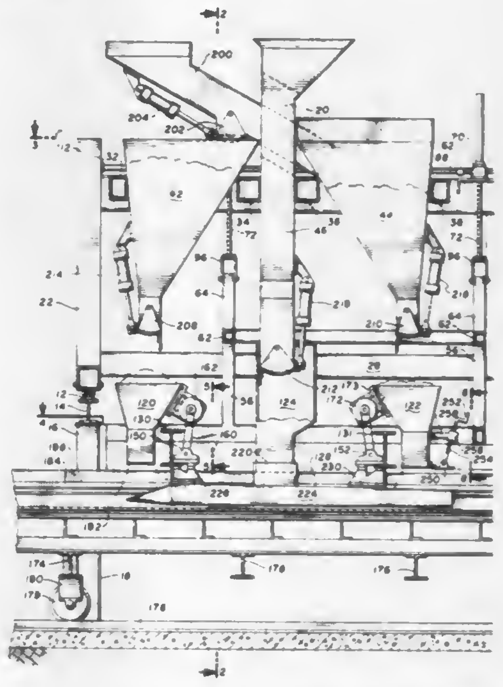
4,369,153
MACHINE FOR CASTING CONCRETE MEMBERS

Richard C. Nash, New Prague; David W. Hanson, Golden Valley, and Richard R. Koehn, Prior Lake, all of Minn., assignors to Fabcon, Inc., Savage, Minn.

Filed Apr. 27, 1981, Ser. No. 257,781

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—62 **15 Claims**



1. A machine for casting concrete panels on a casting pallet including a floor and a pair of parallel side walls, said machine comprising:

a frame;

a slipform frame having at least one slipform suspended therefrom above the floor and between the side walls of said casting pallet, each of said slipforms having a pair of side walls and a top surface, each of said slipforms having a core shaping material receiving port located in the top surface thereof between front and rear portions thereof, the front portion of each of said slipforms having a closed bottom while the remainder of said slipform has an open bottom, said slipform also including a closed extreme front portion in which the side walls and top and bottom surfaces of the said slipform are tapered inwardly to form a markedly reduced cross sectional area closed end;

first concrete delivery means mounted on said frame for depositing concrete over the front and extreme front portions of each of said slipforms and said casting pallet and covering at least part of said slipform with concrete;

core material delivery means mounted on said frame for delivering core material to said core material receiving port on each of said slipforms to fill the rear portion of said slipform with core material;

second concrete delivery means mounted on said frame for depositing concrete over the rear portion of said slipform and completely covering the rear portion of said slipform with concrete; and

means for introducing relative longitudinal movement between said casting pallet and said frame while said concrete hopper means deposit concrete over each of said slipforms and said core material delivery means delivers core material to the interior of each of said slipforms to continuously form on said casting pallet a panel having at least one core material filled core in a single continuous machine casting operation.

4,369,154

PROCESS FOR PRODUCING SMOOTHER CERAMIC SURFACES

William E. Dougherty, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,776

Int. Cl.^{3} C04B *35/64*

U.S. Cl. 264—63 **5 Claims**

PART. IA LAP. (POST SINTER 140 X 3

1. In a process for producing ceramic substrates for use in an electrical packaging structure, according to which (1) a substantially homogeneous ceramic mass comprising alumina, an organic bonding agent, a plasticizing agent, an emulsifying agent and a solvent is formed into a cohesive flat strip, (2) said strip is green dried and cut into desired size substrates, and (3) said substrates are sintered, the improvement comprising the step of lapping the substrates prior to the sintering step, whereby, after sintering, a smoother surface is obtained on said substrates than is obtained with substrates that have not been so lapped.

4,369,155

METHOD FOR THE PRODUCTION OF MELT-SPUN AND MOLECULAR-ORIENTED DRAWN, CRYSTALLINE FILAMENTS

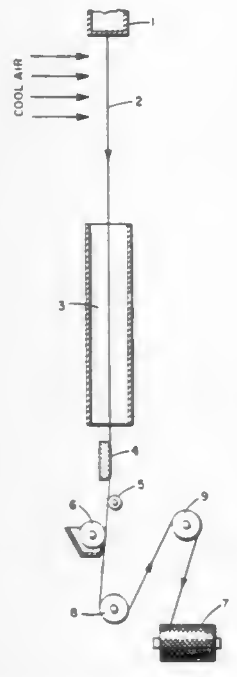
Diederich Schilo, Klingenberg; Hans-Dieter Achtsnit, Elsenfeld-Eichelsbach, and Gerhard Klug, Elsenfeld, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jun. 23, 1980, Ser. No. 162,029

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2925006

Int. Cl.^{3} D02G *1/20*

U.S. Cl. 264—103 **14 Claims**



1. A method for the production of melt-spun and molecularly-oriented, drawn, crystalline filaments of synthetic polymer, comprising cooling freshly spun filaments to their setting point; thereafter contacting said freshly spun filaments in a heating zone with at least one heated surface having a length of 20–300 mm, and being heated to a temperature of 450°–650° C., and being located at a distance of 1500–6500 mm from the spinnerette; drawing said heated filaments in the heated zone; and taking the filaments up at speeds greater than 3500 m/min.

4,369,156

PROCESS FOR THE PREPARATION OF FIBRILLATED FIBER STRUCTURES

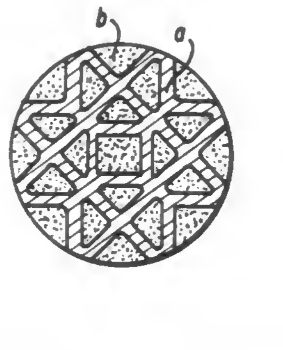
Nikolaus Mathes, Breuberg, and Friedbert Wechs, Wörth am Main, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Feb. 25, 1980, Ser. No. 124,256

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1979, 2907623

Int. Cl.^{3} B29H *7/18*

U.S. Cl. 264—147 **15 Claims**



1. A process for the preparation of fibrillated fiber structures by splitting polyamide and polyester multicomponent drawn fibers by treatment with an aqueous medium, characterized by fiberstructures, such as staple fiber, filaments, yarns, sheet structures, etc. of multicomponent fibers consisting of polyalkylene terephthalate and copolyamides based on ε-caprolactam and hexamethylene diamine/adipamide, having over the cross section a matrix and multi-segment arrangement, whereby the segments represent a fraction of about 20–80% and at least 3 segments are aligned peripherally without being fully embedded into the matrix component, and whereby the peripheral segments and matrix have a shrinkage difference of at least 10%, and subjecting said fiber structures to an aqueous treatment consisting essentially of water in liquid or vapor form at a temperature of from about 55° C. to about 130° C., up to 5% of a water-soluble inorganic salt, from 0 to 5% of an alhoei and from 0 to 5% of a wetting agent.

4,369,157

METHOD OF AUTOMATICALLY DECORATING ARTICLES AS THEY ARE IN-MOLD FORMED AUTOMATICALLY

Francis J. Conner, Boonton, N.J., assignor to Dri-Print Foils, Inc., Rahway, N.J.

Filed Apr. 11, 1977, Ser. No. 786,642

Int. Cl.^{3} B29C *9/00*

U.S. Cl. 264—246 **27 Claims**

1. A method of automatically, in mold, decorating an article formed of heated plastic material, as said plastic material flows in and fills the molds, to form said articles in the molding cycle comprising:

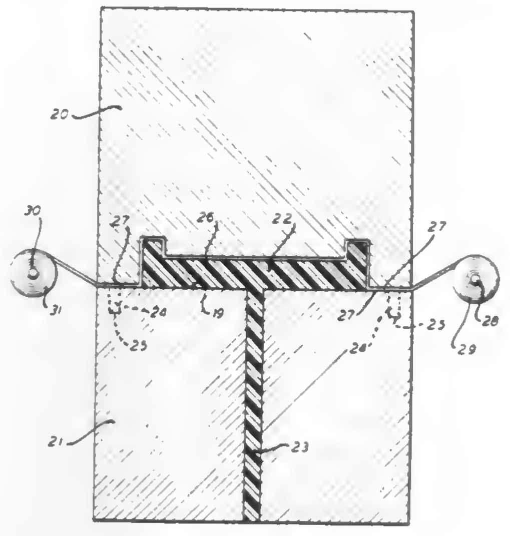
(a) positioning a decorating tape in said molds, said tape having a carrier layer and a decorative portion releasable from said carrier layer by the flow and pressure of said heated plastic material introduced into said molds;

(b) filling said molds with plastic material;

(c) causing said plastic material to flow into and fill said molds and to activate said decorative portion of said tape;

thereby automatically uniting the tape of decorating material and article;

producing a unitary and decorated plastic article in said molding cycle; and



(d) removing substantially the entire released carrier layer from the molds.

4,369,158

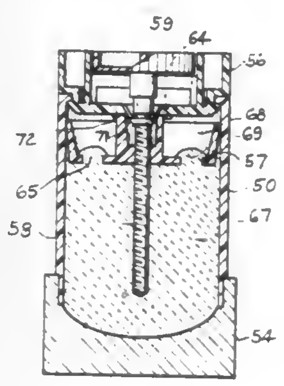
STICK ANTIPERSPIRANT PACKAGE AND PROCESS

Keith Woodruff, Mountainside, N.J.; Donald Johnson, Flushing, N.Y.; John H. Hill, East Rutherford, and Barbara A. Donovan, Clifton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 28, 1980, Ser. No. 144,083

Int. Cl.^{3} B65B *37/00;* **B29C** *5/00*

U.S. Cl. 264—268 **5 Claims**



1. A process for the manufacture of a solid, wax-like cosmetic or pharmaceutical stick product, which comprises the steps of attaching a pouring cap closure to the upper portion of a suitable container for said stick, said container being open at the bottom; inverting said container body and filling from the bottom thereof with a premeasured quantity of said cosmetic or pharmaceutical composition in a molten state; there inserting into the bottom portion of said container body, a twist-up device having air vents, twist-up device comprising a base, spindle and elevator, venting air through said vents cooling said composition for sufficient time to form within said container a solid, wax-like stick, re-inverting the container and removing said pouring cap.

4,369,159

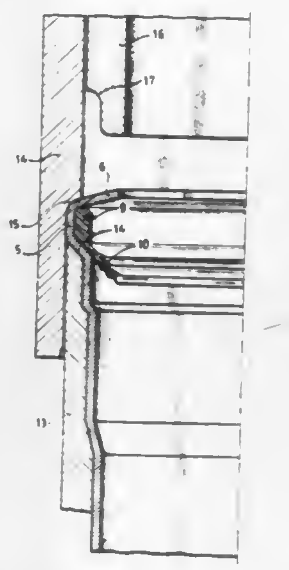
PLASTIC SOCKET PIPE PART AND METHOD OF MANUFACTURING SAME

Adolf Irmer, Geeste, Fed. Rep. of Germany, assignor to Wavin B.V., Zwolle, Netherlands

Continuation of Ser. No. 63,074, Aug. 2, 1979, abandoned, and Ser. No. 898,688, Apr. 21, 1978, Pat. No. 4,193,426. This application Mar. 3, 1981, Ser. No. 239,907

Int. Cl.^{3} B29D *23/00*

U.S. Cl. 264—296 **1 Claim**



1. A method of manufacturing a plastic socket pipe part having a first widening adjoining the pipe part, a second widening adjoining the first widening, a retaining ring connected with the second widening having at least a J-shaped cross section for retaining an annular head portion of a sealing member, said head portion being connected with a sealing sleeve to be received within the second widening and the space between the extremity of the retaining ring and the opposite socket end being smaller than the head portion, comprising the steps of taking an extruded plastic pipe having a second and third widening of about the same wall thickness and an internal diameter which exceeds the diameter of the second widening,

during the first stage of manufacture bending back the end part of the third widening until it radially extends and during the second stage of the manufacture bending said radially extending part further inwardly until it extends substantially axially,

forming the annular head portion, thereafter bending the end part of the third widening, forming the head portion, back substantially coaxially of the extruded plastic pipe forming a retaining ring having at least a J-shaped cross section, for retaining an annular sealing member, said step of bending back the end part being so carried out that the transition between the third widening and the inclined wall part which connects the third widening with the second widening will be situated opposite the free end of the bend back free end part of the third widening forming a U-shaped ring in cross section.

4,369,160

PRESS AND PROCESS FOR VULCANIZING ANNULAR ELEMENTS

Paolo Egidi, Monza, and Federico Squerti, Milan, both of Italy, assignors to Industrie Pirelli, S.p.A., Milan, Italy

Filed Jul. 1, 1981, Ser. No. 279,568

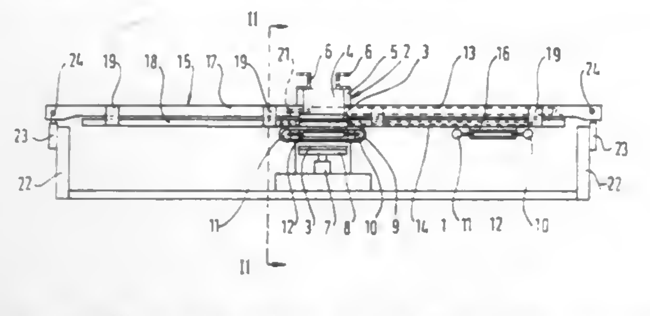
Claims priority, application Italy, Jul. 23, 1980, 23622 A/80

Int. Cl.^{3} B29H *7/22;* **B29D** *29/00*

U.S. Cl. 264—326 **17 Claims**

1. A press for vulcanizing annular elastomeric elements comprising a first assembly comprising a vulcanizing table, interchangeable second assemblies each comprising a vulcanizing table and drive and idle rollers on which the annular ele-

ments to be vulcanized are mounted, means for coupling alternatively said first assembly with one of the interchangeable second assemblies, and means for pressing the vulcanizing tables of the two coupled assemblies one against the other.



4,369,161

RACK AND PINION MECHANISM FOR MOVING A UNIT ABSORBING NEUTRONS IN A NUCLEAR REACTOR

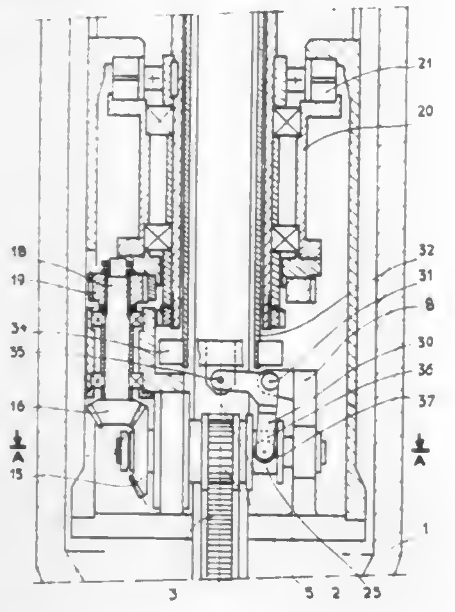
Jean Martin, Chatillon, France, assignor to Framatome, Courbevoie, France

Filed Jul. 7, 1980, Ser. No. 166,465

Claims priority, application France, Jul. 11, 1979, 79 17978

Int. Cl.^{3} G21C *19/10*

U.S. Cl. 376—232 **4 Claims**



1. Rack and pinion mechanism for moving a unit absorbing neutrons movable vertically in a nuclear reactor for controlling the power and for emergency shutdown of said reactor, comprising

(a) a vertical control shaft whose lower part is connected to said absorbent unit and whose upper part constitutes a rack disposed in the longitudinal direction of said shaft;

(b) a first pinion rotatably driven by drive means, in engagement with said rack for moving said control shaft and said absorbent unit in both directions;

(c) said first pinion being in permanent engagement with said rack and being mounted to rotate on a shaft connected to said drive means for setting said first pinion in rotation perpendicularly to said control shaft, said first pinion having teeth on one of its lateral faces;

(d) a clutch pinion rotatably engaged with said shaft and mounted to move in translation on said shaft, between a disengaged position in which said first pinion and said clutch pinion are at a distance and an engaged position in which said pinion and said clutch pinion are in contact, said clutch pinion having teeth on its face directed toward said lateral face of said first pinion provided with teeth;

(e) whereby said first pinion and said clutch pinion are connected for transmitting the rotary movement of said shaft to said first pinion, the translatory movement of said clutch pinion in the axial direction of said shaft being controlled by a push-rod connected to a vertically moving actuating member which is maneuverable from the upper part of the apparatus.

4,369,162

SILVER BASE CASTING ALLOY FOR DENTAL USE

Armin Wagner, Mine Hill, N.J., and Nils Harmsen, Garden City, N.Y., assignors to W. C. Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,630

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041894

Int. Cl.^{3} C22C *30/02, 5/06;* **A61C** *13/22*

U.S. Cl. 420—503 **10 Claims**

1. A silver base casting alloy for dental use consisting essentially of between about 40 and 60% by weight silver, between about 15 and 20% indium, between about 8 and 15% copper, between about 0.1 and 2% nickel, between about 0.1 and 2% zinc, up to 10% gold and up to 30% palladium, with the total gold and palladium content being between about 10 and 30%.

4,369,163

THERMAL SHIELDING FOR BOTTOMS AND COVERS OF REACTION VESSELS

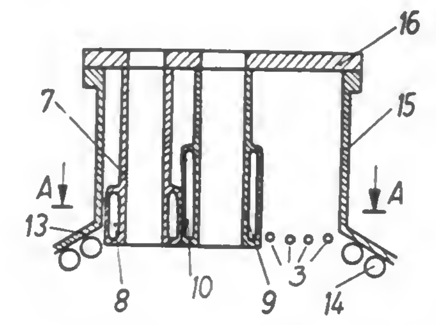
Manfred Schingnitz, Freiberg; Friedrich Berger, Brand-Erbisdorf; Klaus Lucas, Freiberg; Helmut Peise, Freiberg; Winfried Wenzel, Freiberg, all of German Democratic Rep.; Ernest Gudymov; Vladimir Semonov; Vasilij Fedotov; Evginij Avraamov, and Boris Rodionov, all of Moskau, U.S.S.R., assignors to Brennstoffinstitut Freiberg DDR, Freiberg, German Democratic Rep. and Gosudarstvenny Nauchno-Issledovatelsky I Proektny Institut Azortnoi promyshlennosti I Produktor Organicheskogo Sinteza, Moscow, U.S.S.R.

Filed Nov. 3, 1981, Ser. No. 317,931

Claims priority, application German Democratic Rep., Sep. 2, 1980, 223657

Int. Cl.^{3} F28D *21/00*

U.S. Cl. 422—202 **6 Claims**



1. A thermal shielding for covers and bottoms of gas generators and other reaction vessels intended to operate at elevated temperature and pressure wherein the cover or bottom comprises an extension, integral with the reaction vessel, with an outer closure supporting a plurality of spaced guide tubes slightly longer than said extension, said thermal shielding comprising fluid jackets at the inner ends of said guide tubes, the fluid jackets of a plurality of circumferentially spaced guide tubes being interconnected by concentrically spaced heat transfer tubes substantially aligned with the inner surface of the reaction vessel, the fluid jacket of one of said guide tubes being divided by baffle means into separate chambers respectively connected with supply and discharge lines extending through said outer closure for cooling fluid to be circulated through said plurality of fluid jackets and concentric connecting tubes, whereby effective cooling is achieved at inner ends of said guide tubes with a minimum of congestion externally of the vessel cover or bottom.

4,369,164

RECOVERY OF COPPER FROM ARSENICAL DROSSES BY AMMONIUM ARSENATE LEACH

Hayden Monk, Downend, England, assignor to Metallurgical Process Limited and I.S.C. Smelting Limited, both of Nassau, The Bahamas

Filed Dec. 4, 1981, Ser. No. 327,744

Claims priority, application United Kingdom, Dec. 8, 1980, 8039261

Int. Cl.^{3} C01G *3/14;* **C22B** *3/00, 30/04;* **C01G** *28/00*

U.S. Cl. 423—24 **11 Claims**

1. A process for leaching copper and arsenic from copper dross containing copper arsenide and separated from molten lead bullion, comprising: leaching the dross, in finely-divided form, with an aqueous ammoniacal solution containing arsenate as the predominant anion, under oxidizing conditions, to obtain a leachate; removing copper from the leachate to obtain a raffinate and re-cycling raffinate to the leaching stage; and removing a bleed of raffinate from the circuit and precipitating a substantially insoluble arsenic compound from the raffinate bleed, to remove arsenic from the circuit.

6. The process according to claim 1, wherein copper is removed from the leachate by means of a copper-selective organic solvent.

4,369,165

RECOVERY OF TUNGSTEN VALUES FROM ALKALI TUNGSTATE SOLUTIONS BY SOLVENT EXTRACTION

Tai K. Kim; Martin B. MacInnis, both of Towanda; Martin C. Vogt, and Robert P. McClintic, both of Monroeton, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 13, 1981, Ser. No. 292,379

Int. Cl.^{3} C01G *41/00*

U.S. Cl. 423—54 **2 Claims**

1. A process for producing ammonium tungstate from an aqueous alkali metal tungstate solution containing impurities comprising the steps of: (a) extracting said tungsten values into an organic extractant by contacting said aqueous alkali metal tungstate solution with said organic extractant for a sufficient period of time to form a loaded organic extractant containing tungsten values and and an aqueous solution containing a portion of said impurities, said organic extractant comprising tricaprylamine as an active extractant, a trialkyl phosphate as a modifier, and kerosene as an organic solvent, (b) separating said loaded organic extractant from said aqueous solution, (c) stripping said loaded organic extractant from step (b) by contacting with an aqueous ammonia solution at a volume ratio of said aqueous ammonia solution to said loaded organic extractant of from about 7 to one to about 3.5 to one to form an aqueous ammonium tungstate solution and a stripped organic extractant, said aqueous ammonia solution consisting essentially of water and from about 5 to about 21 percent by weight ammonia at a pH of from about 12 to about 13, said contacting being carried out by dispersing said aqueous ammonia solution in said loaded organic wherein said extractant forms a continuous phase with said aqueous ammonia solution dispersed therein as a discontinuous aqueous phase, (d) separating said aqueous ammonium tungstate from said stripped organic extractant; and feeding one portion of said stripped organic extractant to step (a) for use as said organic extractant and feeding another portion of said stripped organic extractant to step (c) for use as organic phase for maintaining said volume ratio.

4,369,166

PURIFICATION OF SOLUTIONS OF GALLIUM VALUES BY LIQUID/LIQUID EXTRACTION

Alain Leveque, and Michel Triollier, both of Paris, France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 30, 1981, Ser. No. 326,177

Claims priority, application France, Dec. 5, 1980, 80 25830

Int. Cl.^{3} C01G *15/00*

U.S. Cl. 423—112 **12 Claims**

1. A process for the purification of an aqueous hydrochloric acid solution of gallium values by liquid/liquid extraction, comprising (i) liquid/liquid extracting an aqueous hydrochloric acid solution of gallium values with an organic phase which comprises an alcohol extractant, (ii) separating the organic phase from the aqueous phase, (iii) selectively washing said organic phase by intimately contacting same with water or with an aqueous solution of hydrochloric acid, (iv) next transferring the purified gallium values from said organic phase into an aqueous solution thereof, and (v) thence separating said organic phase from said resulting aqueous phase, whereby said aqueous phase comprises pure gallium chloride.

4,369,167

PROCESS FOR TREATING STACK GASES

Alexander Weir, Jr., 8229 Billowvista Dr., Playa Del Rey, Calif. 90291

Continuation of Ser. No. 478,871, Jun. 13, 1974, Pat. No. 4,102,982, which is a continuation-in-part of Ser. No. 237,812, Mar. 24, 1972, Pat. No. 3,948,608. This application Jan. 9, 1978, Ser. No. 868,197

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.^{3} B01D *47/00;* **B01J** *8/00;* **C01B** *17/00, 21/00*

U.S. Cl. 423—210 **34 Claims**

1. A process for removing gaseous and particulate pollutants from stack gases, wherein the steps comprise:

passing the stack gases through a defined substantially horizontally extending flow path having a substantially unrestricted cross-sectional flow area throughout the length thereof to avoid any substantial pressure drop;

spraying into the flow path at least a slurry comprising calcium sulfate and, calcium hydroxide reagent for contact with the stack gases therein and thereby effecting by said reagent removal of pollutants including SO_2, SO_3, As, B, Be, Cd, Cr, Hg, Mn, Ni, Pb, and V, when present, from the stack gases passing therethrough; and

discharging to discharge means pollutant laden liquid impinging on the side walls of said flow path by washing said discharging pollutant laden liquid into said discharge means by subsequently impinging liquid droplets.

4,369,168

REGENERATION OF CARBON EMPLOYED IN THE WET PROCESS PRODUCTION OF ALKALI METAL PHOSPHATES

Bruce D. Wells, and Donald D. Tiggelbeck, both of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 68,316, Aug. 21, 1979, Pat. No. 4,299,805, which is a continuation of Ser. No. 892,043, Mar. 30, 1978, abandoned. This application Jul. 21, 1981, Ser. No. 285,694

Int. Cl.^{3} C01B *15/16, 25/26, 25/16*

U.S. Cl. 423—313 **14 Claims**

1. In the process of producing alkali metal phosphates by neutralization of brown crude phosphoric acid and treatment with activated carbon to remove impurities from the resulting brown crude alkali metal phosphates and regenerating the activated carbon, the improvement which comprises regeneration of activated carbon employed in the filtration of brown crude alkali metal phosphates comprising the steps of water washing the activated carbon to remove residual brown crude alkali metal phosphates; contacting the activated carbon with

an aqueous solution of a base where the solution is from about 1% to 50% by weight in said base at a temperature of from 20° C. to 60° C., for a period of from 1-10 hours; washing the activated carbon with water to remove residual alkali hydroxide; contacting the activated carbon with an aqueous solution of 0.5 to 2 N mineral acid other than brown phosphoric acid at a temperature of from 20° C. to 60° C. for a period of 1-16 hours; removing the mineral acid from the activated carbon and resuming filtration of brown crude alkali metal phosphates.

4,369,169

PRETREATMENT OF CRUDE WET PROCESS PHOSPHORIC ACID

Guy Nineuil, Bihorel; Jean Boutin, Mions, and Maurice Chambon, St. Genis Laval, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jan. 22, 1980, Ser. No. 114,204

Claims priority, application France, Jan. 24, 1979, 79 01752

Int. Cl.^{3} C01B *25/16*

U.S. Cl. 423—321 R **25 Claims**

1. A process for the purification of a crude, wet process phosphoric acid, comprising (i) first homogeneously admixing same with a solid adsorbent for a period of time ranging from about 30 minutes to about 2 hours, (ii) next mixing the resultant liquid dispersion with a liquid formulation of a flocculating agent, (iii) maintaining the admixture which then results under nonshearing agitation until same separates into a flocculated phase and a liquid solution phase, and (iv) thence separating therefrom the flocculated phase and a purified, product acid liquid solution phase.

4,369,170

INTERCALATION COMPOUND OF A GRAPHITE WITH A THIAZYL SALT, A PROCESS FOR PRODUCING THE SAME, AND AN ELECTRICALLY CONDUCTIVE MATERIAL COMPRISING THE INTERCALATION COMPOUND OF A GRAPHITE WITH A THIAZYL SALT

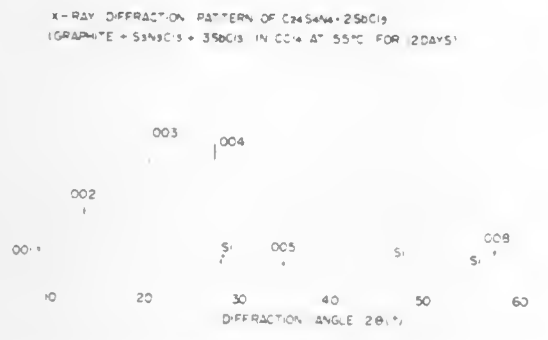
Nobuatsu Watanabe, Nagaokakyo; Tsuyoshi Nakajima, Kyoto, and Masayuki Kawaguchi, Arida, all of Japan, assignors to Central Glass Co., Ltd., Ube, Japan

Filed Oct. 21, 1981, Ser. No. 313,672

Claims priority, application Japan, May 1, 1981, 56-65172

Int. Cl.^{3} C01C *3/20*

U.S. Cl. 423—366 **12 Claims**



1. An intercalation compound of a graphite with a thiazyl salt represented by the formula $Z.S_4N_4.2SbCl_5$ wherein Z stands for C_{24}, pyrolytic carbon or pyrolytic graphite.

2. A process for producing an intercalation compound of a graphite with a thiazyl salt which comprises reacting a graphite material with trithiazyl trichloride and antimony trichloride in the presence of a non-polar solvent.

4,369,171

PRODUCTION OF PITCH AND COKE FROM RAW PETROLEUM COKE

Lloyd S. Grindstaff, and Edward E. Hardin, both of Elizabethton, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,435

Int. Cl.^{3} C01B *31/02;* **C10C** *3/08*

U.S. Cl. 423—461 **5 Claims**

1. A process for the production of a pitch useful as a binder for carbon particulate matter and as an impregnant for porous carbon solids and of a coke useful for Hall cell anodes for the electrolytic production of aluminum, comprising extraction of raw petroleum coke with from 1 to 2 parts of a solvent to 1 part of coke by wt., said solvent selected from the group consisting of tetrahydrofuran, tetralin, coker gas oil having a distillation end point of approximately 320° and mixtures thereof, said extraction carried out at or near the atmospheric boiling points of said solvent, physical separation of the solid coke from the solution thus obtained, and distillation to recover said pitch from said solution, said pitch having less than 1% quinoline insoluble, not more than 10.5% benzene insoluble, and less than 9.6% beta-resin by wt.

4. A process for the production of a calcined coke useful for the formation of an anode for a Hall aluminum cell comprising extracting raw petroleum coke with from 1 to 2 parts of an organic solvent to 1 part of coke by wt., at a temperature near the atmospheric boiling point of said solvent selected from the group consisting of tetrahydrofuran, petroleum thermal tar distillate with 250° C. distillation end point, tetralin, gas oil coker with 320° C. distillation end point, or mixtures thereof, separating the resulting mixture to obtain solids and a solution of soluble matter in said solvent, heating the solids at an elevated temperature to recover entrapped solvent, and calcining the solids at an elevated temperature of 1150° to 1500° C. to recover said coke.

4,369,172

PROLONGED RELEASE THERAPEUTIC COMPOSITIONS BASED ON HYDROXYPROPYLMETHYLCELLULOSE

Joseph M. Schor, Locust Valley; Ashok Nigalaye, Elmhurst, both of N.Y., and Norman G. Gaylord, New Providence, N.J., assignors to Forest Laboratories Inc., New York, N.Y.

Filed Dec. 18, 1981, Ser. No. 332,348

Int. Cl.^{3} A61K *9/02, 9/20, 9/22, 9/26*

U.S. Cl. 424—19 **38 Claims**

1. A carrier base material combined with a therapeutically active medicament and shaped and compressed to a solid unit dosage form having a regular and prolonged release pattern upon administration, the carrier base material being hydroxypropylmethylcellulose or a mixture of hydroxypropylmethylcellulose and up to 30% by weight of the mixture of ethylcellulose and/or up to 30% by weight of the mixture of sodium carboxymethylcellulose, and wherein the hydroxypropylmethylcellulose has a hydroxypropoxyl content of 9-12 weight-% and a number average molecular weight of less than 50,000.

4,369,173

ANTIPERSPIRANT COMPOSITIONS

Robert H. Causland, Goshen, and Americo V. Calogero, New Hampton, both of N.Y., assignors to Wickhen Products, Inc., Huguenot, N.Y.

Continuation-in-part of Ser. No. 527,841, Nov. 27, 1974, abandoned. This application Mar. 19, 1979, Ser. No. 21,835

Int. Cl.^{3} A61K *9/36, 9/62, 7/38*

U.S. Cl. 424—35 **29 Claims**

1. As a new composition of matter, a dry powder capable of being incorporated into a wide variety of consumer antiperspirant products, which is obtained by drying an aqueous solution of the ingredients and pulverizing the dried product, and which consists essentially of from about 55 to about 90% by weight of active acidic antiperspirant material and about 3 to about 45% by weight of at least partially hydrolyzed carbohydrate derived from natural waxy maize, said hydrolyzed carbohydrate being soluble in water and acting to buffer and encapsulate said acidic antiperspirant.

4,369,174

COSMETIC COMPOSITION CONTAINING KOJIC ACID ESTER

Sumiyoshi Nagai, and Tokio Izumi, both of Onojo, Japan, assignors to Sansho Pharmaceutical Co., Ltd., Onojo, Japan

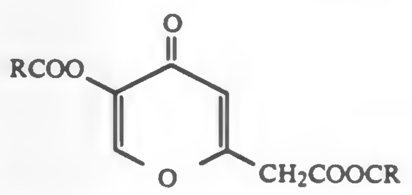
Division of Ser. No. 58,447, Jul. 18, 1979, Pat. No. 4,278,656. This application Oct. 24, 1980, Ser. No. 200,460

Claims priority, application Japan, Jun. 28, 1979, 54-82257

Int. Cl.^{3} A61K *7/135, 7/42, 31/74*

U.S. Cl. 424—62 **1 Claim**

1. In a skin whitening cosmetic composition comprising an aqueous composition of a tyrosinase and suntanning inhibition compound in the form of a lotion, creme, pack or milk lotion, the improvement comprising 0.01 to 10% by weight of the cosmetic composition of the diester of kojic acid having the following formula as the tyrosinase and suntanning inhibition compound:



wherein R is an aliphatic group containing from 3 to 20 carbon atoms.

4,369,175

PROCESS FOR THE MANUFACTURE OF PROLONGED ACTION VINCAMINE PREPARATIONS, THE VINCAMINE PREPARATIONS SO OBTAINED, AND MEDICAMENTS CONTAINING THEM

Satish C. Khanna, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 27, 1981, Ser. No. 288,236

Int. Cl.^{3} A61K *31/795*

U.S. Cl. 424—79 **12 Claims**

1. A process for the manufacture of prolonged action and stable vincamine resinates, which process comprises reacting an acid addition salt of vincamine with an alkali metal salt or alkaline earth metal salt of a sulfonic acid cation exchange resin, in a polar reaction medium.

7. A prolonged action and stable vincamine preparation consisting of vincamine resinate which is bound with a saturation of 10 to 40% on a sulfonic acid cation exchange resin as prepared by the process of claim 1, the remaining sulfonic acid anions of which are substantially saturated by alkali metal or alkaline earth metal ions and an inert pharmaceutical carrier.

10. A vincamine resinate obtained according to claim 1.

4,369,176

METHOD OF ATTRACTING AND KILLING INSECTS

Jerry E. Ott, Phoenix, Ariz., assignor to Farnam Livestock Equipment and Insecticides, Inc., Phoenix, Ariz.

Filed Nov. 20, 1978, Ser. No. 962,231

Int. Cl.^{3} A01N *25/00, 47/10, 57/00*

U.S. Cl. 424—84 **1 Claim**

1. A method for attracting insects to a remote location and killing said insects at said location, said method comprising:

- (a) forming an insecticidal bait by mixing
  - (i) a sugar,
  - (ii) sufficient spore-producing bacteria of the genera Bacillus to cause fermentation of said sugar with the concomitant production of insect-attractant values,
  - (iii) a minor amount of an insectide in sufficient quantity to kill insects attracted to said bait, and
  - (iv) a granular carrier in sufficient amount to carry said sugar, bacteria and insecticide; and
- (b) spreading a quantity of said bait in said remote location in an amount sufficient to attract insects to said location and to kill said insects in said location.

4,369,177

STABLE COMPOSITION OF S-ADENOSYL-L-METHIONINE

Yuichi Kozaki, Kakogawa; Shingo Hata, Takasago; Hajime Kawaharada, Kakogawa, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Chemical Industry Company, Limited, Osaka, Japan

Filed Nov. 20, 1980, Ser. No. 208,842

Claims priority, application Japan, Dec. 4, 1979, 54-157295; Jan. 10, 1980, 55-1763

Int. Cl.^{3} A61K *31/70*

U.S. Cl. 424—175 **12 Claims**

1. A stable composition of S-adenosyl-L-methionine which comprises a salt of S-adenosyl-L-methionine and a pharmaceutically acceptable, water-soluble salt of a bivalent or trivalent metal wherein said composition is an aqueous solution.

4,369,178

GLUCOSAMINE PEPTIDE DERIVATIVES, THEIR PRODUCTION AND USE

Yuichi Yamamura, Takarazuka; Ichiro Azuma, Sapporo, and Shigeru Kobayashi, Neyagawa, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

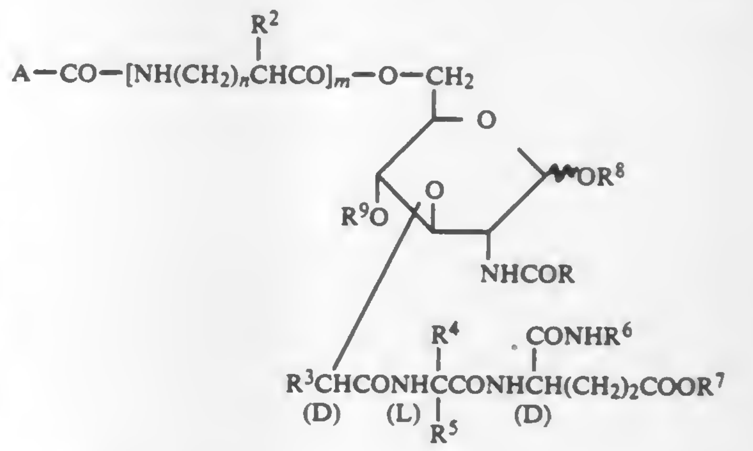
Filed Feb. 21, 1980, Ser. No. 123,401

Claims priority, application Japan, Feb. 21, 1979, 54-19929

Int. Cl.^{3} A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **11 Claims**

1. A compound of the formula:



wherein

- A is a C_{2-10} acylic hydrocarbon group, the terminal of which is substituted with an unsaturated 6-membered cyclic hydrocarbon group;
- m is 0 or 1;
- n is 0 or an integer of 1 to 9;
- R is C_{1-4} alkyl which may be substituted with hydroxyl, or phenyl;
- R^2 is hydrogen or C_{1-4} alkyl which may form a ring by connecting its terminal with the α-nitrogen atom, when n is 0, or hydrogen when n is an integer of 1 to 9;
- R^3 is hydrogen or C_{1-4} alkyl;
- R^4 and R^5 are each hydrogen or C_{1-4} alkyl which may be substituted with hydroxyl or benzyloxyl;
- R^6 is hydrogen or C_{1-4} alkyl;
- R^7 is C_{1-18} alkyl which may be substituted with C_{1-3} alkoxyl;
- R^8 and R^9 are each hydrogen, C_{1-4} alkyl or C_{1-2} alkyl substituted with phenyl; and
- (D) and (L) each indicate configuration if their respective carbon atoms are asymmetric;

or an acid addition salt thereof.

4,369,179
ACYLPEPTIDES

Hans Rink, Riehen; Peter Sieber, Reinach, and Bruno Kamber, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

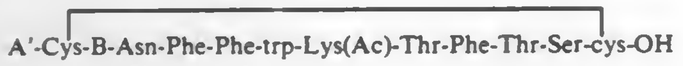
Filed Dec. 5, 1980, Ser. No. 213,299

Claims priority, application Switzerland, Dec. 14, 1979, 11096/79

Int. Cl.^{3} A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **18 Claims**

1. An acylpeptide of the formula



$$\text{A}'\text{-}\overline{\text{Cys-B-Asn-Phe-Phe-trp-Lys(Ac)-Thr-Phe-Thr-Ser-cys}}\text{-OH}$$

(IA)

in which
- A′ represents H—Ala—Gly—, Ac—Ala—Gly, H— or Ac—,
- B represents Lys, Lys(Ac) or Lys(X) (wherein X is an ϵ-amino-protecting group),
- trp represents L-Trp, D-Trp or an analogous radical, which carries in the indole nucleus a halogen atom,
- cys represents L-Cys or D-Cys and
- Ac represents an acyl radical of an optionally substituted alkanecarboxylic acid, present at the free amino group,

and non-toxic salts and pharmacologically acceptable complexes thereof.

4,369,180
COSMETIC FACIAL PREPARATION CONTAINING ALOE VERA

Donna M. Mihalovits, Atlanta, Ga., assignor to Randolph C. Karrh, Swainsboro, Ga., a part interest

Filed Sep. 10, 1981, Ser. No. 300,992

Int. Cl.^{3} A61K *37/00, 31/595, 31/365, 35/78*

U.S. Cl. 424—177 **4 Claims**

1. A cosmetic facial preparation comprising the following ingredients in the following percentages by weight in the final composition:

Ingredient	Minimum Percentage	Maximum Percentage
Aloe Vera	25	75
Citric Acid	0.2	2
Potassium Sorbate	0.1	2
Sodium Benzoate	0.1	2
Cornstarch	10	70
Albumin	1	10
Hydroxypropylmethylcellulose	0.5	10
Allantoin	0.5	5
Vitamin A	0.1	5
Vitamin D_2	0.1	5
Vitamin E	0.1	5

4,369,181
PROCESS FOR TREATING PROLIFERATIVE SKIN DISEASES USING CERTAIN 6,8-SUBSTITUTED RIBOFURANOSYLPURINE-3′,5′-CYCLIC PHOSPHATES

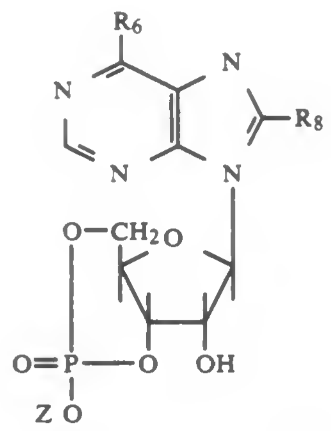
Jon P. Miller, Foster City, and Wesley W. Zmolek, Fremont, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Aug. 5, 1981, Ser. No. 290,223

Int. Cl.^{3} A61K *31/70;* **C07H** *19/20*

U.S. Cl. 424—180 **15 Claims**

1. A method of treating a proliferative skin disease comprising topically administering to an afflicted site on the skin of a patient a therapeutically effective amount of a compound of the formula:



where:
- R_6 is:
  - (i) —NR_1 R_2 where R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, and cyclopentyl or are joined together with the nitrogen atom to form a hetrocyclic group having 4 to 5, inclusive, annular carbon atoms with the proviso that the total number of carbon atoms in the —NR_1 R_2 group is 4 or 5, or
  - (ii) —XR where X is a chalcogen atom of atomic number 8 or 16 and R is alkyl of 4 or 5 carbon atoms,
- R_8 *is:*
  - (i) —X—$(CH_2)_n$ R_3 where X is defined previously, n is an integer in the range of 1 to 3, inclusive, R_3 is hydrogen, alkyl of 1 to 7 carbon atoms, or phenyl substituted with 0 to 1, inclusive, nitro, halo of atomic number 9 to 35, inclusive, methoxy, hydroxy or methyl, or
  - (ii) —NR_4 R_5 wherein R_4 and R_5 are independently selected from the group consisting of hydrogen and alkyl of 1 to 8 carbon atoms and phenalkyl of 7 to 9 carbon atoms, with the provisos that only one of R_4 and R_5 may be hydrogen and the total number of carbon atoms in the —NR_4 R_5 group is in the range of 1 to 9, inclusive, and
- Z is hydrogen, an alkali metal cation or ammonium.

4,369,182
INFLAMMATION-PREVENTING PHARMACEUTICAL COMPOSITION OF ORAL ADMINISTRATION

Miklos Ghyczy; Adorjan Erdös, both of Cologne; Günter Heidemann, Geilenkirchen-Tripsrath, and Götz Ritzmann, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & CIE GmbH, Cologne, Fed. Rep. of Germany

Division of Ser. No. 104,449, Dec. 17, 1979. This application May 22, 1981, Ser. No. 266,307

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2856333

Int. Cl.^{3} A61K *31/685*

U.S. Cl. 424—199 **7 Claims**

1. A pharmaceutical composition in the form for oral administration in the prevention of inflammation in mammals comprising an effective inflammation-alleviating amount of at least one phospholipid and a non-steroidal inflammation-preventing compound comprising 5-fluor-2-methyl-1-p-(methylsulphenyl)-benzylideneindene-3-acetic acid, said phospholipid and said compound being present in a molar ratio ranging from about 0.1:1 to about 20:1, respectively.

4,369,183
2-PYRIDYL-1,2-BENZISOTHIAZOLINONE-1,1-DIOXIDES AND THEIR USE AS SELECTIVE PROTEASE INHIBITORS

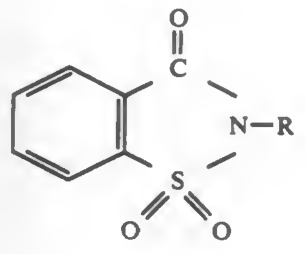
Howard Jones, Holmdel, N.J.; Robert L. Clark, Sequim, Wash., and Morris Zimmerman, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 71,145, Sep. 6, 1979, Pat. No. 4,276,298, which is a continuation-in-part of Ser. No. 889,762, Mar. 24, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,205

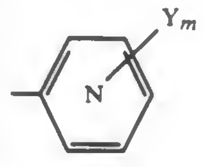
Int. Cl.^{3} A61K *31/44, 31/455;* **C07D** *417/04*

U.S. Cl. 424—263 **9 Claims**

1. A compound of the formula:



wherein R is



where m is 1 to 2; and Y is independently selected from (1) fluoro; (2) nitro, except that where Y is only nitro, m must be 1 or 2 and Y must be 2,4- or 3,5-dinitro; (3) trifluoromethyl; (4) cyano; (5) C_{1-3} alkoxycarbonyl; (6) C_{1-3} alkylcarbonyl; (7) carboxyl; (8) carbamoyl; (9) C_{1-3} alkylacylamino; (10) C_{1-3} alkylsulfonyl; (11) N,N-di(C_{1-3} alkyl) sulfamyl; (12) trifluoromethoxy; (13) trifluoromethylthio; (14) trifluoromethylsulfonyl; and (15) trifluoromethylsulfinyl;

6. A method of selectively inhibiting proteases, comprising the administration to a patient a therapeutically effective amount of the compound of claim 1.

4,369,184
1-(CYCLOHEXYL)-4-ARYL-4-PIPERIDINECARBOXYLIC ACID DERIVATIVES

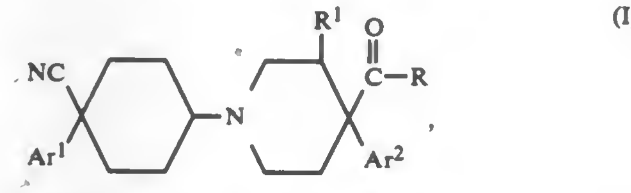
Raymond A. Stokbroekx, Beerse; Marcel G. M. Luyckx, Geel, and Joannes J. M. Willems, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 114,924, Jan. 24, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 191,631

Int. Cl.^{3} A61K *31/445, 31/535;* **C07D** *211/64, 265/30*

U.S. Cl. 424—267 **7 Claims**

1. A chemical compound having the formula



(I)

the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:
- R^1 is a member selected from the group consisting of hydrogen and lower alkyl;
- R is a member selected from the group consisting of hydroxy, lower alkyloxy, aryllower alkyloxy, aryloxylower alkyloxy, lower alkyloxylower alkyloxy, aminolower alkyloxy, mono- and di(lower alkyl)amino lower alkyloxy, (1-pyrrolidinyl)-, (1-piperidinyl)- and (4-morpholinyl)lower alkyloxy, amino, aryllower alkyl amino, mono- and di(lower alkyl)amino, 1-pyrrolidinyl, 1-piperidinyl and 4-morpholinyl; and
- Ar^1 and Ar^2 are each independently selected from the group consisting of aryl, thienyl and pyridinyl;

wherein aryl, as used in the definitions of R, Ar^1 and Ar^2, is a membere selected from the group consising of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of lower alkyl, lower alkyloxy, halo, nitro, amino, cyano, carboxyl, lower alkyloxy carbonyl, mono- and di(lower alkyl)aminocarbonyl and trifluoromethyl.

6. A method to prevent the release of histamine in warm-blooded animals which comprises the systemic administration to said animals of an effective antihistaminic amount of a chemical compound selected from the group consisting of 1-[4-cyano-4-(4-fluorophenyl)cyclohexyl]-3-methyl-4-phenyl-4-piperidinecarboxylic acid, the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof.

4,369,185
FUNGICIDAL 2-SULFINYL-5-SULFONYL-1,3,4-THIADIAZOLE DERIVATIVES

Ludwig Nuesslein; Dietrich Baumert; Georg-Alexander Hoyer, and Ernst A. Pieroh, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

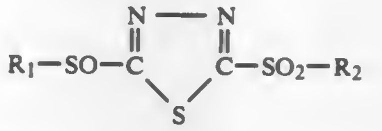
Filed Aug. 12, 1980, Ser. No. 178,703

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2933008

Int. Cl.^{3} A01N *43/82;* **C07D** *285/12*

U.S. Cl. 424—270 **6 Claims**

1. A method of controlling fungi comprising placing into the surroundings of the fungi an effective amount of a compound of the general formula



wherein R_1 is ethyl and R_2 is methyl, ethyl, propyl or isopropyl, or R_1 is isopropyl and R_2 is ethyl.

4,369,186
4,5-DICHLOROIMIDAZOLE-2-CARBOXYLIC ACID DERIVATIVES

Gunther Beck, Leverkusen; Klaus Sasse, Schildgen; Helmut Heitzer; Ludwig Eue, both of Leverkusen; Robert R. Schmidt, Cologne; Hans Scheinpflug, Leverkusen; Ingeborg Hammann, and Wilhelm Brandes, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

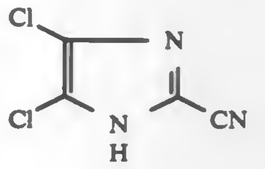
Division of Ser. No. 770,260, Feb. 18, 1977. This application May 17, 1979, Ser. No. 39,978

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1976, 2610527; Jun. 2, 1976, 2624759; Jul. 29, 1976, 2634053

Int. Cl.^{3} C07D *233/66;* **H01N** *43/50*

U.S. Cl. 424—273 R **10 Claims**

1. A 4,5-dichloroimidazole-2-carboxylic acid derivative selected from the group consisting of



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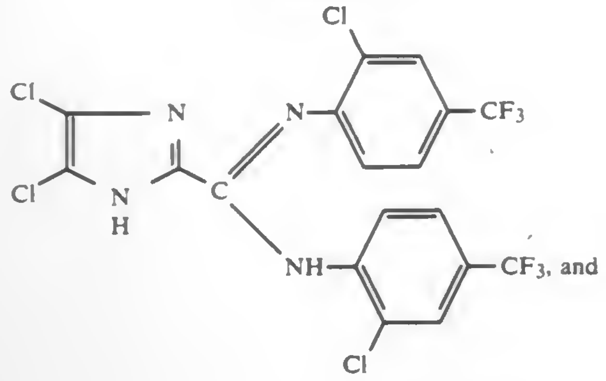
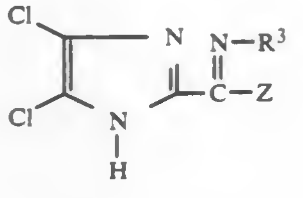
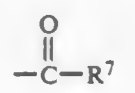


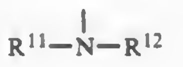


in which
W is O,S or =N-R^3
in which
R^3 denotes hydrogen; OH; C_{1-12}-alkyl optionally substituted by halogen, OH, C_{1-4}-alkoxy, phenoxy (which is optionally substituted by C_{1-4}-alkyl or halogen), C_{1-4}-alkylmercapto, benzylmercapto, COOH, $CONH_2$, CONH-alkyl, $CON(alkyl)_2$ or CONH-aryl (in which the aryl group is phenyl or naphthyl and is optionally substituted by halogen, C_{1-4}-alkyl, CF_3, C_{1-4}-alkoxy or NO_2), or by cycloalkyl with 5 or 6 ring carbon atoms (optionally substituted by C_{1-4}-alkyl; C_{3-8}alkenyl (optionally substituted by halogen or C_{1-4}-alkoxy), C_{3-12}-alkynyl (optionally substituted by phenyl that is optionally substituted by halogen, C_{1-4}-alkyl, CF_3, C_{1-4}-alkoxy or nitro, or by cycloalkyl with 5 or 6 ring carbon atoms), cycloalkyl with 4-8 ring carbon atoms (optionally substituted by C_{1-4}-alkyl or CF_3 or optionally containing a fused benzene ring), or aryl, or
R^3 represents a group —OR^4 wherein
R^4 represents C_{1-4}-alkyl, benzyl or a group



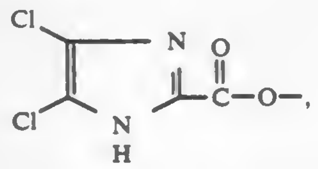
$$-\overset{O}{\overset{\|}{C}}-R^7$$

wherein
R^7 has the below mentioned meanings,
R^3 furthermore represents a group

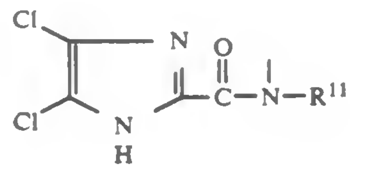


$$R^{11}-\overset{|}{N}-R^{12}$$

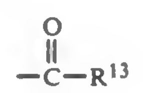
in which
R^{11} and R^{12}, which may be identical or different, each denotes hydrogen, C_{1-12}-alkyl or C_{3-8}-alkenyl (which may be optionally substituted by chlorine, fluorine, bromine, OH, C_{1-4}-alkoxy, phenoxy which may be optionally substituted by C_{1-4}-alkyl, halogen or C_{1-4}-alkoxy), the acyloxy radical



C_{1-4}-alkylmercapto (optionally substituted by phenyl), phenylmercapto (optionally substituted by halogen or C_{1-4}-alkyl), —CN, —COOH, —$CONH(C_{1-4}$-$alkyl)_2$, —CONH—aryl or aryl (the aryl group being phenyl or naphthyl, which is optionally substituted by halogen, C_{1-4}-alkyl, CF_3, C_{1-4}-alkoxy or NO_2), cyclopentyl, cyclohexyl, or a group

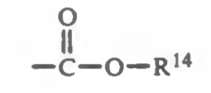


wherein
R^{11} has one of the preceding meanings, C_{3-12}-alkynyl (optionally substituted by phenyl, cyclohexyl or cyclopentyl), C_{4-8}-cycloalkyl (optionally substituted by C_{1-4}-alkyl or CF_3) or aryl, preferably phenyl or naphthyl, which may be substituted by C_{1-4}-alkyl, C_{1-4}-halogenoalkyl, halogen, C_{1-4}-alkoxy, acetyl, aryloxy or arylmercapto (which may be substituted by halogen, C_{1-4}-alkyl, CF_3, C_{1-4}-alkoxy or C_{1-4}-alkylmercapto), C_{1-4}-alkylmercapto, C_{1-4}-alkylsulphonyl, alkoxycarbonyl, aminocarbonyl, CN, NO_2, mono-C_{1-4}-alkylamino, di(C_{1-4}-alkyl)amino, C_{1-4}-halogenoalkoxy or C_{1-4}-halogenoalkylmercapto, or
R^{12} can denote OH, C_{1-4}-alkoxy (optionally substituted by phenyl), or an acyl group of the formula



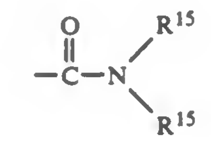
$$-\overset{O}{\overset{\|}{C}}-R^{13}$$

in which
R^{13} denotes hydrogen, C_{1-12}-alkyl or C_{2-8}-alkenyl, C_{2-8}-alkynyl, cycloalkyl with 3–8 ring carbon atoms, phenyl or naphthyl (either of which can optionally be substituted by halogen, C_{1-4}-alkoxy, C_{1-4}-alkyl, CF_3 or NO_2) or
R^{12} can denote a group of the formula



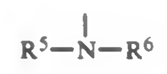
$$-\overset{O}{\overset{\|}{C}}-O-R^{14}$$

in which
R^{14} denotes C_{1-12}-alkyl, C_{3-12}-alkenyl or C_{3-12}-alkynyl each of which can optionally be substituted by halogen, C_{1-4}-alkoxy, phenyl (itself optionally substituted by halogen or C_{1-4}-alkyl), cycloalkyl with 5 or 6 ring carbon atoms; cycloalkyl with 5 or 6 ring carbon atoms (optionally substituted by C_{1-4}-alkyl), or phenyl or naphthyl (either of which is optionally substituted by halogen, C_{1-4}-alkyl, CF_3, C_{1-4}-alkoxy, C_{1-4}-alkylmercapto, NO_2 or CN), or
R^{12} can denote a group of the formula



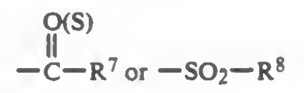
$$-\overset{O}{\overset{\|}{C}}-N\begin{matrix}R^{15}\\R^{15}\end{matrix}$$

in which
the R^{15} moieties are identical or different and denote hydrogen, C_{1-2}-alkyl or C_{3-8}-alkenyl (either of which is optionally substituted by halogen, C_{1-4}-alkyl, CF_3 C_{1-4}-alkoxy), phenyl (optionally substituted by halogen, C_{1-4}-alkyl, CF_3, C_{1-4}-alkoxy, C_{1-4}-alkylmercapto or NO_2), cycloalkyl with 5 or 6 ring carbon atoms or a sulphonyl group —SO_2—R^8 in which
R^8 denotes C_{1-12}-alkyl (optionally substituted by chlorine or fluorine), phenyl (optionally substituted by chlorine, C_{1-4}-alkyl, C_{1-4}-alkoxy, CF_3 or NO_2) or a secondary amine group, or
R^{12} can denote the group



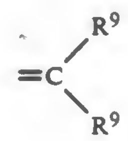
$$R^5-\overset{|}{N}-R^6$$

in which
R^5 and R^6 can be identical or different and represent hydrogen, C_{1-4}-alkyl (which can optionally be substituted by phenyl, which can itself be optionally substituted by halogen or C_{1-4}-alkyl), phenyl (optionally substituted by halogen, NO_2, C_{1-4}-alkyl, C_{1-4}-alkoxy or CF_3) or the group



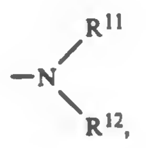
$$-\overset{O(S)}{\overset{\|}{C}}-R^7 \text{ or } -SO_2-R^8$$

in which
R^7 denotes hydrogen, C_{1-12}-alkyl or C_{2-8}alkenyl either of which can be substituted by halogen, nitro, C_{1-4}-alkylmercapto, phenylmercapto (optionally substituted by halogen or C_{1-4}-alkyl), phenyl (optionally substituted by halogen or C_{1-4}-alkyl) or cycloalkyl with 5 or 6 ring carbon atoms; C_{2-8}-alkynyl, cycloalkyl with 3–6 ring carbon atoms, phenyl or naphthyl (either of which is optionally substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, CF_3 or NO_2), or a group of the formula —OR^{26} or —SR^{26}
in which
R^{26} denotes C_{1-12}-alkyl, C_{3-12}-alkenyl or C_{3-12}-alkynyl (any of which may be optionally substituted by halogen, C_{1-4}-alkoxy, phenyl (which may be substituted by halogen C_{1-4}-alkyl), cyclohexyl), C_{3-6}-cycloalkyl, or phenyl or naphthyl (either of which can optionally be substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy or nitro), or
R^7 denotes a group R^{27}-N-R^{27}
in which
the R^{27} moieties are identical or different and denote hydrogen, C_{1-12}-alkyl or C_{3-8}-alkenyl (either of which can be optionally substituted by halogen, C_{1-4}-alkoxy or phenyl that is optionally substituted by C_{1-4}-alkyl or halogen), cycloalkyl with 5 or 6 carbon atoms or phenyl (which may be substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylmercapto, CF_3 or NO_2), or R^5 and R^6 can conjointly denote the group



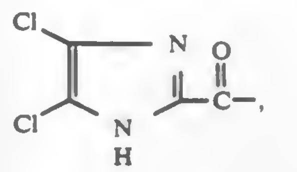
$$=C\begin{matrix}R^9\\R^9\end{matrix}$$

in which
the R^9 moieties are identical or different and each denotes C_{1-12}-alkyl (which is optionally substituted by OH, C_{1-4}-alkoxy, COOH or COO(C_{1-4}-alkyl)), cycloalkyl with 5 or 6 ring carbon atoms, phenylalkyl or naphthylalkyl with 1–4 carbon atoms in the alkyl moiety (the phenyl or naphthyl moiety optionally being substituted by halogen, NO_2, C_{1-4}-alkyl or C_{1-4}-alkoxy), phenyl or naphthyl (either of which is optionally substituted by OH, halogen, NO_2, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylmercapto or CF_3) or the R^9 moieties can, conjointly with the adjacent carbon atom, form a carbocyclic ring, or one of the R^9 moieties can be hydrogen, and Z denotes halogen, a group —OR^{10} or —SR^{10} in which



$$-N\begin{matrix}R^{11}\\R^{12},\end{matrix}$$

R^{10} denotes hydrogen, a metal cation or a cation —NR_4^+ wherein R is hydrogen or an alkyl, aryl, cycloalkyl, or aralkyl group and 2 or 3 of the R moieties can form a 5- or 6-membered ring, or R^{10} denotes C_{1-8}-alkyl or C_{3-12}-alkenyl either of which is optionally substituted by chlorine, fluorine, bromine, acyloxy, wherein acyl denotes the radical of an aliphatic, cycloaliphatic, or aromatic carboxylic acid or the radical



C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy, phenoxy or naphthoxy (either of which is optionally substituted by halogen, C_{1-4}-alkyl, CF_3 or NO_2), C_{1-4}-alkylmercapto (optionally substituted by phenyl that is optionally substituted by halogen or C_{1-4}-alkyl), arylmercapto, arylsulphonyl or arylsulphonyl (any of which may be substituted by C_{1-4}-alkyl or halogen), C_{1-4}-alkylsulphonyl, acylamino or diacylamino (wherein acyl denotes the radical of an aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic carboxylic acid or of a carbonic or thiocarbonic acid derivative), CN, a carboxylic acid ester radical, cycloalkyl with 5 or 6 ring carbon atoms, phenyl (optionally substituted by halogen, C_{1-4}-alkyl or C_{1-4}-alkoxy) C_{3-12}-alkynyl, cycloalkyl with 3–6 ring carbon atoms (optionally substituted by halogen, C_{1-4}-alkoxy or C_{1-4}-alkyl), or phenyl or naphthyl.

9. A method of combating weeds which comprises applying to the weeds, or to a habitat thereof, a herbicidally effective amount of a compound according to claim 1.

4,369,187

3-SUBSTITUTED-1-AZABICYCLO[3.2.0]HEPT-2-EN-7-ONE-2-CARBOXYLIC ACID

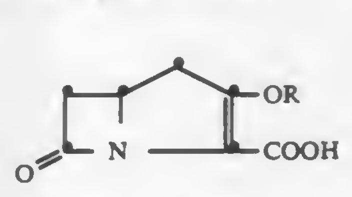
Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, Matawan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 119,065, Feb. 6, 1980, abandoned, which is a continuation of Ser. No. 843,373, Oct. 19, 1977, abandoned. This application Aug. 8, 1980, Ser. No. 176,819

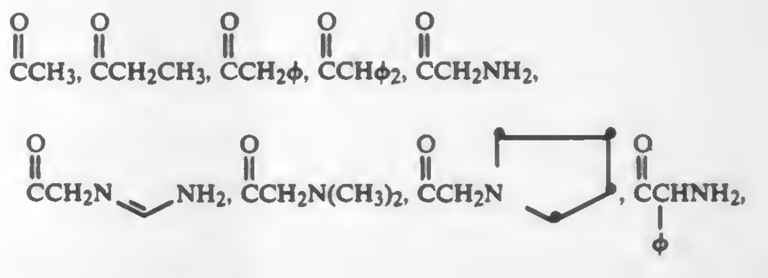
Int. Cl.^{3} C07D *487/04, 205/08;* **A61K** *31/40*

U.S. Cl. 424—274 **3 Claims**

1. A compound having the structure:

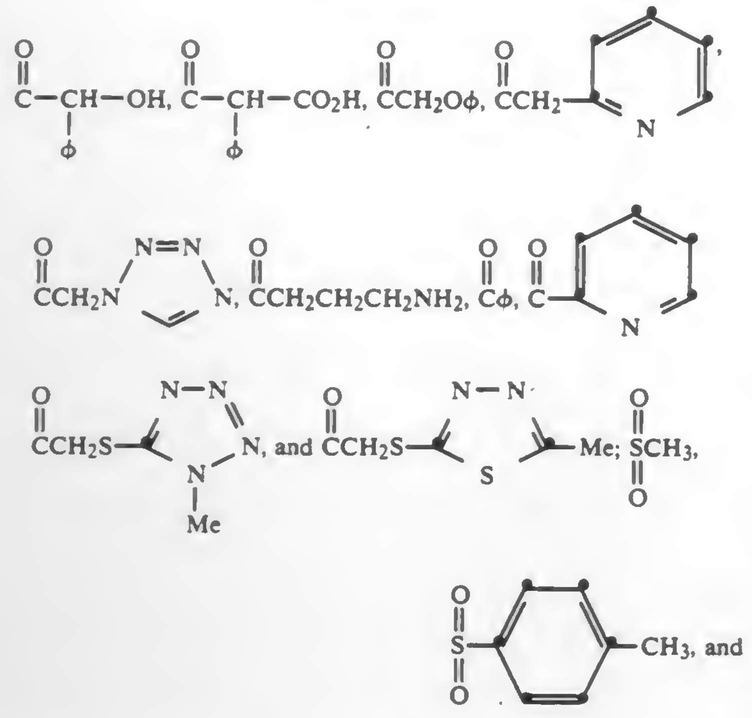


thereof, wherein: R is selected from the group consisting of monosubstituted and unsubstituted: alkyl, having 1–6 carbon atoms, cycloalkyl and cycloalkylalkyl wherein the ring moiety has 3–6 carbon atoms and the alkyl moiety has 1–4 carbon atoms, aralkyl having from 7–16 carbon atoms, and acyl; wherein the substituent on the radical R are selected from: amino; mono- and di-alkylamino wherein the alkyl has 1–6 carbon atoms; alkoxyl having 1–6 carbon atoms; chloro, bromo, amidino; guanidino; and carboxyl; the term "acyl" as it relates to the definition of R is selected from the group consisting of:



$$\overset{O}{\overset{\|}{C}}CH_3,\ \overset{O}{\overset{\|}{C}}CH_2CH_3,\ \overset{O}{\overset{\|}{C}}CH_2\phi,\ \overset{O}{\overset{\|}{C}}CH\phi_2,\ \overset{O}{\overset{\|}{C}}CH_2NH_2,$$

-continued



the pharmaceutically acceptable salts thereof.

3. An antibacterial pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,369,188

2-THIOXOBENZ[CD]INDOLE-1(2H)-ACETIC ACID DERIVATIVES

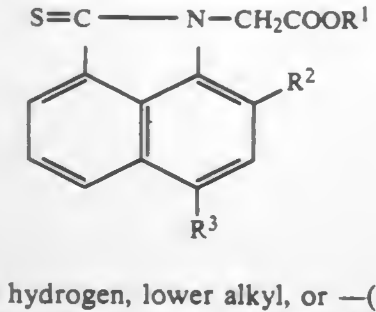
Kazimir Sestanj, St. Laurent, Canada, assignor to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Jul. 17, 1981, Ser. No. 284,049

Int. Cl.³ C07D *209/90;* **A61K** *31/40*

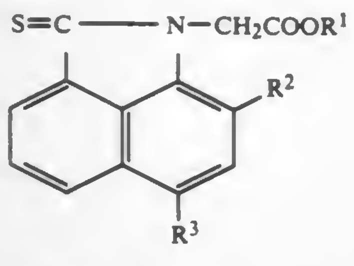
U.S. Cl. 424—274 **17 Claims**

1. A compound of the formula



in which R^1 is hydrogen, lower alkyl, or $—(CH_2)_m—NR^4R^5$ wherein m is an integer from 2 to 6 and R^4 and R^5 each is hydrogen or lower alkyl; R^2 is hydrogen, bromo or chloro; and r^3 is hydrogen or halo; with the proviso that when R^2 is bromo or chloro, then R^3 is bromo or chloro, or a therapeutically acceptable salt thereof.

15. A pharmaceutical composition, for preventing or relieving diabetic complications, consisting of neuopathy, nephropathy, retinopathy, and cataracts, in a diabetic mammal, which comprises an effective amount of a compound of the formula



in which R^1 is hydrogen, lower alkyl, or $—(CH_2)_m\text{-}NR^4R^5$ wherein m is an integer from 2 to 6 and R^4 and R^5 each is hydrogen or lower alkyl; R^2 is hydrogen, bromo or chloro; and R^3 is hydrogen or halo; with the proviso that when R^2 is bromo or chloro, then R^3 is bromo or chloro, or a therapeutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

4,369,189

NOVEL UNSYMMETRICAL FORMAMIDINE-SULFENYLATED CARBAMATE COMPOUNDS

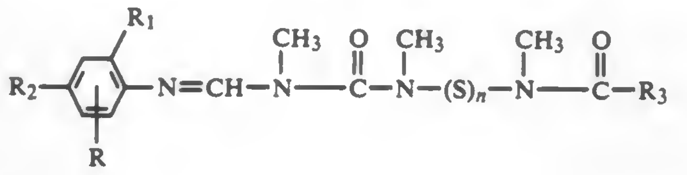
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 10, 1980, Ser. No. 215,087

Int. Cl.³ A01N *9/12;* **C07D** *307/83*

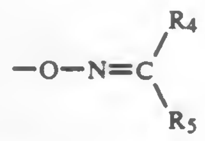
U.S. Cl. 424—285 **68 Claims**

1. Compounds of the formula:



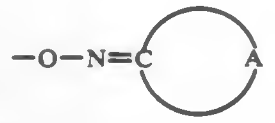
wherein:

- n is 1 or 2;
- R is hydrogen, halogen or alkyl;
- R_1 and R_2 are individually halogen, alkyl, trihaloalky or di- or trihaloalkoxy; provided that the total number of carbon atoms in any one of R; R_1 or R_2 may not exceed four;
- R_3 is:
  - A. fluorine;
  - B. phenoxy, which may be unsubstituted or substituted with one or more alkyl, chloro, fluoro, bromo, alkoxy, alkylthio, alkylthioalkyl, alkylsulfinyl, alkylsulfinylalkyl, alkylsulfonyl, alkylsulfonylalkyl, alkynyloxy, dialkylamino, alkoxycarbonylamino, N,N-dialkyl formamidino, cyano, dioxolanyl, or dithiolanyl substituents in any combination; provided that the total number of aliphatic carbon atoms in R_3 does not exceed twelve;
  - C. 1-naphthoxy, tetrahydronaphthoxy, dihydrobenzofuranoxy, benzodioxalanoxy, or benzothienoxy, any of which may be unsubstituted or substituted with one or more alkyl substituents; provided that the total number of aliphatic carbon atoms in R_3 does not exceed twelve;
  - D.



wherein:

- R_4 is chloro, alkyl, alkylthio, cyanoalkylthio, cyano or hydrogen;
- R_5 is alkyl, alkylthio, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxyalkyl, nitroalkyl, hydroxyalkyl, phenyl or hydrogen, said phenyl being unsubstituted or substituted with one or more alkyl, chloro or fluoro substituents in any combination; provided that R_4 and R_5 are not both hydrogen;'and provided further that the total number of aliphatic carbon atoms in R_4 and R_5 together does not exceed twelve; or
  - E.



wherein:

A is a divalent chain having from 2 to 24 aliphatic carbon atoms completing a 2-oximino-1,4-dithiane, 2-oximino-1,3-dithiane, 4-oximino-1,3-dithiolane, 2-oximino-1,4-dioxane, 2-oximino-tetrahydro-1,4-thiazine-3-one, 2-oximino-1,3-dithiolane, 2-imino-4-oximino-1,3-dithiolane, 3-oximinothiophane, 2-oximinothiophane, 2-oximino-tetrahydro-1,4-oxathiane, 4-oximino-1,3-oxathiolane, 2-oximinothiazolidin-3-one, 2-oximino-1,3-thiazolidin-4-one or 2-oximinotetrahydro-1,4-thiazin-5-one ring structure, all of which may be unsubstituted or substituted with one or more alkyl substituents.

4,369,190

ANALGESIC COMPOSITION AND USE THEREOF TO AMELIORATE INTRACTABLE PAIN

Thomas L. Schulte, 218 Family Farm Dr., Woodside, Calif. 94062

Filed Jun. 23, 1981, Ser. No. 276,566

Int. Cl.³ A61U *31/10, 31/235*

U.S. Cl. 424—308 **13 Claims**

1. A method for the amelioration of intractable pain which comprises applying topically proximate the situs of the pain an analgesically effective amount of a mixture of less than 10% by weight of DMSO and of biphenamine in a pharmaceutically acceptable carrier, the concentration of DMSO and biphenamine in the mixture each being ineffective to ameliorate the pain when applied separately from the other to the situs.

4,369,191

NAPHTHALENETETRAYLTETRAKIS(SULFONYLIMINO)-TETRABENZENE DI- AND TRICARBOXYLIC ACIDS

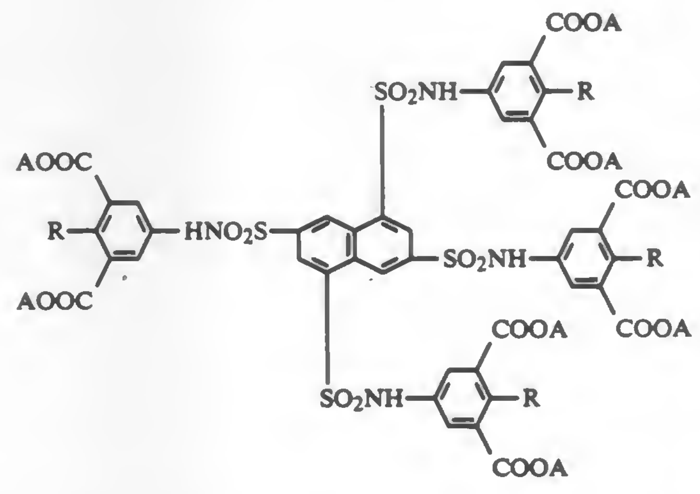
Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 27, 1981, Ser. No. 286,737

Int. Cl.³ C07C *143/80;* **A61K** *31/19*

U.S. Cl. 424—319 **9 Claims**

1. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement inhibiting amount of a compound selected from those of the formula:



wherein R is selected from the group consisting of hydrogen and —COOA; and A is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, an alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6).

4,369,192

ANIMAL FEED AND PROCESS

Melvin J. DeGeeter, Kalamazoo, Mich., assignor to The Upjohn Co., Kalamazoo, Mich.

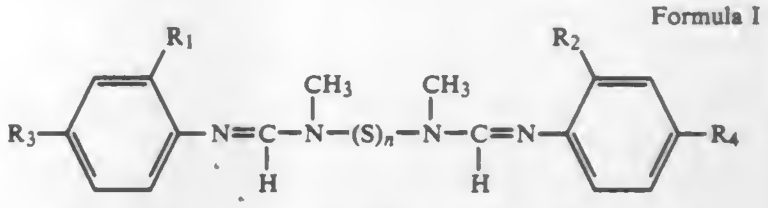
Filed Jun. 3, 1981, Ser. No. 270,089

Int. Cl.³ A61K *31/165*

U.S. Cl. 424—326 **4 Claims**

1. A process for obtaining increased meat, milk, egg, or wool production in healthy animals comprising the daily feeding of an effective amount of a compound of the formula

Formula I



or a pharmacologically acceptable acid addition salt thereof wherein R_1 and R_2 are the same or different and are selected from the group consisting of lower alkyl of from 1 to 4 carbon atoms; R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, halogen, and lower alkyl of from 1 to 4 carbon atoms, and n is 1 or 2 provided that when n is 2 then R_1 and R_2 are the same and R_3 and R_4 are the same in association with the animal's feed, water, salt ration, or pharmacologically acceptable carrier.

4,369,193

DOUGH MIXING FOR FARINACEOUS FOODSTUFF PRODUCTION

Thomas H. Collins, 7 Yarrowside, Little Chalfont, Amersham, Buckinghamshire, and David Tomlinson, 4 Andrew La., Sharples, Bolton, Lancashire, both of England

PCT No. PCT/GB79/00153, § 371 Date May 16, 1980, § 102(e) Date May 15, 1980, PCT Pub. No. WO80/00524, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 14, 1979, Ser. No. 194,291

Claims priority, application United Kingdom, Sep. 16, 1978, 37091/78; Sep. 16, 1978, 37092/78

Int. Cl.³ A21D *13/08;* **A21C** *1/00*

U.S. Cl. 426—19 **9 Claims**

1. A method of mixing dough for use in the production of soft bread having a specific volume of about 4.5 to 7.0 cubic centimeters per gram and wherein energy added during mixing is sufficient to determine the cell structure of the finished product, the dough, not being a sponge, requiring substantially no fermentation in bulk following mixing comprising the steps of: mechanically mixing the dough in batches; imparting energy to the dough by said mixing step in a quantity in excess of 15 watt hours per kilogram of total dough ingredients; controlling the temperature rise in the dough resulting from energy input during said mixing step, by passing a fluid coolant about said chamber, externally thereof and in contact therewith, so that the temperature of the dough after mixing is within the range of 25° C. to 35° C., and inducing a vacuum in the chamber during at least a portion of said mechanical mixing step.

4,369,194

PROCESS FOR TREATING MANURES

Hans M. Arsovic, Baden-Baden, Fed. Rep. of Germany, assignor to Societe Agricole et Fonciere S.A.F. S.A., Switzerland

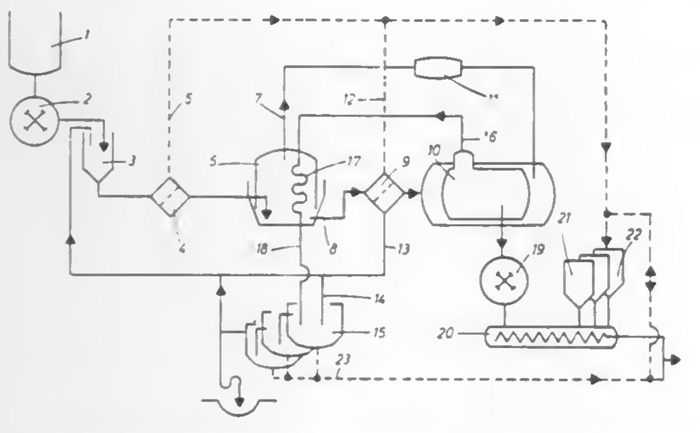
PCT No. PCT/EP80/00016, § 371 Date Oct. 17, 1980, § 102(e) Date Oct. 17, 1980, PCT Pub. No. WO80/01922, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 7, 1980, Ser. No. 201,399

Claims priority, application Switzerland, Mar. 14, 1979, 2405/79

Int. Cl.^{3} A23L *1/31*

U.S. Cl. 426—59 **4 Claims**



1. A method for treating manures which comprises the steps of:

finely shredding the manure,
mixing the shredded manure with water in a mixer to obtain a liquid mixture containing no more than 4 percent solids,
separating said liquid mixture in a first separator to remove light-weight solids from a fluid phase containing fine solids,
reacting said fluid phase in a bioreactor for a period not exceeding four days and thereby generating a combustible biogas with a gas yield of about 200 cm^3/gm. of manure,
separating fluid outflow from said bioreactor in a second separator to remove undigested solids,
drying solids from said first and second separators in a drier with heat supplied at least in part by the combustion of said biogas from said bioreactor,
conducting water vapor from said drier to a heat exchanger/condenser in said bioreactor to yield heat for maintaining the content of said bioreactor at an optimum temperature,
conducting a first part of liquid from said second separator back to said mixer and a second part of said liquid to nitrification/denitrification means, and
subjecting said liquid in said nitrification/denitrification means successively to bacterial degeneration and oxygenation and to a settling process for separating water from sludge.

4,369,195

EXTRUSION TEXTURIZATION OF FULL-FAT SOYBEAN AND PRODUCT THEREOF

Alvin I. Nelson, Champaign, and Johnnie S. Leigh, Urbana, both of Ill., assignors to The University of Illinois Foundation, Urbana, Ill.

Filed Jul. 25, 1979, Ser. No. 60,362

Int. Cl.^{3} A23J *3/00*

U.S. Cl. 426—62 **12 Claims**

1. A textured soybean product comprising a mixture of a first soybean component, selected from the group consisting of raw full-fat whole soybean, raw full-fat soy flour and mixtures thereof, said first component having a protein to carbohydrate ratio of at least 1.0 and said first component having been soaked in a dilute alkaline solution for a time sufficient to effect hydration thereof and from about 1 to about 3 parts by weight of a second component comprising a full-fat soy flour; the mixture of the first and second components having been equilibrated with respect to its water content and having been passed through an extrusion cooker to produce the textured soybean product.

4,369,196

FRESH CHEESE-LIKE FOOD PRODUCTS AND A PROCESS FOR THEIR PREPARATION

Yukie Sukegawa, Soen Broad Heights, 15-1-2, Kitagojo-nishi, Chuo-ku, Sapporo-shi, Hokkaido, Japan (064)

Filed May 4, 1981, Ser. No. 260,397

Claims priority, application Japan, May 5, 1980, 55-59806

Int. Cl.^{3} A23C *23/00;* **A23J** *3/00*

U.S. Cl. 426—104 **9 Claims**

1. A process for preparing a fresh cheese-like food product comprising

(1) adding together components comprising (a) at least one thermally coagulable protein selected from the group consisting of whey protein, liquid albumen, liquid whole egg, albumen powder and whole egg powder, (b) a coagulant composed of 55 to 71 weight percent starch and 29 to 45 weight percent glucono-δ-lactone based on the total weight of said coagulant and (c) a milk selected from the group consisting of whole milk, skimmed milk and a mixture thereof, said thermally coagulable protein being added in an amount, as solids, sufficient for the coagulation of said components upon heating,
(2) mixing said components to form a mixture thereof and
(3) heating the resulting mixture of said components at a temperature and for a time sufficient to coagulate said resulting mixture.

4,369,197

BULK PRESERVATIVE STORAGE OF HORTICULTURAL CROPS AND PIGMENTS PRODUCED FROM GREEN HORTICULTURAL CROPS

Richard M. Basel, Bradner, and Wilbur A. Gould, Worthington, both of Ohio, assignors to Ohio Agricultural Research & Development Center, Wooster, Ohio

Continuation-in-part of Ser. No. 115,393, Jan. 25, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,176

Int. Cl.^{3} A23B *7/10;* **A23L** *1/212*

U.S. Cl. 426—270 **38 Claims**

1. A composition of matter comprising a green pigment derived from chlorophyll and substantially free from copper, said pigment being more soluble in petroleum ether than in acetone, having a R_f value of about 0.0286 when developed with a 74% methanol: 20% acetone: 6% water mixture saturated with soybean oil using microcrystalline cellulose reversed phase thin layer chromatography and having the following spectroscopic characteristics:

(a) visible peaks in either solution at about 410 and about 665 nm;
(b) infra-red peaks at about 2920, about 2850, about 1710, about 1460 and about 1375 cm^{-1}, and
(c) nuclear magnetic resonance peaks in 100% deuterochloroform at about −3.521, about 7.260 and about 5.363 parts per million relative to tetramethylsilane.

4,369,198

METHOD FOR EXTRACTING INGREDIENTS OF OIL-CONTAINING SEEDS

Osamu Uchi, Fujisawa, and Chiaki Hatanaka, Tokyo, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 747,032, Dec. 2, 1976, abandoned. This application Aug. 15, 1978, Ser. No. 933,847

Int. Cl.^{3} A23J *1/14*

U.S. Cl. 426—271 **23 Claims**

1. A method for extracting water-soluble components including proteins from soybeans, comprising:

triturating soybean seeds, which have not been soaked in water, in deoxygenated hot water of from 70° C. to the boiling point under anaerobic conditions and thus extracting said water-soluble components, said hot water being deoxygenated to the extent necessary to prevent the development of foul odors in the aqueous extract resulting from the trituration of the seeds and to enhance the rate of extraction of proteinaceous matter from said soybeans; and then
separating the extracted water-soluble components which include proteins from the non-soluble residue remaining from the extraction process.

4,369,199

PROCESS FOR IMPROVING THE HEALTH OF ANIMALS

Sol Katzen, Hanasi #62, Herzliya Pituach, Israel

Filed May 24, 1978, Ser. No. 909,189

The portion of the term of this patent subsequent to Mar. 7, 1995, has been disclaimed.

Int. Cl.^{3} A23K *1/00*

U.S. Cl. 426—641 **14 Claims**

1. A process for improving the health of a confinement-reared non-human animal which consists of treating bedding or litter material of said animal or droppings of said animal in a dropping pit of said animal or in a sedimentation tank of said animal, said sedimentation tank being located under where said animal is confined, with a sufficient amount of an aqueous solution containing an acid to achieve and maintain said bedding or litter material of said animal or said droppings in said dropping pit or sedimentation tank at an acid pH during the period of production and confinement of said animals, the acid being an inorganic acid which is hydrochloric acid, sulfuric acid, sulfurous acid, phosphoric acid, phosphorous acid, hydrochloric acid, boric acid, nitric acid, nitrous acid, hypochlorous acid or mixtures thereof.

4,369,200

METHOD FOR PRODUCING FATTY CONFECTIONERIES HAVING THREE-DIMENSIONAL DECORATION DEPOSITED THEREON

Hachiya Iwao, and Igarashi Susumu, both of Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,700

Claims priority, application Japan, Sep. 17, 1980, 55-127922

Int. Cl.^{3} A23G *1/00, 1/20*

U.S. Cl. 426—660 **11 Claims**

1. A method for producing fatty confectioneries having three-dimensional decoration in design, pattern and/or letter configuration deposited thereon, comprising the steps of providing a mold having a plurality of three-dimensional recesses in design, pattern and/or letter configuration, placing a plate mold having a plurality of through holes substantially corresponding to said recesses in configuration and position on said mold with the through holes in alignment with the recesses, spraying decorative fatty confectionery material in the form of fine particles into said recesses through said through holes, removing said plate mold from said mold, pouring base fatty confectionery material having a color tone different from the color tone of said decorative fatty confectionery material into said mold, cooling said forming mold to solidify said base and decorative fatty confectionery material and removing the resulting confectionery from said mold.

4,369,201

METHOD OF MANUFACTURING REINFORCED FIBERS FOR MINERAL STRUCTURAL MATERIALS, AND A STRUCTURAL ELEMENT OF A FIBER-REINFORCED MINERAL STRUCTURAL MATERIAL

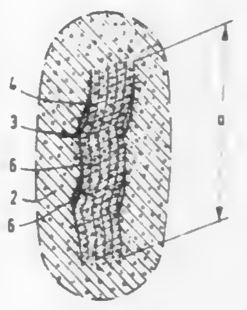
Harald Kober, Zur-Nieden-Str. 14, 4690 Herne 2, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,487

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008204

Int. Cl.^{3} D06M *13/14, 12/14*

U.S. Cl. 427—4 **16 Claims**



1. A method of manufacturing reinforcing fibers for a hydraulic binding material, to be used as an initial material for structural elements such as pipes, plates and the like, the method comprising the steps of providing a plurality of plant fibers having capillaries; and mineralizing the plant fibers by opening the capillaries of the plat fibers, drying the plant fibers, impregnating the plant fibers with a lime water suspension, soaking the plant fibers with a formaldehyde-containing water glass solution, and intermediately drying the plant fibers between said impregnating and soaking steps.

4,369,202

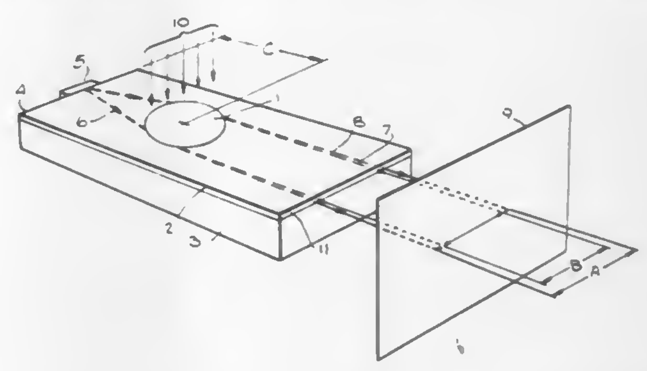
METHOD OF ADJUSTING A LUNEBURG LENS

Carl M. Verber, Columbus, and Van E. Wood, Delaware, both of Ohio, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,465

Int. Cl.^{3} B05D *3/06;* **G02B** *3/00*

U.S. Cl. 427—8 **5 Claims**



1. A method for forming a Luneburg lens having a predetermined focal length, said method comprising the steps of:

fabricating a Luneburg lens overlay on a waveguide from a photorefractive material; and
exposing said fabricated Luneburg lens to energy radiation of a wavelength sufficient to vary the focal length of the Luneburg lens until the focal length thereof is adjusted to the predetermined value.

4,369,203

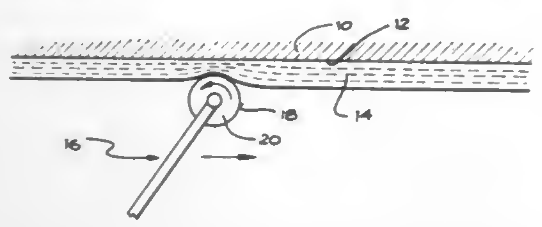
ASBESTOS SURFACING PROCESS

Ronald P. Hansen, 4 Jonathon Pl., French's Forest. N.S.W., Australia

Filed Jun. 15, 1981, Ser. No. 273,312

Int. Cl.^{3} B05D *3/02, 3/12;* B32B *19/04*

U.S. Cl. 427—10 **10 Claims**



1. A process for the in situ impregnation of asbestos material, comprising a first step of substantially saturating, with the application of pressure, the said material with a binder being a polymeric resin, and a second step of applying a polymeric resin compound comprising a polymeric resin and a filler.

9. An electrical testing meter for use with the process of claim 1, wherein the degree of saturation through the entire thickness of asbestos material on a substrate may be tested, said material having an inner surface interfacing with said substrate and an outer surface separated from said inner surface, said meter comprising an electrode and an insulated metal probe having a tip, said insulated metal probe, in use, being inserted through said material until said tip comes into contact with said substrate and said electrode is brought into contact with said outer surface of said material, said meter generating a signal indicating the amount of current flow between said tip and said electrode in contact with said outer surface of said material upon application of a potential between 1-15 volts D.C. across said probe and said electrode.

4,369,204

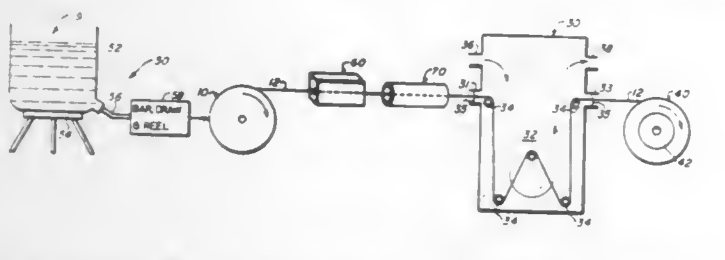
INTEGRATED FIRE-RESISTANT FLEXIBLE METAL CONDUCTOR DERIVED INSULATED COATING

Alfred A. Wolf, and Ernest H. Halpern, both of Annapolis, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 202,976, Nov. 3, 1980, abandoned. This application Jan. 29, 1982, Ser. No. 343,809

Int. Cl.^{3} B05D *3/14*

U.S. Cl. 427—13 **10 Claims**



1. A process for preparing an inorganic insulating coating on an electrical conductor comprising adding an impurity selected from the group consisting of iron oxide, iron sulfide, iron telluride, iron sollenide, molybdenum sulfide, chromium sulfide, cobalt sulfide, cobalt oxide, cobalt telluride, cobalt sellenide, nickel telluride, nickel sellenide and nickel oxide in an amount sufficient to provide an insulating coating that, after subsequent processing, does not burn, smoke, smoulder, yield toxic fumes, or crack during bending or flexing to the melt of a metal electrical conductor, zonally annealing said conductor, and rectifying said conductor metallurgically by exposing said conductor to a magnetic or electrical field.

4,369,205

METHOD FOR MANUFACTURING SEMICONDUCTOR ELEMENTS FROM AMORPHOUS SILICON

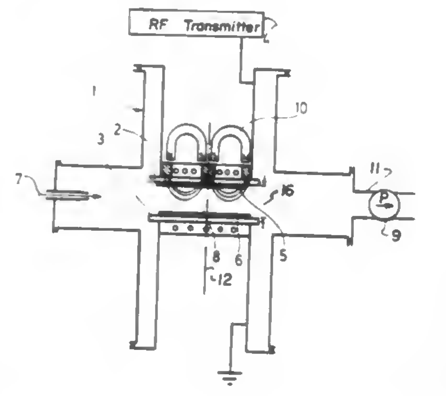
Gerhard Winterling, Ottobrunn, and Max Königer, Pullach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,751

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941559

Int. Cl.^{3} B05D *3/06*

U.S. Cl. 427—39 **4 Claims**



1. A method of manufacturing semiconductor elements of amorphous silicon which convert light into electrical energy comprising:

(a) providing a vessel defining a chamber;
(b) supplying a silicon compound to the chamber;
(c) providing two facing spaced apart electrodes in said chamber for supporting at least one substrate for receiving deposited amorphous silicon thereon, the substrate disposed between the electrodes;
(d) passing an electric current which alternates in the RF range in the chamber and between the electrodes to produce an electric field of 400 to 800 volts per cm. and to produce a glow discharge with free electrons in the chamber to deposit amorphous silicon from the silicon compound on to the substrate;
(e) providing a central pole plate and an outer annular surrounding pole plate forming a closed loop around said central pole plate, and providing at least one magnet having one pole connected to said central pole plate and an opposite pole connected to said outer surrounding pole plate, said pole plates positioned on a side of at least one of said electrodes away from the glow discharge in said chamber and said at least one magnet positioned on a side of said pole plates away from said at least one electrode;
(f) the magnet providing a magnetic field of 100 to 300 gauss in the vessel which is directed substantially transversely to the electric field and is of a magnitude to conduct the electrons have the substrate along closed paths; and
(g) the magnitude of the magnetic field provided being strong enough so that the closed paths of the electrons are in the form of cycloids with radii of the cycloids being smaller than the spacing between the electrodes.

4,369,206

AMMONIUM SALTS OF α-KETOCARBOXYLIC ACIDS

Wofram Mayer; Hans Rudolph, both of Krefeld; Eckhard de Cleur, Duisburg, and Manfred Schönfelder, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 54,315

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830953

Int. Cl.^{3} B05D *3/06*

U.S. Cl. 427—54.1 **7 Claims**

6. In a process for coating substrates with coating compositions based on polyurethane or epoxide resin precursors which harden in the presence of amines, the improvement wherein said compositions contain from about 0.1 to 40% by weight, based on solids content, of an ammonium salt of an α-ketocarboxylic acid corresponding to the following general formula:

$$A—CO—COOH \qquad (I)$$

wherein

A represents hydrogen, a hydroxyl or carboxyl group, —COR, —CN, —NO_2, an optionally branched alkyl radical containing from 1 to 6 carbon atoms which may optionally be substituted by halogen, —OH, —COOH, —COOR, —CN, —OR, —COR, or —COR′, a cycloalkyl radical containing from about 4 to 10 carbon atoms, an aryl or aralkyl radical containing from about 6 to 15 carbon atoms which may optionally be substituted by —OH, —R, —OR, —SR, halogen, —NO_2, —COR, —COOH, —CN, —COOR, —$CONH_2$, —OR′, —SR′ or —COR′, or a C_4-C_{10}—heterocyclic radical containing oxygen and/or nitrogen as a hetero atom,

wherein

R represents an optionally halogen-substituted alkyl group containing from about 1 to 6 carbon atoms and

R′ represents an aryl group containing from about 6 to 12 carbon atoms,

and said composition is irradiated with light having a wavelength of from about 250 to 500 nm and is heated to between about 50°-130° C.

4,369,207

PROCESS FOR PRODUCTION OF LAMINATED FILM STRUCTURE OF AROMATIC POLYESTER

Shunichi Matsumura, Hachioji; Hiroo Inata, and Makoto Ogasawara, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

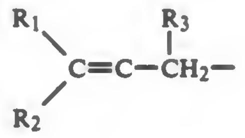
Filed Feb. 19, 1980, Ser. No. 122,664

Claims priority, application Japan, Feb. 23, 1979, 54-19660; Sep. 7, 1979, 54-114097

Int. Cl.^{3} B05D *3/06;* B29C *19/02*

U.S. Cl. 427—54.1 **8 Claims**

1. A process for producing a laminated film structure, which comprises forming an electroconductive metal layer directly on one surface of a melt-shaped and unstretched film of an uncured polyester composed of (A) a saturated linear aromatic polyester in which at least 70 mole% of the acid component consists of an aromatic dicarboxylic acid and (B) a photopolymerizable crosslinking component in an amount of 0.1 to 50 parts by weight per 100 parts by weight of the saturated linear aromatic polyester (A) wherein said photopolymerizable crosslinking component (B) is at least one compound containing at least one allyl or substituted allyl group stable under the melt-shaping conditions for the formation of a film from said aromatic polyester (A), said allyl or substituted allyl group being expressed by the following formula



$$(R_1)(R_2)C{=}C(R_3)—CH_2—$$

wherein R_1, R_2 and R_3 are identical or different and each represents a group selected from the class consisting of hydrogen, alkyl groups having 1 to 6 carbon atoms and cycloalkyl groups having 5 to 12 carbon atoms,

said compound optionally containing at least one ester-forming functional group, and subjecting the resulting structure to the irradiation of ultraviolet light to cure the polyester thereby to form a laminated film structure composed of an unstretched film of a cured polyester having a crosslinking degree of not less than 70%, a swelling degree of not more than 30 and an elongation at room temperature of not less than 10%, and the electroconductive metal layer laminated to at least one surface of the polyester film.

4,369,208

PROCESS FOR PRODUCING TRANSPARENT ELECTROCONDUCTIVE FILM

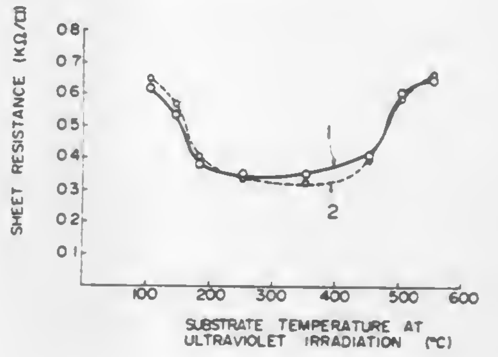
Masaaki Okunaka, Fujisawa; Ryoichi Sudo, Yokosuka; Hitoshi Yokono, Yokohama; Tokio Isogai, Fujisawa, and Mitsuo Yamazaki, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,334

Claims priority, application Japan, Dec. 14, 1979, 54-161437

Int. Cl.^{3} B05D *3/06*

U.S. Cl. 427—54.1 **5 Claims**



1. A process for producing a transparent electroconductive film, which comprises applying a coating solution selected from (a) a coating solution comprising an inorganic indium compound free from a photosensitive group in the molecule, or an inorganic tin compound free from a photosensitive group in the molecule, an organic compound capable of providing a ligand to complex indium or tin, and an organic solvent, (b) a coating solution comprising an organic indium compound free from a photosensitive group in the molecule, or an organic tin compound free from a photosensitive group in the molecule, and an organic solvent, and (c) the coating solution (a) or (b) further containing a dopant source, to a glass substrate, thereby forming a film thereon, immediately thereafter irradiating the film and the substrate with radiation capable of exciting organic groups, at a substrate temperature of 100°-600° C. and then baking the substrate at a high temperature of from 300° to 600° C.

4,369,209

METHOD OF MANUFACTURING A MAGNETIC BUBBLE MEMORY ELEMENT

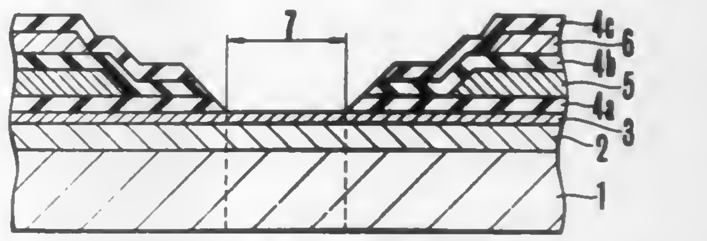
Tadashi Iwashimizu; Yasukazu Morita, both of Mobara, and Koichi Igarashi, Chosei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1978, Ser. No. 880,096

Claims priority, application Japan, Mar. 2, 1977, 52/21518

Int. Cl.^{3} H01F *10/26*

U.S. Cl. 427—123 **5 Claims**



1. In a method of manufacturing a magnetic bubble memory element including the steps of providing on a single crystalline substrate a plurality of island shaped magnetic bubble memory units and separating regions intervening therebetween so as to form a magnetic bubble memory element wafer and dividing

the wafer into individual magnetic bubble memory elements by cutting said separating regions, the improvement wherein the method comprises the steps of forming a single crystalline magnetic thin film over the entire surface of the single crystalline substrate, forming a film for suppressing generation of hard bubbles only in the place corresponding to the memory units on said single crystalline magnetic thin film, accumulating in order on said suppression film a first insulating layer, a conductor pattern layer, a second insulating layer, a magnetic film pattern layer and a third insulating layer, and dividing the wafer by cutting it along said separating regions.

4,369,210

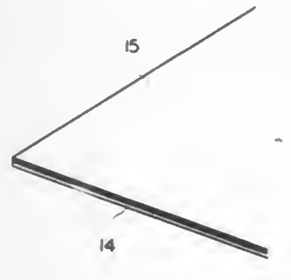
LONG LIFE HEAT CONDUCTIVE BODY FOR UTILIZATION OF SOLAR HEAT ENERGY AND WATER HEATER FOR MAKING USE OF SAME

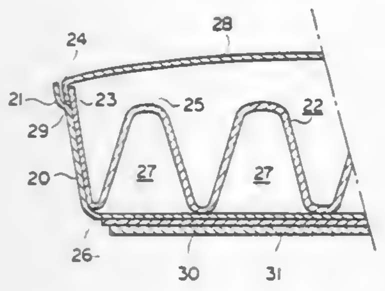
Yuichi Sakamoto, No. 8-21, Shingashi 2-chome, Itabashi-ku, Tokyo, 175, Japan

Filed Aug. 24, 1979, Ser. No. 69,532

Int. Cl.³ B05B *5/00*

U.S. Cl. 427—160 **3 Claims**





1. A method of producing a heat conductive body for use in heating apparatus responsive to solar radiation incident on the body, said method comprising the steps of:

combining sand iron with plastic material in a flowable state, said sand iron being effective to provide substantially increased heat conductivity and transmission through the plastic material,

mixing the combined sand iron and plastic material to provide a uniform blend throughout the mixture, and

selectively forming the uniformly blended mixture to a desired configuration by depositing a layer of the uniformly blended mixture on at least a surface of a preformed plastic base.

4,369,211

PROCESS FOR PRODUCING A HOT DIP GALVANIZED STEEL STRIP

Hajime Nitto, Tokyo; Kango Sakai, and Katushi Saito, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Jan. 26, 1981, Ser. No. 228,698

Claims priority, application Japan, Apr. 25, 1980, 55-55152; Apr. 25, 1980, 55-55153

Int. Cl.³ A23F *1/00*

U.S. Cl. 427—349 **13 Claims**

1. A process for producing a hot dip galvanized sheet strip comprising the steps of:

coating at least one surface of a steel strip with a melt of a zinc-based alloy containing 0.1 to 2% by weight of magnesium;

controlling the weight of the melted zinc-based alloy coating formed on said steel strip surface; and solidifying said melted zinc-based alloy coating,

in which process in at least a portion of a stage in which said melted zinc-based alloy coating is still in the liquid state, said melted zinc-based alloy coating is exposed to an oxygen-controlled atmosphere containing 50 to 1000 ppm of molecular oxygen and the weight of said melted zinc-based alloy coating is controlled in said oxygen-controlled atmosphere.

4,369,212

PROCESS FOR REMOVING RESIDUES FROM GAS ELECTRODES

Howard H. Rogers, Torrance, and Steven J. Stadnick, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 20, 1980, Ser. No. 198,377

Int. Cl.³ B05D *3/00, 5/12;* **H01M** *6/00*

U.S. Cl. 427—352 **25 Claims**

1. In the process for fabricating a metal/gas battery or fuel cell containing a gas electrode comprising a plurality of positive electrodes, a plurality of negative electrodes and an electrolyte, at least one of said electrodes being a gas electrode, each of said gas electrodes comprising a conductive screen-type substrate, said substrate further having first and second faces, with porous polytetrafluoroethylene attached to said first face and with a platinum powder/polytetrafluoroethylene powder mixture sintered on said second face, said mixture being deposited in said second face employing a suspending agent as a vehicle for deposition, the improvement which comprises removing all residues of said suspending agent remaining after the sintering process by a process which comprises:

(a) soaking fabricated negative electrodes in a first solvent bath which comprises a solution consisting essentially of
  (1) a first solvent for dissolving said residues of said suspending agent, and
  (2) a second solvent for wetting said porous polytetrafluoroethylene; and
(b) removing any residues of said solution from said electrodes.

4,369,213

PROCESS FOR PREPARING INDIGO-DYEABLE POLYESTER FIBERS

Robert L. Adelman, and John J. P. Turner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 220,809, Dec. 29, 1980, Pat. No. 4,335,185. This application May 12, 1982, Ser. No. 377,313

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—389.9 **4 Claims**

1. A process for preparing indigo-dyeable polyester fiber comprising applying to the fiber a coating of polyvinyl alcohol and a water-soluble polyamide containing secondary amino

groups in the polymer chain which have been reacted with epichlorohydrin and curing the coating.

4,369,214

PROCESS AND APPARATUS FOR PREVENTING HARDENING OF GLUE ON INACTIVE BOTTLE LABELING MACHINE

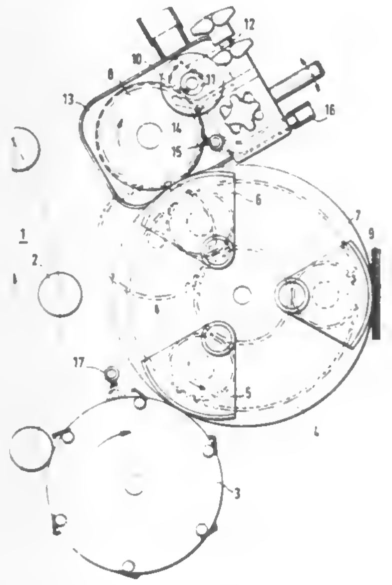
Manfred Pfülb, and Rudolf Zodrow, both of Düsseldorf, Fed. Rep. of Germany, assignors to Jagenberg Werke Ag, Düsseldorf, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,436

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018356; Jun. 12, 1980, 3022040

Int. Cl.³ B05D *1/28;* **B65C** *9/16, 9/22, 9/42*

U.S. Cl. 427—428 **16 Claims**



1. In the cleaning and keeping ready for use the labeling station of a labeling machine comprising a label box, a glue roll and a gripper cylinder as well as label pickup members rolling along the glue roll, wherein the glue is removed from the surface of the glue roll after the supply of glue to the glue roll has been shut off and with the machine idling, the improvement which comprises moisturizing the glue roll after the supply of glue has been shut off so as to keep the glue roll wet throughout idling.

8. In a labeling machine for objects such as bottles and comprising a main drive, conveying means for the objects, a revolving carrier having at least one label pickup member mounted thereon to rotate or oscillate, a gluing station, a label supply station and a label transfer station disposed about said carrier, the pickup member cooperating with the stations, the gluing station comprising a revolving glue roll, a deactivatable glue applicator and an engageable glue scraper adapted to be brought into operating position, a first spray head associated with the glue roll or with a pickup member, moisturizing means for delivering water or another medium to the spray head, and means for turning the spray head on and off so as to spray the cylinder surface of the glue roll or the pickup surface of the pickup member with water or other medium for moisturizing or diluting the glue on the receiving surface, the improvement which comprises an additional spray head for water or another medium for moisturizing or diluting the glue positioned adjacent the label transfer station, and additional means for turning the additional spray head on and off.

4,369,215

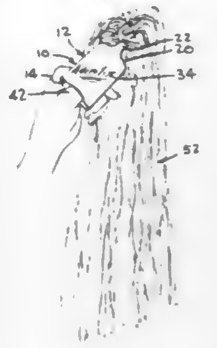
FINGER HELD POMPON

Matt D. Offen, and Frederick M. Sanders, both of Fresno, Calif., assignors to Nevada Post Office Corporation, Los Gatos, Calif.

Filed Dec. 7, 1981, Ser. No. 328,230

Int. Cl.³ D04D *7/06*

U.S. Cl. 428—4 **1 Claim**



1. As a new article of manufacture, a hand-held pompon comprising a body member of pliable plastic memory material having one end open and its interior hollow, said hollow body member adapted to have a user's finger inserted therein and advertising indicia placed on the outer surface thereof, said body member defining a normally flattened receptacle having side edges and spaced apart front and rear flattened surfaces, and a hollow stem extending distally from the end of the body member opposite the open end thereof, said stem terminating in an outer enlarged nodule having an annular shoulder at the inner portion thereof; a plurality of pompon strands adjacent said stem; and a clamping retainer securing a portion of said strands to said stem, and said retainer abutting said shoulder.

4,369,216

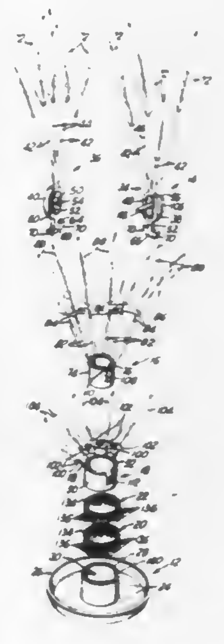
ARTIFICIAL AQUARIUM PLANT

Allan H. Willinger, Englewood, N.J., assignor to Willinger Bros., Inc., Englewood, N.J.

Continuation-in-part of Ser. No. 207,342, Nov. 17, 1980, Pat. No. 4,340,625. This application Sep. 25, 1981, Ser. No. 305,475

Int. Cl.³ A41G *1/00;* **A47G** *7/00*

U.S. Cl. 428—17 **19 Claims**



1. An artificial aquarium plant comprising:
a base member;
a plurality of nestingly interfitting plant members supported by said base member;
each of said plant members including a body portion and branches upwardly extending from said body portion;
said body portion of an innermost plant member including

two matingly engaging opposing section halves, each section half including a semi-oval portion with said branches upwardly extending therefrom;

a connecting pin extending perpendicularly from an inner surface of one semi-oval portion and a cooperating receiving bore provided in an inner surface of the other semi-oval portion, said connecting pin being disposed in said receiving bore to matingly join said section halves together;

coupling means for interconnecting said plant members with said base member, said coupling means including a leg depending from said body portion of said innermost plant member and passing through said body portions of the other plant members and into said base member; and

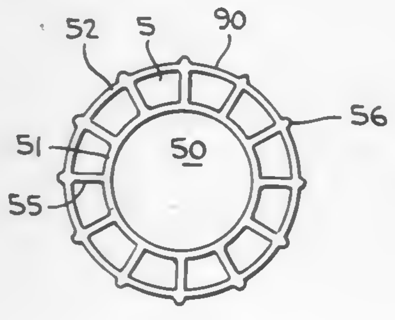
locking means for removably securing said leg in said base member, said locking means including a transverse foot at a distal end of said leg and a slot provided in a bottom wall section of said base member for receiving said foot therethrough in a first aligned position of said foot, said foot being twist locked beneath said bottom wall section in a second misaligned position of said foot rotated from said first aligned position.

4,369,217

CAVITY-FORMING SUPPORT ELEMENT MADE OF EXTRUDED HOLLOW SECTIONS IN COMBINATION WITH CLOSURE MEMBERS OF OTHER MATERIALS OR ALLOYS

Hans K. Leistritz, Stegwiesen 8, D 7891 Kussaberg 2, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,759
Int. Cl.³ B32B *3/20*
U.S. Cl. 428—596 3 Claims



1. Cavity forming structural support assembly forming a chassis element of internal combustion engines, comprising:

an elongated member made of metal or fiber reinforced plastic material including a peripheral wall having a plurality of internal longitudinally extending wall portions defining a longitudinally extending cavity and further including a plurality of secondary longitudinal cavities at least partially surrounding said primary cavities;

capping means formed from materials different than said elongated member and forming a respective end of the elongated member and including transverse walls forming cavities within said elongated member and enclosing said secondary longitudinal cavities, said capping means including a portion extending inside the walls of the hollow-section chamber and in pressing engagement therewith;

a support member extending transversely into the primary cavity of said elongated member and being connected to the inner wall portion of said capping means;

means permitting fluid to be passed through said elongated member via said cavity; and

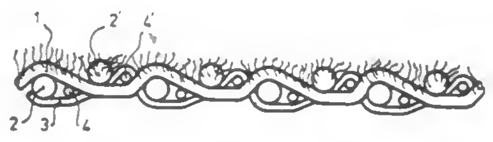
an additional support member including channels therein communicating with said secondary longitudinal cavity and a passageway for the flow of fluid within said primary longitudinal cavity.

4,369,218

FELT FOR DEHYDRATION OF A FIBER WEB

Michel Mazere, Riberac, France, assignor to Albany International Corp., Menands, N.Y.

Filed May 27, 1980, Ser. No. 153,143
Claims priority, application France, May 29, 1979, 79 13581
Int. Cl.³ B32B *5/08, 5/12, 5/26*
U.S. Cl. 428—91 1 Claim



1. Felt for dehydration of a fiber web, preferably an asbestos fiber web in an asbestos pipe manufacturing machine, comprising a fabric having a roughened upper layer and a lower layer;

the upper layer warp and weft being composed of twisted threads of staple;

the lower layer warp and weft being composed of twisted threads of monofilament;

the upper and lower layers being joined by threading warp thread of the upper layer down under weft threads of the lower layer;

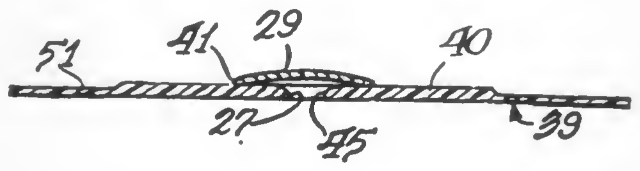
the monofilament threads serving to space the staple threads apart to restrict filling.

4,369,219

CUSTOM VALVED CERVICAL CAP WITH DEFORMABLE MARGIN

Robert A. Goepp, Chicago; Uwe E. Freese, Oak Park, and Marvin P. Loeb, Chicago, all of Ill., assignors to University Patents, Inc., Norwalk, Conn. and Contracap, Inc., Schaumburg, Ill.

Filed Jun. 26, 1980, Ser. No. 163,328
Int. Cl.³ B32B *3/10;* **A61F** *5/46*
U.S. Cl. 428—138 25 Claims



1. A blank for a removable cervical cap which comprises

a substantially planar sheet of a thermoplastic elastomeric material defining a central aperture therein; and

an elastomeric web superposed over said aperture;

said elastomeric web having a thickness less than the thickness of said sheet and being secured to said sheet about said aperture but providing a one-way passageway from said aperture between the web and said sheet; and

said blank having a margin of a thickness that is less than the thickness of said sheet in the region thereof defining said central aperture.

4,369,220

CROSSOVER DIELECTRIC INKS USED IN FORMING A MULTILAYER ELECTRICAL CIRCUIT

Ashok N. Prabhu, Plainsboro, and Kenneth W. Hang, Princeton Jct., both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 280,916, Jul. 6, 1981. This application May 5, 1982, Ser. No. 374,967
Claims priority, application United Kingdom, Oct. 17, 1980, 8033567
Int. Cl.³ H05K *3/46*
U.S. Cl. 428—209 8 Claims

1. A process of forming a multilayer electrical circuit on a circuit board comprising:

(a) applying and firing on said board a conductor ink thereby forming a first conductor film;

(b) forming a crossover dielectric film on the portion of said conductor film with will intersect a second conductor film in said circuit by applying and firing on said portion a crossover dielectric ink comprising:

(1) from about 30 to about 70 percent by weight of a partially devitrifying barium magnesium borosilicate glass powder;

(2) from about 10 to about 30 percent by weight of a pinhole reducing component selected from the group consisting of silicon dioxide, an alkaline earth aluminum borosilicate glass having a softening point above about 700° C., and mixtures thereof; and

(3) from about 20 to about 50 percent by weight of a suitable organic vehicle; and

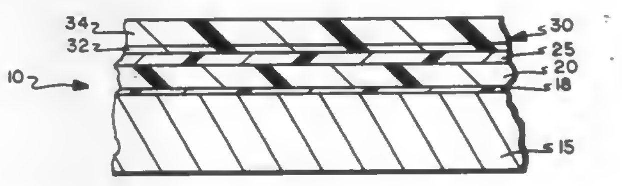
(c) applying and firing a conductor ink on said board thereby forming a second conductor film having said crossover dielectric film interposed between said first and second conductor films.

4,369,221

PROTECTIVE COATING LAMINATE

Jack D. Bennett, Akron, Ohio, assignor to Transformer Service (Ohio), Inc., Akron, Ohio

Filed Mar. 13, 1981, Ser. No. 243,630
Int. Cl.³ B05D *1/36;* **B32B** *7/02, 9/04, 15/04*
U.S. Cl. 428—216 7 Claims



1. A protective coating laminate, for a metal substitute comprising: a metal substrate having thereon

a layer of a paint oil rust inhibitor;

a rust inhibitor-alkyd enamel layer;

an alkyd primer layer; and

a polyurethane paint layer;

wherein said rust inhibiting layer range from about 1/10 mil to about ½ mil, wherein said rust inhibitor-enamel layer ranges from about 0.5 to about 3 mils, wherein said primer layer ranges from about 0.5 to about 3 mils, and wherein said urethane layer ranges from about 1 to about 4 mils in thickness.

5. A process for applying a protective coating to a metal, comprising the steps of:

applying a paint oil rust inhibitor coating to the metal;

applying a coating of a paint oil rust inhibitor-alkyd enamel mixture to said rust inhibitor coating;

applying a coating of an alkyd primer to said rust inhibitor-enamel coating; and

applying a coating of a fully catalyzed polyurethane paint to said primer coating;

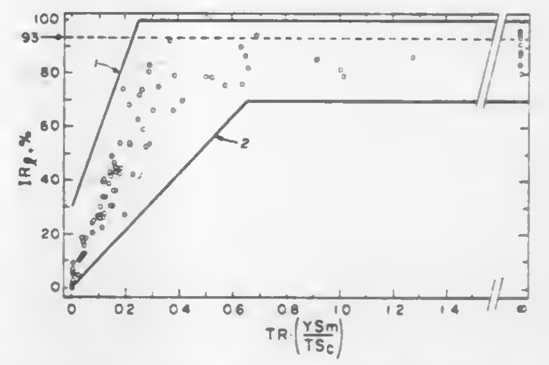
wherein the thickness of said rust inhibitor coating ranges from about 1/10 to about ½ mil wherein the thickness of said rust inhibitor-enamel coating ranges from about 0.5 to about 3 mils, wherein the thickness of said primer coating ranges from about 0.5 to about 3 mils, and wherein the thickness of said urethane coating ranges from about 1 to about 4 mils.

4,369,222

METAL-THERMOPLASTIC-METAL LAMINATES

Ross M. Hedrick, St. Louis; James C. Woodbrey, Chesterfield; James D. Gabbert, St. Louis, and Floyd B. Erickson, Webster Groves, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 230,934, Feb. 2, 1981, which is a continuation of Ser. No. 99,918, Dec. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 972,537, Dec. 22, 1978, abandoned. This application Oct. 26, 1981, Ser. No. 314,927
Int. Cl.³ B32B *15/08, 27/34, 27/36*
U.S. Cl. 428—216 72 Claims



1. A metal-thermoplastic-metal laminate having in combination:

an inelastic ratio less than about 93%;

a coefficient of linear thermal expansion less than about 63×10^{-6}°C.$^{-1}$;

a heat distortion temperature of at least about 130° C.; and

a maximum weight of no more than about 9.76 kg/m^2; said laminate comprising:

a thermoplastic core layer selected from the group consisting of partly crystalline polyamides and polyesters having a crystalline melting point greater than about 130° C., said thermoplastic core having a minimum thickness of about 0.0483 cm; and

a metal layer laminated on each side of the thermoplastic core layer, each metal layer having:

a melting point greater than the crystalline melting point of the thermoplastic core layer; and a

minimum thickness of about 0.00127 cm;

wherein the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness is described by the region of numerical overlap of the parameter $TR(YS_m/TS_c)$ as determined from the areas defined by the relationships of $TR(YS_m/TS_c)$ to IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, the lower boundary of said areas being defined by the equation of a straight line

$$y=mx+b$$

in which y is the y-axis parameters of IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, x is the x-axis parameter of $TR(YS_m/TS_c)$, m is the slope of the straight line, and b is the intercept on the y-axis, with the proviso that:

when y is IR_l, m is 108 and b is zero (0) for values of x from zero (0) to 0.65, and m is zero (0) and b is 70 for values of x greater than 0.65;

when y is $CLTE_l$, m is -3.6×10^{-4} and b is 45×10^{-6} for values of x from zero (0) to 0.1, and m is zero (0) and b is 9×10^{-6} for values of x greater than 0.1; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 1 and b is zero (0) for values of x from zero (0) to 0.05, m is 10 and b is -0.45 for values of x from 0.05 to 0.12, and m is zero (0) and b is 0.75 for values of x greater than 0.12;

and the upper boundary of said areas being defined by the equation of a straight line as defined hereinabove, with the proviso that:

when y is IR_l, m is 280 and b is 30 for values of x from zero (0) to 0.25, and m is zero (0) and b is 100 for values of x greater than 0.25;

when y is $CLTE_l$, m is -2.88×10^{-3} and b is 216×10^{-6} for values of x from zero (0) to 0.05, m is -1.29×10^{-4} and b is 78.5×10^{-6} for values of x from 0.05 to 0.26, and m is zero (0) and b is 45×10^{-6} for values of x greater than 0.26; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 112.5 b is zero (0) for values of x from zero (0) to 0.004, m is 15.3 and b is 0.389 for values of x from 0.004 to 0.04, and m is zero (0) and b is 1 for values of x greater than 0.04;

wherein:

IR_l is the inelastic ratio of the laminate as measured in flexure at 5% strain in the outer metal layers at the point of maximum deflection;

$CLTE_l$ is the coefficient of linear thermal expansion of the laminate;

$(HDT_l-HDT_c)/(T_{mc}-HDT_c)$ is a normalized heat distortion temperature variable wherein

HDT_l is the heat distortion temperature of the laminate;

HDT_c is the heat distortion temperature of the thermoplastic core layer;

T_{mc} is the crystalline melting point of the thermoplastic core layer;

TR is the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness;

YS_m is the thickness-weight-average tensile yield strength of the two metal layers at an offset of 5% elongation; and

TS_c is the tensile strength of the thermoplastic core layer.

42. A process for the preparation of a metal-thermoplastic-metal laminate having in combination:

an inelastic ratio less than about 93%;

a coefficient of linear thermal expansion less than about 63×10^{-6}°C.$^{-1}$;

a heat distortion temperature of at least about 130° C.; and

a maximum weight of no more than about 9.76 kg/m^2; which process comprises:

disposing a metal layer on each side of a thermoplastic core layer selected from the group consisting of partly crystalline polyamides and polyesters having a crystalline melting point greater than about 130° C., said polyamide consisting essentially of: nylon 6; nylon 6,6; nylon 6-co-6,6; nylon 6, terephthalic acid-co-6, isophthalic acid; blends thereof; and copolymers thereof, each metal layer having a melting point greater than the crystalline melting point of the thermoplastic core layer and a minimum thickness of about 0.00127 cm;

wherein the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness is described by the region of numerical overlap of the parameter $TR(YS_m/TS_c)$ as determined from the areas defined by the relationships of $TR(YS_m/TS_c)$ to IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, the lower boundary of said areas being defined by the equation of a straight line

$$y=mx+b$$

in which y is the y-axis parameters of IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, x is the x-axis parameter of $TR(YS_m/TS_c)$, m is the slope of the straight line, and b is the intercept on the y-axis, with the proviso that:

when y is IR_l, m is 108 and b is zero (0) for values of x from zero (0) to 0.65, and m is zero (0) and b is 70 for values of x greater than 0.65;

when y is $CLTE_l$, m is -3.6×10^{-4} and b is 45×10^{-6} for values of x from zero (0) to 0.1, and m is zero (0) and b is 9×10^{-6} for values of x greater than 0.1; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 1 and b is zero (0) for values of x from zero (0) to 0.05, m is 10 and b is -0.45 for values of x from 0.05 to 0.12, and m is zero (0) and b is 0.75 for values of x greater than 0.12;

and the upper boundary of said areas being defined by the equation of a straight line as defined hereinabove, with the proviso that:

when y is IR_l, m is 280 and b is 30 for values of x from zero (0) to 0.25, and m is zero (0) and b is 100 for values of x greater than 0.25;

when y is $CLTE_l$, m is -2.88×10^{-3} and b is 216×10^{-6} for values of x from zero (0) to 0.05, m is -1.29×10^{-4} and b is 78.5×10^{-6} for values of x from 0.005 to 0.26, and m is zero (0) and b is 45×10^{-6} for values of x greater than 0.26; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 112.5 and b is zero (0) for values of x from zero (0) to 0.004, m is 15.3 and b is 0.389 for values of x from 0.004 to 0.04, and m is zero (0) and b is 1 for values of x greater than 0.04;

wherein:

IR_l is the inelastic ratio of the laminate as measured in flexure at 5% strain in the outer metal layers at the point of maximum deflection; $CLTE_l$ is the coefficient of linear thermal expansion of the laminate;

$(HDT_l-HDT_c)/(T_{mc}-HDT_c)$ is a normalized heat distortion temperature variable wherein

HDT_l is the heat distortion temperature of the laminate;

HDT_c is the heat distortion temperature of the thermoplastic;

T_{mc} is the crystalline melting point of the thermoplastic core layer;

TR is the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness;

YS_m is the thickness-weight-average tensile yield strength of the two metal layers at an offset of 5% elongation; and

TS_c is the tensile strength of the thermoplastic core layer;

laminating the thermoplastic core layer and the metal layers by subjecting the combination to elevated temperatures and a pressure sufficient to maintain fare-adhering contact; and

cooling to ambient temperatures.

67. A metal-thermoplastic-metal laminate having in combination:

an inelastic ratio less than about 93%;

a coefficient of linear thermal expansion less than about 63×10^{-6}°C.$^{-1}$;

a heat distortion temperature of at least 130° C.; and

a maximum weight of no more than about 9.76 kg/m^2; said laminate comprising:

a thermoplastic core layer selected from the group consisting of partly crystalline polyamides and polyesters having a crystalline melting point greater than about 130° C., said polyamides consisting essentially of: nylon 6; nylon 6,6; nylon 6-co-6,6; nylon 6, terephthalic acid-co-6, isophthalic acid; blends thereof; and copolymers thereof; and

a metal layer laminated on each side of the thermoplastic core layer, each metal layer having:

a melting point greater than the crystalline melting point of the thermoplastic core layer; and a minimum thickness of about 0.00127 cm;

wherein the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness is described by the region of numerical overlap of the parameter $TR(YS_m/TS_c)$ as determined from the areas defined by the relationships of $TR(YS_m/TS_c)$ to IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, the lower boundary of said areas being defined by the equation of a straight line

$$y=mx+b$$

in which y is the y-axis parameters of IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, x is the x-axis parameter of

$TR(YS_m/TS_c)$, m is the slope of the straight line, and b is the intercept on the y-axis, with the proviso that:

when y is IR_l, m is 108 and b is zero (0) for values of x from zero (0) to 0.65, and m is zero (0) and b is 70 for values of x greater than 0.65;

when y is $CLTE_l$, m is -3.6×10^{-4} and b is 45×10^{-6} for values of x from zero (0) to 0.1, and m is zero (0) and b is 9×10^{-6} for values of x greater than 0.1; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 1 and b is zero (0) for values of x from zero (0) to 0.05, m is 10 and b is -0.45 for values of x from 0.05 to 0.12, and m is zero (0) and b is 0.75 for values of x greater than 0.12;

and the upper boundary of said areas being defined by the equation of a straight line as defined hereinabove, with the proviso that:

when y is IR_l, m is 280 and b is 30 for values of x from zero (0) to 0.25, and m is zero (0) and b is 100 for values of x greater than 0.25;

when y is $CLTE_l$, m is -2.88×10^{-3} and b is 216×10^{-6} for values of x from zero (0) to 0.05, m is -1.29×10^{-4} and b is 78.5×10^{-6} for values of x from 0.05 to 0.26, and m is zero (0) and b is 45×10^{-6} for values of x greater than 0.26; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 112.5 be is zero (0) for values of x from zero (0) to 0.004, m is 15.3 and b is 0.389 for values of x from 0.004 to 0.04, and m is zero (0) and b is 1 for values of x greater than 0.04;

wherein:

IR_l is the inelastic ratio of the laminate as measured in flexure at 5% strain in the outer metal layers at the point of maximum deflection;

$CLTE_l$ is the coefficient of linear thermal expansion of the laminate;

$(HDT_l-HDT_c)/(T_{mc}-HDT_c)$ is a normalized heat distortion temperature variable wherein

HDT_l is the heat distortion temperature of the laminate;

HDT_c is the heat distortion temperature of the thermoplastic core layer;

T_{mc} is the crystalline melting point of the thermoplastic core layer;

TR is the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness;

YS_m is the thickness-weight-average tensile yield strength of the two metal layers at an offset of 5% elongation; and

TS_c is the tensile strength of the thermoplastic core layer.

71. A metal-thermoplastic-metal laminate having in combination:

an inelastic ratio less than about 93%;

a coefficient of linear thermal expansion less than about 63×10^{-6}°C.$^{-1}$;

a heat distortion temperature of at least about 130° C.; and

a maximum weight of no more than about 9.76 kg/m^2; said laminate comprising:

a thermoplastic core layer selected from the group consisting of partly crystalline polyamides and polyesters having a crystalline melting point greater than about 130° C., said polyamides consisting essentially of: poly(Σ-caprolactam); poly(hexamethylene adipamide); poly(hexamethylene tere-co-iso-phthalamide); and

a metal layer laminated on each side of the thermoplastic core layer, each metal layer having:

a melting point greater than the crystalline melting point of the thermoplastic core layer; and a minimum thickness of about 0.00127 cm;

wherein the thickness ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness is described by the region of numerical overlap of the parameter $TR(YS_m/TS_c)$ as determined from the areas defined by the relationships of $TR(YS_m/TS_c)$ to IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, the lower boundary of said areas being defined by the equation of a straight line

$$y=mx+b$$

in which y is the y-axis parameters of IR_l, $CLTE_l$, and $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, x is the x-axis parameter of $TR(YS_m/TS_c)$, m is the slope of the straight line, and b is the intercept on the y-axis, with the proviso that:

when y is IR_l, m is 108 and b is zero (0) for values of x from zero (0) to 0.65, and m is zero (0) and b is 70 for values of x greater than 0.65;

when y is $CLTE_l$, m is -3.6×10^{-4} and b is 45×10^{-6} for values of x from zero (0) to 0.1, and m is zero (0) and b is 9×10^{-6} for values of x greater than 0.1; and

when y is $(HDT_l-HDT_c)/(T_{mc}-HDT_c)$, m is 1 and b is zero (0) for values of x from zero (0) to 0.05, m is 10 and b is -0.45 for values of x from 0.05 to 0.12, and m is zero (0) and b is 0.75 for values of x greater than 0.12;

and the upper boundary of said areas being defined by the equation of a straight line as defined hereinabove, with the proviso that:

when y is IR_l, m is 280 and b is 30 for values of x from zero (0) to 0.25, and m is zero (0) and b is 100 for values of x greater than 0.25;

when y is $CLTE_l$, m is -2.88×10^{-3} and b is 216×10^{-6} for values of x from zero (0) to 0.05, m is -1.29×10^{-4} and b is 78.5×10^{-6} for values of x from 0.05 to 0.26, and m is zero (0) and b is 45×10^{-6} for values of x greater than 0.26; and

when y is (HDT_l-HDT_c), m is 112.5 b is zero (0) for values of x from zero (0) to 0.004, m is 15.3 and b is 0.389 for values of x from 0.004 to 0.04, and m is zero (0) and b is 1 for values of x greater than 0.04;

wherein:

IR_l is the inelastic ratio of the laminate as measured in flexure at 5% strain in the outer metal layers at the point of maximum deflection;

$CLTE_l$ is the coefficient of linear thermal expansion of the laminate;

$(HDT_l-HDT_c)/(T_{mc}-HDT_c)$ is a normalized heat distortion temperature variable wherein

HDT_l is the heat distortion temperature of the laminate;

HDT_c is the heat distortion temperature of the thermoplastic core layer;

T_{mc} is the crystalline melting point of the thermoplastic core layer;

TR is the thicknss ratio of the sum of the metal layer-thicknesses to the thermoplastic core layer thickness;

YS_m is the thickness-weight-average tensile yield strength of the two metal layers at an offset of 5% elongation; and

TS_c is the tensile strength of the thermoplastic core layer.

4,369,223

PREIMPREGNATED MATERIALS COMPRISING VISIBLE-LIGHT CURING SYSTEMS AND METHODS OF MAKING AND USING THEM

Cecil L. Phillips, Northampton, England, assignor to Scott Bader Company Limited, Northamptonshire, England

Filed Sep. 9, 1980, Ser. No. 185,589

Claims priority, application United Kingdom, Sep. 11, 1979, 7931449

Int. Cl.^{3} B32B *17/02, 26/16;* **C08F** *8/00*

U.S. Cl. 428—285 **17 Claims**

1. A thin, pliable prepreg material comprising:

(a) a reinforcing substrate having generally parallel faces,

(b) a resin mix impregnating said substrate, the resin mix comprising,

(i) a thermosetting hardenable resin,

(ii) an initiator therefor susceptible to visible light, and

(iii) a thickener therefor to increase the viscosity of the resin mix to a value in the range of about 800 to about 2000 poise at which said prepreg material is handleable, and

(c) a cover film opaque to visible light, said resin mix being tacky and separably adhering said cover film along a face of the impregnated substrate, said cover film being separable from the reinforcing substrate prior to curing the thermosetting hardenable resin.

4,369,224

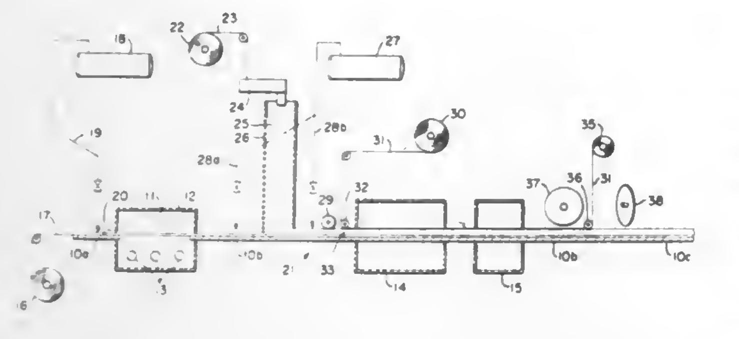
GLASS FIBER REINFORCED LAMINATE

Howard P. Cordts, Grafton, and Joan E. Karloske, Saukville, both of Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Division of Ser. No. 107,834, Dec. 28, 1979, Pat. No. 4,295,907. This application Aug. 7, 1981, Ser. No. 291,012

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—285 **1 Claim**



1. A glass fiber reinforced laminate having an essentially continuous resin matrix having a first region and a second region;

the said first region being substantially free of glass fibers and substantially covering one surface of the laminate and containing the residues of ultraviolet radiation sensitizers;

the said second phase containing a substantially uniform distribution of randomly oriented glass fibers and being free of the residues of ultraviolet radiation sensitizers.

4,369,225

FLEXIBLE LUSTROUSLY METALLIZED RESINOUS ARTICLES AND A PROCESS FOR MANUFACTURING SAME

Katsuhide Manabe, Ichinomiya; Toshiyasu Ito, Kasugai, and Masatoshi Tsutsui, Inazawa, all of Japan, assignors to Toyoda Gosei Kabushiki Kaisha, Aichi, Japan

Filed Dec. 22, 1980, Ser. No. 219,367

Claims priority, application Japan, Dec. 27, 1979, 54-169206

Int. Cl.³ B32B *15/08, 27/40*

U.S. Cl. 428—334 **14 Claims**

1. A flexible lustrously metallized resinous article which comprises a molded article made of a thermoplastic resin selected from at least one member of the group consisting of a thermoplastic polyurethane and a polyblend of a thermoplastic polyurethane and a ABS resin, said molded article having a coating on the surface thereof comprising a flexible polyurethane paint as a base coat, a metal film having a thickness within the range from 150–500°A, which has been applied by means of sputtering, and a flexible polyurethane paint as a top coat, said flexible polyurethane paint base coat comprising a polyol of the polyester series having a hydroxyl number of 100–250 and a number average molecular weight of about 1000–4000 which has been prepared by copolymerizing a hydroxyalkyl methacrylate with a polycondensate of an aliphatic glycol and an aliphatic dicarboxylic acid selected from at least one member of the group consisting of adipic acid, azelaic acid, sebacic acid and pimelic acid mixed in an equivalent value with a polyisocyanate containing 5–20% by weight of NCO groups, and said flexible polyurethane paint top coat comprising an acrylic polyol having a hydroxyl number of 20–200 and a number average molecular weight of about 1000–4000 mixed in an equivalent value with a non-yellowing polyisocyanate comprising a prepolymer selected from at least one member of the group consisting of the hexamethylene diisocyanate series, tetramethylene diisocyanate series, phenylene diisocyanate series and tolylene diisocyanate series having 5–20% by weight of NCO groups and a number average molecular weight of about 100–2000.

6. A process for the manufacture of a flexible lustrously metallized resinous article which comprises applying a flexible polyurethane paint as a base coat onto the surface of a molded article made of a thermoplastic resin selected from at least one member of the group consisting of a thermoplastic polyurethane and a polyblend of a thermoplastic polyurethane and a ABS resin, applying to said base coat a metal film having a thickness within the range of from 150–500°A by means of sputtering after curing said base coat and thereafter applying a flexible polyurethane paint as a top coat onto said metal film, said flexible polyurethane paint base coat comprising a polyol of the polyester series having a hydroxyl number of 100–250 and a number average molecular weight of about 1000–4000 which has been prepared by copolymerizing a hydroxyalkyl methacrylate with a polycondensate of an aliphatic glycol and an aliphatic dicarboxylic acid selected from at least one member of the group consisting of adipic acid, azelaic acid, sebacic acid and pimelic acid, mixed in an equivalent value with a polyisocyanate containing 5–20% by weight of NCO groups, and said flexible polyurethane paint top coat comprising an acrylic polyol having a hydroxyl number of 20–200 and a number average molecular weight of about 1000–4000 mixed in an equivalent value with a non-yellowing polyisocyanate comprising a prepolymer selected from at least one member of the group consisting of the hexamethylene diisocyanate series, tetramethylene diisocyanate series, phenylene diisocyanate series and tolylene diisocyanate series having 5–20% by weight of NCO groups and a number average molecular weight of about 100–2000.

4,369,226

POLYGLUTARALDEHYDE SYNTHESIS AND PROTEIN BONDING SUBSTRATES

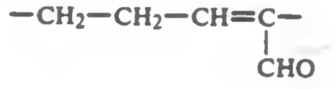
Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 21,989, Mar. 19, 1979, Pat. No. 4,267,234, which is a continuation-in-part of Ser. No. 887,825, Mar. 17, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 235,043

Int. Cl.³ B32B *5/16, 9/00*

U.S. Cl. 428—334 **12 Claims**

1. An article comprising a substrate having a 0.1 to 5 mil coating on a surface thereof of a solid polyglutaraldehyde having a repeating conjugated aldehyde containing structural unit of the formula:



$$-CH_2-CH_2-CH=\underset{CHO}{\underset{|}{C}}-$$

4,369,227

PARTICULATE STYRENE POLYMERS CONTAINING BLOWING AGENT

Klaus Hahn, Lampertheim; Hans P. Rath; Heinz Krapf, both of Gruenstadt; Isidoor De Grave, Wachenheim, and Manfred Walter, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,308

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030053

Int. Cl.³ C08J *9/22*

U.S. Cl. 428—407 **4 Claims**

1. A particulate styrene polymer, containing blowing agent, which is surface-coated with from 0.05 to 1% by weight of an ester of a hydroxycarboxylic acid having 3–6 carbon atoms with an alcohol having 10–20 carbon atoms.

4,369,228

ULTRAVIOLET LIGHT ABSORBING AGENTS AND COMPOSITIONS AND ARTICLES CONTAINING SAME

Bruce A. Ashby, Schenectady, N.Y., assignor to General Electric Co., Waterford, N.Y.

Division of Ser. No. 154,621, May 30, 1981, Pat. No. 4,321,400. This application Dec. 9, 1981, Ser. No. 328,923

Int. Cl.³ B32B *27/18;* **C07F** *7/10*

U.S. Cl. 428—412 **9 Claims**

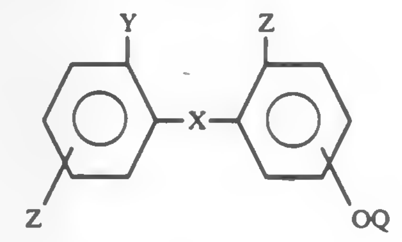
1. An article comprising:

(A) a substrate,

(B) a primer layer on said substrate, and

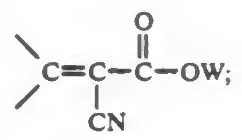
(C) a hard, protective coating over said primer layer and said substrate, said coating comprising an aqueous composition which comprises, before curing,

(a) a dispersion of a colloidal silica in a solution of the partial condensate of a silanol having the formula $RSi(OH)_3$, where R is selected from the group consisting of alkyl having 1 to 3 carbon atoms and aryl, at least 70 weight percent of which is $CH_3Si(OH)_3$, in a mixture of an aliphatic alcohol and water, said dispersion containing from 10 to 50 percent by weight of solids, said solids consisting essentially of 10 to 70 percent by weight of the colloidal silica and 30 to 90 percent by weight of the partial condensate, and (b) an effective amount of an ultra-violet light absorbing agent comprising a compound having the formula



wherein:

X is >C=O, or



$$>C=\underset{CN}{\underset{|}{C}}-\overset{O}{\overset{\|}{C}}-OW;$$

Y is H or OH;

Z is H, OH, OQ or OW, where at least one Z is OH if Y is H;

Q is $-CONH(CH_2)_3Si(R_2)_x(OR_1)_y$ or $-CONH(CH_2)_3Si(R_2)_x(OCOR_1)_y$; and

W is $-C_mH_{2m+1}$;

where $x=0$, 1 or 2, $y=1$, 2 or 3, $x+y=3$, R_1 and R_2, independently, are each alkyl having 1 to 6 carbon atoms and m is 1 to 18.

8. An article as defined in claim 1, in which the substrate comprises polycarbonate.

4,369,229

COMPOSITE HYDROGEL-FORMING ARTICLE AND METHOD OF MAKING SAME

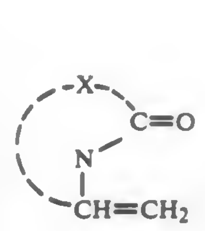
Kishore R. Shah, Chelmsford, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 29, 1981, Ser. No. 229,653

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—421 **5 Claims**

1. A composite article comprising (A) a layer of an optically clear blend of (1) 40 to 98% by weight, based on the total weight of the blend, of a water-soluble polymer of a vinyl lactam having the structure



in which X represents an alkylene bridge having three to five carbon atoms, or a water-soluble copolymer thereof with 1 to 90 mole percent of copolymerizable monomer containing a polymerizable ethylenic unsaturation, said polymer or copolymer having a molecular weight from 10,000 to 1,000,000 and (2) 2 to 60% by weight of a water-insoluble copolymer consisting essentially of 50 to 90% by weight, based on the total weight of the copolymer, of a hydrophobic water-insoluble ethylenically unsaturated monomer, 2 to 12% by weight of an ethylenically unsaturated monomer containing an acid group, and 0 to 50% by weight of a hydrophilic ethylenically unsaturated monomer free from acidic groups, and (B) adherent thereto a layer of solid high molecular weight water-resistant polymeric material which is compatible with said vinyl lactam polymer or copolymer in the unhydrated state as determined by optical clarity of a mixture of said polymeric material with said vinyl lactam polymer or copolymer, said layers being in face to face adherent contact with each other, and said layer (A) being capable of absorbing more than 45% of its weight of water without dissolution at room temperature to form a hydrogel adherent to layer (B).

4,369,230

MAGNETIC RECORDING MEDIUM

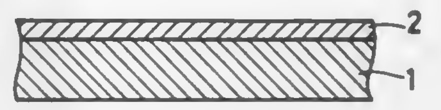
Shigeo Kimura, Tagajo; Masashi Somezawa, Sendai; Kunio Kobayashi, Izumi; Minoru Takamizawa, Annaka; Yoshio Inoue, Annaka, and Hiroshi Yoshioka, Annaka, all of Japan, assignors to Sony Corporation and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,922

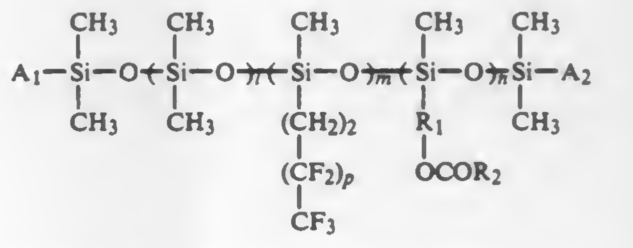
Claims priority, application Japan, May 28, 1980, 55-71065

Int. Cl.³ G11B *5/68, 5/72*

U.S. Cl. 428—421 **19 Claims**



1. A magnetic recording medium comprising a non-magnetic base and a magnetic layer comprising magnetic particles in a binder, in which the non-magnetic base is provided with a layer containing at least one organo-polysiloxane compound represented by the formula (I):



$$A_1-\underset{CH_3}{\overset{CH_3}{Si}}-O\left(\underset{CH_3}{\overset{CH_3}{Si}}-O\right)_l\left(\underset{(CH_2)_2(CF_2)_pCF_3}{\overset{CH_3}{Si}}-O\right)_m\left(\underset{R_1OCOR_2}{\overset{CH_3}{Si}}-O\right)_n\underset{CH_3}{\overset{CH_3}{Si}}-A_2$$

(wherein each of A_1 and A_2 is independently $-CH_3$, $-CH_2-CH_2-(CF_2)_q-CF_3$ or $-R_1OCOR_2$; R_1 is a divalent hydrocarbon residue having 1 to 5 carbon atoms; R_2 is a monovalent hydrocarbon residue having from 7 to 21 carbon atoms; each of l, m and n is independently 0 or an integer ranging from 1 to 200; and each of p and q is independently 0 or an integer ranging from 1 to 12; provided that when at least one of A_1 and A_2 is the group $-R_1OCOR_2$, each of l, m and n may be 0 and that, when both A_1 and A_2 are groups other than the group $-R_1OCOR_2$, each of l and m may be 0 and n is an integer ranging from 1 to 200), said organopolysiloxane being contained in said magnetic layer, in a coating over said magnetic layer or on the opposite side from said magnetic layer.

4,369,231

METHOD OF APPLICATION, AND PRODUCT THEREOF

George C. West, Concord, N.C., and William F. Polfus, Mercedes, Tex., assignors to Reeves Brothers, Inc., New York, N.Y.

Continuation of Ser. No. 133,557, Mar. 24, 1980, Pat. No. 4,287,261, which is a continuation of Ser. No. 945,589, Sep. 25, 1978, abandoned. This application Aug. 4, 1981, Ser. No. 289,909
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.^{3} B05D *3/02;* **B32B** *9/04*

U.S. Cl. 428—421 **15 Claims**

1. A process for coating substrates characterized by:

(a) depositing on a taut substrate a composition comprising
  (1) a poly dimethyl siloxane being present in an amount about 95.3 percent by weight of the composition,
  (2) a dibutyl tin dilaurate catalyst being present in an amount about 0.7 percent by weight of the composition,
  (3) acetic acid being present in an amount about 1.0 percent by weight of the composition, and
  (4) an aromatic solvent being present in an amount about 3.0 percent by weight of the composition,

or

  (1) a poly dimethyl siloxane being present in an amount from about 93 to about 99% by weight of the composition, and
  (2) a tin catalyst being present in an amount from about 0.5 to about 1.5% by weight of the composition,

(b) uniformly distributing the deposited composition on one surface of the substrate,
(c) curing the substrate from (b),
(d) padding the substrate with a solution selected from a silicone or a fluorocarbon solution, and
(e) compressing the substrate whereby it is substantially wind-resistant, water-repellent and has a good handle.

4,369,232

DISPERSANTS FOR COATING COMPOSITIONS ISOCYANATOALKYLACRYLATES AS INORGANIC PIGMENT DISPERSANT ON METAL SUBSTRATES

Christopher Scopazzi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1980, Ser. No. 220,198

Int. Cl.^{3} B32B *27/40;* **C08L** *27/00*

U.S. Cl. 428—425.9 **38 Claims**

1. A composition of the formula

$$\begin{array}{c}[A]_a\text{—}Z\text{—}[B]_b\\ |\\ [C]_c\end{array}$$

A, B and C are connected to Z by urea linkages,
Z is the residue of a polyisocyanate, it being understood that Z is at least a triisocyanate when all of A, B and C are present,
A is the residue which results from the removal of amino hydrogen from a primary or secondary fatty acid amine of 12–24 carbon atoms in the fatty acid groups;
B is the residue which results from the removal of amino hydrogen from a primary or secondary alkyl amine or alkanolamine of up to 6 carbon atoms in the alkyl or alkanol groups;
C is the residue which results from the removal of amino hydrogen from a primary or secondary aminosilane of the formula

$$H_nN\text{-}[(CH_2)_p\text{-}Si\text{-}(OY)_3]_m$$

wherein

Y is alkyl of 2–6 carbon atoms, m and n are each 1 or 2 and the sum of m and n is 3, and p is 2–6; and
a is 20–80, b is 80–20, and c is 0–40, the sum of a, b and c being 100, the mole percentage of —NCO groups replaced on Z.

29. A steel substrate carrying a cured coating containing an inorganic pigment and a composition of claim 1.

4,369,233

PROCESS TO APPLY A PROTECTING SILICON CONTAINING COATING ON SPECIMEN PRODUCED FROM SUPERALLOYS AND PRODUCT

Teunis van Schaik, Velden, Netherlands, assignor to Elbar B.V., Industrieterrien "Spikweien", Lomm, Netherlands

Filed Jul. 19, 1979, Ser. No. 59,032

Claims priority, application Netherlands, Jul. 21, 1978, 7807798

Int. Cl.^{3} B32B *15/00;* **C23C** *5/00*

U.S. Cl. 428—678 **10 Claims**

1. A process for applying a protective silicon-containing coating on a super alloy, subject to high temperature corrosion, comprising:

(a) applying a first coating layer to said super alloy, said first coating layer comprising at least one of the elements selected from the group consisting of Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo and W;
(b) heating the so-formed coated super alloy to a temperature of 800°–1300° C. under a protecting atmosphere;
(c) removing the phase rich in the elements set forth in step (a), wherein the phase rich in the elements set forth in step (a) contains more than 25 weight % thereof;
(d) applying a silicon layer to the product of step (c); and
(e) heating the product of step (d) to a temperature of 800°–1000° C.

10. A super alloy having a protective coating layer wherein the protective coating layer comprises a Ti-Si-Ni alloy which is mainly present in the G-phase.

4,369,234

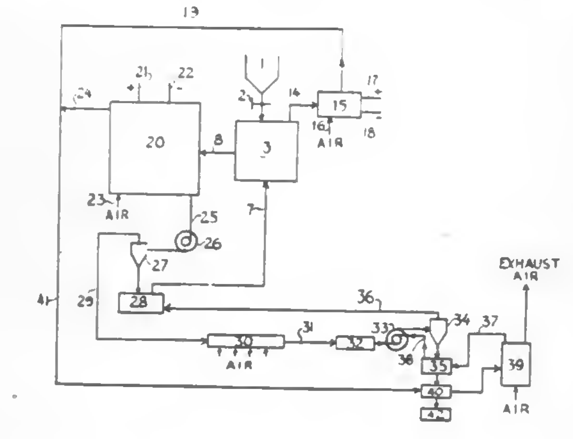
ELECTROCHEMICAL POWER GENERATION

Solomon Zaromb, 171 Clifton Ave., Newark, N.J. 07104

Division of Ser. No. 80,185, Oct. 1, 1979, Pat. No. 4,254,190, which is a continuation-in-part of Ser. No. 20,967, Mar. 16, 1979, Pat. No. 4,218,520, Ser. No. 917,406, Jun. 20, 1978, Pat. No. 4,198,475, Ser. No. 704,452, Jul. 12, 1976, Pat. No. 4,305,999, and Ser. No. 938,395, Aug. 31, 1978, Pat. No. 4,207,382, which is a continuation of Ser. No. 813,483, Jul. 7, 1977, abandoned, said Ser. No. 20,967, is a division of Ser. No. 843,155, Oct. 17, 1977, Pat. No. 4,150,197. This application Feb. 26, 1981, Ser. No. 238,626

Int. Cl.^{3} H01M *8/08*

U.S. Cl. 429—13 **17 Claims**



1. A method of generating heat and electricity from the consumption of a variety of aluminum products which comprises:

(a) partly filling with an aqueous electrolyte solution a reaction chamber adapted for introduction therein of aluminum particles or pieces of various shapes and sizes up to a certain maximum predetermined size and for effecting therein a chemical reaction between said electrolyte and said aluminum pieces yielding aluminum hydroxide and an intermediate reactant;
(b) feeding said aluminum pieces into said reaction chamber in small quantities upon demand;
(c) removing the heat generated in said reaction chamber as a result of said reaction;
(d) removing said aluminum hydroxide reaction product; and
(e) oxidizing said intermediate reactant in an electrochemical cell so as to generate electrical energy.

4,369,235

ELECTROCHEMICAL CELL AND GAS DIFFUSION ELECTRODE FOR THE SAME

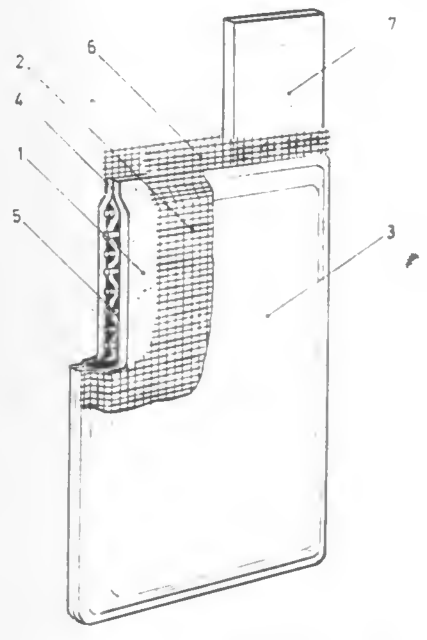
Martin S. O. Bursell, Solna, Sweden, assignor to SAB Nife AB, Sweden

PCT No. PCT/SE80/00176, § 371 Date Feb. 25, 1981, § 102(e) Date Feb. 25, 1981, PCT Pub. No. WO81/00032, PCT Pub. Date Jan. 8, 1981

PCT Filed Jun. 25, 1980, Ser. No. 243,931

Int. Cl.^{3} H01M *12/00*

U.S. Cl. 429—27 **18 Claims**



1. An electrochemical cell, comprising, an external cell housing which is closed in relation to a surrounding atmosphere, electrodes located within the cell housing in contact with a liquid electrolyte, at least one of the electrodes being a gas diffusion electrode, an external surface of the gas diffusion electrode being provided with both a catalyst for converting gas to electricity and an electrically conductive material, an internal surface of the gas diffusion electrode being provided with a hydrophobic material, the hydrophobic material of the gas diffusion electrode including a cohesive porous plastics layer having pores which are impermeable to liquid but permeable to gas, a gas space totally sealed about its periphery being defined inside the electrode, said gas diffusion electrode permitting gas to diffuse to and from said gas space and preventing entry of water or electrolyte into the gas space the gas diffusion electrode being partially immersed in the electrolyte and having a portion of the electrode in contact with gas in a gas chamber located within the cell housing above the electrolyte, the gas diffusion electrode being adapted for drawing gas from the gas chamber through the gas permeable pores into the gas space by a subpressure generated within the gas space during operation of the cell.

4,369,236

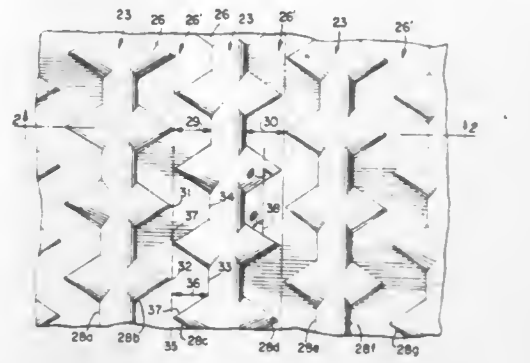
BATTERY SEPARATOR

Dennis D. O'Rell, Boxborough; Wai M. Choi, West Newton, and Nan J. Lin, Burlington, all of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,402

Int. Cl.^{3} H01M *2/18*

U.S. Cl. 429—147 **16 Claims**



1. A sheet product suitable for use as a separator in an acid battery comprising an acid-stable porous sheet material, said sheet material having first and second faces formed within spaced planes containing said faces and into a plurality of separate continuous open channels on each of said faces, each channel having a nadir substantially planar area or separated from at least one adjacent channel by an apex substantially planar area or both, each channel on each face defining a separation between two channels on the other face, each of said channels defining an imaginary median line, at least some portions of at least some of said channels extending laterally with respect to said median line such that the overall channel configuration of said sheet has at least about 20 percent extending laterally beyond the minimum lateral extension for each channel, and said channels being so configured that each of said channels is defined by at least one continuous intersect contour line; substantially all portions of said at least one intersect contour line is formed from straight line segments orientated at an acute angle theta no greater than 70° with respect to an imaginary vertical line orientated from bottom to top of a battery containing at least one separator formed from said sheet product.

4,369,237

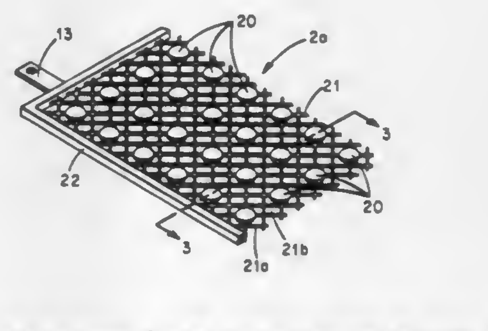
MULTI-ELEMENT ANODE STRUCTURES FOR ELECTROCHEMICAL CELLS

Franz Goebel, Sudbury, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 9, 1981, Ser. No. 319,812

Int. Cl.^{3} H01M *4/02*

U.S. Cl. 429—218 **15 Claims**



1. An anode structure for an electrochemical cell, comprising:

a metal screen; and
a plurality of spaced-apart discrete lithium anode elements arranged in a pattern and in physical contact with the metal screen.

4,369,238

STORAGE BATTERY SEPARATOR

Takao Hasegawa, and Wataru Takahashi, both of Gifu, Japan, assignors to Nihon Mukiseni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 225,104

Claims priority, application Japan, Jan. 16, 1980, 55-2608

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—252 **4 Claims**

1. A storage battery separator comprising a mixture of phenol resin, polyolefin resin and inorganic powder, and containing the phenol resin of 2-50% based on the mixture.

4,369,239

PROCESS FOR PREPARATION OF PHOTOPOLYMERIZED DOT-ETCHABLE MASKS USING STAGING SOLUTION

Bernard Feinberg, Englishtown, and James W. O'Neil, Howell, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1981, Ser. No. 289,822

Int. Cl.³ G03F *7/02;* **G03C** *5/00;* **G03F** *7/00;* **F23L** *13/00*

U.S. Cl. 430—5 **6 Claims**

1. In a process for dot-etching an imagewise exposed photopolymerizable layer wherein the layer is no more than 0.015 mm thick and has an optical density greater than 3.0 in the 300 to 400 nm region and contains a tone correctable image comprised of polymeric dots or lines having a hardened upper skin which rests on a softer undervolume having a less degree of polymerization or hardening, the process comprising applying a staging solution to areas of the image layer that it is desired to protect, drying the staging solution to provide a stage, reducing the size of the polymeric dots or lines in unprotected areas by undercutting them with a solvent for the softer undervolume and removing hardened polymer from the edges of the hardened upper skin by mechanical action on the image, and removing the stage with a solvent therefor which does not have any dilatory effect on the photopolymerized layer or image formed therein, the improvement wherein the staging solution having a Brookfield Model LVF viscosity in the range of 50 to 70 cps determined at 20° C./#1 spindle/60 rpm consists essentially of

- (a) at least one film forming hydrocarbon resin having a number average molecular weight in the range of about 500 to 3000 and melt viscosities of 10 poises at 237° C.±15° C., 100 poises at 207° C.±10° C., and 1000 poises at 184° C.±7° C., the resin containing greater than 50% by weight aliphatic hydrocarbons and being derived from synthetic and natural products, 25 to 50% by weight;
- (b) at least one aliphatic hydrocarbon solvent which is inert to the photopolymerizable layer, 50 to 75% by weight;
- (c) optionally a dye or colorant; and
- (c) optionally a finely divided particulate material, the weight percentages being based on the total weight of components (a) and (b).

4,369,240

ELEMENT HAVING IMAGES DEVELOPED WITH DRY NONELECTROSCOPIC TONERS

Michael G. Fickes, Matawan, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 204,796, Nov. 7, 1980, Pat. No. 4,330,613. This application Dec. 29, 1981, Ser. No. 335,508

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—17 **12 Claims**

1. A photopolymer element comprising a supported photopolymer layer having imagewise tacky and nontacky areas, solely the tacky image areas being toned with a dry nonelectroscopic toner comprising pigmented organic resin particles having a size distribution within the range of 0.2 to 30 micrometers and not more than 50 percent of the particles being less than 1 micrometer particle size, the pigmented particles being surface coated with at least 1% by weight of an antistatic agent in combination with at least 0.5% by weight of slip agent selected from the class consisting of silicone oil having a weight average molecular weight of about 230 to 50,000; saturated hydrocarbons having a weight average molecular weight of about 200 to 10,000; and fluorocarbon compounds having a weight average molecular weight of 500 to 500,000.

4,369,241

METHOD OF FORMING A FLUORESCENT SCREEN OF A BLACK MATRIX TYPE COLOR PICTURE TUBE

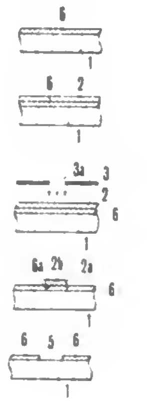
Yoshiyuki Odaka, Isumi, and Kiyoshi Miura, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1981, Ser. No. 232,707

Claims priority, application Japan, Mar. 19, 1980, 55-33861

Int. Cl.³ H01J *9/20;* **G03C** *5/00*

U.S. Cl. 430—25 **1 Claim**



1. In a method of forming a fluorescent screen of a black matrix type color picture tube wherein a plurality of trios of phosphor are arranged, in a predetermined pattern, on the inner surface of a face plate of the color picture tube with a film of a light absorptive material applied on gaps between the patterned trios, said method comprising the steps of:

- forming a porous light absorptive film on the inner surface of the face plate;
- forming a light-hardenable photosensitive resin film on the light absorptive film with some absorption of the resin material into the underlying upper region of the light absorptive film;
- exposing to light the portion of the light-hardenable resin film corresponding to a phosphor applying portion through a shadow mask sufficient to harden the exposed portion and said underlying upper region to firmly couple said films at their interface;
- removing the unexposed portion of the light-hardenable photosensitive film by developing; and
- continuing the development to remove the exposed portion of the light-hardenable photosensitive film and portion of the light absorptive film therebeneath to partly perforate the light absorptive film so that in the light absorptive film, openings are formed into which the phosphor is applied.

4,369,242

NON-POROUS AND POROUS AL_2O_3 BARRIER ZONES IN LAYERED ELECTROPHOTOGRAPHIC DEVICE

Padmanabham A. Arimilli, Maplewood, and Frank E. Aspen, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 190,423, Sep. 25, 1980, abandoned. This application Aug. 5, 1981, Ser. No. 290,344

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—58 **13 Claims**

1. An electrophotographic device comprising:

(1) an electrically conductive substrate,

(2) a barrier-charge transport layer comprising aluminum oxide, wherein said layer comprises a non-porous barrier

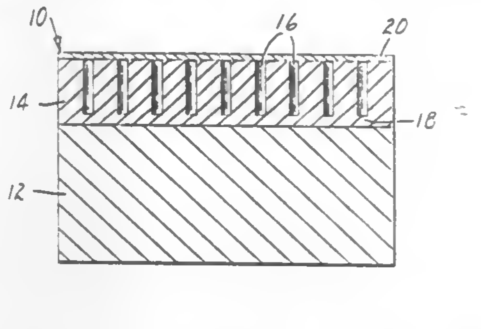
zone adjacent said substrate and a porous charge transport zone, and

(3) a photoconductive insulator layer of less than two micrometers adjacent the porous charge transport zone of said barrier-charge transport layer.

12. An electrophotographic device comprising:

(1) an electrically conductive substrate,

(2) a barrier-charge transport layer comprising aluminum oxide, wherein said layer comprises a non-porous barrier zone adjacent said substrate and a porous charge transport zone, and



(3) a photoconductive insulator layer of less than two micrometers adjacent the porous charge transport zone of said barrier-charge transport layer

wherein the barrier-charge transport layer is at least 0.15 micrometers thick, the pore diameters of the porous zone are between 0.007 and 0.040 micrometers, the center-to-center spacing of the pores is from 0.010 to 0.400 micrometer, and the photoconductive insulator layer is less than 2.0 micrometers thick.

4,369,243

PHOTOGRAPHIC RECORDING MATERIAL FOR DIFFUSION PROCESSES AND USEFUL NON-DIFFUSING SULFILIMINE COMPOUNDS

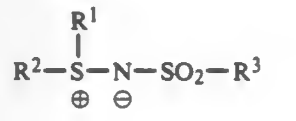
Hans-Heinrich Credner, Hohenschaeftlarn; Wolfgang Lässig, Munich, and Karl-Wilhelm Schranz, Odenthal-Hahnenberg, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,255

Int. Cl.³ G03C *5/54;* **G07C** *49/62;* **G09B** *53/00*

U.S. Cl. 430—223 **13 Claims**

1. In a photographic recording material containing at least one photosensitive silver halide emulsion layer with an alkali-permeable binder and a non-diffusing reducible compound which is in effective contact therewith and which contains a photographically active group, this reducible compound being capable of reductive clearage thereby to split off the photographically active group as a diffusible compound under the alkaline development conditions, the improvement according to which the non-diffusing reducible compound is a sulfilimine compound corresponding to the following formula:



$$\underset{\oplus}{\overset{R^1|}{R^2-S}}-\underset{\ominus}{N}-SO_2-R^3 \qquad (I)$$

in which

- R^1 and R^2 represent the same or different aryl radicals at least one of these aryl radicals carrying an electron-attracting substituent in a position ortho or para and at least one of these aryl substituents carrying a ballasting group; and
- R^3 represents the residue of a diffusible photographically active compound.

4,369,244

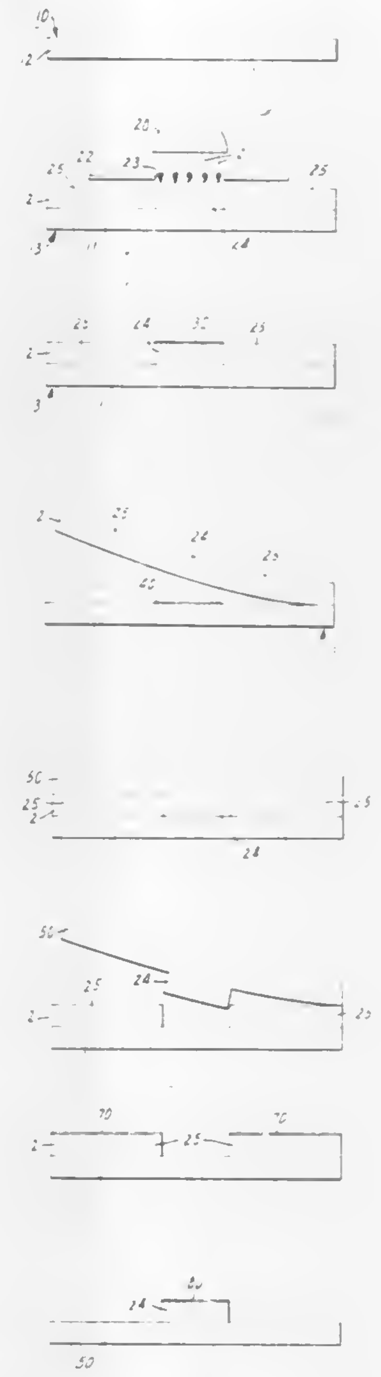
IMAGING PROCESS AND ARTICLE EMPLOYING PHOTOLABILE, BLOCKED SURFACTANT

Gilbert L. Eian, White Bear Lake, and John E. Trend, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 11, 1980, Ser. No. 177,287

Int. Cl.³ G03C *1/90*

U.S. Cl. 430—257 **7 Claims**



1. An imaging process comprising:

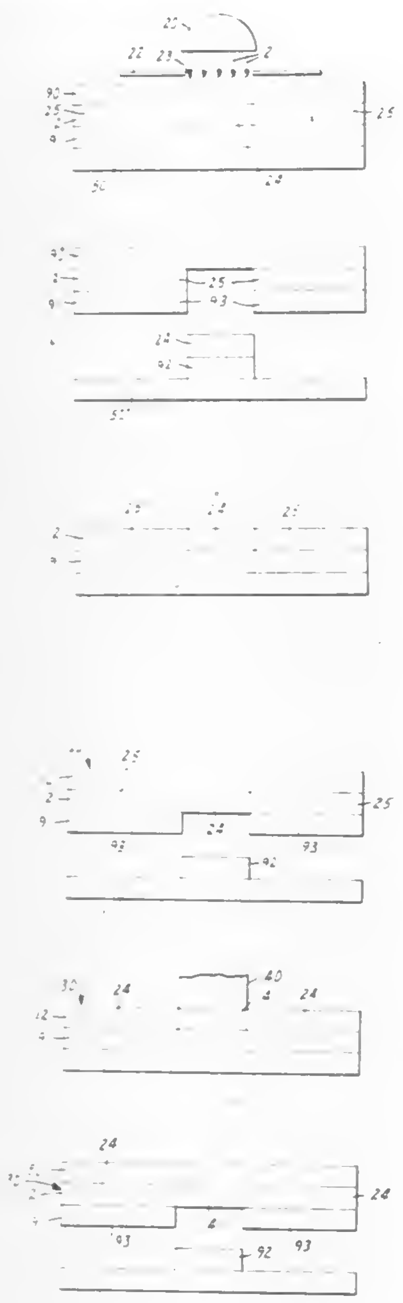
(1) providing a support having bonded to one surface thereof an actinic radiation-sensitive layer comprising a blend of:

- (a) actinic radiation-transmissive film-forming polymeric material having adhesion for said support; and
- (b) photolabile blocked surfactant capable upon exposure to actinic radiation of releasing a detectable amount of surfactant in the exposed areas, wherein the adhesion of the actinic radiation-sensitive layer for the support is greater in unexposed areas than in exposed areas;

(2) exposing said radiation-sensitive layer to actinic radiation in an image-wise pattern at an intensity and for a time sufficient to release an image-wise pattern of released surfactant in the exposed area;

(3) applying to the surface of the imaged actinic radiation-sensitive layer an adherent layer, wherein the adhesion between said adherent layer and the exposed area of the actinic radiation-sensitive layer is greater than the adhesion between the exposed area of the actinic radiation-sensitive layer and the support and the adhesion between the unexposed area of the

actinic radiation-sensitive layer is greater for the support than for the adherent layer, and wherein the cohesion of the actinic radiation-sensitive layer is
(a) greater than the adhesion between the exposed area of the actinic; radiation-sensitive layer and the support layer;
(b) greater than the adhesion between the unexposed area and the adherent layer; and



(c) less than the adhesion between the unexposed area of the actinic radiation-sensitive layer and the support layer; and
(4) separating the adherent layer from said actinic light sensitive area whereby the unexposed area of said actinic radiation-sensitive layer remains bonded to the support and the exposed area of said actinic radiation-sensitive layer remains adherently bonded to said adherent layer.

4,369,245
PHOTOGRAPHIC ELEMENT FOR TANNING DEVELOPMENT AND METHOD FOR OBTAINING COLORED RELIEF IMAGE

Marco Beruto, and Piero Ramello, both of Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 8, 1981, Ser. No. 299,726
Claims priority, application Italy, Jul. 28, 1980, 49360 A/80
Int. Cl.^{3} G03C ***1/76, 1/06***
U.S. Cl. 430—264 **9 Claims**

1. A photographic element comprising a support layer and spread over said support, a layer of silver halide emulsion in non-hardened gelatin with a tanning developer dispersed therein and, spread over said emulsion layer, a layer of non-hardened gelatin having at least one colored pigment dispersed therein, the silver of said layer of silver halide emulsion being present in a quantity of less than 0.[illegible] grams per square meter, and the gelatin of said emulsion layer being present in a quantity such as to provide a silver/gelatin ratio of less than 0.4.

4,369,246
PROCESS OF PRODUCING AN ELASTOMERIC PRINTING RELIEF

Gwendyline Y. Y. T. Chen, Wilmington, and James F. Brennan, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 160,439, Jun. 17, 1980, abandoned, which is a division of Ser. No. 926,579, Jul. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 374,567, Jun. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 130,470, Apr. 1, 1971, abandoned. This application Jan. 28, 1981, Ser. No. 229,068
Int. Cl.^{3} G03C ***5/00***
U.S. Cl. 430—306 **13 Claims**

1. A process for forming a solvent-insoluble, elastomeric printing relief comprising applying to a sheet support a layer of a photosensitive, elastomeric composition to a dry thickness of from about 0.005 to about 0.250 inch, said composition comprising
(1) at least 30% by weight of at least one solvent-soluble, thermoplastic, elastomeric block copolymer containing at least two thermoplastic, nonelastomeric polymer blocks having a glass transition temperature above 25° C. and an average molecular weight of 2000–100,000, and between said thermoplastic, nonelastomeric polymer blocks an elastomeric polymer block having a glass transition temperature below 10° C. and an average molecular weight of about 25,000 to 1,000,000.
(2) at least 1% by weight of an addition-polymerizable ethylenically unsaturated compound containing at least one terminal ethylenical group, and
(3) a polymerization-effective amount of polymerization initiator activatable by actinic radiation;
laminating a flexible, polymeric film and a flexible cover sheet to said layer, so that the surface of said film is contiguous to the surfaces of said layer; stripping said cover sheet from said film; imagewise exposing the photosensitive layer to actinic radiation through said film; and removing said film and the unexposed areas of said layer by solvent-washing.

4,369,247
PROCESS OF PRODUCING RELIEF STRUCTURES USING POLYAMIDE ESTER RESINS

David L. Goff, Springfield; Edward L. Yuan, Philadelphia, both of Pa., and Stephen Proskow, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 183,648, Sep. 3, 1980, Pat. No. 4,329,419. This application Dec. 24, 1981, Ser. No. 334,163
Int. Cl.^{3} G03C ***5/00***
U.S. Cl. 430—311 **10 Claims**

1. In a process for the formation of relief structures wherein the relief structure consists of a stable heat resistant polyimide material comprising the steps of applying a solvent soluble radiation sensitive polyamide ester resin composition to a substrate, drying the composition, exposing the composition to radiation through a pattern, dissolving the unradiated portions and converting the resulted relief structure to form a polyimide structure; the improvement used therewith is a radiation polymerizable composition consisting essentially of
(a) a polyamide ester resin containing photopolymerizable groups;
(b) solvent for the resin;
(c) radiation sensitive polymerizable polyfunctional acrylate compound and
(d) photopolymerization initiator of an aromatic biimidazole;
wherein the polyamide ester resin being convertible to a polyimide resin.

4,369,248
PHOTOGRAPHIC RECORDING MATERIAL AND ITS USE FOR THE PRODUCTION OF IMAGES

Erwin Ranz, Leverkusen; Heinz-Dieter Schütz, Bergisch Gladbach, and Joachim W. Lohmann, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,658
Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020163
Int. Cl.^{3} G03C ***1/76***
U.S. Cl. 430—376 **10 Claims**

1. A photographic recording material comprising a support layer, at least one silver halide emulsion layer I, which contains an emulsion mixture of at least one light sensitive silver halide emulsion layer L and a fine-grained, comparatively non-light sensitive silver halide emulsion U, and at least one layer II which either contains no silver halide emulsion or only a comparatively non-sensitive silver halide emulsion, and wherein the combination includes improvement comprises at least one layer II
(a) is in water-permeable arrangement in relation to at least one layer I and
(b) contains an anti-fogging agent or a precursor compound for an anti-fogging agent.

4,369,249
PROCESS FOR PRODUCING POLYMERIC IMAGE AND PHOTOSENSITIVE ELEMENT THEREFOR

Masayoshi Mizuno, Mishima, and Hiroyuki Tsuchiya, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 135,842, Mar. 31, 1980, Pat. No. 4,287,290. This application May 1, 1981, Ser. No. 259,650
Claims priority, application Japan, Apr. 5, 1979, 54-41342
Int. Cl.^{3} G03C ***1/49***
U.S. Cl. 430—537 **5 Claims**

1. An image forming photosensitive element comprising a sheet support, a layer of an addition-polymerizable material formed thereon and comprising at least one addition-polymerizable unsaturated compound, and a layer of a photographic silver halide emulsion formed thereon, said addition-polymerizable material being capable of initiating its own addition-polymerization when treated with an aqueous solution containing a developing agent for the photographic silver halide emulsion, an anti-oxidizing agent and an alkali, the developing agent having a reducing capacity for the silver halide and losing its ability to initiate addition-polymerization where it has encountered and reduced silver halide, whereby addition-polymerization will occur only in selected areas corresponding to the object to be photographed.

4,369,250
FATTY ACID DETERMINATION

E. Melvin Gindler, Union City, Calif., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Jul. 31, 1981, Ser. No. 288,989
Int. Cl.^{3} C12Q ***1/34, 1/44;*** **G01N** ***31/00***
U.S. Cl. 435—18 **42 Claims**

1. A method of demonstrating the presence of a free fatty acid in a liquid sample, said method comprising the steps of:
(a) mixing said sample with a reagent comprising a solution of a complex of a long chain cationic surfactant and an anionic dye whereby said free fatty acids react with said complex to liberate said dye from said complex; and,
(b) observing the resulting color change in said sample.

39. A reagent kit for determining the concentration of a component hydrolyzable by a hydrolase enzyme to liberate fatty acids, said reagent kit comprising first and second containers, said first container containing a solution of said hydrolase enzyme, and said second container containing a solution of a complex of a long chain cationic surfactant and an anionic dye.

4,369,251
METHOD FOR THE PRODUCTION OF SISOMICIN

Miklos Jarai; Sandor Piukovich, both of Budapest; Sandor Istvan, Szentendre; Istvan Gado, Budapest; Valeria Szell, Budapest, and Istvan Barta, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Division of Ser. No. 116,916, Jan. 30, 1980. This application Dec. 8, 1980, Ser. No. 214,445
Claims priority, application Hungary, Feb. 1, 1979, CI 1906
Int. Cl.^{3} C12P ***19/48;*** **C12R** ***1/29***
U.S. Cl. 435—80 **11 Claims**

1. A process for the production of sisomicin comprising cultivating the actinomyces species *Micromonospora danubienis* under aerobic fermentation conditions on a nutrient medium containing assimilable carbon and nitrogen sources to produce recoverable amounts of sisomicin.

4,369,252
FERMENTATION PROCESS FOR THE PREPARATION OF ERGOT ALKALOIDS, PRIMARILY ERGOCORNINE AND β-ERGOCRYPTINE

Geza Wack; Janos Kiss; Zsuzsa Lengyel nee Szemenyel; Lajos Nagy; Eva Udvardy Nagy nee Cserey Pechany; Karoly Zalai, and Erzsebet Zsoka nee Somkuti, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Feb. 6, 1981, Ser. No. 232,172
Claims priority, application Hungary, Feb. 8, 1980, 282
Int. Cl.^{3} C12P ***17/18;*** **C12N** ***1/14;*** **C12R** ***1/645***
U.S. Cl. 435—119 **4 Claims**

1. A microbiologic process for the preparation of the ergot alkaloids ergocornine and β-ergocryptine, which comprises fermentation culturing a Claviceps purpurea variant strain MNG 00186 under aerobic conditions in a culture medium which contains carbon and nitrogen sources and mineral salts, and recovering the ergot alkaloids.

4,369,253
GROWTH PROMOTING METHOD FOR BASIDIOMYCETES

Hitoshi Takita, Tokyo; Toshihiko Wada, Mibu; Yutaka Mukaida, Tokyo; Satoru Enomoto, Fujisawa; Akiyoshi Nakajima, Mibu, and Azuma Okubo, Mibu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 76,666, Sep. 18, 1979, abandoned. This application Mar. 24, 1981, Ser. No. 247,218
Claims priority, application Japan, Jun. 11, 1979, 54/73361; Dec. 24, 1980, 55/165723
Int. Cl.^{3} C12N ***1/38, 1/14***
U.S. Cl. 435—244 **2 Claims**

1. A method of cultivating a fungus of Basidiomycetes wherein said fungus is cultivated in a medium to which at least one of the straight-chain saturated aliphatic alcohols represented by the formula $C_nH_{2n+1}OH$, wherein n is an integer of 26 to 36, has been added to produce a concentration of 0.05 to 10 ppm of said alcohol.

4,369,254

CROSSOVER DIELECTRIC INKS

Ashok N. Prabhu, Plainsboro, and Kenneth W. Hang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,916

Claims priority, application United Kingdom, Oct. 17, 1980, 8033567

Int. Cl.³ H05K *3/46;* **C03C** *3/08*

U.S. Cl. 501—21 **7 Claims**

1. A crossover dielectric ink suitable for forming an intermediary film between two or more conductor films on a substrate comprising:

- (a) from about 30 to about 70 percent by weight of a partially devitrifying barium magnesium borosilicate glass powder;
- (b) from about 10 to about 30 percent by weight of a pinhole reducing component selected from the group consisting of silicon dioxide, an alkaline earth aluminum borosilicate glass having a softening point above about 700° C., and mixtures thereof; and
- (c) from about 20 to about 50 percent by weight of a suitable organic vehicle.

4,369,255

METHOD OF OBTAINING IMPROVED EQUILIBRIUM CONDITIONS AND OF SIMULTANEOUSLY PRODUCING STEAM UNDER HIGH PRESSURE IN THE PRODUCTION OF METHANOL

Emil Supp, Dietzenbach, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,007

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028646

Int. Cl.³ C07C *27/06, 31/04*

U.S. Cl. 518—712 **7 Claims**

1. In a method of producing methanol by reaction of an oxide of carbon and hydrogen at a temperature of 200° to 300° C. under a pressure of 20 to 100 bars by passing said oxide of carbon and hydrogen through at least one tube containing a copper-containing catalyst, which tube is disposed on a lower tube plate and is housed in a reactor through which passes circulating boiling water under pressure to indirectly cool the contents of said tube, steam resulting therefrom is withdrawn together with the circulating water and is separated therefrom the improvement for improving the equilibrium within the reactor and simultaneously producing high pressure steam, which comprises disposing an intermediate bottom plate 20 to 150 cm over said lower tube plate, whereby to define a lower cooling zone and an upper cooling zone, said intermediate bottom plate provided with apertures to convey water from said lower cooling zone to said upper cooling zone, feeding circulating water above said intermediate bottom plate and feed water below said intermediate bottom plate, whereby the gaseous reaction mixture within said tube is cooled by 20° to 50° C. in the lower part of the catalyst-filled tube in the tube length of 20 to 150 cm, the feed water is heated in the reactor to a temperature of 230° to 290° C. with evaporation of a portion of the feed water, the resulting mixture of steam and circulating water is separated, the circulating water is recycled and the resulting high-pressure steam is withdrawn.

4,369,256

POLYALKYLENE RESINS CROSSLINKED WITH DIISOCYANATE USED FOR SELECTIVE SEPARATION OF HEPARIN FROM OTHER GLUCOSAMINOGLYCANES

Benito Casu, Milan; Giangiacomo Torri, Bergamo, and Giorgio Zoppetti, Milan, all of Italy, assignors to Crinos Industria Farmacobiologica S.p.A., Villa Guardia, Italy

Filed Apr. 6, 1981, Ser. No. 251,874

Claims priority, application Italy, Apr. 18, 1980, 21499 A/80

Int. Cl.³ C08G *18/00*

U.S. Cl. 521—25 **4 Claims**

1. An anionic exchange resin for isolating and recovering heparin or another glucosaminoglycane from a solution containing it, wherein said resin is a polyalkylene-imine cross-linked with a diisocyanate in a molar equivalent ratio in the range of 1:0.1 to 1:0.15.

4,369,257

FOAMING SYNTHETIC RESIN COMPOSITIONS STABILIZED WITH CERTAIN NAPHTHYL AMINE COMPOUNDS

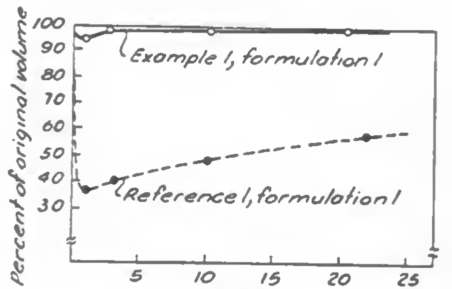
Tsuneo Hoki, and Minoru Hisamatsu, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 241,270, Mar. 6, 1981, Pat. No. 4,331,777. This application Feb. 1, 1982, Ser. No. 344,837

Claims priority, application Japan, Mar. 12, 1980, 55/30239

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—79 **3 Claims**



1. An extrusion foaming process for expanding an aliphatic olefin polymer which comprises

- (1) heat plastifying said olefin polymer;
- (2) admixing with said heat plastified olefin polymer under conditions of elevated temperature and pressure a volatile organic blowing agent and from 0.1 to 10 weight percent based upon said olefin polymer of a compound of the formula (I):

$$\text{A—NH—B—NH—A}' \qquad \text{(I)}$$

wherein A and A′, which may be the same or different, each represent α- or β-naphthyl group and B represents a radical selected from a group consisting of p- and m-phenylene groups, a p,p′-diphenylene group, and a m,m′-diphenylene group; and

- (3) extruding the resultant heat plastified mixture into a zone of lower pressure to thereby produce an aliphatic olefin polymer foam product.

4,369,258

POLYURETHANE FOAM COMPOSITIONS AND A PROCESS FOR MAKING SAME USING A MELAMINE POLYOL

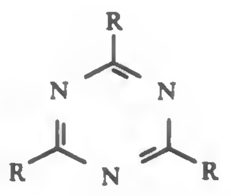
Douglas L. Johnson, Franklin Lakes, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 22, 1981, Ser. No. 285,720

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—107 **11 Claims**

1. In a polyurethane foam prepared from a polyisocyanate, a polyol, and a foaming agent, the improvement which comprises incorporating therein prior to foaming an amount sufficient to improve the resultant foam of a melamine polyol of the formula



wherein each R is NH_2, an alkyl (C_2–C_{12}) amine, or a hydroxyalkyl (C_2–C_4) substituted amine and there is an average at least about one hydroxy group per melamine polyol molecule.

4,369,259

COLOR-STABILIZED PHENOLIC FOAMS

Josef Tiroux, Troisdorf-Oberlar, and Franz Weisselfels, Siegburg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,342

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102066

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—108 **9 Claims**

1. Foam of resol-type phenolic resins resistant to color change, comprising at least one of alkali metal or calcium salt of phosphinic acid or phosphonic acid, as a stabilizer.

4,369,260

PHOSPHORUS-CONTAINING ALTERNATING COPOLYMERS

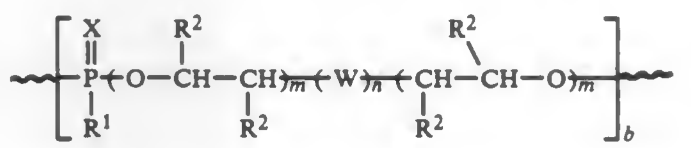
Usama E. Younes, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 20, 1981, Ser. No. 255,511

Int. Cl.³ C08F *297/02, 297/04*

U.S. Cl. 521—189 **9 Claims**

1. An alternating copolymer having the formula:



$$\sim\!\!\left[\begin{matrix}\text{X}\\ \|\\ \text{P}\\ |\\ \text{R}^1\end{matrix}\!\!\left(\text{O—}\overset{\overset{\text{R}^2}{|}}{\text{CH}}\text{—}\underset{\underset{\text{R}^2}{|}}{\text{CH}}\right)_{m}\!\!\left(\text{W}\right)_{n}\!\!\left(\underset{\underset{\text{R}^2}{|}}{\text{CH}}\text{—}\overset{\overset{\text{R}^2}{\backslash}}{\text{CH}}\text{—O}\right)_{m}\right]_{b}\!\!\sim$$

wherein R^1 represents a halogen, a (C_1 to C_{10}) alkyl or halogenated (C_1 to C_{10}) alkyl group, hydroxy, a (C_1 to C_{10}) alkoxy or halogenated (C_1 to C_{10}) alkoxy group, an aryl or halogenated aryl group, and an aryloxy or halogenated aryloxy group; X may or may not be present and represents oxygen or sulfur; W represents at least one monomer selected from the group consisting of dienes, styrenes, vinylidene chloride, vinyl esters, acrylic and methacrylic esters, and acrylonitrile; each R^2 separately represents hydrogen, a (C_1 to C_4) alkyl group, or an aryl group; n represents an integer equal to or greater than 2; each m separately represents an integer from 1 to 20, and b represents an integer from 2 to 1000.

7. The alternating copolymer of claim 1 in the form of a foam.

8. A polymer blend comprising the alternating copolymer of claim 1.

4,369,261

POLYIMIDE FOAMS

John Gagliani, Schaumburg; Raymond Lee, and Usman A. K. Sorathia, both of Elk Grove Village, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 252,902, Apr. 10, 1981, Pat. No. 4,332,656. This application Dec. 7, 1981, Ser. No. 327,906

Int. Cl.³ C08J *9/02;* **C08G** *69/26*

U.S. Cl. 521—189 **7 Claims**

1. A flexible, resilient polyimide foam with a homogeneous cellular structure and improved compression set properties and obtained by curing a precursor which contains: one or more lower alkyl esters of 3,3′,4,4′-benzophenonetetracarboxylic acid; an aromatic, meta- or para-substituted diamine which is free of aliphatic moieties; and a heterocyclic diamine, the molar ratio of heterocyclic diamine to tetracarboxylic acid diester in said precursor being in the range of about 0.4–0.42 to 1.0.

4,369,262

DENTAL MATERIAL BASED ON CROSSLINKED PLASTIC AND POLYMERIZABLE BINDER

Michael Walkowiak, Leverkusen; Wolfgang Podszun, Cologne; Bernhard Leusner, Leverkusen; Carlhans Süling, Odenthal, and Hans-Hermann Schulz, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 95,737, Nov. 19, 1979, abandoned. This application Jul. 16, 1981, Ser. No. 283,761

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2850916

Int. Cl.³ A61K *6/08*

U.S. Cl. 523—109 **5 Claims**

1. A dental material in paste form consisting essentially of

- (1) at least one phase of at least one finely divided, cross-linked plastic wherein at least 50% by weight of said finely divided, cross-linked plastic is made from at least one ester of methacrylic acid and a monohydric or polyhydric alcohol, said cross-linked plastic comprising 40 to 80% by weight of the dental material and said cross-linked plastic being made from a monomeric mixture containing 2 to 35% by weight of crosslinking agent and
- (2) a second phase consisting of polymerizable binder in which at least 50% by weight of said binder is at least one ester of methacrylic acid and a monohydric or polyhydric alcohol.

4,369,263

FRICTION MATERIAL CONTAINING STEEL WOOL AS REINFORCING AGENT

Noriaki Matsushima, Fujieda; Ken-ichi Noguchi, Yaizu, and Kazuhisa Hirano, Fujieda, all of Japan, assignors to Sumitomo Durez Company Ltd., Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,586

Claims priority, application Japan, Dec. 27, 1979, 54-169282

Int. Cl.³ C08L *61/06*

U.S. Cl. 523—152 **11 Claims**

1. In a friction material containing steel wool as the principal reinforcing material, the improvement wherein the steel wool is pretreated with a thermosetting resin to provide a coating of solid resin on the steel wool in a proportion of about 0.3 to 5 weight percent of solid resin based on the weight of steel wool.

4,369,264

AQUEOUS TREATING COMPOSITION FOR GLASS FIBER STRANDS USED TO PRODUCE MATS FOR THERMOPLASTIC POLYMERS

John A. Baumann, Lower Burrell, Pa.; Raymond H. Cates, Shelby, N.C. and Charles E. Picone, Lower Burrell, of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 30, 1980, Ser. No. 221,490

Int. Cl.^{3} C03C *25/02*

U.S. Cl. 523—209 **26 Claims**

1. Aqueous glass fiber treating composition for treating glass fibers that are gathered into strands and prepared into mats for reinforcing thermoplastic polymers, wherein the reinforced polymers have improved stampability, comprising:

a. an effective amount of lubricant,
b. an effective amount of solid, particulate, inorganic compound that has a moh hardness equal to or greater than glass and that is dispersible in water as a particulate solid,
c. one or more coupling agents,
d. adhesion promoting chemical agent to promote association of the glass fibers with the thermoplastic polymer,
e. a film-forming polymer, and
f. water.

26. Method of producing a mat of glass fiber strands for reinforcing thermoplastic polymers, wherein the reinforced thermoplastic polymer has improved stampability, comprising:

a. forming glass fibers from molten cones of glass at the tips of orifices in a bushing by attenuation;
b. sizing said glass fibers with an aqueous sizing composition, comprising:
  i. an effective amount of lubricant,
  ii. an effective amount of solid, particulate, inorganic compound that is dispersible in water as a solid particulate and has a moh hardness equal to or greater than glass,
  iii. one or more coupling agents,
  iv. adhesion promoting chemical agent to promote association of the glass fibers with the thermoplastic polymer, and
  v. water;
c. gathering said fibers into strand,
d. collecting said glass fiber strand into a package,
e. removing the strand from a plurality of the packages,
f. disposing of the plurality of glass fiber strands in a substantially uniform distribution in an approximate horizontal direction to produce the mat of glass fiber strands.

4,369,265

READILY DISPERSIBLE SILICONE-COATED FINELY DIVIDED SOLIDS

Gunter Buxbaum, Krefeld-Traar; Ottfried Schlak, Leverkusen; Franz Hund, and Lutz Leitner, both of Krefeld-Bockum, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,782

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927379

Int. Cl.^{3} C09C *3/12*

U.S. Cl. 523—212 **8 Claims**

1. A finely divided annealed solid coated with about 0.1 to 2% by weight of an organo-silicone polymer of the formula

$$R_a^{I}R_b^{II}R_c^{III}Si(OR^{IV})_d(OR^{V})_e(OH)_fO_{\frac{4-(a+b+c+d+e+f)}{2}}$$

wherein

R^{I}, R^{II}, R^{III} each independently is an optionally halogenated alkyl, alkenyl or alkyl radical having from 1 to 10 carbon atoms;
R^{IV} is an alkyl or alkenyl radical having from 9 to 24 carbon atoms;
R^{V} is an alkyl or alkenyl radical having from 1 to 8 carbon atoms;
the sum of a+b+c is from 1 to about 1.95;
d is a number from about 0.2 to 2;
e and f each independently is a number from 0 to 1;
the sum of d+e+f is from about 0.2 to 2; and
the sum of a+b+c+d+e+f is no more than 3.

7. A coating, coloring or paint pigmented with a finely divided solid according to claim 1.

4,369,266

CONCENTRATED DISPERSIONS OF FLUORINATED POLYMERS AND PROCESS FOR THEIR PREPARATION

Jürgen Kuhls, and Eduard Weiss, both of Burghausen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,463

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2908001

Int. Cl.^{3} C08L *3/00, 3/16*

U.S. Cl. 523—332 **13 Claims**

1. Process for concentrating a colloidal dispersion of a fluorinated polymer which contains at least one fluorine-containing emulsifier, said process comprising the steps of

(a) adding from 0.5 to 12% by weight of at least one stabilizing emulsifier calculated on the polymer solids weight of the dispersion,
(b) circulating the dispersion over a semi-permeable ultra-filtration membrane to separate the dispersion into a fluorinated polymer dispersion concentrate and an aqueous permeate which contains part of the fluorine-containing emulsifier and the stabilizing emulsifier, said circulation being at a conveying rate of 2 to 7 meters per second and effected by pumps which keep the fluorinated polymer free from contact with components which cause frictinal forces, and
(c) separately removing said concentrate and said permeate.

4,369,267

PROCESS FOR DISPERSING CARBON BLACK IN POLYETHYLENE

Chue-Kwok J. Keung, Dollard des Ormeaux, and Donald E. Rathgeber, St. Lambert, both of Canada, assignors to Union Carbide Canada Limited, Toronto, Canada

Filed May 9, 1980, Ser. No. 148,342

Claims priority, application Canada, Jun. 1, 1979, 328965

Int. Cl.^{3} B29B *1/04;* **C08K** *3/04;* **C08J** *3/22*

U.S. Cl. 523—351 **15 Claims**

1. A process for producing a polyethylene composition having fine particle size carbon black dispersed therein which process comprises:

(A) intensive mixing from 20% to 50% by weight of carbon black with from 80% to 50% by weight of a low density polyethylene to produce an initial masterbatch blend, then
(B) intensive mixing by kneading action said initial masterbatch blend with (i) a polymer selected from the group consisting of high density polyethylene and a propylene polymer, and (ii) low density polyethylene to produce an intermediate masterbatch blend wherein the amount of carbon black is from 1.1% to 46% by weight, the amount of polymer is from 9% to 85% by weight and the amount of total low density polyethylene is at least 5% by weight of the total intermediate masterbatch blend, then
(C) intensive mixing said intermediate masterbatch blend with a further amount of low density polyethylene so that the proportion of carbon black in the product is from 1.0% to 5% by weight and the proportion of polymer is from 1.0% to 10% by weight of the total composition, at least 50% of the remainder being low density polyethylene.

4,369,268

ORGANOPOLYSILOXANE COATING COMPOSITIONS

Frank D. Graziano, Lake Bluff, and Edmund J. Kuziemka, Naperville, both of Ill., assignors to Material Sciences Corporation, Elk Grove Village, Ill.

Filed Jun. 8, 1981, Ser. No. 271,219

Int. Cl.^{3} C08K *5/15*

U.S. Cl. 523—435 **7 Claims**

1. A fast-curing resin coating composition comprising:

(i) 10–25 parts of an epoxy resin of molecular weight 50,000 to 200,000 measured by gel permeation chromatography,
(ii) 1–3 parts of an etherified resol phenolic resin,
(iii) 1–4 parts of an epoxy resin of molecular weight from 300 to 500,
(iv) 1–3 parts of a silicone fluid comprised of methylphenylsiloxanes, dimethylsiloxanes and diphenyldimethylsiloxanes,
(v) 12–20 parts of an organopolysiloxane release resin prepared by
  (a) agitating a mixture comprising (A) an organohalosilane blend consisting essentially of about 60 mole percent methyltrichlorosilane, about 35 mole percent phenyltrichlorosilane, and about 5 mole percent dimethyldichlorosilane, (B) water, (C) acetone, and (D) a water-immiscible organic solvent, wherein there is present by weight in said mixture per part by weight of (A), about 1.7 to about 10 parts of (B), about 0.2 to about 5 parts of (C), and about 0.3 to about 5 parts of (D); and
  (b) separating the organic solvent solution of (F) from the resulting hydrolysis mixture of step (i), wherein (F) is a silanol-containing organopolysiloxane resin having an average ratio of about 1.05 organic radicals per silicon atom,
(vi) a catalytic amount of an organometallic curing agent, in a
(vii) suitable solvent, all of the parts being parts by weight.

4,369,269

CONDUCTIVE INK

William P. Harper, Phoenix, and Michael J. Taylor, Mesa, both of Ariz., assignors to Rogers Corporation, Rogers, Conn.

Filed Jun. 5, 1980, Ser. No. 156,670

Int. Cl.^{3} C08L *75/04, 63/00*

U.S. Cl. 523—459 **18 Claims**

1. An improved conductive ink for application to a previously hydrolyzed polymer surface comprising:

a thermosetting binder which is characterized as having hydroxyl functionality and the ability to form hydroxyl groups;
conductive particles; and
3 to 10% by weight of the binder of a multi-functional isocyanate, said isocyanate being characterized by the ability to migrate to the previously hydrolized polymer surface from the binder, said isocyanate reacting with the hydroxyl groups of the hydrolized polymer surface and the hydroxyl groups of the binder so as to cross-link the binder and the hydrolized polymer surface, said isocyanate having a molecular weight ranging between 150 and 350 and a low vapor pressure relative to other isocyanates which have a molecular weight ranging between 150 and 350.

4,369,270

PIGMENT DISPERSIONS AND USE THEREOF

Erwin Dietz, Kelkheim; Max Grossmann, and Michael Maikowski, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,792

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1979, 2901462

Int. Cl.^{3} C08L *1/26, 61/10*

U.S. Cl. 524—33 **30 Claims**

1. A dispersion containing

(a) a pigment,
(b) an oxalkylated novolak
(c) urea and/or a compound containing at least two aliphatic chains of more than 9 carbon atoms and connected by a bridge member, which compound is an ester or amide derived from a long-chain acid and a long-chain alcohol or a long-chain amine, an ester or amide of a polyhydric alcohol, a polyamine or an amino-alcohol and a long-chain acid, an ester or amide of a polybasic inorganic or organic acid and a long-chain alcohol or long-chain amine, an ester or amide of a long-chain acid with a hydroxy-alkane carboxylic acid or amino-acid and a long-chain alcohol or a long-chain amine, a urea or urethane from a long-chain isocyanate and long-chain amine or a long-chain alcohol, or a urea or urethane from a polyvalent-isocyanate and a long-chain amine or a long-chain alcohol; and
(d) water and agents for retarding the drying up of the dispersion.

4,369,271

LACQUER FOR RECORD CARRIERS, AND PROCESS FOR ITS PRODUCTION

Dietrich J. Bahr, Herrenberg, and Marian Briska, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,362

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019574

Int. Cl.^{3} C08L *1/14*

U.S. Cl. 524—40 **8 Claims**

1. A process for producing a mechanically stable, heat resistant lacquer for record carriers, said process comprising the steps of:

(1) forming a solution of cellulose aceto monobutyrate in a solvent;
(2) forming a solution of a copolymer of vinyl acetate and vinyl lauryl ester in a solvent;
(3) mixing together the two above solutions at a ratio of from 65 to 90% by weight cellulose aceto monobutyrate to 10–35% by weight copolymer; and
(4) adding a filler or a pigment to the mixture.

4,369,272

PROCESS FOR PREPARING POLYOLEFIN RESIN EXTENDED PIGMENTS COMPRISING SALT MILLING CRUDE PIGMENT WITH THE RESIN

Edward E. Jaffe, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 7, 1981, Ser. No. 281,196

Int. Cl.^{3} C08K *3/10, 5/34;* **C08L** *31/02;* **C09B** *48/00*

U.S. Cl. 524—88 **8 Claims**

1. A process comprising salt milling a crude organic pigment wherein from 10 to 75 percent by weight, based on the amount of pigment and resin present, of a thermoplastic resin selected from the class consisting of polyolefins and copolymers of ethylene with up to 25 percent by weight of a monomer selected from the class consisting of acrylic acid, methacrylic acid, vinyl acetate and oxidized ethylene units, is comilled with said pigment for at least one hour while maintaining said pigment and said resin in a finely divided free flowing state, and

recovering a resin extended pigment of pigmentary particle size.

4,369,273

LIQUID STABILIZING COMPOSITION AND CHLORINE CONTAINING THERMOPLASTICS STABILIZED THEREWITH

Martinus A. Snel, Haarlem, Netherlands, assignor to Nautamix B.V., Haarlem, Netherlands

Filed Aug. 22, 1980, Ser. No. 180,469

Claims priority, application Netherlands, Aug. 22, 1979, 7906338

Int. Cl.³ C08K *5/16, 5/34, 5/36;* **C09K** *15/30*

U.S. Cl. 524—89 **21 Claims**

1. Liquid stabilizing composition for use in chlorine containing thermoplastic polymers, comprising

- a. 0.1–3 wt % of one or more metal halides, such as zinc chloride and/or aluminum chloride or mixtures of the zinc chloride and/or aluminum chloride with magnesium chloride, calcium chloride, lithium chloride and barium chloride;
- b. 0.5–20 wt % of an ethoxylated C_5–C_{22} alkyl mercaptan with 2–8 ethoxy groups;
- c. 1–30 wt % of aliphatic unsaturated linear or branched monocarboxylic acids and/or aliphatic saturated and branched monocarboxylic acids;
- d. 4–30 wt % of a liquid organic phosphite;
- e. 0.5–25 wt % of an organic polyimine; and
- f. 0.2–10 wt % of an alkyl substituted naphthindole on positions 2 and 3.

18. Stabilized compositions comprising a thermoplastic polyvinyl halide substrate selected from one member of the group consisting of polyvinyl chloride and polyvinylidene chloride and 0.5–8% by weight, based upon the total composition, of the stabilizing composition of any one of the preceding claims.

4,369,274

HINDERED AMINE LIGHT STABILIZERS FOR POLYMERS

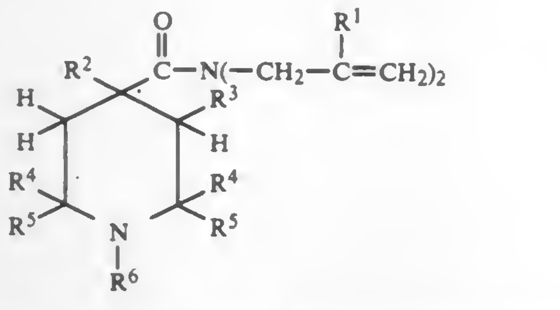
Walter M. Thomas, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,883

Int. Cl.³ C08K *5/34;* **C08F** *126/06;* **C07D** *211/94, 211/66, 211/62;* **C08F** *39/04*

U.S. Cl. 524—99 **11 Claims**

1. A compound of the formula (I)



(I)

wherein R^1 represents hydrogen, or C_1–C_4 alkyl; R^2 represents hydrogen, hydroxy, or C_1–C_8 alkoxy; R^3 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^4 and R^5 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; and, R^6 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxy, or oxyl.

4. A homopolymer of the compound of claim **1**, **2** or **3**.

6. A method of stabilizing a polymer which is normally subject to degradation by ultraviolet radiation which comprises incorporating into said polymer an ultraviolet stabilizingly effective amount of a compound or polymer of a compound of claim **1**.

4,369,275

MALONATE DERIVATIVES AS STABILIZERS FOR ORGANIC MATERIALS

Jean Rody, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

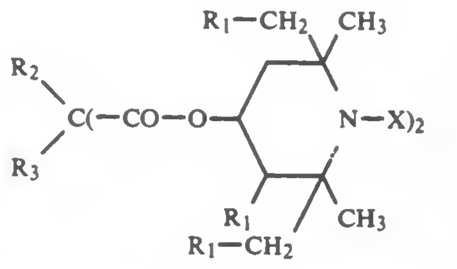
Continuation of Ser. No. 118,219, Feb. 4, 1980, Pat. No. 4,293,468, which is a continuation of Ser. No. 958,447, Nov. 7, 1978, abandoned, which is a continuation of Ser. No. 792,179, Apr. 29, 1977, abandoned. This application Jun. 8, 1981, Ser. No. 271,263

Claims priority, application Switzerland, May 4, 1976, 5558/76

Int. Cl.³ C08K *5/34;* **C07D** *401/12*

U.S. Cl. 524—103 **14 Claims**

1. A malonate of the formula I



(I)

in which R_1 is hydrogen or C_1–C_4-alkyl, R_2 is C_1–C_{12}-alkyl, R_3 is C_1–C_{12}-alkyl, and X denotes hydrogen, oxyl, C_1–C_{12}-alkyl, C_3–C_6-alkenyl, C_3–C_4-alkynyl, C_2–C_{21}-alkoxyalkyl, C_7–C_8-aralkyl, 2,3-epoxypropyl, an aliphatic acyl group selected from formyl, acetyl, acryloyl or crotonyl, or one of the groups $—CH_2COOR_4$, $—CH_2—CH(R_5)—OR_6$, $—COOR_7$ or $—CONHR_7$, in which R_4 is C_1–C_8-alkyl, C_3–C_6-alkenyl, phenyl, C_7–C_8-aralkyl or cyclohexyl and R_5 is hydrogen, methyl or phenyl and R_6 denotes hydrogen or acetyl, propionyl, butyryl, octanoyl, dodecanoyl, stearoyl, acryloyl, benzoyl, chlorobenzoyl, toluoyl, isopropylbenzoyl, 2,4-dichlorobenzoyl, 4-methoxybenzoyl, 3-butoxybenzoyl, 2-hydroxybenzoyl, 3,5,-di-t-butyl-4-hydroxybenzoyl, β-(3,5-di-t-butyl-4-hydroxyphenyl)-propionyl, phenylacetyl, cinnamoyl or hexahydrobenzoyl and R_7 is C_1–C_{12}-alkyl, cyclohexyl, phenyl or benzyl.

11. A method of stabilizing an organic material ordinarily subject to light- and thermal-induced degradation which comprises adding to the organic material a stabilizing amount of a malonate of claim **1** to prevent said degradation.

4,369,276

PYRROLE STABILIZERS FOR CHLORINE-CONTAINING THERMOPLASTICS

Hermann O. Wirth; Jürgen Büssing, both of Bensheim, and Hans-Helmut Friedrich, Lautertal, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

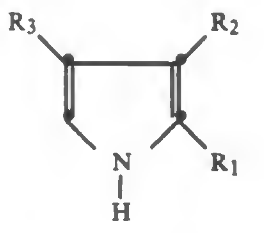
Continuation-in-part of Ser. No. 164,194, Jun. 30, 1980, Pat. No. 4,290,940. This application May 26, 1981, Ser. No. 266,872

Claims priority, application Switzerland, Jun. 28, 1979, 6035/79

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—104 **6 Claims**

1. A chlorine-containing thermoplastic, containing a pyrrole of the formula I



(I)

in which R_1 is hydrogen, alkyl, cycloalkyl, aryl, alkoxycarbonylmethyl, free or esterified α-hydroxyalkyl, free or esterified α-hydroxycycloalkylmethyl, free or esterified α-hydroxyaralkyl, alkoxymethyl, alkylthiomethyl, aryloxymethyl, arylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, aralkylthiomethyl, alkoxy, alkylthio, cycloalkoxy, cycloalkylthio, aralkoxy, arylalkylthio, aryloxy, arylthio, halogen, mercapto, mercaptomethyl or hydroxyl, R_2 is hydrogen, alkyl, cycloalkyl, aryl, free or esterified α-hydroxyalkyl, in which the alkyl moiety together with R_1 can be alkylene, or free or esterified α-hydroxycycloalkylmethyl, free or esterified α-hydroxyaralkyl, alkoxy, cycloalkoxy, aralkoxy, aryloxy, alkylthio, cycloalkylthio, aralkylthio, arylthio, alkoxymethyl, alkylthiomethyl, aryloxymethyl, arylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, aralkylthiomethyl, hydroxyl, cyano, free carboxyl or carboxyl in the form of a salt or an ester, or acyl, it being possible for acyl together with R_1 to be —CO-alkylene, in which —CO— is bonded in the 3-position, or R_2 is halogen, mercapto or mercaptomethyl, and R_3 is alkyl, cycloalkyl, aralkyl, aryl, free or esterified hydroxymethyl, alkoxymethyl, alkylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, arylalkylthiomethyl, aryloxymethyl or arylthiomethyl, alkoxy, alkylthio, cycloalkoxy, cycloalkylthio, aralkoxy, aralkylthio, aryloxy, arylthio, halogen, mercapto or mercaptomethyl, or if R_2 is carboxyl in the form of a salt, R_3 is hydrogen and R_1 is as defined, or in which R_3 is hydroxyl and R_1 is hydrogen, alkyl or aryl and R_2 is hydrogen, alkyl, aryl or acyl, or a salt thereof,

and at least one costabilizer selected of the group consisting of epoxy compounds, phosphites, metal carboxylate or phenolate stabilizers and organo-tin compounds; the weight ratio of pyrrole to co-stabilizer being from about 2:1 to 1:8.

4,369,277

PYRROLE-STABILIZED CHLORINE-CONTAINING THERMOPLASTICS

Hermann O. Wirth; Jürgen Büssing, both of Bensheim, and Hans-Helmut Friedrich, Lautertal, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

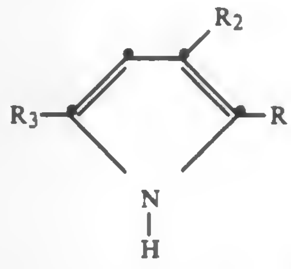
Filed Jun. 22, 1981, Ser. No. 276,301

Claims priority, application Switzerland, Jun. 27, 1980, 4969/80; May 16, 1981, 3168/81

Int. Cl.³ C08K *5/34*

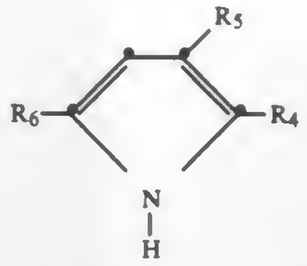
U.S. Cl. 524—104 **9 Claims**

1. A chlorine-containing thermoplastic which contains a pyrrole of the formula I



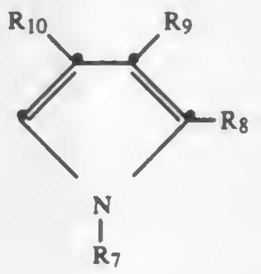
(I)

in which R_1 is alkyl, cycloalkyl, aryl, alkoxycarbonylmethyl, esterified or unesterified α-hydroxyalkyl, esterified or unesterified α-hydroxycycloalkylmethyl, esterified or unesterified α-hydroxyaralkyl, alkoxymethyl, alkylthiomethyl, aryloxymethyl, arylthiomethyl, cycloalkoymethyl, cycloalkylthiomethyl, aralkoxymethyl, aralkylthiomethyl, alkoxy, alkylthio, cycloalkoxy, cycloalkylthio, aralkoxy, aryalkylthio, aryloxy, arylthio, mercapto, mercaptomethyl, hydroxy, cyano, esterified or unesterified carboxyl, acyl or halogen, with the proviso that if R_1 is halogen, R_2 must not be halogen at the same time, R_2 is hydrogen, alkyl, cycloalkyl, aryl, esterified or unesterified α-hydroxyalkyl, in which the alkyl moiety can also jointly with R_1 be alkylene, esterified or unesterified α-hydroxycycloalkylmethyl, esterified or unesterified α-hydroxyaralkyl, alkoxy, cycloalkyloxy, aralkoxy, aryloxy, alkylthio, cycloalkylthio, aralkylthio, arylthio, alkoxymethyl, alkylthiomethyl, aryloxymethyl, arylthiomethyl, cycloalkoxymethyl, cycloalkylthiomethyl, aralkoxymethyl, arylalkylthiomethyl, hydroxyl, mercapto, mercaptomethyl or halogen, with the proviso that if R_2 is halogen, R_1 must not be halogen at the same time, and R_3 is hydroxyl or mercapto, with the further proviso that R_1 and R_3 cannot both be hydroxyl at the same time, or of the formula II



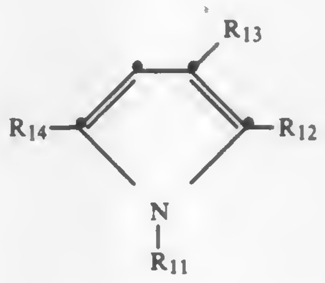
(II)

in which R_4 and R_6 are defined as for R_2, with the exclusion of hydrogen, but can both be halogen simultaneously, and R_4 can also be esterified or unesterified carboxyl, acyl or cyano, and R_5 is defined like R_3, with the further proviso that R_4 and R_6 cannot both be hydroxyl at the same time, or of the formula III



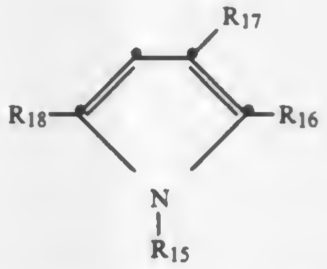
(III)

in which R_7 is alkyl, cycloalkyl, aryl, acyl or alkoxycarbonylalkyl, R_8 and R_9 are defined like R_2 and can both be halogen or hydrogen, and either R_8 or R_9 can additionally be esterified or unesterified carboxyl, acyl or cyano, and R_{10} is defined like R_3, or of the formula IV



(IV)

in which R_{11} is defined like R_7, R_{12} like R_1 and R_{13} like R_2, and R_{12} and R_{13} can both be hydrogen or halogen, and R_{14} is defined like R_3, or of the formula V



(V)

in which R_{15} is defined like R_7, R_{16} like R_1, R_{17} like R_3 and R_{18} like R_2, and R_{16} and R_{18} can both be hydrogen or halogen.

4,369,278

RESIN COMPOSITION FOR INJECTION MOLDING AND METHOD FOR PRODUCING THE SAME

Hideo Kasahara, Yokohama; Kunio Fukuda, Chigasaki, and Yukihisa Mizutani, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,807

Claims priority, application Japan, Sep. 16, 1980, 55/127119

Int. Cl.^{3} C08K *5/51*

U.S. Cl. 524—147 **9 Claims**

1. A resin composition for injection molding, which is composed of 20 to 80 wt.% of a polyphenylene ether and 80 to 20 wt.% of a rubber-reinforced styrene polymer and contains not more than 5000 ppm of volatile substances of which molecular weight is about 300 or less.

4,369,279

LOW-TEMPERATURE CURING POLYSILOXANE COATING COMPOSITION WITH FLUOROCARBON

Dennis P. Emerick, Aston, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 21, 1981, Ser. No. 313,590

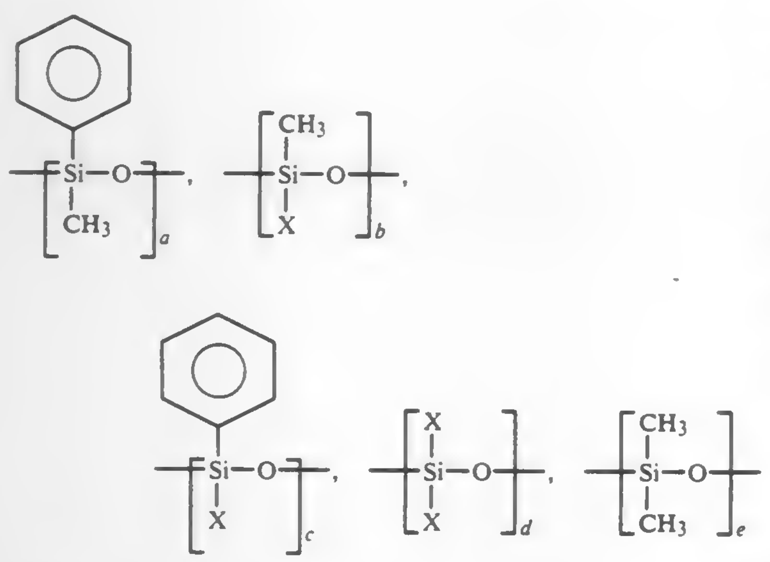
Int. Cl.^{3} C08K *5/54*

U.S. Cl. 524—267 **3 Claims**

1. A coating composition comprising:

(a) a binder comprised of

(1) 40–99%, based on the weight of the binder, of a polysiloxane resin-forming precondensate which has one or more of the units



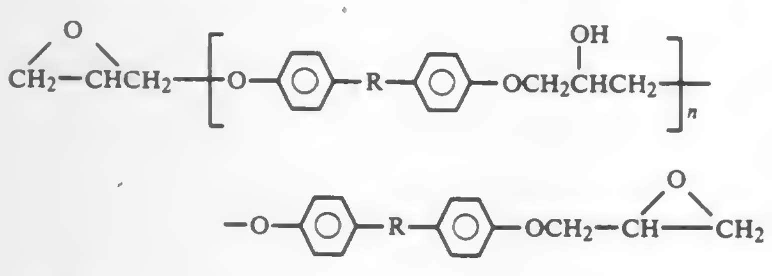
wherein

X is a functional group which allows crosslinking at its site, and

a, b, c, d and e are of a magnitude and in proporations which provide the resin with a degree of substitution, measured as the ratio of phenyl plus methyl groups to silicon atoms, of a least about 1.0, and a ratio of phenyl groups to silicon atoms of at least about 0.3,

and which has a silanol content above 4%, based on the weight of the precondensate; and

(2) 1–40%, based on the weight of the binder, of an epoxy resin having the formula



wherein

n is an integer from 0–42, and

R is an alkylene group of 1–4 carbon atoms;

(b) 5–60%, based on the weight of the binder, of a fluorocarbon copolymer of tetrafluoroethylene and hexafluoropropylene containing by weight about 8–25 mole percent hexafluoropropylene;

(c) 0.1–5%, based on the weight of the binder, of a multifunctional amine catalyst;

(d) 0.2–10% , based on the weight of the binder, of a silicone fluid which is a dimethyl polysiloxane fluid having a viscosity of 50–5000 centistokes measured at 25° C.; and

(e) a inert liquid carrier.

4,369,280

POLYBUTYLENE TEREPHTHALATE MOLDING COMPOSITIONS AND ARTICLES MOLDED THEREFROM

Ronald L. Dieck, Sunnyvale, Calif.; Frank N. Liberti, Mt. Vernon, Ind., and Allen D. Wambach, Monroeville, Pa., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 4, 1981, Ser. No. 289,906

Int. Cl.^{3} C08K *5/06*

U.S. Cl. 524—281 **19 Claims**

1. A polybutylene terephthalate molding composition which provides moldings of improved impact resistance, containing a component selected from the group consisting of ethylene-ethyl acrylate copolymers, ethylene-vinyl acetate copolymers, and mixtures of said copolymers; the weight of said component being between 0.1% and 4.5% of the weight of said composition, the molar ratio of said ethylene to each of said ethyl acetate and to said vinyl acetate being between 1:10 and 10:1, and the molecular weight of said copolymers being between 100,000 and 1,000,000.

4,369,281

POLYVINYL ALCOHOL COMPOSITION, PROCESS FOR ITS PREPARATION AND ITS USE

Wolfgang Zimmermann, and Albrecht Harreus, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,459

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017744; Mar. 16, 1981, 3110166

Int. Cl.^{3} C08K *5/05*

U.S. Cl. 524—379 **9 Claims**

1. Water-soluble, flowable and thermoplastically workable polyvinyl alcohol composition consisting of

(a) 60 to 98 percent by weight of a partially solvolyzed graft copolymer of a vinyl ester and a polyethylene glycol having a molecular weight of from 5,000 to 1,000,000, the viscosity of the 4 percent by weight aqueous solution of the partially solvolyzed graft copolymer being of from 3 to 40 mPa.s (measured at a temperature of 20° C.),

(b) 2 to 40 percent by weight of water and

(c) 2 to 20 percent by weight of a polyhydric alkanol having a melting point of from 25° to 100° C.

4,369,282

MODIFIED POLYESTER COMPOSITIONS

Richard W. Campbell, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 54,403, Jul. 3, 1979, Pat. No. 4,267,286. This application Dec. 19, 1980, Ser. No. 218,396

Int. Cl.^{3} C08L *67/02*

U.S. Cl. 524—445 **8 Claims**

1. A thermoplastic composition comprising:

(a) a polyester composition comprising:

(i) a poly(1,4-butylene terephthalate) resin;

(ii) a blend of a poly(1,4-butylene terephthalate resin and a poly(ethylene terephthalate) resin;

(iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic/aliphatic or aliphatic polyester;

(iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or

(v) a blend of (iii) and a poly(1,4-butylene terephthalate) resin;

(b) an impact modifier therefor comprising a combination of:

(i) a polyacrylate resin or a vinyl aromaticdiene block copolymer resin; and

(ii) a poly(1,3-butylene terephthalate) resin, in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together; and

(c) a component selected from the group consisting essentially of fillers, reinforcing agents and mixtures of the two, said component being present in an amount of from about 1 to about 60 parts by weight per 100 parts by weight of (a), (b) and (c) together.

4,369,283

HIGH SOLIDS CAN COATING COMPOSITION CONTAINING EPOXY, ACRYLIC AND AMINOPLAST RESINS

Lili W. Altschuler, Wynnewood, Pa., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 6, 1981, Ser. No. 241,092

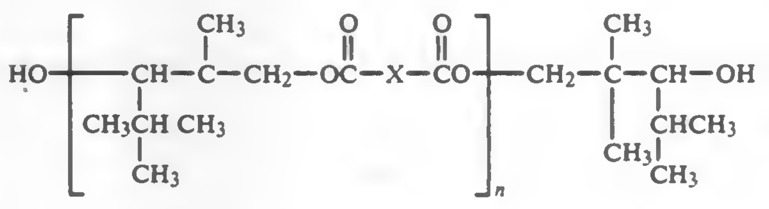
Int. Cl.^{3} C08L *67/02*

U.S. Cl. 524—451 **11 Claims**

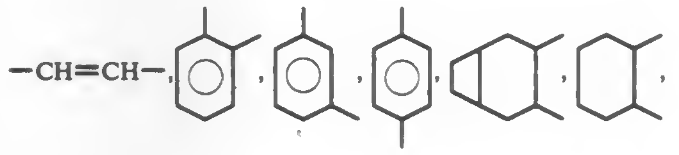
1. A high solids exterior can coating composition consisting essentially of:

A. a vehicle blend consisting essentially of:

1. from 5 to 22% by weight of acrylic polymer having a weight average molecular weight determined by gel permeation chrometography using a polystyrene standard, of from at least 50,000 to 90,000,
2. from 25 to 50% by weight of polyester having the structure:



or the isomer through the secondary hydroxyl group or mixtures thereof, wherein X=



and wherein n=0–10 and at least 70% by weight is n=3 or less provided that only a maximum of 25% by weight of n=0; and wherein the polyester has a number average molecular weight not exceeding 1,000, determined by gel permeation chromatography using a polypropylene glycol standard;

3. from 5 to 15% by weight of castor oil which has not been dehydrated;
4. from 20 to 50% of an aminoplast resin;
5. pigments comprising TiO_2 and talc in proportions of from 10 to 90% by weight of each, the ratio of pigments to vehicle solids being in the range of 0.8:1 to 1.4:1 by weight; and
6. from 0.2 to 2.0% by weight of a catalyst which is a blocked sulfonic acid catalyst wherein the sulfonic acid is selected from the group consisting of methane sulfonic acid, paratoluene sulfonic acid alkyl benzene sulfonic acid wherein the alkyl group contains 2–12 carbon atoms, and 2-methacryloxyethyl sulfonic acid, its homopolymers and copolymers; and

B. aliphatic and aromatic hydrocarbon solvents;

said coating composition having a solids contents of at least 70% by weight.

4,369,284

THERMOPLASTIC ELASTOMER GELATINOUS COMPOSITIONS

John Y. Chen, Pacifica, Calif., assignor to Applied Elastomerics, Incorporated, Pacifica, Calif.

Continuation-in-part of Ser. No. 916,731, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,315, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 778,343, Mar. 17, 1977, abandoned. This application Mar. 28, 1980, Ser. No. 134,977

Int. Cl.^{3} C08K *5/01*

U.S. Cl. 524—476 **19 Claims**

1. A gelatinous elastomer composition consisting essentially of:

(a) 100 parts by weight of a triblock copolymer of the general configuration poly(styrene-ethylene-butylene-styrene) wherein said styrene end block to ethylene and butylene center block ratio is within the range of from between 31:69 to 40:60;

(b) from about 300 to about 1,600 parts by weight of an plasticizing oil selected from the group consisting of petroleum paraffinic oils, petroleum naphthenic oils, synthetic polybutene oils, synthetic polypropene oils, synthetic polyterpene oils and mixtures thereof; said oils having an average molecular weight of between about 200 to about 700; and

(c) said gelatinous elastomer composition being characterized as having an elongation at break of at least about 1,600%, an ultimate tensile strength of at least about 8×10^{5} dyne/cm^{2}, and a gel rigidity of substantially not greater than about 700 gram Bloom.

4,369,285

POLYAMIDE MOULDING COMPOSITIONS WITH IMPROVED TOUGHNESS

John R. Sanderson, Austin, Tex.; Dieter Neuray, Krefeld, Fed. Rep. of Germany; Dietrich Michael, Krefeld, Fed. Rep. of Germany, and Heinrich Bonten, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,270

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931689

Int. Cl.^{3} C08L *77/02;* **C08G** *69/14*

U.S. Cl. 524—538 **7 Claims**

1. A reinforced and/or filled polyamide moulding composition which contains from 0.5 to 5% by weight, based on the total composition, of a thermoplastic polyurethane which has been produced while maintaining an NCO/OH ratio of from 0.98:1 to 1.1:1.

4,369,286

MODIFIED AMINOPLAST RESINS CONTAINING METHYLOLMELAMINE ETHERIFIED WITH A MONOALCOHOL AS MODIFIER

Hubert Czepel; Friedl Heger, and Wilhelm Dobramysl, all of Linz, Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Nov. 3, 1981, Ser. No. 317,830

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044151

Int. Cl.^{3} C08L *61/32*

U.S. Cl. 524—598 **3 Claims**

1. A modified aminoplast resin based on melamine and formaldehyde or urea and formaldehyde, which contains, as the modifier, 0.5 to 5% by weight, relative to an aqueous solution

of an aminoplast precondensate having a solids content of 50 to 65% by weight, of a methylolmelamine having a molar ratio of melamine to formaldehyde of 1:3 to 1:6, which is etherified with a mono-alcohol having a chain length of 1 to 4 carbon atoms, in a molar ratio of melamine to alcohol of 1:2 to 1:6.

4,369,287
PERMANENT FLUXING AGENT AND SOLDER-THROUGH CONFORMAL COATING

Wendell R. Hutchinson, and John D. Shurboff, both of Coral Springs, Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 16, 1981, Ser. No. 243,980

Int. Cl.^{3} C08K *5/01, 5/13;* **B32B** *15/00;* **C08F** *20/04*

U.S. Cl. 524—700 **14 Claims**

1. A method of providing a flux and solder-through coating for electrical components or assemblies and comprising the steps of melting a copolymer of ethylene and an organic acid, the copolymer having a molecular weight of about 2000 to about 3000, having a density of about 0.93 to about 0.95 and the ratio of ethylene to acid being from about 40/975 to about 160/825, and of applying the coating to a component or assembly.

12. A flux and solder-through coating for electrical components or assemblies and comprising:

a copolymer of ethylene and an organic acid, the copolymer having a molecular weight of about 2000 to about 3000, having a density of about 0.93 to about 0.95, and the ratio of ethylene to acid being from about 40/975 to about 160/825;
an aliphatic hydrocarbon; and
a terpene.

4,369,288
ODORLESS OR LOW-ODOR CROSSLINKABLE COMPOUND AND RESIN COMPOSITION CONTAINING THE SAME

Tohru Koyama, Hitachi; Toshikazu Narahara, Ibaraki, and Yuji Aimono, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 139,025, Apr. 10, 1980, Pat. No. 4,297,471. This application Jun. 12, 1981, Ser. No. 273,034

Claims priority, application Japan, Apr. 13, 1979, 54-45596; Apr. 17, 1979, 54-47677

Int. Cl.^{3} C08L *67/02, 61/18, 13/00*

U.S. Cl. 525—48 **8 Claims**

1. An odorless or low-odor resin composition comprising:

(A) An unsaturated polyester resin or a polybutadiene resin modified with acrylic acid or methacrylic acid, and
(B) a crosslinkable compound obtained by reacting an aromatic hydrocarbon-formaldehyde resin with an α,β-unsaturated monocarboxylic acid or an ester thereof in the presence of an esterification or ester interchange catalyst.

4,369,289
MASTERBATCH COMPOSITION COMPRISING A MATRIX HAVING A POLYSILOXANE DISPERSED THEREIN AND A METHOD FOR THE PREPARATION THEREOF

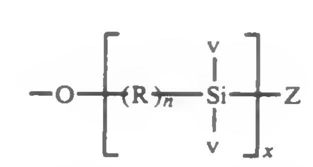
Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,328,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 19, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Aug. 20, 1981, Ser. No. 294,784

Int. Cl.^{3} C08L *23/06, 23/16, 23/26, 83/06*

U.S. Cl. 525—105 **25 Claims**

1. A moisture resistant masterbatch composition comprising a thermoplastic resin matrix containing dispersed therein a polysiloxane, capable of subsequent reaction with an alkylene-alkyl acrylate copolymer, containing a repeating unit of the formula:



$$-O-\left[(R)_n-\overset{V}{\underset{V}{\overset{|}{\underset{|}{Si}}}}-\right]_x-Z$$

wherein R is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is a hydrolyzable group, n is an integer having a value of one to 18 inclusive and x is an integer having a value of at least 2.

4,369,290
AMINOMETHYL-PHENOL CROSS-LINKING COMPOUNDS

James M. Evans, Lynn Haven, Fla., and James T. K. Woo, Medina, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,884

Int. Cl.^{3} C08L *63/00, 61/34*

U.S. Cl. 525—137 **7 Claims**

1. A heat curable coating thermosetting composition, comprising:

50% to 97% by weight of an active hydrogen polymer containing a polymeric structure having reactive hydrogen groups selected from amide groups, amine groups, or thiol groups; and
3% to 50% by weight of cross-linking aminomethyl substituted aromatic ring phenol derivative containing an aromatic ring, a free hydroxyl group attached to the aromatic ring, and at least two methylene amine groups attached to the aromatic ring wherein said hydroxyl group is conjugated with at least one of the methylene amine groups, said aminomethyl derivative being heat reactive whereby said conjugated methylene amine group is activated to cross-link with said reactive hydrogen polymer.

4,369,291
POLYENE/α-OLEFIN COPOLYMERS

Klaus-Peter Arlt, Senden Muenster; Ulrich Grigo, and Rudolf Binsack, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

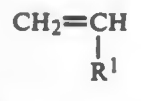
Continuation-in-part of Ser. No. 142,899, Apr. 23, 1980, abandoned. This application Aug. 3, 1981, Ser. No. 289,389

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917403; European Pat. Off., Apr. 18, 1980, 80 102 093.4; Japan, Apr. 25, 1980, 55-54407

Int. Cl.^{3} C08F *279/02*

U.S. Cl. 525—247 **4 Claims**

1. A process for making a copolymer of from 5 to 95% by weight of a straight-chain, branch-chain or cross-linked, but solvent swellable, homopolymeric polyene and having at least 90% 1,4 linkages and from 5 to 95% by weight of an α-olefin of the formula



$$CH_2{=}\underset{\displaystyle R^1}{\underset{|}{CH}}$$

wherein

R^1 is alkyl having from 1 to 16 carbon atoms or phenyl, which comprises reacting at least one α-olefin of said formula with a solid catalytic complex of $TiCl_3$ and an aluminum compound of the formula $AlR^2{}_nX_{3-n}$ wherein
R^2 is C_1–C_{10} alkyl,
X is halogen and $O<n\leqq 3$ in the presence of a solution of said polyene in an inert solvent or in the presence of a gel of said polyene swelled in an inert solvent and producing a final linkage between resulting polyolefin and said polyene at the end of the polymerization by adding to the reaction mixture a dihalogen aluminum alkyl of the formula X_2AlR^3 wherein
R^3 is C_1–C_{18} alkyl and
X is halogen.

4,369,292
ORGANIC PIGMENTS

William W. Maslanka, London-British Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

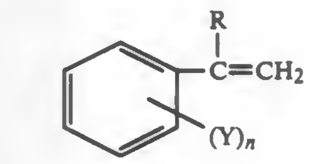
Division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 12, 1980, Ser. No. 158,859

Int. Cl.^{3} C08F *267/10*

U.S. Cl. 524—535 **8 Claims**

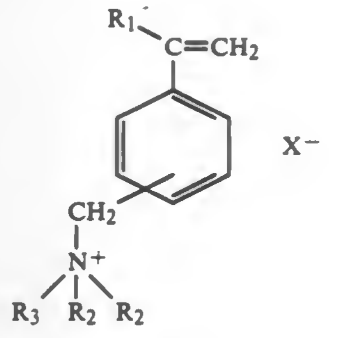
1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula

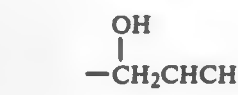


wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of:

(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula:

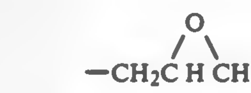


wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1–C_4 alkyl, R_3 is hydrogen, a C_1–C_4 alkyl,



$$-CH_2\overset{\displaystyle OH}{\overset{|}{C}H}CH_2Y$$

where Y is hydroxyl or halogen,



$$-CH_2\overset{\displaystyle O}{\overset{/\ \backslash}{C\,H\,CH_2}},$$

and $—CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,369,293
CATALYST FOR THE PREPARATION OF BISPHENOLS

Frieder Heydenreich, Ratingen; Claus Wulff, Krefeld; Lothar Klein, Leverkusen; Hans-Jürgen Meissner, and Norbert Bachem, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 172,936, Jul. 28, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 273,005

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931036

Int. Cl.^{3} C08F *8/34*

U.S. Cl. 525—333.5 **1 Claim**

1. A catalyst suitable for preparing bisphenols from phenols and compounds containing carbonyl groups comprising a styrene/divinyl benzene copolymer containing from 0.2 to 25% by weight of polymerized divinyl benzene and having a degree of substitution of at least 0.9 groups derived from sulphochloride groups of which 15 to 40 mole percent are sulfonic acid mercapto alkyl amide groups and the remainder are sulfonic acid groups.

4,369,294
NOVEL BLOCK COPOLYMERS INCLUDING ACRYLONITRILE SEQUENCES AND GLUTARIMIDE UNITS AND PROCESSES FOR PREPARING SAME

Vladimir A. Stoy, Princeton, N.J., assignor to S.K.Y. Polmers, Princeton, N.J.

Division of Ser. No. 188,224, Sep. 17, 1980, Pat. No. 4,331,783, which is a continuation-in-part of Ser. No. 166,032, Jul. 7, 1980. This application Nov. 20, 1981, Ser. No. 323,468

Int. Cl.^{3} C08F *293/00, 220/48, 220/52*

U.S. Cl. 525—340 **13 Claims**

1. A process for producing a novel block copolymer of a molecular weight of from 10,000 to 2,000,000 comprised of acrylonitrile sequences and sequences including a major portion of glutarimide units, each of said sequences having a molecular weight of at least 400 , which comprises;

(a) contacting a precursor block copolymer comprised of acrylonitrile and acrylamide sequences with a strongly acid catalyst at a temperature of between 15° and 185° C. for a time sufficient to effect conversion of units forming said acrylamide sequences to glutarimide units; and
(b) recovering said block copolymer comprised of acrylonitrile sequences and sequences including a major portion of glutarimide units.

4,369,295
IMPREGNATED SECOND VALENCE CHROMIUM COMPOUND IN SUPPORTED CATALYST

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 106,350, Dec. 21, 1979, Pat. No. 4,325,839. This application Nov. 3, 1981, Ser. No. 317,737

Int. Cl.^{3} C08F *4/22, 4/78*

U.S. Cl. 526—96 **21 Claims**

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst having chromium present in both the hexavalent state and a lower valence state, said catalyst being produced by a process comprising forming a silica-containing support containing hexavalent chromium, thereafter as a separate step anhydrously impregnating said support with a chromium component in an anhydrous solvent wherein the chromium has a valence of less than 6 , and thereafter removing said solvent by gentle heating at a temperature of no more than about 100° C. and recovering said catalyst as the finished product of the process and wherein a weight ratio of said

hexavalent chromium to said chromium having a valence of less than 6 is within the range of about 0.1:1 to 10:1.

4,369,296

PROCESS FOR THE PRODUCTION OF METHYL METHACRYLATE HOMO- OR CO-POLYMERS

Wolfgang Podszun, Cologne; Carlhans Süling, Odenthal, and Heinrich Alberts, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,877

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010373

Int. Cl.^{3} C08F *2/00, 120/18*

U.S. Cl. 526—209 **7 Claims**

1. A process for the polymerisation of methyl methacrylate or mixtures thereof with up to 25%, by weight, based on total monomer, of vinyl monomers copolymerisable therewith, wherein polymerisation is carried out in the presence of from 0.01 to 10%, by weight, based on total monomer, of at least one enol ether derived from an aliphatic or cycloaliphatic aldehyde or ketone.

4,369,297

DIETHYNYLBENZENE-ETHYNYLPYRENE COPOLYMERS

Norman Bilow, Encino, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 207,829, Nov. 17, 1980, Pat. No. 4,324,830. This application Sep. 30, 1981, Ser. No. 307,345

Int. Cl.^{3} C08F *238/00*

U.S. Cl. 526—284 **7 Claims**

1. A homogeneously compounded composition comprising a resinous copolymer of diethynylbenzene and ethynylpyrene.

4,369,298

NOVEL CURED RESIN, PROCESS FOR PRODUCTION THEREOF, AND LENS COMPOSED OF SAID RESIN FROM BIS(ALKYLENEOXYPHENYL)-DIACRYLATE, BIS(ALKYLENEOXYPHENYL)DIALLYL ETHER, BIS(ALKYLENEOXYPHENYL)DIALLYL CARBONATE MONOMERS

Yasuji Kida, Kudamatsu, and Kazuo Shikata, Tokuyama, both of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

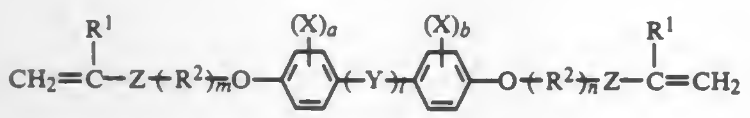
Filed May 19, 1981, Ser. No. 265,421

Claims priority, application Japan, May 27, 1980, 55-69543; Jun. 5, 1980, 55-74917; Mar. 9, 1981, 56-32485

Int. Cl.^{3} C08F *12/24, 216/12*

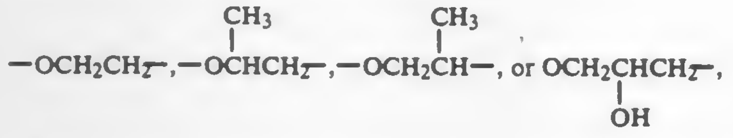
U.S. Cl. 526—313 **31 Claims**

1. A cured resin consisting substantially of a first polymer unit derived from an unsaturated compound having two terminal vinyl groups represented by the following general formula



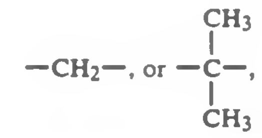
$$CH_2=\overset{R^1}{C}-Z(R^2)_mO-C_6H_4(X)_a-(Y)_l-C_6H_4(X)_b-O(R^2)_nZ-\overset{R^1}{C}=CH_2$$

wherein R^1 is hydrogen or methyl, R^2 is



$$-OCH_2CH_2-,\ -O\overset{CH_3}{C}HCH_2-,\ -OCH_2\overset{CH_3}{C}H-,\ \text{or}\ OCH_2\underset{OH}{C}HCH_2-,$$

each of said groups being bonded to Z by its bond located on the left hand side on the sheet surface, Z represents —CO—, $—CH_2—$, or $—CH_2OCO—$, each of said groups being bonded by its bond located on the left hand side on the sheet surface to the carbon atom to which R^1 is bonded, X is halogen, Y is —O—, $—SO_2—$,



$$-CH_2-,\ \text{or}\ -\underset{CH_3}{\overset{CH_3}{C}}-,$$

l is 0 or 1, m and n, independently from each other, are an integer of 1 to 4, and a and b, independently from each other, are integers of 1 to 4, and a second polymer unit derived from another unsaturated compound radical-polymerizable with the first-mentioned unsaturated compound, said polymer units being bonded to each other at random.

4,369,299

ACRYLIC RESIN HAVING EXCELLENT SOLVENT RESISTANCE AND MOLDABILITY

Makoto Honda, Tokyo; Kobe Ozawa, Fujisawa; Kazuhiro Hosoya, Tokyo, and Jiro Kurita, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 957,887, Nov. 6, 1978, Pat. No. 4,246,382. This application Feb. 29, 1980, Ser. No. 126,117

Claims priority, application Japan, Nov. 11, 1977, 52-134728; Feb. 22, 1978, 53-19514; May 17, 1978, 53-58476; Jul. 6, 1978, 53-81438; Mar. 5, 1979, 54-25214

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.^{3} C08F *2/38, 20/14*

U.S. Cl. 526—329.7 **5 Claims**

1. An acrylic resin having an intrinsic viscosity [η] of about 0.028 to about 0.117 l/g and a weight-average molecular weight to number-average molecular weight ratio (Mw/Mn), measured by gel permeation chromatography of about 2.3 to about 6.0, said resin comprising the polymerization product of (1) about 50 to 100 wt. % of methyl methacrylate and (2) 0 to about 50 wt. % of at least one monomer selected from the group consisting of acrylic ester monomer amd methacrylic ester monomer, said acrylic ester monomer comprising the reaction product of an alkyl alcohol having 1 to 8 carbon atoms and acrylic acid and said methacrylic ester comprising the reaction product of an alkyl alcohol having 2 to 12 carbon atoms and methacrylic acid.

4,369,300

ACRYLATED URETHANE SILICONE COMPOSITIONS

Richard G. Carter, Brookfield, Conn.; Walter P. Miller, and Stuart L. Watson, Jr., both of South Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

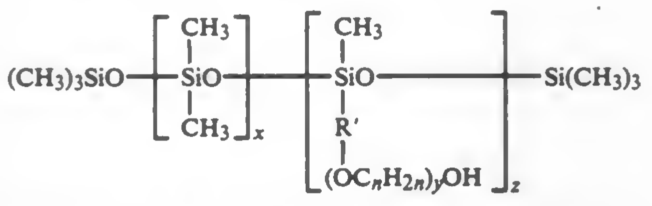
Continuation-in-part of Ser. No. 260,921, May 6, 1981, abandoned, which is a continuation of Ser. No. 97,447, Nov. 26, 1979, abandoned. This application Jan. 8, 1982, Ser. No. 337,481

Int. Cl.^{3} C08G *77/04*

U.S. Cl. 528—28 **14 Claims**

1. Acrylated urethane silicone reaction products of the reaction of:

(A) a silicone carbinol of the formula



$$(CH_3)_3SiO-\left[\underset{CH_3}{\overset{CH_3}{Si}}O\right]_x-\left[\overset{CH_3}{\underset{\underset{(OC_nH_{2n})_yOH}{R'}}{Si}}O\right]_z-Si(CH_3)_3$$

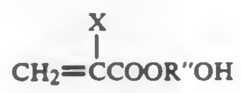
wherein R' is an alkylene group having from 1 to 16 carbon atoms; n is an integer having a value of 2 or 3; x has an average value of from 1 to 1000; y has an average value of from 0 to 15; and z has an average value of from 4 to 6;

(B) an organic polyisocyanate of the formula

$Q(NCO)_m$.

wherein m has a value of from 2 to 5 and Q can be linear or branched alkylene having from 1 to 10 carbon atoms; arylene, alkarylene or aralkylene having from 6 to 12 carbon atoms; cycloalkylene having from 5 to 10 carbon atoms; or bicycloalkylene having from 7 to 15 carbon atoms; and

(C) a hydroxyalkyl acrylyl compound of the formula



$$CH_2=\overset{X}{C}COOR''OH$$

wherein X is hydrogen or methyl and R'' is a linear or branched divalent alkylene having from 2 to about 5 carbon atoms.

4,369,301

LACQUER POLYISOCYANATES, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF AS ISOCYANATE COMPONENT IN THERMOSETTING TWO-COMPONENT POLYURETHANE LACQUERS

Eberhard König, Kronberg; Josef Pedain, Cologne, and Hans J. Kreuder, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,030

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039824

Int. Cl.^{3} C08G *18/80*

U.S. Cl. 528—45 **5 Claims**

1. A lacquer polyisocyanate, characterized by a content, based on the weight of said polyisocyanate, but excluding the weight of the blocking agent, of:

(a) free isocyanate groups of from about 0 to 8%, by weight;
(b) isocyanate groups blocked with blocking agents of from about 10 to 28%, by weight;
(c) structural units corresponding to the following formula:

$—NH—NH—CO—O—$

of from about 2 to 10%, by weight.

4,369,302

CURABLE RESIN COMPOSITION COMPRISING CYANATE ESTER AND POLYISOCYANATE

Nobuyuki Ikeguchi, and Yasunori Osaki, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,282

Claims priority, application Japan, Jan. 7, 1980, 55-461

Int. Cl.^{3} C08G *18/00, 18/04*

U.S. Cl. 528—73 **11 Claims**

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:
  (1) a polyfunctional aromatic cyanate ester monomer having the formula:

  $R—O—C\equiv N)_m$

  wherein m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,
  (2) a homoprepolymer of one or more polyfunctional cyanate esters of (1), and
  (3) a coprepolyer of (1) and an amine; and
(b) at least one compound selected from the group consisting of:
  (1) a polyisocyanate,
  (2) a homoprepolymer of one or more polyisocyanates, and
  (3) a coprepolymer of (1) and an acid anhydride, said composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product.

4,369,303

PROCESS FOR PRODUCING AN AROMATIC POLYESTERPOLYCARBONATE

Hazime Mori; Katsuhisa Kohyama; Katsuhiko Nakamura, all of Kitakyushu; Katsuyuki Sakata, Nakama, and Akira Matsuno, Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

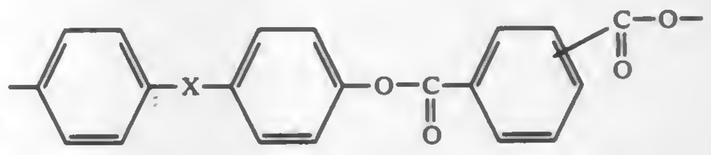
Filed Oct. 24, 1980, Ser. No. 200,596

Claims priority, application Japan, Oct. 24, 1979, 54-137471

Int. Cl.^{3} C08G *63/64*

U.S. Cl. 528—173 **10 Claims**

1. A process for producing an aromatic polyesterpolycarbonate, which comprises: polycondensing (a) a dihydroxydiaryl compound, (b) a terephthaloyl chloride and/or isophthaloyl chloride reactant, and (c) phosgene by an interfacial polymerization process in the presence of water, methylene chloride and an acid binding agent thereby preparing an aromatic polyesterpolycarbonate product containing structural units of the formula:



(I)

wherein X is a divalent group selected from the group comprising $—CR_2—$, $=C=R'$, —O—, —S—, —SO—, or $—SO_2—$, wherein R is hydrogen or a monovalent hydrocarbon group and R' is a divalent hydrocarbon group, and the aromatic rings may be substituted with halogen or monovalent hydrocarbon groups, said condensation reaction being characterized in that after at least 95% of the total —COCl groups in the terephthaloyl chloride and/or isophthaloyl chloride and phosgene starting materials has reacted an oligomer having a terminal chloroformate group prepared by reacting the dihydroxydiaryl compound with phosgene, or an oligomer having a terminal chloroformate group prepared by reacting the dihydroxydiaryl compound, terephthaloyl chloride or isophthaloyl chloride or a mixture thereof and phosgene, is added to the reaction mixture in an amount to bring the concentration of —COCl groups to a level of 10 to 1000 eq/g relative to the total amount of the above starting materials to complete the reaction.

4,369,304

CURABLE RESIN COMPOSITION OF (1) POLYFUNCTIONAL CYANATE ESTER, (2) ACRYLIC OR METHACRYLIC ESTER AND (3) MALEIMIDE

Morio Gaku, Showamachi, and Nobuyuki Ikeguchi, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,509

Claims priority, application Japan, Aug. 8, 1979, 54/100928

Int. Cl.^{3} C08G *73/10;* C08F *22/40*

U.S. Cl. 528—322 **3 Claims**

1. A curable resin composition comprising:

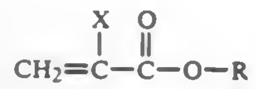
(a) at least one cyanate ester compound selected from the group consisting of:
  (1) of polyfunctional aromatic cyanate ester monomer having the formula:

  $R—O—C\equiv N)_m$

wherein m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,

- (2) a homoprepolymer of one or more polyfunctional aromatic cyanate ester monomers of (1), and
- (3) a coprepolymer of (1) and an amine; and

(b) at least one acrylic ester or methacrylic ester compound, said acrylic ester or methacrylic ester being represented by the formula



$$CH_2{=}\overset{\overset{\large X}{|}}{C}{-}\overset{\overset{\large O}{\|}}{C}{-}O{-}R$$

wherein X is hydrogen or methyl, and R is a straight or branched chain cycloalkyl having 3 to 12 carbon atoms, an aromatic hydrocarbon having 6 to 16 carbon atoms, a straight or branched chain halogen-substituted cycloalkyl having 3 to 12 carbon atoms, or a halogen-substituted aromatic hydrocarbon having 6 to 16 carbon atoms, said compound being selected from the group consisting of the acrylic esters, homoprepolymers of acrylic esters, homoprepolymers of methacrylic esters, coprepolymers of acrylic esters and methacrylic esters and mixtures thereof; and

(c) at least one compound selected from the group consisting of:

- (1) a polyfunctional maleimide,
- (2) a homoprepolymer of one or more polyfunctional maleimides, and
- (3) a coprepolymer of (1) and an amine, said composition including a mixture of components (a), (b) and (c), a preliminary reaction product of components (a), (b) and (c), the combination of said mixture and said preliminary reaction product, the combination of (a) and the preliminary reaction product of (b) and (c), the combination of (b) and the preliminary reaction product of (a) and (c), or the combination of (c) and the preliminary reaction product of (a) and (b).

4,369,305
POLYAMIDE MOLDING RESIN FROM PACM HAVING SPECIFIC STEREO ISOMER RATIO

Rolando U. Pagilagan, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 208,648, Nov. 20, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,740

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—338 **2 Claims**

1. A polyamide molding resin consisting essentially of a polycondensate composed of units of

- (a) 60–90 mole percent isophthalic acid, based on total acids present;
- (b) 10–40 mole percent terephthalic acid, based on total acids present;
- (c) 98–92 mole percent hexamethylene diamine, based on total amines present; and
- (d) bis(p-aminocyclohexyl)methane in which the mole percent present is between a lower limit of 2 mole percent of the total amines present and an upper mole percent limit which is 1/11 of the mole percent of (a) present, and in which at least 59 percent by weight of the bis(p-aminocyclohexyl)methane is either the trans, trans isomer or the cis, trans isomer,

provided the amount of acids (a) and (b) together comprise about 100 mole percent and provided the amount of amines (c) and (d) together comprise about 100 mole percent, said polyamide having a melt viscosity at 280° C. of less than 30,000 poises.

4,369,306
METHOD FOR TREATING OLEFIN POLYMER FOR REMOVING CATALYST

Akinori Toyota, and Norio Kashiwa, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,404

Claims priority, application Japan, Mar. 7, 1980, 55-27993

Int. Cl.³ C08F *6/08*

U.S. Cl. 528—485 **10 Claims**

1. A method for treating an olefin polymer to remove organic catalyst component residues contained therein, which comprises contacting an olefin polymer obtained by polymerizing an olefin in the presence of a catalyst composed of (A) a highly active magnesium-containing titanium compound, (B) an organoaluminum compound and (C) a carbonyl- or Si-containing electron donor, with (D) an organometallic compound of a metal of Groups I to II of the periodic table or an organoaluminum compound selected from the group consisting of trialkylaluminum compounds, alkylaluminum halide compounds, alkylaluminum hydride compounds, and alkyllithium aluminum compounds, after the polymerization.

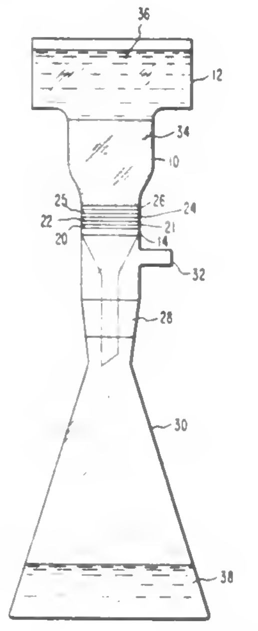
4,369,307
METHOD FOR REMOVING CARBON PARTICLES FROM A MOLDED ARTICLE

Nitin V. Desai, Hightstown, and Robert F. Poll, Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,944

Int. Cl.³ C08F *6/00;* B01D *29/08*

U.S. Cl. 528—488 **3 Claims**



1. A method for separating out carbon particles from a composition comprising a plastic consisting of a homopolymer or copolymer of vinylchloride and carbon particles of submicron dimensions comprising the steps of:

adding the composition to an organic solvent which dissolves the plastic and does not dissolve the carbon particles, wherein the concentration of the resulting plastic solution is sufficiently dilute to allow the carbon particles to be free from the plastic, and

filtering the resulting mixture in a column of calcium carbonate which traps essentially all of the carbon particles and allows the plastic solution to pass through.

4,369,308
LOW SWELLING STARCHES AS TABLET DISINTEGRANTS

Paolo C. Trubiano, Somerville, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jul. 24, 1981, Ser. No. 286,411

Int. Cl.³ A61K *47/00;* C13L *1/00;* C08B *31/00*

U.S. Cl. 536—106 **12 Claims**

1. A disintegrant for compressed tablets, consisting essentially of a free-flowing, crosslinked and pregelatinized, low swelling starch powder having a moisture content of about 12% by weight or less and derived from a cold-water-insoluble, granular starch base; said starch powder characterized by all of the following:

- (a) its uniformly swollen, virtually non-birefringent granules,
- (b) by a cold water swelling value above about 3 and below about 25 ml., and
- (c) by an acid viscosity breakdown of about 400 B.U. or less; said acid viscosity breakdown determined by heating an aqueous dispersion containing 9% of said starch powder and 1% glacial acetic acid, both by weight and based on anhydrous starch, at from ambient temperature to 95° C., holding at 95° C. until a peak viscosity is reached, but for no more than 1 hr. if no peak viscosity is reached, holding for an additional 10 min. at 95° C. after said peak viscosity is reached, and recording a final viscosity at 95° C. plus 10 min., with the difference between said peak viscosity and said final viscosity being said acid viscosity breakdown and with said acid viscosity breakdown considered as zero when no peak viscosity is reached; said measurement being carried out in a Brabender Visco/Amylo/Graph having a 700 cm.-gm. sensitivity cartridge; said starch powder effectively disintegrating said tablet when placed in a fluid.

4,369,309
THIAZINOBENZIMIDAZOLE DERIVATIVES

Hiromichi Eto, Abiko; Teruo Kohmoto, Chiba; Tadayuki Kouda, Narita; Youichiro Ogawa, Chiba; Susumu Sato, Chiba; Tadayuki Kuraishi, Chiba, and Toshiaki Nakashima, Shisui, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

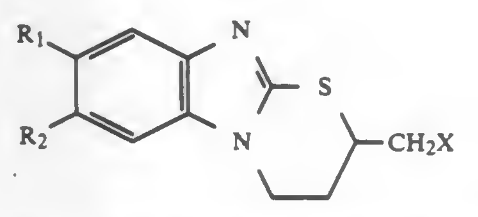
Filed Mar. 3, 1981, Ser. No. 240,219

Claims priority, application Japan, Jun. 20, 1980, 55-83710

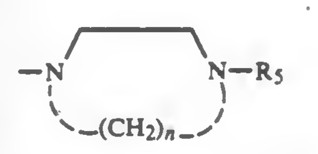
Int. Cl.³ C09B *23/10;* C07D *417/14*

U.S. Cl. 542—436 **9 Claims**

1. A thiazinobenzimidazole derivative represented by the formula:



wherein R_1 and R_2 are each a hydrogen atom, alkyl group having 1 to 6 carbon atoms, alkoxy group having 1 to 6 carbon atoms or halogen atom, and X is a group represented by:



wherein R_5 denotes a cinnamoyl group which may optionally be substituted by a chlorine atom or a methyl, methoxy or methylenedioxy group and n represents an integer of 2 or 3.

4,369,310
BLEACHABLE DYES

Stephen R. Postle, Brentwood, England, assignor to Ciba-Geigy Ltd., Basel, Switzerland

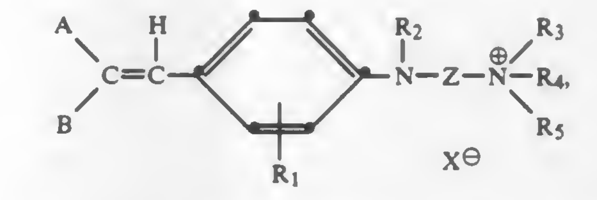
Filed Oct. 22, 1980, Ser. No. 199,162

Claims priority, application United Kingdom, Nov. 19, 1979, 7939970

Int. Cl.³ C07D *231/22, 487/04*

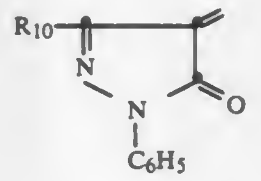
U.S. Cl. 542—442 **9 Claims**

1. A dyestuff of the formula

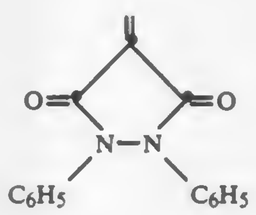


(1)

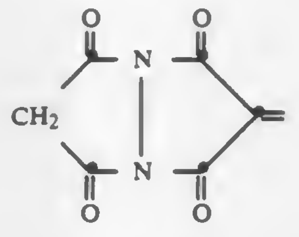
wherein A and B represent together with the carbon atom to which they are attached the atoms necessary to complete a ring system of the formula



(a)

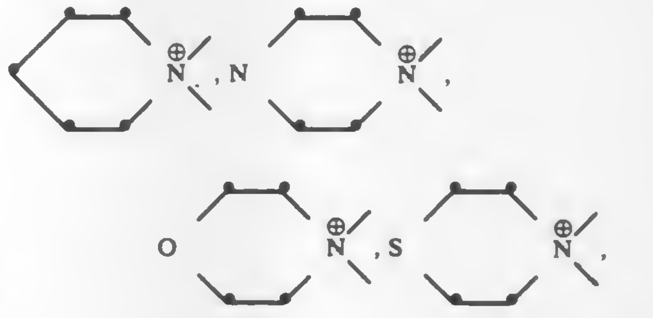


(b)



(d)

where in the above formula (a) R_{10} is hydrogen or methyl, R_1 is hydrogen, alkyl having from 1 to 4 carbon atoms or alkoxy having from 1 to 4 carbon atoms, R_2 is alkyl having from 1 to 4 carbon atoms, which is unsubstituted or substituted by chlorine, bromine or methoxy, R_3, R_4 and R_5 each represent hydrogen, alkyl having from 1 to 4 carbon atoms, carboxyalkyl or alkoxycarbonylalkyl wherein each alkyl radical and the alkoxy radical have from 1 to 4 carbon atoms, naphthyl or phenyl, or two of R_3 to R_5 or all three of R_3 to R_5 may with the nitrogen atoms to which they are attached form a ring system of the formula



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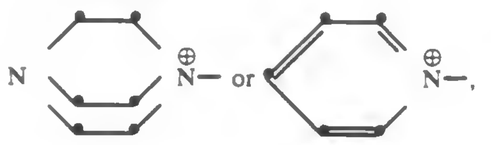
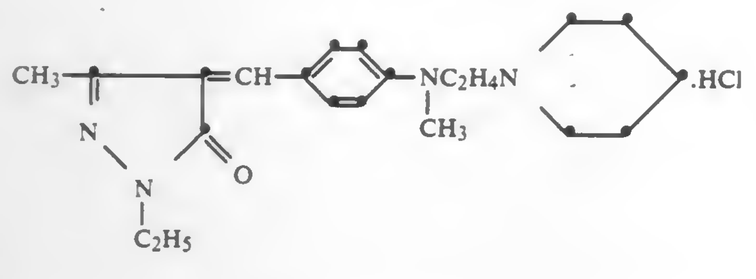


Z is a linking group —(CHR$_8$)$_m$—(CH$_2$)$_n$— wherein R$_8$ is hydrogen or methyl and m is 0 or 1, n is 1, 2 or 3 and X$^\ominus$ is a halide or methyl sulphate.

8. A dyestuff according to claim 1 having the formula



4,369,311
METHOD OF PREPARATION OF CYCLIC NITRILE SULFITES

James L. Grainger, College Park, Ga., and Kent D. Campbell, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1981, Ser. No. 301,492

Int. Cl.^{3} C07D *419/10, 419/14, 291/04*

U.S. Cl. 542—443 **10 Claims**

1. A process comprising contacting in a solvent an amide reactant having bonded to an aromatic hydrocarbon radical at least one reactive amide moiety, —CONH$_2$, with sulfur dioxide in the presence of an oxidizing agent and a catalyst under conditions sufficient to form a cyclic nitrile sulfite.

4,369,312
METHOD OF PRODUCING OXO-CONTAINING AZETIDINONE COMPOUNDS

Masashi Hashimoto, Takarazuka; Matsuhiko Aratani, Suita; Daijiro Hagiwara, Moriguchi; Kozo Sawada, Toyonaka, and Tetsuo Onami, Fukushima, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

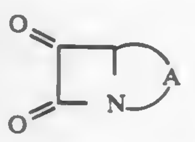
Filed Jul. 1, 1981, Ser. No. 279,546

Claims priority, application Japan, Jul. 4, 1980, 55-92059; Sep. 8, 1980, 55-124799

Int. Cl.^{3} C07D *501/04, 499/00*

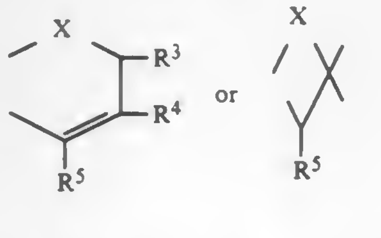
U.S. Cl. 544—16 **2 Claims**

1. A method of producing a compound of the formula:



(I)

wherein A is a group of the formula:



in which

R^3 is hydrogen or alkyl,

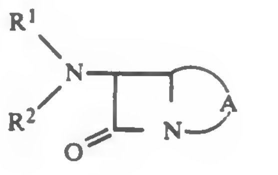
R^4 is hydrogen, halogen, alkyl, alkoxy, alkanoyloxymethyl, alkoxycarbonyloxymethyl, alkanesulfonyloxymethyl, carbamoyloxymethyl, mono-, di- or trihaloalkanoyl carbamoyloxymethyl, aroyloxymethyl, ar (lower) alkanoyloxymethyl, aryloxycarbonyloxymethyl, aryloxy (lower) alkanoyloxymethyl, arylglyoxyloyloxymethyl, arenesulfonyloxymethyl, heterocyclic carbonyloxymethyl, heterocyclic (lower) alkanoyloxymethyl, heterocyclic glyoxyloyloxymethyl, or heterocyclic-thiomethyl comprising as the heterocyclic moiety unsaturated 3 to 8 membered monocyclic heterocyclic containing 1 to 4 nitrogen atoms, saturated 3 to 8 membered monocyclic heterocyclic containing 1 to 4 nitrogen atoms, unsaturated fused heterocyclic containing 1 to 4 nitrogen atoms, unsaturated 3 to 8 membered monocyclic heterocyclic containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, saturated 3 to 8 membered monocyclic heterocyclic containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, unsaturated fused heterocyclic containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, unsaturated 3 to 8 membered monocyclic heterocyclic containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms, saturated 3 to 8 membered monocyclic heterocyclic containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms, unsaturated 3 to 8 membered monocyclic heterocyclic containing 1 to 2 sulfur atoms, unsaturated fused heterocyclic containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms, unsaturated 3 to 8 membered monocyclic heterocyclic containing an oxygen atom, unsaturated 3 to 8 membered monocyclic heterocyclic containing an oxygen atom and 1 to 2 sulfur atoms, unsaturated fused heterocyclic containing 1 to 2 sulfur atoms, unsaturated fused heterocyclic containing an oxygen atom and 1 to 2 sulfur atoms, and said heterocyclic moieties substituted with 1 to 5 substituents comprising lower alkyl, lower alkoxy, lower alkylthio, lower alkylamino, cyclo (lower) alkyl, cyclo (lower) alkenyl, hydroxy, halogen, amino, cyano, nitro, carboxy and protected carboxy,

R^5 is carboxy or protected carboxy, and

X is —S— or —O—,

or a salt thereof or a hydrate thereof,

which comprises reacting a compound of the formula:



(II)

wherein

R^1 is trihalomethanesulfonyl,

R^2 is trihalomethanesulfonyl, alkanoyl, alkoxycarbonyl, alkanesulfonyl, carbamoyl, mono-, di- or trihaloalkanoyl carbamoyl, aroyl, ar (lower) alkanoyl, aryloxycarbonyl, aryloxy (lower) alkanoyl, arylglyoxyloyl, arenesulfonyl, heterocyclic carbonyl, heterocyclic (lower) alkanoyl, or heterocyclic glyoxyloyl, and

A is as defined above,

or a salt thereof, with an inorganic or organic base, and then subjecting the resultant compound to hydrolysis in the presence of an acid.

4,369,313
INTERMEDIATES FOR USE IN THE PREPARATION OF CEPHALOSPORIN ANTIBIOTICS

William R. Jones, Greenford; Harish S. Trivedi, London, and Timothy L. Gane, Ruislip, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 152,852, May 23, 1980, abandoned. This application Mar. 3, 1981, Ser. No. 239,203

Claims priority, application United Kingdom, May 25, 1979, 7918428

Int. Cl.^{3} C07D *501/18*

U.S. Cl. 544—24 **2 Claims**

1. (6R,7R)-7-Amino-3-(1-pyridiniummethyl)ceph-3-em-4-carboxylate dihydrochloride dihydrate.

4,369,314
OXACEPHALOSPORINS

Daniel Farge; Pierre L. Roy, both of Thiais; Claude Moutonnier, Le Plessis Robinson; Bernard Plau, Creteil, and Jean-François Peyronel, Palaiseau, all of France, assignors to Rhone-Poulenc Industries, Paris, France

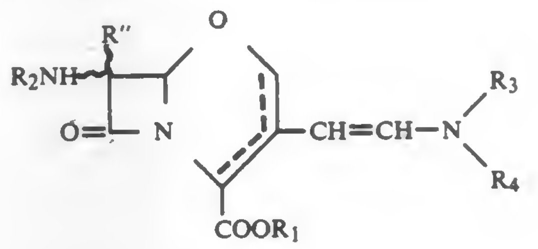
Filed Nov. 19, 1981, Ser. No. 322,951

Claims priority, application France, Nov. 20, 1980, 80 24639

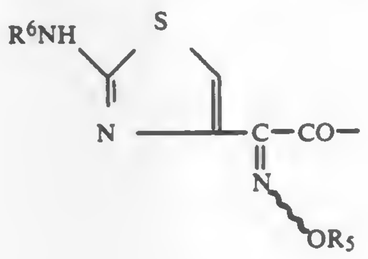
Int. Cl.^{3} C07D *498/04*

U.S. Cl. 544—90 **8 Claims**

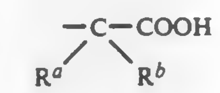
1. An oxacephalosporin of the formula:



which is in the form of a bicyclooct-2-ene or bicyclooct-3-ene and in which formula the substituent on the carbon atom in the 3-position of the bicyclooctene exhibits E/Z stereoisomerism, R$_1$ represents an acid-protecting radical which can easily be removed, R$_2$ represents either a radical of the formula:



in which R$_5$ is a hydrogen atom, an alkyl radical, a vinyl radical, a carboxyalkyl radical of the formula:



$$-\underset{R^a\ \ R^b}{\mathrm{C}}-\mathrm{COOH}$$

in which R^a and R^b are identical or different and represent hydrogen atoms or alkyl radicals, or together form an alkylene radical containing 2 or 3 carbon atoms, and of which the acid group is protected, or R$_5$ is an oxime-protecting radical, and R^6 is an amine-protecting radical, or R$_2$ is an α-carboxyarylacetyl radical of which the acid group is protected and in which aryl represents phenyl, p-hydroxyphenyl, protected p-hydroxyphenyl, or thien-2-yl or thien-3-yl, and R″ represents a hydrogen atom or a methoxy radical in the 7α-position, or alternatively R$_2$ represents an amino-protecting radical and R″ represents a hydrogen atom or a methoxy radical in the 7α-position or a hydrogen atom in the 7β-position, and R$_3$ and R$_4$, which are identical or different, represent alkyl radicals unsubstituted or substituted by an alkoxy or dialkylamino radical, or phenyl radicals, or R$_3$ and R$_4$ together form, with the nitrogen atom to which they are attached, a 5- or 6-membered saturated heterocyclic ring which may contain another hetero-atom chosen from nitrogen, oxygen or sulphur, and unsubstituted or substituted by an alkyl radical.

4,369,315
OXACEPHALOSPORINS

Daniel Farge; Pierre Le Roy, both of Thiais; Claude Moutonnier, Le Plessis Robinson; Bernard Plau, Creteil, and Jean-Francois Peyronel, Palaiseau, all of France, assignors to Rhone-Poulenc Industries, Paris, France

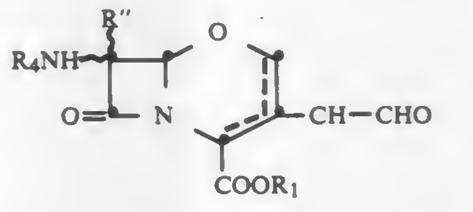
Filed Nov. 19, 1981, Ser. No. 323,113

Claims priority, application France, Nov. 20, 1080, 80 24639

Int. Cl.^{3} C07D *498/04*

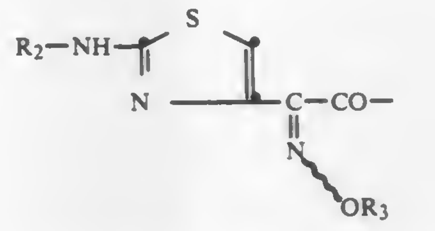
U.S. Cl. 544—90 **12 Claims**

1. A new oxacephalosporin of the general formula:

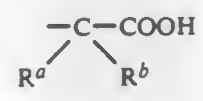


which is in the form of a bicyclooct-2-ene or bicyclooct-3-ene or a 3-oxoethylidenebicyclooctane and in which the symbol R$_1$ represents a protective radical and

(a) the symbol R$_4$ represents a radical of the general formula:



in which R$_2$ is an amino-protecting radical and R$_3$ is a hydrogen atom, an oxime-protecting radical, an alkyl or vinyl radical or a carboxyalkyl radical represented by the general formula:



$$-\underset{R^a\ \ R^b}{\mathrm{C}}-\mathrm{COOH}$$

in which the radicals R^a and R^b, which are identical or different, represent hydrogen atoms or alkyl radicals, or together form an alkylene radical containing 2 or 3 carbon atoms, and of which the acid group can be protected; or R$_4$ represents a free or protected α-carboxyarylacetyl radical in which aryl represents phenyl, free or protected p-hydroxyphenyl, or thien-2-yl or thien-3-yl, and the symbol R″ represents a hydrogen atom or a methoxy radical in the 7α-position, or alternatively

(b) the symbol R$_4$ represents a radical which can easily be removed chosen from amongst:

(1) benzhydryl or trityl,

(2) an acyl radical of the formula:

R$_5$CO—

in which R$_5$ represents:

(a) hydrogen, alkyl of 1 to 7 carbon atoms, methyl substituted by 1 to 3 halogen atoms, alkenyl of 3 to 7 carbon atoms or cyanomethyl,

(b) phenyl which is unsubstituted or substituted by one to three substituents selected from halogen, hydroxy, nitro, cyano, trifluoromethyl, alkyl and alkoxy, or thien-2-yl or thien-3-yl,

(c) a radical of the formula:

R'_5YCH_2-

in which R'_5 represents a radical as defined under (b) and Y is sulphur or oxygen, or

(d) an arylalkyl radical of the formula:

R''_5CH_2-

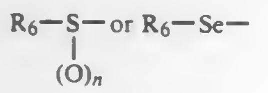
in which R''_5 represents a phenyl radical which is unsubstituted or substituted by one to three substituents selected from hydroxyl, alkyl and alkoxy or thien-2-yl, thien-3-yl, furan-2-yl, furan-3-yl, or tetrazol-1-yl,

(3) a radical of the formula:

R_6OCO-

in which R_6 is unsubstituted branched alkyl, linear or branched alkyl substituted by halogen, cyano, phenyl, or phenyl substituted by halogen, alkyl, alkoxy, nitro or phenyl, 2-trimethylsilylethyl, vinyl, allyl, or quinolyl,

(4) a radical of the formula:



$R_6-\underset{(O)_n}{\underset{|}{S}}-$ or R_6-Se-

in which formulae R_6 is alkyl, phenyl, or phenyl substituted by halogen, nitro or alkyl, and n is 0 to 1, or

(5) a bis-(4-nitrobenzyl)-phosphoryl radical, or

(6) R_4NH- is replaced by alkylaminomethyleneamino or by a radical of the formula:

$Ar-CH=N-$

in which Ar is phenyl unsubstituted or substituted by alkoxy, nitro, alkyl or hydroxyl, and the symbol R″ represents a hydrogen atom or a methoxy radical in the 7α-position or a hydrogen atom in the 7β-position, it being understood that the above-mentioned alkyl or acyl radicals and portions are linear or branched, unless otherwise mentioned, and contain 1 to 4 carbon atoms, if appropriate in its syn or anti forms.

4,369,316
3,1 BENZOXAZINE 2,4-DIONE

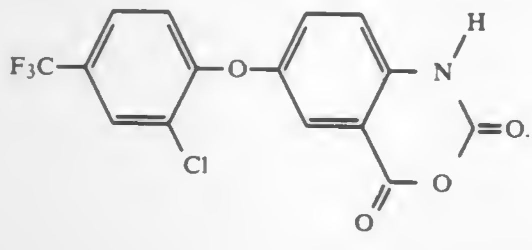
Walter M. Kruse, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 250,205, Apr. 4, 1981, Pat. No. 4,314,078. This application Oct. 23, 1981, Ser. No. 314,178

Int. Cl.³ C07D *265/26*

U.S. Cl. 544—94 **1 Claim**

1. The compound of the following formula (IV):



(IV)

4,369,317
METHOD OF PREPARING MORPHOLINIUM PHOSPHATES

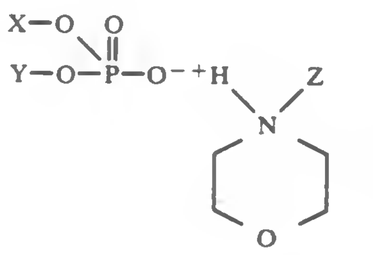
John J. Hawkins, Santa Ana, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 196,717, Oct. 14, 1980, Pat. No. 4,338,440, which is a division of Ser. No. 107,031, Dec. 26, 1979, Pat. No. 4,271,002, which is a continuation-in-part of Ser. No. 52,639, Jun. 27, 1979, Pat. No. 4,276,141, which is a continuation-in-part of Ser. No. 880,908, Feb. 24, 1978, abandoned. This application Jun. 29, 1981, Ser. No. 277,799

Int. Cl.³ C07D *9/09*

U.S. Cl. 544—110 **14 Claims**

1. A method of manufacturing a compound having a formula I

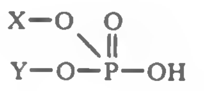


(I)

wherein

X and Y are selected from a first group consisting of aryl, alkyl(aryl), alkenyl(aryl), alkynyl(aryl), alkyl, cycloalkyl, alkenyl, cycloalkenyl, and alkynyl radicals wherein said alkyl moiety of said alkyl(aryl) radical consists of 1–12 carbon atoms; each alkenyl and alkynyl moiety of said alkenyl(aryl) and alkynyl(aryl) radicals, respectively, consists of 2–12 carbon atoms; each aryl moiety consists of 6, 10, 12, or 14 carbon atoms; and each alkyl, cycloalkyl, alkenyl, cycloalkenyl, and alkynyl radical consists of 6 to 14 carbon atoms; and

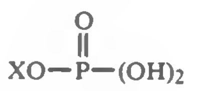
Z is selected from a group consisting of alkyl radicals containing 1–12 carbon atoms; alkenyl and alkynyl radicals containing 4–12 carbon atoms; and cycloalkyl and cycloalkenyl radicals containing 6 to 12 carbon atoms comprising: separating a compound having a formula II



(II)

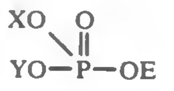
wherein X and Y are as defined above, from a mixture containing said compound II and at least one reaction co-product selected from a group consisting of

XOH (III)



$XO-\overset{O}{\overset{\|}{P}}-(OH)_2$ (IV)

and



(V)

wherein X and Y are as defined above and wherein E is also selected from said first group, by:

(a) mixing said mixture with a solvent selected from a group consisting of heptane, cyclohexane, and mixtures thereof;

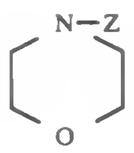
(b) mixing ethylene glycol with the product of step (a);

(c) allowing the mixture of step (b) to form a hydrocarbon layer and an ethylene glycol layer;

(d) separating said hydrocarbon layer from said ethylene glycol layer;

(e) extracting said hydrocarbon layer at least once with water; and

(f) adding a compound having the formula VI:



(VI)

wherein Z is as defined above, to the extracted hydrocarbon layer of step (e), thereby forming said compound of formula I.

4,369,318
PROCESS FOR THE PRODUCTION OF COLORED PHOTOGRAPHIC IMAGES BY THE SILVER DYE-BLEACH PROCESS

Gerald Jan, Marly, Switzerland, assignor to Ciba-Geigy Ltd., Basel, Switzerland

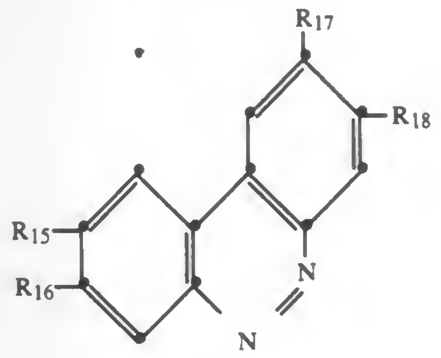
Division of Ser. No. 77,461, Sep. 20, 1970, Pat. No. 4,266,011. This application Jul. 17, 1980, Ser. No. 169,709

Claims priority, application Switzerland, Sep. 29, 1978, 10196/78

Int. Cl.³ C07D *237/36*

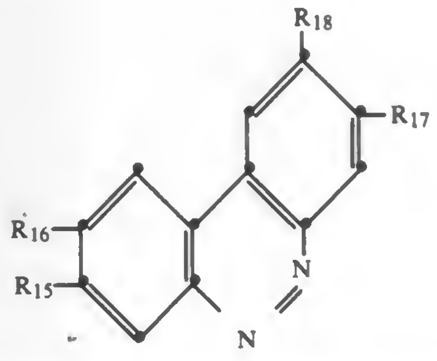
U.S. Cl. 544—234 **4 Claims**

1. A compound of the formula



in which R_{15} and R_{17} are each hydrogen or alkyl or alkoxy, each having 1 to 4 carbon atoms, R_{16} is hydroxyl, $-CH_2OH$, $-O(CH_2)_nOH$, $-O(CH_2)_2O(CH_2)_2OH$, $-CH_2NR_5R_6$, $-O(CH_2)_nNR_5R_6$, $-CH_2SO_3M$, $-O(CH_2)_nSO_3M$ or $-SO_3M$ and R_{18} is $-CH_2OH$, $-O(CH_2)_nOH$, $-O(CH_2.)_2O(CH_2)_2OH$, $-NR_5R_6$, $-CH_2NR_5R_6$, $-O(CH_2)_nNR_5R_6$, $-CH_2SO_3M$, $-O(CH_2)_nSO_3M-SO_3M$, alkoxy having 1 to 4 carbon atoms or—if R_{16} is not hydroxyl—hydrogen or alkyl having 1 to 4 carbon atoms, R_5 and R_6 are each hydrogen or alkyl having 1 to 4 carbon atoms, M is hydrogen, an alkali metal, ammonium or alkyl-ammonium having 1 to 4 carbon atoms per alkyl radical and n is an integer from 2 to 4 and R_{16} is not $-SO_3H$, if R_{15}, R_{17} and R_{18} are hydrogen or alkyl, and R_{16} and R_{18} are not both $-SO_3H$, if R_{15} and R_{17} are hydrogen or alkyl.

3. A compound of the formula



in which R_{15} and R_{17} are each hydrogen or alkyl or alkoxy, each having 1 to 4 carbon atoms, R_{16} is hydroxyl, $-CH_2OH$, $-O(CH_2)_nOH$, $-O(CH_2)_2O(CH_2)_2OH$, $-CH_2NR_5R_6$, $-O(CH_2)_nNR_5R_6$, $-CH_2SO_3M$, $-O(CH_2)_nSO_3M$ or $-SO_3M$ and R_{18} is $-CH_2OH$, $-O(CH_2)_nOH$, $-O(CH_2.)_2O(CH_2)_2OH$, $-NR_5R_6$, $-CH_2NR_5R_6$, $-O(CH_2)_nNR_5R_6$, $-CH_2SO_3M$, $-O(CH_2)_nSO_3M$, $-SO_3M$, alkoxy having 1 to 4 carbon atoms or—if R_{16} is not hydroxyl—hydrogen or alkyl having 1 to 4 carbon atoms, R_5 and R_6 are each hydrogen or alkyl having 1 to 4 carbon atoms, M is hydrogen, an alkali metal, ammonium or alkyl-ammonium having 1 to 4 carbon atoms per alkyl radical and n is an integer from 2 to 4, and R_{16} is not $-SO_3M$, if R_{15}, R_{17} and R_{18} are hydrogen or alkyl, and R_{16} and R_{18} are not both $-SO_3M$, if R_{15} and R_{17} are hydrogen or alkyl.

4,369,319
10-ALKYL-10-DEAZAMINOPTERINS

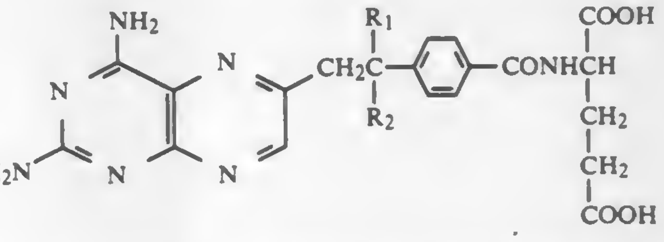
Joseph I. DeGraw, Jr., 880 Hanover Ave., Sunnyvale, Calif. 94087, and Francis M. Sirotnak, 80 East End Ave., New York, N.Y. 10028

Division of Ser. No. 75,913, Sep. 17, 1979, which is a continuation-in-part of Ser. No. 883,627, Mar. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 761,152, Jan. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 664,213, Mar. 5, 1976, abandoned. This application Feb. 10, 1981, Ser. No. 233,280

Int. Cl.³ C07D *475/08*

U.S. Cl. 544—260 **6 Claims**

1. 10-Deazaminopterin compounds having the formula:



wherein: R_1 and R_2 are both selected from the group consisting of hydrogen and alkyl having from one to about eight carbon atoms, and at least one of R_1 and R_2 is alkyl.

4,369,320
N-[HETEROCYCLICAMINOCARBONYL]-8-QUINOLINESULFONAMIDES

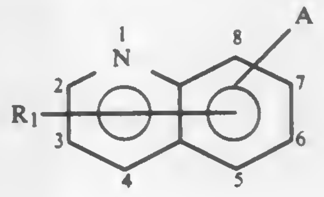
George Levitt; Chin-Lung Yeh, both of Wilmington, Del., and John C. Budzinski, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 203,637, Nov. 3, 1980, abandoned. This application Sep. 3, 1981, Ser. No. 298,661

Int. Cl.³ C07D *239/24;* **A01N** *43/54*

U.S. Cl. 544—320 **14 Claims**

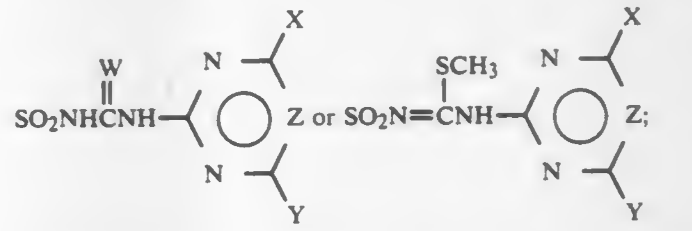
1. A compound selected from



I

wherein

A is



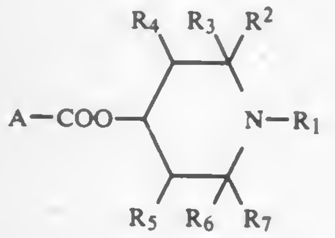
R_1 is H, F, Cl, Br, OCH_3, CH_3, NO_2, CO_2R_2, $S(O)_nR_3$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$ or OSO_2R_6;

R_2 is C_1-C_4 alkyl, C_3-C_4 alkenyl, CH_2CH_2Cl or $CH_2CH_2OCH_3$;
R_3 is C_1-C_4 alkyl;
R_4 and R_5 are independently C_1-C_4 alkyl;
R_6 is C_1-C_4 alkyl or CF_3;
n is 0, 1 or 2;
X is C_1-C_2 alkyl, C_1-C_2 alkyl substituted with OCH_3, CF_3, C_1-C_3 alkoxy, $N(CH_3)_2$, $NHCH_3$, NH_2, or SCH_3;
Y is CH_3, OCH_3 or Cl;
Z is CH; and
W is O or S;
provided that
(1) A is in the 5 or 8 position of the quinoline ring;
(2) when R_1 is NO_2, CO_2R_2, $S(O)_nR_3$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$ or OSO_2R_6, then R_1 is at the 6-position when A is at the 5-position, and R_1 is at the 7-position when A is at the 8-position of the quinoline ring; 7-position of the quinoline ring;
(3) the total number of carbon atoms of R_4 and R_5 is less than or equal to 5; and
(4) when Y is Cl, then Z is CH and X is NH_2, $NHCH_3$, $N(CH_3)_2$ or OCH_3.

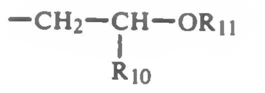
4,369,321
PIPERIDINE DERIVATIVES WHICH ARE STABILIZERS FOR SYNTHETIC POLYMERS

Giuseppe Cantatore, Casalecchio di Reno, Italy, assignor to Chimosa Chimica Organica S.p.A., Bologna, Italy
Filed Dec. 12, 1980, Ser. No. 215,925
Claims priority, application Italy, Dec. 21, 1979, 28324 A/79
Int. Cl.³ C07D *401/12, 403/12, 413/12*
U.S. Cl. 546—187 **4 Claims**

1. A compound of the formula

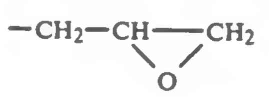


or an acid addition salt thereof, in which
R_1 represents
- (a) hydrogen,
- (b) C_1-C_{12}-alkyl,
- (c) $—CH_2CN$
- (d) C_3-C_{12}-alkenyl,
- (e) C_3-C_{12}-alkinyl,
- (f) benzyl,
- (g) benzyl substituted by 1 to 3 C_1-C_4-alkyl radicals,
- (h) hydroxybenzyl,
- (i) hydroxybenzyl substituted by 1 to 3 C_1-C_4-alkyl radicals,
- (j) a $—COR_8$, $—COOR_8$, $—CH_2COOR_8$ or $—CONR_8R_9$ radical in which R_8 and R_9, which may be identical or different, represent
  - (1) linear or branched C_1-C_{12}-alkyl,
  - (2) C_3-C_{12}-alkenyl,
  - (3) C_5-C_{12}-cycloalkyl,
  - (4) phenyl,
  - (5) phenyl substituted by 1 to 3 C_1-C_8-alkyl radicals,
  - (6) hydroxyphenyl,
  - (7) hydroxyphenyl substituted by 1 to 3 C_1-C_8-alkyl radicals,
  - (8) C_7-C_{12}-aralkyl, or
  - (9) 2,2,6,6-tetramethyl-piperidin-4-yl,
- (k) a

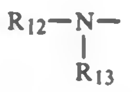


$$—CH_2—\underset{\displaystyle R_{10}}{\underset{|}{CH}}—OR_{11}$$

radical, in which R_{10} is hydrogen, methyl or phenyl and R_{11} is hydrogen, $—R_8$, $—COR_8$ or $—CONR_8R_9$, in which R_8 and R_9 are as defined above, or
- (l) a

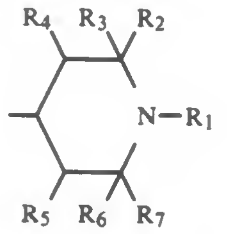


radical;
R_2, R_3, R_6 and R_7, which may be identical or different, are alkyl containing 1 to 6 C atoms;
R_4 and R_5, which may be identical or different, are hydrogen or alkyl containing 1 to 6 C atoms;
A is

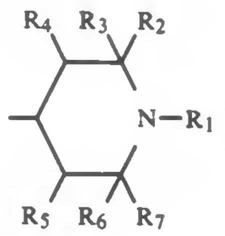


$$R_{12}—\underset{\displaystyle R_{13}}{\underset{|}{N}}—$$

radical, in which R_{12} is a radical of the formula



in which R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are as defined above, R_{13} is hydrogen, linear or branched C_1-C_{20}-alkyl, C_5-C_{12}-cycloalkyl, phenyl, o-, m- or p-toluyl, o-, m- or p-hydroxyphenyl, 3,5-di-t-butyl-4-hydroxy-phenyl, o-, m- or p-methoxyphenyl, o-, m- or p-ethoxyphenyl, benzyl, 4-methylbenzyl, 4-t-butylbenzyl, 4-hydroxybenzyl, 3,5-di-t-butyl-4-hydroxybenzyl, 4-methoxybenzyl, 4-ethoxybenzyl, or a group of the formula

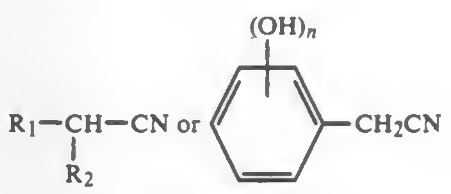


or A is a heterocyclic radical selected from the group consisting of pyrrolidin-1-yl, piperidin-1-yl, morpholin-4-yl, piperazin-1-yl, 4-methyl-piperazin-1-yl, hexahydroazepin-1-yl, homopiperazin-1-yl and 4-methyl-homopiperazin-1-yl.

4,369,322
PROCESS FOR THE PRODUCTION OF SUBSTITUTED ACETONITRILES

Peter Schalke, and Axel Kleemann, both of Hanau, Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany
Continuation of Ser. No. 102,933, Dec. 12, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,836
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854210
Int. Cl.³ C07C *120/00, 121/66, 121/68;* **C07D** *213/57*
U.S. Cl. 546—330 **31 Claims**

1. A process for the production of an aromatic or heteroaromatic substituted acetonitrile of the formula



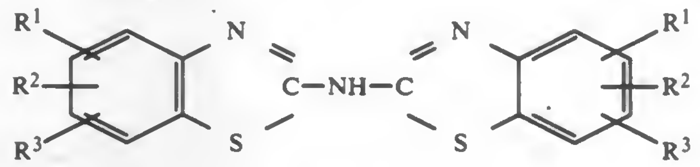
where R_1 is hydrogen, phenyl, thienyl, pyridyl, quinolyl or isoquinolyl and R_2 is thienyl, pyridyl, quinolyl or isoquinolyl or R_2 is a substituted thienyl, pyridyl, quinolyl or isoquinolyl group having at least one substituent wherein the substituent is lower alkyl, halogen, hydroxy, cyano, phenoxy or methoxy and n is 0 or 1 comprising reacting a substituted methane of the formula $R_1—CH_2—R_2$, toluene or hydroxytoluene with cyanogen chloride in the gas phase by feeding the substituted methane and cyanogen chloride separately from each other and in gaseous form into the reactor at a temperature close to the reaction temperature and carrying out the reaction at a temperature between 550° and 850° C., cooling the reaction mixture immediately after leaving the reactor to a temperature below 100° C. and treating the reaction mixture with an aqueous base.

4,369,323
PROCESS FOR THE MANUFACTURE OF 2,2′-IMINO-BIS-BENZOTHIAZOLE COMPOUNDS

Theodor Papenfuhs, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Nov. 19, 1980, Ser. No. 208,189
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947489
Int. Cl.³ C07D *277/82*
U.S. Cl. 548—156 **8 Claims**

1. A process for the manufacture of a 2,2′-imino-bis-benzothiazole compound of the formula

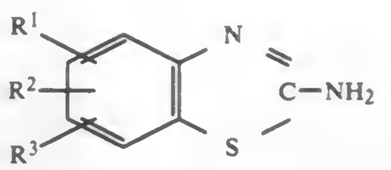
(1)



wherein R^1 is hydrogen, or is alkyl of 1 to 5 C-atoms unsubstituted or substituted by alkoxy of 1 to 4 C-atoms, or is alkoxy of 1 to 5 C-atoms unsubstituted or substituted by alkoxy of 1 to 4 C-atoms, or is halogen, nitro or cyano, R^2 is hydrogen, alkyl of 1 to 5 C-atoms unsubstituted or substituted by alkoxy of 1 to 4 C-atoms, alkoxy of 1 to 5 C-atoms unsubstituted or substituted by alkoxy of 1 to 4 C-atoms, or is halogen or cyano and R^3 is hydrogen, alkyl of 1 to 5 C-atoms unsubstituted or substituted by alkoxy of 1 to 4 C-atoms, or alkoxy of 1 to 5 C-atoms unsubstituted or substituted by alkoxy of 1 to 4 C-atoms, R^1, R^2 and R^3 being identical or different from one another,

which consists essentially of heating a 2-amino-benzothiazole compound of the formula

(2)

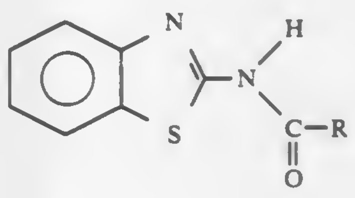


in which R^1, R^2 and R^3 are defined as above, at a temperature of 130° to 210° C. in the presence of an acidic compound selected from the group consisting of the aliphatic carboxylic acids, hydrochloric acid, sulfuric acid, phosphoric acid, polyphosphoric acid, phenol, the cresols and the hydrochloric, sulfuric and phosphoric salts of said 2-amino-benzothiazole compound.

4,369,324
PROCESS FOR THE PREPARATION OF 2-AMINO-6-NITROBENZOTHIAZOLE

Walter Horstmann, Bergisch Gladbach, Fed. Rep. of Germany; Richard Sommer, Summerville, S.C.; Hans Trautwein, Odenthal-Voiswinkel, and Gerhard Wolfrum, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Apr. 23, 1981, Ser. No. 256,636
Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3018028
Int. Cl.³ C07D *277/82*
U.S. Cl. 548—164 **4 Claims**

1. A process for the preparation of 2-amino-6-nitro-benzothiazole comprising reacting an acylaminobenzthiazole of the formula



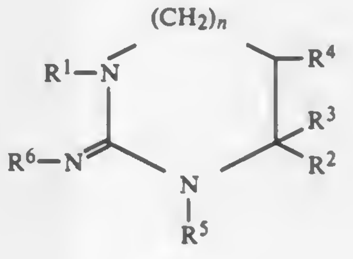
in which
R is hydrogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, with nitric acid at a molar ratio of said acylaminobenzthiazole to nitric acid of 1:10 at a temperature of 0°-50° C. thereby to produce 6-nitro-2-acylamino-benzthiazole, and saponifying the 6-nitro-2-acylamino-benzthiazole with a dilute mineral acid, alkali hydroxide or ammonia at 20°-150° C.

4,369,325
1,3-DIARYL-2-IMINO-IMIDAZOLIDINES AND COMPOUNDS

Lajos Toldy; Zoltan Zubovics; Mariann Kürti, and Inge Schäfer, all of Budapest, Hungary, assignors to EGYT Gyógyszervegyészeti Gyár, Budapest, Hungary
Division of Ser. No. 30,149, Apr. 16, 1979, Pat. No. 4,284,642. This application Aug. 11, 1981, Ser. No. 292,002
Claims priority, application Hungary, Apr. 21, 1978, GO-1400
Int. Cl.³ C07D *233/44, 233/48*
U.S. Cl. 548—315 **4 Claims**

1. A compound of the general formula (I),

(I)



wherein

R^1 and R^5 each represent a phenyl group optionally substituted with 1 to 3 lower alkoxy, halo, lower alkyl, monohalo-(lower)-alkyl, dihalo-(lower)-alkyl and/or trihalo-(lower) alkyl groups,

R^2 stands for hydrogen or a lower alkyl group optionally substituted with a hydroxy group or 1 to 3 halogen atoms,

R^3 and R^4 each represent a hydrogen atom or a lower alkyl group, and

R^6 stands for a carbamoyl, thiocarbamoyl or amidino group having optionally one or two lower alkyl and/or lower alkoxycarbonyl substituents, or a group of the general formula R^7—CO-wherein

R^7 stands for a lower alkoxy group, an aryloxy group, an aralkoxy group and

n is equal to 0,

with the proviso that when R^1 and R^5 each represent a phenyl group, R^2 and R^3 may not stand for hydrogen or a pharmaceutically acceptable acid addition salt, a pure isomer or an isomeric mixture thereof.

4,369,326

CARBAZOLYLMETHANE COMPOUNDS

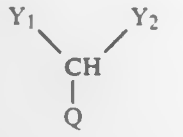
Jean C. Petitpierre, Kaiseraugst, and Peter Burri, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 29,593, Apr. 12, 1979, Pat. No. 4,254,032. This application Oct. 2, 1980, Ser. No. 193,312

Int. Cl.³ C07D *209/86*

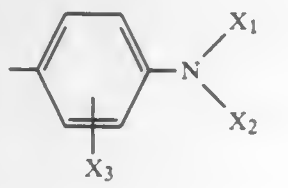
U.S. Cl. 548—418 **12 Claims**

1. A carbazolylmethane compound of the formula



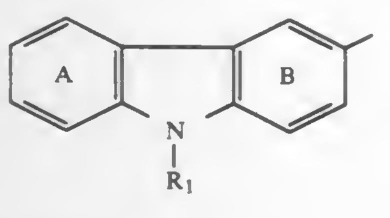
wherein Q is a phenyl, diphenyl or naphthyl radical, which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy, or an amino-substituted phenyl radical of the formula

(1b)



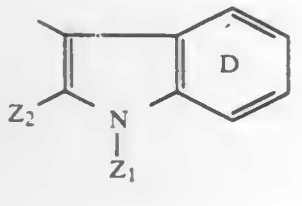
one of Y_1 and Y_2 is a 3-carbazolyl radical of the formula

(1a)



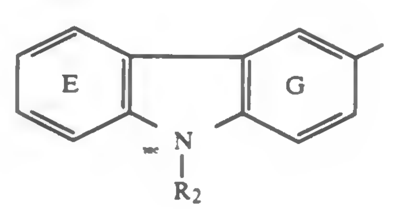
and the other is a 3-indolyl radical of the formula

(1c)



a 3-carbazolyl radical of the formula

(1d)



a 3-carbazolyl radical of the formula (1a) or an amino-substituted phenyl radical of the formula (1b), each of X_1 and X_2 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or X_1 and X_2 together with the nitrogen atom to which they are attached represent a 5- or 6-membered heterocyclic radical, X_3 represents hydrogen, halogen, nitro, lower alkyl, or lower alkoxy, each of R_1, R_2 and Z_1 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents alkenyl containing not more than 12 carbon atoms, acyl of 1 to 12 carbon atoms, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl, lower alkoxy or nitro, and Z_2 represents hydrogen, lower alkyl or phenyl, the ring A is substituted by a phenyl radical or one or two fused benzene nuclei, and the phenyl radical, the fused benzene nucleus and the rings B, D, E and G, each independently of the others, are unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl, with the proviso that only one of Q, Y_1 and Y_2 is an amino-substituted phenyl radical of formula (1b).

4,369,327

PREPARATION OF PHTHALIC ANHYDRIDE

Dieter Stockburger; Wilhelm Schultz, both of Gruenstadt; Johannes E. Schmidt; Friedrich Wirth, both of Ludwigshafen; Herwig Hoffmann, Frankenthal; Bernhard Holzknecht, Ellerstadt, and Klaus Wintermantel, Weinheim-Oberflockenbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,177

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044518

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—248 **6 Claims**

1. In a process for the preparation of phthalic anhydride (PA) by catalytic oxidation of a vaporized naphthalene or o-xylene with air at elevated temperatures and pressures, a preheated mixture of compressed air and naphthalene or o-xylene being passed into a reactor charged with the catalyst, and the reaction gas leaving the reactor being cooled to a temperature of 140° to 180° C. and then passed through a separator in which the PA is separated out as a solid, the improvement which comprises;

preheating the air fed to the reactor, before or after the admixture of naphthalene or of o-xylene, by using it to cool the reaction gas in the PA separator, and

cooling the feed air by introduction of the naphthalene or o-xylene with an injection cooling effect.

4,369,328

OXYGENATED ALICYCLIC COMPOUNDS AND PROCESS FOR PREPARING SAME

Karl-Heinrich Schulte-Elte, Onex; Bernard Egger, Bernex, and Bernard Muller, Geneva, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Jul. 24, 1981, Ser. No. 286,689

Claims priority, application Switzerland, Aug. 26, 1980, 6413/80

Int. Cl.³ C07D *303/48*

U.S. Cl. 549—546 **3 Claims**

1. 2,6,6-Trimethyl-1,2-epoxy-cyclohexane-1-carboxylic acid.

4,369,329

SUBSTITUTED TARTARIC ACID ESTERS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS POLYMERIZATION INITIATORS

Heinrich Wolfers, Reurdt; Hans Rudolph, Krefeld, and Heinrich Alberts, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 128,801

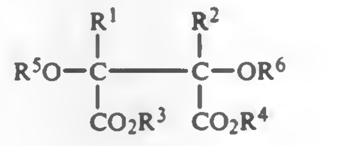
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909951

Int. Cl.³ C07F *7/04, 7/08, 7/18*

U.S. Cl. 556—442 **2 Claims**

1. Ethers of 1,2-disubstituted tartaric acid esters corresponding to the following formula (II):

(II)



$$R^5O-\underset{CO_2R^3}{\overset{R^1}{C}}-\underset{CO_2R^4}{\overset{R^2}{C}}-OR^6$$

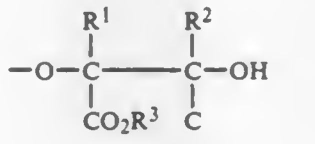
in which

- R^1 and R^2 represent linear or branched C_1–C_{10} alkyl radicals optionally substituted by methoxy, chlorine or fluorine, C_5–C_7 cycloalkyl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine, C_7–C_{10} aralkyl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine, or C_6–C_{12} aryl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine,
- R^3 and R^4 represent linear or branched C_1–C_{18} alkyl radicals optionally substituted by methoxy, Chlorine or fluorine, C_5–C_7 cycloalkyl radicals optionally substituted by C_1C_4 alkyl, methoxy, chlorine or fluorine, C_7–C_{10} aralkyl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine, C_6–C_{10} aryl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine, or triorganosilyl radicals containing from 3 to 18 carbon atoms,

R^5 and R^6 represent
  - (1) a hydrogen atom with the proviso that at most one of the two substituents is a hydrogen atom,
  - (2) C_1–C_{10} alkyl radicals optionally substituted by methoxy, chlorine or fluorine, C_5–C_7 cycloalkyl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine, C_7–C_{10} aralkyl radicals optionally substituted by C_1–C_4 alkyl, methoxy, chlorine or fluorine, or
  - (3) $SiR^7R^8(O_nSiR^9R^{10})_mR^{11}$ and

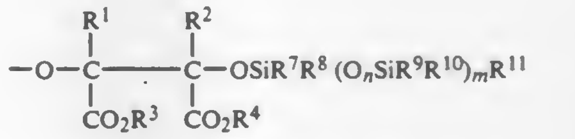
R^7, R^8 and R^{11} represent
  - (a) methyl, ethyl, phenyl, benzyl, chloromethyl, hydroxyl, methoxy or ethoxy, or
  - (b) a radical corresponding to the formula (III) or (IV):

(III)



$$-O-\underset{CO_2R^3}{\overset{R^1}{C}}-\underset{C}{\overset{R^2}{C}}-OH$$

(IV)



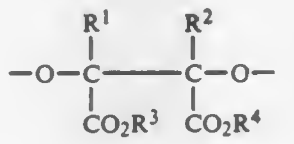
$$-O-\underset{CO_2R^3}{\overset{R^1}{C}}-\underset{CO_2R^4}{\overset{R^2}{C}}-OSiR^7R^8(O_nSiR^9R^{10})_mR^{11}$$

R^9 and R^{10} are as defined in (3a) and

n=0 or 1,

m=0 or an integer or from 1 to 10; and in which the compounds corresponding to formula (II) in case (3) may contain the component structure (V):

(V)



$$-O-\underset{CO_2R^3}{\overset{R^1}{C}}-\underset{CO_2R^4}{\overset{R^2}{C}}-O-$$

attached through silicon atoms or groups containing silicon atoms from 1 to 10 times and, in the $SiR^7R^8(O_nSiR^9R^{10})_mR^{11}$-radicals where they function as terminal groups, the substituents R^7, R^8 and R^{11} may have the meanings defined in (3a).

ELECTRICAL

4,369,330

HOUSING FOR ELECTRICAL COMPONENTS, COMPONENT GROUPS OR INTEGRATED CIRCUIT

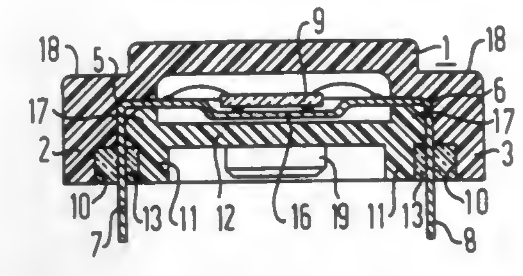
Dieter Pilz, Zugspitzstrasse 6, D-8039 Puchheim, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 244,902

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011730

Int. Cl.³ H05K *5/06*

U.S. Cl. 174—52 FP **2 Claims**



1. A housing for electrical components, component groups or integrated circuits, comprising a rectangular dish part with oppositely disposed side walls having recesses and a set-back portion formed therein, a cover part being inserted in said dish part and having an outwardly protruding rib disposed thereon forming a circular channel with said set-back portion, connecting parts having a right angle bend and being disposed in and fitted to said recesses for mechanically and electrically connecting an electrical component to a printed circuit outside the housing, and synthetic casting resin filling said channel for hermetically sealing said connecting parts to said dish and cover parts.

4,369,331

ETHYLENE POLYMER COMPOSITIONS STABILIZED AGAINST WATER TREEING BY AN ORGANO TITANATE; AND THE USE THEREOF AS INSULATION ABOUT ELECTRICAL CONDUCTORS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1980, Ser. No. 218,794

Int. Cl.³ C08K *5/05;* **H01B** *3/30, 7/00*

U.S. Cl. 174—110 PM **12 Claims**

1. A water treeing resistant, crosslinkable composition, devoid of added mineral filler, comprising an ethylene polymer, a heat stabilizer, an organic peroxide and a hydrolyzable organo titanate having the formula:

$$Ti(OR)_4$$

wherein R is hydrogen or a hydrocarbon radical, with at least one R being a hydrocarbon radical, said hydrolyzable organo titanate being present in an amount sufficient to improve the water treeing resistance of said composition.

4,369,332

KEY VARIABLE GENERATOR FOR AN ENCRYPTION/DECRYPTION DEVICE

Carl M. Campbell, Jr., Newtown Square, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 26, 1979, Ser. No. 78,913

Int. Cl.³ H04K *1/00*

U.S. Cl. 178—22.07 **29 Claims**

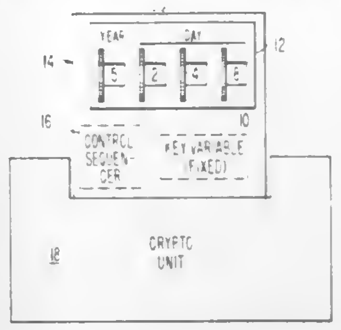
1. An apparatus for generating a working key variable for use in a cryptographic device, said cryptographic device including an input for incoming data, an input for a key variable and an output for translated data, said apparatus comprising:

plug-in means, engageable with said cryptographic device by an operator, said plug-in means for initiating and controlling the generation of one of said working key variables, said plug-in means including

switchable means, settable by said operator, said switchable means for entering an operator specified variable,

memory means for storing a fixed key variable, and

control means for causing the transfer of said operator specified variable to the incoming data input of said cryptographic device and the transfer of said fixed key variable to the key variable input of said cryptographic device, said control means additionally for activating said cryptographic device, wherein said operator specified variable is encrypted in accordance with said fixed key variable, whereby said working key variable is produced at the translated data output of said cryptographic device; and



means, connected to the translated data output of said cryptographic device and the key variable input of said cryptographic device, said latter means for supplying said generated working key variable as the key variable input to said cryptographic device.

4,369,333

METHOD AND APPARATUS FOR ENCIPHERING AND DECIPHERING OF INFORMATION

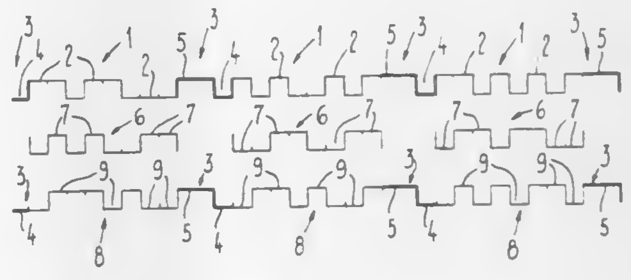
Bruno Gemperle, Steinhausen, and Oskar Stürzinger, Baar, both of Switzerland, assignors to Crypto AG, Steinhausen, Switzerland

Filed Aug. 5, 1980, Ser. No. 175,370

Claims priority, application Switzerland, Aug. 17, 1979, 7551/79

Int. Cl.³ H04L *9/02*

U.S. Cl. 178—22.13 **11 Claims**



1. A method for enciphering and deciphering information comprising the steps of:

enciphering at a transmitter end plain information signal groups which are separated from one another by separation signals;

carrying out a deciphering of the plain information signal groups at the receiver end;

inserting at the transmitter end between the information signal groups, upon absence of plain information signals, fill signals which are insignificant as to their information content;

said fill signals likewise being separated by separation signals; and

at the transmitter end enciphering at least part of the separation signals.

4,369,334
AUDIBLE ANNOUNCEMENT IN AN ELECTRONIC CASH REGISTER

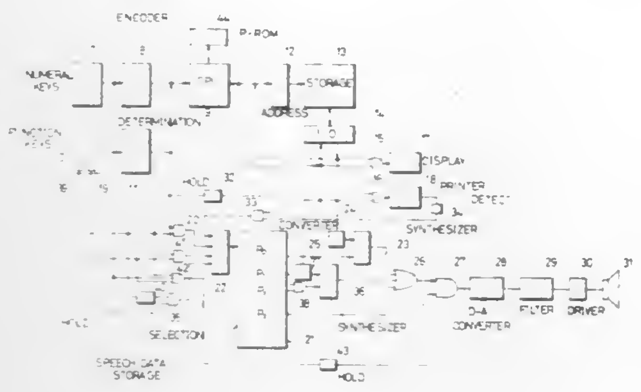
Hiroshi Nakatani; Masahide Ishida, both of Yamatokoriyama, and Hachizou Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1980, Ser. No. 130,346

Claims priority, application Japan, Mar. 16, 1979, 54-32142; Mar. 16, 1979, 54-32143; Mar. 16, 1979, 54-32144; Mar. 16, 1979, 54-32145

Int. Cl.^{3} G10L *1/00*

U.S. Cl. 179—1 SM **5 Claims**



1. An electronic cash register for use in conjunction with a sales transaction, said sales transaction including the computation of a total, the tendering of money, and the rendering of change in response thereto, comprising:
- numeral keys for introducing information relating to the computation of said total and the tendering of said money;
- function keys for conducting said sales transaction, said function keys including a transaction completion instruction key and a handed money instruction key;
- central processor unit means connected to said numeral keys and said function keys and responsive to actuation thereof for performing a calculation operation on said information thereby producing said total and for storing said total therein, said processor unit means storing the amount of the tendered money therein in response to the information entered via said numeral keys, said processor unit means calculating the amount of said change in accordance with the tendered money and the total;
- a printer system connected to said central processor unit means for printing out the information introduced via said numeral keys and said total produced by said central processor unit means;
- a detection circuit connected to an output terminal of said printer system for developing a detection output when printing in conjunction with a transaction is complete;
- synthetic speech data storage means for storing synthetic speech data therein related to said sales transaction;
- selection and synthesis means connected to said central processor unit means and to said synthetic speech data storage means and responsive to actuation of said transaction completion instruction key, said handed money instruction key and said detection output for selecting desired ones of said synthetic speech data stored in said synthetic speech data storage means and for synthesizing the selected synthetic speech data with the total, the amount of the money tendered, and the amount of said change stored in said central processor unit means thereby producing synthesized synthetic speech;
- said selection and synthesis means selecting synthetic speech data relating to the computation of said total and the tendering of said money in response to actuation of said transaction completion instruction key and synthesizing said synthetic speech data with said total and the amount of the money tendered;
- said selection and synthesis means selecting synthetic speech data relating to the rendering of said change in response to actuation of said handed money instruction key and synthesizing the selected synthetic speech data with the amount of said change; and
- audio system means connected to said synthetic speech data storage means and responsive to the synthesized synthetic speech data produced by said selection and synthesis means for providing an audible announcement representative of said total, the money tendered, and the change rendered in response thereto.

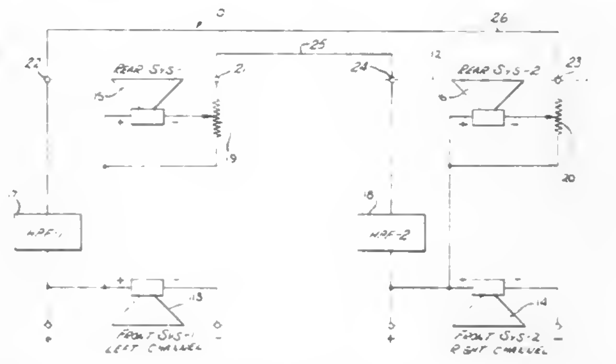
4,369,335
TWO-CHANNEL, FOUR LOUDSPEAKER-COMPONENT ENHANCED STEROPHONIC SYSTEM

Michael L. Petroff, 11436 Victoria Ave., Los Angeles, Calif. 90066

Filed Jul. 21, 1980, Ser. No. 170,523

Int. Cl.^{3} H04S *1/00*

U.S. Cl. 179—1 GA **3 Claims**



1. In a two-channel, four loudspeaker-component enhanced stereophonic system which receives a two-channel stereophonic signal including left and right channels which are derived from two amplifiers and which include:
- a. a first front loudspeaker system having a positive terminal and a negative terminal;
- b. a second front loudspeaker system having a positive terminal and a negative terminal;
- c. a first rear loudspeaker system having a positive terminal and a negative terminal;
- d. a second rear loudspeaker system having a positive terminal and a negative terminal, an improvement comprising:
  - a. a first speaker enclosure having a top, a back, a pair of sides, a bottom and a front, the front having a speaker opening wherein the first front loudspeaker may project sound outwardly therefrom and the back having a speaker opening wherein the first rear loudspeaker may project sound outwardly therefrom in the opposite direction;
  - b. a second speaker enclosure having a top, a back, a pair of sides, a bottom and a front, the front having a speaker opening wherein the second front loudspeaker may project sound outwardly therefrom and the back having a speaker opening wherein the second rear loudspeaker may project sound outwardly therefrom in the opposite direction;
  - c. a first electronic matrix network for interconnecting the positive terminal of the first front loudspeaker system and the negative terminal of the second rear loudspeaker system; and
  - d. a second electronic matrix network, which is identical to said first electronic matrix network, for interconnecting the positive terminal of the second front loudspeaker system and the negative terminal of the first rear loudspeaker system whereby the first and second loudspeaker systems are directly interconnected to the corresponding amplifier channel signals and whereby the left and right channel signals are subtracted in the two rear loudspeaker systems in order to provide sounds which appears to emanate from behind both of said first and second speaker enclosures.

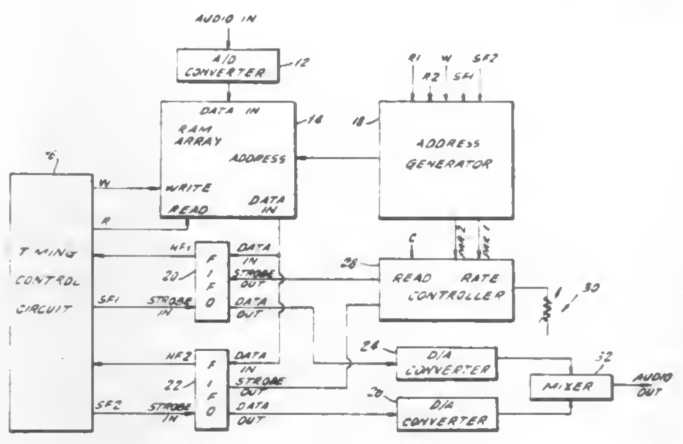
4,369,336
METHOD AND APPARATUS FOR PRODUCING TWO COMPLEMENTARY PITCH SIGNALS WITHOUT GLITCH

Anthony Agnello, Brooklyn, N.Y., assignor to Eventide Clockworks, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 97,266, Nov. 26, 1979, abandoned. This application Jan. 21, 1981, Ser. No. 226,598

Int. Cl.^{3} H04B *1/66*

U.S. Cl. 179—1 J **11 Claims**



1. Apparatus for varying the pitch of an audio frequency input signal, comprising:
- (A) sampling means for sampling said input signal at a sampling rate fc and for generating a respective digital signal representative of each successive said sample;
- (B) memory means for storing said digital signals as they are generated by said sampling means, said memory means being capable of storing a plurality of said digital signals;
- (C) signal removal means for:
  - (1) removing said digital signals from said memory means at a first rate which switches between an increased frequency $fi>fc$ and a decreased frequency $fd<fc$ and generating a first analog signal being substantially identical in shape to said input signal but being delayed with respect thereto and having a frequency which is different therefrom;

and
  - (2) removing said digital signals from said memory means at a second rate which switches between said increased frequency $fi>fc$ and said decreased frequency $fd<fc$ and generating a second analog signal as a function thereof, said second analog signal being substantially identical in shape to said input signal but being delayed with respect thereto and having a frequency which is different therefrom; said first and second rates always being different such that one of said rates is at said increased frequency fi whenever the other of said rates is at said decreased frequency fd;
- (D) said signal removal means including delay limiting means for causing the frequency of said first and second rates to switch whenever the delay of either of said analog signals with respect to said input signal exceeds predetermined limits; and
- (E) means for combining said first and second analog signals to form an audio frequency output signal having a desired tone effect.

4,369,337
CENTRAL OFFICE INTERFACE CIRCUIT

Bryan R. Parlor, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

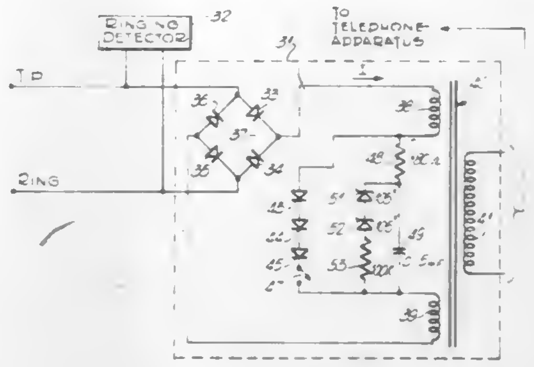
Filed May 5, 1980, Ser. No. 146,237

Claims priority, application Canada, Apr. 30, 1980, 350902

Int. Cl.^{3} H04M *1/00*

U.S. Cl. 179—81 R **6 Claims**

1. An interface circuit for interconnection between first and second leads of a central office line, and a telephone apparatus, said circuit comprising:
- a rectifier means having a pair of input terminals for direct connection to said line, and a pair of output terminals;
- a selectively operable switch means, for connection in a series circuit relationship with said telephone apparatus and said pair of output terminals wherein said telephone apparatus includes a transformer having at least one primary winding and one secondary winding, and wherein said series circuit relationship is made with said primary winding; and
- a capacitance means for connection in parallel to said switch means such that said capacitance can become charged to a maximum voltage level via said rectifier means, when said switch means is open, thus impeding the flow of alternating current via said capacitance.



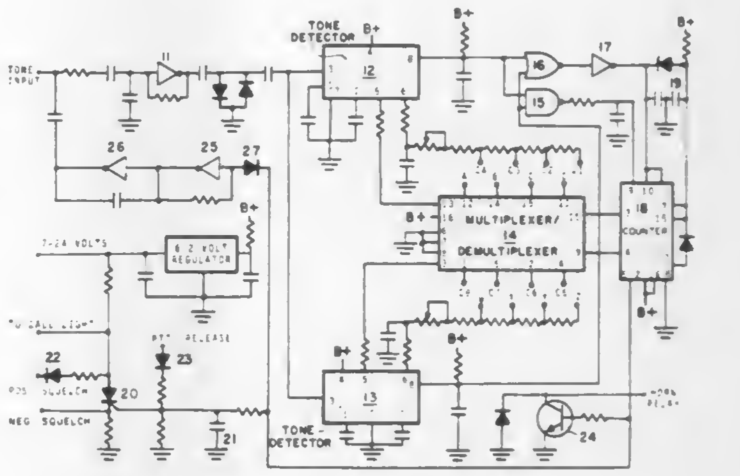
4,369,338
SUB-MINIATURE TONE DECODER

Charles Soulliard, Tucson, Ariz., assignor to Midian Electronics, Inc., Tucson, Ariz.

Filed Sep. 22, 1980, Ser. No. 189,207

Int. Cl.^{3} H04M *1/50*

U.S. Cl. 179—84 VF **10 Claims**



1. A tone decoder, comprising:
- a first tone detector for providing a logic signal in response to detection of a predetermined frequency;
- a second tone detector for providing a logic signal in response to detection of a second predetermined frequency;
- counting means for counting simultaneous logic signals from said first and second tone detectors; and
- switching means responsive to a predetermined count in said counting means for changing the frequency to which said first and second tone detectors are responsive.

4,369,339

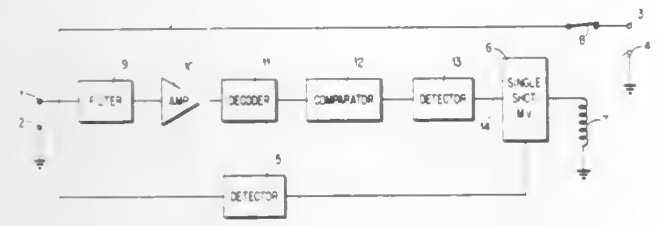
METHOD FOR COMPLETING THE CONNECTION BETWEEN A TELEPHONE EXCHANGE AND THE PHONE SUBSCRIBER'S LINE IN RESPONSE TO THE RECEPTION, AT THE EXCHANGE, OF A PRE-ESTABLISHED CODE

Marcelo Castro, and Horacio Castro, both of El Salvador 5962, Buenos Aires, Argentina

Filed Oct. 6, 1980, Ser. No. 194,365

Int. Cl.^{3} H04M *3/38*

U.S. Cl. 179—84 C **10 Claims**



1. A method for initially opening and subsequently completing the connection between a telephone exchange and a called subscriber in response to the reception, at the exchange, of a pre-established code from a calling end, the method comprising, once a final selector stage at the exchange has completed its selecting operation in response to a call, the steps of: (A) detecting at the exchange the presence of a ringing signal at the output of the exchange final selector stage corresponding to the phone line of the called subscriber; (B) opening the connection between said final selector stage and the called subscriber's line in response to the detection of said ringing signal; (C) filtering-out the ringing signal and letting through "Touch-Tone" code signals received from the calling end; (D) decoding the characters of the "Touch-Tone" code signals; (E) comparing the decoded characters with predetermined characters and generating a validation signal in response to a match between said decoded and predetermined characters; and (F) closing again the connection between the exchange final selector stage and the called subscriber's line in response to said validation signal and consequently sending ringing signals to the called subscriber.

4,369,340

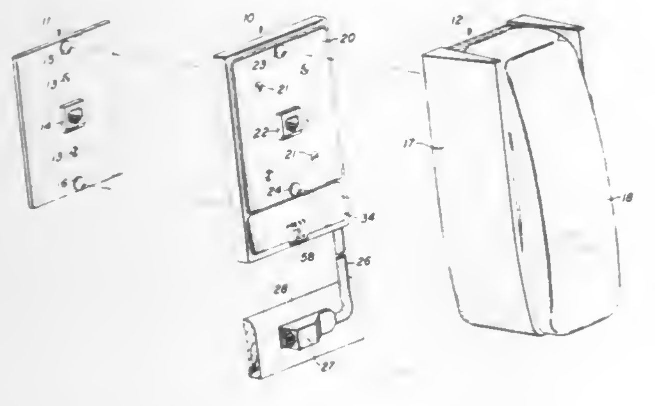
WALL TELEPHONE ADAPTER ASSEMBLY

Charles M. Beatenbough, Buford, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 4, 1980, Ser. No. 184,048

Int. Cl.^{3} H04M *1/11*

U.S. Cl. 179—146 R **5 Claims**



1. An adapter assembly (**10**) for connecting one or more telephone sets (**12**) to a wall jack outlet (**11**, **14**) having a mounting stud (**16**), said stud having a shank and a flanged head, said adapter assembly (**10**) comprising a backplate (**19**) having a keyhole aperture (**31**) having an enlarged region dimensioned to admit said flanged head and a slotted region (**33**) for admitting only said shank, an adapter jack outlet (**22**), electrical wiring for interconnecting said wall jack outlet (**14**) and said adapter jack outlet (**22**), electrical wiring for interconnecting said wall jack outlet (**14**) and said adapter jack outlet (**22**), and extension cord means (**26**) connected to said wiring terminating in an auxiliary jack outlet (**27**) characterized in a locking mechanism for locking said adapter assembly (**10**) to said wall jack outlet (**11**, **14**) comprising a lid (**34**) hingedly mounted on said assembly (**10**) over said keyhole aperture (**31**), said lid (**34**) having a lug (**59**) extending inwardly from the rear surface thereof, said lug (**59**) being dimensioned and positioned to occupy sufficiently said enlarged region of said keyhole aperture (**31**) when said lid (**34**) is closed to prevent removal of said adapter assembly (**10**) over said mounting stud (**16**) when said shank of said mounting stud (**16**) is admitted in said slotted region (**33**).

4,369,341

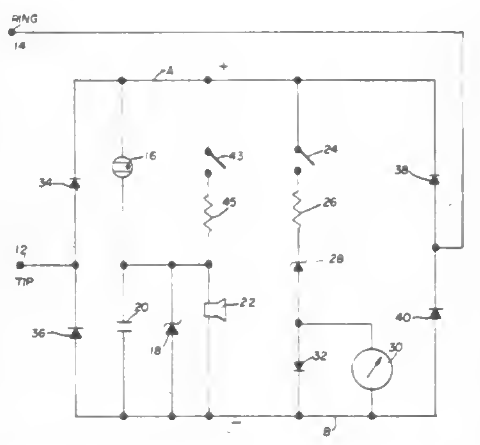
CUSTOMER LINE TEST TERMINATION DEVICE

Omprakash G. Ahuja, East Meadow, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed May 11, 1981, Ser. No. 262,451

Int. Cl.^{3} H04M *3/24*

U.S. Cl. 179—175.2 R **12 Claims**



1. A line test termination device for use on a telephone subscriber line having a pair of electrically conductive paths to provide an audio-visual indication when interrogated by the telephone central office and a subscriber test to indicate the operability of said subscriber line, comprising, in combination:

(a) a first current path having a light emitting voltage breakover means connected in series with an audio indicator means;

(b) a second current path having a first normally open switch means, a first resistance means, a voltage breakover means and an indicating means connected in series, said second current path being connected in parallel with said first current path; and

(c) current polarizing means, connected across said pair of electrically conductive paths for providing a unidirectional flow of current through said first and second current paths regardless of the polarity of the voltage applied across said pair of electrically conductive paths.

4,369,342

MECHANISM FOR PREVENTING THE SIMULTANEOUS LOCKING FOR USE IN A PUSH-BUTTON DEVICE

Yoshio Suzuki, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

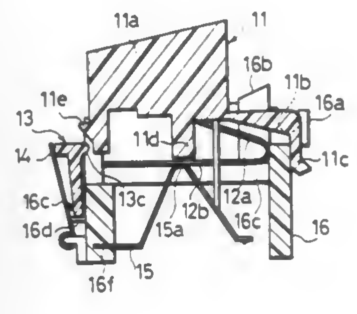
Filed Sep. 5, 1980, Ser. No. 184,298

Claims priority, application Japan, Sep. 8, 1979, 54-124340[U]

Int. Cl.^{3} H01H *9/20*

U.S. Cl. 200—5 E **1 Claim**

1. In a switch device including a plurality of push buttons movable inwardly to a latched state, a mechanism for preventing simultaneous latching of more than one push button, including a respective cam-engaging portion extending outwardly from each said push button, means including respective spring elements for each said push button urging said push buttons to the un-latched position, a common cam member located adjacent said push buttons and having a plurality of cam surfaces lying oppositely respective cam-engaging portions, means including at least one spring member urging said cam surfaces towards engagement with said cam-engaging portions to apply a force whereby inward movement of any push button towards its latched position can slide the cam-engaging portion associated therewith against the respective cam surface to move the cam member out of engagement with any previously latched push button and, after the cam-engaging portion has moved past the respective cam surface, urge said cam surface against the cam-engaging portion of the actuated push button with sufficient frictional resistance therebetween to hold the actuated push button in its latched position, said force being insufficient to hold two of said push buttons in their latched position against the resilient forces applied by the spring elements thereof.



4,369,343

IGNITION DISTRIBUTOR HAVING ELECTRODES WITH THERMISTOR DISCHARGING PORTIONS

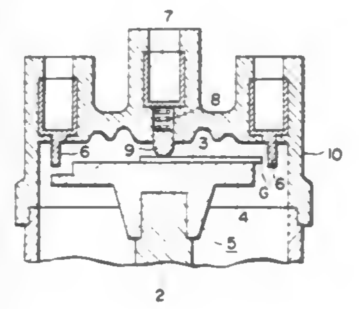
Masazumi Sone, Tokyo, and Iwao Imai, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Hitachi, Ltd., Tokyo, both of, Japan

Filed Nov. 21, 1980, Ser. No. 209,028

Claims priority, application Japan, Nov. 26, 1979, 54-152061; Dec. 27, 1979, 54-169273; Apr. 3, 1980, 55-42844

Int. Cl.^{3} H01H *19/00;* **F02P** *1/00*

U.S. Cl. 200—19 R **2 Claims**



1. A distributor for an internal combustion engine, comprising:

a distributor rotor having a rotor electrode including a discharging portion;

a plurality of stationary electrodes, each of which includes a discharging portion and is arranged along a circular locul defined by the rotating distributor rotor with a discharging gap defined by the discharging portion of said rotor electrode and the discharging portion of each of said plurality of stationary electrodes as said rotor rotates;

at least one of said discharging portion of said rotor electrode and said discharging portion of each of said stationary electrodes is made of a positive temperature coefficient (PTC) thermistor.

4,369,344

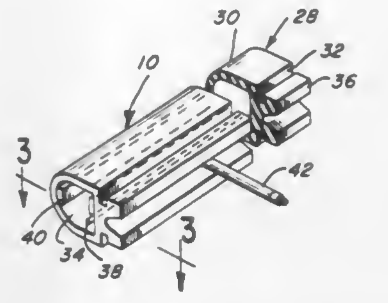
SENSITIVE DOOR EDGE WIEGAND MODULE SWITCH ASSEMBLY

John A. Diamond, Glenview, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Jul. 26, 1979, Ser. No. 60,925

Int. Cl.^{3} H01H *3/16;* **H01F** *7/00;* **E05F** *15/02;* **G11C** *11/00*

U.S. Cl. 200—61.43 **8 Claims**



1. Improved sensitive edge for detecting obstructions in the path of a power door, comprising a resilient deformable body defining an internal hollow chamber;

signal means generating an electrical current pulse in response to encountering a magnetic field of predetermined intensity in said chamber continuously disposed internal of said edge; and,

means for generating a magnetic field of said predetermined intensity movably mounted in said chamber spaced from and continguous said signal means;

wherein deformation of said edge at any point moves said magnetic field into close proximity to said signal means thereby generating said current pulse.

4,369,345

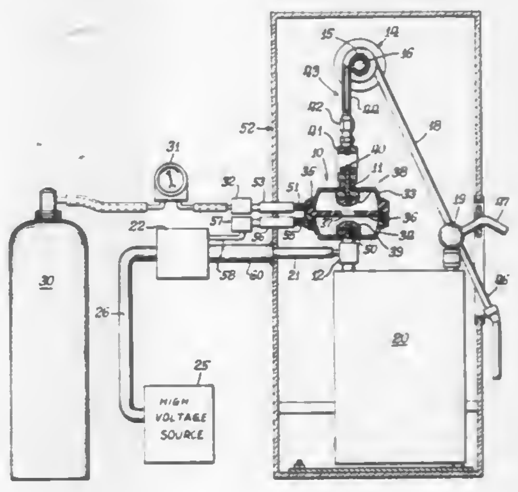
METHOD OF AND APPARATUS FOR SELECTIVE LOCALIZED DIFFERENTIAL HYPERTHERMIA OF A MEDIUM

George H. Czerlinski, 9111 Forest View Rd., Skokie, Ill. 60203

Division of Ser. No. 853,269, Nov. 11, 1977, abandoned. This application Oct. 18, 1979, Ser. No. 86,262

Int. Cl.^{3} H05B *6/06;* **A61N** *1/42*

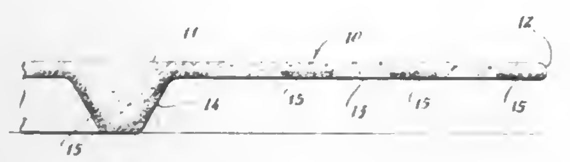
U.S. Cl. 219—10.43 **6 Claims**



1. A method of producing localized hyperthermia in a medium having an ambient temperature, including the steps of: placing in said medium a quantity of particles of a magnetizable material having a Curie point approximately one-half the desired temperature rise above said ambient temperature of said medium, and a predetermined median radius; and applying an alternating magnetic field to said particles at a frequency inversely related to the square of said median radius of said particles to maximize the dissipated heat coupling to the localized areas of said medium surrounding said particles.

4,369,346
MICROWAVE BAKING UTENSIL

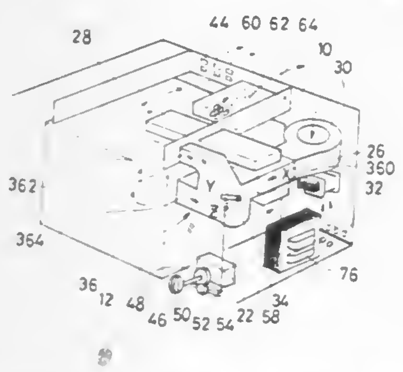
Bill J. Hart; Billy E. Smith, both of Bloomington, and Maverine H. Short, LeRoy, all of Ill., assignors to National Union Electric Corporation, Greenwich, Conn.
Filed Jun. 20, 1979, Ser. No. 50,479
Int. Cl.^{3} H05B *9/06*
U.S. Cl. 219—10.55 E **8 Claims**



1. A utensil for microwave baking comprising a unitary body of a porous ceramic material having an upper cooking surface and an underside support surface, and an open pattern of a compound of an inorganic solid carrier and being ion implanted on said underside support surface, said carrier being a material selected from the group consisting of Groups III, IV and V of the periodic table, said material having an n-type impurity that can exist in a valence state higher than the carrier and a p-type impurity that can exist at a valence state lower than said carrier, said compound penetrating the molecules of said ceramic material at said underside surface.

4,369,347
DAMPER ACTIVATION IN A COMBINED MICROWAVE AND ELECTRIC HEATING OVEN

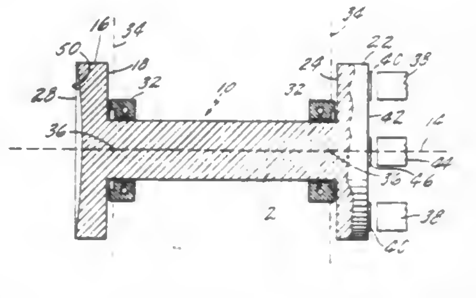
Yasuo Shin, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 9, 1980, Ser. No. 138,749
Int. Cl.^{3} H05B *6/68*
U.S. Cl. 219—10.55 B **13 Claims**



1. A combined microwave and electric heating oven comprising:
- an oven wall defining an oven cavity therein;
- microwave generating means disposed at the outside of the oven cavity for performing a microwave cooking operation;
- electric heater means for performing an electric heating cooking operation;
- blower fan means operatively associated with the microwave generating means for creating a forced air flow for cooling said microwave generating means;
- air flow guide means for directing said forced air flow toward said oven cavity;
- damper means disposed in said air flow guide means, said damper means selectively taking a first position wherein said forced air flow is introduced into said oven cavity and a second position wherein said forced air flow is not introduced into said cavity;
- first cooking time period determination means for determining a period of microwave cooking wherein said microwave generating means is energized; and
- drive means operatively associated with said first cooking time period determination means for driving said damper means, said damper means being positioned in said first position when said microwave generating means is energized, and said damper being positioned in said second position when said microwave generating means is de-energized and said electric heater means is energized.

4,369,348
METHOD AND APPARATUS FOR HIGH FREQUENCY OPTICAL BEAM OSCILLATION

Karl A. Stetson, Coventry, and Conrad M. Banas, Bolton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Division of Ser. No. 1,101, Jan. 4, 1979. This application Sep. 12, 1980, Ser. No. 186,867
Int. Cl.^{3} B23K *27/00*
U.S. Cl. 219—121 LP **3 Claims**

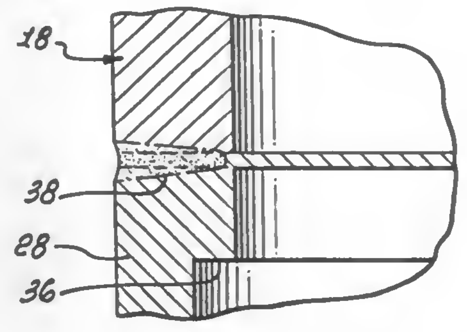


1. A method of time averaging the intensity distribution of a focussed beam of radiation incident onto a workpiece comprising:
- directing a beam of radiation to a reflective surface attached to one end of a compound beam wherein the reflective surface focusses the radiation to a focus zone incident onto a workpiece;
- coupling drive energy into the compound beam to produce vibratory motion therein resulting in the oscillatory motion of the reflective surface attached to one end of the compound beam producing vibratory motion of the focus zone over a radiation-material interaction zone of the workpiece wherein the vibratory motion of the focus zone effectively time averages the interaction of the intensity distribution of the radiation with the workpiece, wherein the drive energy is coupled into the compound beam by first and second pairs of drivers, the drivers in each pair positioned diametrically opposed one another proximate a second end of the compound beam, said second pair of drivers positioned in an orthogonal relationship to said first pair of drivers, operating at a frequency tuned to a fundamental vibratory mode of the compound beam resulting in first and second line scans of the focus zone through the radiation-material interaction zone.

4,369,349
TRANSDUCER DIAPHRAGM ELEMENTS AND METHODS AND APPARATUS FOR MAKING SAME

Kjell E. Myhre, 941 Enterprise Ave., Inglewood, Calif. 90302
Division of Ser. No. 71,807, Sep. 4, 1979, Pat. No. 4,291,218, which is a continuation of Ser. No. 752,108, Dec. 20, 1976, abandoned. This application Apr. 8, 1981, Ser. No. 252,091
Int. Cl.^{3} B23K *15/00*
U.S. Cl. 219—121 ED **4 Claims**

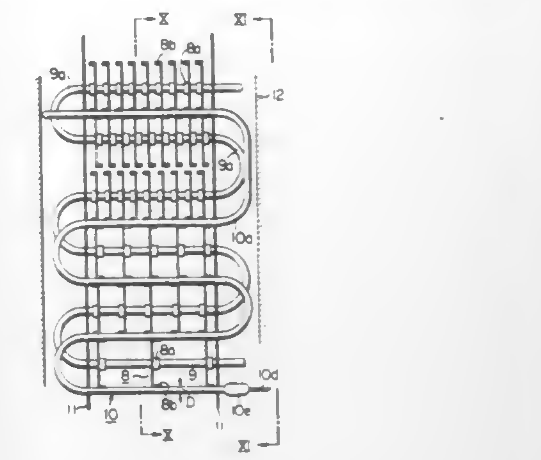
1. In a method of making a transducer, the improvement of combining a diaphragm and a first tubular member into a one-piece transducer diaphragm element by electron beam welding, comprising in combination the steps of:
- forming said first tubular member as a first heat sink having a first end coinciding with a first peripheral region on one major surface of said diaphragm and having a wall thickness for conducting heat away from said first peripheral region axially along said first tubular member;
- providing a second tubular member as a second heat sink having a second end congruent to said first end, coinciding with a second peripheral region on the opposite major surface of said diaphragm and having a wall thickness for conducting heat away from said second peripheral region axially along said second tubular member;
- sandwiching said diaphragm between said first and second ends of said first and second tubular members into a composite structure laterally delimited by the peripheries of said diaphragm and said first and second tubular members;
- welding said first and second ends of said first and second tubular members and a peripheral portion of said diaphragm between said first and second ends with an electron beam into a fillet-type welding joint monolithically unifying said diaphragm and first and second tubular members, by directing said electron beam radially inward onto and circumferentially along the junction between said sandwiched diaphragm and first and second tubular members;
- axially removing heat from said diaphragm through said first and second heat sinks during said electron beam welding; and
- removing said second tubular member after completion of said electron beam welding.

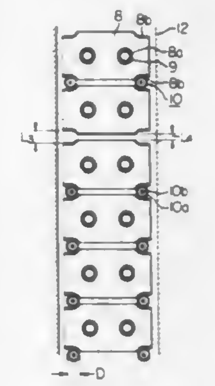


4,369,350
ELECTRIC DEFROSTER HEATER MOUNTING ARRANGEMENT FOR STACKED FINNED REFRIGERATION EVAPORATOR

Nobuyuki Kobayashi, Ohiramachi; Taisei Hosoda, Katsuta; Hideo Uzuhashi, Ohiramachi; Tamio Innami, Tsuchiura, and Humito Uzuhasi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 17, 1980, Ser. No. 131,172
Claims priority, application Japan, Nov. 29, 1978, 53-146461
Int. Cl.^{3} F25D *21/08;* **H05B** *3/02*
U.S. Cl. 219—201 **6 Claims**

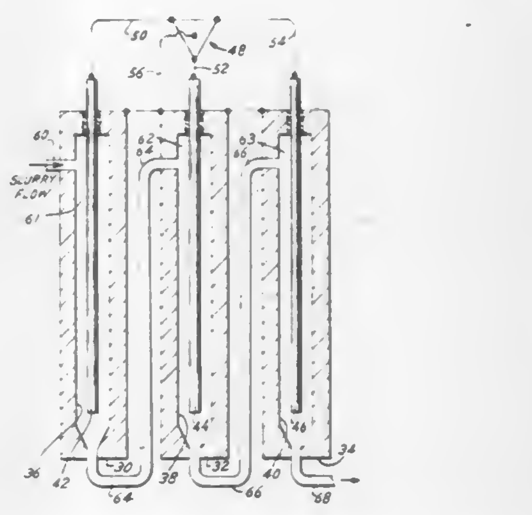
1. An evaporator of a refrigerating apparatus comprising:
- a refrigerant tube of serpentine form including a plurality of finned parallel straight portions connected together in series flow relationship by U-shaped unfinned connecting end portions and arranged to form a stacked assembly of side-by-side finned tube arrays, each tube array including a plurality of generally rectangular fins of a small size, each of the rectangular fins being formed with openings having cylindrical collars attached to edges of the openings for allowing said straight portions of said refrigerant tube to extend therethrough, said fins each being formed with heater supporting cutouts in four corners thereof, the cutouts at confronting corners of the fins of each immediately adjacent pair of finned tube arrays being juxtaposed to define a heater receiving space extending a length of the finned tube arrays; and
- an elongated heater supported by said juxtaposed heater supporting cutouts of the fins of a pair of immediately adjacent finned tube arrays in the stack and in thermal contact with the fins, said heater being substantially coextensive in length with the length of the tube arrays.





4,369,351
METHOD AND APPARATUS FOR HEATING LIQUIDS AND AGGLOMERATING SLURRIES

Lester G. Massey, Moreland Hills, Ohio; Robert I. Brabets, Lombard, Ill.; David A. George, Park Forest, Ill., and William A. Abel, Joliet, Ill., assignors to CNG Research Company, Cleveland, Ohio
Filed Mar. 6, 1980, Ser. No. 127,736
Int. Cl.^{3} H05B *3/60*
U.S. Cl. 219—284 **13 Claims**



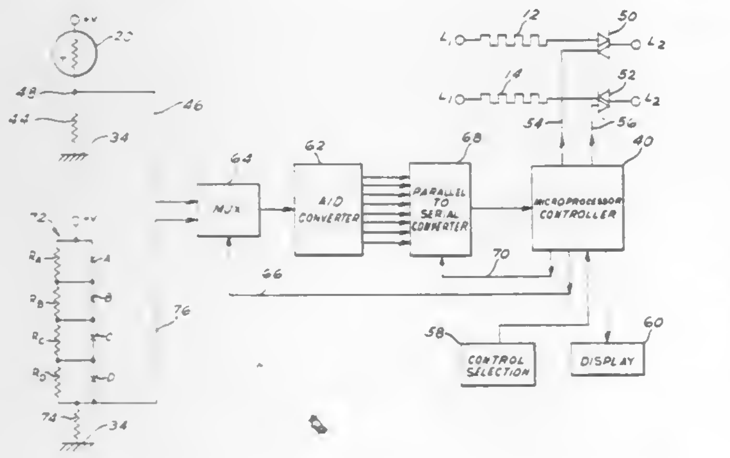
1. A method for heating a slurry of a liquid and a solid from a subcritical temperature, through the transition at the critical point and to a supercritical temperature, said slurry having a predetermined critical temperature, critical pressure and vapor pressure at known temperature conditions, which method comprises:

passing an electrical current through said slurry, such that the electrical resistance of the slurry dissipates the electrical current as heat energy within the slurry, said current being passed through the slurry in an amount sufficient to raise the temperature of the slurry from a subcritical temperature, through the transition at the critical point and to a temperature above its critical temperature while maintaining a pressure on the slurry greater than the vapor pressure of the slurry at least up to the critical pressure.

4,369,352

TEMPERATURE CONTROL SYSTEM FACILITATING COOKING TEMPERATURE CALIBRATION IN SELF-CLEANING OVEN

Howard R. Bowles, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Dec. 29, 1980, Ser. No. 220,867
Int. Cl.^{3} H05B *1/02*
U.S. Cl. 219—413 8 Claims



1. In an oven having a heating element for heating an oven enclosure, operable in two modes respectively corresponding to two different temperature ranges, and having an oven temperature sensor within the oven enclosure operable in both temperature ranges to provide a sensor output signal, the improvement which comprises:

temperature selection means for enabling the user to select a desired oven temperature setting including a self-cleaning temperature setting;

means responsive to said temperature selection means for establishing a reference temperature signal corresponding to the user selected temperature setting;

a calibration input device for generating a single calibration signal selectively corresponding to one of a plurality of discrete temperature offset values, said device including user operable means for selecting the desired one of said plurality of discrete offset temperature values; and

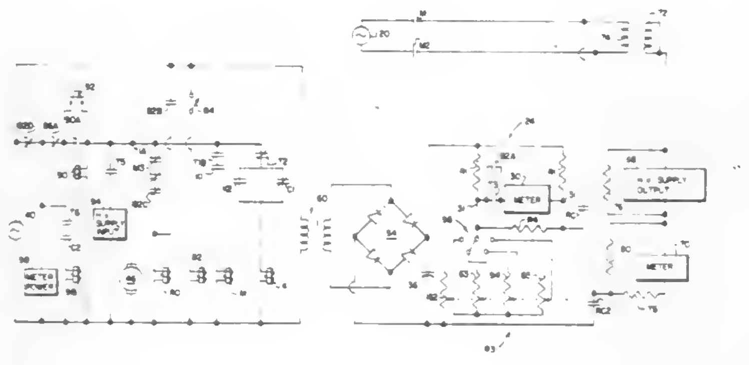
a controller responsive to said temperature sensor, and said calibration input device which operates during one of the modes to energize the heating element as a function of the temperature sensor output signal, the calibrating signal and the reference temperature signal and which operates during the other of the modes to energize the heating element only as a function of the temperature sensor output signal and the temperature reference signal, but not as a function of any calibration signal;

whereby temperature calibration for one of the temperature ranges corresponding to said one of the modes is facilitated without affecting temperature calibration for the other of the temperature ranges corresponding to said other of the modes.

4,369,353

APPARATUS AND METHOD OF DRYING A TRANSFORMER

Clarence G. Duenke, P.O. Box 1587, San Angelo, Tex. 76901
Continuation of Ser. No. 122,804, Feb. 19, 1980, abandoned, which is a continuation-in-part of Ser. No. 809,267, Jun. 23, 1977, abandoned. This application Jul. 2, 1981, Ser. No. 279,707
Int. Cl.^{3} H05B *1/02*
U.S. Cl. 219—492 11 Claims



1. An Apparatus for controllably heating a winding of a transformer, said transformer including a first winding of an unknown resistance, a second winding, and insulation disposed between said first and second winding, said apparatus comprising:

a resistance bridge circuit including balancing resistance means in one arm thereof and a balance detecting meter;

first switching means for connecting said first winding into another arm of said bridge circuit;

said balancing resistance means including a first variable resistor for initially balancing said bridge and presetting means for switchably incrementing said balancing means by an amount corresponding to a desired maximum temperature of said first winding;

second switching means for connecting said first winding to a source of current;

timing means for actuating said first and second switching means to alternately connect said first winding to said bridge circuit during a succession of measurement periods and to the source of current during a succession of heating periods;

first control means responsive to said meter for discontinuing the connecting of said first winding to said source of current for each heating period following a measurement period during which said bridge circuit is substantially balanced;

leakage current detection means for determining the resistance of insulation between said first and second windings;

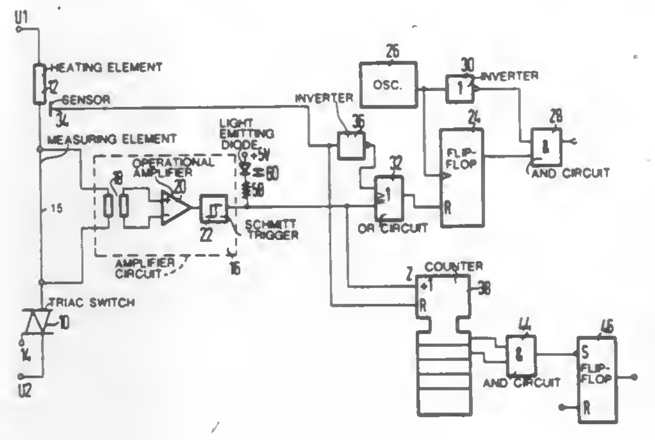
third switching means for activating said leakage current detection means, said timing means controlling said first, second and third switching means to activate said leakage current detection means during a succession of insulation resistance test periods occurring after each measurement period and before each heating period, and

second control means responsive to said leakage current detection means for deactivating said timing means upon determination of a resistance of said insulation of a minimum desired level when said insulation is at a temperature corresponding to the desired maximum heating temperature of said first winding.

4,369,354

ARRANGEMENT FOR MONITORING THE OPERATION OF A HEATING ELEMENT

Ludger Goedecke, Munich, and Hans von Hayek, Neuried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Oct. 14, 1980, Ser. No. 196,532
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944796
Int. Cl.^{3} H05B *1/02*
U.S. Cl. 219—506 27 Claims



1. An arrangement for monitoring the operation of a heating circuit which is connected to a pair of terminals of an alternating voltage source operating at a first frequency and which includes a switch and at least one heating element connected in series between the terminals, said arrangement comprising:

a switch;

at least one heating element connected in series with said switch;

an alternating voltage source operating at a first frequency and connected across the series connection of said switch and said heating element;

a measuring element connected in series with said switch and said heating element;

an amplifier circuit connected across said measuring element and operable to produce clock pulses in response to a predetermined voltage drop across said measuring element;

an oscillator producing an oscillator signal at a second frequency which is lower than the first frequency;

a flip-flop including an output, a dynamic input connected to said oscillator, and a reset input connected to said amplifier circuit and operable to produce a fault signal at its output in response to said oscillator signal and the loss of said clock pulses;

an OR circuit including a first input connected to said amplifier circuit, a second input and an output connected to said reset input of said flip-flop;

a sensor for sensing the heated state of said heating element and producing a corresponding signal; and

an inverter connected to said sensor for inverting its signal, and connected between said second input of said OR circuit and said sensor for resetting said flip-flop in response to said corresponding signal.

4,369,355

LENS CASE AND HEATING UNIT

Michael L. Helixon, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Jul. 21, 1980, Ser. No. 170,709
Int. Cl.^{3} H05B *3/06;* A61L *2/04*
U.S. Cl. 219—521 4 Claims

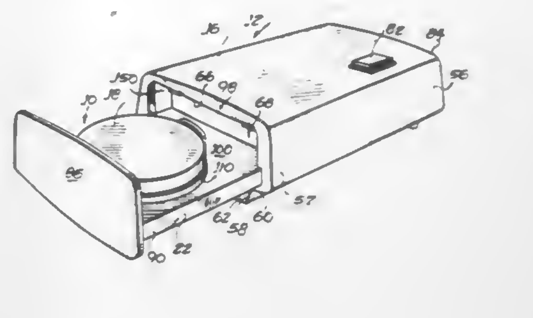
1. Apparatus for heating contact lenses comprising

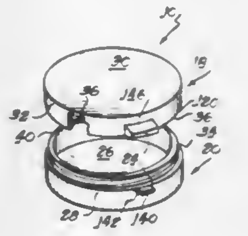
a removable lens case composed of a container member for receiving contact lens treating solutions and a closure member for said container member, said container member having an alignment means, said closure member having an insertion prevention means,

a housing defining a compartment for said lens case,

heating means within said housing adjacent said compartment,

a holder for said lens case adapted to be received within said compartment, said holder having case locating means





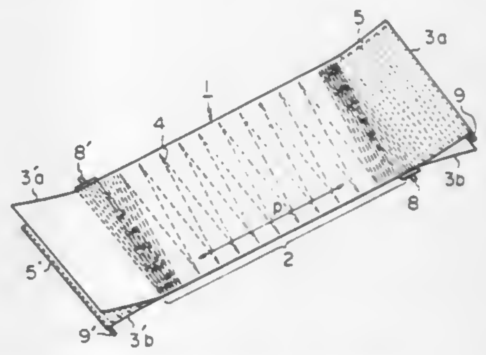
which cooperate with said alignment means to permit placement of said lens case in said holder only in a predetermined orientation, and

interference means which interfere with said insertion prevention means when said closure member is improperly applied to said container member to prevent the lens case from being fully inserted into said compartment.

4,369,356

HEAT-SHRINKABLE COVER SHEET

Iwao Tsurutani; Hideto Kataoka, and Shinichi Taoka, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Chiba, Japan
Filed Apr. 16, 1981, Ser. No. 254,948
Claims priority, application Japan, Apr. 22, 1980, 55-54016[U]
Int. Cl.^{3} H05B *3/10;* H02G *15/18*
U.S. Cl. 219—535 9 Claims



1. A heat-shrinkable cover sheet having two branched tongue-like portions on each of both the ends in the direction of thermal shrinkage, characterized in that a heating element formed of a heating electric conductor wire is included and built in the body portion of said sheet, the front tongue-like portion on one end of the sheet and the back tongue-like portion on the other end of the sheet, in a manner such that thermol shrinkage of the entire sheet is not prevented, and the heating element included in at least one of the tongue-like

portions is independent from the heating element of the body portion of the sheet, so that application of electricity to said independent heating element and stopping of application of electricity to said independent heating element can freely be carried out while electricity is applied to the heating element of the body portion.

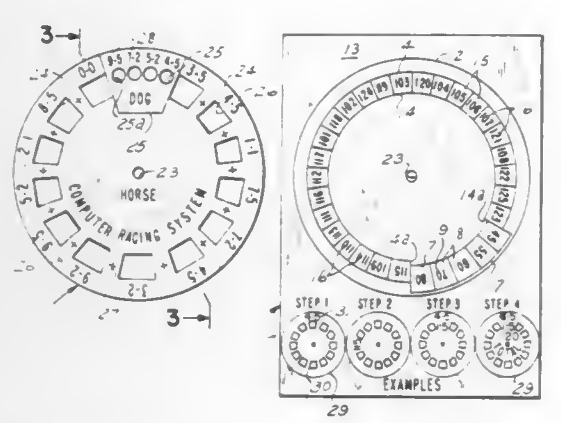
4,369,357
RACE COMPUTER

Gloria J. Williams, P.O. Box 371, West Long Branch, N.J. 07764

Filed May 15, 1981, Ser. No. 264,194

Int. Cl.³ G06G *1/00*

U.S. Cl. 235—78 G **3 Claims**



1. A race computer for horses and dogs, comprising, in combination, a rectangular card, a plurality of adjacent segments arranged in a circular configuration imprinted on said card, a portion of said segments indicating the weights of horses imprinted on a horse race program, and another portion of said segments indicating the weights of dogs imprinted on a dog race program, a rotatable disc secured to said card by suitable means, race track odds included on said rotatable disc, providing for alignment with said weights of horses imprinted on said portion of said segments on said card, and said weights of said horses on said card, when aligned with said race track odds on said disc, are added by the user to obtain a total for each horse running in a particular race, and the lowest total obtained, of all of said horses to be run in said race, is the horse for said user to place a bet on.

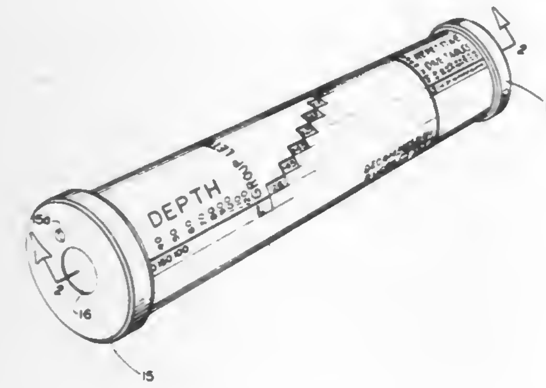
4,369,358
TABLE CORRELATING DEVICE FOR SCUBA DIVERS

William Adams, 1965 Garfield Ave., Salt Lake City, Utah 84108

Filed Apr. 8, 1981, Ser. No. 252,155

Int. Cl.³ G06C *3/00, 27/00*

U.S. Cl. 235—79.5 **10 Claims**



1. A device for use in determining the amount of nitrogen absorption in the body of a scuba diver, comprising:

an elongate inner cylinder to which are attached, longitudinally thereof, three side-by-side tables dealing with variables affecting the amount of said nitrogen absorption;

two separate outer tubes arranged concentrically about and side-by-side longitudinally of the inner cylinder as sleeves so that the inner cylinder and outer tubes may be rotated relative to one another, one of said outer tubes comprehending two of said tables and the other of said outer tubes comprehending the third of said tables and each of said outer tubes being provided with sight windows to allow selective reading and correlating of said tables; and

means for maintaining each of said outer tubes in proper relationship to the inner cylinder, whereby the sight windows are maintained in proper relationship with the respective tables.

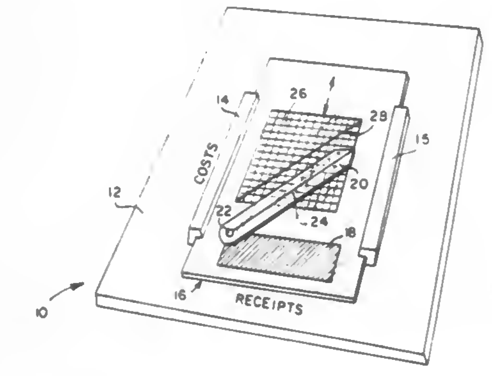
4,369,359
APPARATUS AND METHOD FOR CALCULATING BREAK-EVEN POINT OF ENTERPRISE

Alejandro V. Mendoza, Retorno 7 de la Avenida Ignacio Zaragoza, No. 45 Col. Jardin, Balbuena, 9, D. F., Mexico

Filed Nov. 13, 1980, Ser. No. 206,628

Int. Cl.³ G06C *3/00*

U.S. Cl. 235—89 R **5 Claims**



1. A method for graphically calculating a break-even point of an enterprise for anticipated receipts from a selected volume of business with applicable fixed and variable costs making up total costs, where fixed costs are the aggregate of expenses which are a function of time and have nothing to do with the volume of business, and variable costs are the aggregate of expenses that are a function of the volume of business and which vary proportionally with volume, comprising the steps of,

preparing a Cartesian coordinate system for plotting receipts versus costs with a diagonal line of unity slope extending from the origin of costs and receipts,

placing a line to extend from a point of fixed costs and zero receipts through the point of total costs and anticipated receipts for a selected volume of business, and

reading the break-even point at the level of receipts where said line thus placed intersects said diagonal line.

4,369,360
BANK NOTE DEPOSITING APPARATUS

Keiji Tsuji, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

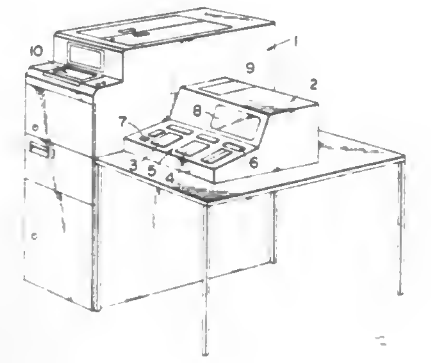
Filed Apr. 10, 1981, Ser. No. 252,782

Claims priority, application Japan, Apr. 15, 1980, 55-49946

Int. Cl.³ G06F *15/30;* **G07F** *7/08*

U.S. Cl. 235—379 **3 Claims**

1. A bank note depositing apparatus comprising: a bank note entrance unit; an inspecting unit for receiving the bank notes from said bank note entrance unit thereby to effect a variety of inspections including the kinds and genuineness of the bank notes; an arithmetic unit for counting the number and sum of the bank notes which have been inspected; a temporary storage unit for temporarily storing the genuine bank notes which have been subjected to the inspecting and arithmetic processings; and a movable safe including a plurality of storage portions for receiving and storing the bank notes, which are stored in said temporary storage unit after all of them have been processed, such that, when one of said storage portions is occupied by a predetermined number of the bank notes, another standby vacant storage portion is brought to a position where it can receive the bank notes from said temporary storage unit.



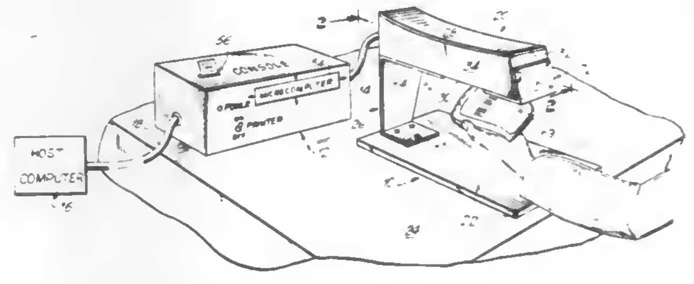
4,369,361
PORTABLE, STAND-ALONE, DESK-TOP LASER SCANNING WORKSTATION FOR INTELLIGENT DATA ACQUISITION TERMINAL AND METHOD OF SCANNING

Jerome Swartz, Stonybrook; Edward Barkan, South Setauket; Richard Bravman, Centereach; Frank Delfine, Farmingdale; Shelley A. Harrison, Dix Hills, and Alexander M. Adelson, Peekskill, all of N.Y., assignors to Symbol Technologies, Inc., Hauppauge, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,945

Int. Cl.³ G06K *7/14*

U.S. Cl. 235—470 **58 Claims**



1. In a laser scanning system, a portable, stand-alone, desktop, laser scanning workstation for reading bar code symbols on objects passing through the workstation, comprising:

(a) a single housing having wall portions bounding an outlet port;

(b) miniature light source means mounted within the housing, for generating a laser light beam;

(c) miniature optic means mounted within the housing, for directing the laser light beam along a light path through the outlet port and towards a bar code symbol which is located in the vicinity of a reference plane that is located exteriorly of the housing;

(d) miniature scanning means mounted in the light path and within the housing, for cyclically sweeping the laser light beam across the bar code symbol for reflection therefrom;

(e) miniature sensor means mounted within the housing, for detecting the intensity of light reflected from the bar code symbol, and for generating an electrical signal indicative of the detected intensity of the reflected light;

(f) miniature signal processing means mounted within the housing, for processing the electrical signal to generate therefrom a processed signal descriptive of the bar code symbol;

(g) all of said miniature light source means, optic means, scanning means, sensor means, and signal processing means together with said housing constituting a lightweight, compact laser scanning head;

(h) a base located exteriorly of the housing and mountable on a support surface; and

(i) means for mounting the head on the base to constitute a laser scanning workstation which supports itself on the support surface and which is portable as a unit from one location to another, said head being mounted at a predetermined elevation above the base to permit the user to view the bar code symbol from above the same, and to position the bar code symbol in the light path of the laser light beam exteriorly of the outlet port during passage of the object through the workstation.

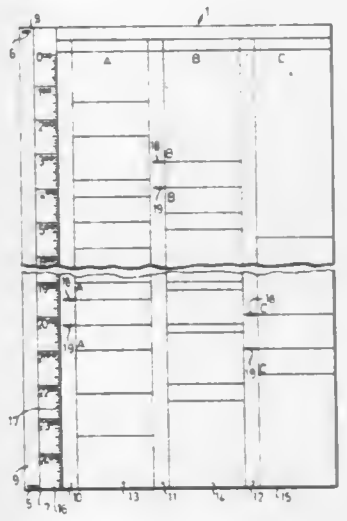
4,369,362
RECORDER CONTROL APPARATUS AND METHOD

Karl M. Groetschel, Montsalvatstrasse 1 a, D-8000 München 19, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 929,126, Jul. 28, 1978, Pat. No. 4,222,069. This application May 16, 1980, Ser. No. 150,661

Int. Cl.³ G06K *21/06*

U.S. Cl. 235—495 **8 Claims**



1. A television and/or radio receiver recorder data carrier comprising a sheet having:

a. at least one information track defined by sequentially arranged intellectually visually readable items of data pre-applied in their totality identifying a sequence of television and/or radio programmes to be transmitted over a channel pertaining to that track and occupying respective spaces having dimensions lengthwise of said track in general conformity with the durations of the respective programmes with which the respective items of data are concerned,

b. a time track having a sequence of index means along said time track representing the elapse of time,

c. means indicating the lateral position of a zone extending longitudinally of at least one of said tracks for receiving a machine readable users marking controlling operation of a receiver recorder and delineating selected ones of said items and hence selecting ones of said programmes.

4,369,363
OPTICAL PULSE DETECTOR AND ENCODER

David Quint, Fort Collins, Colo., and George W. Pratt, Jr., Wayland, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 16, 1981, Ser. No. 244,417

Int. Cl.³ H01J *110/14*

U.S. Cl. 250—211 R **4 Claims**

1. A solid-state two-photon picosecond pulse coincidence detector that comprises:

a solid-state optical waveguide;

electrode means adapted to pick up local changes in resistance within said waveguide;

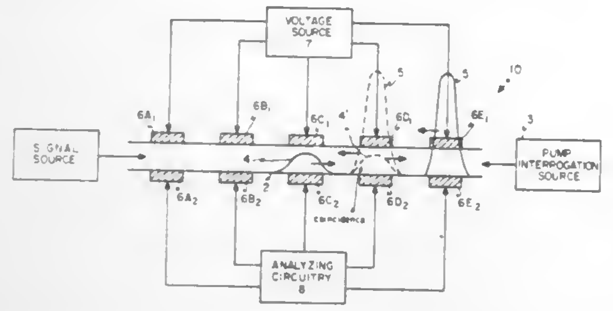
sensing circuitry means connected to the electrode means and operable to determine the level of conductivity at the site of the electrode means;

a source of optical signal pulses positioned to direct said optical signal pulses along the optical waveguide;

a source of optical interrogation pulses positioned to direct optical interrogation pulses along the optical waveguide;

the material forming the waveguide and the frequencies of both the optical signal pulses and the optical interrogation pulses being matched or interrelated so that both the optical signal pulses and the optical interrogation pulses propagate along the waveguide with minimal propagation losses; and

means to synchronize an optical interrogation pulse with individual pulses of a train of the optical signal pulses to establish spatial and temporal coincidence of the optical interrogation pulse and the optical signal pulses;



the photon energy of the optical interrogation pulse being less than one-half of the minimum carrier-producing electronic transistion in the waveguide, the photon energy of each optical signal pulse being less than the energy of said electronic transitions but greater than the difference in energy between said electronic transitions and the photon energy of the optical interrogation pulse, and the material forming the waveguide being further adapted to permit carrier generation when there is spatial and temporal coincidence of an optical signal pulse and the optical interrogation pulse, which carrier generation results in an electric current through the electric means, which electric current is noted by the sensing circuitry means.

4,369,364

MONITORING DEVICE WITH AN OPTICAL SENSOR FOR THE DETECTION OF INTERFERENCE ARCS IN ELECTRICAL SYSTEMS

Jurgen H. Kuntermann, Burgstetten, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

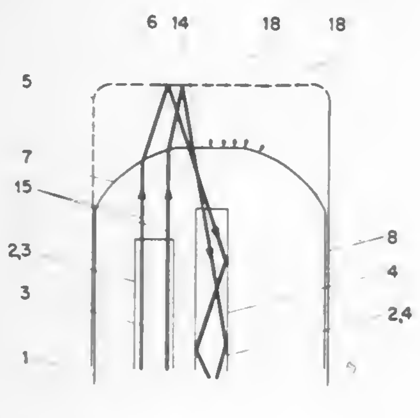
PCT No. PCT/CH79/00099, § 371 Date Aug. 27, 1980, § 102(e) Date Aug. 27, 1980, PCT Pub. No. WO80/01442, PCT Pub. Date Jul. 10, 1980

PCT Filed Jul. 13, 1979, Ser. No. 200,492

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856188

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 250—227 **10 Claims**



1. A monitoring device for the detection of interference arcs in an electrical system, particularly in an enclosed SF_6-gas-insulated high voltage system, comprising:

a passive non-metallic optical sensor comprising,

a transparent protective cylinder defining an axis and having first and second photoconductors arranged in parallel with each other and the cylinder axis, said photoconductors disposed gas-tightly in said system,

said first conductor provided to lead out of said system light impulses produced by an interference arc,

an external light source coupled to said second photoconductor for the production of test light impulses to be transmitted through said second photoconductor, and

means for passing the test light impulses transmitted through said second photoconductor through a portion of the space within said system being monitored and to said first photoconductor, including a collective lens for focusing said test light impulses passed through said portion of said space at said first photoconductor as said test light impulses enter said first photoconductor.

4,369,365

CORRECTION FOR SCAN PERIOD VARIATION IN OPTICAL IMAGE SCANNERS

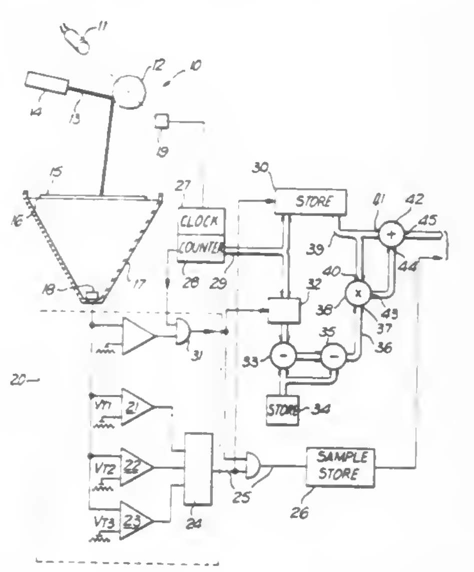
John Bedford, Midlothian, and Graham M. Clarke, Edinburgh, both of Scotland, assignors to Ferranti Limited, Cheadle, England

Filed Apr. 22, 1981, Ser. No. 256,597

Claims priority, application United Kingdom, May 14, 1980, 8015935

Int. Cl.^{3} H01J *3/14*

U.S. Cl. 250—236 **11 Claims**



1. A method of correcting for scan period variations in optical image scanners comprising converting optical radiation of the image into an electrical signal throughout the scan, sampling the signal by detecting the crossing by a parameter of the signal of one or more threshold values each indicative of a signal being in a different range of values and timing the crossings to determine scan times therefor, storing sample signals identifying which thresholds are crossed and the scan times measured for the crossings, detecting an optical marker positioned so as to give rise to an electrical marker signal near the end of the scan, storing a time value representative of the nominal scan time at which the marker should be detected, detecting an error in the duration of each scan period by comparing the scan time of actual marker detection with the nominal scan time of detection, and retrieving the stored scan times of the sample signals and adding algebraically to each of the retrieved measured scan times a fraction of the period error in accordance with the value of the measured scan time to give a period corrected measured scan time.

4,369,366

PHOTOELECTRIC DIGITAL MEASURING INSTRUMENT BALANCING CIRCUIT

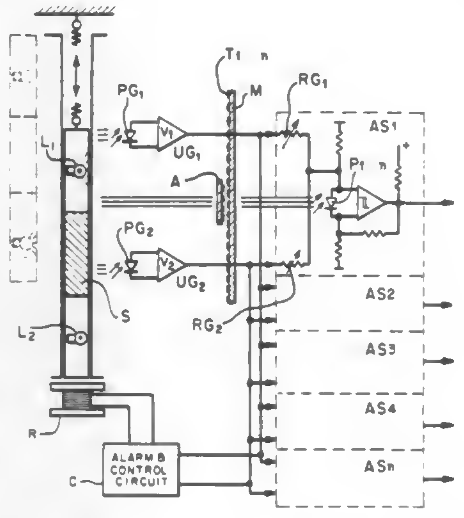
Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,038

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944363

Int. Cl.^{3} F21V *19/04;* H05B *39/10*

U.S. Cl. 250—237 G **5 Claims**



1. A balancing circuit for a digital, photoelectric length or angle measuring system, which measuring system includes a measuring scale, at least first and second light sources for illuminating the scale, and photosensitive scanning elements for measuring light modulated by the scale, said balancing circuit comprising:

first balance means, responsive to the first light source, for generating a first bias signal which varies as a function of the intensity of the first light source;

second balance means, responsive to the second light source, for generating a second bias signal which varies as a function of the intensity of the second light source;

means for selectively activating a selected one of the first and second light sources; and

means for utilizing the one of the first and second bias signals corresponding to the selected light source to balance at least one of the scanning elements with respect to the intensity of the selected light source, said utilizing means operative such that the balance means corresponding to the selected light source operates free of adverse interference from the balance means corresponding to the non-selected light source;

said first and second balance means being independently adjustable such that the first and second bias signals can be adjusted independently of one another.

4,369,367

RADIATION IMAGE INFORMATION READ OUT DEVICE

Kazuo Horikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

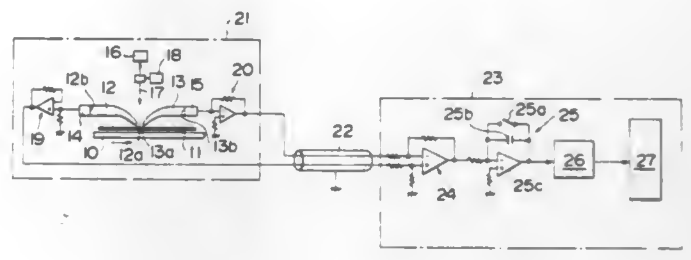
Filed Jul. 11, 1980, Ser. No. 168,805

Claims priority, application Japan, Jul. 11, 1979, 54-87802

Int. Cl.^{3} G03C *5/16*

U.S. Cl. 250—327.2 **5 Claims**

1. A radiation image information read out device for scanning a stimulable phosphor plate with a light beam of stimulating rays to cause the stimulable phosphor plate carrying radiation image information to emit light according to the radiation image information stored therein in the form of radiation energy and detecting the emitted light to read out the radiation image information comprising a plurality of light guiding sheets having at an end thereof a light input face extending along the scanning line of the stimulable phosphor plate and at the other end thereof a light output face, a plurality of photodetectors located adjacent to the light output faces of said light guiding sheets for measuring the amount of light emitted from the stimulable phosphor plate and transmitted through the light guiding sheets, said plurality of photodetectors being divided into two groups, inversion amplifier means connected with one group of said photodetectors for inversely amplifying the output thereof, non-inversion amplifier means connected with the other group of said photodetectors for non-inversely amplifying the output thereof, and a differential amplifier means connected with said inversion amplifier means and said non-inversion amplifier means for obtaining a difference between the outputs thereof.



4,369,368

LEVEL MEASURING DEVICE

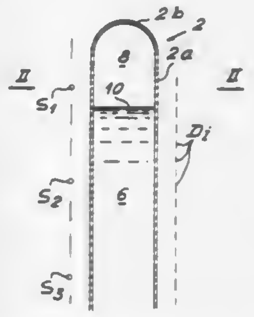
Patrice Bernard, and Jacques Bouchard, both of Aix en Provence, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 25, 1980, Ser. No. 180,886

Claims priority, application France, Sep. 5, 1979, 79 22218

Int. Cl.^{3} G01F *23/00*

U.S. Cl. 250—357.1 **2 Claims**



1. A device for measuring the surface level of a liquid in a vertically axed enclosure containing a radioactive fluid, the enclosure wall being able to receive deposits of radioactive corrosion products, which comprises N radiation sources located on the same vertical line in the vicinity of the enclosure wall, said sources being able to emit radiation traversing the enclosure; N′ radiation detectors D_1 (N′>N) located successively at levels on a second vertical line contained in the plane defined by the first vertical line and said axis, said detectors being able to detect the radiation which has traversed the enclosure, each detector measuring the intensity of the radiation received; and means for processing said measurements and deducing therefrom the liquid surface level and/or the local density of the two-phase mixture, wherein it also comprises at least one supplementary detector positioned outside the area reached by the radiation emitted by the sources, said detector being able to measure the radiation due to the radioactivity of the fluid and said deposits.

4,369,369

X OR GAMMA RADIATION DETECTOR, PARTICULARLY FOR RADIOLOGY AND A RADIOLOGICAL APPARATUS COMPRISING SUCH A DETECTOR

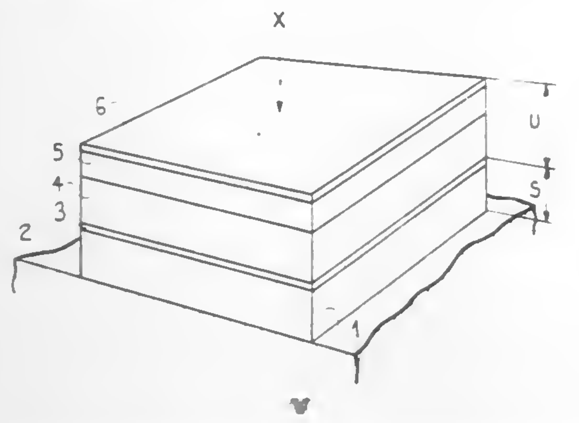
Karl Heidrich, Essen, and Lothar Ginzel, Schwerte, both of Fed. Rep. of Germany, assignors to Thomson-CSF, Paris, France

Filed Nov. 12, 1980, Ser. No. 206,286

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946108

Int. Cl.^{3} H05B *33/00*

U.S. Cl. 250—484.1 **13 Claims**



1. A X or gamma radiation detector comprising:

at least one first transformer for transforming X or gamma radiation into light going from the UV band to the IR band wherein said first transformer comprises at least one photoconducting layer and an electroluminescent layer between a cover electrode and a Schottky barrier transfer electrode having a biasing voltage applied between said cover electrode and said transfer electrode; and

at least one of a second transformer for transforming light from said transfer electrode into electrical signals.

4,369,370

METHOD FOR PRODUCING NUCLEAR TRACES OR MICROHOLES ORIGINATING FROM NUCLEAR TRACES OF AN INDIVIDUAL ION

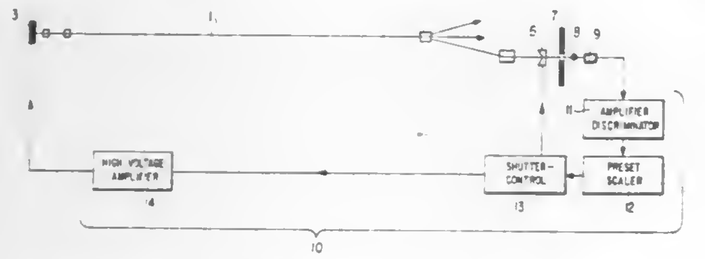
Reimar Spohr, Darmstadt, Fed. Rep. of Germany, assignor to Gesellschaft fur Schwerionenforschung mbH Darmstadt, Darmstadt, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,351

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951376

Int. Cl.^{3} H01J *23/00*

U.S. Cl. 378—160 **11 Claims**



1. Method for producing at least one nuclear trace, or a microhole originating from a nuclear trace, of a single ion or a countable number of ions at a desired location in a solid body by means of a beam of heavy ions in a heavy ion accelerator comprising the steps of:

directing a defocused portion of a beam of accelerated ions onto a surface of a solid body via an aperture aligned with a desired location on the surface of said body; directly detecting the number of individual ion particles passing through said aperture and impinging on said body; and preventing other ion particles from passing through said aperture when a predetermined number of individual ion particles is detected by:

initially blocking the entire beam by actuating a fast acting beam cut-off switch disposed in the slow portion of the beam path; thereafter actuating a slower acting beam cut-off switch, which is able to receive greater beam energies than the first switch and is disposed in the beam path behind the first switch and in said defocused portion of the beam path, to block said defocused portion of the beam path; and thereafter opening the first switch.

4,369,371

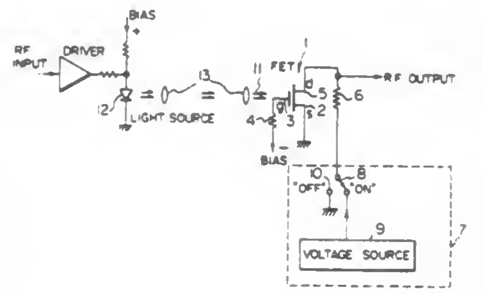
BROADBAND HIGH SPEED OPTOELECTRONIC SEMICONDUCTOR SWITCH

Elmer H. Hara, Kanata; R. Ian MacDonald; Robert S. H. Hum, both of Ottawa, and Brian S. Kawasaki, Carleton Place, all of Canada, assignors to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Nov. 24, 1980, Ser. No. 209,956

Int. Cl.^{3} G02B *27/00*

U.S. Cl. 250—551 **5 Claims**



1. An optoelectronic switch comprising:

a photosensitive FET;

means for directing a modulated optical signal onto the photosensitive FET; and

voltage means connected to bias the photosensitive FET to selectively render the photosensitive FET responsive or nonresponsive to the optical signal.

4,369,372

PHOTO ELECTRO TRANSDUCER DEVICE

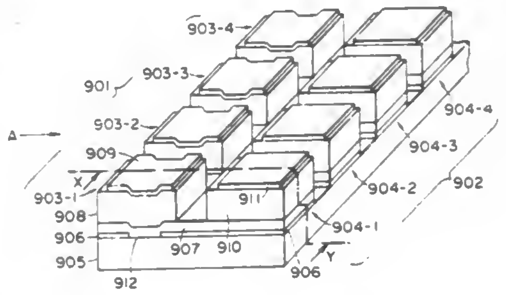
Seishiro Yoshioka; Yutaka Hirai, both of Tokyo; Tadaji Fukuda; Masaki Fukaya, both of Kawasaki, and Takashi Nakagiri, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,170

Claims priority, application Japan, Jun. 18, 1979, 54-76532; Jun. 27, 1979, 54-82095

Int. Cl.^{3} H01J *40/14*

U.S. Cl. 250—578 **25 Claims**



1. A photo electro transducer device comprising a photo electro transducer portion having n photo electro transducer elements provided with photoreceptor faces and arranged in an array and a crosstalk preventing portion having n diode elements electrically connected respectively to said n photo electro transducer elements, wherein each of said n photo electro transducer elements is composed of one of n electrode areas A arranged in an array on a substrate, a photoreceptor layer provided on said electrode area A and an electrode area B provided on said photoreceptor layer, and wherein each of said diode elements is composed of a portion of said electrode area A, an electrode area C and a semiconductor layer provided between said electrode areas A and C.

4,369,373

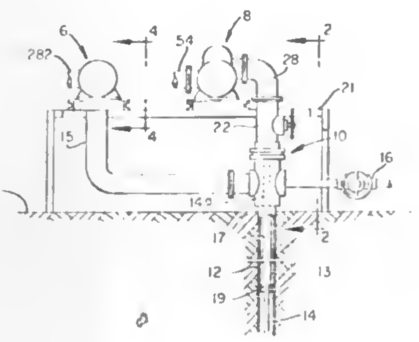
METHOD AND APPARATUS FOR GENERATING ELECTRICITY FROM THE FLOW OF FLUID THROUGH A WELL

Ben W. Wiseman, P.O. Box 5394, Midland, Tex. 79701

Division of Ser. No. 830,465, Sep. 6, 1977, Pat. No. 4,134,024. This application Jan. 5, 1979, Ser. No. 1,265

Int. Cl.^{3} F02C *6/18;* **F03B** *13/00*

U.S. Cl. 290—2 **9 Claims**



1. Apparatus for generating electricity from the fluid pressure of a well comprising: a fluid driven motor having an inlet side and an outlet side; a well head, means securing the outlet of said well head to the inlet of said fluid driven motor for directing a portion of the fluid through the motor; an output shaft rotatably driven by said fluid driven motor; a generator; means securing said output shaft of said fluid driven motor to said generator; a pipe line; means securing the outlet of said fluid driven motor to the pipe line; electrical conductor means connected to the output terminals of said generator; load means; and means for controlling the load on the generator to control the temperature of fluid flowing through the pipe.

4,369,374

WAVE-MOTION-DRIVEN POWER GENERATOR STATION

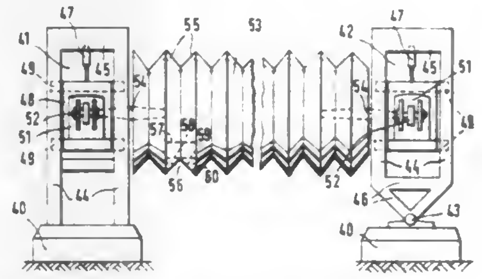
Karl Sandgänger, Helmholtzstrasse 11, D-6650 Homburg (Saar), Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,828

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930531

Int. Cl.^{3} F03B *13/12*

U.S. Cl. 290—53 **25 Claims**



1. A power generating station comprising:

(a) a body mounted for rotation about a predetermined axis thereof by the waves of the sea, said body having a plurality of protuberances which are coaxial with said body and are adapted to be impacted by the waves so as to rotate said body about said axis, and said protuberances being at least substantially annular through every cross-section thereof and tapering inwardly in a direction radially outward from said axis;

(b) support means mounting said body for rotation about said axis; and

(c) power generating means connected with said body.

4,369,375

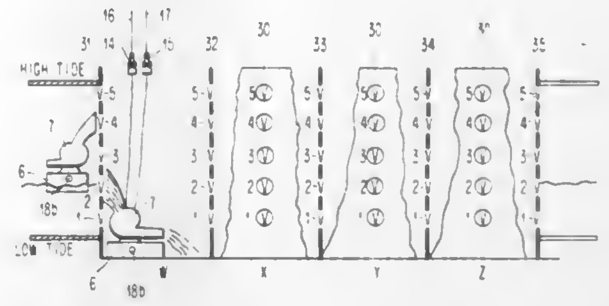
POWER GENERATION FROM TIDAL CHANGES

Joseph Romano, 8 Cedar St., Montauk, N.Y. 11954

Filed Apr. 9, 1981, Ser. No. 252,386

Int. Cl.^{3} E02B *9/08*

U.S. Cl. 290—53 **4 Claims**



1. A system for generation of power from tidal changes which comprises (A) two or more chambers, positioned in proximity to tidally influenced water, each chamber being of a height greater than the maximum tidal height difference, each chamber being capable of being filled with water, and each chamber having a series of vertically arranged ports, each port being controlled by a valve, and (B) a turbine mounted on a float and positioned in such manner that an inlet for the turbine is sequentially capable of receiving water from ports in sequence as the float rises or falls in response to tidal changes.

4,369,376

MAGNETIC GATE AND METHOD OF PRODUCTION THEREOF

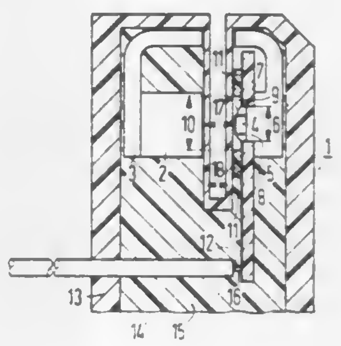
Wilhelm Ertl, Ottobrunn; Ulrich Lachmann; Heinrich Pertsch, both of Munich, and Günter Wirnharter, Brannenburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,615

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001820

Int. Cl.^{3} G01R *33/12*

U.S. Cl. 307—99 **5 Claims**



1. Magnetic gate, comprising a housing, a magnet being disposed in said housing and having two poles, one of said poles having an at least partly flat surface, a magnetically permeable metal piece bridging the magnetic flux of said magnet from one to the other of said poles and having a first part to which said magnet is directly applied, and a second part having an extended portion, a semiconductor chip having an integrated circuit, said semiconductor chip being piezo-electrically unsensitive and being applied directly to said extended portion of said second part of said permeable metal piece and

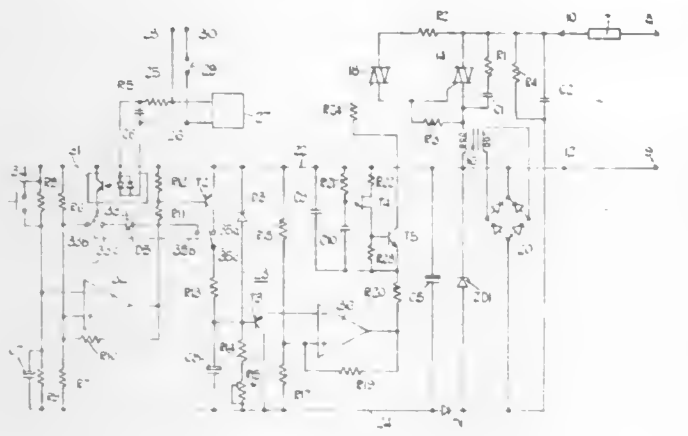
spaced from one of said magnetic poles of said magnet defining an air gap therebetween, a thin intermediate carrier having a cutout formed therein and electrical connections, a carrier plate having a cutout formed therein and electrical connections, said extended portion of said second part of said permeable metal piece being disposed in said cutout formed in said carrier plate, said semiconductor chip being disposed in said cutouts formed in said intermediate carrier and carrier plate and having electrical connections, finger-like contact structures connecting said electrical connections of said semiconductor chip and said intermediate carrier together, said electrical connections of said intermediate carrier and said carrier plate being connected to each other, additional external connecting wires extending from connecting points at said carrier plate to a location outside said housing, and insulating material filling said housing and covering said connecting points, the magnetic flux being unweakened by said carrier plate at said cutouts, and said housing having a gap formed therein in said insulating material between said first and second parts of said permeable metal piece including said air gaps.

4,369,377

CURRENT CONTROL DEVICE

Anthony Dytch, Rugeley, England, assignor to Allen-Martin Electronics Limited, England

Continuation of Ser. No. 235,760, Feb. 18, 1981, abandoned.
This application Feb. 4, 1982, Ser. No. 345,766
Claims priority, application United Kingdom, Feb. 23, 1980, 8006200; Feb. 23, 1980, 8006201
Int. Cl.^{3} H01H *35/00, 9/54;* **H05B** *37/02*
U.S. Cl. 307—117 **9 Claims**



1. A current control device comprising first and second terminals for connection in series with an AC load, switch means connected between said terminals for permitting or preventing flow of load current, a circuit for controlling the switch means, a pair of power supply rails for the control circuit, a first circuit connected between said terminals for providing power to said supply rails when load current is flowing between said terminals, a second circuit connected between said terminals for providing power to said supply rails when flow of load current between said terminals is prevented, light level detecting means, and means for detecting the presence of persons, the control circuit being responsive to the light level detecting means and the person detecting means for controlling the switch means.

4,369,378

QUANTIZING CIRCUITS USING A CHARGE COUPLED DEVICE WITH A FEEDBACK CHANNEL

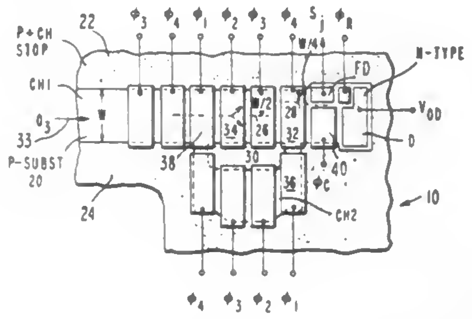
Leonard R. Rockett, Jr., Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 30,513, Apr. 16, 1979, Pat. No. 4,280,191.
This application Oct. 27, 1980, Ser. No. 201,191
Int. Cl.^{3} G11C *19/28;* **H01L** *29/78;* **H03K** *13/03*
U.S. Cl. 307—221 D **5 Claims**

1. A charge-coupled device (CCD) for translating a signal charge to fractional charge packets comprising, in combination:

a main CCD channel along which a signal charge is propagated;

means in said main channel for dividing said signal charge into a fractional charge packet and a remainder charge packet;


P+CH STOP
CH1
θ_3
33
P-SUBST 20
22
24
ϕ_3 ϕ_4 ϕ_1 ϕ_2 ϕ_3 ϕ_4 S_j ϕ_R
N-TYPE
FD
V_{OD}
D
10
CH2
38
30
34
26
28
32
36
40
ϕ_C
ϕ_4 ϕ_3 ϕ_2 ϕ_1

means responsive to any fractional charge packet present in said main CCD channel for producing an output signal of an amplitude proportional thereto; and

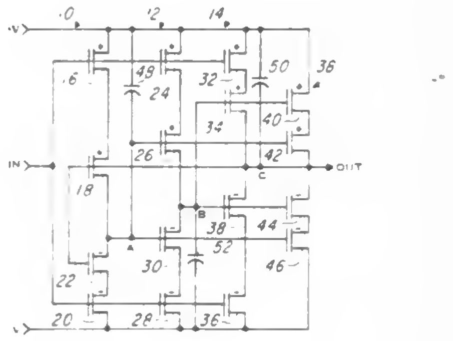
a feedback CCD channel receptive of any remainder charge packet present in said main CCD channel for propagating the same back to said main CCD channel for division of said remainder charge packet in the same manner as the division of said signal charge.

4,369,379

CMOS FREQUENCY DIVIDER CIRCUIT HAVING INVALID SIGNAL OVERRIDE

Charles G. Hull, Rosenberg, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 14, 1980, Ser. No. 130,299
Int. Cl.^{3} H03K *23/22, 19/007, 19/096*
U.S. Cl. 307—225 C **7 Claims**



1. A frequency divider comprising:

a first divider stage including first storage means for maintaining a logical condition therein, first logic means for establishing a logical high condition in said first storage means in response to a logical low input signal when a third storage means is in the logical low condition and for leaving said logical condition in said first storage means unchanged otherwise, and second logic means for establishing a logical low condition in said first storage means in response to a logical high input signal when said third storage means is in a logical high condition and for leaving said logical state in said first storage means unchanged otherwise;

second divider stage including second storage means for maintaining a logical condition therein, third logic means for establishing a logical high condition in said second storage means in response to a logical low input signal when said first storage means is in the logical low condition and for leaving said logical condition of said second storage means unchanged otherwise, and fourth logic means for establishing a logical low condition in said second storage means in response to a logical high input signal when said first storage means is in the logical high condition and for leaving said logical condition in said second storage means unchanged otherwise;

third divider stage including said third storage means for maintaining a logical condition therein, fifth logic means for establishing a logical high condition in said third storage means in response to a logical low input signal when said second storage means is in the logical low condition and for leaving said logical condition of said third storage means unchanged otherwise, and sixth logic means for establishing a logical low condition in said third storage means in response to a logical high input signal when said second storage means is in the logical high condition and for leaving said logical condition in said third storage means unchanged otherwise; and

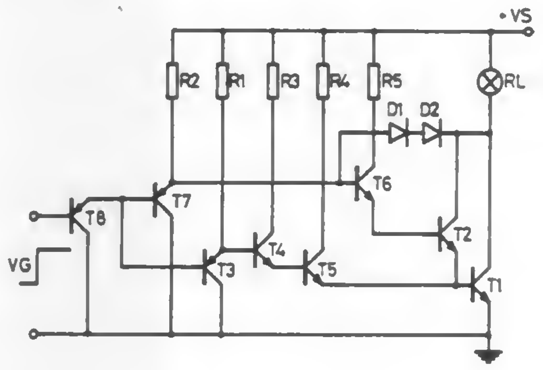
override means including means for detecting the logical condition of said first and second storage means and means for establishing the opposite logical condition in said third storage means in response to detecting the same logical condition on both said first and second storage means.

4,369,380

CIRCUIT FOR CONTROLLING A TRANSISTOR STATIC SWITCH FOR D.C. LOADS WITH HIGH TURN-ON CURRENT

Pietro Menniti, Catanzaro, and Maurizio Felici, Milan, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Sep. 30, 1980, Ser. No. 192,597
Claims priority, application Italy, Oct. 3, 1979, 26205 A/79
Int. Cl.^{3} H03K *3/26, 3/33*
U.S. Cl. 307—254 **3 Claims**



1. A switch and control circuit for a D. C. load requiring a turn-on current of a first magnitude and an operating current of a second lower magnitude, said switch arranged in series between said load and a supply voltage source and comprising a first output transistor of a first conductivity type and a second driver transistor of said first conductivity type, said transistors arranged in a Darlington configuration; said circuit comprising first and second current generators respectively connected to the bases of said first and second transistors and further comprising a switching means operatively respectively connected between said first and second current generators and said first and second transistor bases for simultaneously interrupting the flow of current from said current generators to their respective transistor bases;

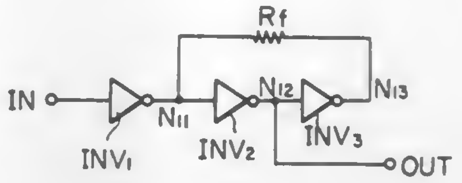
said circuit still further comprising a unidirectional current flow means, arranged between the base and collector of said second transistor, said current flow means oriented so that current supplied by said second current generator may be shunted away from the base of said second transistor and wherein said current flow means is an open circuit to current flow when said second transistor is in its active region.

4,369,381

CMOS SCHMITT-TRIGGER CIRCUIT

Keizo Okamoto, Sagamihara; Masayoshi Tomita, Kawasaki, and Osamu Takagi, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 11, 1980, Ser. No. 168,356
Claims priority, application Japan, Jul. 19, 1979, 54-91969
Int. Cl.^{3} H03K *3/356, 3/037*
U.S. Cl. 307—279 **14 Claims**



1. A CMOS Schmitt-trigger circuit for connection between a reference terminal and a power supply terminal and having an input terminal, comprising:

a first CMOS inverter operatively connected to said input terminal, comprising a p-channel transistor and a n-channel transistor having an on state resistance,

a second CMOS inverter connected in cascade to said first CMOS inverter,

a third CMOS inverter connected in cascade to said second CMOS inverter comprising a p-channel transistor and a n-channel transistor,

a feedback resistance connected between the output end of said third CMOS inverter and the input end of said second CMOS inverter having a resistance greater than said on state resistance of said n-channel transistor of said first CMOS inverter, and

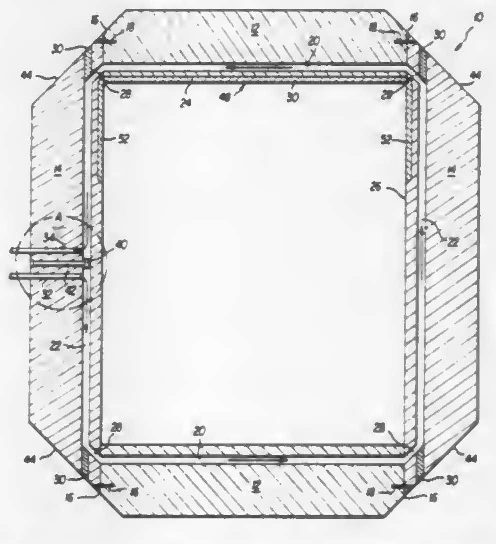
an output terminal connected to the output end of said second inverter for providing an output potential.

4,369,382

LOW COST DIAGONAL TYPE MHD GENERAL CHANNEL FRAME ELEMENT AND METHOD OF FABRICATING THE SAME

Anthony P. Coppa, Merion, Pa., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 106,810, Dec. 26, 1979, Pat. No. 4,290,189.
This application May 27, 1981, Ser. No. 267,437
Int. Cl.^{3} H02K *45/00*
U.S. Cl. 310—11 **12 Claims**



1. A diagonal type MHD generator channel frame element comprising:

a first set of members each of which has a first exterior cross-sectional profile, and an internal passageway totally enclosed within the body of said first member and having a first cross-sectional profile similar to said exterior cross-sectional profile of said first member;

a second set of members each of which has a second exterior cross-sectional profile, and an internal passageway totally enclosed within the body of said second member and having a second cross-sectional profile similar to said exterior cross-sectional profile of said second member;

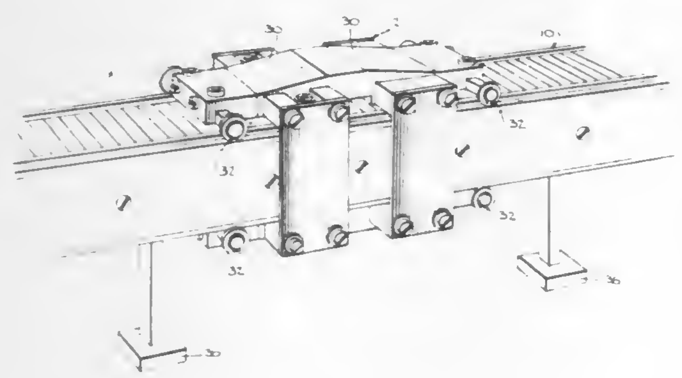
said first and second members being connected together in an annular array so as to define said frame element, with members of each set disposed in opposite pairs;

means for fluidically connecting together said passageways defined within said first and second members such that a single fluid passageway extends annularly throughout said annular frame element; and

means for circulating coolant fluid within said single passageway and throughout said annular frame element.

4,369,383
LINEAR DC PERMANENT MAGNET MOTOR

Lawrence W. Langley, Christiansburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.
Filed Sep. 5, 1979, Ser. No. 72,772
Int. Cl.^{3} H02K *41/00*
U.S. Cl. 310—12 **6 Claims**



1. A linear DC permanent magnet motor comprising:

a stationary wound member, said wound member comprising at least two slip bars adapted for connection to a DC source, a plurality of electrically energizeable windings wound on a slotted magnetic structure and a plurality of commutator bars connected to said windings;

a movable field member comprising permanent magnet means for developing a magnetic field, at least two slip bar brushes adapted to engage said slip bars and at least three commutator brushes for energizing with direct current some but not all of said windings at any one time, said second commutator brush being physically located intermediaate said first and third commutator brushes along the longitudinal axis of said wound member, said second commutator brush being electrically connected to one of said slip bar brushes and said first and third commutator brushes being electrically connected to the other of said slip bar brushes, the magnetic field of said permanent magnet means interacting with said energized windings causing said field member to move relative to said wound member to selectively and progressively energize said windings; and

support means for maintaining air gaps between said wound member and said field member.

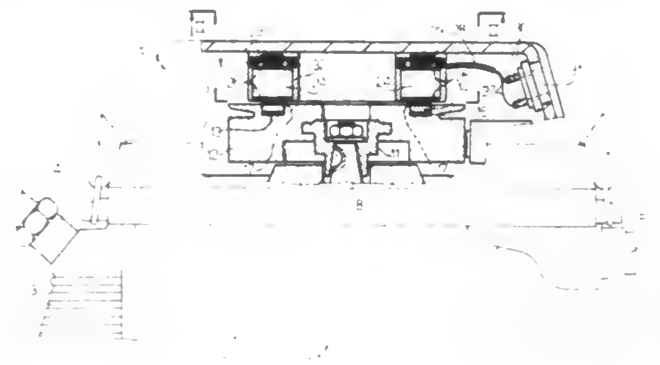
4,369,384
ALTERNATOR FOR A MARINE ENGINE

Givoanni Nardi, Pisa, Italy, assignor to Whitehead Motofides S.p.A., Leghorn, Italy
Continuation of Ser. No. 50,508, Jun. 20, 1979, abandoned. This application Dec. 29, 1981, Ser. No. 335,555
Claims priority, application Italy, Jul. 5, 1978, 53479/78[U]
Int. Cl.^{3} H02K *15/00*
U.S. Cl. 310—42 **4 Claims**

1. In an outboard marine engine having an engine casing and a rotatably driven flywheel extending beyond one end of the engine casing and including an annular groove adapted to receive a cord for pull-starting the engine, the improvement of an alternator/cover assembly for said outboard marine engine, said improvement comprising:

a cover for said outboard marine engine adapted to enclose said flywheel at said engine casing end, including snap disengagement means for removably disengaging said cover from said engine casing;

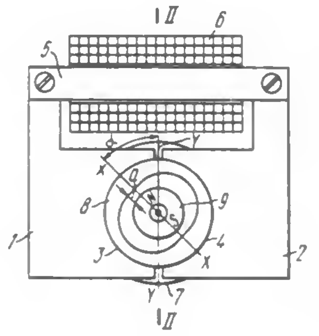
an alternator driven by said engine, including a rotor embedded in an annular seat provided in the upper surface of said flywheel in a plane perpendicular to the axis of rotation of said flywheel, and a fixed stator adapted to oppositely face the upper surface of said flywheel so that in the air gap between the stator and rotor the lines of flux of the magnetic field are substantially parallel to the axis of rotation of the rotor; and



means rigidly mounting said stator to the interior of said cover to fix the relative positions of said rotor and stator during operation of said engine and to enable said stator to be removable from said marine engine simultaneously with operation of said snap disengagement means and ensuing removal of said cover from said engine to permit ready access to said flywheel and said flywheel annular groove.

4,369,385
SINGLE-PHASE STEP MICROMOTOR

Daniel D. Malkin, ulitsa Junykh Lenintsev, 95/13, korpus 1, 31 kv.; Anatoly S. Umerenkov, Volokolamsky proezd, 6, korpus 1, kv. 9; Alexandr A. Ketsaris, ulitsa Krasny Kazanets 19, korpus 1, kv. 83; Gennady A. Kruglov, ulitsa Baltiiskaya, 4, kv. 21, and Vladimir I. Kalashnikov, ulitsa Chasovaya, 4, korpus 2, kv. 149, all of Moscow, U.S.S.R.
Filed Mar. 17, 1981, Ser. No. 244,659
Int. Cl.^{3} H02K *37/00*
U.S. Cl. 310—49 R **2 Claims**



1. A single-phase step micromotor comprising:

a stator having cylindrical surfaces of a pair of pole pieces facing each other;

a core interconnecting opposite ends of said pole pieces;

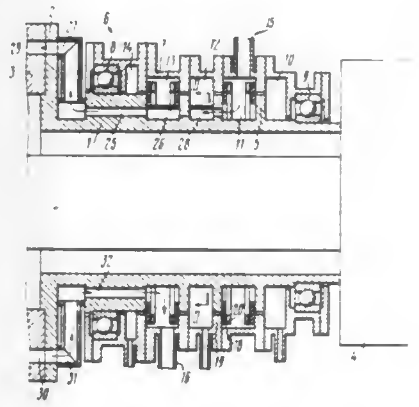
a single-phase winding mounted on said core and wired to a source of electrical pulses of varying polarity;

a double-pole rotor interposed between said pole pieces of said stator; and

a ferromagnetic ring fixing the position of said rotor and arranged between said stator and rotor, the thickness of said ring being less than that of said pole pieces, the inner diameter of said ring varying along the angular coordinate of said stator.

4,369,386
ARRANGEMENT FOR LIQUID SUPPLY INTO THE ROTOR OF AN ELECTRIC MACHINE

Alexandr N. Lurie, Belgradskaya ulitsa, 6, korpus 2, kv. 237, Leningrad; Anatoly N. Anchukov, poselok Shexna II, ulitsa Energetikov, 19, Vologodskaya oblast; Alexandr A. Dukshtau, Basseinaya ulitsa, 111, korpus 3, kv. 34, Leningrad; Gleb S. Schegolev, Sinyavinskaya ulitsa, 12/49, kv. 29, Leningrad; Gennady A. Yablonsky, Kondratievsky prospekt, 67, korpus 2, kv. 13, Leningrad, and Mikhail L. Steklov, ulitsa Ryleeva, 17-19, kv. 25, Leningrad, all of U.S.S.R.
Continuation of Ser. No. 61,391, Jul. 27, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 199,054
Int. Cl.^{3} H02K *9/00*
U.S. Cl. 310—54 **4 Claims**



1. In an electric machine having a rotor with a shaft, an arrangement for supplying liquid to the rotor comprising:

a bush having a duct for passing the liquid therethrough and projecting circular partitions, mountable onto the rotor shaft;

pressure, drain, and a collecting circular chambers, adapted, respectively, to feed the liquid, to remove leaking liquid and to remove used liquid, formed by interconnected stationary circular partitions and embracing said bush and mounted with clearances relative to said partitions of said bush; and

sealing plates of resilent rubberlike material sealing said clearances and mounted in said pressure and collecting circular chambers, each of said sealing plates being fixed on each one of said clearance-forming circular partitions and held in contact, by surfaces of the sealing plates, with said circular partitions of said bush.

4,369,387
ELECTRIC DRIVE UNIT

Gerhard Haar, Leinfelden; Heinz Jakob, Bietigheim-Bissingen; Helmut Landa, Brackenheim-Hausen; Erwin Mayer, Kirchheim; Hans Prohaska, Bietigheim-Bissingen; Theodor Schneider, Freudental; Karl-Friedrich Schubert, Bietigheim-Bissingen, and Martin Weber, Ingersheim, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Mar. 10, 1980, Ser. No. 129,280
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905869
Int. Cl.^{3} H02K *7/10*
U.S. Cl. 310—83 **19 Claims**

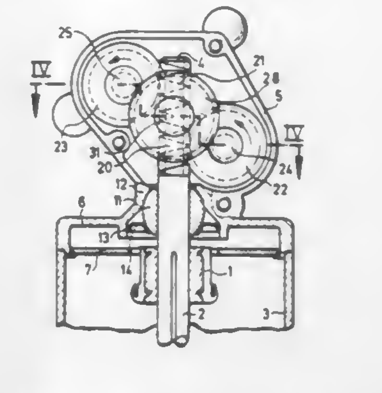
1. An electric drive unit comprising:

an electric motor comprising a housing, an armature winding in said housing, and an armature shaft extending from said housing;

a gear housing connected to said motor housing;

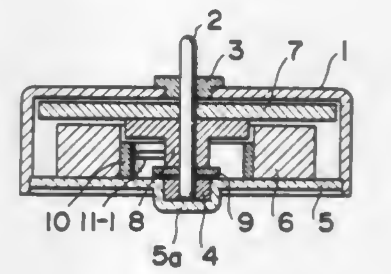
said armature shaft extending into said gear housing and having a first portion having first and second oppositely pitched worm threads;

said gear housing including: a first gear means comprising a first worm gear wheel having a first rotational axis and disposed on one side of said first shaft portion and adapted to engage said first worm thread, a first spur wheel concentrically seated on said first worm gear and rotatable with said first worm gear about said first rotational axis; a second gear means comprising a second worm gear wheel having a second rotational axis and disposed on the opposite side of said first shaft portion and adapted to engage said second worm thread, a second spur wheel concentrically seated on said second worm gear and rotatable with said second worm gear about said second rotational axis; said first and second axes of rotation being parallel; a driven output shaft; a toothed wheel seated on said output shaft and adapted to engage said first and second spur wheels, said toothed wheel having a third axis of rotation located in a plane defined by said first and second axes of rotation.



4,369,388
DIRECT CURRENT MOTOR WITH NON-SUPERPOSED ARMATURE WINDINGS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171 Shimotsuruma, Yamato-shi, Kanagawa-ken; Hideo Okada, 3-34-29 Kugayama, Siginami-ku, Tokyo, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan
Continuation of Ser. No. 970,857, Dec. 19, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,518
Claims priority, application Japan, Dec. 22, 1977, 52-153627
Int. Cl.^{3} H02K *21/26*
U.S. Cl. 310—154 **4 Claims**



1. A direct current motor comprising:

a housing having at least a portion thereof formed of magnetic material;

a shaft disposed centrally and journalled for rotation within said housing;

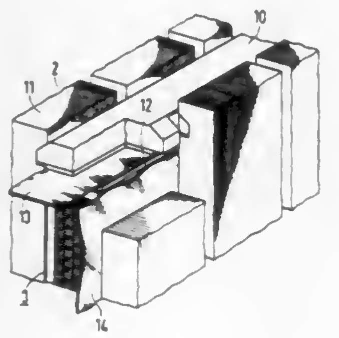
a first element disposed within said housing comprising an annular field magnet having eight poles disposed centrally about said shaft, each said pole being magnetized into alternate N and S polarities in equal angular spaces;

a second element disposed within said housing comprising an armature spaced from said field magnet and having three armature windings disposed thereon in non-superposed relationship in equal pitches with respect to each other and in a face-to-face relationship with respect to said field magnet poles;

said portion of said housing formed of magnetic material closing the magnetic path of said field magnet and said armature being disposed in said magnetic path, each winding of said armature being formed and disposed thereon such that the angular spacing of those conductor portions thereof that contribute to the generation of torque is equal to the angular width of said field magent poles;

one of said elements being fixed to said shaft and the other of said elements being fixed to said housing. said one of said elements being thereby made rotatable relative to the other of said elements.

4,369,389
DEVICE FOR SECURING WINDING BARS IN SLOTS OF ELECTRIC MACHINES, ESPECIALLY TURBO-GENERATORS
Dietrich Lambrecht, Rathenaustr. 11, 4330 Mülheim, Ruhr, Fed. Rep. of Germany
Filed Apr. 28, 1981, Ser. No. 258,378
Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016990
Int. Cl.^{3} H02K *3/48*
U.S. Cl. 310—214 6 Claims



1. Device for securing winding bars in slots of electric machines, comprising at least one winding bar having sides and being disposed in each slot, a slot-closing wedge disposed in vicinity of the opening of the slot, at least one wavy slot-closing spring having a given first spring travel distance and being disposed in the slot in longitudinal direction thereof, said slot-closing spring being formed of glass fabric embedded in a hardenable resin and being compressed by approximately 80% of said given first spring travel distance, and a wavy lateral slot spring having a given second spring travel distance and being disposed between a side of said at least one winding bar and an adjacent side wall of the slot in longitudinal direction of the slot, said lateral slot spring being formed of glass fabric embedded in a hardenable resin and being compressed by at least 85% of said given second spring travel distance.

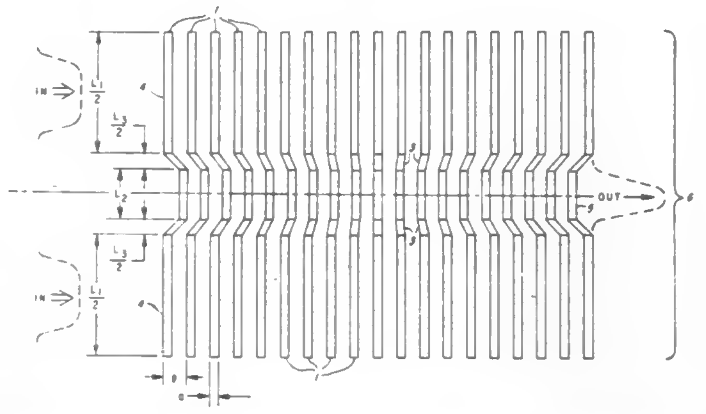
4,369,390
SYMMETRIC BEAM WIDTH COMPRESSION MULTISTRIP COUPLER
Donald C. Malocha, Longwood, Fla.; Robert S. Wagers, Richardson, and Jeffrey H. Goll, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 30, 1981, Ser. No. 229,709
Int. Cl.^{3} H01L *41/08*
U.S. Cl. 310—313 B 14 Claims

1. A structure for compressing a surface acoustic wave beam comprising:

a. A substrate having a surface layer of piezoelectric material capable of propagating a surface acoustic wave: and

b. A multistrip coupler upon the surface of said piezoelectric layer, comprised of thin conductive strips at approximate right angles to the direction of propagation of said wave and symmetrical with respect to the direction of propagation;

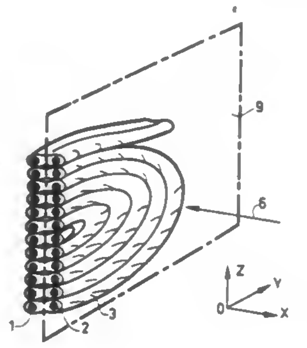
c. said conductive strips having a spaced, aligned relationship with a center channel having smaller interspaced distances between strips than the distances between the side portions of the strips, said side portions additionally being longer than the center strip portions;



d. means for generating an acoustic surface wave in such a manner that said wave propagates across said multistrip coupler and said generated wave having as input ports both of the said longer side portions of the multistrip coupler; and

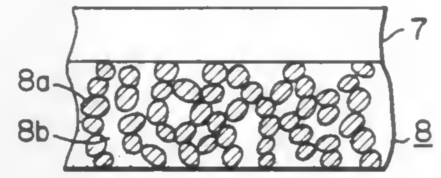
e. means for detecting the resultant compressed beam wave at the center channel output.

4,369,391
PRESSURE-SENSING TRANSDUCER DEVICE HAVING A PIEZOELECTRIC POLYMER ELEMENT AND A METHOD OF FABRICATION OF SAID DEVICE
Francois Micheron, Paris, France, assignor to Thomson -CSF, Paris, France
Filed Jun. 11, 1980, Ser. No. 158,459
Claims priority, application France, Jun. 13, 1979, 79 15141
Int. Cl.^{3} H01L *41/08;* H03B *5/32*
U.S. Cl. 310—800 4 Claims



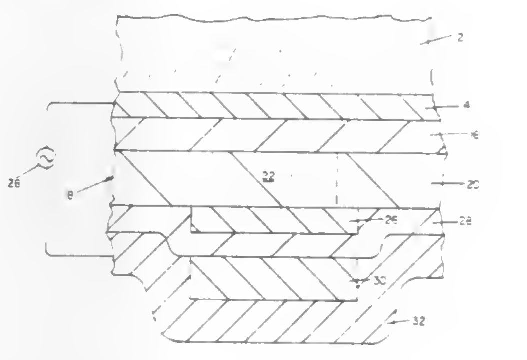
1. A pressure-sensing transducer device having the configuration of a flat cable of predetermined length comprising two conductors, each constituting one electrode embedded in a polymeric material forming an insulator, said polymeric material being capable of exhibiting pizoelectric properties for activating at least those regions of said polymeric material which are located between said two conductors in order to have dipolar orientations along lines of force located between the two electric conductors in planes at right angles to the plane of symmetry of said conductors with each said conductor being stripped at least at one end of said cable in order to establish electrical connections with an external medium wherein said cable is also coiled in such a manner as to insure that each said two conductors forms a spiral, the spirals being contained in two parallel surfaces.

4,369,392
OXIDE-COATED CATHODE AND METHOD OF PRODUCING THE SAME
Sadayoshi Hotta, and Masanori Watanabe, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sep. 16, 1980, Ser. No. 187,701
Claims priority, application Japan, Sep. 20, 1979, 54/121093; Jan. 17, 1980, 55/4353
Int. Cl.^{3} H01J *1/14*
U.S. Cl. 313—346 R 5 Claims



1. An oxide-coated cathode comprising as the base a sintered product principally composed of an alkaline earth metal compound and a high-melting-point metal and having high heat conductivity and low specific resistance, said sintered product being used either singly or provided on a high-melting-point metal layer containing a reducible element as impurity, said base being coated with an oxide cathode material.

4,369,393
ELECTROLUMINESCENT DISPLAY INCLUDING SEMICONDUCTOR CONVERTIBLE TO INSULATOR
Norman J. Frame, Whitefish Bay, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.
Filed Nov. 28, 1980, Ser. No. 211,085
Int. Cl.^{3} H05B *33/02, 33/14, 33/22*
U.S. Cl. 313—506 3 Claims



1. An electroluminescent display comprising an upper, transparent electrode layer, a first insulating layer beneath said electrode layer,

a layer of electroluminescent material below said first insulating layer,

a layer of manganese dioxide beneath said electroluminescent layer,

said manganese dioxide acting as a convertible semiconductor so as to convert to an insulator at places of high current flow in order to stop such flow,

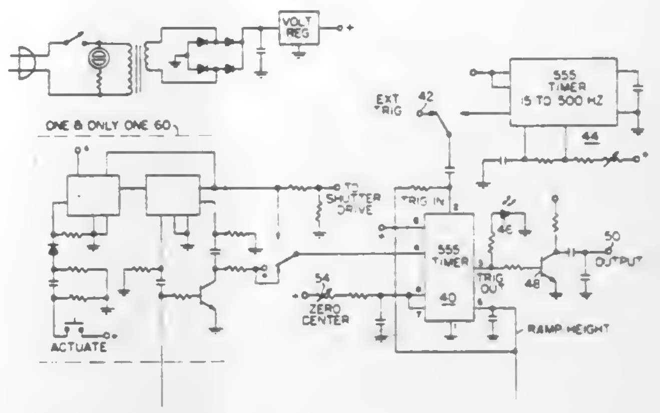
said manganese dioxide also providing contrast enhancement to said display, and

said manganese dioxide layer extending only part way beneath said electroluminescent layer so as to be beneath desired areas of display,

a second insulating layer beneath said electroluminescent layer, and

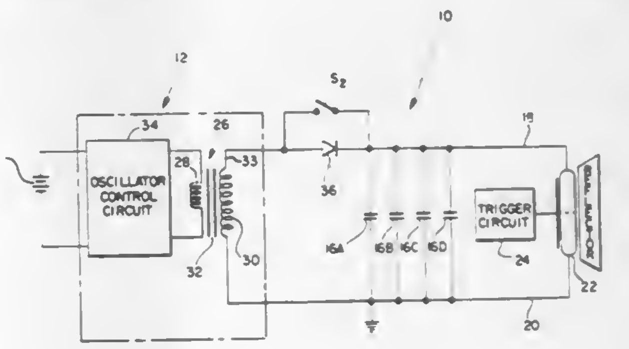
a lower electrode layer beneath said insulator layer.

4,369,394
TIMER CIRCUIT FOR A STROBOSCOPE
Andrew W. Vincent, Rochester, N.Y., assignor to A. W. Vincent Associates Inc., Rochester, N.Y.
Filed Dec. 29, 1980, Ser. No. 220,276
Int. Cl.^{3} H05B *37/00*
U.S. Cl. 315—200 A 1 Claim



1. A timer circuit for triggering a stroboscope at successively longer intervals following the occurrence of preselected repetitively occurring events comprising a first 555 timer, an RC circuit, means for charging the capacitor of the RC circuit through the resistance thereof thereby to generate a ramp voltage across the capacitor, said capacitor being connected to said timer to be periodically discharged thereby so that the ramp voltage is generated repetitively, the resistance in said RC circuit being variable so that the repetition rate of the ramp voltage varies in response to changes of the resistance, an amplifier having an input connected to the capacitor of said RC circuit for amplifying the ramp voltage, said amplifier including feedback and bias control means for holding the instantaneous value of the ramp voltage at the center of the ramp approximately at a constant, preselected value, a second 555 timer, variable means for applying a selectable fraction in amplitude of the ramp voltage from said amplifier to the control input of said second timer, means for applying a trigger signal to said second timer synchronously with the preselected repetitively occurring events, and output means for applying the output signals of said second timer to a device such as a stroboscope to be periodically triggered.

4,369,395
ELECTRONIC FLASH WITH SAFETY SWITCH FEATURE
John W. Stempeck, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 5, 1981, Ser. No. 240,761
Int. Cl.^{3} H05B *41/32*
U.S. Cl. 315—241 P 2 Claims



1. In an electronic flash apparatus of the type comprising a flash discharge tube; a storage capacitor; means responsive to an applied voltage for charging the storage capacitor including a transformer having a primary winding energized with an alternating voltage derived from the applied voltage and a

secondary winding energized with an alternating voltage to provide a charging current to the storage capacitor; circuit means responsive to an applied trigger signal for discharging the storage capacitor through the discharge tube to produce an illuminating flash of light; and a housing having a main body portion for supporting the flash discharge tube, the storage capacitor, the charging means and the circuit means; and a cover portion which may be removably connected to the main body portion to cover at least the storage capacitor, the charging means and the circuit means, the improvement comprising:

safety switching means for discharging the storage capacitor in response to removal of the cover portion of the housing from the main body portion, said switching means being stationed with respect to the housing so as to assume an open circuit condition when the cover portion of the housing is connected to the main body portion and a closed circuit condition when the cover portion of the housing is disconnected from the main body portion, said switching means also being electrically connected with respect to the secondary winding of the transformer and the storage capacitor so as to establish a discharge path for the storage capacitor through the secondary winding when said switching means is in its closed circuit condition.

4,369,396

COLOR CATHODE-RAY TUBE APPARATUS WITH SHADOW MASK

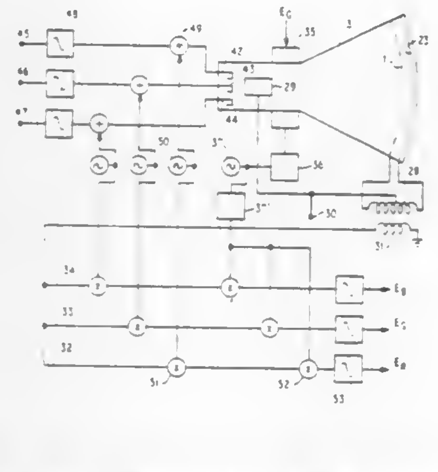
Ian D. Judd, Chandler's Ford, England, assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 29, 1980, Ser. No. 154,340

Claims priority, application United Kingdom, Jun. 27, 1979, 7922378

Int. Cl.^{3} H01J *29/74, 29/76*

U.S. Cl. 315—369 **5 Claims**



1. Multi-beam color cathode-ray tube apparatus with a shadow mask for ensuring color purity and means for causing the beams to trace a line raster, characterized in that the shadow mask is formed with slits,

each slit extending in the same direction as said line raster from one edge of the display area to the other so that each of the multi-beams is directed through the slits to an associated phosphor stripe, each line of the raster being colinear with a different slit, there being for each slit a corresponding raster line.

4,369,397

MOTOR CONTROL APPARATUS FOR A MOTORIZED VEHICLE, AND METHOD THEREFOR

Graham L. Read, West Hindmarsh, Australia

Filed Jul. 25, 1979, Ser. No. 60,356

Claims priority, application Australia, Jul. 28, 1978, PD5266

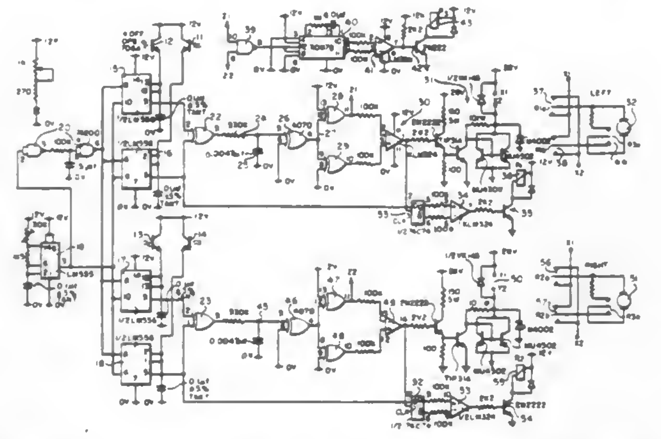
Int. Cl.^{3} B62D *11/04*

U.S. Cl. 318—54 **12 Claims**

1. A control arrangement for electric motors in which a mechanical controller is adapted to be manually used to control both forward and rearward speed of at least one electric motor, said control arrangement comprising:

means to convert a manually determined position of a controller into an electrically useful signal to control said at least one electric motor, said means including a shift member having various positions and controlled in position by the said controller;

at least two detectors and a radiant energy emitter associated with each of said detectors, said detectors each being responsive with a proportional electrical output to the level of the radiant energy from the associated emitter reflected from a reflection surface of said shift member, the position of said shift member being detected by said detectors by providing a varying effect to which said detectors are sensitive and will provide a variable output therby, the electrical output signal from each said detector being varied by reason of the varied, relative positions of said shift member with respect to said detectors; and



an electrical circuit for controlling the said at least one electric motor, and said electrical circuit including means to effect a drive signal for said at least one electric motor which is varied to control the speed thereof as a factor of the combination of outputs of said detectors to control both the direction of rotation of the controlled motor in both a forward and rearward direction and the speed thereof.

4,369,398

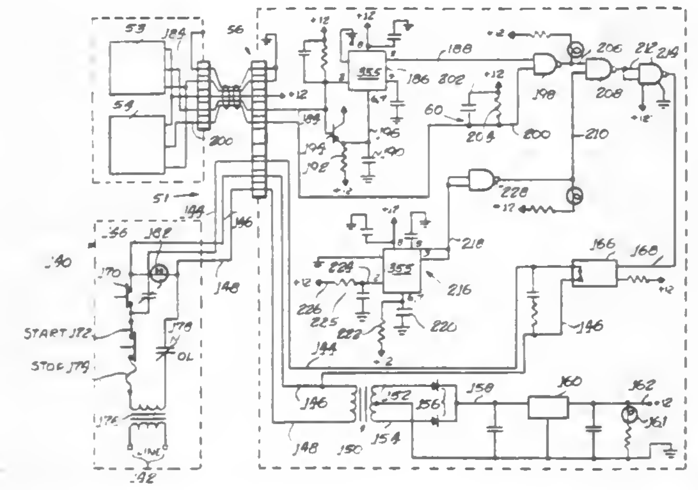
METHOD AND APPARATUS FOR MONITORING VIBRATING EQUIPMENT

George W. Lowry, Sr., Balch Springs, Tex., assignor to Triple/S Dynamics, Inc., Dallas, Tex.

Filed Mar. 7, 1980, Ser. No. 128,023

Int. Cl.^{3} H02K *33/00*

U.S. Cl. 318—114 **19 Claims**



1. An apparatus for detecting understroke or overstroke conditions of a vibrating piece of equipment, said apparatus comprising:

support means for mounting said apparatus on said vibrating piece of equipment;

an oscillatory member mounted on said support means for oscillation with said piece of equipment;

Hall effect switch means positioned on said support means adjacent said member for operation by said oscillatory member; and

circuit means operated by said Hall effect switch means to provide an alarm signal when said oscillatory member is undergoing an oscillatory motion outside of a predetermined motion.

4,369,399

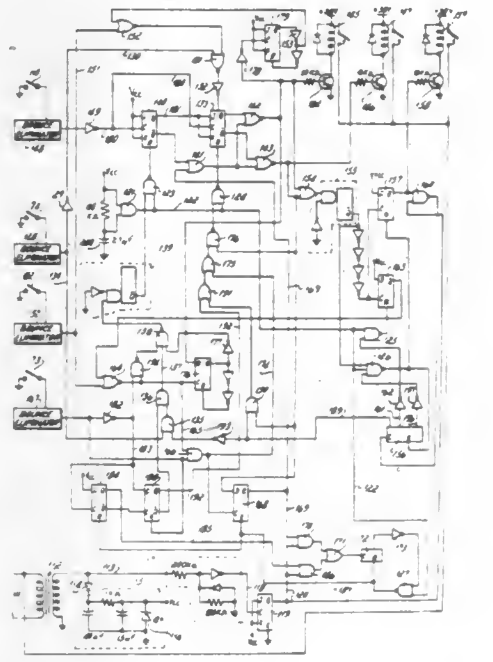
CONTROL CIRCUIT FOR A MOTOR-DRIVEN DOOR OPERATOR

Maw H. Lee, Broadview Heights, and Chun F. Chen, North Canton, both of Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Division of Ser. No. 931,668, Aug. 7, 1978, Pat. No. 4,263,536. This application Mar. 30, 1981, Ser. No. 248,969

Int. Cl.^{3} H02P *3/08*

U.S. Cl. 318—467 **8 Claims**



1. In a door operator including a drive mechanism connectable to a door and actuable to move the door in either direction between an open position and a closed position, a selectively energizable reversible motor connected to the drive mechanism for actuating the drive mechanism to move the door between the open and closed position and a selectively activated control circuit connected to a power supply and to the motor for energizing the motor, the improvement in the control circuit comprising:

a down limit switch activated as the door closes near the closed position,

an up limit switch activated as the door opens near the open position,

a selectively activated control switch for activating the control circuit; and

maximum run-time circuitry connected to the down and up limit switches and to the control switch for changing the operational mode of the motor if energization of the motor continues after a maximum predetermined time elapses following activation of the control circuit, the maximum run-time circuitry being operable when de-energization of the motor is normally influenced by the up and down limit switches to change the operational mode of the motor in the event one of the up and down limit switches fails.

4,369,400

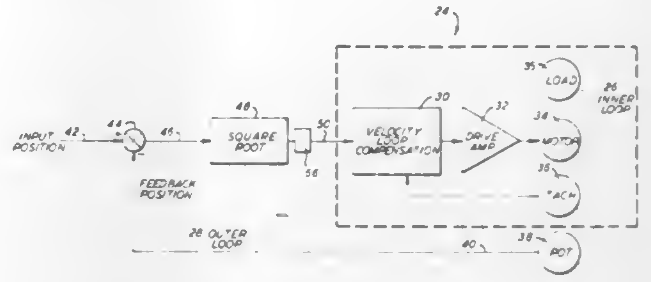
SERVO CONTROL SYSTEM

James A. Turner, Binghamton, N.Y., and John C. Stubbart, Ashland, Mass., assignors to The Singer Company, Binghamton, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,535

Int. Cl.^{3} G05B *13/00*

U.S. Cl. 318—561 **12 Claims**



1. An apparatus for positioning a load in which a velocity drive signal is derived from a positional error signal and employed to drive an actuator which positions the load, comprising;

(a) a first means to provide a rectified positional error signal;

(b) a second means connected in series with said first means to provide a first signal representative of the square root of said rectified positional error signal; and

(c) a third means connected in series with said second means for amplifying the magnitude of said first signal to produce a non-linear velocity drive signal that has a magnitude $\sqrt{2AD}$, where A represents the acceleration and D represents the position of said load, whereby said first, second and third means comprise a non-linear system.

4,369,401

VALVE POSITION MONITOR AND CONTROL SYSTEM

Robert W. Fayfield, Excelsior, and Kenneth B. Fontaine, Maple Grove, both of Minn., assignors to Scovill Manufacturing Co., Waterbury, Conn.

Division of Ser. No. 921,443, Jul. 3, 1978. This application Apr. 28, 1980, Ser. No. 144,381

Int. Cl.^{3} G05B *23/02*

U.S. Cl. 318—565 **6 Claims**

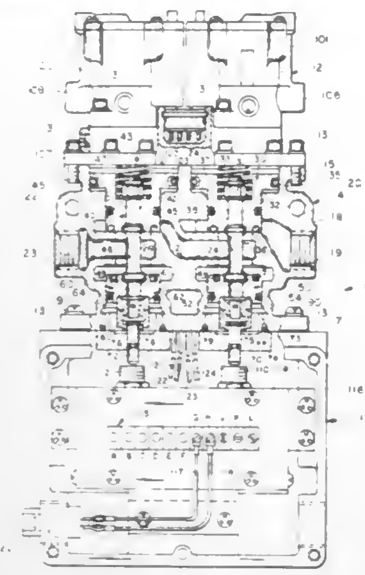
1. An electrical control circuit for monitoring and controlling the position of a movable element in a machine comprising:

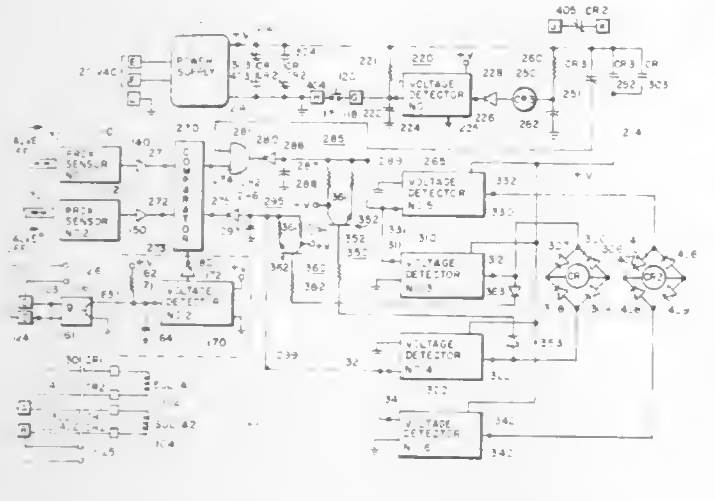
an electrically operated actuator for use in effecting movement of a movable element in a machine between at least two positions;

detector means positionable to detect the position of the movable element and provide electrical output signals representative thereof;

actuator circuit means coupled to said actuator for providing electrical input control signals to said actuator; and

logic circuit means including delay means, said logic circuit means having an input coupled to said detector means and an output coupled to said actuator circuit means for generating inhibit signals applied to said actuator circuit for deactivating said actuator circuit means whenever the signals from said detector means indicate that the movable element is not positioned as commanded by said actuator

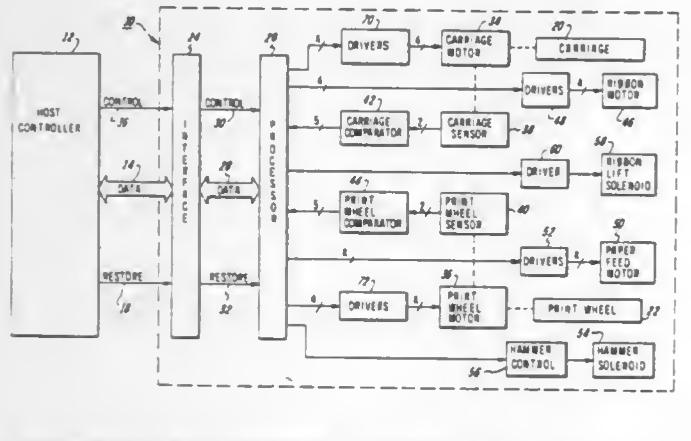




circuit means within a predetermined delay period thereby indicating a system failure.

4,369,402
MOTION DAMPING APPARATUS

Andrew Gabor, Alamo, and John C. G. Dunfield, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 22, 1980, Ser. No. 171,201
Int. Cl.^{3} H02K *29/00*
U.S. Cl. 318—685 **13 Claims**



1. Apparatus for controlling the damping mode movement of a movable element to bring said movable element to rest at a desired stopping position, said apparatus comprising:

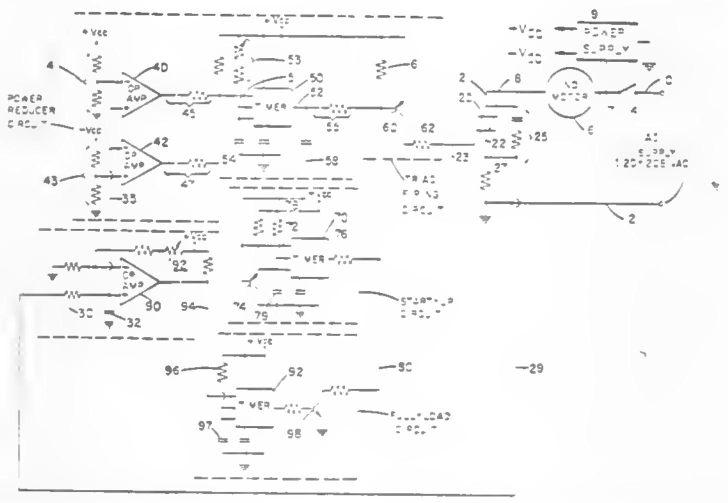
a multi-phase drive motor having a drive shaft coupled to said movable element for driving same, a plurality of electrically conductive coils mounted in position-displaced relationship about said shaft, and means coupled to said drive shaft and responsive to the selective energization of said coils by respective motor drive signals for causing the corresponding rotation of said drive shaft and movement of said movable element;

a sensor coupled to said drive shaft and responsive to the rotation thereof for generating an electrical signal containing information indicative of the direction, speed and distance of movement of said movable element;

means for detecting from the distance information indicated by said electrical signal whether said movable element is within a predetermined distance of said desired stopping position; and damping control means for controlling the levels of said motor drive signals in dependence upon the direction information indicated by said electrical signal following detection of said movable element being within said predetermined distance of said desired stopping position.

4,369,403
POWER FACTOR CONTROLLER FOR INDUCTION MOTOR

Maw H. Lee, Broadview Heights, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio
PCT No. PCT/US80/00604, § 371 Date Sep. 12, 1980, § 102(e) Date Sep. 12, 1980, PCT Pub. No. WO80/02895, PCT Pub. Date Dec. 24, 1980
Continuation-in-part of Ser. No. 127,440, Mar. 5, 1980, abandoned, Continuation-in-part of Ser. No. 42,608, May 25, 1979, abandoned. This PCT application May 21, 1980, Ser. No. 204,361
Int. Cl.^{3} H02P *5/40*
U.S. Cl. 318—729 **5 Claims**



1. An electronic controller for regulating the power applied by an AC supply to an AC induction motor, comprising:

a semiconductor AC switching means inserted in series with the AC supply and the induction motor, power being applied to the induction motor via the switching means;

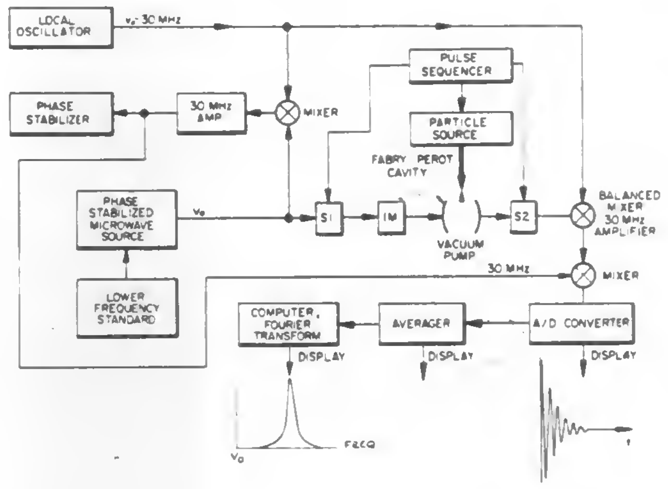
means for detecting at least a portion of each trailing edge of load current pulses through the induction motor when the switching means is in a conducting state;

means for detecting the magnitude of current through the motor when the switching means is in a conducting condition, the magnitude of current changing in response to a changing mechanical load on the motor; and

a power-reducing circuit responsive to each of the detected trailing edge portions for triggering the switching means into a conducting state a predetermined time period after each detected trailing edge of the load current pulses when the peak value of the load current pulses is less than a predetermined load current value indicative of a near full load condition, said triggering being independent of the trailing edges of associated motor voltage pulses.

4,369,404
METHOD AND APPARATUS FOR THE SPECTROSCOPIC OBSERVATION OF PARTICLES

Willis H. Flygare, 112 W. Pennsylvania, Urbana, Ill. 61801, and Terrill J. Balle, 2292 A Aster Rd., Bethlehem, Pa. 18108
Filed Sep. 15, 1980, Ser. No. 187,145
Int. Cl.^{3} G01R *27/04*
U.S. Cl. 324—58.5 C **12 Claims**



1. A method of spectroscopic observation of particles, such as molecules, atoms or molecular complexes, said method comprising:

providing a Fabry-Perot cavity having a cavity resonant frequency;

applying a source of pulsed particles to be investigated to said Fabry-Perot cavity, while;

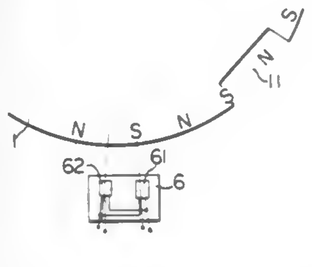
simultaneously applying a radiation pulse to the pulsed particles in said Fabry-Perot cavity sufficient to polarize said particles and provide coherent radiation emission frequencies from said polarization over a frequency band centered at said cavity resonant frequency;

said coherent radiation emission frequencies characteristic of the respective particles within said source of pulsed particles applied to the Fabry-Perot cavity; and

observing said coherent radiation emission frequencies so as to determine said respective particle characteristics.

4,369,405
ROTATIONAL POSITION DETECTING APPARATUS

Masahiro Sato, Toyoake, and Kunio Makita, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jul. 8, 1980, Ser. No. 167,155
Claims priority, application Japan, Jul. 10, 1979, 54-95407[U]
Int. Cl.^{3} G01P *3/48*
U.S. Cl. 324—174 **3 Claims**



1. A rotational position detecting apparatus comprising:

rotating means including a plurality of magnetic poles induced on the periphery thereof except at a portion thereof indicative of a rotational reference position, each of said magnetic poles forming rotational angle information means;

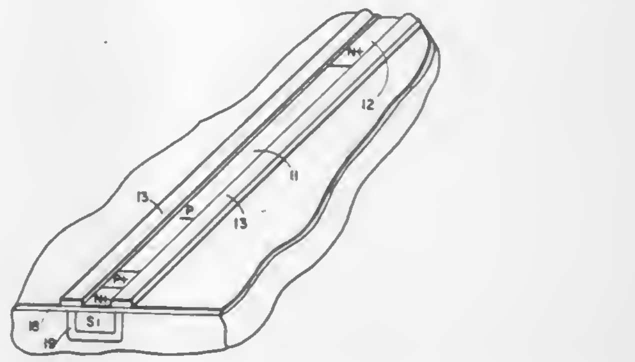
a pair of magnetically sensitive means having a mounting pitch therebetween related to the pitch of the magnetic poles, and positioned to face said rotating means so as to generate outputs whose AC components are different in phase by one half period from each other; and

a wavefore shaping circuit including a differential circuit for generating an output indicative of the difference between the output AC components of said pair of magnetically sensitive means, and a comparator for comparing the differential output of said differential circuit with a predetermined level to generate a rectangular wave output,

wherein said magnetic poles of said rotating means are dropped out at said rotational reference position such that the output AC component of each of said magnetically sensitive means is dropped out at said reference position in a point symmetrical manner on both sides of the zero level thereof.

4,369,406
SEMICONDUCTOR MAGNETO-TRANSISTOR DEVICE

Sidney I. Soclof, San Gabriel, and Michael T. Elliott, Carbon Canyon, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed May 5, 1980, Ser. No. 146,928
Int. Cl.^{3} G01R *33/02;* H01L *27/22, 43/00*
U.S. Cl. 324—252 **9 Claims**



1. A semiconductor magnetic detector for reading information representing magnetization position at a plurality of separate information positions, comprising:

a body of semiconductor material including a surface emitter zone of first conductivity type, an elongated base surface zone of a second conductivity type disposed in said body adjacent said emitter zone, and a collector surface zone of first conductivity type disposed adjacent said base zone, a main current path of charge carriers being formed through said base zone from said emitter zone to said collector zone, said base zone being situated with respect to said information positions such that the presence of a magnetic field at said information positions will deflect drifting charge carriers;

a pair of thin film conductors disposed on said body on respective opposed sides of the width of said elongated base surface zone and in capacitative coupling therewith and functioning to detect a Hall voltage across the width of said base surface zone resulting from a shift in electron distribution in said base zone due to the presence of a magnetic field in an information position deflecting said charge carriers in said base zone.

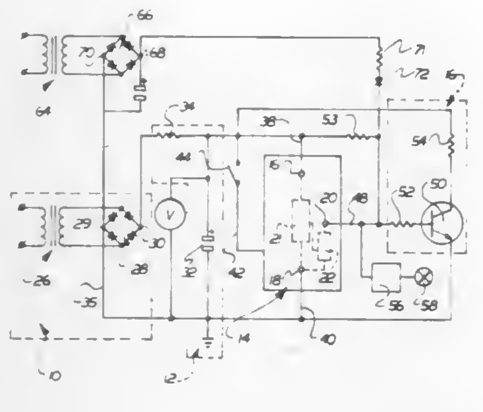
4,369,407
REGULATOR TESTER

George K. Korbell, Euclid, Ohio, assignor to Sheller-Globe Corporation, Cleveland, Ohio
Continuation of Ser. No. 70,806, Aug. 29, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,262
Int. Cl.^{3} G01R *31/02*
U.S. Cl. 324—416 **11 Claims**

1. Apparatus for testing a regulator independently of the alternator or generator to which it is intended to be connected, said regulator having first and second terminals across which

the output voltage of the alternator or regulator is normally applied, said regulator sensing said voltage and switching an internal switch between conductive and nonconductive states when said voltage moves beyond a predetermined acceptable range of values, where said internal switch is coupled between a third terminal of said regulator and one of said first and second terminals to control current flow through the field coil of said alternator or generator to which it is intended to connect said regulator, said apparatus comprising:

first static circuit means for generating an output voltage simulating the output of said alternator or generator to which it is intended to connect said regulator and for applying said simulated output voltage across said first and second terminals to cause said regulator, if operating properly, to switch said internal switch between said conductance states; and



second static circuit means coupled between said third terminal and said one of said first and second terminals to which said internal switch is connected for generating a simulated field current of an alternator or generator and for applying said simulated field current to said third terminal, said second static circuit means comprising a low voltage power supply providing a low voltage power signal having a magnitude substantially smaller than the maximum level of said simulated output voltage, said low voltage supply having an impedance selected such that the magnitude of the current supplied to the internal switch is substantially the same as the rated field current of said alternator or generator with which said regulator is intended to be associated even though the voltage of said low voltage power signal is quite low, whereby little power is dissipated thereby.

4,369,408

METHOD AND APPARATUS FOR DIGITAL FREQUENCY SELECTION

Gerhard Plohn; Manfred Schuh, both of Erlangen, and Manfred Wörner, Kirchehrenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,043

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3002018

Int. Cl.^{3} H03K *5/26, 19/003*

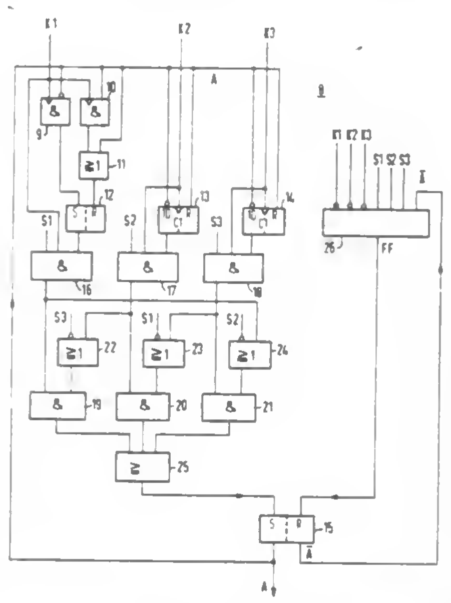
U.S. Cl. 328—154 **4 Claims**

1. A method for selecting a signal having a median frequency from first, second and third periodic signals of different frequencies, the method comprising the steps of:

a. converting the first, second and third periodic signals into respective first, second and third pulse sequences, each said pulse sequence having a duty cycle of approximately unity and a frequency which corresponds to the frequency of its associated periodic signal, each said pulse sequence being formed of a sequence of first and second logic signal states which are preceded by positive and negative signal slopes, respectively;

b. producing an output signal which assumes a first logic signal state when a positive signal slope of said first pulse sequence, which places said first pulse sequence in said first logic signal state and occurs while said output signal is in a second logic signal state, is followed by a positive signal slope of said second pulse sequence, while said first pulse sequence is in a first logic signal state; and

c. causing said output signal to assume a second logic signal state when an initiating negative signal slope is an initiating one of said first, second and third pulse sequences, which places said initiating pulse sequence which experienced said initiating negative signal slope in said second logic signal state and occurs while said output signal is in said first logic signal state, is followed by a further negative signal slope of a remaining one of said first, second and third pulse sequences, which did not experience said initiating negative signal slope, said further negative signal slope occuring while said initiating pulse sequence which experienced said initiating negative signal slope is in said second logic signal state.



4,369,409

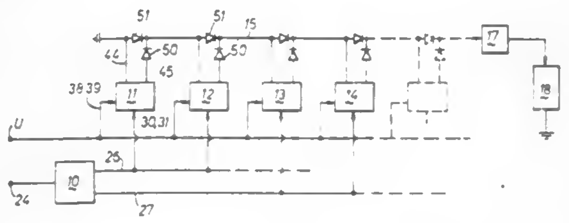
LOW-FREQUENCY POWER AMPLIFIER

Bohumil Kyrian; Johann Milavec, both of Windisch, and Wilhelm Tschol, Fislisbach, all of Switzerland, assignors to Patelhold Patentverwertungs- & Elektro-Holding A.G., Glarus, Switzerland

Filed Aug. 5, 1980, Ser. No. 175,362

Int. Cl.^{3} H03F *3/38, 3/217*

U.S. Cl. 330—10 **33 Claims**



1. An LF power amplifier for amplifying an input LF signal, comprising:

means for generating a first pulse width modulated pulse train having a predetermined frequency, each of the pulses of said first pulse train having a predetermined height and the width of each of said pulses of said first pulse train being modulated as a function of said input signal;

means for generating a second pulse width modulated pulse train having said predetermined frequency, each of the pulses of said second pulse train having said predetermined height and the width of each of said pulses of said second pulse train being modulated as a function of said input signal;

first and second switch stage means, said first and second switch stage means receiving said first and second pulse trains, respectively, and each amplifying the pulses of said pulse train which it receives;

means for combining, in series, said first and second pulse trains after they have been amplified by said first and second switch stage means, respectively, to form a combined pulse train; and

low pass filter means for filtering said combined pulse train.

4,369,410

MONOLITHICALLY INTEGRABLE TRANSISTOR AMPLIFIER HAVING GAIN CONTROL MEANS

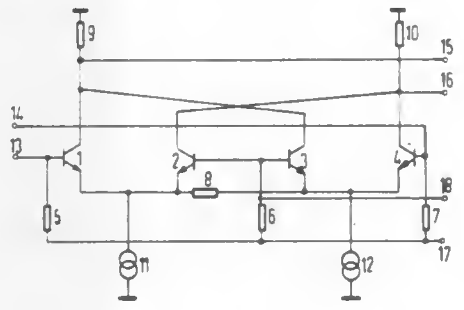
Josef Fenk, Eching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,863

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924171

Int. Cl.^{3} H03G *3/30*

U.S. Cl. 330—254 **6 Claims**



1. Monolithically integrable transistor amplifier comprising four mutually similar transistors formed pairwise by direct connection of emitter electrodes thereof into one differential amplifier including a first and a second transistor, and another differential amplifier including a third and a fourth transistor, the transistors of the respective differential amplifiers having respective emitter electrodes connected in similar manner via a resistance to a first potential source, respective signal inputs connected to base terminals of said first and said fourth transistors, a common reference input connected via a respective resistance to said base terminals of said first and said fourth transistors for applying a reference signal or potential thereto, said first and said third transistors having collectors, on the one hand, and said second and said fourth transistors having collectors on the other hand, which are connected to respective signal outputs and via a common load resistance, respectively, to a second potential source, said second and said third transistors having base terminals connected via resistance means to said common reference input, means for effecting gain control connected to said base terminals of said second and said third transistors, and a negative feedback resistance connected in common to said emitters of said first and said second transistors of said one differential amplifier and in common to said emitters of said third and fourth transistors of said other differential amplifier.

4,369,411

CIRCUIT FOR CONVERTING SINGLE-ENDED INPUT SIGNALS TO A PAIR OF DIFFERENTIAL OUTPUT SIGNALS

Tsutomu Niimura; Kyoichi Murakami, both of Kanagawa, and Akira Yamakoshi, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,566

Claims priority, application Japan, Sep. 18, 1979, 54-119921

Int. Cl.^{3} H03F *3/45*

U.S. Cl. 330—257 **21 Claims**

1. A signal converting circuit comprising:

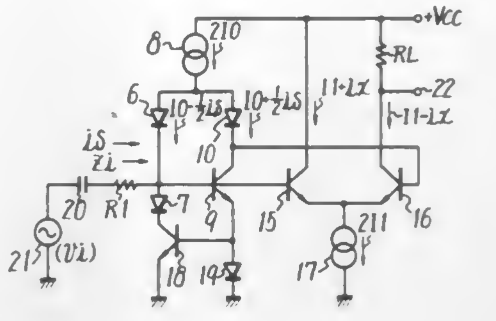
current source means for generating a constant current;

input signal generating means for generating an input signal current;

first means for producing a first differential current as a function of said constant current and said input signal current;

second means for producing a second differential current as a function of said constant current and said input signal current;

at least one of said first and second means including semiconductor means having an input and supplied with a current at said input;



output means for producing differential output signals in response to said first and second differential currents; and

means for eliminating the effect on said differential output signals of said current at the input of said semiconductor means.

4,369,412

AUDIO AMPLIFIER

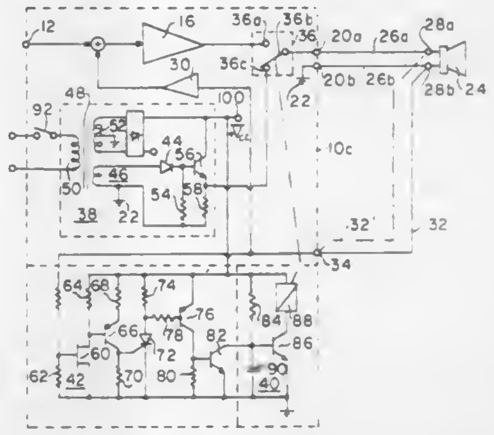
Hideki Sakano, Iwafunemachi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 197,948

Claims priority, application Japan, Feb. 5, 1980, 55-12667

Int. Cl.^{3} H02H *7/20*

U.S. Cl. 330—298 **7 Claims**



1. An audio amplifier for connection to a pair of terminals of a loudspeaker through like individual extension wires comprising:

a line input terminal;

a line amplifier having an input terminal connected to the line input terminal;

a line output terminal for connection to one of the terminals of the loudspeaker through one of the extension wires;

a grounded terminal for connection to the other of the terminals of the loudspeaker through the other of the extension wires;

an auxiliary terminal for connection to the grounded terminal of the loudspeaker;

a positive feedback circuit connected between the auxiliary terminal and the input terminal of the line amplifier; and

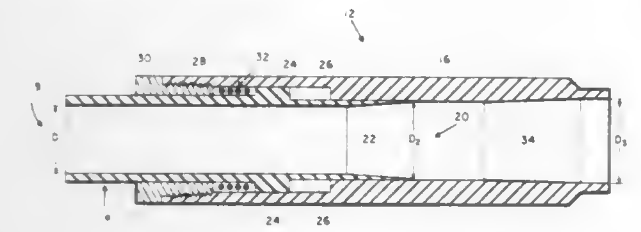
apparatus for protecting the line amplifier and loudspeaker from damage by voltage overload including:

(a) a switch between the output of the line amplifier and the line output terminal; and

(b) controller means sensitive to the voltage at the auxiliary terminal for opening or maintaining open, said switch when said voltage exceeds a predetermined value.

4,369,413
INTEGRATED DUAL TAPER WAVEGUIDE EXPANSION JOINT

Joseph M. Devan, and Hugh Milligan, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 3, 1981, Ser. No. 230,995
Int. Cl.³ H01P *1/06, 5/02*
U.S. Cl. 333—34 **9 Claims**



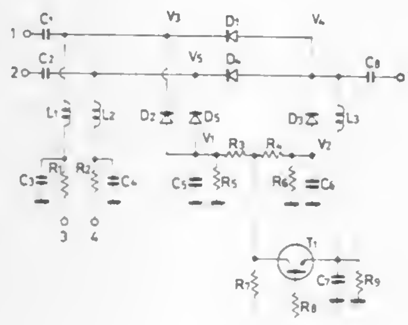
1. A tapered transition waveguide expansion joint for joining a first circular waveguide having a first diameter with a second circular waveguide having a second diameter for propagating electromagnetic energy in the TE_{01} mode, said first diameter being less than said second diameter comprising:

a first section of circular waveguide having a first end, the inside diameter of said first end being equal to said first diameter, said first section of circular waveguide having a second end, the outside diameter of said second end having a third diameter greater than said first diameter and less than said second diameter, said third diameter being sufficiently small to prevent the generation of modes other than said TE_{01} mode, said first section of waveguide including a section of linear taper waveguide between said first and second ends;

a second section of circular waveguide disposed such that it is concentric with said first section of circular waveguide over at least a portion thereof, said second section of circular waveguide being in slideable engagement with said first section of waveguide, said second section of waveguide having first and second ends, the inside diameter of said second section of waveguide first end being equal to said third diameter, and the inside diameter of said second section of waveguide second end being equal to said second diameter.

4,369,414
HIGH-FREQUENCY INPUT CIRCUIT FOR TWO INPUTS

Kazuharu Aoki, and Sadao Igarashi, both of Soma, Japan, assignors to Alps Electric Co. Ltd., Tokyo, Japan
Filed Dec. 2, 1980, Ser. No. 212,100
Claims priority, application Japan, Dec. 10, 1979, 54-170782[U]
Int. Cl.³ H03H *7/24*
U.S. Cl. 333—81 R **5 Claims**



1. A high-frequency input circuit for two inputs, comprising:

a first input terminal for receiving a high-frequency input signal;

a second input terminal for receiving another high-frequency input signal;

a common output terminal;

a first pi attenuation circuit connected between said first input terminal and said common output terminal and composed of first, second and third P-I-N diodes;

a second pi attenuation circuit connected between said second input terminal and said common output terminal and composed of fourth, fifth and said third P-I-N diodes;

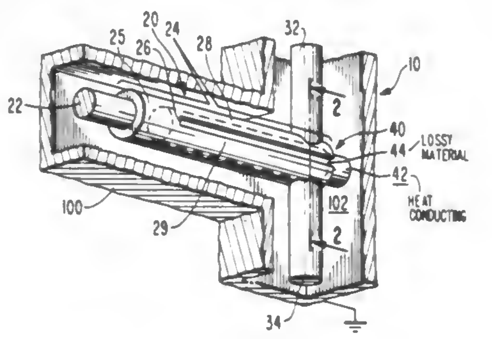
switching means connected between said first and second input terminals for selectively rendering said first and second pi attenuation circuits conductive;

means connected between branches of said first and second pi attenuation circuits for supplying the circuits with a bias voltage; and

means connected to said common output terminal for supplying a variable voltage for controlling the degree of attenuation of the signals in said first and second pi attenuation circuits.

4,369,415
SPACE-LOADED COAXIAL COUPLER

Alfred Schwarzmann, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 9, 1981, Ser. No. 232,690
Int. Cl.³ H01P *5/12*
U.S. Cl. 333—127 **13 Claims**



1. A coaxial transmission line coupler for connecting a common port to n branch ports where n is an integer greater than 1, said structure designed for operation over a predetermined frequency band, said structure comprising:

an inner conductor system including a common leg and n branch legs, said branch legs extending from a common junction with said common leg, each branch leg having a first portion beginning at said common junction and extending a distance of about ¼ wavelength at a frequency within said band, said first portions of said branch legs disposed substantially parallel and together defining a hollow interior having an axis extending parallel to said first portions of said branch conductors;

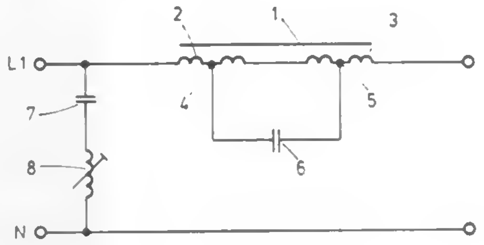
an odd mode power dissipation element disposed within said hollow interior for dissipating any odd mode power;

an outer conductor enclosing said inner conductor system;

a thermally conducting element extending, in a direction parallel to said axis, from said power dissipation element within said hollow interior to said outer conductor for conducting, to said outer conductor, heat generated in said power dissipation element.

4,369,416
BAND-STOP FILTER FOR EQUIPMENT WITH CARRIER-FREQUENCY UTILIZATION OF LOW-VOLTAGE LINES

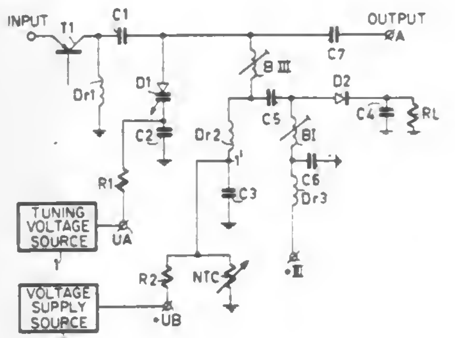
Robert Zapp, Schalksmühle, and Ewald Wichmann, Lüdenscheid, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany
Filed Dec. 22, 1980, Ser. No. 218,499
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952036; Jan. 25, 1980, 3002637
Int. Cl.³ H03H *7/01, 7/09*
U.S. Cl. 333—175 **9 Claims**



1. Band-stop filter for equipment with carrier-frequency utilization of low-voltage lines, comprising a current-compensated choke having two ends for direct connection to the main current loop of the low voltage lines, a ferromagnetic core, four coil windings being directly connected in series with each other forming a pair of front coils and a pair of rear coils, each pair being continuously wound in one direction, two of said coils being wound on said core producing opposing magnetic fields, two center taps each being connected between a respective one of said front and rear coil pairs, and a capacitor connected between said center taps.

4,369,417
CIRCUIT FOR TUNABLE RADIO-FREQUENCY CIRCUITS

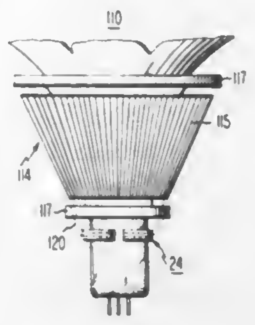
Karl-Heinz Kupfer, Krefeld, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 10, 1980, Ser. No. 205,078
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945546
Int. Cl.³ H03J *7/24, 3/04*
U.S. Cl. 334—15 **3 Claims**



1. A circuit for compensating for temperature-responsive variations of the circuit frequency of tunable RF-circuits having an oscillator, a tuning voltage source and a tuning diode coupled between said oscillator and said tuning voltage source, characterized in that said circuit comprises a separate voltage supply source, variable resistance means having a control input, and a temperature-responsive voltage divider, wherein said variable resistance means and said temperature-responsive voltage divider are coupled in series between said voltage supply source and a reference potential, said control input of said variable resistance means being coupled directly to said tuning voltage source while a tap of said temperature-responsive voltage divider being coupled to said tuning voltage source through said tuning diode, whereby the tuning voltage from said tuning voltage source is independent of variations in the compensating circuit and furthermore the value of said variable resistance means varies in dependence on the tuning voltage.

4,369,418
DEFLECTION YOKE INCORPORATING A PERMEABLE CORRECTOR

John R. Archer, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 215,002, Dec. 10, 1980, abandoned. This application May 18, 1982, Ser. No. 379,419
Int. Cl.³ H01F *3/12*
U.S. Cl. 335—211 **7 Claims**

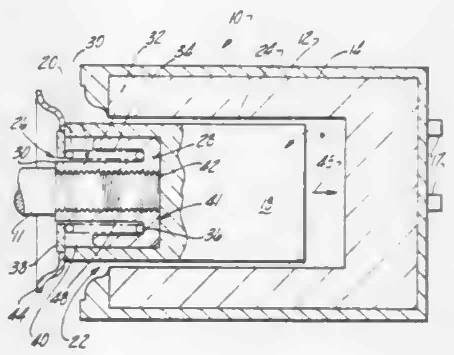


1. In a self-converging deflection yoke for use with a color kinescope producing three horizontal in-line electron beams, said yoke incorporating horizontal and vertical deflection coils producing nonuniform fields for deflecting and converging said beams; said coils producing a main deflection field and an external field; said nonuniform fields causing unequal deflection of said beams resulting in vertical coma errors between the rasters scanned by said beams in the absence of correction therefor; a vertical coma correcting apparatus comprising:

a magnetically permeable ring disposed at the rear of said yoke within said external field for shunting the flux from said external field into said ring, thereby modifying said nonuniform fields to control the deflection of at least one of said three beams with respect to another of said beams to correct said coma errors, said ring having a slot formed therein, and said slot being a small fraction of the diameter of said ring for interrupting the flow of magnetic flux through said ring.

4,369,419
SOLENOID HAVING SPRING BIASED LOST MOTION LINK

James I. Portscheller, Sparland, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US81/01129, § 371 Date Aug. 21, 1981, § 102(e) Date Aug. 21, 1981
PCT Filed Aug. 21, 1981, Ser. No. 298,834
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—255 **12 Claims**



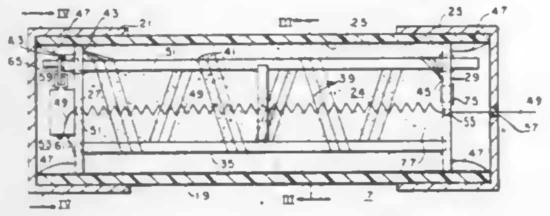
1. In a solenoid having an electrically energizable coil **(14)** and a magnetically attractive plunger **(18)** adapted to be coupled with a load **(11)**, said plunger **(18)** being movable in response to activation of said coil **(14)** between a plunger first

position, with which there is an associated load first position, and a plunger second position, with which there is an associated load second position, the improvement comprising:

lost motion link means (**20,28,32,38,40**) for connecting said plunger (**18**) and said load (**11**) and freeing said plunger for movement from said plunger first position toward said plunger second position while said load (**11**) remains stationary, said link means (**20,28,32,38,40**) including biasing means (**36**) for biasing said load (**11**) toward said load second position in response to said plunger (**18**) being moved from said plunger first position to said plunger second position.

4,369,420
CURRENT LIMITING FUSE WITH ACTUABLE EXTERNAL MEANS

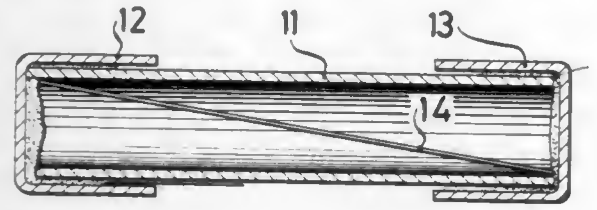
Donald D. Blewitt, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 27, 1980, Ser. No. 153,391
Int. Cl.^{3} H01H *71/20*
U.S. Cl. 337—148 **6 Claims**



1. A transformer-fuse system, comprising:
(a) a transformer and a fuse connected in a series circuit;
(b) the fuse having a tubular electrically insulating casting;
(c) a terminal at each end of the casing and each terminal being connected in the series circuit;
(d) a mandrel within the casing having one portion movable relative to another portion;
(e) a fuse element disposed on and between the two mandrel portions and the fuse element being in electrical continuity with the spaced terminals to effect electrical continuity until the fuse element opens;
(f) moving means for moving said one portion;
(g) overload means in the series circuit between the fuse and the transformer; and
(h) an actuating wire connected at one end to the moving means and extending from the interior of the casing to the transformer and in a circuit parallel to the circuit that includes the overload means, whereby when one of the fuse element and overload means opens a current is conducted through the actuating wire to operate the moving means to rupture the fuse element in multiple locations.

4,369,421
SAFETY DEVICE WITH DELAY

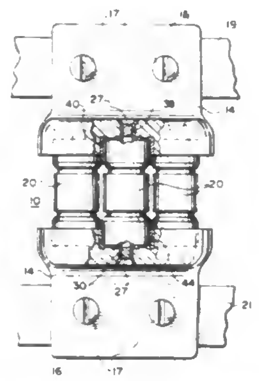
Christian Felsch, Blaurakenweg 5, 4600 Dortmund 30, Fed. Rep. of Germany
Filed Jul. 16, 1981, Ser. No. 283,815
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027245
Int. Cl.^{3} H01H *85/04*
U.S. Cl. 337—163 **8 Claims**



1. Delayed safety device, comprising: a meltable conductor engaging two contacts; a non-conductive sleeve serving as touch protection and shielding said meltable conductor; said meltable conductor being of a base metal having a coating of synthetic plastic, said coating decomposing when heated and emitting hydrochloric acid, said hydrochloric acid reacting with said meltable conductor and reducing its cross-section, said coating protecting said meltable conductor against corrosion and providing said meltable conductor with a switching-off characteristic which is present when the meltable conductor is made of a noble metal.

4,369,422
MULTIPLE ELEMENT CURRENT LIMITING FUSE

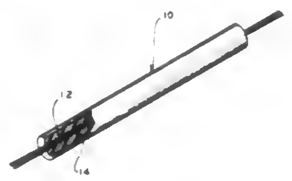
John F. Rasmussen, and Jayant S. Hemmady, both of Ballwin, Mo., assignors to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Apr. 1, 1981, Ser. No. 250,063
Int. Cl.^{3} H01H *85/14*
U.S. Cl. 337—248 **7 Claims**



1. A multiple element, current-limiting fuse comprising:
First and second metallic end bells each having an interior surface, an exterior surface, and means for connection to an external electrical circuit; and
a plurality of fusible elements disposed between said end bells, said fusible elements including a central body formed of electrically insulative material, said body having first and second ends, first and second metallic ferrules coupled to said first and second ends of said central insulative body, respectively, and a fusible link electrically connecting said first and second metallic ferrules;
one of said fusible elements being a securing fusible element, said securing fusible element having first stud means extending from said first metallic ferrule thereof for mechanically coupling said first metallic ferrule to said first metallic end bell and second stud means extending from said second metallic ferrule said second metallic end bell, said securing fusible element thereby maintaining said end bells in fixed spaced-apart relationship even upon the application of opposing forces to said end bells, said end bells define apertures therethrough, dimensioned for receipt of said stud means, and wherein said apertures include countersunk portions in said exterior surface of said end bells and said stud means are flared within said countersunk portions.

4,369,423
COMPOSITE AUTOMOBILE IGNITION CABLE

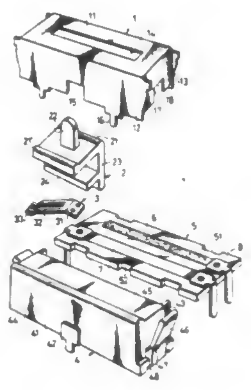
Matthew W. Holtzberg, 342 Plaza Rd., N., Fairlawn, N.J. 07410
Filed Aug. 20, 1980, Ser. No. 179,681
Int. Cl.^{3} H01C *7/00*
U.S. Cl. 338—66 **8 Claims**



1. A composite electrically conductive cable assembly for use as an ignition cable or the like, comprising in combination:
an electrically conductive core comprising a plurality of graphitized polyacrylonitrile filaments; and
an electrically insulating elastomeric jacket surrounding and enveloping said plurality of filaments.

4,369,424
SLIDE RHEOSTAT

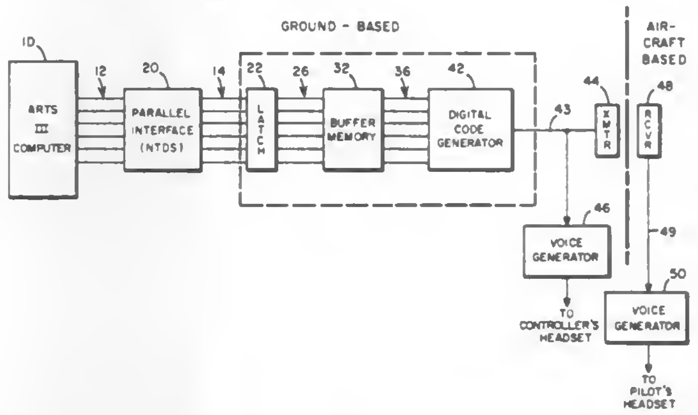
Takahiro Miyamoto, Miyagi, Japan, assignor to Alps Electric Co. Ltd., Tokyo, Japan
Filed Jul. 16, 1981, Ser. No. 284,090
Claims priority, application Japan, Jul. 18, 1980, 55-101513
Int. Cl.^{3} H01C *10/30*
U.S. Cl. 338—161 **3 Claims**



1. A slide rheostat comprising a case having a longitudinal slot formed in its upper surface; an insulating substrate held to the lower portion of said case and carrying an elongate resistor and an elongate collector; an insulating slider carrier having a lever portion extending through said slot and carrying a conductive slider adapted to slide in contact along said elongate resistor and said elongate collector by movement of said lever portion along said slot; and means including an insulating frame located within said case for supporting said slider carrier while providing an upper surface underlying said slot and being sufficiently larger in length and width than said slot for reducing the amount of dust and the like which may enter the interior of said resistor through said slot.

4,369,425
VOICED ALERTING SYSTEM

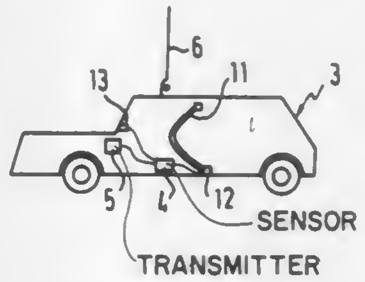
David P. Andersen, and Eugene P. Chicoine, both of Burnsville, Minn., assignors to Sperry Corporation, New York, N.Y.
Filed Jun. 8, 1981, Ser. No. 271,333
Int. Cl.^{3} G01C *23/00, 21/20*
U.S. Cl. 340—26 **4 Claims**



1. A voice communication system comprising:
means for producing relative position data as between at least a first and a second moving object;
means for frequency encoding said relative position data into a coded advisory message;
means for transmitting said frequency encoded message to at least one of said moving objects;
means responsive to said transmitted message for decoding said transmitted message and generating a voiced advisory message, whereby a person receiving said advisory message can take appropriate corrective action depending upon the positional difference with respect to other nearby objects.

4,369,426
EMERGENCY DISTRESS SIGNAL SYSTEM FOR MOTOR VEHICLES

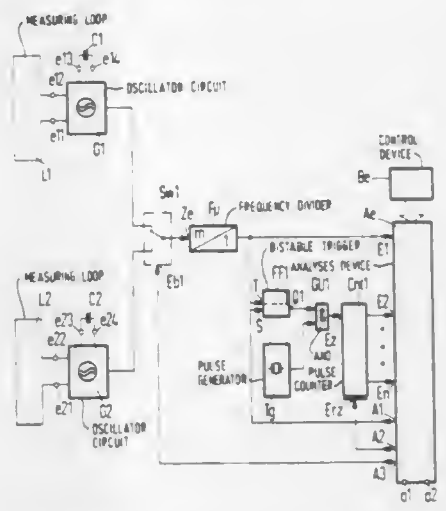
Wolfgang Merkel, Schwäbisch-Gmünd, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany
Filed Mar. 25, 1980, Ser. No. 133,845
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912547
Int. Cl.^{3} G08G *1/00;* **B60Q** *9/00*
U.S. Cl. 340—32 **11 Claims**



1. Emergency distress signal system for motor vehicles, comprising message transmitting means for indicating the location of a vehicle and radiating an emergency distress signal, at least one reporting-receiving station for receiving the distress signal, and a sensor disposed in the vehicle for actuating said message transmitting means upon the occurrence of a crash, said sensor including means for sending different trigger pulses to said transmitting means and for producing differentiatable distress signals based on trigger-threshold values corresponding to graded crash loads.

4,369,427
METHOD AND CIRCUIT ARRANGEMENT FOR DETERMINING THE ENTRY AND/OR EXIT OF A VEHICLE, IN PARTICULAR A TRAFFIC VEHICLE, INTO AND OUT OF A PREDETERMINED MONITORING ZONE

Peter Drebinger, Munich, and Heinz Merkle, Graefelfing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 4, 1980, Ser. No. 156,408
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929494
Int. Cl.^{3} G08G *1/01;* **G01R** *33/12*
U.S. Cl. 340—38 L **9 Claims**



1. A circuit arrangement for detecting the entry and/or exit

of a vehicle into and/or out of a predetermined monitoring zone, comprising:

an inductive loop for disposition in the monitoring zone for sensing passage of vehicles therepast;

an oscillator connected to said inductive loop and operable to produce oscillations at a first frequency when a vehicle is not present in the monitoring zone and at another frequency when a vehicle is in proximity to said inductive loop;

conversion means connected to said oscillator for converting the oscillations into measuring pulses of a lower frequency than that of the oscillations;

a measuring interval counter connected to said conversion means for receiving and counting a preselectable number of measuring pulses, said measuring interval counter including a plurality of selected outputs;

a bistable circuit including a trigger input connected to said conversion means, a set input for receiving a setting signal, and an output;

first logic means including a first input connected to said output of said bistable circuit, a second input, and an output;

a clock for generating counting pulses at a pulse rate higher than that of the measuring pulses, said clock connected to said second input of said first logic means;

a counting pulse counter including a counting input connected to said output of said first logic means, a reset input and at least one output for providing output signals each representing a counting of said counting pulses;

a transfer register including a plurality of inputs, and a plurality of outputs;

second logic means connected between said at least one output of said counting pulse counter and said inputs of said transfer register and connected to and controlled by said selected outputs of said measuring interval counter to transfer the output signals of said counting pulse counter to said transfer register;

reference means including a plurality of outputs for providing signals representing a reference frequency;

a subtractor connected to said outputs of said transfer register and said reference means for forming difference signals representing the difference between the contents of said transfer register and the reference means;

threshold value means including outputs for providing threshold values; and

comparison means connected to said subtractor and to said outputs of said threshold value means, including outputs for providing signals representing the comparison results.

4,369,428

PARKING BRAKE WARNING SYSTEM

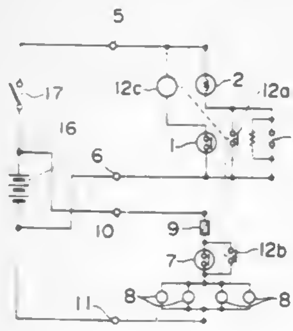
Toshiyuki Tanaka, Fuji, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 14, 1981, Ser. No. 263,746

Claims priority, application Japan, May 22, 1980, 55-70524[U]

Int. Cl.³ B60Q *1/48*

U.S. Cl. 340—69 **2 Claims**



1. A parking brake warning system of an automobile having a service brake and a parking brake, comprising:

an electric power supply source;

a warning lamp;

first and second parking brake operation responsive switches which are cooperating with each other in such a manner that both of said parking brake operation responsive switches are opened or closed concurrently;

an ignition switch;

said warning lamp, said first parking brake operation responsive switch and said ignition switch being connected in series with respect to said electric power supply source;

a stop light;

a service brake operation responsive switch which is closed upon application of the service brake;

said service brake operation responsive switch and said stop light being connected in series with respect to said electric power supply source, said service brake operation responsive switch and said ignition switch being connected in parallel with respect to said electric power supply source;

said second parking brake responsive switch and said stop lamp being connected in series with respect to said electric power supply source, said second parking brake responsive switch and said ignition switch being parallel with respect to said electric power supply source;

a third parking brake operation responsive switch which is closed upon actuation of the parking brake; and

a relay coil;

said third parking brake responsive switch, said relay coil and said ignition switch being connected in series with respect to said electric power supply source;

said first and second parking brake operation responsive switches cooperating with said relay coil such that said first and second parking brake operation responsive switches are closed when said relay coil is energized.

4,369,429

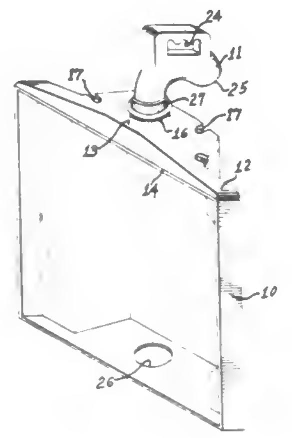
TRAFFIC SIGNAL HOUSING ADAPTER

Alan M. Souder, Jacksonville, Fla., assignor to Trafcon, Inc., Jacksonville, Fla.

Filed Mar. 23, 1981, Ser. No. 246,230

Int. Cl.³ E01F *9/00;* **H02G** *3/08*

U.S. Cl. 340—119 **16 Claims**



1. An adapter member for connection to the top surface or bottom surface of a molded plastic traffic signal housing and adapted to be connected to the outlet of a metallic wire entrance fixture, said adapter member comprising a rigid body having a top, a bottom, and a passageway through said body from said top to said bottom, said body adjacent said passageway at said top being shaped to mate with the outlet end of the wire entrance fixture so as to provide 360° rotational positioning of said body with respect to said fixture, said bottom of said body being shaped and adapted to be substantially coextensive with, to substantially correspond to, and to be fastened to the major portion of said top surface or bottom surface of said molded plastic traffic signal housing.

4,369,430

IMAGE ANALYZER WITH CYCLICAL NEIGHBORHOOD PROCESSING PIPELINE

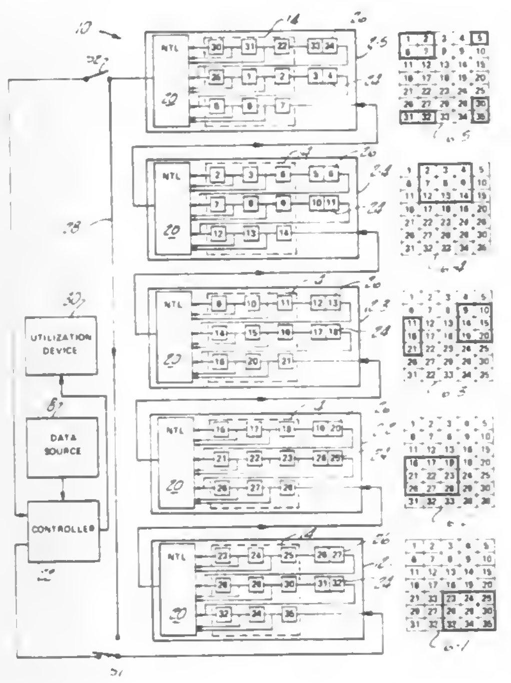
Stanley R. Sternberg, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed May 19, 1980, Ser. No. 150,833

The portion of the term of this patent subsequent to Sep. 11, 1996, has been disclaimed.

Int. Cl.³ G06K *9/36;* **G06F** *15/20*

U.S. Cl. 340—146.3 MA **7 Claims**



1. An image analyzer system comprising:

a pipeline of serially connected neighborhood transformation stages, each stage including neighborhood extraction means for accessing substantially all of the neighborhoods in a matrix of pixels constituting an image, said image matrix being supplied to the pipeline of stages as serial digital data from a data source, and programmable neighborhood transformation logic means for analyzing the pixels contained in the neighborhood extraction means, operative to perform a neighborhood transformation thereon and provide a transformation output signal to the next stage;

controller means for programming the neighborhood transformation logic in each of the stages before the serial image data is supplied thereto and

feedback means for coupling the output of the last stage to the input of the first stage in the pipeline for performing subsequent transformation on the previously transformed pixel data whereby the image pixels are transformed a greater number of times than there are stages in the pipeline without requiring additional transfer of image data from the data source.

4,369,431

APPARATUS AND METHODS FOR RECOGNIZING HANDWRITTEN SIGNS

Ernest Howbrook, Cheadle, England, assignor to National Research Development Corporation, London, England

Filed Oct. 20, 1980, Ser. No. 198,469

Claims priority, application United Kingdom, Oct. 26, 1979, 7937165

Int. Cl.³ G06K *9/00*

U.S. Cl. 340—146.3 SY **13 Claims**

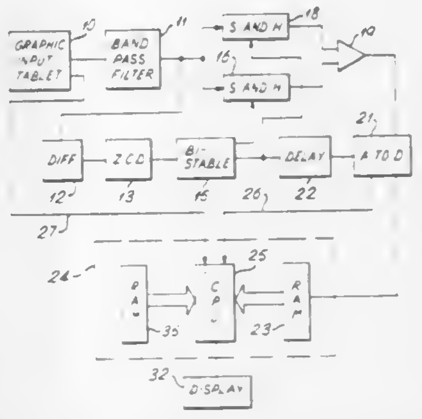
1. A method for determining whether a predetermined sign was made by a specified person, the method comprising the steps of

obtaining a succession of position signals representing the position of a writing instrument used in making the sign,

filtering the position signals using a filter having a lower cut-off frequency greater than 0.25 Hz and an upper cut-off frequency less than 20 Hz,

segmenting the filtered signal on the basis of a characteristic of the filtered signal, deriving at least one group of feature signals in which each signal is associated with a respective segment of the filtered signal and represents one characteristic of the segment, each other signal in the group representing the said one characteristic for the associated segment,

storing a group of reference signals, each associated with the same respective segments as the feature signals and derived from a number of operations of writing the predetermined sign by the specified person,



correlating the feature signals and reference signals by comparing respective signals in each of a plurality of sub groups of feature signals and reference signals associated with the same segment to obtain an overall error for the sub group, and systematically changing the feature signals associated with respective segments without changing the sequence of feature signals until the overall error is within a predetermined limit or the least possible overall error is obtained, and

comparing respective feature signals and reference signals associated with the same segment after correlation to obtain a further overall signal for at least most of the feature signals and providing an indication of whether a sign was apparently made by the specified person on the basis of the further overall error.

4,369,432

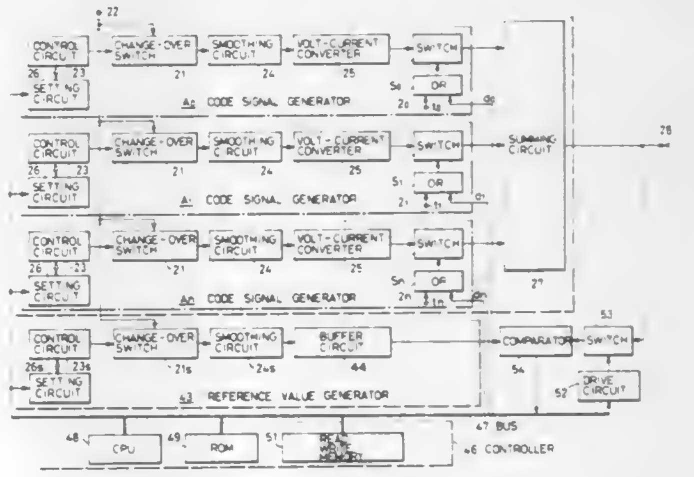
AUTO-CALIBRATED D-A CONVERTER

Tsukasa Mikami, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Feb. 8, 1980, Ser. No. 119,843

Int. Cl.³ H03K *13/03*

U.S. Cl. 340—347 DA **11 Claims**



1. A digital-to-analog converter operatively connected to receive a digital input signal and a reference voltage, comprising:

code signal generators, each of which comprises:

setting means for generating a set value;

control means, operatively connected to said setting means, for generating a control signal having a duty ratio corresponding to said set value;

switching means, operatively connected to said control means, for selectively connecting the reference voltage at a first node in dependence upon said control signal, so that a square wave voltage signal is generated;

a smoothing circuit, operatively connected at said first node, for smoothing said square wave voltage signal having the duty ratio corresponding to said set value, said code signal generators corresponding to respective bits of the digital input signal to be converted, said set value being selected so that the one of said code signal generators corresponding thereto will produce a bit analog output corresponding to the weight of the corresponding bit of the digital input signal;

output switching means, operatively connected to said smoothing circuit of each of said code signal generators, for selectively providing the outputs therefrom in response to the respective bits of the digital input signal;

summing means, operatively connected to said output switching means, for summing the outputs provided by said output switching means to obtain an analog output signal; and

means for calibrating each of said code signal generators, comprising:

a reference value generator for generating a reference value, for each of said code signal generators, corresponding to the analog output signal which is produced when only one of said code signal generators is connected to said summing means by said output switching means;

a comparator, having inputs operatively connected to said summing means and to said reference value generator, for comparing the analog output signal, comprising the output provided by a selected one of said code signal generators, with the corresponding reference value from said reference value generator; and

a controller, operatively connected to said comparator, said reference value generator and said plurality of code signal generators, for altering the set value generated by said setting means, of the selected one of said code signal generators, in dependence upon the comparison result, so that the inputs to said comparator become equal.

4,369,433

DIGITAL-TO-ANALOG CONVERTER AND PCM ENCODER USING THE CONVERTER

Kazuo Yamakido, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,991

Claims priority, application Japan, Sep. 10, 1979, 54-115298

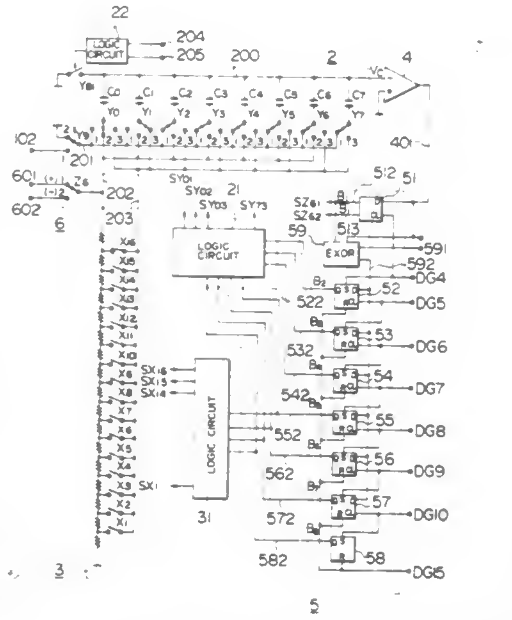
Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 DA **9 Claims**

1. A digital-to-analog converter comprising:

a capacitor array circuit including first to eighth capacitors having binary-weighted capacities in ratio, each capacitor having one end thereof connected to an output line, a first common line of a first potential connected to the other ends of said first to eighth capacitors through respective switch contacts of a first switch group, a second common line of a second potential connected to the other ends of said first to seventh capacitors through respective switch contacts of a second switch group, and a third common line connected to the other ends of said first to eighth capacitors through respective switch contacts of a third switch group;

a resistor string circuit including a resistance element connected between said second common line and a source of said first potential, sixteen taps connected to said resistance element at respective points for deriving voltages which correspond to (2n−1)/33 (where n represents a given number of 1 to 16) of a voltage applied across said resistance element, and a fourth switch group including a plurality of switches inserted between said third common line and said taps, respectively; and



logic circuit means for controlling selectively the switching operation of said first to fourth switch groups in dependence on a digital signal to be converted, thereby to produce an analog voltage corresponding to the digital signal from said output line.

4,369,434

ENCIPHERING/DECIPHERING SYSTEM

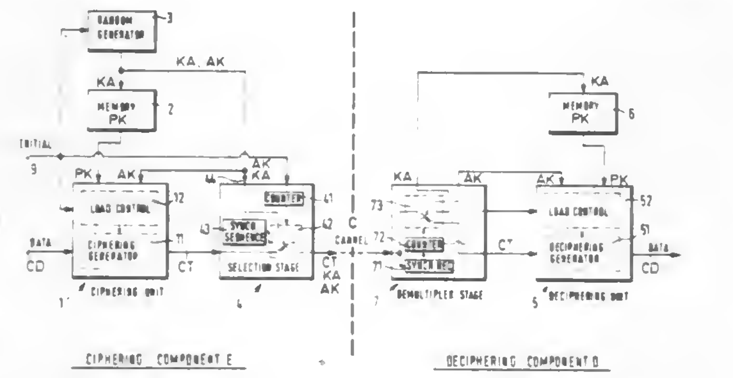
Kurt H. Mueller, Wallisellen, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Dec. 11, 1980, Ser. No. 215,493

Claims priority, application Switzerland, Dec. 20, 1979, 11319/79

Int. Cl.^{3} H03K *13/00*

U.S. Cl. 340—347 DD **5 Claims**



1. An enciphering/deciphering system comprising:

an enciphering section for transforming unscrambled data into a coded message and having an enciphering generator whose mode of operation is determined by at least one primary secret code, and a first memory with a number of different primary codes stored therein;

a deciphering section for transforming the coded message back into unscrambled data and having a deciphering generator and a second memory with the same primary codes stored therein;

means for selecting a primary code from said first memory upon a new initialization of the system, loading it into said enciphering generator, transmitting a storage address of the selected primary code to the deciphering section and, on the basis of the transmitted memory address, reading the primary code out of said second memory and loading it into said deciphering generator; and

means for producing a randomly determined output signal in the enciphering section, which with each new initialization of the system forms a random selection address for the primary code which is contained in said first and second memories and which is to be newly loaded upon the new initialization, for controlling said code selecting and loading means.

4,369,435

FIRE DETECTOR AND FIRE ALARM SYSTEM HAVING CIRCUITRY TO DETECT REMOVAL OF ONE OR MORE DETECTORS AT A SIGNAL STATION

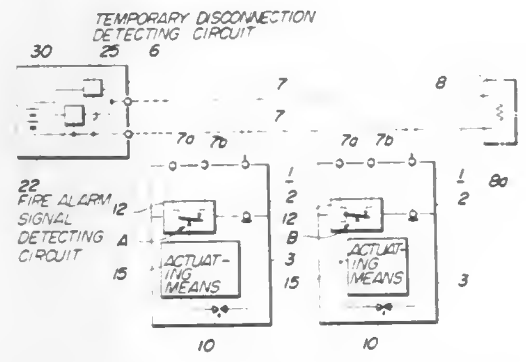
Yasaburo Adachi, Machida; Kanji Ishii, Ibaragi; Sadataka Yuchi, Chigasaki, and Akira Furuyama, Atsugi, all of Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1980, Ser. No. 172,633

Claims priority, application Japan, Jul. 27, 1979, 54-94895

Int. Cl.^{3} G08B *21/00*

U.S. Cl. 340—506 **20 Claims**


TEMPORARY DISCONNECTION DETECTING CIRCUIT
30
25
6
7
8
22
FIRE ALARM SIGNAL DETECTING CIRCUIT
ACTUATING MEANS
ACTUATING MEANS
10
10
3

1. A fire detector comprised of a detector head and a socket, said socket being connected across a pair of lines leading to a signal station and serially connecting, through said detector head, one of said pair of lines to a succeeding fire detector formed and connected identically with said fire detector, which detector is characterized by a means for disconnecting said one line from said signal station temporarily when said detector head is being removed from said socket.

4,369,436

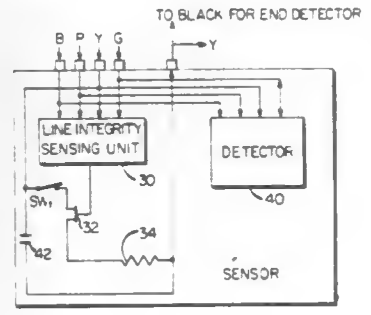
ANTI-BRIDGING CABLE SUPERVISION CIRCUIT

William J. Lautzenheiser, North Billerica, Mass., assignor to American District Telegraph Company, New York, N.Y.

Continuation of Ser. No. 87,317, Oct. 22, 1979, abandoned. This application May 1, 1981, Ser. No. 259,661

Int. Cl.^{3} G08B *29/00*

U.S. Cl. 340—506 **10 Claims**



1. In an intrusion alarm system having a sensor connected to a multi-wire transmission line from a pair of terminals at a control unit, a method for sensing the compromising of the sensor by a bridging and cutting operation comprising the steps of:

providing a network of resistive elements, at least one resistive element per sensor and means including switches, one each per sensor, for serially connecting the resistive elements through the wires of said transmission line across said pair of terminals;

detecting at each sensor a cut or short circuit of the wires of said transmission line;

opening the switch associated with a sensor at which a cut or short of the wires of said transmission line is detected; and,

monitoring the resistance of said network for changes therein, whereby a resistance change indicates either bridging of a resistive element or shorting or cutting of a wire.

4,369,437

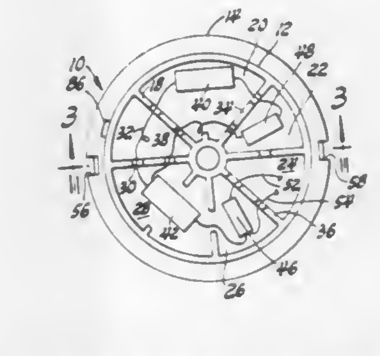
SECURITY AND ALARM APPARATUS

Robert E. Thompson, Jr., 15482 Foch Rd., Livonia, Mich. 48154, and Leo D. Snedegar, 14055 Shadywood Dr., Plymouth, Mich. 48170

Filed Mar. 16, 1981, Ser. No. 244,202

Int. Cl.^{3} G08B *13/08*

U.S. Cl. 340—539 **9 Claims**



1. A fill pipe alarm apparatus comprising:

a cover comprising a disc;

a cylindrical section of a diameter less than said disc connected to and extending downwardly from said disc to form a rim section on said disc and a chamber extending below said disc;

a bottom cover secured to said cylindrical section and forming therewith and with said disc a sealed chamber;

a switch within said chamber adapted to be maintained in a first condition by a magnetic field but urged toward a second condition upon a change in said field;

a signal transmitter;

an electrical power source;

means supporting said switch, said transmitter, and said power source within said chamber;

said switch, said power source and said transmitter being in electrical connection such that when said switch assumes a second condition a signal will be transmitted by said transmitter; and

means for maintaining said switch under the influence of a selected magnetic field to normally maintain said switch in said first position whereby upon changing of the influence of said field, said switch will assume said second condition and effect the transmission of a signal by said transmitter.

4,369,438

SUMP PUMP DETECTION AND ALARM SYSTEM

Joseph R. Wilhelmi, 3131 September Dr., Joliet, Ill. 60435

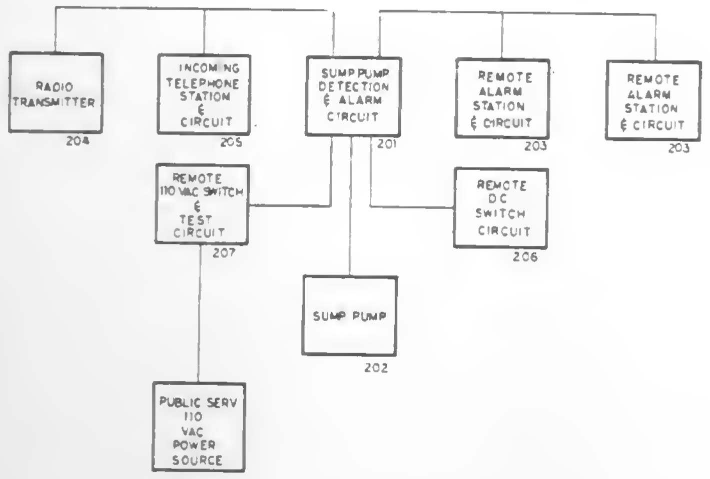
Filed May 13, 1980, Ser. No. 149,382

Int. Cl.^{3} G08B *19/00, 1/08;* **H04Q** *7/00*

U.S. Cl. 340—623 **42 Claims**

1. A detection and alarm system to detect a plurality of different conditions at a sump pump location and to thereupon provide a distinguishing alarm signal for each of such different conditions, comprising a first detecting means to detect a loss of electrical power to said sump pump location and no abnormally high water level condition at said sump pump location, first alarm signalling means to signal the existence of such first condition, second detecting means to detect a loss of electrical

power to said sump pump location plus an abnormally high water level condition at said sump pump location, and second


RADIO TRANSMITTER
204
INCOMING TELEPHONE STATION & CIRCUIT
205
SUMP PUMP DETECTION & ALARM CIRCUIT
201
REMOTE ALARM STATION & CIRCUIT
203
REMOTE ALARM STATION & CIRCUIT
203
REMOTE 110 VAC SWITCH & TEST CIRCUIT
207
REMOTE DC SWITCH CIRCUIT
206
SUMP PUMP
202
PUBLIC SERV 110 VAC POWER SOURCE

alarm signalling means to signal the existence of such second condition.

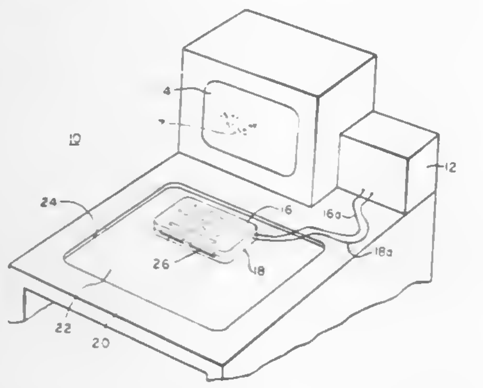
4,369,439
CURSOR POSITION CONTROLLER FOR A DISPLAY DEVICE

Michael S. Broos, Kittery, Me., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 14, 1981, Ser. No. 225,123

Int. Cl.^{3} G09G *1/00*

U.S. Cl. 340—710 **6 Claims**



1. A system for controlling the display of data for a visual data display controlled by a computer, wherein said system comprises:

an operator controlled keyboard for selectively generating said display data alteration signals;

a support surface for said keyboard;

means for supporting said keyboard on said support surface whereby said keyboard is movable by said generator;

constraining means for limiting the movement of said keyboard on said support surface whereby each elemental area in the allowed region of movement of said keyboard corresponds to an elemental area of said display,

means for generating said position signals representative of the position of said keyboard relative to a fixed reference point on said support surface, and

means for altering the data displayed at the points in said display defined by said position signals, said position signals being indicative of the positions on said display of portions of said data to be altered, and in accordance with display data alteration signals indicating the nature of the change to be made at the indicated position.

4,369,440
DATA INPUT DEVICE

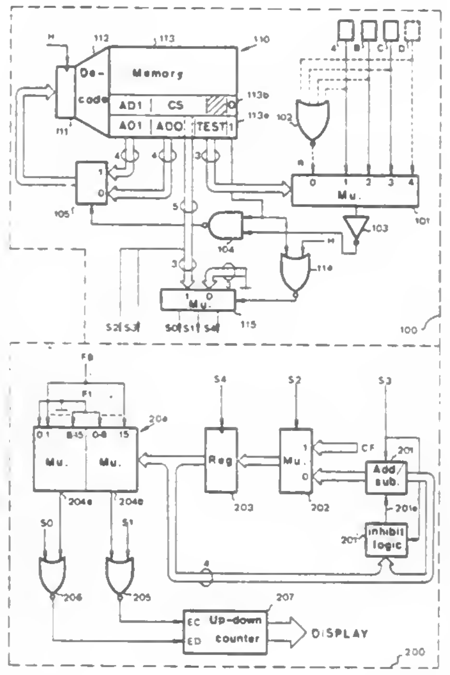
Christian Piguet, Neuchatel, and Jean-Felix Perotto, Hauterive, both of Switzerland, assignors to Centre Electronique Horloger, S.A., Neuchatel, Switzerland

Filed Mar. 10, 1981, Ser. No. 242,171

Claims priority, application Switzerland, Mar. 14, 1980, 2007/80

Int. Cl.^{3} G06F *3/14*

U.S. Cl. 340—711 **17 Claims**



1. A data input device comprising a plurality of responsive sensors, a display device and control means for causing progression in a selected direction of a sequence of symbols on the display device in response to actuation of the sensors, said control means being arranged to control the progression of the symbols in a direction and at a speed which are variable in response to actuation of the sensors and also to provide for progression of the symbols in an acquired direction between two successive actuations of the sensors.

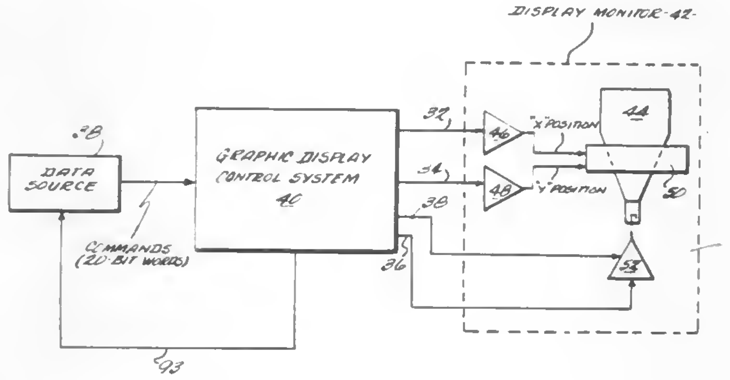
4,369,441
DISPLAY CONTROL SYSTEM

Louis Wohlmuth, 1 Elm Hollow Ct., Baltimore, Md. 21208

Filed Sep. 18, 1980, Ser. No. 188,288

Int. Cl.^{3} G09G *1/10*

U.S. Cl. 340—733 **25 Claims**



1. In a display system synthesizing an image from a source of digital vector commands, a vector generating system providing in response to a digital vector command, analog deflection signals for an electronically driven display comprising:

a digital vector generator for generating, in response to a vector defined by said digital vector command, one or more digital subvector commands of substantially constant length; and

an analog vector generator for generating, in response to each subvector command, a deflection signal for coupling to said display for drawing the sub-vector defined by the sub-vector command.

4,369,442
CODE CONTROLLED MICROCONTROLLER READOUT FROM COIN OPERATED MACHINE

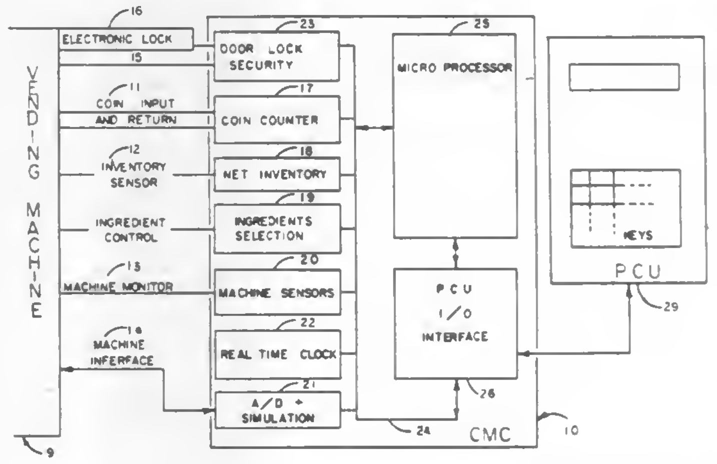
Robert L. Werth, 2053 W. Romney Dr., Anaheim, Calif. 92801, and Timothy L. Brehm, Irvine, Calif., assignors to Robert L. Werth, Anaheim, Calif.

Continuation-in-part of Ser. No. 830,758, Sep. 6, 1977, Pat. No. 4,216,461. This application Aug. 4, 1980, Ser. No. 175,294

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.^{3} H04Q *9/00;* **G06F** *7/00, 9/06*

U.S. Cl. 340—825.35 **21 Claims**



1. An apparatus for sensing and totalling transactions in a vending machine, coin changer, and the like, comprising:

A. means for sensing coin input and output transactions;

B. means for converting the sensed transactions into digit signal pulses; and,

C. a plurality of microelectronic circuit registers to receive the digit pulses, including:

i. internal totalling registers for counting net coin intake;

ii. memory registers for storing the net coin intake; and,

iii. a read-out register for outputting:

a. the net coin intake from the memory registers, servicing requirements, prior service history, power outages, battery deterioration, tamper attempts and usage times;

b. times and dates of: coin collecting, coin usage, power interruptions, tampering and servicing; and,

c. inventory control data, product and price change data, dispensing instructions, machine diagnostics, temperature control adjustments, service time checks, code controlled access entry to security locks, and security alarms;

the read-out registers being adapted for accessing and interrogation by a detachable, portable collection unit for data contained in the memory registers;

the collection unit being adapted for performing calculations and for the input of instruction, data, access codes, code validations code changes, programs and program changes, and for servicing a plurality of vending machines, by means of a keyboard input.

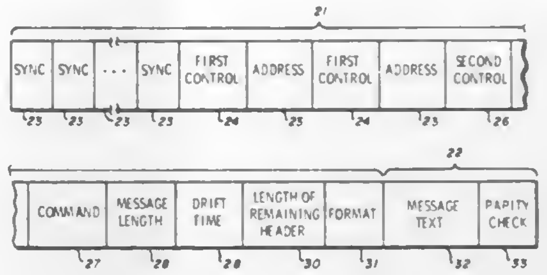
4,369,443
MESSAGE COMMUNICATION SYSTEM WITH MESSAGE STORAGE

Frank V. Giallanza, San Jose; Don M. Tracey, Mountain View, and Wayne T. Holcombe, Palo Alto, all of Calif., assignors to Meta Systems, Inc., Sunnyvale, Calif.

Filed Dec. 26, 1979, Ser. No. 106,713

Int. Cl.^{3} G08B *5/22*

U.S. Cl. 340—825.47 **51 Claims**



1. A message communication system with message storage comprising:

transmitting means for developing and transmitting a binary encoded data train which has a message portion and a header preceeding said message portion, said message portion including a plurality of characters, said header including, in the order stated, a plurality of synch signals, a first control signal following said synch signals to mark the end of said plurality of synch signals, a selected number of address signals, said first control signal being further interposed between each of said selected number of address signals in the event said header includes more than one of said selected number of address signals, a second control signal to mark the end of said selected number of address signals, and a message length signal which includes information of a total character count of said plurality of characters; and

a plurality of personal receivers, each of said personal receivers including synch means responsive to said synch signals and operative to prepare each of said personal receivers for reception of said data train, address means responsive to said address signals for addressing one or more of said personal receivers for which said message portion is intended defining an addressed personal receiver, said address means including first address means responsive to a universal address signal common to all of said personal receivers, second address means responsive to an individual address signal unique to a different one of each of said personal receivers, and third address means responsive to a selected address signal common to a selected group of said personal receivers, and message means for receiving and storing in said address personal receiver said message portion and selectively displaying said message portion in alphanumeric characters, said message means including a plurality of character storage locations, said message means in response to said message length signal further being for reserving a selected number of said character stored locations in said address personal receiver commensurate with said total character of said plurality of characters.

4,369,444
MULTIPATH DOPPLER SHIFT VERTICAL SPEED MEASUREMENT SYSTEM

James P. Blumling, Levittown, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,180

Int. Cl.^{3} G01S *13/58*

U.S. Cl. 343—8 **12 Claims**

1. A Doppler radar system for measuring the vertical component of velocity of a target in relative motion to the radar system comprising:

A. transmitting means for radiating toward said target electromagnetic energy of known wavelength λ and known frequency f_t;

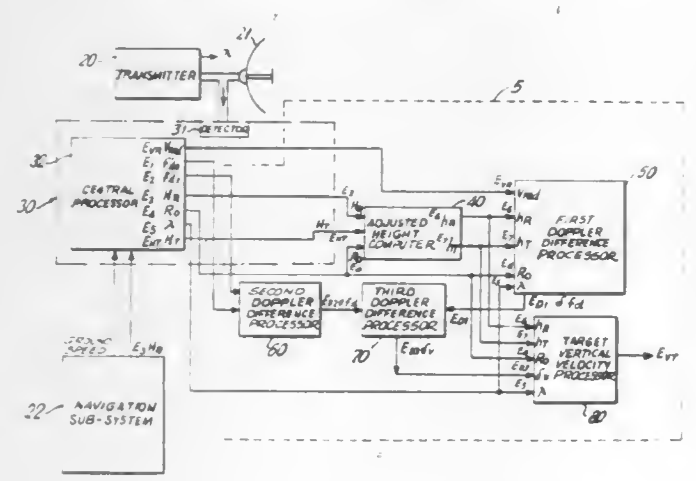
B. navigation means for determining the height of the system H_R above the ground and for providing at its output a signal E_3 representative of H_R;

C. receiver-processor means in communication with said transmitting means for receiving and processing electromagnetic energy reflected from said target, said receiver-processor means including:

  i. detector means adapted to be responsive to first and second components of the electromagnetic energy reflected from said target, said first component comprising reflected energy received from the target via a direct line of sight path between said radar system and said target and having a Doppler frequency f'_{do}; said second component comprising reflected energy received via an indirect path between the radar system and the target and having a Doppler frequency f'_{d1} said second component including one portion traversing a path from the system to the surface of the earth to the target to the radar system, and another portion traversing a path from the radar system to the target to the surface of the earth to the radar system;

  ii. central processor means responsive to said detector means and said navigation means for;

    (1) processing said first component of reflected electromagnetic energy to provide at its output a direct Doppler signal E_1 representative of f'_{do};



    (2) processing said second component of reflected electromagnetic energy to provide at its output an indirect Doppler signal E_2 representative of f'_{d1};

    (3) determining target slant range R_o and providing at its output a slant range signal E_4 representative of target slant range R_o;

    (4) determining target height H_T and providing at its output a signal E_{HT} representative of said target height H_T;

    (5) determining the relative radial velocity V_{rad} between the system and target and providing at its output a signal E_{VR} representative of radial velocity V_{rad};

    (6) processing the transmitted electromagnetic energy to provide at its output a transmitter signal E_5 representative of the wavelength λ of the transmitted electromagnetic energy; and

    (7) processing said E_3 signal from said navigation means and providing said E_3 signal at its output;

D. means responsive to the signals E_{VR}, E_3, E_4, E_5, and E_{HT} for providing a signal E_{D1} representative of a Doppler difference δf_d, where δf_d is approximately defined by the relationship:

$$\delta f_d=(V_{rad}/\lambda)\,(1-R_o/(R_o^2+4\,H_RH_T)^{\frac{1}{2}});$$

E. means responsive to signals E_1 and E_2 for providing a signal E_{D2} representative of a difference $\delta f'_d$ between the direct and indirect Doppler frequencies f'_{do} and f'_{d1} respectively;

F. means responsive to signals E_{D1} and E_{D2} for providing a signal E_{D3} which is a function of the difference δv between E_{D1} and E_{D2}; and

G. means responsive to E_3, E_{HT}, E_4, E_{D3}, and E_5 for providing a signal E_{VT} representative of the target vertical velocity V_{TY} where V_{TY} is approximately defined by the relationship:

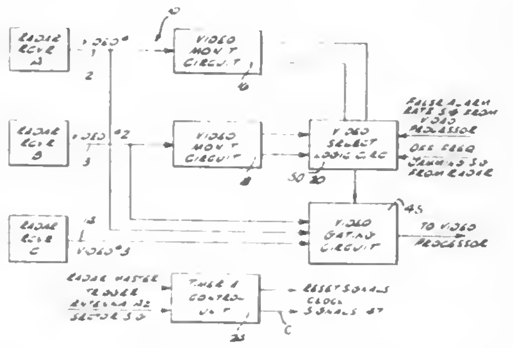
$$V_{TY}=[R_o^2+4\,H_RH_T)^{\frac{1}{2}}/2\,H_R]\delta v$$

4,369,445

AUTOMATIC ECM VIDEO PROCESSOR

Norol T. Evans, San Pedro, and Robert B. Nelson, Anaheim, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 23, 1966, Ser. No. 538,171
Int. Cl.³ G01S *7/36*
U.S. Cl. 343—18 E **8 Claims**



1. A system comprising a plurality of radar receivers developing video signals, each receiver having predetermined performance characteristics in ECM environments;

a processor responsive to the video signals provided by said plurality of radar receivers in ECM environments for monitoring ECM interference characteristics of the video signals of at least some of said receivers and for providing control signals in accordance therewith; and

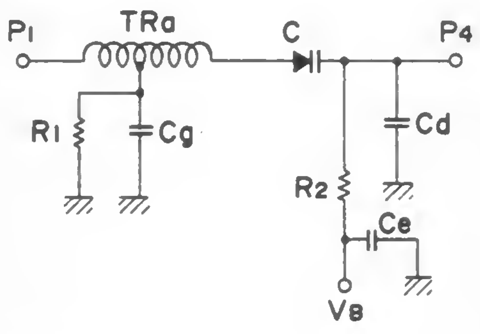
means included in said processor for automatically selecting the video signals of one of said receivers as a function of the control signals.

4,369,446

ANTENNA INPUT CIRCUIT

Kazuo Takayama, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jul. 25, 1980, Ser. No. 172,407
Claims priority, application Japan, Aug. 2, 1979, 54-098882; Aug. 3, 1979, 54-099346
Int. Cl.³ H01Q *11/12*
U.S. Cl. 343—711 **7 Claims**



1. An antenna input circuit of an electronic tuning type AM receiver for automobiles which is connected to a capacitive antenna represented by an equivalent circuit composed of an antenna capacitance connected in series with an antenna electromotive force to an output terminal of the capacitive antenna and a cable capacitance connected in parallel with them, said antenna input circuit and comprising:

a tuning transformer comprising a winding having a tap;

a variable capacitance diode connected in series between the capacitive antenna and said output terminal;

an additional capacitance connected at a first terminal thereof to said tap of said tuning transformer;

a capacitance for reducing the output impedance of said antenna input circuit, connected at a first terminal thereof to said output terminal; and

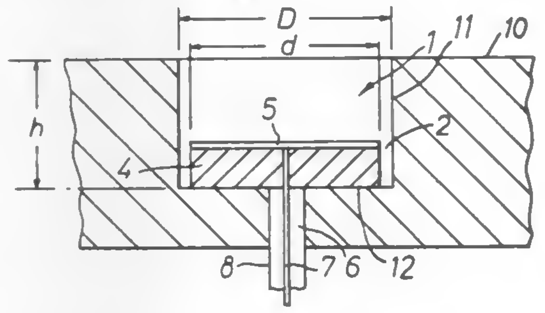
a capacitance for improving the image interference ratio connected between the respective second terminals of said additional capacitance and said output impedance reducing capacitance and ground.

4,369,447

ANNULAR SLOT ANTENNA

Kenneth J. Edney, Somerset, England, assignor to EMI Limited, Hayes, England

Filed Jul. 10, 1980, Ser. No. 168,397
Claims priority, application United Kingdom, Jul. 12, 1979, 7924249
Int. Cl.³ H01Q *13/12*
U.S. Cl. 343—769 **6 Claims**



1. An antenna comprising an open mouthed cylindrical cavity defined by an electrically conducting side wall of uniform diameter, and by an electrically conducting bottom wall,

an electrically insulating support member lying on the bottom wall,

an electrically conducting plate mounted to the support member in a position spaced from and facing the mouth of the cavity to define a space between the plate and bottom wall, and being electrically isolated from the wall to define a substantially annular slot between the plate and side wall, and

means for feeding electromagnetic energy of microwave frequency to, or receiving such energy from, said space to thereby feed the energy to or receive energy from the cavity.

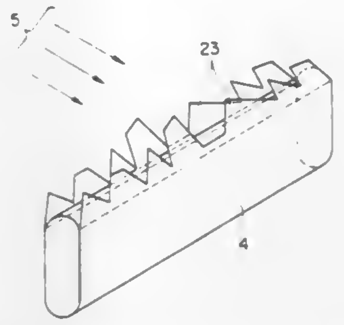
4,369,448

MICROWAVE ANTENNA WITH RADIATION SCATTERING SUPPORT MEMBER ELEMENTS

Hideo Satoh, and Naoto Matsunaka, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,216
Claims priority, application Japan, Jun. 3, 1980, 55-74544; Jun. 3, 1980, 55-17545; Jun. 3, 1980, 55-74546; Jun. 3, 1980, 55-74547; Jun. 3, 1980, 55-74548; Jun. 3, 1980, 55-74549; Jun. 3, 1980, 55-74550
Int. Cl.³ H01Q *19/14*
U.S. Cl. 343—781 CA **17 Claims**

1. An antenna for the microwave or millimeter waveband comprising: at least one supporting strut extending into an aperture of said antenna; at least one triangular strut provided on at least a part of said supporting strut, a section of said triangular strut perpendicular to a longitudinal axis of said supporting strut being in a form of a triangle having one side which is connected to said supporting strut, said one side being equal in length to a width of said strut, and remaining two sides of which are longer than the wavelength of waves radiated by said antenna device, and the length of said triangular strut in said longitudinal direction of said supporting strut being longer than said wavelength; and a planar member having a thickness less than said wavelength, said planar member having one edge connected to an outer edge of said triangular strut away from said supporting strut and an opposite edge cut in the form of a polygonal having a plurality of segments each of which is longer than said wavelength, a plane of said planar member being parallel to a plane including said longitudinal direction of said supporting strut and a direction of propagation of said waves.

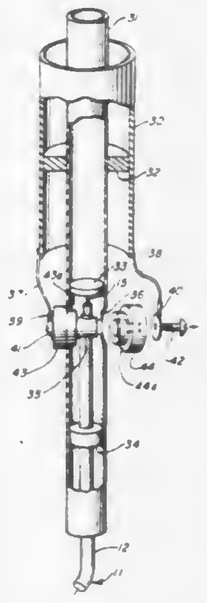


4,369,449

LINEARLY POLARIZED OMNIDIRECTIONAL ANTENNA

James B. MacDougall, 236 E. Wood St., New Lenox, Ill. 60451

Filed Jun. 1, 1981, Ser. No. 268,846
Int. Cl.³ H01Q *9/20*
U.S. Cl. 343—790 **33 Claims**



1. A linearly polarized omnidirectional antenna for transmitting and receiving radio signals within a selected frequency band, said antenna comprising

an elongated tubular conductive radiator,

an elongated inner conductive member extending longitudinally through the interior of said radiator and electrically spaced away from said radiator along the entire length of said radiator,

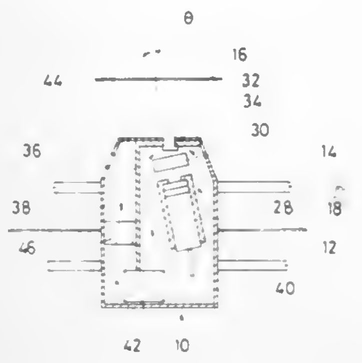
feed means for conducting signals to and from one end of said radiator and to and from said inner conductive member, and

a series reactive impedance between said feed means and said radiator, the combined impedance of said radiator, said inner conductive member and said series reactive impedance substantially matching the impedance of said feed means over said selected frequency band.

4,369,450
PRINTER HEAD IN AN INK JET SYSTEM PRINTER

Fusao Iwagami, Higashiosaka, and Hiroji Iwai, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1980, Ser. No. 204,922
Claims priority, application Japan, Nov. 8, 1979, 54-145132
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. A printer head for an ink jet system printer, which emits ink droplets toward a recording medium, whereby an ink mist is formed and diffused after the ink droplets impinge upon said recording medium, said printer head comprising:

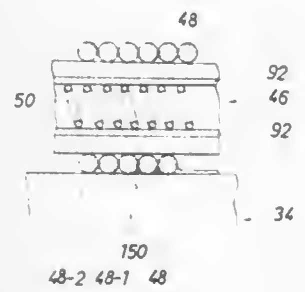
an ink droplet issuance unit for emitting said ink droplets toward the recording medium; and

a fan system within said printer head for withdrawing said ink mist produced into said printer head.

4,369,451
THERMAL PRINTING DEVICE

Yosihiro Sekido; Tutomu Kurihara; Munetada Kazama, and Rokuro Homma, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,484
Claims priority, application Japan, Oct. 30, 1979, 54-139296; Dec. 7, 1979, 54-158766; Apr. 23, 1980, 55-54799
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **10 Claims**



1. A thermal printing device which prints on ordinary paper using an ink which melts when heated but is solid at room temperature, wherein the improvement comprises:

an ink-carrier having a smooth surface which carries an ink-layer formed on said surface from an ink-molten pool to a printing position,

means for rotating said ink-carrier,

a cylindrical roller having a linear uneven surface, said linear uneven surface being in linear contact with said ink-carrier forming a space for catching ink from the ink-molten pool to form a vacant ink-pool between said ink-carrier and said cylindrical roller, said linear uneven surface around said roller being formed by a cylindrical body and wire means wound around the surface of said cylindrical body with each wind being adjacent the next wind, the ink of ink-molten pool adhering to the surface of said ink-carrier forming an ink-layer in accordance with the rotation of said ink-carrier,

means for melting the ink of said ink-molten pool,

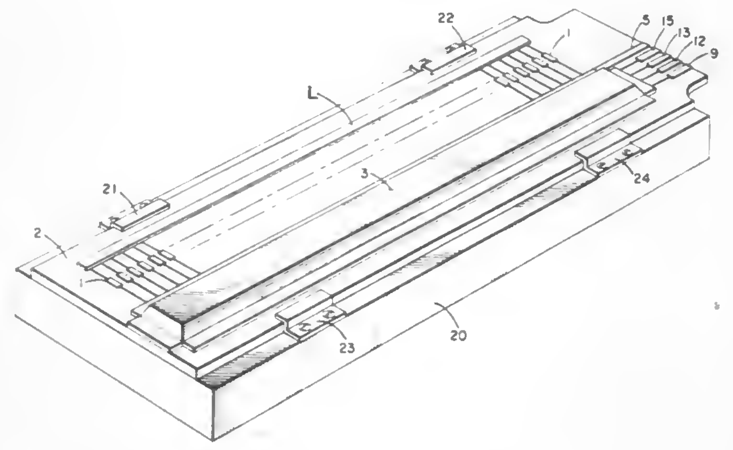
means for generating thermal patterns for re-melting the solid ink-layer by generating thermal patterns in accordance with the printing signal at the printing position corresponding to printing paper,

and means for controlling the feeding of printing paper, forcing said paper to be in contact with said ink-carrier so that ink patterns may be formed on said printing paper.

4,369,452
THERMAL RECORDING HEAD

Gousuke Anno, Kawasaki; Tamio Saitou, Oume, and Yoshikatsu Fukumoto, Tokyo; Kiyomi Tagaya, Oume, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Claims priority, application Japan, Jan. 31, 1980, 55/10273
Int. Cl.³ G01D *15/10;* H05B *3/00*
U.S. Cl. 346—76 PH **8 Claims**



1. A thermal recording head comprising:

an insulated substrate;

a plurality of thermal resistive elements placed in line on said insulated substrate;

a plurality of drive circuits placed on said insulated substrate, having signal input terminals, current supply terminals and output terminals, each output terminal of said drive circuits being connected to one of said thermal resistive elements;

shift register means placed on said insulated substrate, having a plurality of memory units, the number of which is the same as the number of said thermal resistive elements, each said memory unit being connected to one of said signal input terminals of said plurality of drive circuits, said shift register means receiving serial picture signals and supplying parallel signals to the signal input terminals of said drive circuits; and

a metal cover placed on said insulated substrate to cover said shift register means and said drive circuits, said metal cover being connected to the current supply terminals of said drive circuits.

4,369,453
PLOTTER HAVING A CONCAVE PLATEN

Jobst Brandt, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

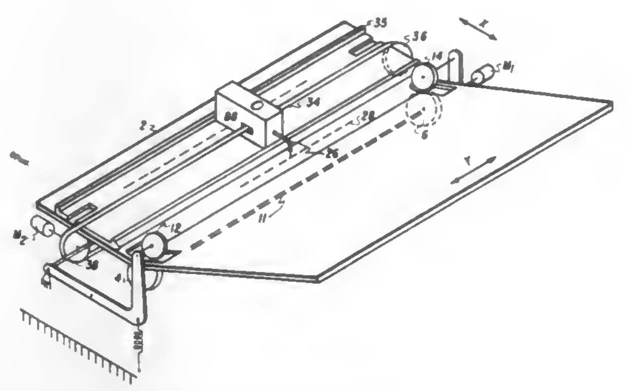
Filed Oct. 31, 1980, Ser. No. 202,846
Int. Cl.³ G01D *15/24*
U.S. Cl. 346—136 **14 Claims**

1. A plotting apparatus having a first axis and a substantially orthogonal second axis for recording information on a recording medium comprising:

a platen with at least a portion thereof having a concave surface, said concave surface having a constant geometric cross sectional configuration in all planes perpendicular to the second axis for at least the width of the recording medium in the direction of the second axis;

drive means adjacent to said concave surface for providing motion of the recording medium in the direction of the first axis;

image means mounted for mobility in the direction of the second axis for creating a selected image on the recording medium;

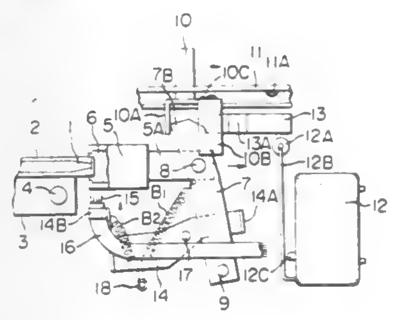


hold-down means located in close proximity to the platen in said portion of the concave surface with constant geometric cross-sectional configuration for bending the recording medium into the shape of a trough extending in the direction of the second axis within the concavity of the concave surface to utilize the internal stress of the recording medium resulting from said bending to cause the recording medium to contact the platen in a zone extending across the platen for the width of the recording medium in the direction of the second axis.

4,369,454
RECORDING APPARATUS

Hiroshi Kyogoku, Kawasaki, and Koji Terasawa, Fuchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,938
Claims priority, application Japan, Jan. 24, 1979, 54-7565
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **3 Claims**



1. A recording apparatus, comprising:

a printing head;

switch means for activating and deactivating said printing head;

protective covering means movable between a first position wherein it covers said printing head and a second position wherein it uncovers said printing head;

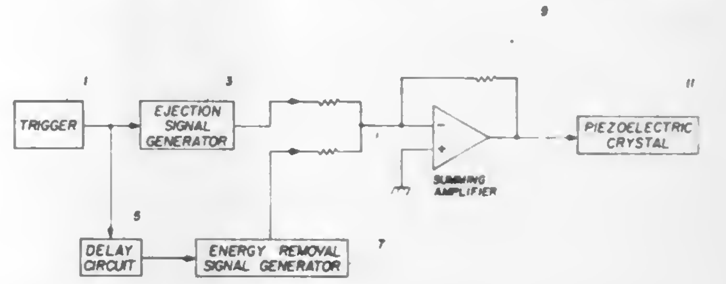
mechanical linkage means connecting said switch means and said protective covering means for effecting the covering and uncovering of said printing head in response to the movement of said switch means; and

ink collection means for collecting excess ink ejected by said printing head, wherein said linkage means includes means for transporting said ink collection means between an operative position adjacent to said printing head and an inoperative position displaced from said printing head in accordance with the movement of said switch means.

4,369,455
INK JET PRINTER DRIVE PULSE FOR ELIMINATION OF MULTIPLE INK DROPLET EJECTION

Charles H. McConica, Fort Collins; Michael A. Tremblay, Loveland, and Pedro F. Engel, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 8, 1980, Ser. No. 214,149
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **4 Claims**



1. An apparatus for generating a drive signal for application to a piezoelectric crystal of an ink jet print head, the apparatus comprising:

trigger means for generating a trigger signal at an output;

first generation means, having an input connected to the trigger means output and being responsive to presence of the trigger signal thereat, said first generation means being operative for presenting at an output a first signal which is composed of a single cycle sinusoidal wave;

delay means, having an input connected to the trigger means output, for receiving the trigger signal at the input and for presenting said trigger signal at an output a delay period of time thereafter;

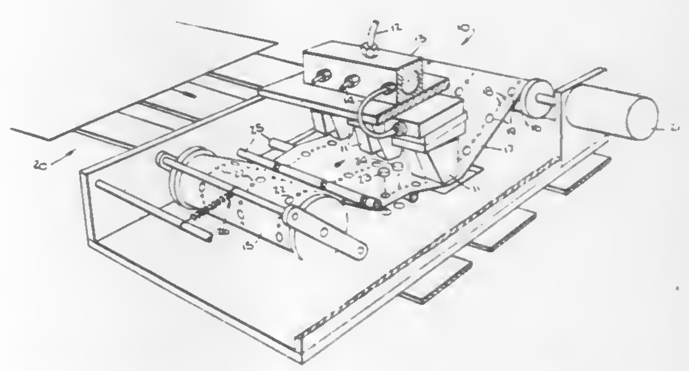
second generation means, having an input connected to the delay means output, for presenting a second signal at an output in response to presence of the trigger signal at the input; and

summing means, having a first input connected to the first generation means output and a second input connected to the second generation means output, said summing means being operative for presenting at an output a drive signal which is composed of a sum of the signals present at the first and second inputs.

4,369,456
CLEANING DEVICE FOR WRITING HEADS USED IN INK JET RECORDERS AND PRINTERS

Antonio S. Cruz-Uribe, Cobalt; Peter J. Lewis, Easton, and Peter T. Miller, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 26, 1981, Ser. No. 296,668
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **16 Claims**



1. An apparatus for use in the ink jet recording device or

printer for cleaning or protecting the nozzle openings positioned in at least one writing head, said apparatus comprising:
- rotatably mounted supply and take-up reels;
- a movable absorbent cleaning belt extending from the supply reel to the take-up reel, said belt including a plurality of embossed elements and a plurality of openings positioned in sequence along the belt for being brought into contact with the bottom portion of said writing heads; and
- sensing means for sensing the positioning of openings in said belt over said nozzles and thereby controlling movement of said belt to permit said embossed elements to be drawn across said nozzles to clean ink and impurities therefrom until the next openings along the belt are positioned over said nozzles whereby the sensing means causes the belt to cease movement and permit said ink jet writing heads to print through said openings.

4,369,457

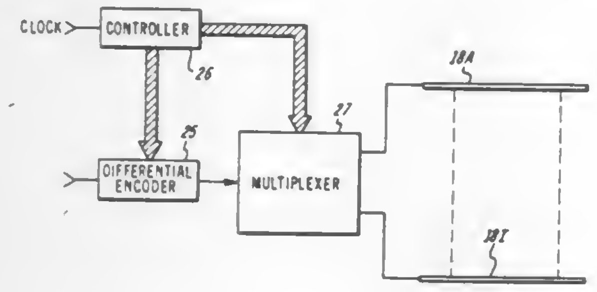
REVERSE POLARITY DIFFERENTIAL ENCODING FOR FRINGE FIELD RESPONSIVE ELECTRO-OPTIC LINE PRINTERS

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 187,917

Int. Cl.³ G01D *15/14;* G02F *1/01*

U.S. Cl. 346—160 10 Claims



1. In an electro-optic line printer for printing an image on a photosensitive recording medium in response to respective sets of input data samples having magnitudes representing exposure values for picture elements for successive lines of said image, the combination comprising,
- a multi-gate light valve having an optically transmissive electro-optic element and a plurality of spaced apart, individually addressable electrodes; said electrodes being disposed on one side of said electro-optic element and being intimately coupled thereto;
- means for transmitting a sheet-like, collimated light beam through an interaction region of said electro-optic element;
- encoding means for differentially encoding said input samples to provide differentially encoded data samples having sample-to-sample voltage drops corresponding to the magnitudes of respective input data samples; said respective input data samples sequentially representing adjacent picture elements for successive lines of said image;
- means coupled to said encoding means for periodically imposing opposite polarities on said encoded data samples; and
- means coupled between said encoding means and said electrodes for applying said encoded data samples to said electrodes, whereby electric fringe fields of periodically reversing polarity are created within the interaction region of said electro-optic element to sequentially spatially modulate said light beam in accordance with the input data samples for successive lines of said image and the electro-optic element is protected against optical damage.

4,369,458

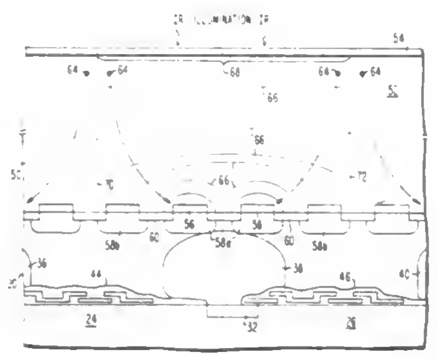
SELF-ALIGNED, FLIP-CHIP FOCAL PLANE ARRAY CONFIGURATION

Richard N. Thomas, Franklin Borough, and Michael M. Sopira, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1980, Ser. No. 165,158

Int. Cl.³ H01L *29/78, 27/14, 27/02, 23/48*

U.S. Cl. 357—30 10 Claims



1. A flip-chip interconnected focal plane array circuit configuration comprising:
- a first integrated circuit for signal processing having a first array of electrical signal storage cells, each cell having an injection site and a metallic cell contact disposed at said site to provide electrical connection thereto; and
- a second integrated circuit for radiation detection having a substrate with a first side conditioned for accepting a radiation image thereon, and a second side, opposite said first side, including a second array of metallic detector contacts disposed on the surface thereof, said second array having a greater density of contacts than said first array for substantially equal surface areas, said metallic detector contacts being smaller in physical size than said metallic cell contacts;
- said first and second integrated circuits being interconnected in a flip-chip configuration with each metallic cell contact of said first circuit being bonded physically to a corresponding group of metallic detector contacts of said second circuit, each corresponding bonded group of metallic detector contacts defining a corresponding volume in the substrate of said second integrated circuit and an associated surface area on the first side thereof, whereby in operation, the radiation image accepted by the first side of the second circuit is divided into picture elements in accordance with the defined associated surface areas and electrical signals representative of the radiation image elements are photogenerated in the corresponding volumes of the second circuit, the photogenerated electrical signals being conducted to the correspondingly associated cells of the first circuit, through their metallic cell and detector contact bondings, to form compositely in the storage cell array thereof an electrical representation of the radiation image accepted by the second circuit.

4,369,459

SOLID-STATE TELEVISION CAMERA

Mineo Iwasawa, Hayama; Yukio Endo, and Hiroyuki Yamamoto, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 15, 1980, Ser. No. 169,152

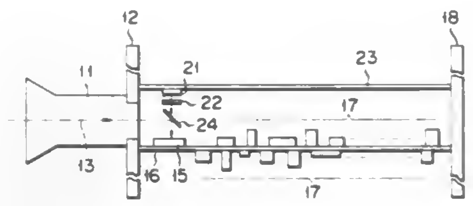
Claims priority, application Japan, Jul. 23, 1979, 54-92584

Int. Cl.³ H04N *9/09, 3/15*

U.S. Cl. 358—50 13 Claims

1. A shoulder-carried solid-state television camera which comprises an image taking lens for photographing a subject; optical means disposed along the optical axis of said lens for reflecting light from said lens in a direction substantially perpendicular to said optical axis of said lens; one or more printed circuit boards disposed at a position or positions offset from

said optical axis of said lens and substantially parallel thereto; one or more solid-state image pick-up elements, with all of the pick-up elements of said camera mounted on one or more of said boards for receiving the light reflected by said optical means; and various circuit members mounted on one or more of said boards; the direction for reading out said solid-state image pick-up elements being opposite to the usual reading out direction due to an inversion of the light image by said optical means; the width W of said camera being, accordingly, independent of the length of said printed circuit boards and the length L of the camera along the optical axis of the image taking lens being longer than the width W of the camera along the direction perpendicular to the optical axis.



4,369,460

COLOR-PICTURE TUBE WITHOUT SHADOW MASK AND WITH ONLY ONE ELECTRON GUN

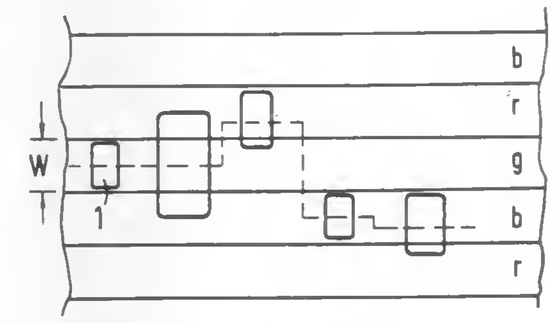
Eberhard Weiss, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,559

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005946

Int. Cl.³ H04N *9/24*

U.S. Cl. 358—67 6 Claims



1. A color-picture tube with a screen coated with groups of horizontal phosphor stripes, areas of which are caused to glow by electrons incident on them,
- said color-picture tube having only one electron gun,
- a deflection system for deflecting the electrons, such that an electron beam produced by this electron gun is serially scanned across said screen along said phosphor stripe groups in the horizontal direction,
- wherein chromaticity of the respective color to be produced is determined by the position of the electron spot within a phosphor-stripe group and by the beam current, the color-picture tube further comprising:
- a vertical, comb-shaped electrode having teeth aligned with the groups of horizontal phosphor stripes and mounted along at least one vertical edge of the screen, outside the optically used area of the screen,
- means coupled to said vertical comb-shaped electrode for producing a control signal having a magnitude determined by the displacement of the electron beam from a desired vertical position relative to the teeth of the vertical, comb-shaped electrode, and
- means for applying said control signal to said deflection system for correcting the displacement.

4,369,461

METHOD AND APPARATUS FOR FORMING IMAGES

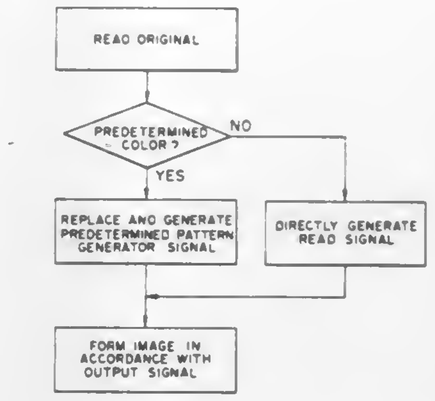
Yasuyuki Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1980, Ser. No. 201,536

Claims priority, application Japan, Nov. 2, 1979, 54-142386

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 9 Claims


READ ORIGINAL
PREDETERMINED COLOR ?
NO
YES
REPLACE AND GENERATE PREDETERMINED PATTERN GENERATOR SIGNAL
DIRECTLY GENERATE READ SIGNAL
FORM IMAGE IN ACCORDANCE WITH OUTPUT SIGNAL

1. A method of forming images comprising the steps of:
- reading an original to generate a read signal;
- discriminating between the presence and absence of a portion having a predetermined color in the original;
- in accordance with said discriminating step, replacing the read signal for the portion of the original having predetermined color with a predetermined pattern signal; and
- forming an image of the original in accordance with the read signal and the predetermined pattern signal.

4,369,462

CODING SYSTEM FOR PAY TELEVISION

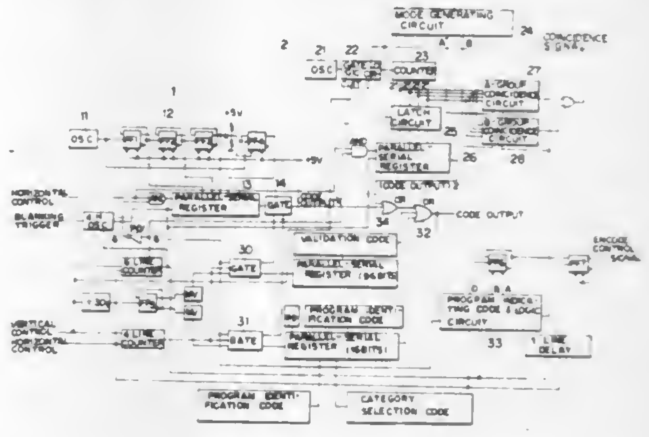
Akimori Tomizawa; Hiroshi Osaka, and Ryokichi Kanai, all of Toda, Japan, assignors to Clarion Co., Inc., Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,614

Claims priority, application Japan, Aug. 17, 1979, 54-104843

Int. Cl.³ H04N *7/16;* H04K *1/02*

U.S. Cl. 358—124 5 Claims



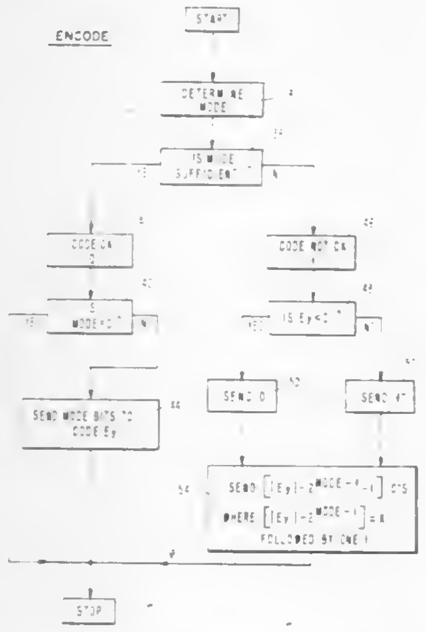
1. A coding system producing an encode control signal for encoding a television signal by inverting at least a part of the television signal, which comprises:
- a first means for generating first random code signals;
- a second means for generating second random code signals corresponding to a predetermined value of said encode control signal; and
- a third means for inserting the first random code signals into the first five lines of the first six lines within a vertical blanking period of said television signal and the second random code signal into the sixth line to produce said encode control signal,
- said second means including:
- a clock-pulse generating means;

a counter means for counting clock pulses from said clock-pulse generating means;
an inversion mode generating means for producing inversion mode signals indicating a plurality of inversion modes;
a program indicating means for producing program indicating signals;
a setting means for providing predetermined signals in response to outputs from said counter means and said program indicating signal;
a coincidence means for producing a coincidence signal when the mode signal and the predetermined signal are in a predetermined relation; and
a means for producing the second random code signal corresponding to the count value of said counter in response to the coincidence signal.

4,369,463
GRAY SCALE IMAGE DATA COMPRESSION WITH CODE WORDS A FUNCTION OF IMAGE HISTORY

Dimitris Anastassiou, Croton-on-Hudson, and Joan L. Mitchell, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,662
Int. Cl.³ H04N *7/12*; H03K *13/22*
U.S. Cl. 358—135 21 Claims

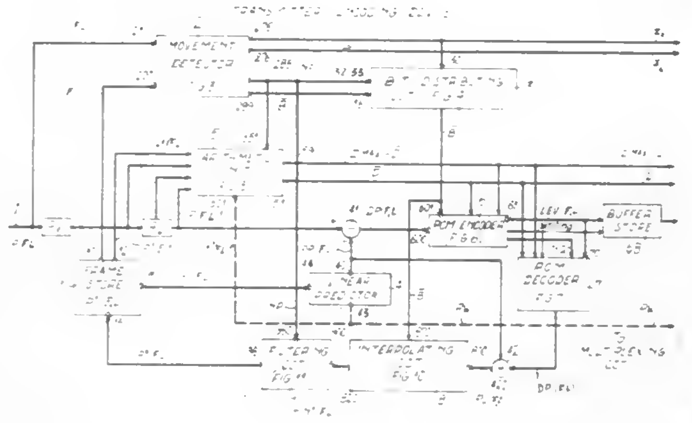


1. A method for compressing gray scale image data comprising:
predicting the gray scale value of a current pel which is to be processed, utilizing the values of previously processed pels.
predicting a range of values, by a smoothness determination, which should suffice for coding the current pel's quantized error,
determining the minimum range of values which are actually needed to accurately encode the quantized error for the pel,
producing a first special purpose code bit when the predicted range of values for coding the quantized error is sufficient and a different bit when it is insufficient, and
generating a code word for indicating the required quantization value for modification of the predicted pel value.

4,369,464
DIGITAL VIDEO SIGNAL ENCODING AND DECODING SYSTEM

Jean-Pierre Temime, 216, av. Aristide Briand, Bagneux, France (92220)

Filed Jul. 8, 1980, Ser. No. 166,853
Claims priority, application France, Jul. 9, 1979, 79 17798
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—136 14 Claims

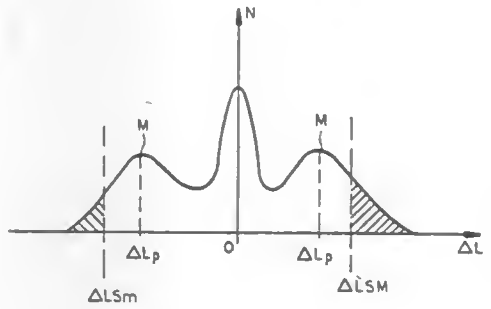


1. A digital video system having an encoding device in a transmitter for encoding a digital video signal at a high given rate constituted of PCM words which have a predetermined bit number and are representative of consecutive picture elements of a scanned picture, into a digital encoded signal transmitted on a low rate digital transmission medium conveying words which are representative of present picture elements, the levels of which are susceptible to variation relative to those corresponding to the previous picture, said encoding device comprising:
picture storing means for storing the transmitted picture element words after the words have been interpolated;
means for detecting the moving area of the picture with respect to the previous stored picture in response to a comparison of the word difference between two words representative of two corresponding elements of the present picture and the previous stored picture with a predetermined threshold;
the number of data bits NB allocated to each line of a picture in said digital transmission medium being constant and the average number of bits B allocated to each encoded signal word of a line being greater than or equal to a first predetermined integer;
said moving area detecting means producing for each line of a picture the coordinates of the two ledge picture elements defining the moving area of said present picture with respect to the corresponding line of said previous pictures;
means for deducing the number NP of picture elements in said moving area of the line likely to be encoded from the produced coordinates of said two ledge picture elements and for deducing said average number of bits B for said line from the ratio NB/NP of said numbers NB and NP;
a linear predicting means for delivering DPCM predicted picture element words from the stored picture element words and present picture element words;
first and second down-counting means controlled by said movement area detecting means and having their counts C_1, C_2 set to NB and NP at the start of the moving area of each present picture line for down-counting the number of bits remaining to be allocated to said line and the number of picture element words remaining likely to be encoded at the line element frequency;
means connected to down-counting means for comparing the counts of said first and second down-counting means to select the DPCM words representing the picture elements to be transmitted each time $C_1/B \geqq C_2$;
means receiving said DPCM words and controlled by said comparing means for encoding, according to a predetermined quantization law, said selected DPCM words to multiplex said selected DPCM words in said digital transmission medium; and
means connected to said encoding means for linearly interpolating the PCM unselected picture element words.

4,369,465
PROCESS AND DEVICE FOR SUPPRESSING INTERFERENCES IN A PICTURE COMPOSED OF ELECTRONICALLY GENERATED IMAGE POINTS

Michel Blamoutier, and Jean Fraleux, both of Paris, France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR78/00031, § 371 Date Jun. 11, 1979, § 102(e) Date Jun. 8, 1979
PCT Filed Oct. 11, 1978, Ser. No. 196,732
Claims priority, application France, Oct. 11, 1977, 77 30532
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 9 Claims

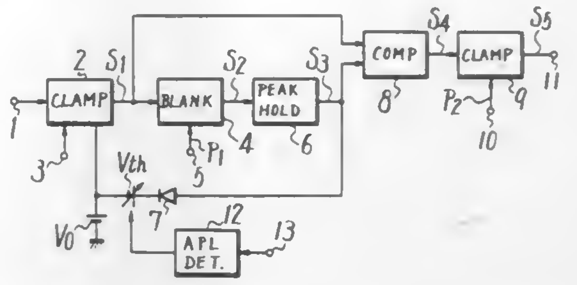


1. A process for suppressing interferences in the display of a picture composed of image points in the form of electronically generated luminous dots projected onto a viewing surface in a predetermined pattern of consecutive line scans, the brightness of each dot being determined by the level of a luminance signal,
comprising the steps of:
(a) comparing a given luminance signal S(i,j), pertaining to an image point P(i,j) where i indicates the order number of a scanning line and j indicates the dot position in said line, with a luminance signal S(i-k,j-p) pertaining to at least one adjacent image point P(i-k,j-p); and
(b_1) upon the comparison in step (a) revealing a level difference between signals S(i,j) and S(i-k,j-p) whose absolute value does not exceed a predetermined threshold, using said luminance signal S(i,j) to control the brightness of image point P(i,j);
(b_2) upon the comparison in step (a) revealing a positive level difference between signals S(i,j) and S(i-k,j-p) exceeding said predetermined threshold, incrementing said signal S(i-k,j-p) by a corrective signal Sc of predetermined magnitude $+\Delta LSM$ to produce a resulting signal $Sc(i,j)=S(i\text{-}k,j\text{-}p)+Sc$ and using said resulting signal Sc(i,j) to control the brightness of image point P(i,j);
(b_3) upon the comparison in step (a) revealing a negative level difference between signals S(i,j) and S(i-k,j-p) whose absolute value exceeds said predetermined threshold, decrementing said signal S(i-k,j-p) by a corrective signal Sc of predetermined magnitude $-\Delta LSm$ to produce a resulting signal $Sc(i,j)=S(i\text{-}k,j\text{-}p)-|Sc|$ and using said resulting signal Sc(i,j) to control the brightness of image point P(i,j).

4,369,466
VIDEO SIGNAL PROCESSING CIRCUIT

Atsushi Matsuzaki, Yokohama, and Mitsuo Kawamata, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,023
Claims priority, application Japan, Nov. 26, 1979, 54-153194
Int. Cl.³ H04N *5/16*
U.S. Cl. 358—170 7 Claims

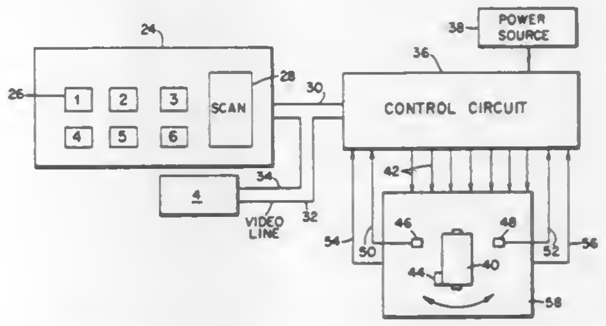


1. A video signal processing circuit for an input video signal having a DC level, a pedestal level, and a blanking period, comprising:
means for setting the level of said input video signal to a first predetermined DC level, which is higher than said pedestal level of said input video signal, at least during said blanking period of said input video signal, and for producing a first signal in response thereto;
means for detecting and holding the darkest level of said first signal and for producing a second signal in response thereto;
means for producing a threshold level signal;
black level control means adapted to be controlled by said second signal for setting the DC level of said input video signal at a level such that the darkest level of said input video signal coincides with a second predetermined DC level only when the darkest level of said input video signal is less than the level of said threshold level signal; and
means for varying said threshold level signal in response to the average picture level of said input video signal.

4,369,467
VIDEO CAMERA MONITORING SYSTEM

William V. Smith, Memphis, Tenn., assignor to Lectrolarm Custom Systems, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 159,172, Jun. 13, 1980, Pat. No. 4,321,625, which is a continuation-in-part of Ser. No. 60,463, Jul. 25, 1979, Pat. No. 4,314,278, which is a continuation-in-part of Ser. No. 22,505, Mar. 21, 1979, Pat. No. 4,225,886, which is a continuation-in-part of Ser. No. 851,812, Nov. 16, 1977, Pat. No. 4,152,696. This application Jan. 19, 1981, Ser. No. 225,996
Int. Cl.³ H04N *5/24*
U.S. Cl. 358—210 45 Claims



1. A video camera system comprising: at least one video camera said video camera being capable of a plurality of different functions; input means for providing a plurality of different level input voltage signals; and a plurality of control circuit means associated with each video camera, each said control circuit means associated with a video camera being able to simultaneously provide a control signal in response to an input voltage signal such control signal serving to enable a separate

control function of the associated video camera and each of said control circuit means including:

a plurality of first switch means coupled to receive the input voltage signals from said input means, each of said first switch means being activated when the voltage is above a corresponding predetermined level with the predetermined level for each said first switch means being different and each of said first switch means providing at its respective output a first switching signal upon being activated;

a plurality of blocking means, each being coupled to the output of a respective one of said first switching means except for said first switching means corresponding to the lowest level input voltage signal, and each of said blocking means providing a blocking signal upon receiving a first switching signal from the corresponding said first switching means and an enabling signal absent receipt of a first switching signal from the corresponding said first switching means;

a plurality of gating means each being coupled to a corresponding one of said first switching means and said blocking means associated with said first switching means that is to be activated by the next higher level input voltage signal, each of said gating means providing at its output a gated signal when receiving a first switching signal from the corresponding said first switching means and an enabling signal from the associated said blocking means and said gating means providing no output signal when said gating means receives a blocking signal from the associated said blocking means; and,

a plurality of output means for selectively controlling the different functions of the associated video camera, each of said output means being coupled to receive the gated signals of one of said gating means and the output of said output means enabling corresponding control functions of the associated video camera.

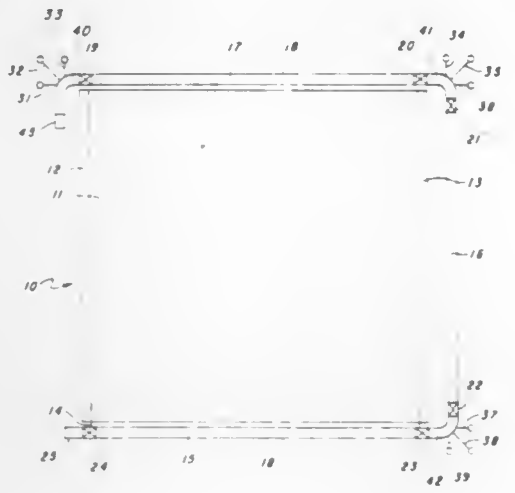
4,369,468
BLOCK OUTPUT CCD IMAGER

Joseph E. Hall, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 42,749, May 29, 1979, Pat. No. 4,251,834. This application Nov. 10, 1980, Ser. No. 205,856

Int. Cl.^{3} H04N *3/14*

U.S. Cl. 358—213 **16 Claims**



1. A CCD imager having an image matrix of A columns and B rows of pixels, and clocking means, comprising:

(a) output register means electrically connected to the imager matrix for receiving the charge packets representing the pixels, and having a capacity of at least N×A positions where N is an integer larger than one; and

(b) N nondestructive readout means, each electrically connected to a certain portion of said register means for simultaneously indicating the amplitude of said charge packets representative of N pixels in a single column of said matrix.

4,369,469
CHARGE TRANSFER APPARATUS

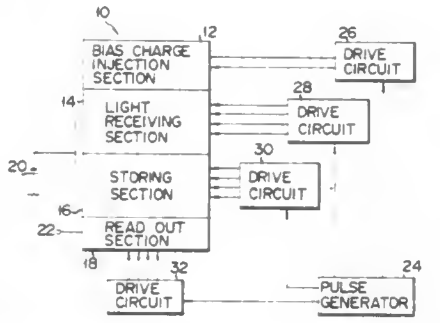
Yukio Endo, and Okio Yoshida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 21, 1981, Ser. No. 226,904

Claims priority, application Japan, Jan. 25, 1980, 55-6968; Feb. 21, 1980, 55-19710

Int. Cl.^{3} H04N *3/14, 5/30*

U.S. Cl. 358—213 **5 Claims**



1. A charge transfer apparatus comprising:

a bias charge transfer element formed of a bias charge injection section, light receiving section and storing section;

means for producing pulse signals for defining timings in which the operation modes of the charge transfer element are carried out; and

drive means connected to the charge transfer element and pulse generating means, which includes a voltage source for sending forth D.C. voltage signals to define the depths of potential wells of said charge transfer element, supplies D.C. voltage signals to the respective electrodes of said charge transfer element in accordance with the pulse signals produced from said pulse generating means, before the charge integration mode of the light receiving section, sends forth to the bias charge injection section a signal for causing bias charges to be injected into potential wells of the light receiving section and thereafter supplies the electrodes of the light receiving section with a signal for causing the bottoms of potential wells to be uniformly raised.

4,369,470
PLAY-FREE FOCUSING MECHANISM FOR A TELEVISION CAMERA

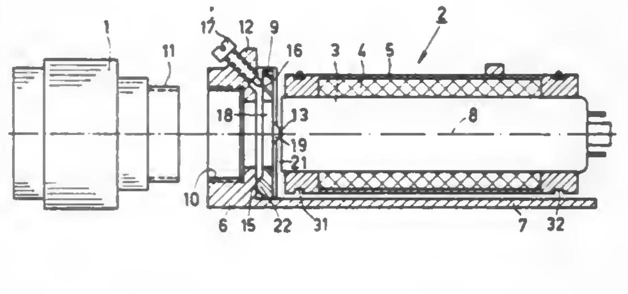
Cornelis J. Contant, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,793

Claims priority, application Netherlands, Dec. 13, 1979, 7908967

Int. Cl.^{3} H04N *5/26*

U.S. Cl. 358—227 **4 Claims**



1. A television camera comprising:

a pickup lens;

a pickup unit which is aligned with respect to the pickup lens;

a holder having a slide with a longitudinal axis and having a wall which extends transverse to the longitudinal axis, said pickup unit being arranged on the slide so that it can be displaced along the axis while remaining aligned with the pickup lens;

an adjusting lever, having first and second ends, for adjustably coupling the pickup unit to the wall, said adjusting lever being coupled to the pickup unit at a point between the ends of the lever, said adjusting lever being coupled to the wall at the first and second ends of the lever, the coupling at the second end being by way of an adjusting member;

characterized in that:

the adjusting lever is resiliently clamped between the pickup unit and the wall;

the adjusting lever is coupled to the pickup unit at two points by a first pair of point bearings, said first pair of point bearings being situated such that the longitudinal axis intersects a line connecting these bearings substantially at the midpoint of the line; and

the adjusting lever is coupled to the wall by a second pair of point bearings, said second pair of point bearings being situated in a plane which is substantially perpendicular to and at the midpoint of the line which connects the first pair of point bearings.

4,369,471
APPARATUS FOR AND METHOD OF PROCESSING THE IMAGE SIGNAL

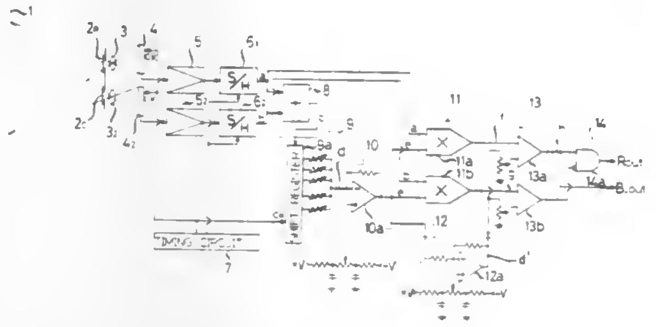
Toshitaka Hirata, Tokyo, Japan, assignor to Rocoh Company, Ltd., Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,500

Claims priority, application Japan, Mar. 5, 1980, 55-27717

Int. Cl.^{3} H04N *1/40*

U.S. Cl. 358—280 **8 Claims**



1. Method of processing an image signal for projecting an image light on photoelectric conversion means and changing a photoelectrically converted image signal into an image signal in a binary form, characterized in that a standard signal showing the mean value or smoothed value of the photoelectrically converted image signal is obtained by means of a filter circuit, on the basis of the standard signal thus obtained an inverted phase signal that is low when the level of the standard signal is high and vice versa is obtained by means of an operational amplifier means, and a product signal which is produced by multiplying the photoelectrically converted image signal by the inverted phase signal is compared with the standard signal so as to acquire said binary image signal.

4,369,472
METHOD AND APPARATUS FOR ENCODING DIGITAL DATA

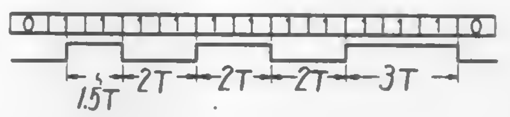
Masato Tanaka, and Shunsuke Furukawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 222,278

Claims priority, application Japan, Dec. 28, 1979, 54-172532; Jan. 17, 1980, 55-3929

Int. Cl.^{3} G11B *5/09*

U.S. Cl. 360—40 **27 Claims**



1. A method of encoding digital data formed of binary bits of first and second values occupying consecutive bit cells of predetermined intervals, comprising the steps of:

producing a first transition at a first reference point in a bit cell when a binary bit of said second value changes over to a binary bit of said first value;

sensing successive binary bits of said first value and producing a respective second transition at a second reference point in a bit cell after sensing every n successive binary bits of said first value (n=2 or 3); and

sensing successive binary bits of said second value and producing a respective second transition at said second reference point in a bit cell when at least two successive binary bits of said first value are followed by a binary bit of said second value and also after sensing every m successive binary bits of said second value (m=3 or 4), such that said last-mentioned second transition at said second reference point is separated from a said first transition by at least 1.5 bit cell intervals but no more than 4.5 bit cell intervals and successive ones of said second transitions are separated from each other by no more than 4 bit cell intervals.

4,369,473
RECORDING AND/OR REPRODUCING APPARATUS

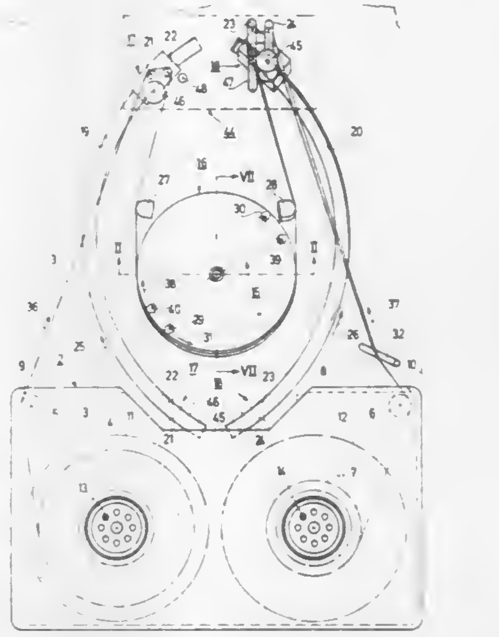
Walter Eibensteiner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,425

Claims priority, application Austria, Jul. 20, 1979, 5028/79

Int. Cl.^{3} G11B *5/08, 15/12*

U.S. Cl. 360—85 **18 Claims**



1. A recording and/or reproducing apparatus comprising at least one magnetic head which is rotatable in a given direction

of rotation and at least one drum-shaped taped guide for a magnetic tape, which guide is arranged near said magnetic head, and which magnetic tape can pass around at least a part of the circumferential surface of the tape guide and past the magnetic head which rotates at a given level, the magnetic head scanning oblique tracks situated within one longitudinal half of the magnetic tape, and comprising a drive arrangement for the transport of the magnetic tape in a given direction of movement at a given speed in order to scan the tracks, characterized in that by means of the drive arrangement the magnetic tape can also be driven selectively in a direction of movement opposite to the given direction of movement and at the given speed in order to scan the tracks, and in that during transport of the tape in said opposite direction of movement at least one magnetic head which rotates at a further level which is spaced from the given level by a distance which is equal to substantially half the width of the magnetic tape and which has a direction of rotation which is opposite to the give direction of rotation, scans oblique tracks which are situated within the second longitudinal half of the magnetic tape.

4,369,474

PLAYER FOR MAGNETIC TAPE CARTRIDGE RECORDINGS

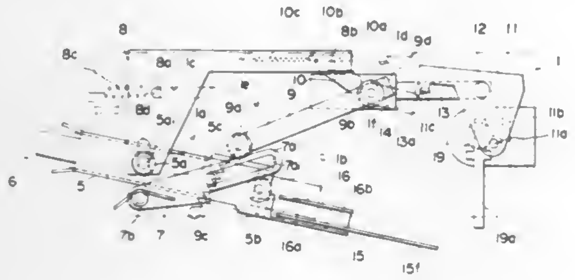
Teturo Kamimura; Masahiro Komatsubara; Shizuo Ando, and Takuzi Inanaga, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,984

Claims priority, application Japan, Dec. 29, 1979, 54-171501

Int. Cl.³ G11B ***15/66***

U.S. Cl. 360—96.1 10 Claims



1. A player for magnetic tape cartridge recording and playback operation comprising:

- a chassis having a main surface;
- a cartridge holder mounted for motion within said chassis and adapted to receive a tape cartridge from without said chassis at an initial oblique position with respect to the main surface;
- guide means associated with said cartridge holder and including at least one set of guide grooves, each including a first groove portion parallel to the main surface and a second groove portion extending from the first groove portion substantially perpendicularly thereto, said guide means allowing said cartridge holder to be translated into said chassis to an intermediate oblique position along the first groove portion and then turned from the intermediate oblique position to a position parallel to the main surface; and
- a reproducing head movably mounted on said cartridge holder at the leading end thereof.

4,369,475

ENCLOSED DISC DRIVE WITH IMPROVED AIR FLOW

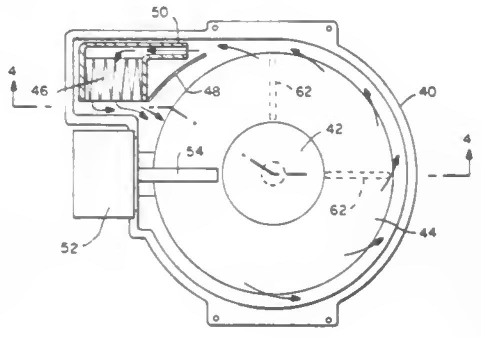
Bin L. Ho, and Stephen Bibby, both of Los Gatos, Calif., assignors to PRIAM, San Jose, Calif.

Continuation of Ser. No. 6,776, Jan. 26, 1979, Pat. No. 4,282,554. This application Apr. 13, 1981, Ser. No. 253,316

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ G11B ***17/04***

U.S. Cl. 360—97 4 Claims



1. An enclosed disc drive comprising a container including a bottom portion and a mating top portion, a spindle mounted in said bottom portion with said spindle positioned for receiving magnetic disc means, a magnetic disc mounted on said spindle within said bottom portion and being rotatable thereon, a first air filter positioned in a peripheral area of said container in the plane of said magnetic disc and in relatively close proximity to said magnetic disc, and guide means provided between said disc and said first air filter for directing a planar air flow created by the spinning of said magnetic disc means through said first filter and back to said magnetic disc.

4,369,476

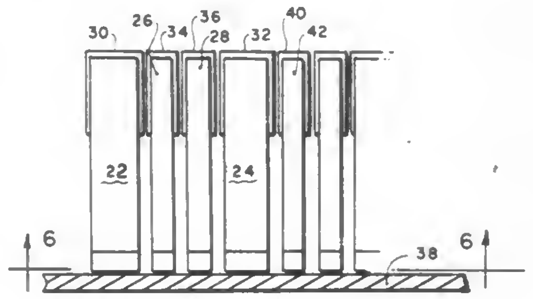
MULTI-TRACK RECORDING HEAD ASSEMBLY WITH ELECTROMAGNETIC CROSS-TALK NEUTRALIZATION

Herbert Karsh, Laguna Beach, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 25, 1980, Ser. No. 172,044

Int. Cl.³ G11B ***5/115***

U.S. Cl. 360—123 6 Claims



1. A multi-track recording head assembly with electromagnetic cross-talk and crossfeed neutralization comprising:

- a first recording head and a second recording head for developing varying magnetic fluxes for recording a first track and a second track, respectively, on a recording medium moving relative said heads;
- a first neutralization head juxtaposed between said first recording head and said second recording head and proximate to said first recording head for developing a varying magnetic flux having a polarity opposite to that developed by said first recording head for neutralizing a portion of said flux by said first recording head which would otherwise be recorded as crossfeed and cross-talk on said second track; and
- a second neutralization head juxtaposed between said first neutralization head and said second recording head for developing a varying magnetic flux of opposite polarity of said flux developed by said second recording head for neutralizing a portion of said flux developed by said second recording head which would otherwise be recorded as crossfeed and cross-talk on said first track.

4,369,477

MAGNETIC HEAD AND METHOD OF MANUFACTURING THE SAME

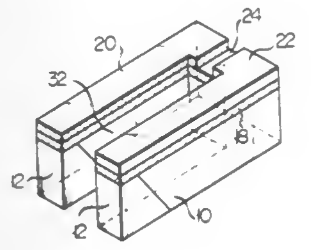
Naohiro Hanaoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,468

Claims priority, application Japan, May 24, 1979, 54-64231

Int. Cl.³ G11B ***5/16, 5/12***

U.S. Cl. 360—126 13 Claims



1. A magnetic head manufactured by the steps of:

- forming a ferromagnetic first thin film on one surface of a first half, said first half including a combination of a first block of a ferromagnetic material and a second block of a non-magnetic material, said one surface including one surface of each of said first and second blocks;
- forming a ferromagnetic second thin film and a non-magnetic third film on said first thin film such that said second and third thin films do not overlap each other;
- said first half being substantially thicker than each of said first, second and third thin films;
- joining a second half to said second and third thin films formed on said first half to form a block assembly, said second half being non-magnetic at least on the side thereof facing said second block of said first half via said first, second and third thin films;
- forming a notch in said block assembly, said notch extending along a boundary zone between said first and second thin films to form a core block, said notch separating an end face of said block assembly on the side on which said second block is formed in a direction not parallel to the juncture between said first and second halves with a space in which said boundary zone has been contained;
- providing a magnetic flux detecting means in a magnetic path constituted by said core block including said first block; and
- machining said end face of said block assembly or said core block separated by said notch such that there still remains a surface of said second block continuous with said first thin film and that the resultant shape of the machined surface is suited for frictional contact with a magnetic recording medium.

4,369,478

AUTOMOBILE MAGNETIC TAPE PLAYING APPARATUS

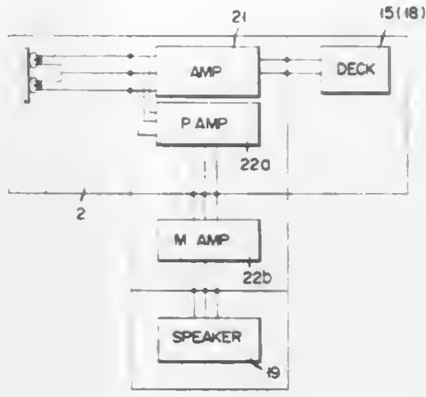
Masaaki Sato; Akira Osanai, both of Hachioji, and Hajime Iwase, Fujimi, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1979, Ser. No. 46,960

Claims priority, application Japan, Jun. 15, 1978, 53-72604

Int. Cl.³ G11B ***15/00;*** **H04B** ***1/20***

U.S. Cl. 360—137 6 Claims



1. An automobile magnetic tape playing apparatus comprising an amplifier unit mounted in an automobile;

- a magnetic tape-driving unit including a magnetic head for reproducing data from a magnetic tape and a magnetic tape-driving mechanism allowing for the run of the magnetic tape;
- mechanical support means for detachably fitting the magnetic tape-driving unit to the amplifier unit by; and
- an electric coupling means for electrically connecting the magnetic tape-driving unit to the amplifier unit, with both elements electrically shut off as need arises.

4,369,479

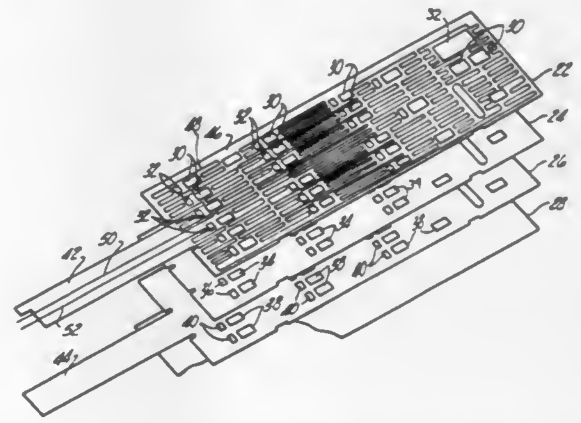
SAFETY POWER CUTOFF FOR APPLIANCES

Jimmy R. Rickard, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 7, 1980, Ser. No. 110,266

Int. Cl.³ H01H ***9/00;*** **H02H** ***9/00***

U.S. Cl. 361—1 8 Claims



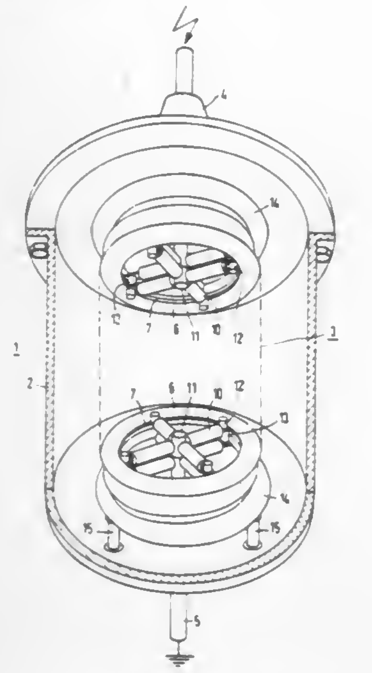
1. A power interrupter arrangement for an appliance of they type having a control panel and operating circuitry energized by an external power supply, said arrangement comprising:

- frangible circuit means adapted for mounting to the control panel; and
- interrupt means operatively coupled to said frangible circuit means effective to interrupt energization of the operating circuitry by the external power supply upon breaking of said frangible circuit means.

4,369,480

OVERVOLTAGE ARRESTER INCLUDING A COLUMN OF ARRESTER ELEMENTS AND SHIELDING THEREFOR

Michael Crucius, and Mohamed A. Hassan, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 27, 1981, Ser. No. 248,198
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012741
Int. Cl.³ H02H *1/04*
U.S. Cl. 361—128 **15 Claims**

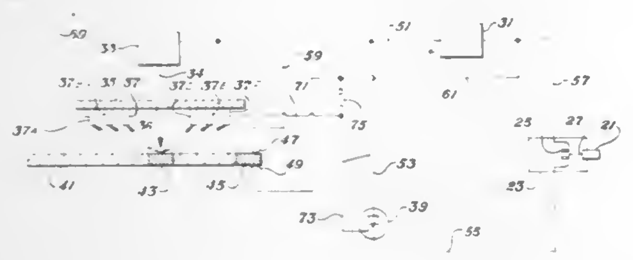


1. An overvoltage arrester comprising a plurality of shielding elements each having an opening therethrough, the shielding elements being substantially superposed so that the openings are substantially aligned, a plurality of electrically interconnected arrester elements disposed in the substantially aligned openings, means associated with each of at least two adjacent shielding elements for fastening at least one arrester element to each of the two shielding elements and a plurality of support members disposed between adjacent shielding elements at the periphery of the openings in the shielding elements for supporting the shielding elements, the shielding elements providing support for the arrester elements fastened thereto.

4,369,481

ELECTRONIC LOCK

David Early, Box 1102, Bridgeport, Tex. 76026
Filed Apr. 24, 1980, Ser. No. 143,437
Int. Cl.³ H01H *47/00*
U.S. Cl. 361—173 **12 Claims**



1. A lock comprising:

a movable member for releasing a door,

solenoid means for moving said member to a position to allow the door to be opened when said solenoid means is energized,

a laser located to emit a beam of electromagnetic radiation along a give path,

a key having a reflecting means adapted to be located in the path of said beam to reflect electromagnetic radiation from said beam in a given pattern,

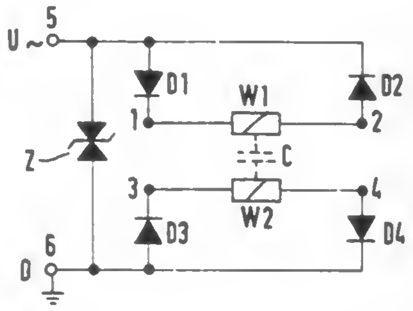
a plurality of electromagnetic radiation sensitive means for receiving reflected electromagnetic radiation from said reflecting means in said given pattern,

means responsive to said plurality of electromagnetic radiation sensitive means when they receive electromagnetic radiation in said given pattern for coupling a source of electrical power to said solenoid means for energizing said solenoid means.

4,369,482

ELECTROMAGNETIC RELAY

Heinz Ritter, Schongau, Fed. Rep. of Germany, assignor to SDS-Elektro GmbH, Deisenhofen, Fed. Rep. of Germany and Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 12, 1981, Ser. No. 273,140
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024343
Int. Cl.³ H01H *47/36*
U.S. Cl. 361—210 **6 Claims**



1. An electromagnetic relay adapted to be driven from an a.c. voltage source, comprising

(a) a coil having first and second electrically insulated, capacitively coupled windings,

(b) a first pair of diodes connected in opposite forward directions between the respective ends of said first winding and a first terminal of said a.c. voltage source, and a second pair of diodes connected in opposite forward directions between the respective ends of said second winding and a second terminal of said a.c. voltage source, so that the magnetic fluxes generated by said first and second windings have the same direction irrespective of the polarity of the a.c. voltage, and

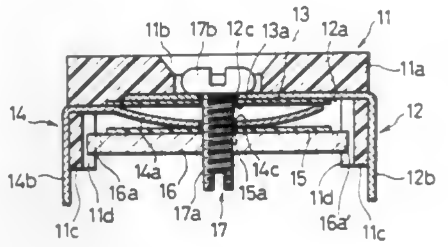
(c) a contact system including at least one fixed contact and one movable contact adapted to be moved by said magnetic fluxes.

4,369,483

TRIMMER CAPACITOR

Takashi Shirakawa, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Jul. 25, 1980, Ser. No. 172,412
Claims priority, application Japan, Jul. 25, 1979, 54-102601[U]
Int. Cl.³ H01G *5/16*
U.S. Cl. 361—291 **5 Claims**

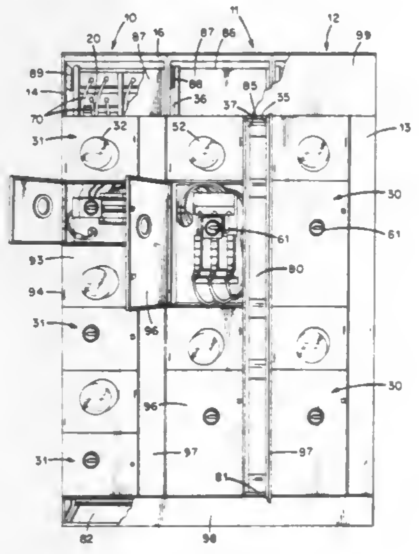
1. A trimmer capacitor comprising an insulating frame having a top wall surface and a depending side wall surface forming a recess opening downwardly; a flat electrode held securely to the underside of said top wall portion; a thin dielectric member held to the bottom surface of said flat electrode; a second electrode having an edge portion held to said side wall portion and having a plate portion extending resiliently across said recess; a screw shaft extending rotatably through said top wall surface, said flat electrode, said dielectric member and said second electrode and having a head portion held within an opening in the upper surface of said top wall portion; a pressing plate extending across the open lower portion of said recess and having a threaded opening engaging said screw shaft; and co-acting guide means formed respectively on said side wall portion and said pressing plate for causing said pressing plate to move axially along said screw shaft during rotation of said head portion thereof to vary the spacing between said flat electrode and said second electrode; said second electrode constantly urging said pressing plate away from said top wall surface to place said screw shaft constantly under axial tension.



4,369,484

MULTIPLE METER SWITCHBOARD

Robert L. Fugate, Cleveland; Richard Schneider, Mayfield Heights, and Felix K. Zgud, Lyndhurst, all of Ohio, assignors to GTE Products Corporation, Stamford, Conn.
Filed Mar. 23, 1981, Ser. No. 246,495
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—334 **10 Claims**



1. A multiple meter electric switchboard assembly comprising

an enclosure having side walls and an open front;

horizontally extending busbars;

a plurality of vertically arranged service sections within the enclosure;

each service section including a meter compartment comprising

a vertical rear mounting panel,

a barrier side wall parallel to and spaced from one of the side walls of the enclosure,

a top wall extending horizontally from the other of said side walls of the enclosure to the barrier side wall and from the rear mounting panel to the open front of the enclosure and

a bottom wall spaced from the top wall and extending horizontally from said other of the side walls of the enclosure to the barrier side wall and from the rear mounting panel to the open front of the enclosure;

each service section including a switching compartment vertically adjacent to the meter compartment, the switching compartment comprising

a vertical rear mounting panel generally aligned with the rear mounting panel of the meter compartment,

a barrier side wall parallel to and spaced from said one of the side walls of the enclosure and generally aligned with the barrier side wall of the meter compartment,

a top wall extending horizontally from said other of the side walls of the enclosure to the barrier side wall and from the rear mounting panel to the open front of the enclosure, and

a bottom wall spaced from the top wall and extending horizontally from said other of the side walls of the enclosure to the barrier side wall and from the rear mounting panel to the open front of the enclosure;

a meter socket mounted within each meter compartment on the rear mounting panel thereof and adapted for mounting a meter thereon;

a switching mechanism mounted within each switching compartment on the rear mounting panel thereof;

circuit protective means mounted within each switching compartment on the rear mounting panel thereof;

line terminals and load terminals mounted within each service section;

electrical conductors connected to said busbars and extending vertically behind the rear mounting panels, said conductors being connected to the line terminals of each service section;

electrical conductors within each service section connecting the meter socket, switching mechanism, and circuit protective means mounted therein in series between the line terminals and load terminals thereof;

each switching mechanism being switchable between an activated condition producing a closed circuit between the line and load terminals of the associated service section and a deactivated condition producing an open circuit between the line and load terminals of the associated service section;

said one side wall of the enclosure and said barrier side walls defining a vertical wireway therebetween extending alongside the plurality of vertically arranged service sections;

access means in the barrier side walls for permitting access between the load terminals of each service section and the vertical wireway;

an openable front closure member for closing the open front of each meter compartment to prevent manual access thereto while permitting a meter mounted in the meter socket to be read;

an openable front closure member for closing the open front of each switching compartment to prevent manual access thereto; and

an openable front closure member for closing the open front of the vertical wireway to prevent manual access thereto.

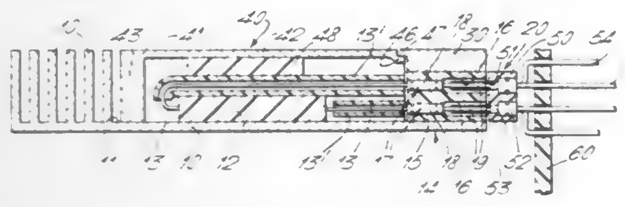
4,369,485

CIRCUIT ASSEMBLIES EACH WITH A COMPONENT COOPERATING WITH A CONNECTOR AND CLAMP TO A SUBSTRATE

Melvyn R. Bell, Crossgates, and Ian D. Gooch, Edinburgh, both of Scotland, assignors to Ferranti Limited, Cheadle, England
Filed Mar. 27, 1980, Ser. No. 134,464
Claims priority, application United Kingdom, Mar. 31, 1979, 7911359; Nov. 23, 1979, 7940614
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **12 Claims**

1. A circuit assembly comprising an at least substantially planar substrate, on at least one major surface of which substrate is supported at least one component with leads extending therefrom, and there is also supported on said one major sur-

face of the substrate at least one connector connected to said at least one component, the connector having a plurality of electrically conducting connector pieces, each connector piece extending parallel to and co-operating with a lead of the component, and providing a terminal of the circuit assembly, the plurality of connector pieces are secured to a block of electrical insulating material of the connector, and the arrangement is such that said at least one component is secured within the circuit assembly in a readily detachable manner by readily releasable clamping means provided in the circuit assembly, the required clamping action being between the substrate and the clamping means, the clamping means for said at least one component including at least part of the connector, the required clamping action being at least partially between the substrate and the connector by a cooperating flange and lip hyphen-shaped portion provided by the clamping means and the connector, the leads extending from said at least one component substantially in one plane parallel to said one major surface of the substrate.



4,369,486

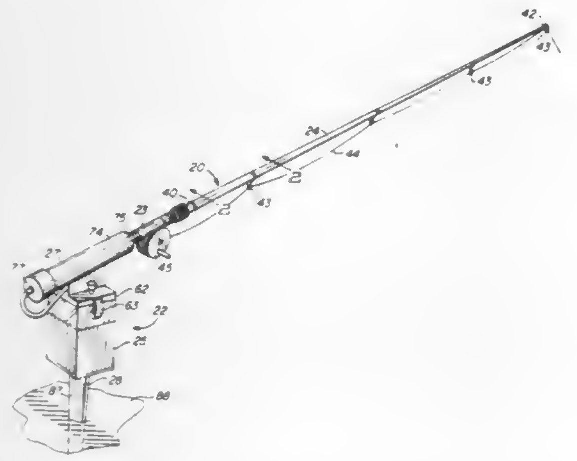
ILLUMINATED FISHING TACKLE

Robert R. Pool, 607 E. Franklin, Mesa, Ariz. 85204

Filed Apr. 23, 1981, Ser. No. 256,840

Int. Cl.³ F21V *7/09*

U.S. Cl. 362—32 **37 Claims**



1. In a fishing pole including an elongate hollow rod fabricated of light transmitting material and having free and fixed ends, and a plurality of guides spaced between said ends, and an elongate hollow handle having a forward end secured to the fixed end of said rod, and a butt end, improvements therein for illumination of said rod and for convenient servicing of components, said improvements comprising:

- (a) a bundle of fiber optics, each said fiber optic having:
  - i. a light receiving end proximate the fixed end of said rod; and
  - ii. a light emitting end spaced at a selected location along said rod; and
- (b) lighting means for directing light to the light receiving end of each said fiber optic.

4,369,487

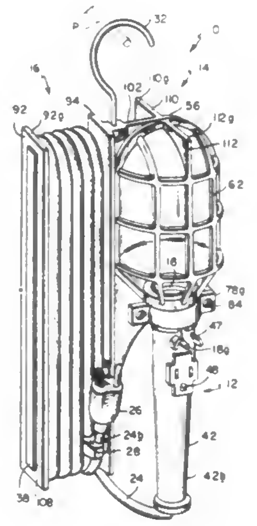
UTILITY LAMP

Arthur J. Carlow, Beverly, Mass., assignor to Carico Corporation, Beverly, Mass.

Filed Sep. 15, 1980, Ser. No. 186,840

Int. Cl.³ F21V *27/00*

U.S. Cl. 362—258 **30 Claims**



1. A utility lamp comprising

A. a tubular handle;

B. a bulb receptacle mounted in said handle;

C. an electrical cord having one end extending into said handle and being connected to said receptacle and having its other end terminated by an electrical connector;

D. a bulb cage for protectively enclosing a bulb positioned in the receptacle, said bulb cage comprising

1. a first section;
2. a second section;
3. a hinge connecting said first and second sections so that they are movable relatively between a closed position wherein they protectively enclose a bulb in the receptacle and an open position wherein they are spaced apart so that access may be had to a bulb in the receptacle; and
4. means for releasably locking the sections in the closed position;

E. means for removably securing the bulb cage to the handle; and

F. means integral with the cage defining a spool extending generally parallel to said handle about which can be wound the length of cord extending from the handle, said handle, cage and spool defining means all formed of an impact resistant plastic material.

4,369,488

OPTICAL SYSTEM PERMITTING CONTROLLED SHIFTING OF THE BEAM PATTERN IN HEADLAMPS, ESPECIALLY FOR VEHICLES

Norbert Brun, Bobigny, France, assignor to Cibie Projecteurs, Bobigny, France

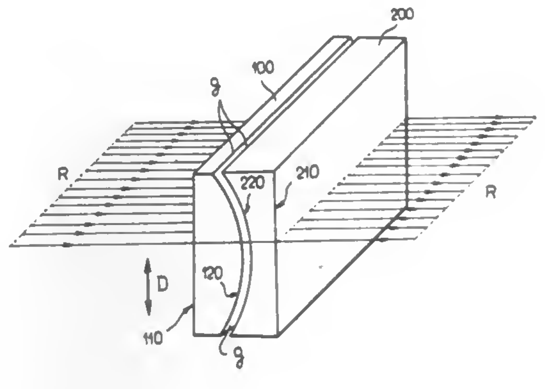
Filed Sep. 29, 1980, Ser. No. 191,500

Claims priority, application France, Oct. 2, 1979, 79 24508; Dec. 24, 1979, 79 3154

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—268 **9 Claims**

1. In a headlamp having a light source, and a main optical system for forming light from said light source into a beam, a beam deflecting system comprising at least one generally platelike transparent optical deflecting element, and means supporting said optical deflecting element in the path of light rays contained in the beam formed by said main optical system, with said optical deflecting element extending generally perpendicularly to such light rays, and said supporting means permitting a generally translational adjustment of the position of said optical deflecting element in a direction generally transverse to the beam formed by the main optical system, the said optical deflecting element bearing surface configurations of such shapes that those light rays of the beam which are incident on the said beam deflecting system in a given direction emerge from the said beam deflecting system in substantially the same direction as one another, and the said direction of emergence is changed by the said translational adjustment of said optical deflecting element.



4,369,489

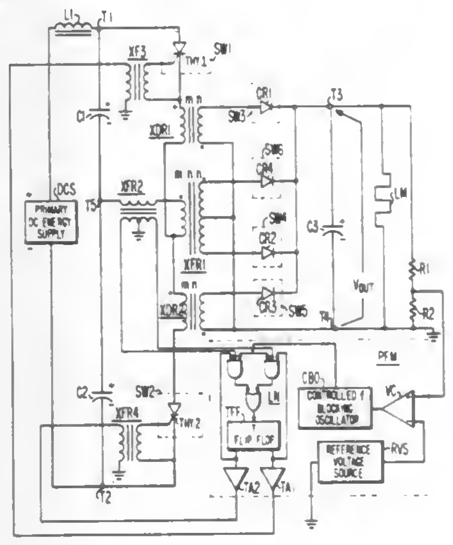
SWITCHING DC-TO-DC CONVERTER SUPPLYING UNINTERRUPTED OUTPUT CURRENT

Duard L. Pruitt, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,494

Int. Cl.³ H02M *3/315*

U.S. Cl. 363—28 **9 Claims**



1. A switching dc-to-dc converter for supplying substantially continuous converted dc without having to have output filtering comprising:

first and second terminals for connection therebetween of a primary dc energy supply;

third and fourth terminals for connection therebetween of a load receptive of the converted dc;

a fifth terminal;

first and second capacitors connected between said fifth terminal and respective ones of said first and second terminals;

first and second plural-winding inductors, non-saturable in operation, each having a respective primary winding and a respective secondary winding with a turns ratio of m:n between them, and each having sufficient inductance to sustain substantially direct current flow through its secondary winding during flyback intervals in the conversion process;

a transformer having a primary winding with a first end and a second end and having at least a first secondary winding with a turns ratio between it and the primary winding of such value that there is no substantial discontinuity in the converted dc;

means for connecting the first end of the primary winding of said transformer to said fifth terminal;

a first controlled rectifier, having cathode and anode for defining the ends of a principal conduction path connected in series with a primary winding of said first plural-winding inductor between said first terminal and the second end of the primary winding of said transformer, and having a gate electrode, the conduction intervals of said first controlled rectifier being interspersed with the flyback intervals of said first inductor;

a second controlled rectifier, having cathode and anode for defining the ends of a principal conduction path connected in series with the primary winding of said second plural-winding inductor between said second terminal and the second end of the primary winding of said transformer, and having a gate electrode, the conduction intervals of said second controlled rectifier being interspersed with the flyback intervals of said second inductor;

means for rectifying the flows of current through the secondary windings of said first and second plural-winding inductors and each said secondary winding of said transformer and

means for applying these rectified flows of current in similar polarity between said third and fourth terminals; and

a pulse frequency modulator for applying triggering pulses alternately between the cathode and gate electrode of said first controlled rectifier and between the cathode and gate electrode of said second controlled rectifier, at a rate responsive to the amplitude of the voltage between said third and fourth terminals.

4,369,490

LOW-RIPPLE POWER RECTIFIER SYSTEM

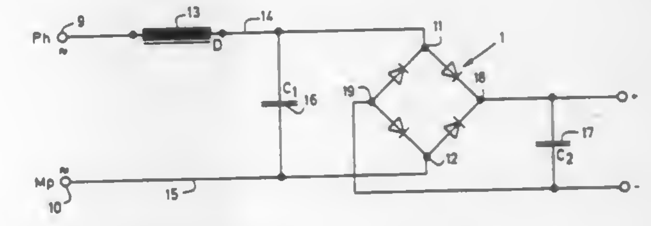
Frithjof Blum, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft Für Elektrische Gluhlampen, Munich, Fed. Rep. of Germany

Filed Dec. 2, 1980, Ser. No. 212,118

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950411

Int. Cl.³ H02M *1/14*

U.S. Cl. 363—48 **13 Claims**



1. Low-ripple low-harmonic reflecting rectifier system, particularly for coupling to an a-c power network and to receive a-c power input, and to provide d-c power output to a d-c semiconductor circuit, especially to supply a discharge lamp inverter circuit from a-c power terminals (Ph, Mp; **9**, **10**), having

a-c network terminals;

a rectifier circuit (1), having an input and an output;

a filter capacitor (C2) connected across the d-c output of the rectifier circuit;

and comprising, in accordance with the invention,

an a-c wave-shaping and wave-transforming network means (D; C1) connected to receive the a-c voltage from the power network in sinusoidal wave shape and converting said sinusoidal wave shape to a wave shape which is approximately of trapezoidal shape including

the combination of storage inductance means (D), and a storage capacitor (C1) connected to the a-c network terminals,

the storage inductance (D) being connected between the network terminals and the input to the rectifier circuit in serial connected, and the storage capacitor (C1) being connected in parallel across the input to the rectifier circuit,

and dimensioned and matched with respect to each other and the frequency of the voltage supplied by the a-c network in sinusoidal wave shape, to have a resonant frequency greater than twice network frequency but less than three times network frequency.

4,369,491

PROTECTIVE CIRCUITRY FOR TRANSISTORIZED D-C/D-C CONVERTER

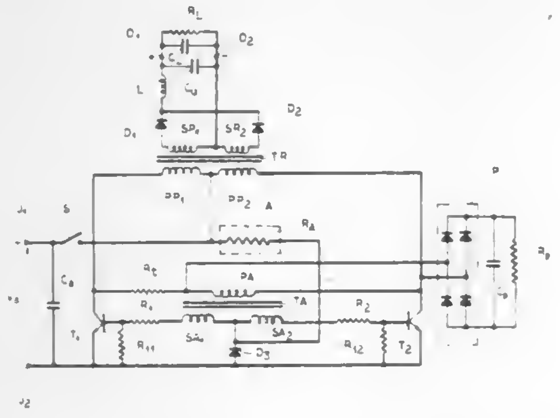
Luigi Rizzi, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens, Milan, Italy

Filed May 6, 1980, Ser. No. 147,285

Claims priority, application Italy, May 10, 1979, 22519 A/79

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—56 **7 Claims**



1. In a d-c/d-c converter comprising two switching transistors each having an emitter, a base and a collector, a source of direct current having one terminal connected to the emitters of said transistors, an output transformer having a first primary winding inserted between the collectors of said transistors and provided with a center tap connected to another terminal of said source, said output transformer having secondary winding means connected across a full-wave rectifier including a shunt capacitance, and a self-saturating feedback transformer having a second primary winding connected together with a series resistance across said first primary winding, said feedback transformer further having secondary-winding halves inserted in respective base/emitter circuits of said transistors for driving same in push-pull in response to unbalance currents traversing said second primary winding,

the combination therewith of a protective network for limiting the magnitude of said unbalance currents upon beginning conduction of said transistors, said network including an ancillary capacitor connected in series with full-wave rectifying diodes and in parallel with a discharge resistor across said second primary winding between a collector of one of said switching transistors and a junction of said second primary winding with said series resistance.

4,369,492

DEVICE FOR THE PROTECTION OF A CONVERTER WHICH CONVERTS AN IMPRESSED D-C CURRENT FROM A CURRENT SOURCE INTO AN A-C CURRENT FED TO A LOAD

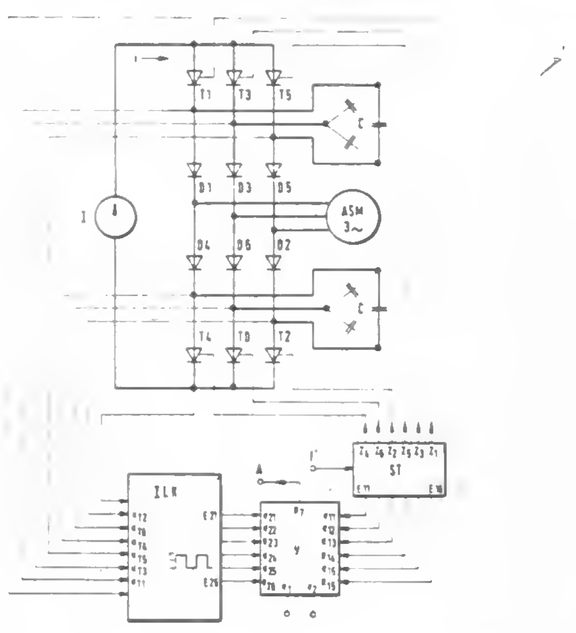
Klaus Moll, Frankenthal, and Helmut Schulze, Ober-Ramstadt, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,123

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010338

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—58 **9 Claims**



1. Device for the protection of a converter having a given number of controlled semiconductor elements, which converts an impressed d-c current generated in a current source into a-c current and feeds it to a load, comprising control means connected to the semiconductor elements of the converter for forming firing pulses for the controlled semiconductor elements, means for setting reference blocking intervals for the semiconductor elements, means for setting and controlling actual blocking intervals of the semiconductor elements, means connected to said reference and actual blocking interval setting means for comparing said reference and actual blocking intervals with each other, a read-only memory for storing said reference blocking intervals, an event counter for counting disturbances detected by comparison of said reference and actual blocking intervals, a memory stage being connected to said event counter and being settable if said event counter reaches a predetermined count, and time-base means connected to said event counter and memory stage for resetting said event counter if said memory stage is not set at the end of a predetermined base time.

4,369,493

RESPONSE TIME MONITOR

Allan A. Kronenberg, Commack, N.Y., assignor to Metropolitan Life Insurance Company, New York, N.Y.

Filed May 14, 1979, Ser. No. 38,988

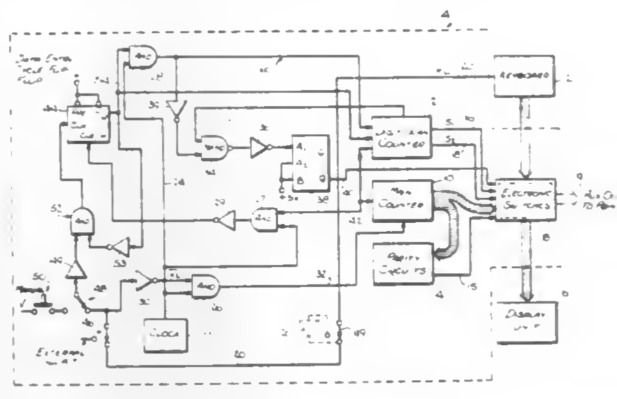
Int. Cl.³ G06F *3/00, 13/00*

U.S. Cl. 364—200 **11 Claims**

1. An apparatus for measuring the interactive performance of a computer system including a computer and at least one computer terminal without dependence upon the programming of the computer, the computer terminal comprising a keyboard, a display, and a storage from which signals can be transferred to at least one of the display and the computer, the keyboard providing at least one of input data signals and control signals in a coded format to the storage, and the terminal and the computer being adapted to exchange data signals and control signals, the apparatus being adapted to receive at least one signal from the computer terminal and to transmit at least one measurement signal to the computer terminal and to be coupled to the computer terminal, and comprising:

a timer;

means responsive to a signal in the computer terminal generated in response to a signal from the keyboard for activating the timer and generating measurement data signals related to at least one of the time required for the computer system to complete an operation initiated at the terminal and the time between successive operations initiated at the terminal; and



means coupled to the timer and adapted to be coupled to the storage in the computer terminal for encoding the measurement data signals in the coded format of the keyboard and for transferring the coded measurement data signals in sequence with signals from the keyboard into the storage from which the coded measurement data signals can be transferred to the computer terminal display for visual display and/or to the computer for processing or storage.

4,369,494

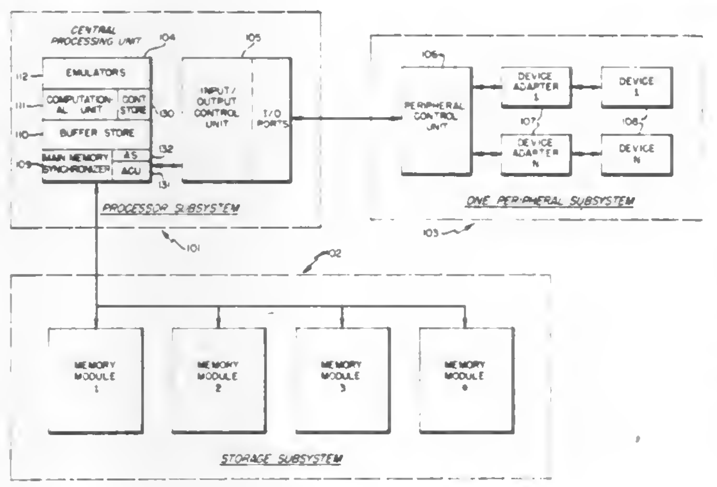
APPARATUS AND METHOD FOR PROVIDING SYNCHRONIZATION BETWEEN PROCESSES AND EVENTS OCCURRING AT DIFFERENT TIMES IN A DATA PROCESSING SYSTEM

Jacques Bienvenu, Paris; Claude Carre, La Varenne-St-Hilaire; Patrick Dufond, Paris; Duc L. Tuong, Paris; Philippe-Hubert deRivet, Paris; Henri Verdier, Paris; John J. Bradley, Garches, all of France, and Benjamin S. Franklin, Cambridge, Mass., assignors to Compagnie Honeywell Bull, Paris, France

Continuation of Ser. No. 531,251, Dec. 9, 1974, abandoned. This application Nov. 9, 1978, Ser. No. 959,096

Int. Cl.³ G06F *9/00*

U.S. Cl. 364—200 **18 Claims**



10. Apparatus for providing synchronization between processes awaiting the occurrence of particular events and events awaiting processes occurring at different times in a data processing system, comprising in combination:

a first storage area;

a plurality of representations held in said first storage area of processes awaiting the occurrence of a first particular event;

a second storage area;

a plurality of messages held in said second storage area denoting the occurrence of second particular events;

signal generating means responsive to the operation of a first process for generating a first signal denoting the occurrence of a first event; and

control means responsive to said first signal for associating said first event with a process represented in said first storage area when said first event is said first particular event and for storing in said second storage area a representation of said first event when said first storage area holds no representation of a process awaiting the occurrence of said first event.

4,369,495

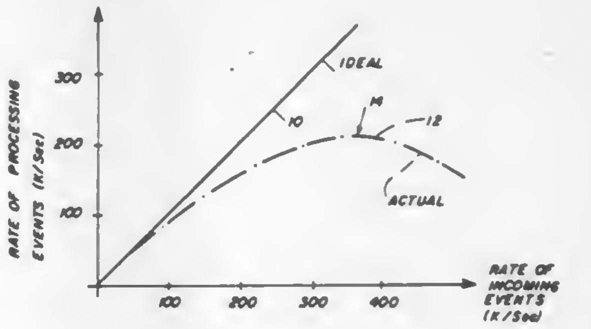
METHOD OF AND MEANS FOR COMPENSATING FOR THE DEAD TIME OF A GAMMA CAMERA

Dan Inbar, Haifa, and Alexander Ganin, Kirvat Bialick, both of Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Jun. 19, 1980, Ser. No. 160,942

Int. Cl.³ G01T *1/20*

U.S. Cl. 364—414 **13 Claims**



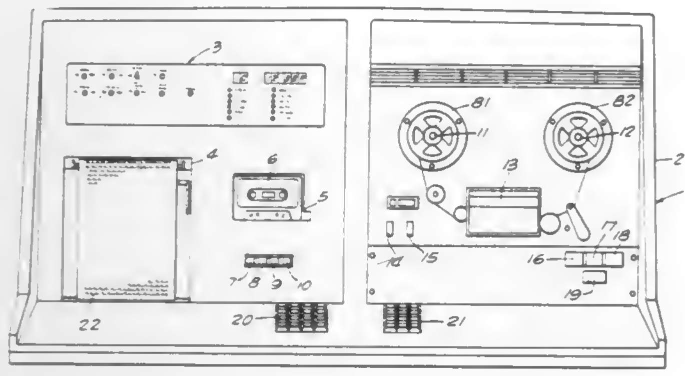
1. In a gamma camera for mapping a frame of a dynamically changing radiation field into a storage, wherein the system comprises a head responsive to stimuli from the field for producing a group of input signals for each interaction of a stimulus with the head, circuitry for processing groups of input signals and producing groups of output signals that represent interactions with the head, the circuitry having an efficiency for converting groups of input signals to groups of output signals functionally related to the rate at which groups of input signals are applied, coordinate computation circuitry responsive to each group of output signals for calculating the coordinates of the interaction that is represented by the group of output signals, a control responsive to the calculation of the coordinates of an interaction during a frame time for recording a representation of the activity distribution of said field, and means for compensating the representation of the activity distribution for the inefficiency of the circuitry in processing groups of input signals by injecting into the circuitry synthetic input signals which resemble, in terms of amplitude and shape, the input signals produced by the head in response to interaction with stimuli, said inefficiency being compensated for by a correction factor obtained by calculating the percentage of the synthetic signals that are processed by the circuitry; the improvement comprising injecting synthetic input signals at a rate functionally related to the rate at which input signals are processed by the head.

4,369,496

APPARATUS FOR HIGH-SPEED TRANSCRIPTION OF RECORDED PHYSIOLOGICAL DATA

William R. Parsons, Santa Ana; Christopher T. Bible, El Toro, and Donald P. Kannenberg, Garden Grove, all of Calif., assignors to Advancemed, Irvine, Calif.

Filed Mar. 7, 1980, Ser. No. 128,181
Int. Cl.^{3} A61B *5/04;* G06K *15/02*
U.S. Cl. 364—417 **10 Claims**



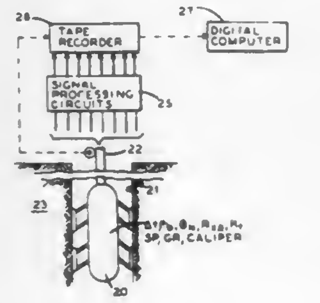
1. An apparatus for high-speed transcription of recorded physiological data onto light-sensitive media including tape-playback means for converting the data into electrical signals representative thereof, means for converting said electrical signals into light signals susceptible of high-speed transcription, means for generating a signal for selecting alpha-numeric data from storage means for transcription with said light signals, and means for generating signals to control said data-converting means, signals to control said electrical signal converting means, and signals for controlling the frequency at which said alpha-numeric data is transcribed onto said light-sensitive media.

4,369,497

MACHINE METHOD AND APPARATUS FOR DETERMINING THE PRESENCE AND LOCATION OF HYDROCARBON DEPOSITS WITHIN A SUBSURFACE EARTH FORMATION

Andre Poupon, Paris, and Robert G. Gaymard, Saint-Germain en Laye, both of France, assignors to Schlumberger Technology Corp., New York, N.Y.

Continuation of Ser. No. 112,005, Feb. 2, 1971, abandoned. This application Jul. 25, 1979, Ser. No. 60,835
Claims priority, application France, Feb. 2, 1970, 70 03544
Int. Cl.^{3} G06F *15/20*
U.S. Cl. 364—422 **8 Claims**



1. A machine method for exploring subsurface earth formations to determine the presence and location of hydrocarbon deposits within the earth formation surrounding a borehole formed in the earth formation by probing such subsurface earth formation with one or more signals produced in an investigating device adapted to be suspended in said borehole and acquiring and analyzing signals responsive to said probing signals, comprising the steps of:

(a) providing electrical signals representative of the bulk density of the formation over a section of the borehole derived from signals responsive to gamma rays emitted into said subsurface earth formation from a source of gamma rays located in said investigating device;

(b) providing electrical signals representative of the hydrogen content of the formation over a section of the borehole derived from signals responsive to neutrons emitted from a source of neutroms located in said investigating device;

(c) providing electrical signals representative of the formation shale content over a section of the borehole derived from signals emitted from the investigating device into the formation surrounding the borehole and producing therefrom further signals indicative of the quantity of shale in the formation;

(d) automatically combining said bulk density, hydrogen content and shale quantity electrical signals to produce still further electrical signals representative of at least one formation characteristics; and

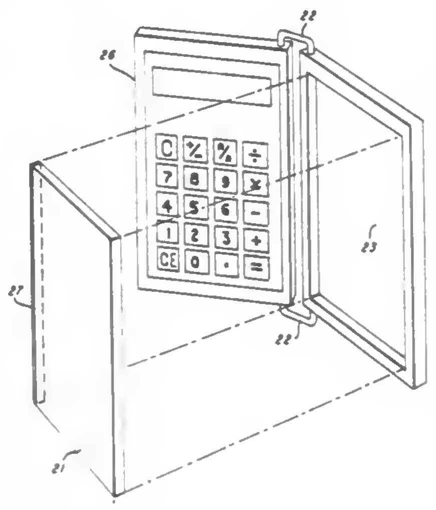
(e) automatically comparing the further electrical signals representative of at least one formation characteristic with a preselected limit and providing adjustment of said compared electrical signals if the compared electrical signals are out of limits thereby enabling redetermination of electrical signals representative of other formation characteristics from which the presence and location of hydrocarbons in the subsurface earth formation can be accurately determined.

4,369,498

PHOTOLUMINESCENT POWERED CALCULATOR

Eric F. Schulte, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 19, 1981, Ser. No. 226,299
Int. Cl.^{3} G06F *15/02;* H01L *31/04*
U.S. Cl. 364—707 **8 Claims**



4. A light powered electric apparatus comprising:

a. an electrically powered device;

b. a light collector and concentrator including a photoluminescent collector having opposed first and second main surfaces bounded by at least one edge surface and a reflective face located in contact with said first main surface but separated therefrom by the normal roughness of said reflective face to provide an air gap;

c. means optically coupled to said edge surface for converting light received from said edge surface into electric power;

d. means for attaching said light collector and concentrator to said electric device; and

e. means for electrically interconnecting said light converting means to said electric device.

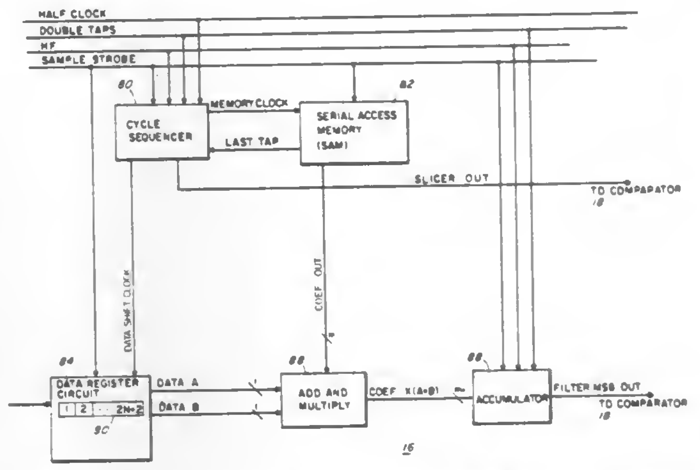
7. A light powered electric apparatus as in claim 4, wherein said electric device is an electronic calculator.

4,369,499

LINEAR PHASE DIGITAL FILTER

William D. Northam, Cambridge, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Sep. 18, 1980, Ser. No. 188,548
Int. Cl.^{3} G06F *15/31*
U.S. Cl. 364—724 **12 Claims**



1. Modem circuitry for processing digital signals, comprising

means for providing a stream of said signals at a signal rate,

means for sampling said signals at a sample rate higher than said signal rate to provide a sequence of samples, said means for sampling being connected to respond to said means for providing,

means for filtering said samples, said means for filtering being connected to respond to said means for sampling, said means for filtering comprising

means for storing at least N tap coefficients, where N is an integer,

a first delay line for storing at least N consecutive said samples,

a second delay line for storing at least one more sample than the number of said samples which can be stored in said first delay line,

means for introducing a new one of said samples into one end of said first delay line, transferring an already stored sample from the other end of said first delay line to said second delay line, and shifting already stored samples in said first delay line and said second delay line in a particular direction,

means for thereafter providing N successive pairs of said samples, each said pair having one member sample from each of said lines, by completely recirculating said first line in said particular direction, and separately and incompletely recirculating said second line in said particular direction, the successive samples provided from said first line being oppositely time ordered from the corresponding successive samples provided from said second line,

means for producing, for each said pair, the product of the sum of said respective members and one of said tap coefficients, said means for producing being connected to respond to said means for recirculating, and

accumulator means responsive to said means for producing and connected to accumulate said products to produce a filter output.

4,369,500

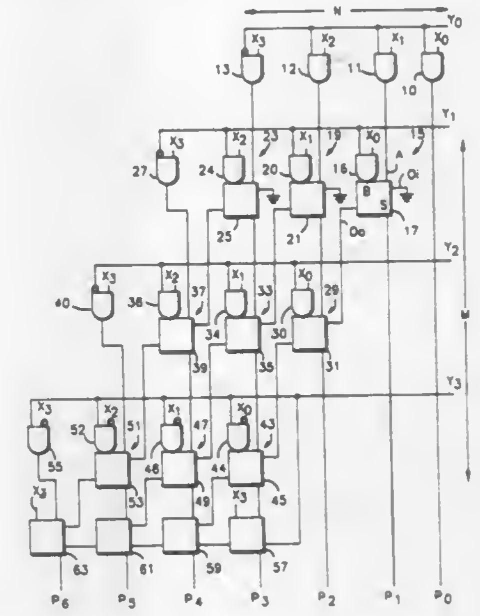
HIGH SPEED NXM BIT DIGITAL, REPEATED ADDITION TYPE MULTIPLYING CIRCUIT

Bruce Fette, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Oct. 20, 1980, Ser. No. 198,688
Int. Cl.^{3} G06F *7/50, 7/52*
U.S. Cl. 364—758 **13 Claims**

1. A high speed N×M bit digital, repeated addition type multiplying circuit for multiplying a N-bit multiplicand by a M-bit multiplier, said digital multiplier comprising:

(a) a plurality of rows and columns of combining circuits each including an AND gate having a multiplier-bit input, a multiplicand-bit input, and an output and a multiply/adder cell having a sum-bit input and a carry-bit input, and a sum-bit output and a carry-bit output, said multiply/adder cell including two combing gates, each being one of an exclusive OR circuit and an exclusive NOR circuit, and each having two inputs and an output with the inputs of a first of said two combining gates being connected one each to the sum-bit input and to the output of the AND gate and the inputs of the second of said two combining gates being connected one each to the output of the first of said two combining gates and to the carry-bit input, and said multiply/adder cell further including a high speed carry propagation line connected between the carry-bit input and the carry-bit output;



(b) the multiplier-bit inputs and the multiplicand-bit inputs of each of said combining circuits being connected to receive a different combination of bits of the M-bit multiplier and the N-bit multiplicand and the sum-bit inputs of each of said combining circuits being connected to the sum-bit outputs of other of said combining circuits; and

(c) the carry-bit output of each of a plurality of said combining circuits being coupled with the carry-bit inputs of the corresponding combining circuits in the next highest row for providing repeated addition type multiplication of the multiplier and the multiplicand.

4,369,501

DUAL CYCLE DATA DETECTION SYSTEM AND METHOD FOR BUBBLE MEMORIES

Caroll J. Brown, San Jose, and Lionel D. Provazek, Campbell, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,471
Int. Cl.^{3} G11C *19/08*
U.S. Cl. 365—8 **10 Claims**

7. A data detector for a bubble memory system which includes a major loop having data bits stored in data cells in the form of magnetic bubbles and no magnetic bubbles where each data cell is preceded by a no-bubble cell and means are provided for stepping said major loop past a sensing transducer to provide first and second signals corresponding respectively to said no-bubble cell and said data cell, said detector comprising:

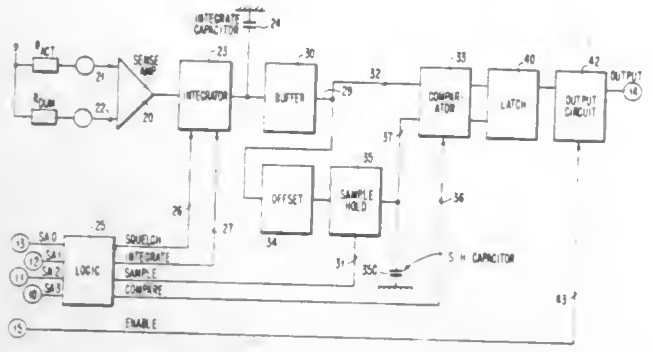
(a) an integrator having an input terminal for receiving said first and second signals from said sensing transducer;

(b) a sample and hold circuit coupled to receive the output of said integrator;

(c) a comparator having one input connected to said sample and hold circuit and a second input selectively connected to the output of said integrator;

(d) a latch having an input connected to the output of said comparator; and

(e) control circuits for providing control signals to said integrator, to said sample and hold circuit, to said comparator, and to said latch to cause the output of said latch to be set to a value corresponding to the one bit of read data stored in the cell which was stepped past said sensing transducer.



4,369,502

SEMICONDUCTOR MEMORY CIRCUIT

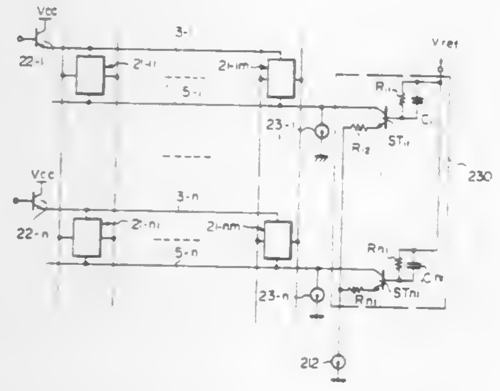
Hideaki Isogai, Higashikurume, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1980, Ser. No. 179,900

Claims priority, application Japan, Aug. 22, 1979, 54-106901

Int. Cl.^{3} G11C ***11/40, 7/00***

U.S. Cl. 365—155 **5 Claims**



1. A semiconductor memory circuit comprising:

memory cells;

word lines, hold lines and bit lines connected to respective memory cells;

a first constant-current source connected to said hold lines; and

a hold-current controlling circuit connected to said first constant-current source;

said hold-current controlling circuit comprising:

identical controlling circuit elements connected to respective hold lines; and

a second constant-current source commonly connected to said identical controlling circuit elements;

each of said controlling circuit elements comprising means for absorbing electric charges from a respective hold line when a corresponding word line changes from a selection status to a non-selection status, until the voltage level of the respective hold line reaches a full "L" (low) level or full "H" (high) level and for blocking a flow of electric charges from said respective hold line when said corresponding word line changes from the non-selection status to the selection status, during a predetermined interval after a time data switching from one of said memory cells to another of said memory cells is performed, said blocking and absorbing means comprising:

a parallel circuit of a resistor and a capacitor;

a transistor having a base connected to said parallel circuit, at a first end, having a first output terminal connected to a respective hold line and having a second output terminal connected to said second constant-current source;

a diode connected between said first output terminal and said base of said transistor; and

a reference voltage V_{ref} applied to a second end of said parallel circuit.

4,369,503

DECODER CIRCUIT

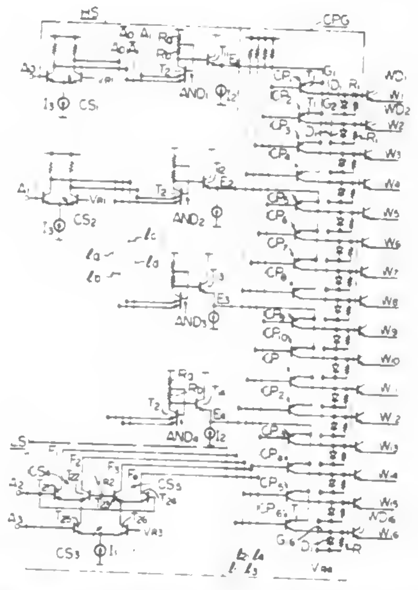
Hideaki Isogai, Higashikurume, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 6, 1981, Ser. No. 232,008

Claims priority, application Japan, Feb. 8, 1980, 55-14576

Int. Cl.^{3} G11C ***11/40***

U.S. Cl. 365—189 **11 Claims**



1. A decoder circuit operatively connectable to receive a plurality of address signals having first and second parts and operatively connectable to n×m word lines having n first word line groups and m second word line groups, where n and m are integers, said decoder circuit for selecting one of the n×m word lines and for driving a semiconductor memory device, said decoder circuit comprising:

a high level selection circuit, operatively connectable to receive the first part of said plurality of address signals, for generating a first level output signal for specifying one of the n first word line groups, and for generating (n−1) second level output signals for the rest of the n first word line groups;

a low level selection circuit, operatively connectable to receive the second part of said plurality of address signals, for generating a second level output signal for specifying one of the m second word line groups, and for generating (m−1) first level output signals for the rest of the m second word line groups; and

n×m coupling circuits each operatively connected to a corresponding one of the outputs of said high level selection circuit, to a corresponding one of the outputs from said low level selection circuit and to a corresponding one of said n×m word lines, each of said n×m coupling circuits selecting the corresponding word line when the first level output signal from said high level selection circuit and the second level output signal from said low level selection circuit are simultaneously applied to the corresponding one of said n×m coupling circuits.

4,369,504

SERIAL-PARALLEL SIGNAL CONVERTER

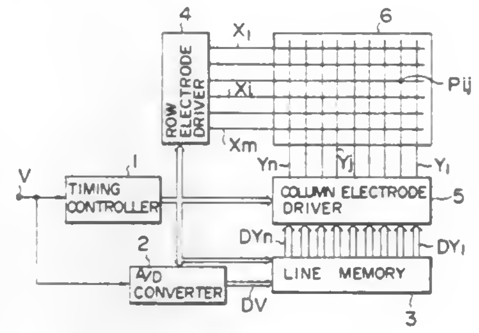
Hisao Hanmura, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,127

Claims priority, application Japan, Apr. 25, 1979, 54/50331

Int. Cl.^{3} G11C ***11/40***

U.S. Cl. 365—238 **7 Claims**



1. A serial-parallel signal converter for storing a serially input digital signal in a predetermined number of elements and producing the stored data as a parallel output digital signal at one time, comprising:

an address counter for counting a timing pulse signal for commanding write-in operations of the serial digital signal thereby to produce address signals,

a memory including a number of memory cells which can be designated by said address signals, wherein write-in operation of the digital signal is sequentially effected only to the memory cells having the addresses designated by said address signals, while read-out operation is effected such that contents stored in all the memory cells are read out parallelly at one time;

an upper address decoder for decoding more significant address bits produced from said address counter;

a lower address decoder for decoding less significant address bits produced from said address counter; and

means for effecting selection of the memory cell to which the write-in operation is to be effected in dependence on the outputs from both of said upper address decoder and the lower address decoder.

4,369,505

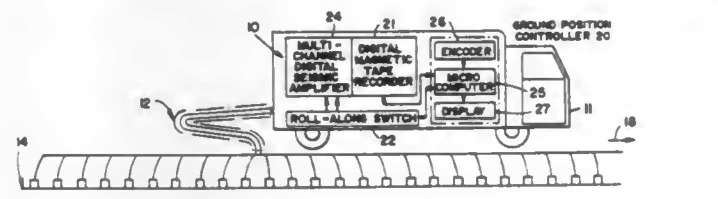
METHOD AND APPARATUS ASSOCIATED WITH A MICROCOMPUTER SYSTEM FOR AUTOMATICALLY TESTING A NEXT-IN-TIME POSITIONAL PARAMETER OF AN EXPLORATION SYSTEM THAT INCLUDES TWO RECORDING TRUCKS

H. T. Carruth, Jr., Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 16, 1980, Ser. No. 169,335

Int. Cl.^{3} G01V ***1/24***

U.S. Cl. 367—13 **9 Claims**


10
24
21
26
GROUND POSITION CONTROLLER 20
MULTI-CHANNEL DIGITAL SEISMIC AMPLIFIER
DIGITAL MAGNETIC TAPE RECORDER
ENCODER
MICRO COMPUTER
DISPLAY
ROLL-ALONG SWITCH
25
27
11
12
22
14
16

1. Method of automatically testing a reference positional code that can be associated with one of a series of next-in-time positions of a source-detector array of a second recording truck ("slave"), said code being generated by a first recording truck ("master") in operatively connection with said second truck and tested within said second truck using a microcomputer system that includes a MPU, memory units and a series of displays/storage and switching devices interconnected via a system bus, comprising

(a) detecting at said microcomputer system an interrupt request from said first truck,

(b) storing the positional code generated by the first truck, and

(c) sequentially testing the validity of the code on a bit-by-bit basis, whereby operations between trucks can be coordinated during subsequent collection operations.

4,369,506

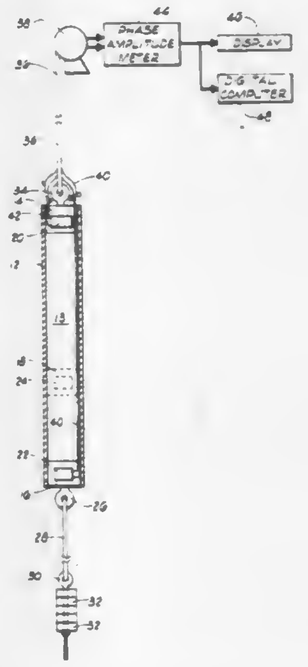
METHOD AND APPARATUS FOR SHEAR WAVE LOGGING

William M. Benzing, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jul. 14, 1980, Ser. No. 168,055

Int. Cl.^{3} G01V ***1/40***

U.S. Cl. 367—31 **6 Claims**



1. Apparatus for shear wave logging within a fluid-filled borehole comprising:

a shear wave vibration source earth coupled adjacent said borehole to propagate shear wave energy of selected frequency having wave length that is long compared to detector spacing, said energy being propagated vertically along said borehole;

an elongated housing having upper and lower ends and defining an internal air cavity portion;

first and second geophone housings sealingly connected in said elongated housing at opposite ends of said air cavity portion;

first and second horizontal motion detectors secured within said respective geophone housings and spaced by a selected distance;

means for suspending said elongated housing at a selected point along said borehole; and

means conducting electrical output from said first and second detectors and analyzing to determine and output horizontal shear wave phase difference.

4,369,507

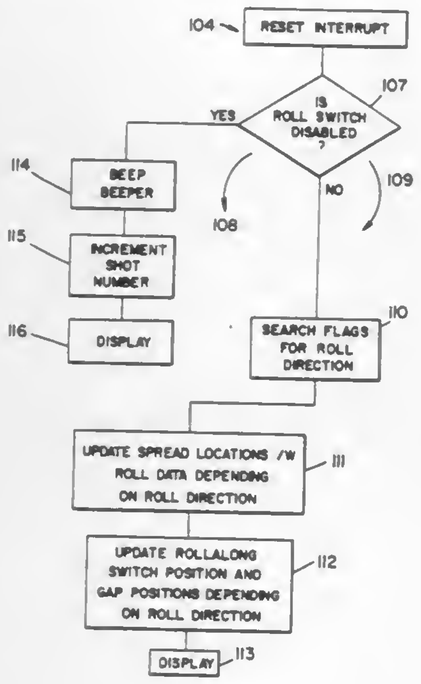
CONDITIONAL UPDATING METHOD AND APPARATUS ASSOCIATED WITH A MICROCOMPUTER SYSTEM FOR AUTOMATICALLY INDICATING AND RECORDING PARAMETERS THAT SPATIALLY DEFINE LOCATIONS OF SEISMIC EXPLORATION SPREAD AND SOURCE ARRAYS

H. T. Carruth, Jr., Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 16, 1980, Ser. No. 169,338

Int. Cl.^{3} G01V *1/20, 1/34*

U.S. Cl. 367—56 **5 Claims**


104
RESET INTERRUPT
107
IS ROLL SWITCH DISABLED ?
YES
NO
109
108
114
BEEP BEEPER
115
INCREMENT SHOT NUMBER
116
DISPLAY
110
SEARCH FLAGS FOR ROLL DIRECTION
UPDATE SPREAD LOCATIONS /W ROLL DATA DEPENDING ON ROLL DIRECTION
111
UPDATE ROLLALONG SWITCH POSITION AND GAP POSITIONS DEPENDING ON ROLL DIRECTION
112
DISPLAY
113

1. A method of conditionally updating array and source parameters related to an exploration system during generation and collection of seismic data by a source-detector array positioned at known locations along a line of survey at the earth's surface in operational contact with a rollalong switch capable of changing switch matrix size and hence "active" detector position on command, based on type of source being used by said exploration system, said updated parameters being generated as bits of digital data in a microcomputer system that includes a microprocessor unit (MPU), memory units and display, switching and alarm means interconnected to each other and to a digital field system (DFS) via a system bus, comprising:

(a) after an interrupt request has been generated by said microcomputer system, automatically determining switch status of a switch of said display, switching and alarm means,

(b) if said switch of (a) is in a first state, designating a vibratory source is being used in said exploration system, enabling an audio alarm of said display switch and alarm means to alert a human operator that an exploration cycle is beginning followed by incrementing of a shot number counter of said microcomputer system and displaying said updated number at said display switch and alarm means, for operator perusal,

(c) if the switch of (a) is in a second state, signifying that an impulsive source is in use in which a single activation per shot location occurs, after determining roll direction, calculating via said microcomputer system (i) new spread end positions for next-in-time source activation, (ii) new gap positions for said spread, and (iii) a new rollalong switch position,

(d) displaying the data of (c) in alpha-numeric form at said display, switching and alarm means of said microcomputer system, for operator examination and for correction, if required.

4,369,508

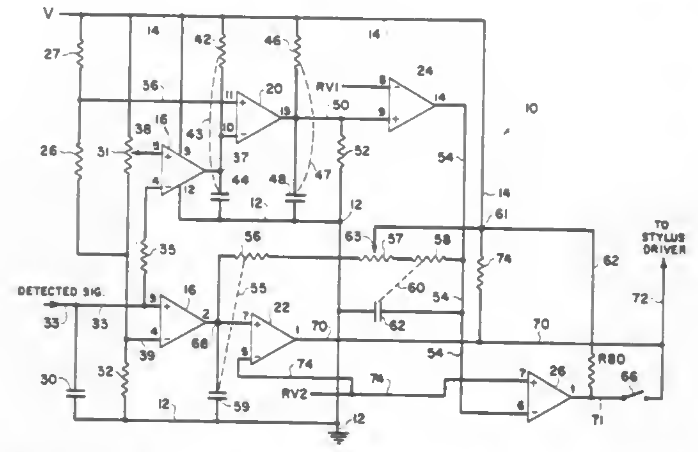
SONAR HAVING SIGNAL AMPLITUDE DIFFERENTIATION AND NOISE SUPPRESSION

Ronald G. Weber, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Continuation of Ser. No. 969,726, Dec. 15, 1978, abandoned. This application Nov. 18, 1980, Ser. No. 207,937

Int. Cl.^{3} G01S *15/96, 7/66*

U.S. Cl. 367—115 **8 Claims**



1. In a sonar system having a display means, including means to initiate a transmitted ultrasonic pulse in a body of water, and including echo signal sensor means, amplifier means and signal detector means, the improvement in means to process the detected signal to provide both recognition of differences in amplitudes of the detected signal and noise suppression, comprising:

(a) first comparator means responsive to said detected signal, and a first integrator means responsive to the output of said first comparator means;

(b) second comparator means responsive to said first integrator means, the output of said second comparator means connected to the input of a stylus driver means;

(c) third comparator means responsive to said detected signal, and second integrator means responsive to the output of said third comparator means;

(d) fourth comparator means responsive to the output of said second integrator means, and third integrator means responsive to the output of said fourth comparator means;

(e) fifth comparator means responsive to the output of said third integrator means, and a fourth integrator means responsive to the output of said fifth comparator means;

(f) sixth comparator means responsive to said fourth integrator means, the output of said sixth comparator means connected to the output of said second comparator means, and to the input of said stylus driver means;

whereby whenever one of the outputs of said second and sixth comparators drops to a zero signal, the display means is disabled and when both outputs are high signals, said display means is enabled.

4,369,509

GAIN CONTROL CIRCUIT FOR NOISE REDUCTION SYSTEM

Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,154

Claims priority, application Japan, May 24, 1979, 54-64181

Int. Cl.^{3} G11B *5/027*

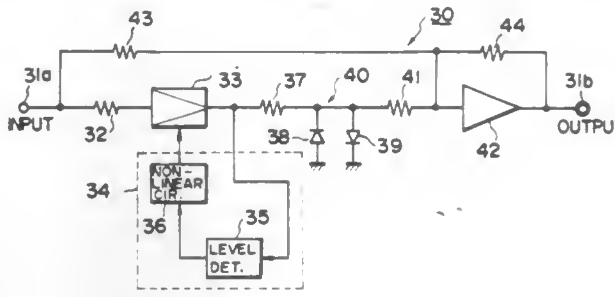
U.S. Cl. 369—174 **30 Claims**

22. In apparatus for recording an information signal on a recording medium by a recording device, gain control means comprising:

means defining a first transmission path for compressing said information signal with a first substantially constant compression characteristic when the amplitude of said information signal is below a predetermined value and with a second substantially constant compression characteristic when the amplitude of said information signal is above said predetermined value;

means defining a second transmission path for transmitting said information signal with substantially unity gain; and

means for effectively supplying the information signal to said recording device by way of said first path when the amplitude of said information signal is below said predetermined value and for effectively supplying said information signal to said recording device by way of said second path with substantially unity gain when the amplitude of said information signal is above said predetermined value.



4,369,510

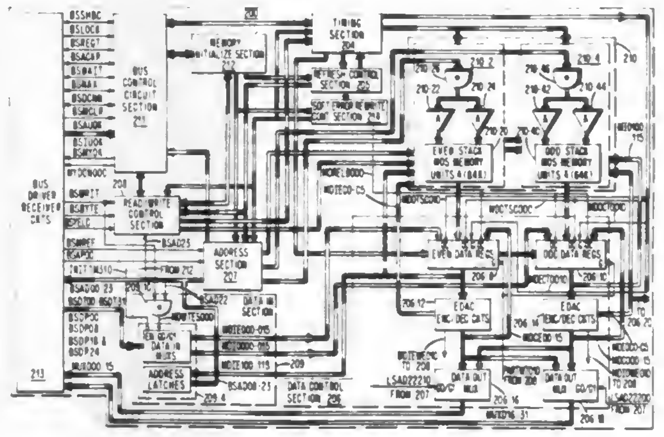
SOFT ERROR REWRITE CONTROL SYSTEM

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 25, 1980, Ser. No. 172,485

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—13 **40 Claims**



1. A semiconductor memory system comprising:

a dynamic memory including a number of addressable arrays of memory cells arranged in a number of rows and columns and said arrays being organized into a number of storage locations;

error detection and correction means coupled to said memory for detecting and correcting single bit errors in the contents of the cells read out from said memory during a memory cycle of operation;

timing means for providing sequences of timing signals for performing said memory cycle of operation;

refresh and write control means coupled to said timing means and to said memory, said refresh control means periodically generating refresh command signals in response to signals from said timing means, and including row and column address counter means; and,

rewrite control means coupled to said refresh and write control means and to said timing means, said rewrite control means including counter means operative after each occurrence of a predetermined number of refresh command signals to condition said timing means to generate a sequence of signals during a rewrite cycle of operation for performing read and write cycles of operations upon the cells within the rows and columns of one of said number of storage locations specified by said row and column address counter means for enabling the detection and correction of said single bit errors within said memory by said error detection and correction means at a predetermined rate thereby rendering said memory system less susceptible to soft errors.

4,369,511

SEMICONDUCTOR MEMORY TEST EQUIPMENT

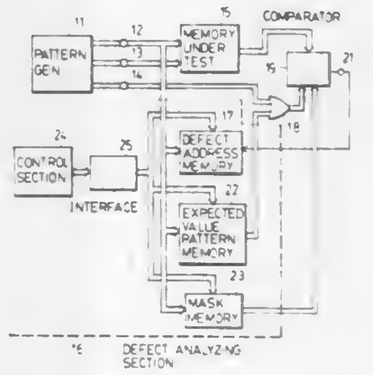
Kenji Kimura, Saitama; Kohji Ishikawa, Funabashi, and Naoaki Narumi, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Takeda Riken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,162

Claims priority, application Japan, Nov. 21, 1979, 54-150899; Nov. 21, 1979, 54-150900; Nov. 21, 1979, 54-150904

Int. Cl.^{3} G01R *31/28*

U.S. Cl. 371—21 **14 Claims**



1. An equipment for testing a memory under test, said equipment comprising:

a pattern generator for generating address data and write data for addressing and selectively writing into each respective generated address of the memory under test, and for providing expected value data in synchronism with the generation of the respective address data by the pattern generator;

comparator means for comparing data read out from each said respective address of the memory under test with the corresponding expected value data, and for outputting a disagreement signal when the two data are different;

a block mask memory for storing block mask data and for reading same out by a predetermined portion less than the entirety of each said address data generated by said pattern generator for each said respective address of the memory under test;

said comparator means comprising comparison inhibit means for selectively inhibiting said output from the comparator means according to the block mask data read out from the block mask memory;

a defect address memory which is accessed by each said address generated by said pattern generator for the memory under test to selectively write according to the respective block mask data the corresponding output from the comparator means into the respective address of said defect address memory;

wherein said memory under test is divided into plural blocks of plural addresses having a predetermined number of bits per address, and each said block mask data read out by said predetermined portion of each respective address data generated by said pattern generator includes data for selectively inhibiting the output of said disagreement signal to said comparator for each said bit of all the addresses of the corresponding block designated by the block mask data.

4,369,512

DIGITAL TRANSMISSION CIRCUIT USING MEANS FOR INTRODUCING A REDUNDANCY ON THE MOST SIGNIFICANT BIT

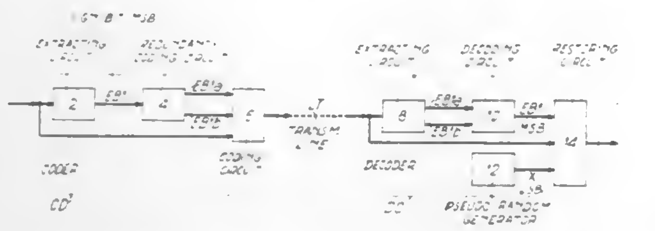
Pierre Brossard, 9 rue des Fleurs, Montigny le-Bretonneux 78190 Trappes, and Didier Lombard, 223 rue de l'Universite, 75007 Paris, both of France

Filed Oct. 23, 1980, Ser. No. 199,867

Claims priority, application France, Nov. 14, 1979, 79 28053

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—43 **5 Claims**



1. A digital transmission circuit comprising a coder, a decoder, and a transmission channel connecting said coder and said decoder, wherein:
   (A) said coder comprises:
      an extracting circuit having one input receiving an incident digital signal constituted by a sequence of bits between a most significant bit and a least significant bit, and having one output delivering the most significant bit EB1 of said incident digital signal,
      a first coding circuit having one input connected to said output of said extracting circuit and two outputs supplying two redundant bits EB1*a* and EB1*b*, equal to said bit EB1,
      a second circuit having a first input, a second input and a third input, said first and second inputs being connected to the two outputs of said first coding circuit and said third input being connected to the input of said extracting circuit and having one output delivering a coded digital signal having the same number of bits as the incident signal with bit EB1*a* as the most significant bit, the least significant bit of the incident signal being eliminated and the bit EB1*b* being inserted between two bits of the incident signal, said output being connected to said transmission channel;
   (B) said decoder comprises:
      an extracting circuit having one input connected to said transmission channel, and two outputs supplying said redundant bits EB1*a* and EB1*b*,
      a decoding circuit having two inputs connected to said two outputs of said extracting circuit and one output supplying a sign bit EB1,
      a pseudo-random bit generator having one output,
      a restoring circuit having a first, a second and a third input, said first input being connected to said output of said decoding circuit, said second input being connected to said input of said extracting circuit, said third input being connected to said output of said pseudo-random generator, said restoring circuit having an output supplying a decoded digital signal having said bit EB1 as the most significant bit and said pseudo-random bit as the least significant bit.

4,369,513

SEMICONDUCTOR LASER DEVICE

Jun-ichi Umeda, and Takashi Kajimura, both of Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

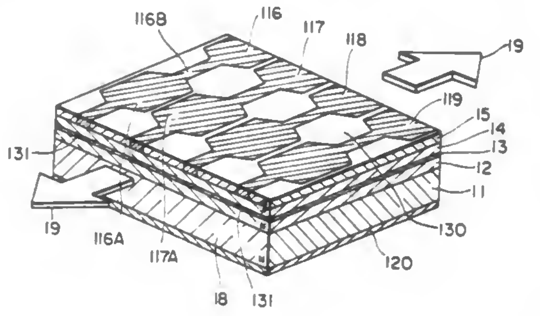
Filed Oct. 31, 1980, Ser. No. 204,012

Claims priority, application Japan, Nov. 9, 1979, 54-144402; Oct. 8, 1980, 55-142704[U]

Int. Cl.^{3} H01S *3/19*

U.S. Cl. 372—46 **6 Claims**

1. In a semiconductor laser device having on a predetermined semiconductor substrate a stack region for optical confinement including at least an active layer and a clad layer, a first electrode disposed on the semiconductor substrate side, a second electrode disposed over the stack region for injecting current into the active layer, and means comprising an optical resonator, the improvement comprising: the second electrode being a plurality of stripe conductive regions at least one of which includes a broader portion and a narrower portion juxtaposed in the traveling direction of a laser beam whereby the laser radiation emitted in correspondence with the respective stripe conductive regions will form a simply connected net and give rise to nonlinear interactions of the plurality of active regions which will thereby develop in the active layer.



4,369,514

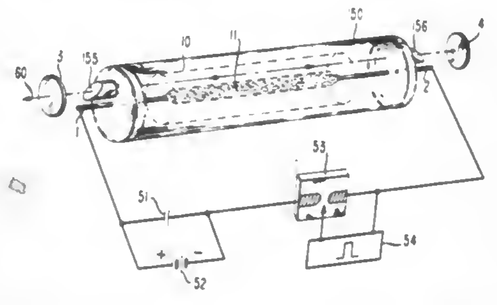
RECOMBINATION LASER

William T. Silfvast, Holmdel, N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 30, 1980, Ser. No. 202,069

Int. Cl.^{3} H01S *3/09*

U.S. Cl. 372—89 **18 Claims**



1. A recombination laser providing laser radiation which comprises:
   at least one resonant laser cavity including energy abstracting means;
   a laser material; and
   excitation means for generating from said laser material at least one plasma discharge confined to a cylindrical region, said at least one plasma discharge radially expanding into a second region, at least a portion of said second region being disposed in said at least one resonant laser cavity, said laser material being chosen such that a population inversion is produced therein by recombination of electrons and ions in said plasma.

4,369,515

CLOCK SYNCHRONIZATION CIRCUIT

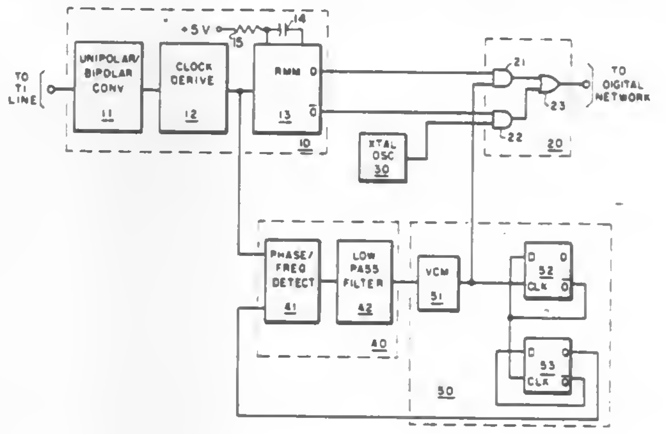
Jose L. Valdes, Chicago, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 6, 1980, Ser. No. 194,652

Int. Cl.^{3} H04L *7/00*

U.S. Cl. 375—108 **9 Claims**

1. A clock synchronization circuit for use in a telephone switching system including a digital line operated to provide bi-polar digital data of a variable frequency, conversion means connected to said digital line, operated to convert said bi-polar digital data to uni-polar digital data, clock derivation means connected to said conversion means operated to derive clock signals from said uni-polar digital data, and a digital network, said synchronization circuit comprising:
   a retriggerable monostable multi-vibrator connected to said clock derivation means operated in response to said derived clock signals having a frequency above a first predetermined value to generate a first enable signal, and further operated in response to said derived clock signals having a frequency below a predetermined value to generate a second enable signal;
   first clock signal generating means connected to said retriggerable monostable multi-vibrator, operated in response to said derived clock signals to generate a first clock signal having a frequency related to the frequency of said derived clock signals;
   second clock signal generating means operated to generate a second clock signal of a predetermined frequency; and
   gating means connected to said retriggerable monostable multi-vibrator, said first clock signal generating means and said second clock signal generating means, operated in response to said first enable signal to gate said first clock signal to said digital network, and further operated in response to said second enable signal to gate said second clock signal to said digital network.



4,369,516

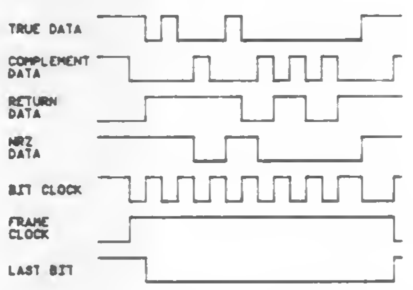
SELF-CLOCKING DATA TRANSMISSION SYSTEM

John P. Byrns, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1980, Ser. No. 187,303

Int. Cl.^{3} H03K *5/156*

U.S. Cl. 375—110 **21 Claims**



1. A method of serially transmitting a data signal from a signal source by means of first and second binary signals, the data signal including a plurality of bits each having a binary zero state or a binary one state, said method comprising the steps of:
   (a) generating a first binary state of the first and second signals before and after the data signal;
   (b) generating for each bit of the data signal a second binary state of the first signal and the first binary state of the second signal for a bit having a binary zero state, and generating the first binary state of the first signal and the second binary state of the second signal for a bit having a binary one state; and
   (c) generating the second binary state of the first and second signals between successive bits of the data signal.

4,369,517

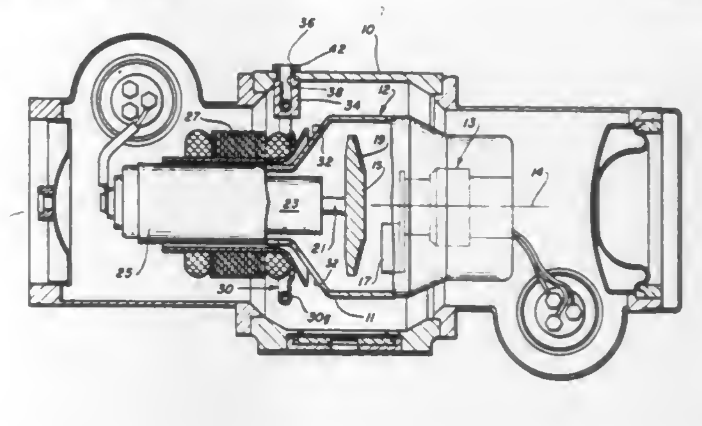
X-RAY TUBE HOUSING ASSEMBLY WITH LIQUID COOLANT MANIFOLD

Thomas S. Ozawa, Chicago, Ill., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Feb. 20, 1980, Ser. No. 122,986

Int. Cl.^{3} H01J *35/10, 35/16*

U.S. Cl. 378—130 **7 Claims**



1. An x-ray tube housing assembly for sealingly supporting an x-ray insert tube and a quantity of liquid coolant and wherein the insert tube has a rotating anode having an x-ray target within an envelope, the housing assembly comprising:
   a housing adapted to sealingly support said x-ray insert tube and including an inlet passage and an outlet passage for respectively permitting the ingress and egress of a liquid coolant; and
   a manifold positioned to direct incoming coolant from said inlet passage against the insert tube in the region adjacent said target such that swirling mixing occurs with coolant present in said housing.

4,369,518

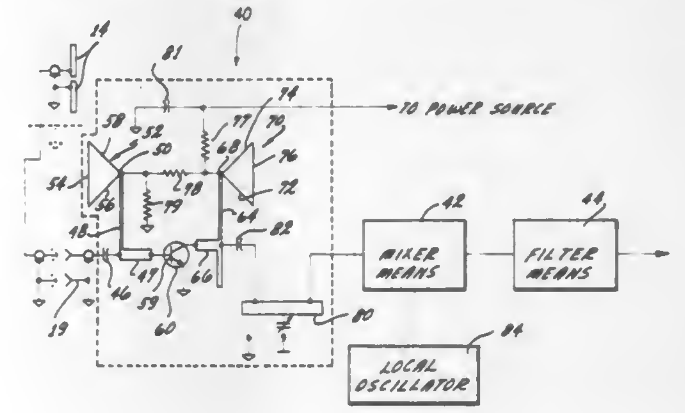
COMPACT ANTENNA SYSTEM

John M. Olson, Port Hueneme, Calif., assignor to Tanner Electronic Systems Technology, Inc., Van Nuys, Calif.

Filed Nov. 28, 1980, Ser. No. 211,314

Int. Cl.^{3} H04H *1/00;* **H04B** *1/18*

U.S. Cl. 455—3 **8 Claims**



1. A compact antenna system for use in connection with subscription television at the exterior of a structure containing a television receiver of a subscriber comprising:
   a housing;
   antenna means disposed within said housing to receive subscription television signals, said antenna means being connected to circuitry on a circuit board for processing said signals received by said antenna;

a circuit board member attached to said housing and mounted upon a holder member, said circuit board member containing circuitry connected to the output of said antenna member to process signals received thereby;

a holder member adaptable to be mounted outside a structure containing a television receiver to receive said subscription television signals;

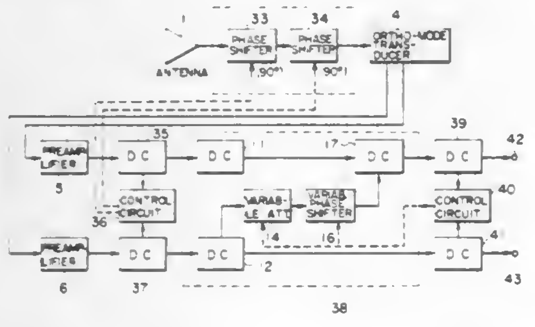
circuitry disposed upon said circuit board member, said circuitry including preamplification and filter means for providing preamplification to, and to remove unwanted frequencies from, signals received from said antenna means, said preamplification and filter means including amplifier means having bias and supply lines and having a bias terminal, and at least one circuit element having a substantially triangular configuration, a first one of said at least one circuit element being connected between the bias line and the bias terminal of said amplifier means and being tuned to resonate at the frequency of said subscription television signals to be amplified, and a second of said circuit elements being connected between the supply line and the output of said amplifier means and being tuned to resonate at said frequency of said subscription television signal to be amplified.

4,369,519

CROSS POLARIZATION COMPENSATION SYSTEM

Hironori Yuuki, Niza; Hiroshi Kurihara, Atsugi; Noboru Baba, Higashikurume; Makoto Arai; Kazunori Inagaki, both of Tokyo, and Matsuichi Yamada, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,463
Claims priority, application Japan, Feb. 8, 1978, 53-12263
Int. Cl.^{3} H04B *1/12*
U.S. Cl. 455—60 **1 Claim**



1. A cross polarization compensation system comprising:

input terminal means for receiving an input elliptically polarized wave;

first rotatable differential phase shift means having a phase shift of 90° or less than 90° and operatively connected to said input terminal means for phase shifting the received elliptically polarized wave;

first control means operatively connected to said first rotatable differential phase shift means for controlling said first rotatable differential phase shift means so that said input elliptically polarized wave is converted by said first rotatable differential phase shift means into a converted elliptically polarized wave defined by

$$|\alpha| = |\cot^{-1}\gamma|$$

where α is the tilt angle of an ellipse indicative of the converted elliptically polarized wave to a predetermined reference direction and γ is the axial ratio for said ellipse;

second rotatable differential phase shift means having a phase shift of 90° and connected to said first rotatable differential phase shift means for phase shifting said converted elliptically polarized wave; and

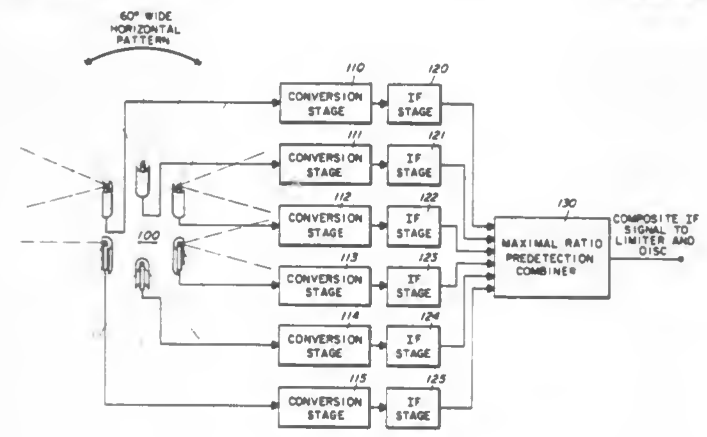
second control means operatively connected to said second rotatable differential phase shift means for disposing the phase delay or advance plane of said second rotatable differential phase shift means in alignment with the major axis of the ellipse indicative of the converted elliptically polarized wave, thereby to obtain a linearly polarized wave having electric fields components of a desired direction through said second rotatable differential phase shift means.

4,369,520

INSTANTANEOUSLY ACQUIRING SECTOR ANTENNA COMBINING SYSTEM

Frank J. Cerny, Jr., North Riverside, and James J. Mikulski, Deerfield, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1979, Ser. No. 22,757
Int. Cl.^{3} H04B *7/06, 7/08*
U.S. Cl. 455—137 **7 Claims**



1. A high-gain omnidirectional receiving system adapted to substantially instantaneously receive a radio frequency (RF) signal, having a predetermined frequency, said receiving system comprising:

antenna means including a plurality of directional antennas spatially disposed in a predetermined arrangement for providing a substantially omnidirectional receiving pattern, each of the directional antennas operating at the predetermined frequency for receiving an RF signal component substantially from a corresponding pre-established portion of the omnidirectional receiving pattern;

means coupled to the antenna means for converting the RF signal received by each directional antenna to a corresponding intermediate frequency (IF) signal;

means coupled to the converting means for filtering each of the IF signals; and

maximal-ratio predetection diversity combining means coupled to the filtering means for substantially instantaneously acquiring the filtered IF signal of any corresponding received RF signal component, said maximal-ratio predetection diversity combining means comprising:

means for providing a reference signal having a predetermined reference frequency;

for each filtered IF signal: means coupled to the filtering means for dividing the filtered IF signal into first and second portions; first means for multiplying the first portion of the filtered IF signal with the reference signal to provide a first product signal having a phase that is the difference between the phase of the filtered IF signal and the reference signal; means for providing a variable phase shift to said first product signal, said phase shift being a function of the frequency of said first product signal; and second means for multiplying the second portion of the filtered IF signal and the phase-shifted first product signal to provide a second product signal that is substantially cophased with the reference signal and substantially independent of the phase of the filtered IF signal; and

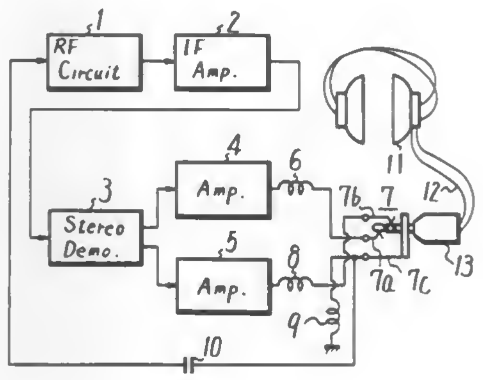
means for combining the second product signals for each corresponding filtered IF signal to provide a composite IF signal.

4,369,521

RADIO RECEIVING APPARATUS USING HEADPHONE CONNECTOR CABLE AS AN ANTENNA

Takeshi Sawada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,963
Claims priority, application Japan, Jun. 26, 1980, 55–89932[U]
Int. Cl.^{3} H04B *1/06;* H04H *5/00*
U.S. Cl. 455—270 **16 Claims**



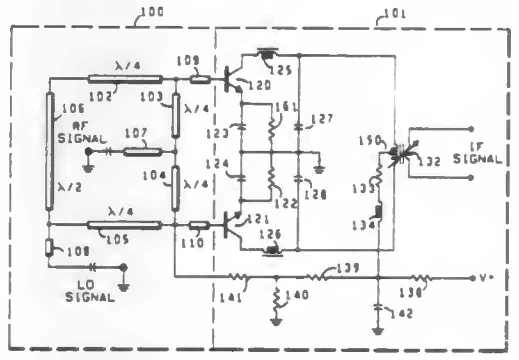
1. Radio receiving apparatus comprising a radio frequency (RF) stage supplied with an RF signal; signal processing means coupled to said RF stage to produce an audio frequency signal in response to the RF signal supplied to said RF stage; a jack having at least first and second contacts; means for supplying said audio frequency signal produced by said signal processing means to said first contact of said jack; impedance means coupled between said second contact of said jack and a reference potential, said impedance means presenting a relatively high impedance to an RF signal; plug means insertable into said jack and having at least two conductive portions connected to said first and second contacts, respectively, of said jack; headphone means for reproducing audio sounds in response to said audio frequency signal; conducting leads for connecting said headphone means to said plug means and including at least one signal carrying lead connected to the conductive portion of said plug means that is, in turn, connected to said first contact of said jack and at least one shield lead disposed in shielding relationship with respect to said signal carrying lead and connected to the other conductive portion of said plug means; and means for coupling said second contact of said jack to said RF stage to supply to said RF stage RF signals picked up by said shield lead.

4,369,522

SINGLY-BALANCED ACTIVE MIXER CIRCUIT

Frank J. Cerny, Jr., North Riverside; George D. Helm, Cary, and Ronald G. Wesoloski, Glenview, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 921,675, Jul. 3, 1978, Pat. No. 4,193,036. This application Aug. 30, 1979, Ser. No. 70,955
Int. Cl.^{3} H04B *1/26*
U.S. Cl. 455—333 **10 Claims**



1. A singly-balanced active mixer for developing an intermediate frequency (IF) signal from a radio frequency (RF) signal and a local oscillator (LO) signal, the local oscillator signal being comprised of two substantially equal components phase shifted by 180 degrees with respect to one another, said mixer comprising:

(a) first and second bipolar transistor devices each having an emitter, base and collector and arranged in a common-emitter configuration, the base of the first device coupled to the RF signal and to one of the LO signals for providing a first mixer signal, and the base of the second device coupled to the RF signal and to the other one of the LO signals for providing a second mixer signal;

(b) a first DC biasing network coupled to the emitters of the first and second devices for applying a predetermined bias voltage hereto;

(c) a second DC biasing network coupled to the bases of the first and second devices for applying a predetermined bias voltage thereto;

(d) an output transformer having a tap at a predetermined location on the primary winding, said tap not being bypassed at the RF, LO and IF frequencies, the first and second mixer signals from the first and second devices coupled to opposite ends of the primary winding, IF components of the first and second mixer signals adding in phase in the primary winding, and the composite IF signal provided across the secondary winding of said output transformer; and

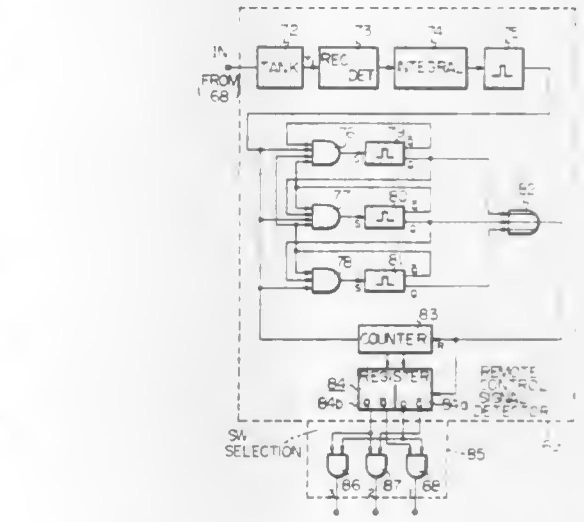
(e) a third DC biasing network coupled to said tap of the primary winding of the output transformer for applying a predetermined bias voltage to the collectors of the first and second devices.

4,369,523

REMOTE CONTROL SYSTEM OF AN OPTICAL REPEATER

Norio Seki, Tokyo; Yohtaro Yatsuzuka, Yokohama, and Haruo Sakaguchi, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1980, Ser. No. 158,344
Claims priority, application Japan, Jun. 19, 1979, 54-76342
Int. Cl.^{3} H04B *9/00*
U.S. Cl. 455—601 **4 Claims**



1. A remote control system in an optical communication system comprising a plurality of optical repeaters inserted in an optical fiber line, a pair of terminal stations installed at ends of said optical fiber line for digital communication between said terminal stations, each of said optical repeaters having a plurality of switches for controlling operation of its own repeater, and each of said switches being controlled by one of said terminal stations, characterized in that

(a) one of said terminal stations has a remote control signal generator for transmitting a remote control test signal to the other terminal station only through the same optical fiber line and said optical repeaters, said remote control test signal having a pseudo noise pulse pattern of a predetermined period and a predetermined number of repetitions of said period, said predetermined period and said predetermined number of repetitions of said period designating a particular repeater and a particular switch in said particular repeater,

(b) each of said optical repeaters having a remote control signal detector for recognizing said remote control test signal as designating said particular repeater and said particular switch in said particular repeater, and means for accepting said remote control test signal without change and without a separate pulse generator for testing said particular repeater and said particular switch by using said pseudo noise pulse pattern to perform the tests and transmitting said pattern back to said terminal station.

4,369,524

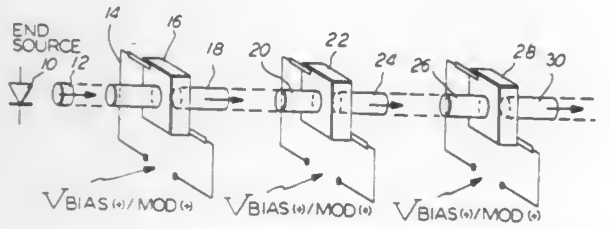
SINGLE COMPONENT TRANSCEIVER DEVICE FOR LINEAR FIBER OPTICAL NETWORK

Eric G. Rawson, Saratoga; Donald R. Scifres, Los Altos, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 14, 1980, Ser. No. 196,714

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—606 **5 Claims**



1. An optical fiber data transmission system including a modulated light source (10) for introducing a modulated or unmodulated carrier beam of light into said optical fiber (12) wherein the improvement is characterized by:

diode means (16) inserted along said optical fiber for detecting the modulated light on said optical fiber or further modulating said light on said optical fiber depending on the applied bias voltage to said diode means, wherein for detection of light by said diode means a constant back-bias voltage sufficient to provide a useful detected signal would be applied, and for modulation of a carrier beam of light the back-bias voltage is modulated so as to shift the absorption edge of the diode means back and forth across the wavelength of the light source (10), said diode means comprising a first thick layer (92) of p-type gallium arsenide, a second thin layer (94) of p-type gallium aluminum arsenide, a third thin layer (96) of p-type gallium arsenide, a fourth thin layer (98) of n-type gallium aluminum arsenide, and a fifth thick layer (100) of n-type gallium arsenide, and further including a cylindrical region (102) through said first, second, third, fourth, and fifth layers of higher refractive index inside said cylindrical region than outside said region so as to provide a light waveguide channel through the diode means.

4,369,525

DEVICE FOR AUTOMATIC REGULATION OF THE OUTPUT POWER OF A TRANSMITTER MODULE IN AN OPTICAL-FIBER TRANSMISSION SYSTEM

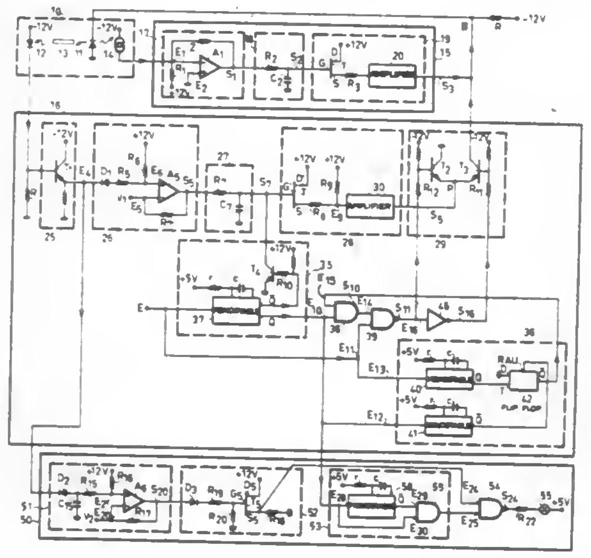
Jean P. Breton, and Adalbert Maciaszek, both of Paris, France, assignors to Lignes Telegraphiques et Telephoniques, Conflans Ste. Honorine, France

Filed Feb. 20, 1981, Ser. No. 236,629

Claims priority, application France, Feb. 22, 1980, 80 03983

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—618 **5 Claims**



1. A device for automatically regulating output power in a transmitter module for a transmission system which utilizes an optical fiber and comprising:

a unit in which are arranged a laser diode, means for extracting part of the optical power emitted by the laser diode and converting said optical power to electric power, and a sensor which is responsive to the temperature of the unit;

a first circuit connected between said temperature sensor and said laser diode for regulating the direct current of said laser diode and comprising at least a first generator for producing a current which is variable as a function of the temperature of the unit and has a long time constant with respect to the transmission rate;

a second circuit connected between said converting means and said laser diode for regulating the modulation current of said laser diode and comprising at least a second generator for producing a variable current as a function of the power of the laser diode, and means forming a switch controlled by the data to be transmitted and connected in series between said second current generator and said laser diode.

DESIGN PATENTS

GRANTED JAN. 18, 1983

ERRATA

For CLASS	See PATENT NO.
D23–138	267,623

DESIGNS

JANUARY 18, 1983

267,596

TIE

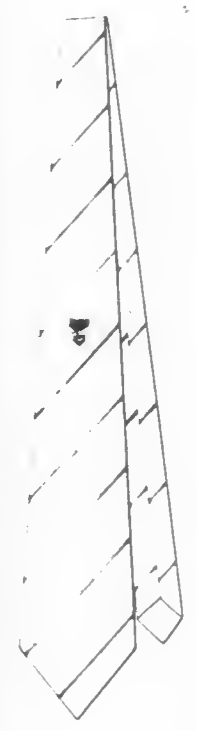
William Long, 99 Botanic Ave., Belfast BT7 1JN, Northern Ireland

Filed Aug. 4, 1980, Ser. No. 175,241

Term of patent 14 years

Int. Cl. D2—*05*

U.S. Cl. D2—356



267,597

BELT WITH CIGARETTE LIGHTER ATTACHMENT

Ernest D. Carter, c/o Tralee Hotel, W Hill Rd., Bournemouth, Dorset, England (BH2 5EQ)

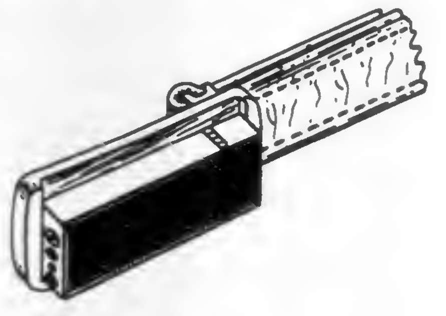
Filed Oct. 22, 1979, Ser. No. 86,757

Claims priority, application United Kingdom, Apr. 20, 1979, 989564

Term of patent 14 years

Int. Cl. D2—*07*

U.S. Cl. D2—381



267,598

ADJUSTABLE ARTICLE CARRYING HARNESS

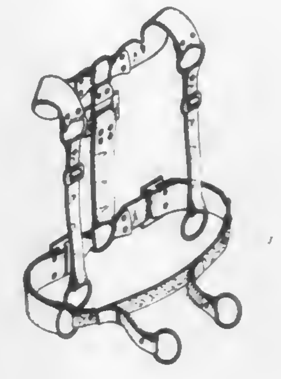
Daniel M. Lyer, and Vicky Lyer, both of P.O. Box 467, Prescott, Ariz. 86302

Filed Oct. 2, 1980, Ser. No. 193,343

Term of patent 14 years

Int. Cl. D3—*02*

U.S. Cl. D3—32



267,599

CHILD'S SHAMPOO CHAIR

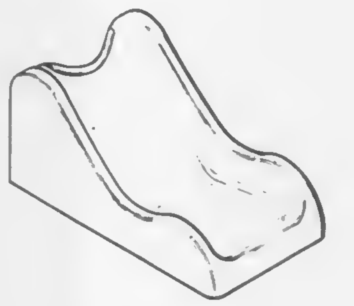
Marie C. Fator, P.O. Box 708, Corsicana, Tex. 75110

Filed Jan. 30, 1981, Ser. No. 230,284

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—7



267,600

OTTOMAN

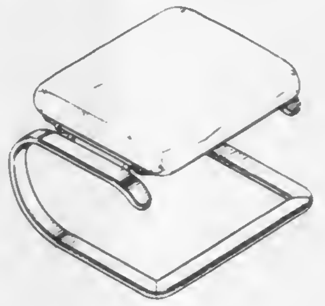
Larry G. Hickey, Costa Mesa, Calif., assignor to Tropitone Furniture Co., Inc., Sarasota, Fla.

Filed Dec. 23, 1980, Ser. No. 223,491

Term of patent 14 years

Int. Cl. D6—*01*

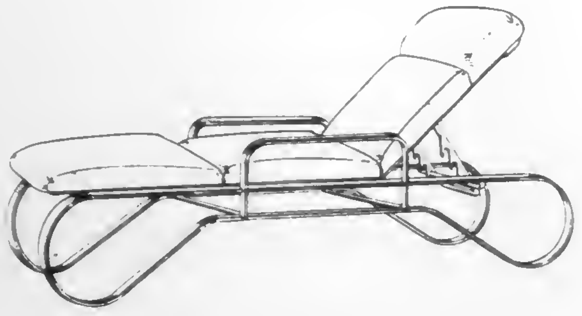
U.S. Cl. D6—36



267,601

CHAISE LOUNGE

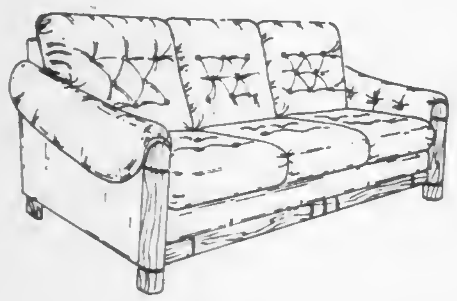
Larry G. Hickey, Costa Mesa, Calif., assignor to Tropitone Furniture Co., Inc., Sarasota, Fla.
Filed Dec. 23, 1980, Ser. No. 223,490
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



267,602

SOFA

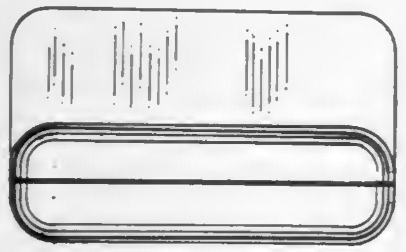
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Aug. 4, 1980, Ser. No. 174,926
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



267,603

SOAP HOLDER

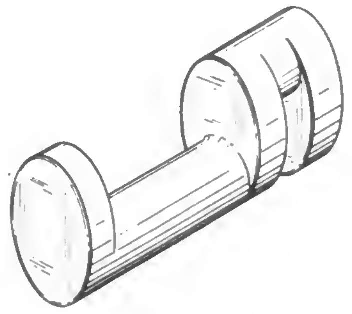
Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,029
Claims priority, application Portugal, May 9, 1980, 15.082
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90



267,604

UTILITY HOOK FOR APERTURED BOARDS

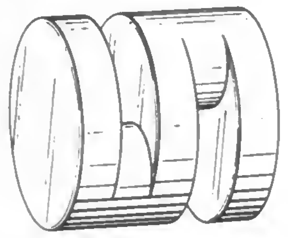
Lawrence Peabody, New York; Theodore W. Schriever, Syracuse, and Stephen K. Wenczl, Fayetteville, all of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,018
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—114



267,605

COMPONENT HOOK FOR APERTURED BOARDS

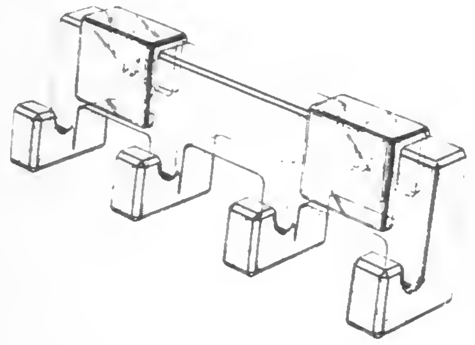
Lawrence Peabody, New York; Theodore W. Schriever, Syracuse, and Stephen K. Wenczl, Fayetteville, all of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,074
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—114



267,606

WALL MOUNTED BRACKET

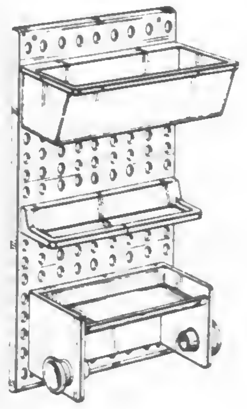
Guy Vrignaud, Grenoble, France, assignor to Allibert S.A. Societe Anonyme, Grenoble, France
Filed Feb. 4, 1981, Ser. No. 231,346
Claims priority, application Hague, Aug. 18, 1980, DM/000313
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—122



267,607

COMBINED APERTURED BOARD AND STORAGE ELEMENTS THEREFOR

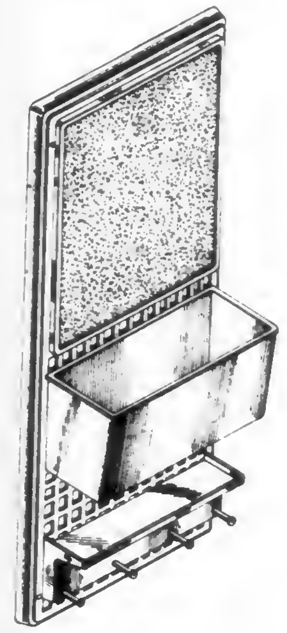
Lawrence Peabody, New York; Theodore W. Schriever, Syracuse, and Stephen K. Wenczl, Fayetteville, all of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Jul. 15, 1980, Ser. No. 169,059
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



267,608

COMBINED STORAGE UNIT AND DISPLAY BOARD THEREFOR

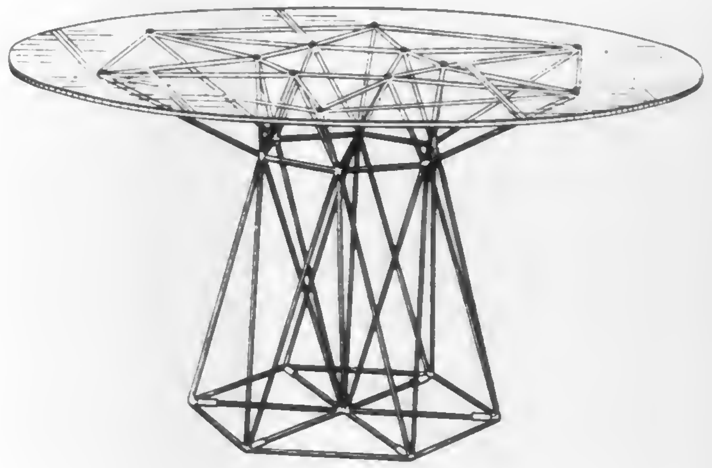
Anthony J. Brescia, Liverpool, and Spencer Rhoads, Baldwinsville, both of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Apr. 1, 1981, Ser. No. 249,851
Term of patent 14 years
Int. Cl. D6—*04;* D19—*07*
U.S. Cl. D6—131



267,609

TABLE

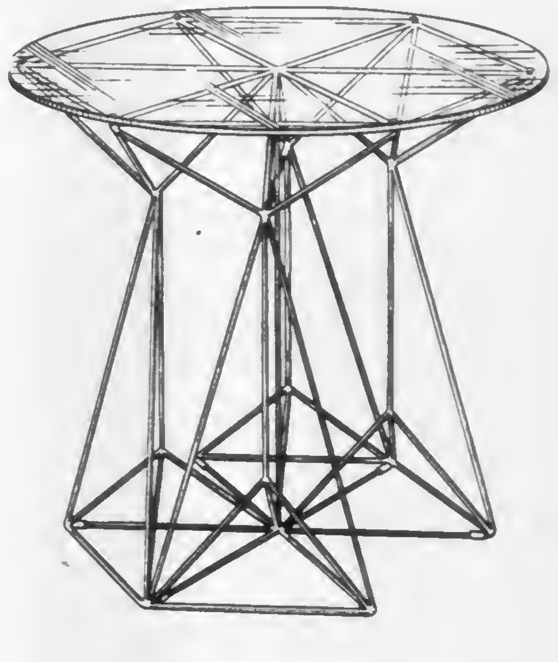
John Reistetter, and Bart Russo, both of Los Angeles, Calif., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jan. 23, 1981, Ser. No. 228,023
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



267,610

TABLE

John Reistetter, and Bart Russo, both of Los Angeles, Calif., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jan. 23, 1981, Ser. No. 228,025
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



267,611
NIGHT STAND OR SIMILAR ARTICLE

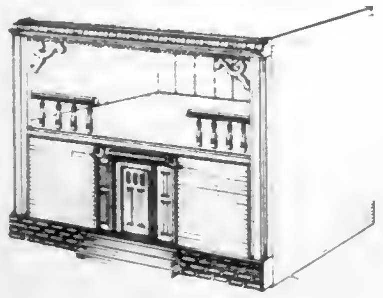
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,810

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—153



267,612
DESK OR SIMILAR ARTICLE

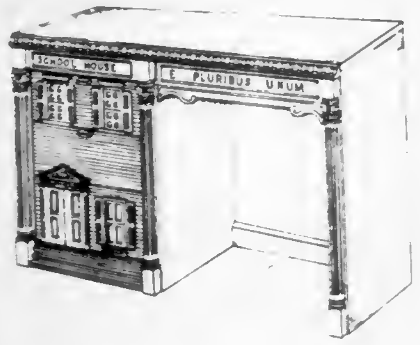
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,811

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—153



267,613
CABINET OR SIMILAR ARTICLE

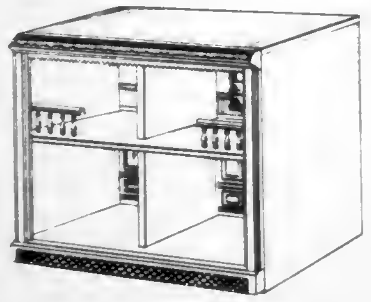
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,820

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—153



267,614
COMBINED CHEST OF DRAWERS AND OPEN DECK OR SIMILAR ARTICLE

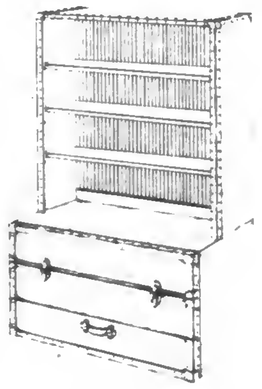
Richard G. Barr, Watchung, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 7, 1980, Ser. No. 205,031

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—153



267,615
DOOR CABINET OR SIMILAR ARTICLE

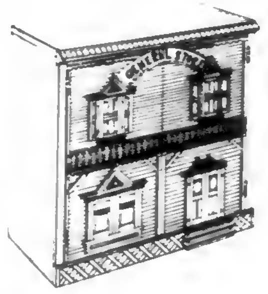
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,809

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—154



267,616
CASSETTE STORAGE CABINET

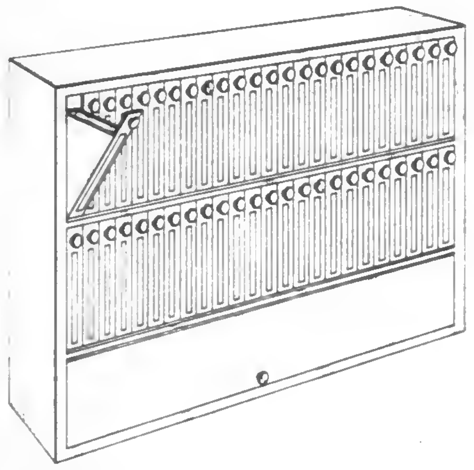
Robert L. Thompson, 5731 Antietam Dr., Winston-Salem, N.C. 27106

Filed Jun. 6, 1980, Ser. No. 157,048

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—170



267,617
COFFEE TABLE

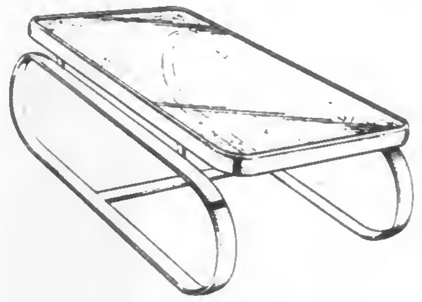
Larry G. Hickey, Costa Mesa, Calif., assignor to Tropitone Furniture Co., Inc., Sarasota, Fla.

Filed Dec. 23, 1980, Ser. No. 223,488

Term of patent 14 years

Int. Cl. D6—*03*

U.S. Cl. D6—175



267,618
DISPLAY HOLDER FOR BROCHURES AND THE LIKE

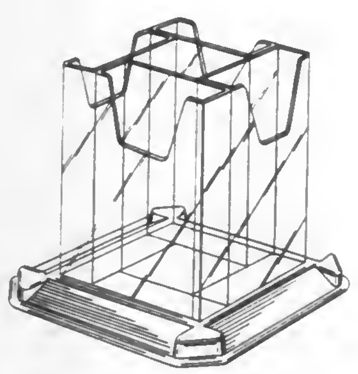
Richard M. Liptak, Parma Heights, Ohio, assignor to Integral Design, Inc., Cleveland, Ohio

Filed Apr. 7, 1980, Ser. No. 137,766

Term of patent 14 years

Int. Cl. D20—*02*

U.S. Cl. D6—184



267,619
DECAL OR TRANSFER SURFACE OR THE LIKE FOR CULINARY WARE

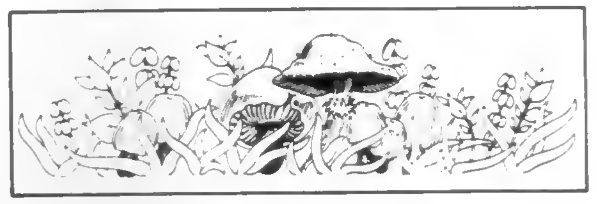
Marc G. Rubin, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 23, 1981, Ser. No. 236,873

Term of patent 14 years

Int. Cl. D07—*01*

U.S. Cl. D7—39



267,620
OVEN UTENSIL TOOL

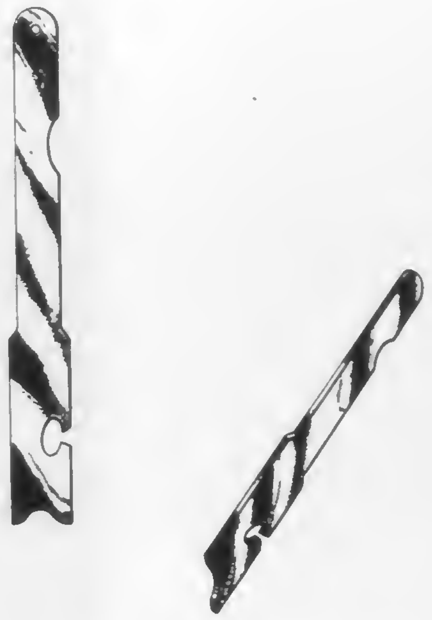
Kal Efron, 402A Metuchen Dr., Cranbury, N.J. 08512

Filed Mar. 23, 1981, Ser. No. 246,861

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D7—99



267,621
MICROWAVE OVEN

Toshio Harada, Nara, Japan; Rolf Feil, Wasserburg, and Roland Vetter, Giengen, both of Fed. Rep. of Germany, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

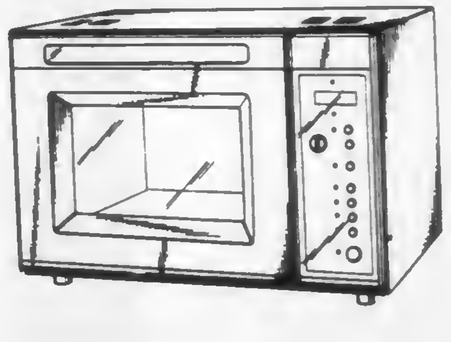
Filed Jun. 2, 1981, Ser. No. 269,090

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 5256

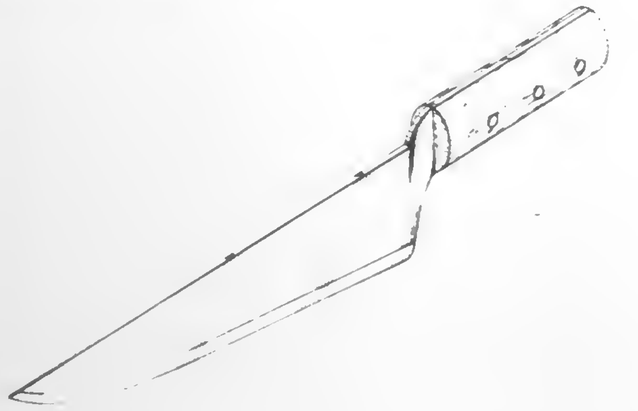
Term of patent 14 years

Int. Cl. D7—*02*

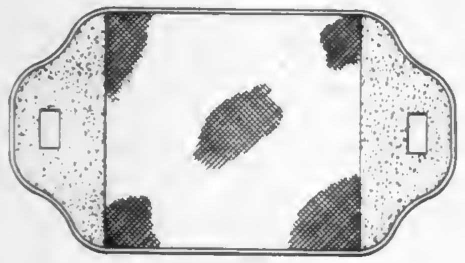
U.S. Cl. D7—351



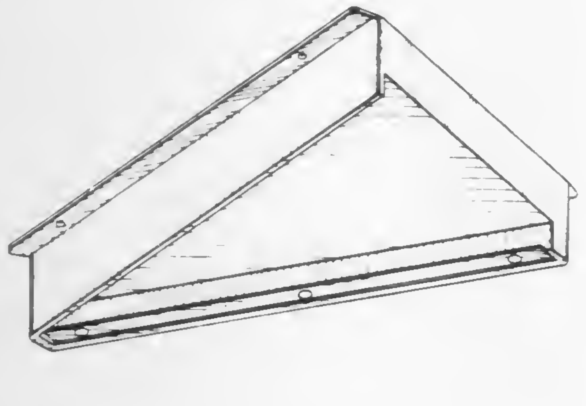
267,622
KNIFE
James E. Russell, 6501 Ranchester Dr., Houston, Tex. 77036
Filed Jan. 29, 1980, Ser. No. 116,559
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—151



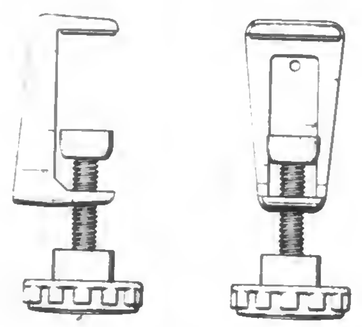
267,623
FIREWOOD CARRIER OR SIMILAR ARTICLE
Michael Giesz, Jr., 22494 Berry Dr., Rocky River, Ohio 44116
Filed Aug. 25, 1980, Ser. No. 180,873
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D23—138.5



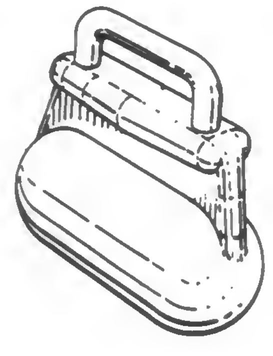
267,624
JAR LID REMOVER
Thomas M. Funka, Sr., 1238 Cass Rd., Maumee, Ohio 43537
Filed Feb. 5, 1981, Ser. No. 231,666
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—37



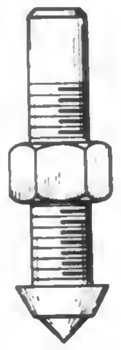
267,625
BRACKET FOR ATTACHING WINE BUCKET TO A TABLE
Ralph A. Dark, San Juan Capistrano, Calif., assignor to Winering Incorporated, Laguna Niguel, Calif.
Filed Jun. 5, 1980, Ser. No. 156,614
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—73



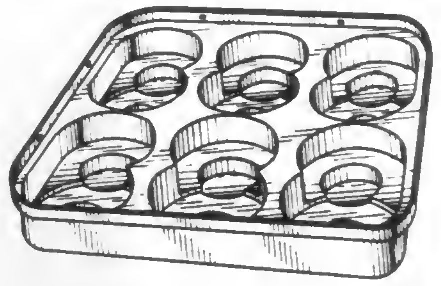
267,626
SLIDE FOR FITTING IN A TRACK IN A SPAR
Yung-Kay Fung, 80 Bonham Rd., B-3, 28th Floor, Hong Kong, Hong Kong
Filed Oct. 3, 1980, Ser. No. 194,182
Claims priority, application United Kingdom, Apr. 8, 1980, 80/994376
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



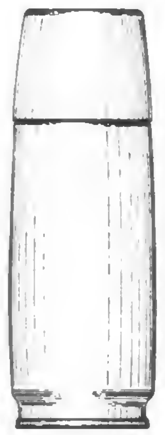
267,627
COMBINED BOLT AND NUT THEREFOR
Stefan K. Hultin, 503 E. Robinson St., Carson City, Nev. 89701
Filed Mar. 26, 1981, Ser. No. 247,892
Term of patent 3½ years
Int. Cl. D8—*08*
U.S. Cl. D8—387



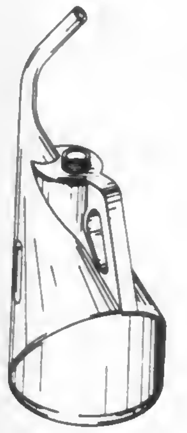
267,628
COMBINED PACKAGING AND SHIPPING CONTAINER
John S. Driscoll, 221 LaFox, Algonquin, Ill. 60102, and John J. Cushing, 6259 N. Artesian, Chicago, Ill. 60659
Filed Nov. 24, 1980, Ser. No. 209,650
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—345



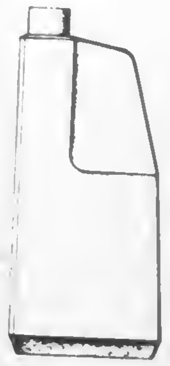
267,629
BOTTLE
Gary K. Hasegawa, Chicago, and Donald R. Richardson, Orland Park, both of Ill., assignors to The Continental Group, Inc., Stamford, Conn.
Filed Jun. 1, 1979, Ser. No. 44,602
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—353



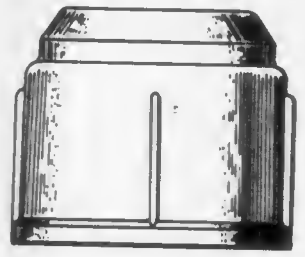
267,630
FUEL CONTAINER OR THE LIKE
George W. MacFarlane, 504 Richmond, Orlando, Fla. 32806
Filed Jan. 19, 1981, Ser. No. 226,112
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—374



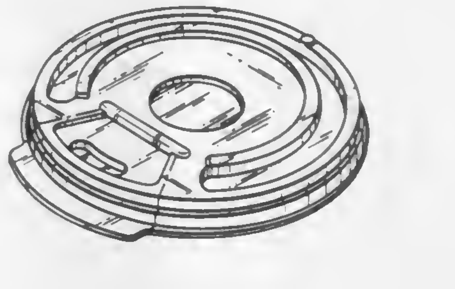
267,631
BOTTLE
Timothy J. Beechuk, Batavia, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 16, 1980, Ser. No. 140,647
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—376



267,632
PRESSURIZED CONTAINER PISTON
Floyd R. French, St. Louis, Mo., assignor to Clayton Corporation, St. Louis, Mo.
Filed Apr. 28, 1980, Ser. No. 144,528
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—434



267,633
DISPOSABLE TEAR-TAB LID
Hubert E. Christian, Phoenix, Ariz., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Oct. 14, 1980, Ser. No. 196,994
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—438

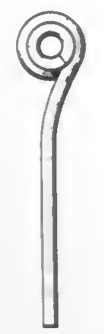


267,634

NECKLACE ORNAMENT OR SIMILAR ARTICLE

Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,129
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—79

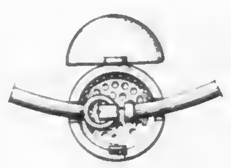


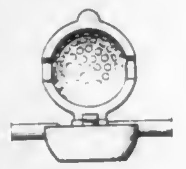
267,635

JEWELRY FINDING OR SIMILAR ARTICLE

Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,133
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—87



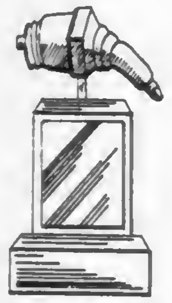


267,636

TROPHY

Charles H. Allgood, II, 3886 Healy Rd., Memphis, Tenn. 38111
Filed Oct. 20, 1980, Ser. No. 198,824
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—157

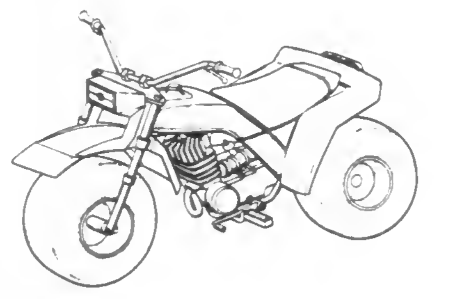


267,637

THREE-WHEELED MOTOR VEHICLE

Yasuhiro Ohba, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1980, Ser. No. 204,933
Claims priority, application Japan, May 14, 1980, 55-18611
Term of patent 14 years
Int. Cl. D12—*11*

U.S. Cl. D12—110

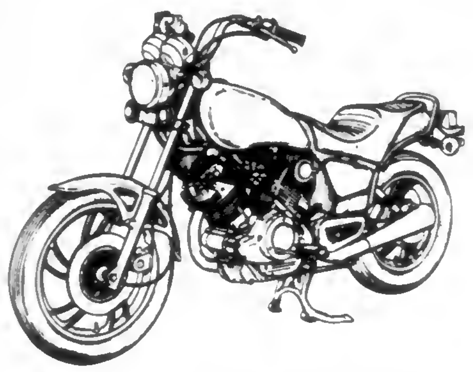


267,638

MOTORCYCLE

Shinji Iwasaki, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Feb. 6, 1981, Ser. No. 232,402
Claims priority, application Japan, Aug. 9, 1980, 55-32660
Term of patent 14 years
Int. Cl. D12—*11*

U.S. Cl. D12—110

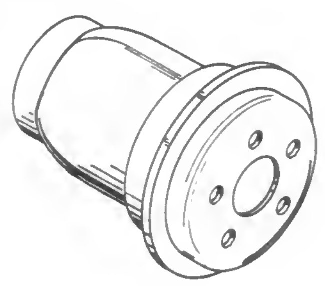


267,639

HUB FOR A VEHICLE WHEEL

Bert C. Moore, 1436 Laguna St., Santa Barbara, Calif. 93101
Filed Feb. 7, 1980, Ser. No. 119,623
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—207

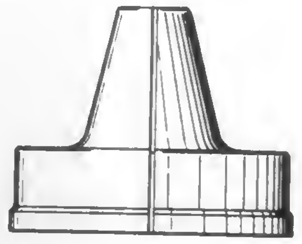


267,640

CONICAL SINGLE END CAP FOR USE WITH A CABLE SPLICE CASE

William J. Seim, Roseville, and Ronald C. Houts, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Nov. 17, 1980, Ser. No. 207,251
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—24

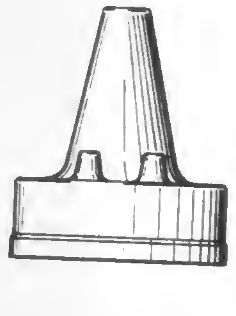


267,641

CONICAL SINGLE END CAP FOR USE WITH A CABLE SPLICE CASE

William J. Seim, Roseville, and Ronald C. Houts, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Nov. 17, 1980, Ser. No. 207,250
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—24

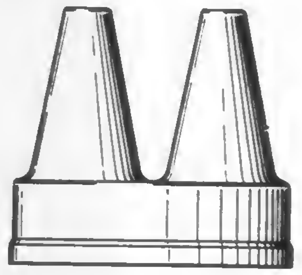


267,642

CONICAL DOUBLE END CAP FOR USE WITH A CABLE SPLICE CASE

William J. Seim, Roseville, and Ronald C. Houts, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Nov. 17, 1980, Ser. No. 207,255
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—24

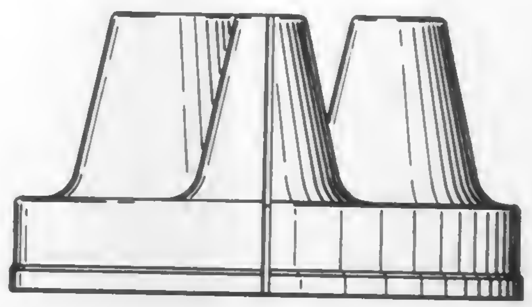


267,643

CONICAL TRIPLE END CAP FOR USE WITH A CABLE SPLICE CASE

William J. Seim, Roseville, and Ronald C. Houts, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Nov. 17, 1980, Ser. No. 207,419
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—24

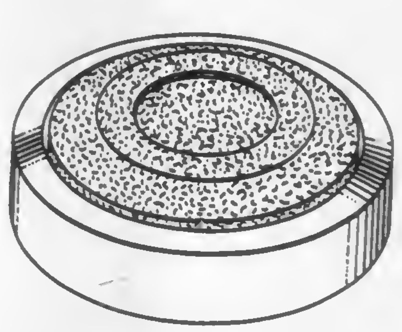


267,644

LOUDSPEAKER MAGNET HOUSING

Douglas J. Warner, Berkeley, Calif., assignor to James B. Lansing Sound, Inc., Chicago, Ill.
Division of Ser. No. 82,683, Oct. 9, 1979. This application Aug. 3, 1981, Ser. No. 289,314
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—37

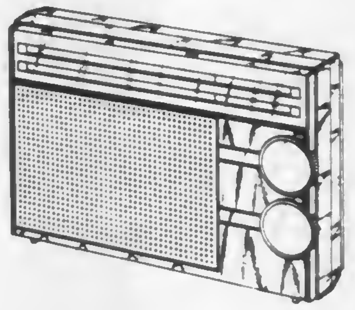


267,645

RADIO RECEIVER

Sies K. Brandsma, Eersel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 5, 1981, Ser. No. 240,652
Claims priority, application United Kingdom, Sep. 10, 1980, 996507
Term of patent 14 years
Int. Cl. D14—*03*

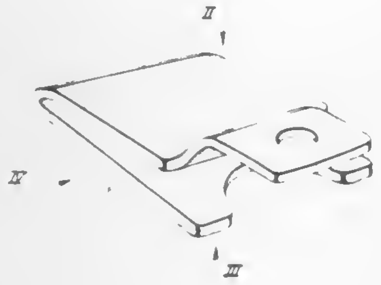
U.S. Cl. D14—71



267,646
FOLDED LEGER PLATE FOR HEADER COMB TEETH

James D. McCarron, 67 Boori St., Peak Hill, New South Wales 2869, Australia
Filed Jul. 23, 1980, Ser. No. 171,574
Claims priority, application Australia, Feb. 5, 1980, 80,167
Term of patent 14 years
Int. Cl. D15—*03*

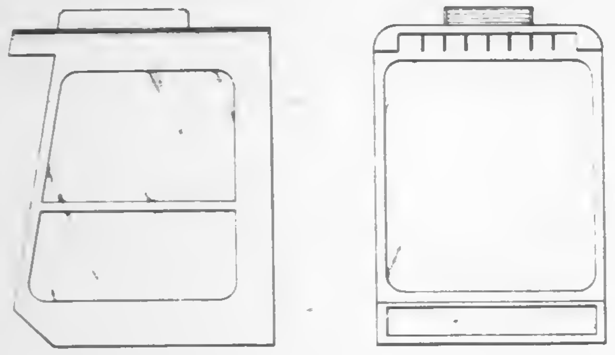
U.S. Cl. D15—28



267,647
CAB FOR EARTH-MOVING AND HANDLING MACHINERY OR THE LIKE

Daniel Baconet, Stains; Jacques Leguay, Trilport, and Jean-Yves Morizur, Compiegne, all of France, assignors to Poclain, France
Filed Sep. 19, 1980, Ser. No. 188,697
Claims priority, application France, Mar. 20, 1980, 800,897
Term of patent 14 years
Int. Cl. D15—*04*

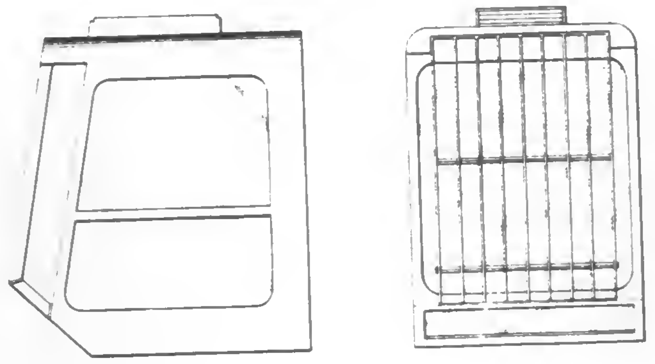
U.S. Cl. D15—30



267,648
CAB FOR EARTH-MOVING AND HANDLING MACHINERY OR THE LIKE

Daniel Baconet, Stains; Jacques Leguay, Trilport, and Jean-Yves Morizur, Compiegne, all of France, assignors to Poclain, France
Filed Sep. 19, 1980, Ser. No. 188,698
Claims priority, application France, Mar. 20, 1980, 800897
Term of patent 14 years
Int. Cl. D15—*04*

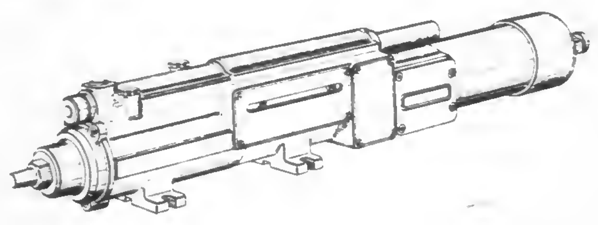
U.S. Cl. D15—30



267,649
DRILLING MACHINE

Noboru Hirose, and Yoshinari Mori, both of Nagoya, Japan, assignors to Brother Industries, Ltd., Nagoya, Japan
Filed Mar. 24, 1980, Ser. No. 133,417
Claims priority, application Japan, Oct. 1, 1979, 54-41310
Term of patent 14 years
Int. Cl. D15—*09*

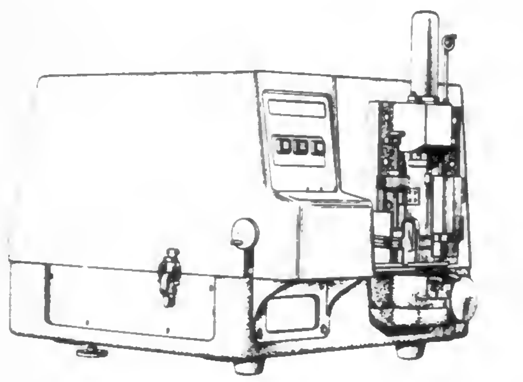
U.S. Cl. D15—132



267,650
TAG ATTACHING MACHINE

Michitoshi Watanabe, Nagoya, Japan, assignor to Tomoe Special Machine Co., Ltd., Nagoya, Japan
Filed Sep. 17, 1980, Ser. No. 187,885
Term of patent 14 years
Int. Cl. D15—*99*

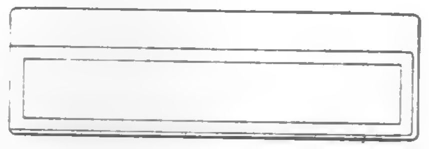
U.S. Cl. D15—145

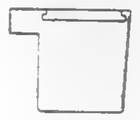


267,651
COOLANT RESERVOIR FOR ATTACHMENT TO MACHINE TOOLS

LeRoy C. Hodge, Plymouth, Minn., assignor to Twin City Mold Engineering, Inc., Hopkins, Minn.
Filed Feb. 28, 1979, Ser. No. 16,318
Term of patent 14 years
Int. Cl. D15—*09*

U.S. Cl. D15—150

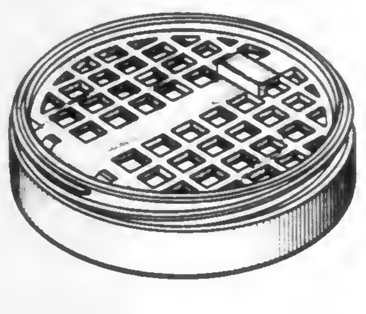




267,652
LENS CASE BASE

Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.
Filed Mar. 3, 1980, Ser. No. 126,446
Term of patent 14 years
Int. Cl. D16—*99*

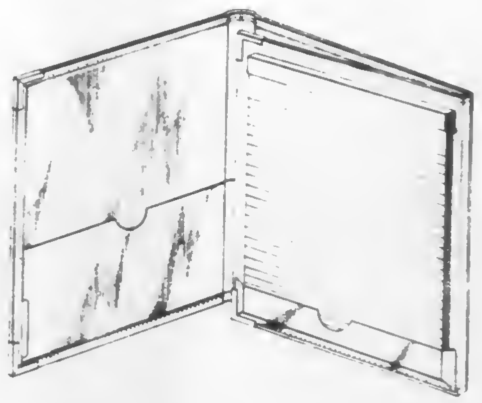
U.S. Cl. D16—129



267,653
COMBINED PORTFOLIO AND WRITING PAD

Ronald A. Miller, Plainwell, and Robert Korstanje, Richland, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Aug. 11, 1980, Ser. No. 177,303
Term of patent 14 years
Int. Cl. D19—*04*

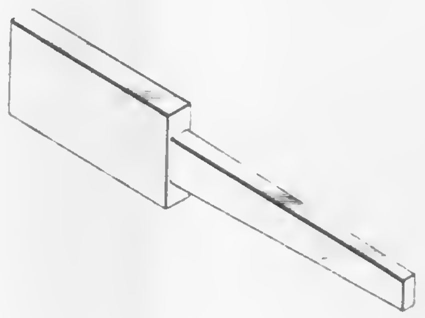
U.S. Cl. D19—26



267,654
PEN

Jack Nadel, Los Angeles, Calif., assignor to Measured Marketing Services, Inc., Santa Monica, Calif.
Filed Feb. 27, 1981, Ser. No. 239,012
Term of patent 14 years
Int. Cl. D19—*06*

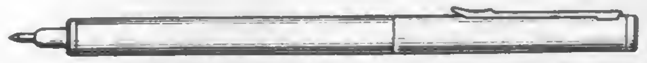
U.S. Cl. D19—43



267,655
WRITING INSTRUMENT

Franco E. Verona, Turin, Italy, assignor to Aurora S.p.A., Turin, Italy
Filed Aug. 1, 1980, Ser. No. 174,723
Claims priority, application Italy, Feb. 27, 1980, 52974/80[U]
Term of patent 7 years
Int. Cl. D19—*06*

U.S. Cl. D19—51

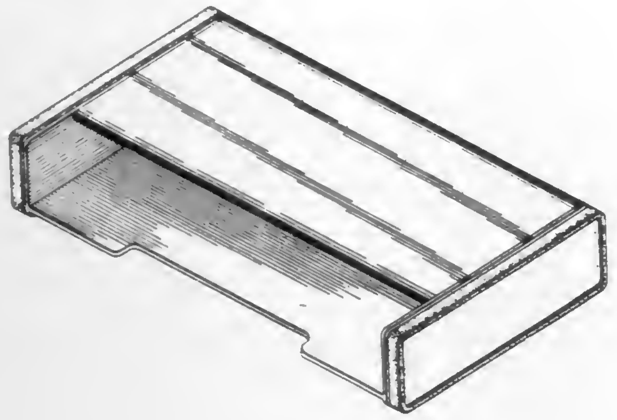


267,656
COMBINED LETTER TRAY AND FILE

James V. Vevirit, Williamsville; Francis V. Herr, Kenmore; Thomas B. Walklet, East Amherst, all of N.Y.; James G. Hansen, Winnetka, and Theodore J. Hasler, Chicago, both of Ill., assignors to McDonald Products Corporation, Buffalo, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,106
Term of patent 14 years
Int. Cl. D19—*02*

U.S. Cl. D19—92

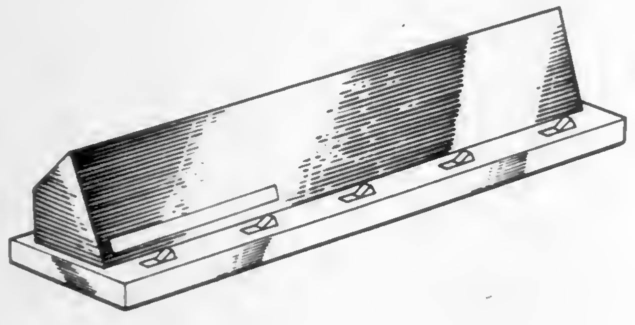


267,657
PERSONAL MESSAGE CENTER

Jacob Y. Wong, 4589 Camino Molinero, Santa Barbara, Calif. 93110

Filed Oct. 14, 1980, Ser. No. 196,822
Term of patent 14 years
Int. Cl. D20—*03*

U.S. Cl. D20—18

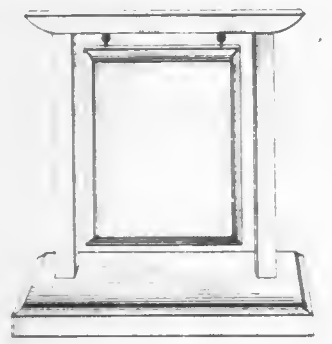


267,658
SUSPENDED SIGN BOARD

Alfred P. Samuels, Jr., 2211 Forister Ct., Norman, Okla. 73069

Filed Dec. 1, 1980, Ser. No. 211,558
Term of patent 14 years
Int. Cl. D20—*03*

U.S. Cl. D20—42

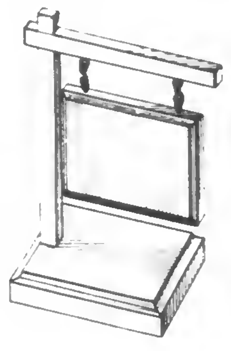


267,659
POST HUNG SIGN BOARD

Alfred P. Samuels, Jr., 2211 Forister Ct., Norman, Okla. 73069

Filed Dec. 1, 1980, Ser. No. 211,560
Term of patent 14 years
Int. Cl. D20—*03*

U.S. Cl. D20—42

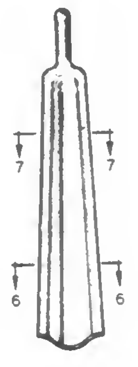


267,660
HOOP STICK

Edward E. Blosser, P.O. Box 201, Scio, Ohio 43988

Filed Jan. 9, 1981, Ser. No. 223,835
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—101

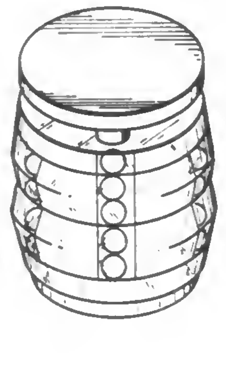


267,661
ROTARY PUZZLE

Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Jan. 8, 1981, Ser. No. 223,252
Claims priority, application Japan, Nov. 22, 1980, 55-048891
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—104

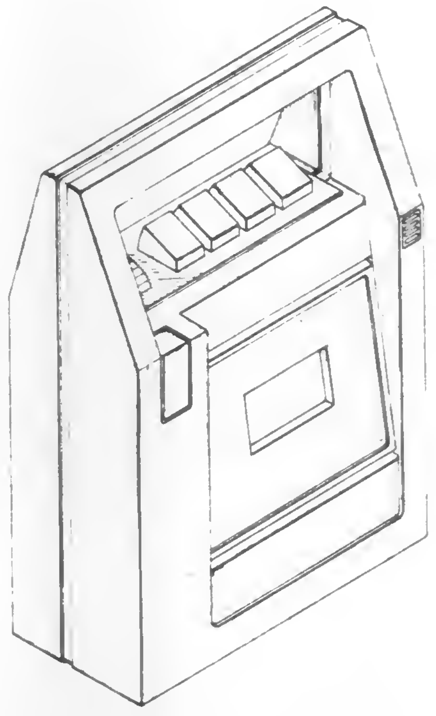


267,662
TOY TAPE RECORDER

Gregory F. Lambert, East Aurora, N.Y., and Ronald D. Irvin, Poway, Calif., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 24, 1980, Ser. No. 210,263
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—112

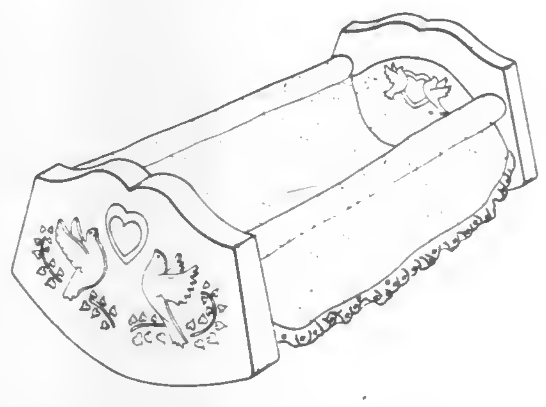


267,663
DOLL CRADLE

Elisabeth Krisel, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 12, 1981, Ser. No. 224,619
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—123

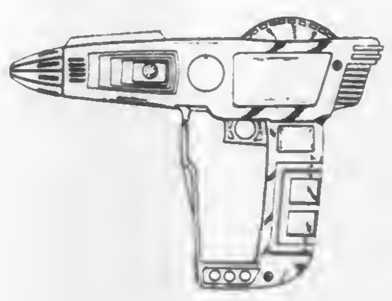


267,664
TOY HANDGUN

Kent Lin, 2nd Fl., 8-2, Yung-Chi Rd., Taipei, Taiwan

Filed Jan. 12, 1981, Ser. No. 224,613
Term of patent 7 years
Int. Cl. D21—*01*

U.S. Cl. D21—147

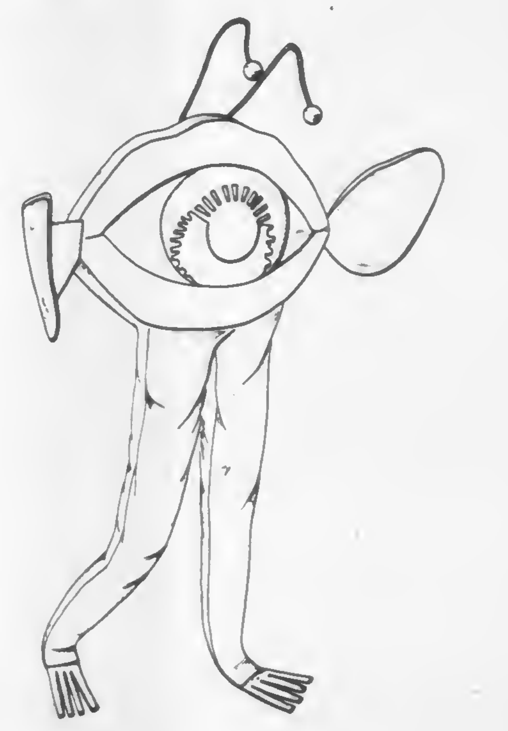


267,665
STUFFED DOLL

Edgar D. Robinson, 1320 N. 25th St., Richmond, Va. 23223

Filed Dec. 15, 1980, Ser. No. 216,582
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—148

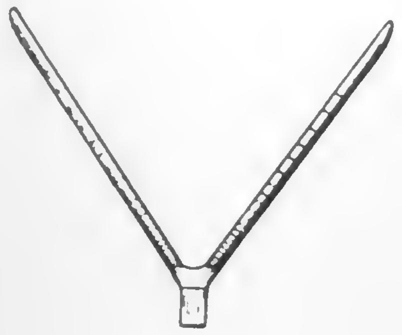


267,666

DUAL SURFBOARD FIN OR THE LIKE

Charles B. Vann, 235 Florida Blvd., Neptune Beach, Fla. 32233
Continuation-in-part of Ser. No. 881,883, Feb. 27, 1978. This application Feb. 25, 1980, Ser. No. 124,118
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—237

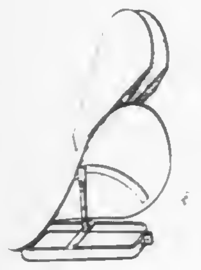


267,667

CHIMNEY COWL

Robert K. Flynn, Box 57, Fir Mountain, Saskatchewan, Canada
Filed Sep. 26, 1980, Ser. No. 190,936
Term of patent 14 years
Int. Cl. D23—*04*

U.S. Cl. D23—154

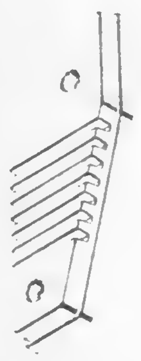


267,668

END PLATE FOR FLOOD LIGHT HOUSING

Viggo B. Rambusch, New York, N.Y., and Peter B. White, Montclair, N.J., assignors to Rambusch Decorating Company, New York, N.Y.
Filed Jan. 22, 1981, Ser. No. 227,520
Term of patent 14 years
Int. Cl. D26—*03*

U.S. Cl. D26—113

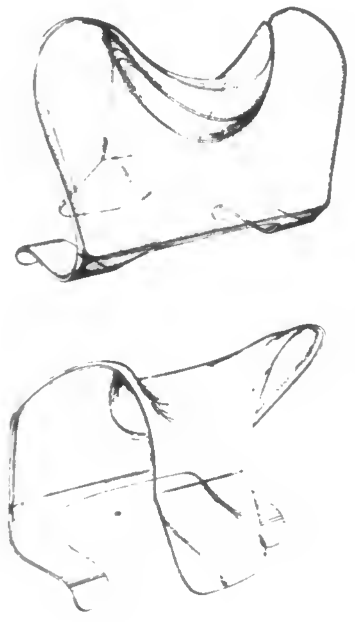


267,669

HAIR-WASHING TRAY

Denis C. Pounds, 22 The Ridgeway, Harold Wood, Essex, England
Filed Oct. 3, 1980, Ser. No. 193,735
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D28—20

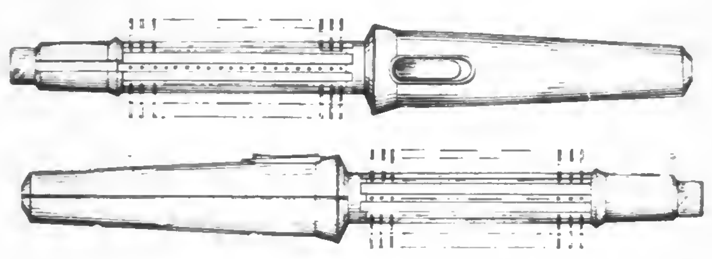


267,670

HAIR CURLING IRON

Dennis E. Radatz, La Grange Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jul. 9, 1980, Ser. No. 167,288
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D28—35

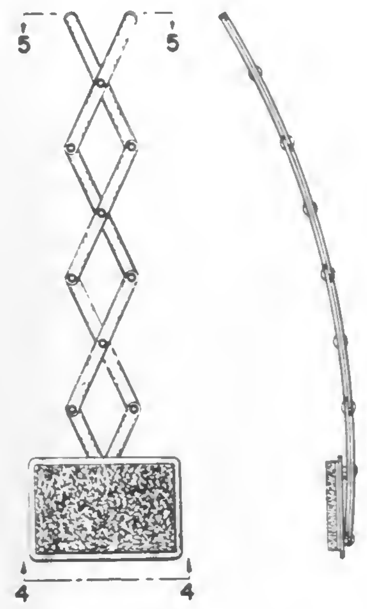


267,671

BACK SCRUBBER

George J. Kupchik, 6803 Archmere Ave., Brooklyn, Ohio 44144
Filed Jun. 26, 1981, Ser. No. 277,962
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D28—63

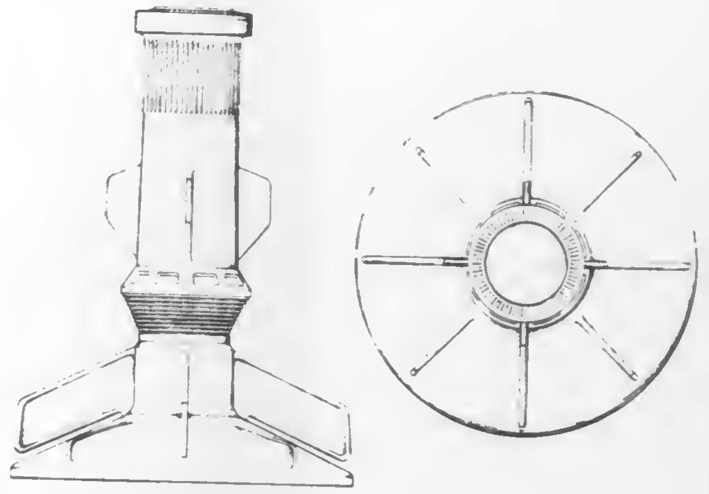


267,672

AGITATOR FOR AUTOMATIC WASHER OR SIMILAR ARTICLE

William Ohmann, and Edward E. Wiessner, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jun. 30, 1980, Ser. No. 164,052
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D32—26

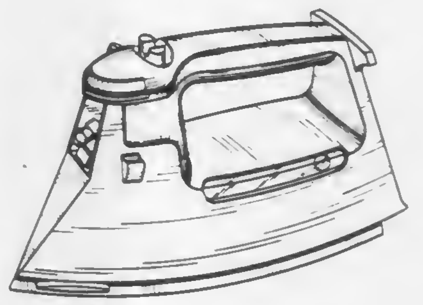


267,673

PRESSING IRON

Robert O. Ernest, Oak Park; Norman A. Steinkamp, La Grange Park, and Bernard B. Bluestein, Des Plaines, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Jul. 11, 1980, Ser. No. 167,634
Term of patent 14 years
Int. Cl. D7—*05*

U.S. Cl. D32—70



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TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JANUARY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- "A"-Company, Inc.: *See—*
  - Webb, David E.; and Andrews, Lawrence F., 4,369,033, Cl. 433-9.000.
- A. Nattermann & CIE GmbH: *See—*
  - Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,369,182, Cl. 424-199.000.
- A/S Niro Atomizer: *See—*
  - Solver, Peter E., 4,369,091, Cl. 159-4.0CC.
- A. W. Vincent Associates Inc.: *See—*
  - Vincent, Andrew W., 4,369,394, Cl. 315-200.00A.
- AB Volvo: *See—*
  - Ronbeck, Arne I., 4,368,882, Cl. 271-135.000.
- Abbott Laboratories: *See—*
  - Larkin, Mark E.; and Tripp, Edward S., 4,368,765, Cl. 150-1.000.
- Abel, William A.: *See—*
  - Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., 4,369,351, Cl. 219-284.000.
- Abildgaard, William H.; and Groswith, Charles T., III, to Velo-Bind, Inc. Bookbinding strips. 4,369,013, Cl. 412-38.000.
- Abo, Toshimi; and Kanegae, Hidetoshi, to Nissan Motor Co., Ltd. Two-shaft gas turbine engine. 4,368,616, Cl. 60-39.14R.
- Abrasives International N.V.: *See—*
  - Bruschek, Dieter K.; and Levering, Richard M., 4,369,046, Cl. 51-298.000.
- ACF Industries, Incorporated: *See—*
  - Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., 4,368,927, Cl. 303-18.000.
  - Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., 4,368,928, Cl. 303-18.000.
- Achtsnit, Hans-Dieter: *See—*
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- A'Costa, Anthony. Hand gun and kit therefor. 4,368,589, Cl. 42-77.000.
- Adachi, Yasaburo; Ishii, Kanji; Yuchi, Sadataka; and Furuyama, Akira, to Hochiki Kabushiki Kaisha. Fire detector and fire alarm system having circuitry to detect removal of one or more detectors at a signal station. 4,369,435, Cl. 340-506.000.
- Adamec, Alfred; and Leder, Roland. Mould for the horizontal continuous casting of metals. 4,368,774, Cl. 164-418.000.
- Adams Rite Manufacturing Co.: *See—*
  - Hirschbein, Aaron M., 4,368,905, Cl. 292-5.000.
- Adams, William. Table correlating device for scuba divers. 4,369,358, Cl. 235-79.500.
- Adelman, Robert L.; and Turner, John J. P., to Du Pont de Nemours, E. I., and Company. Process for preparing indigo-dyeable polyester fibers. 4,369,213, Cl. 427-389.900.
- Adelson, Alexander M.: *See—*
  - Swartz, Jerome; Barkan, Edward; Bravman, Richard; Delfine, Frank; Harrison, Shelley A.; and Adelson, Alexander M., 4,369,361, Cl. 235-470.000.
- Advancemed: *See—*
  - Parsons, William R.; Bible, Christopher T.; and Kannenberg, Donald P., 4,369,496, Cl. 364-417.000.
- Aero Plastics of K.C., Inc.: *See—*
  - Wiens, Lewis H.; Saylor, James R.; and Blume, Orville E., 4,368,674, Cl. 105-377.000.
- Aerpat A.G.: *See—*
  - Sheffield, David J.; and Saxon, John W. C., 4,368,838, Cl. 227-55.000.
- Agfa-Gevaert AG: *See—*
  - Wilsch, Herbert; and Zanner, Johann, 4,368,960, Cl. 352-92.000.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Credner, Hans-Heinrich; Lassig, Wolfgang; and Schranz, Karl-Wilhelm, 4,369,243, Cl. 430-223.000.
  - Huber, Leonhard; Hofler, Adolf; and Escales, Eberhard, 4,368,968, Cl. 354-133.000.
  - Ranz, Erwin; Schutz, Heinz-Dieter; and Lohmann, Joachim W., 4,369,248, Cl. 430-376.000.
- Agnello, Anthony, to Eventide Clockworks, Inc. Method and apparatus for producing two complementary pitch signals without glitch. 4,369,336, Cl. 179-1.00J.
- Agri Plastics International Pty. Limited: *See—*
  - Filmer, David B., 4,368,735, Cl. 128-330.000.
- Ahmed, Myrna M.: *See—*
  - Ahmed, Nazeer; and Ahmed, Myrna M., 4,369,083, Cl. 156-307.300.
- Ahmed, Nazeer; and Ahmed, Myrna M. Method of forming composite laminates. 4,369,083, Cl. 156-307.300.
- Ahuja, Omprakash G., to TII Industries, Inc. Customer line test termination device. 4,369,341, Cl. 179-175.20R.
- Aign, Volker; Wolf, Karlheinz; Hornle, Reinhold; Pusch, Norbert; and Walz, Klaus, to Bayer Aktiengesellschaft. Aqueous dyestuff or pigment dispersions. 4,369,070, Cl. 106-308.00N.
- Aihara, Toshiharu: *See—*
  - Tahara, Iwao; Aihara, Toshiharu; Takahashi, Naoki; Matsuo, Yushin; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, legal representative, 4,368,988, Cl. 368-63.000.
- Aimono, Yuji: *See—*
  - Koyama, Tohru; Narahara, Toshikazu; and Aimono, Yuji, 4,369,288, Cl. 525-48.000.
- Air Products and Chemicals, Inc.: *See—*
  - Moseley, Fred; and Dyer, Paul N., 4,369,128, Cl. 252-429.00R.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Akagi, Motonobu, 4,368,759, Cl. 137-625.480.
  - Kodama, Hisashi, 4,368,699, Cl. 123-90.580.
  - Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, 4,368,653, Cl. 74-868.000.
  - Ohmi, Atsushi; and Ochiai, Chiaki, 4,368,661, Cl. 91-376.00R.
- Akagi, Motonobu, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electromagnetic flow control valve unit. 4,368,759, Cl. 137-625.480.
- Akagiri, Kenzo, to Sony Corporation. Gain control circuit for noise reduction system. 4,369,509, Cl. 369-174.000.
- Akiyama, Yoshinori: *See—*
  - Inasawa, Hideho; and Akiyama, Yoshinori, 4,368,557, Cl. 16-263.000.
- Akzo N.V.: *See—*
  - Lammers, Henri T., 4,368,615, Cl. 57-251.000.
  - Schafer, Hans G.; Vogts, Axel; Poppel, Gunter; and Schurmann, Horst, 4,369,042, Cl. 44-15.00R.
- Akzona Incorporated: *See—*
  - Mathes, Nikolaus; and Wechs, Friedbert, 4,369,156, Cl. 264-147.000.
  - Schilo, Diederich; Achtsnit, Hans-Dieter; and Klug, Gerhard, 4,369,155, Cl. 264-103.000.
- Albany International Corp.: *See—*
  - Curry, Thomas H.; and Luciano, William A., 4,369,081, Cl. 156-148.000.
  - Mazere, Michel, 4,369,218, Cl. 428-91.000.
- Albee, William H. Coacting bag rollers. 4,368,816, Cl. 198-624.000.
- Alberto-Culver Company: *See—*
  - Greb, Gregory A.; Spitza, Raymond W.; and Moe, Robert R., 4,368,870, Cl. 249-102.000.
- Alberts, Heinrich: *See—*
  - Podszun, Wolfgang; Suling, Carlhans; and Alberts, Heinrich, 4,369,296, Cl. 526-209.000.
  - Wolfers, Heinrich; Rudolph, Hans; and Alberts, Heinrich, 4,369,329, Cl. 556-442.000.
- Alcon Laboratories, Inc.: *See—*
  - Helixon, Michael L., 4,369,355, Cl. 219-521.000.
- Aldred, Phillip J. E.; Taylor, Peter J.; and Kenzie, Bryan W. Apparatus for detecting an aqueous liquid in bottles and containers. 4,368,980, Cl. 356-240.000.
- Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research and Engineering Co. Coal liquefaction process. 4,369,106, Cl. 208-10.000.
- Alexander, Granison T., Jr., to Chromalloy American Corporation. Oil well bailer apparatus. 4,368,909, Cl. 294-69.00R.
- Alexeev, Gennady P.: *See—*
  - Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.
- Allen, Larry: *See—*
  - Allen, Larry D., 4,368,711, Cl. 123-522.000.
- Allen, Larry D., to Allen, Larry; Harrison, Robert; Harbour, Harry; Hisel, Gary; Kraft, Thomas; Johnson, Ansell; and Rose, Harry. Apparatus and a method for operating an internal combustion engine. 4,368,711, Cl. 123-522.000.
- Allen-Martin Electronics Limited: *See—*
  - Dytch, Anthony, 4,369,377, Cl. 307-117.000.
- Alliance Machine Company, The: *See—*
  - Ottle, John C., 4,368,792, Cl. 177-147.000.
- Allied Corporation: *See—*
  - Lentz, James M., 4,368,563, Cl. 24-230.00A.
- Alliot, Patrick, to Framatome. Distributor for the admission of a fluid to be vaporized into a steam generator. 4,368,693, Cl. 122-491.000.
- Alps Electric Co. Ltd.: *See—*
  - Aoki, Kazuharu; and Igarashi, Sadao, 4,369,414, Cl. 333-81.00R.
  - Miyamoto, Takahiro, 4,369,424, Cl. 338-161.000.
  - Shirakawa, Takashi, 4,369,483, Cl. 361-291.000.
  - Sugiura, Shigekata, 4,368,940, Cl. 339-177.00E.
  - Suzuki, Yoshio, 4,369,342, Cl. 200-5.00E.

Altschuler, Lili W., to Du Pont de Nemours, E. I., and Company. High solids can coating composition containing epoxy, acrylic and aminoplast resins. 4,369,283, Cl. 524-451.000.
AluTeam Sport and Freizeit GmbH: *See—*
    Neisius, Vinzenz, 4,368,891, Cl. 273-400.000.
Aluteam Sport- und Freizeit GmbH: *See—*
    Weiss, Juergen; and Neisius, Vinzenz, 4,368,875, Cl. 256-59.000.
Amendola, Steven C. Separation of super-acid in a coal liquification process. 4,369,107, Cl. 208-10.000.
American Cyanamid Company: *See—*
    Conrow, Ransom B.; and Bernstein, Seymour, 4,369,191, Cl. 424-319.000.
    Johnson, Douglas L., 4,369,258, Cl. 521-107.000.
    Thomas, Walter M., 4,369,274, Cl. 524-99.000.
    Woodruff, Keith; Johnson, Donald; Hill, John H.; and Donovan, Barbara A., 4,369,158, Cl. 264-268.000.
American District Telegraph Company: *See—*
    Lautzenheiser, William J., 4,369,436, Cl. 340-506.000.
American Hospital Supply Corporation: *See—*
    White, Fred K., 4,369,117, Cl. 210-782.000.
American Standard Inc.: *See—*
    Grundy, Reed H., 4,368,862, Cl. 246-28.00R.
    Housman, Richard J.; and Kanjo, Wajih, 4,368,648, Cl. 74-505.000.
Amoco Chemicals Corporation: *See—*
    MacArthur, Dennis C., 4,369,087, Cl. 156-435.000.
Amoroso, Michael A., Jr.: *See—*
    Erichsen, Herman W.; and Amoroso, Michael A., Jr., 4,368,575, Cl. 29-610.0SG.
Anastassiou, Dimitris; and Mitchell, Joan L., to International Business Machines Corporation. Gray scale image data compression with code words a function of image history. 4,369,463, Cl. 358-135.000.
Anchukov, Anatoly N.: *See—*
    Lurie, Alexandr N.; Anchukov, Anatoly N.; Dukshtau, Alexandr A.; Schegolev, Gleb S.; Yablonsky, Gennady A.; and Steklov, Mikhail L., 4,369,386, Cl. 310-54.000.
Andersen, David P.; and Chicoine, Eugene P., to Sperry Corporation. Voiced alerting system. 4,369,425, Cl. 340-26.000.
Anderson, Donald J., to Chevron Research Company. Method of recovering viscous petroleum employing heated subsurface perforated casing containing a movable diverter. 4,368,781, Cl. 166-252.000.
Anderson, Francis J. Vibration sensing device. 4,368,637, Cl. 73-652.000.
Ando, Shizuo: *See—*
    Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,369,474, Cl. 360-96.100.
Andrews, Lawrence F.: *See—*
    Webb, David E.; and Andrews, Lawrence F., 4,369,033, Cl. 433-9.000.
Anno, Gousuke; Saitou, Tamio; and Fukumoto, Yoshikatsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal recording head. 4,369,452, Cl. 346-76.0PH.
Aoki, Kazuharu; and Igarashi, Sadao, to Alps Electric Co. Ltd. High-frequency input circuit for two inputs. 4,369,414, Cl. 333-81.00R.
Aono, Toshio. Serrated blade for a mowing machine. 4,368,610, Cl. 56-295.000.
Applied Elastomerics, Incorporated: *See—*
    Chen, John Y., 4,369,284, Cl. 524-476.000.
Arai, Hajime: *See—*
    Numazawa, Akio; Arai, Hajime; and Haga, Shoji, 4,368,650, Cl. 74-740.000.
Arai, Makoto: *See—*
    Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, 4,369,519, Cl. 455-60.000.
Arai, Yoshi: *See—*
    Miyahara, Tesshu; Arai, Yoshi; and Kimura, Kazuo, 4,369,076, Cl. 148-105.000.
Aratani, Matsuhiko: *See—*
    Hashimoto, Masashi; Aratani, Matsuhiko; Hagiwara, Daijiro; Sawada, Kozo; and Onami, Tetsuo, 4,369,312, Cl. 544-16.000.
Arbed S.A.: *See—*
    Artois, Fernand; Linden, Raymond; and Feitler, Alberg, 4,369,066, Cl. 106-98.000.
    Baumert, Jean, 4,368,877, Cl. 266-99.000.
    Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, 4,369,060, Cl. 75-60.000.
Archer, John R., to RCA Corporation. Deflection yoke incorporating a permeable corrector. 4,369,418, Cl. 335-211.000.
Arimilli, Padmanabham A.; and Aspen, Frank E., to Minnesota Mining and Manufacturing Company. Non-porous and porous Al_2O_3 barrier zones in layered electrophotographic device. 4,369,242, Cl. 430-58.000.
Arisawa, Masatoshi: *See—*
    Deguchi, Katsuhiko; Arisawa, Masatoshi; Ishida, Atsuo; and Ooshima, Katsuaki, 4,369,134, Cl. 252-526.000.
Arlt, Klaus-Peter; Grigo, Ulrich; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Polyene/α-olefin copolymers. 4,369,291, Cl. 525-247.000.
Armstrong, William A.: *See—*
    Sharp, William J.; Beam, Harold D.; and Armstrong, William A., 4,368,852, Cl. 239-695.000.
Arndt, George I.: *See—*
    Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., 4,368,712, Cl. 123-523.000.
Arscott, Hedley C.; Nebrensky, Jiri R.; and Wilson, Christopher J., to British Petroleum Company Limited, The. Gas separation from crude oil. 4,369,047, Cl. 55-38.000.
Arsovic, Hans M., to Societe Agricole et Fonciere S.A.F. S.A. Process for treating manures. 4,369,194, Cl. 426-59.000.
Arter, Nelson K.; Avritt, Michael D.; Dodt, William C.; and Herman, Marion J., to International Business Machines Corporation. Document ejector apparatus and method useful for copiers. 4,368,977, Cl. 355-75.000.
Artois, Fernand; Linden, Raymond; and Feitler, Alberg, to Arbed S.A. Process of production of colloidal mortar and product according to this process. 4,369,066, Cl. 106-98.000.
Aruga, Shiro: *See—*
    Nakano, Kazuaki; Fukuda, Masaaki; Mito, Kyuichi; Shinkai, Mikio; and Aruga, Shiro, 4,369,092, Cl. 159-47.100.
Asahi-Dow Limited: *See—*
    Hoki, Tsuneo; and Hisamatsu, Minoru, 4,369,257, Cl. 521-79.000.
    Kasahara, Hideo; Fukuda, Kunio; and Mizutani, Yukihisa, 4,369,278, Cl. 524-147.000.
Asahi Glass Company, Ltd.: *See—*
    Fujimori, Yoshitugu; Kumata, Masataka; and Mizuhashi, Mamoru, 4,368,945, Cl. 350-1.700.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
    Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, 4,369,299, Cl. 526-329.700.
    Mizuno, Masayoshi; and Tsuchiya, Hiroyuki, 4,369,249, Cl. 430-537.000.
    Nezu, Satoshi; Goto, Keijin; and Yano, Seisuke, 4,369,097, Cl. 203-100.000.
Asano, Noriyuki: *See—*
    Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,368,978, Cl. 356-1.000.
Aschwanden, Werner: *See—*
    Kyburz, Emilio; and Aschwanden, Werner, 4,369,139, Cl. 548-539.000.
Ash, Stephen R., to Purdue Research Foundation. Implantable catheter. 4,368,737, Cl. 604-175.000.
Ashby, Bruce A., to General Electric Co. Ultraviolet light absorbing agents and compositions and articles containing same. 4,369,228, Cl. 428-412.000.
Aslund, Christer, to NYBY Uddeholm AB. Process and an apparatus for converting lump-size material of titanium metal or its alloys into powder-form material and pressings. 4,369,078, Cl. 148-126.000.
Aspen, Frank E.: *See—*
    Arimilli, Padmanabham A.; and Aspen, Frank E., 4,369,242, Cl. 430-58.000.
Astapchik, Stanislav A.: *See—*
    Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.
Atlantic Richfield Company: *See—*
    Motier, John F., 4,369,141, Cl. 260-453.00P.
    Younes, Usama E., 4,369,260, Cl. 521-189.000.
Avery International Corporation: *See—*
    Van Arnam, Donald E.; McFeaters, Earl W.; and Baggarley, Richard R., 4,368,982, Cl. 356-445.000.
Avraamov, Evginij: *See—*
    Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.
Avritt, Michael D.: *See—*
    Arter, Nelson K.; Avritt, Michael D.; Dodt, William C.; and Herman, Marion J., 4,368,977, Cl. 355-75.000.
Ayerst, McKenna & Harrison Inc.: *See—*
    Sestanj, Kazimir, 4,369,188, Cl. 424-274.000.
Azuma, Ichiro: *See—*
    Yamamura, Yuichi; Azuma, Ichiro; and Kobayashi, Shigeru, 4,369,178, Cl. 424-177.000.
Baba, Noboru: *See—*
    Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, 4,369,519, Cl. 455-60.000.
Babb, Larry F., to Emerson Electric Co. Hand tool for cutting plastic pipe or the like. 4,368,577, Cl. 30-92.000.
Bachem, Norbert: *See—*
    Heydenreich, Frieder; Wulff, Claus; Klein, Lothar; Meissner, Hans-Jurgen; and Bachem, Norbert, 4,369,293, Cl. 525-333.500.
Baggarley, Richard R.: *See—*
    Van Arnam, Donald E.; McFeaters, Earl W.; and Baggarley, Richard R., 4,368,982, Cl. 356-445.000.
Bahr, Dietrich J.; and Briska, Marian, to International Business Machines Corporation. Lacquer for record carriers, and process for its production. 4,369,271, Cl. 524-40.000.
Bailet, Jean-Claude; and De Bella, Rocco, to Siamp Cedap Reunies. Device for tightening or blocking of an object on a rod. 4,369,012, Cl. 411-437.000.
Bailey, Joe B., Jr.: *See—*
    Lindler, James M.; and Bailey, Joe B., Jr., 4,368,749, Cl. 135-20.00R.
Bailey, Victor S., to Grundy (Teddington) Limited. Beer keg tapping assembly. 4,368,831, Cl. 222-400.700.

Baird, William C., Jr.: *See—*
    Mauldin, Charles H.; and Baird, William C., Jr., 4,369,129, Cl. 252-439.000.
Bakeman, Paul E., Jr.; Fortino, Andres G.; Geipel, Henry J., Jr.; Kasold, Jeffrey P.; and Quinn, Robert M., to International Business Machines Corp. Method for forming IGFET devices having improved drain voltage characteristics. 4,369,072, Cl. 148-1.500.
Baker, David S. Shot making apparatus. 4,369,023, Cl. 425-10.000.
Baker, Paul V.: *See—*
    Orr, Thomas M.; and Baker, Paul V., 4,368,789, Cl. 175-418.000.
Bakunin, Vladimir A.: *See—*
    Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Kozlov, Valery A.; Sukhushin, Anatoly V.; Bakunin, Vladimir A.; and Bondar, Mikhall J., 4,369,002, Cl. 405-184.000.
Balle, Terrill J.: *See—*
    Flygare, Willis H.; and Balle, Terrill J., 4,369,404, Cl. 324-58.50C.
Ban, Itsuki; Shiraki, Manabu; Okada, Hideo; and Egami, Kazuhito. Direct current motor with non-superposed armature windings. 4,369,388, Cl. 310-154.000.
Banas, Conrad M.: *See—*
    Stetson, Karl A.; and Banas, Conrad M., 4,369,348, Cl. 219-121.0LP.
Banko, Anton, to Surgical Design Corp. Surgical instrument. 4,368,734, Cl. 128-305.000.
Banner, Charles E.: *See—*
    Kramer, Joseph O.; Young, Otto V.; Banner, Charles E.; and Schuster, John D., 4,368,822, Cl. 211-41.000.
Bannister, Raymond L., to Pitney Bowes Inc. Apparatus for franking mail. 4,368,814, Cl. 194-1.00A.
Barbe, Karl-Heinz; and Wamser, Kurt, to Hauni-Werke Korber & Co. KG. Method and machine for treating uniting bands in filter tipping machines or the like. 4,368,743, Cl. 131-88.000.
Barkan, Edward: *See—*
    Swartz, Jerome; Barkan, Edward; Bravman, Richard; Delfine, Frank; Harrison, Shelley A.; and Adelson, Alexander M., 4,369,361, Cl. 235-470.000.
Barke, Martin B.; and Luebke, Rebecca A., to Cargill, Incorporated. Seed having high opacity coatings. 4,368,591, Cl. 47-57.600.
Barristo, Ltd.: *See—*
    Van Roeyen, Harry P., 4,369,098, Cl. 204-16.000.
Barta, Istvan: *See—*
    Jarai, Miklos; Piukovich, Sandor; Istvan, Sandor; Gado, Istvan; Szell, Valeria; and Barta, Istvan, 4,369,251, Cl. 435-80.000.
Bartholomew, Roy E., to Bendix Corporation, The. Brake proportioning system. 4,368,926, Cl. 303-7.000.
Baschung, Michael, to Gretag Aktiengesellschaft. Apparatus for guiding finite film strip portions during their conveyance. 4,368,969, Cl. 354-339.000.
Basel, Richard M.; and Gould, Wilbur A., to Ohio Agricultural Research & Development Center. Bulk preservative storage of horticultural crops and pigments produced from green horticultural crops. 4,369,197, Cl. 426-270.000.
BASF Aktiengesellschaft: *See—*
    Graser, Fritz; and Wickenhaeuser, Gerhard, 4,368,582, Cl. 34-15.000.
    Hahn, Klaus; Rath, Hans P.; Krapf, Heinz; De Grave, Isidoor; and Walter, Manfred, 4,369,227, Cl. 428-407.000.
    Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.
Bathgate, Raymond J., to FBC Limted. Chemical blowing agent. 4,369,126, Cl. 252-350.000.
Batleman, Harvey L.: *See—*
    Robeson, Lloyd M.; Claus, William D., Jr.; and Batleman, Harvey L., 4,369,136, Cl. 524-371.000.
Battaglia, Eugene: *See—*
    Kober, Marvin; and Battaglia, Eugene, 4,368,654, Cl. 81-9.50R.
Bauer, Gerald L., to Sterling Drug, Inc. Mixing waste with oxygen in a wet oxidation process. 4,369,115, Cl. 210-761.000.
Bauer, Ludwig, to Daimler-Benz Aktiengesellschaft. Locking cap for an oil gauge pipe. 4,368,579, Cl. 33-176.70R.
Bauermeister, Fred H. Solar-powered grain dryer and process for drying grain. 4,368,583, Cl. 34-93.000.
Bauler, Claude: *See—*
    Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, 4,369,060, Cl. 75-60.000.
Baumann, John A.; Cates, Raymond H.; and Picone, Charles E., to PPG Industries, Inc. Aqueous treating composition for glass fiber strands used to produce mats for thermoplastic polymers. 4,369,264, Cl. 523-209.000.
Baumert, Dietrich: *See—*
    Nuesslein, Ludwig; Baumert, Dietrich; Hoyer, Georg-Alexander; and Pieroh, Ernst A., 4,369,185, Cl. 424-270.000.
Baumert, Jean, to Arbed S.A. System for monitoring slag thickness and consistency in refining crucible. 4,368,877, Cl. 266-99.000.
Baxter Travenol Laboratories, Inc.: *See—*
    Dossin, Luc M., 4,368,729, Cl. 128-214.00D.
Bayer Aktiengesellschaft: *See—*
    Aign, Volker; Wolf, Karlheinz; Hornle, Reinhold; Pusch, Norbert; and Walz, Klaus, 4,369,070, Cl. 106-308.00N.
    Arlt, Klaus-Peter; Grigo, Ulrich; and Binsack, Rudolf, 4,369,291, Cl. 525-247.000.
    Beck, Gunther; Sasse, Klaus; Heitzer, Helmut; Eue, Ludwig; Schmidt, Robert R.; Scheinpflug, Hans; Hammann, Ingeborg; and Brandes, Wilhelm, 4,369,186, Cl. 424-273.00R.
    Behre, Horst; Blank, Heinz U.; and Schenk, Wolfgang, 4,369,143, Cl. 260-505.00C.
    Buxbaum, Gunter; Schlak, Ottfried; Hund, Franz; and Leitner, Lutz, 4,369,265, Cl. 523-212.000.
    Ersfeld, Heinrich, 4,368,847, Cl. 239-125.000.
    Heydenreich, Frieder; Wulff, Claus; Klein, Lothar; Meissner, Hans-Jurgen; and Bachem, Norbert, 4,369,293, Cl. 525-333.500.
    Horstmann, Walter; Sommer, Richard; Trautwein, Hans; and Wolfrum, Gerhard, 4,369,324, Cl. 548-164.000.
    Konig, Eberhard; Pedain, Josef; and Kreuder, Hans J., 4,369,301, Cl. 528-45.000.
    Mayer, Wofram; Rudolph, Hans; de Cleur, Eckhard; and Schonfelder, Manfred, 4,369,206, Cl. 427-54.100.
    Michalski, Jan; Potrzebowski, Marek; and Lopusinski, Andrzej, 4,369,147, Cl. 260-935.000.
    Podszun, Wolfgang; Suling, Carlhans; and Alberts, Heinrich, 4,369,296, Cl. 526-209.000.
    Sanderson, John R.; Neuray, Dieter; Michael, Dietrich; and Bonten, Heinrich, 4,369,285, Cl. 524-538.000.
    Schubart, Rudiger; and Eholzer, Ulrich, 4,369,122, Cl. 252-182.000.
    Seifert, Hermann; Waldmann, Helmut; Wirthwein, Rolf; and Hofen, Willi, 4,369,096, Cl. 203-58.000.
    Siegers, Gunter, 4,369,114, Cl. 210-661.000.
    Thomas, Rudolf; Schmidt, Thomas; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., 4,369,056, Cl. 71-92.000.
    von Bonin, Wulf, 4,369,064, Cl. 106-18.150.
    Walkowiak, Michael; Podszun, Wolfgang; Leusner, Bernhard; Suling, Carlhans; and Schulz, Hans-Hermann, 4,369,262, Cl. 523-109.000.
    Wolfers, Heinrich; Rudolph, Hans; and Alberts, Heinrich, 4,369,329, Cl. 556-442.000.
BBC Brown, Boveri & Company Limited: *See—*
    Fried, Reinhard; Heller, Rudolf; and Hubner, Heimo, 4,368,708, Cl. 123-452.000.
    Kuntermann, Jurgen H., 4,369,364, Cl. 250-227.000.
Beam, Harold D.: *See—*
    Sharp, William J.; Beam, Harold D.; and Armstrong, William A., 4,368,852, Cl. 239-695.000.
Bearden, Roby, Jr.: *See—*
    Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,369,106, Cl. 208-10.000.
Beatenbough, Charles M., to Bell Telephone Laboratories, Incorporated. Wall telephone adapter assembly. 4,369,340, Cl. 179-146.00R.
Beatrice Foods Co.: *See—*
    Jones, John H., 4,368,903, Cl. 283-21.000.
Beck, Gunther; Sasse, Klaus; Heitzer, Helmut; Eue, Ludwig; Schmidt, Robert R.; Scheinpflug, Hans; Hammann, Ingeborg; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. 4,5-Dichloroimidazole-2-carboxylic acid derivatives. 4,369,186, Cl. 424-273.00R.
Becker, Kurt; Geisel, Gerhard; Schwarzer, Siegfried; and Seidel, Hans-Georg, to Heye, Hermann. Arrangement for adjusting the mass of thermoplastic gobs for a molding machine. 4,369,053, Cl. 65-164.000.
Beckley, Don A., to Hitco. Continuous filament graphite composite electrodes. 4,369,104, Cl. 204-286.000.
Beckman Instruments, Inc.: *See—*
    Hawkins, John J., 4,369,317, Cl. 544-110.000.
Beckwith, Irwin W. Hanging necktie holder. 4,368,823, Cl. 211-113.000.
Bedel, Denis E.: *See—*
    Davis, Steven B.; Coyle, Forrest E.; and Bedel, Denis E., 4,368,943, Cl. 339-198.00M.
Bedford, John; and Clarke, Graham M., to Ferranti Limited. Correction for scan period variation in optical image scanners. 4,369,365, Cl. 250-236.000.
Bednar, Jiri, to Povazske strojarne, narodni podnik. Multistage automatic planetary transmission gearing. 4,368,651, Cl. 74-752.00E.
Behre, Horst; Blank, Heinz U.; and Schenk, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of naphthalene-1,3,5-trisulphonic acid. 4,369,143, Cl. 260-505.00C.
Bell, Melvyn R.; and Gooch, Ian D., to Ferranti Limited. Circuit assemblies each with a component cooperating with a connector and clamp to a substrate. 4,369,485, Cl. 361-386.000.
Bell Telephone Laboratories, Incorporated: *See—*
    Beatenbough, Charles M., 4,369,340, Cl. 179-146.00R.
    Kohl, Paul A.; and Ostermayer, Frederick W., Jr., 4,369,099, Cl. 204-129.300.
    Silfvast, William T.; and Wood, Obert R., II, 4,369,514, Cl. 372-89.000.
Bendix Corporation, The: *See—*
    Bartholomew, Roy E., 4,368,926, Cl. 303-7.000.
    Garnett, Jack L., 4,368,595, Cl. 51-118.000.
    Nave, William E., 4,368,618, Cl. 60-39.28R.
    Uhlig, Herbert K.; and Zegelbrier, August M., 4,368,820, Cl. 209-540.000.
Beneke, Ulrich: *See—*
    Oepping, Wilfried; and Beneke, Ulrich, 4,368,559, Cl. 16-386.000.
Bennett, Harold E., to United States of America, Navy. Absolute reflectometer. 4,368,983, Cl. 356-445.000.
Bennett, Jack D., to Transformer Service (Ohio), Inc. Protective coating laminate. 4,369,221, Cl. 428-216.000.
Benzing, William M., to Conoco, Inc. Method and apparatus for shear wave logging. 4,369,506, Cl. 367-31.000.

- Berger, Friedrich: *See—*
  - Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.
- Berger Industries, Inc.: *See—*
  - Shemtov, Sami, 4,368,997, Cl. 403-59.000.
- Bergmann, Horst, to Daimler-Benz Aktiengesellschaft. Gas-operated internal combustion engine. 4,368,713, Cl. 123-527.000.
- Bergwerksverband GmbH: *See—*
  - Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased; Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, 4,369,094, Cl. 201-41.000.
- Bernard, Patrice; and Bouchard, Jacques, to Commissariat a l'Energie Atomique. Level measuring device. 4,369,368, Cl. 250-357.100.
- Bernstein, Seymour: *See—*
  - Conrow, Ransom B.; and Bernstein, Seymour, 4,369,191, Cl. 424-319.000.
- Berry, Homer E.: *See—*
  - Truitt, Robert E.; and Berry, Homer E., 4,368,914, Cl. 294-83.00R.
- Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., to Standard Oil Company (Indiana). Process for removing sulfur oxides from a gas. 4,369,108, Cl. 208-120.000.
- Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank, to Standard Oil Company. Composition for removing sulfur oxides from a gas. 4,369,130, Cl. 252-455.00Z.
- Beruto, Marco; and Ramello, Piero, to Minnesota Mining and Manufacturing Company. Photographic element for tanning development and method for obtaining colored relief image. 4,369,245, Cl. 430-264.000.
- Bethmann, Karl W.: *See—*
  - Flach, Jurgen; Opitz, Rigobert; and Bethmann, Karl W., 4,369,071, Cl. 134-8.000.
- Beusse, Hans, to Messerschmitt-Boelkow-Blohm GmbH. Minimizer system of vibrational movements of a mass. 4,368,900, Cl. 280-707.000.
- Beyers, Marvin E.; Kirn, Anthony E.; and Untz, Robert W., to Caterpillar Tractor Co. Sealed track belt arrangement. 4,368,929, Cl. 305-11.000.
- Biax-Fiberfilm Corporation: *See—*
  - Schwarz, Eckhard C. A., 4,368,565, Cl. 26-99.000.
- Bibby, Stephen: *See—*
  - Ho, Bin L.; and Bibby, Stephen, 4,369,475, Cl. 360-97.000.
- Bible, Christopher T.: *See—*
  - Parsons, William R.; Bible, Christopher T.; and Kannenberg, Donald P., 4,369,496, Cl. 364-417.000.
- Bienvenu, Jacques; Carre, Claude; Dufond, Patrick; Tuong, Duc L.; deRivet, Philippe-Hubert; Verdier, Henri; Bradley, John J.; and Franklin, Benjamin S., to Compagnie Honeywell Bull. Apparatus and method for providing synchronization between processes and events occurring at different times in a data processing system. 4,369,494, Cl. 364-200.000.
- Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., to ACF Industries, Incorporated. Hand brake release apparatus. 4,368,927, Cl. 303-18.000.
- Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., to ACF Industries, Incorporated. Inertial hand brake release apparatus. 4,368,928, Cl. 303-18.000.
- Bilow, Norman, to United States of America, Air Force. Diethynylbenzene-ethynylpyrene copolymers. 4,369,297, Cl. 526-284.000.
- Binder, Andy S. Physiologic analyzer. 4,368,740, Cl. 128-718.000.
- Binsack, Rudolf: *See—*
  - Arlt, Klaus-Peter; Grigo, Ulrich; and Binsack, Rudolf, 4,369,291, Cl. 525-247.000.
- Biro, Erno; and Biro, Erno. Heating apparatus for burning lumpy fuels, first of all to meet the heat demand of family homes and individual flats, or a small group of them. 4,368,723, Cl. 126-181.000.
- Biro, Erno: *See—*
  - Biro, Erno; and Biro, Erno, 4,368,723, Cl. 126-181.000.
- Blackwood, Rodger; and Medway, John G. Brick molding machine. 4,369,024, Cl. 425-112.000.
- Blaicher, Wolfgang. Device for storage and dosed delivery of liquids. 4,368,593, Cl. 47-59.000.
- Blamoutier, Michel; and Fraleux, Jean, to Thomson-CSF. Process and device for suppressing interferences in a picture composed of electronically generated image points. 4,369,465, Cl. 358-167.000.
- Blank, Heinz U.: *See—*
  - Behre, Horst; Blank, Heinz U.; and Schenk, Wolfgang, 4,369,143, Cl. 260-505.00C.
- Blasin, Serge, to Regie Nationale des Usines Renault. Longitudinal adjustment device for the folding seat of an automobile. 4,368,916, Cl. 297-341.000.
- Bleeck, Heinz: *See—*
  - Mainka, Manfred; Bleeck, Heinz; Wehrmeister, Gerhard; and Czapay, Milan, 4,368,611, Cl. 57-6.000.
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  - Meltzer, Peter M.; and Gallagher, Donald G., 4,368,585, Cl. 40-152.100.
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  - Duchaine, Pierre J. M., 4,368,930, Cl. 308-5.00R.
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  - Carruth, H. T., Jr., 4,369,505, Cl. 367-13.000.
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- Chimosa Chimica Organica S.p.A.: *See—*
  - Cantatore, Giuseppe, 4,369,321, Cl. 546-187.000.
- Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
  - Jarai, Miklos; Piukovich, Sandor; Istvan, Sandor; Gado, Istvan; Szell, Valeria; and Barta, Istvan, 4,369,251, Cl. 435-80.000.
- Chipperfield, Dwight D.: *See—*
  - Smalley, Edward A.; Boguski, Mark J.; Casey, Todd A.; and Chipperfield, Dwight D., 4,368,899, Cl. 280-477.000.
- Chirra, Ramalinga R., to Discovision Associates. Wide aperture objective lens. 4,368,957, Cl. 350-469.000.
- Chisso Corporation: *See—*
  - Nakano, Kazuaki; Fukuda, Masaaki; Mito, Kyuichi; Shinkai, Mikio; and Aruga, Shiro, 4,369,092, Cl. 159-47.100.
- Chissoasahi Fertilizer Co., Ltd.: *See—*
  - Fujita, Toshio; Takahashi, Chigo; Yoshida, Shigemitsu; and Shimizu, Hirozo, deceased, 4,369,055, Cl. 71-64.110.
- Choi, Wai M.: *See—*
  - O'Rell, Dennis D.; Choi, Wai M.; and Lin, Nan J., 4,369,236, Cl. 429-147.000.
- Christensen, Burton G.; and Ratcliffe, Ronald W., to Merck & Co., Inc. 3-Substituted-1-azabicyclo[3.2.0]hept-2-en-7-one-2-carboxylic acid. 4,369,187, Cl. 424-274.000.
- Christoffel, Roy M.: *See—*
  - Callahan, Joseph W.; Christoffel, Roy M.; and Horvath, Jack W., 4,369,121, Cl. 252-88.000.
- Christopher, John. Archery clicker. 4,368,719, Cl. 124-88.000.
- Chromalloy American Corporation: *See—*
  - Alexander, Granison T., Jr., 4,368,909, Cl. 294-69.00R.
- Churlaud, Henri A., to Societe Anonyme des Etablissements Ph. Bonvillain & E. Ronceray. Mixer for granular products, in particular for foundry sand. 4,368,985, Cl. 366-28.000.
- Ciba-Geigy AG: *See—*
  - Coote, Jack H.; and Jenkins, Arthur P., 4,368,974, Cl. 355-35.000.
  - Rody, Jean, 4,369,275, Cl. 524-103.000.
- Ciba-Geigy Corporation: *See—*
  - Khanna, Satish C., 4,369,175, Cl. 424-79.000.
  - McGowan, Earsel, Jr., 4,369,063, Cl. 106-1.140.
  - Moser, Hans, 4,369,142, Cl. 260-502.50F.
  - Petitpierre, Jean C.; and Burri, Peter, 4,369,326, Cl. 548-418.000.
  - Rink, Hans; Sieber, Peter; and Kamber, Bruno, 4,369,179, Cl. 424-177.000.
  - Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, 4,369,276, Cl. 524-104.000.
  - Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, 4,369,277, Cl. 524-104.000.
- Ciba-Geigy Ltd.: *See—*
  - Jan, Gerald, 4,369,318, Cl. 544-234.000.
  - Mehl, Wolfgang, 4,369,038, Cl. 8-471.000.
  - Postle, Stephen R., 4,369,310, Cl. 542-442.000.
- Cibie Projecteurs: *See—*
  - Brun, Norbert, 4,369,488, Cl. 362-268.000.
- Citizen Watch Company Limited: *See—*
  - Kawashima, Hideyuki, 4,368,989, Cl. 368-74.000.
- Claire Corporation AG: *See—*
  - Somers, Giles N., 4,368,934, Cl. 312-13.000.
- Clarion Co., Inc.: *See—*
  - Tomizawa, Akimori; Osaka, Hiroshi; and Kanai, Ryokichi, 4,369,462, Cl. 358-124.000.
- Clark, Robert L.: *See—*
  - Jones, Howard; Clark, Robert L.; and Zimmerman, Morris, 4,369,183, Cl. 424-263.000.
- Clarke, Graham M.: *See—*
  - Bedford, John; and Clarke, Graham M., 4,369,365, Cl. 250-236.000.
- Claus, William D., Jr.: *See—*
  - Robeson, Lloyd M.; Claus, William D., Jr.; and Batleman, Harvey L., 4,369,136, Cl. 524-371.000.
- Clopay Corporation: *See—*
  - Lee, Maw H.; and Chen, Chun F., 4,369,399, Cl. 318-467.000.

- CNG Research Company: *See—*
  - Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., 4,369,351, Cl. 219-284.000.
- Coal Industry (Patents) Limited: *See—*
  - Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,368,919, Cl. 299-1.000.
- Coates, Don M., to Du Pont de Nemours, E. I., and Company. Dyeing of polyolefins. 4,369,039, Cl. 8-513.000.
- Codex Corporation: *See—*
  - Northam, William D., 4,369,499, Cl. 364-724.000.
- Cohen, Georges: *See—*
  - Rojey, Alexandre; and Cohen, Georges, 4,368,779, Cl. 165-165.000.
- Cohen, Lewis. Ring mechanism for loose-leaf binders. 4,368,995, Cl. 402-39.000.
- Cole, William A., to Diane Mfg. Co. Check out lane display barrier. 4,368,804, Cl. 186-57.000.
- Coles Cranes Limited: *See—*
  - Thomasson, William R., 4,368,824, Cl. 212-150.000.
- Collins, Thomas H.; and Tomlinson, David. Dough mixing for farinaceous foodstuff production. 4,369,193, Cl. 426-19.000.
- Colvin, Randy G. Safety bench pressing apparatus. 4,368,884, Cl. 272-123.000.
- Combustion Engineering, Inc.: *See—*
  - Ward, Charles T.; and Creek, Ronald B., 4,368,694, Cl. 122-504.000.
  - Wentzell, Timothy H.; and Innes, Charles B., Jr., 4,368,644, Cl. 73-634.000.
- Commissariat a l'Energie Atomique: *See—*
  - Bernard, Patrice; and Bouchard, Jacques, 4,369,368, Cl. 250-357.100.
- Compagnie Honeywell Bull: *See—*
  - Bienvenu, Jacques; Carre, Claude; Dufond, Patrick; Tuong, Duc L.; deRivet, Philippe-Hubert; Verdier, Henri; Bradley, John J.; and Franklin, Benjamin S., 4,369,494, Cl. 364-200.000.
- Conner, Francis J., to Dri-Print Foils, Inc. Method of automatically decorating articles as they are in-mold formed automatically. 4,369,157, Cl. 264-246.000.
- Conoco, Inc.: *See—*
  - Benzing, William M., 4,369,506, Cl. 367-31.000.
- Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Naphthalenetetrayltetrakis(sulfonylimino)-tetrabenzene di- and tricarboxylic acids. 4,369,191, Cl. 424-319.000.
- Conroy, Walter J.: *See—*
  - Pendleton, Robert A.; Edfors, John E.; Whitford, Leonard G.; and Conroy, Walter J., 4,368,867, Cl. 248-346.000.
- Contant, Cornelis J., to U.S. Philips Corporation. Play-free focusing mechanism for a television camera. 4,369,470, Cl. 358-227.000.
- Contracap, Inc.: *See—*
  - Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,369,219, Cl. 428-138.000.
- Cool Spool, Inc.: *See—*
  - Jacob, Lionel C.; and Yarborough, G. Wirth, 4,368,857, Cl. 242-84.50A.
- Cooper, Frank W., Jr., to Westinghouse Electric Corp. Sleeving method. 4,368,571, Cl. 29-421.00R.
- Cooper, Herbert E. Vehicle transport system. 4,369,008, Cl. 410-29.100.
- Coote, Jack H.; and Jenkins, Arthur P., to Ciba-Geigy AG. Illuminating system for producing prints on variable contrast photosensitive material, filter strip for said system and lamphouse comprising the same. 4,368,974, Cl. 355-35.000.
- Copar Corporation: *See—*
  - Johnson, Keith R., 4,369,080, Cl. 156-64.000.
- Copeland Corporation: *See—*
  - King, Robert W., 4,368,755, Cl. 137-512.300.
- Coppa, Anthony P., to General Electric Company. Low cost diagonal type MHD general channel frame element and method of fabricating the same. 4,369,382, Cl. 310-11.000.
- Corbett, Robert E.: *See—*
  - Vincent, Monty E.; and Corbett, Robert E., 4,369,112, Cl. 210-433.200.
- Cordts, Howard P.; and Karloske, Joan E., to Freeman Chemical Corporation. Glass fiber reinforced laminate. 4,369,224, Cl. 428-285.000.
- Cormier, Alan D.; Feil, Marvin; and Legg, Kenneth D., to Instrumentation Laboratory Inc. Blood gas control. 4,369,127, Cl. 436-111.000.
- Corners, Ltd.: *See—*
  - Pestoor, James J., 4,368,998, Cl. 403-171.000.
- Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
  - Lovera, Bruno; and Pancotti, Santino, 4,369,019, Cl. 416-134.00A.
- Courtemanche, Jacques: *See—*
  - Cassou, Bertrand; Bonnet, Lucien; Brillard, Jean P.; Courtemanche, Jacques; and de Reviers, Michel, 4,368,732, Cl. 128-235.000.
- Cousins, James E. Downhole drilling apparatus. 4,368,786, Cl. 175-78.000.
- Coyle, Forrest E.: *See—*
  - Davis, Steven B.; Coyle, Forrest E.; and Bedel, Denis E., 4,368,943, Cl. 339-198.00M.
- Credner, Hans-Heinrich; Lassig, Wolfgang; and Schranz, Karl-Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Photographic recording material for diffusion processes and useful non-diffusing sulfilimine compounds. 4,369,243, Cl. 430-223.000.
- Creek, Ronald B.: *See—*
  - Ward, Charles T.; and Creek, Ronald B., 4,368,694, Cl. 122-504.000.
- Crinos Industria Farmacobiologica S.p.A.: *See—*
  - Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, 4,369,256, Cl. 521-25.000.
- Crooks, W. Ralph: *See—*
  - Thrash, Robert N.; and Crooks, W. Ralph, 4,368,632, Cl. 72-198.000.
- Croswhite, Howard L.: *See—*
  - Vahratian, Adam; Croswhite, Howard L.; Maynard, Roosevelt, Jr.; and Liang, Po Lung, 4,368,649, Cl. 74-695.000.
- Crown Screw Corporation: *See—*
  - Sugiyama, Ichirou, 4,368,552, Cl. 10-10.00R.
- Crucius, Michael; and Hassan, Mohamed A., to Siemens Aktiengesellschaft. Overvoltage arrester including a column of arrester elements and shielding therefor. 4,369,480, Cl. 361-128.000.
- Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., to Pitney Bowes Inc. Cleaning device for writing heads used in ink jet recorders and printers. 4,369,456, Cl. 346-140.00R.
- Crypto AG: *See—*
  - Gemperle, Bruno; and Sturzinger, Oskar, 4,369,333, Cl. 178-22.130.
- Cummings, Kent. Commode enclosure for forming a utility cabinet. 4,368,551, Cl. 4-661.000.
- Cummins Engine Company, Inc.: *See—*
  - Molewyk, Terry L.; and Johnson, Joseph M., 4,368,715, Cl. 123-550.000.
- Cunko, Edward F., Jr. Golf club cover assembly. 4,368,768, Cl. 150-52.00G.
- Curry, Thomas H.; and Luciano, William A., to Albany International Corp. Method of securing a foam layer to a belt. 4,369,081, Cl. 156-148.000.
- Czapay, Milan: *See—*
  - Mainka, Manfred; Bleeck, Heinz; Wehrmeister, Gerhard; and Czapay, Milan, 4,368,611, Cl. 57-6.000.
- Czepel, Hubert; Heger, Friedl; and Dobramysl, Wilhelm, to Chemie Linz Aktiengesellschaft. Modified aminoplast resins containing methylolmelamine etherified with a monoalcohol as modifier. 4,369,286, Cl. 524-598.000.
- Czerlinski, George H. Method of and apparatus for selective localized differential hyperthermia of a medium. 4,369,345, Cl. 219-10.430.
- Dailey, Donald L.: *See—*
  - Hutchinson, Eugene B.; and Dailey, Donald L., 4,368,609, Cl. 56-221.000.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Bauer, Ludwig, 4,368,579, Cl. 33-176.70R.
  - Bergmann, Horst, 4,368,713, Cl. 123-527.000.
- Dainippon Ink & Chemicals Inc.: *See—*
  - Miyahara, Tesshu; Arai, Yoshi; and Kimura, Kazuo, 4,369,076, Cl. 148-105.000.
- Dainippon Screen Mfg., Co., Ltd.: *See—*
  - Sakamoto, Takashi, 4,368,950, Cl. 350-174.000.
- D'Amato, Robert J. Apparatus for and method of testing vision. 4,368,959, Cl. 351-243.000.
- Danepak Limited: *See—*
  - Ives, Donald C. A., 4,368,790, Cl. 177-50.000.
- Data Instruments, Inc.: *See—*
  - Erichsen, Herman W.; and Amoroso, Michael A., Jr., 4,368,575, Cl. 29-610.0SG.
- Daussan, Andre: *See—*
  - Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,368,834, Cl. 222-593.000.
- Daussan et Compagnie: *See—*
  - Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,368,834, Cl. 222-593.000.
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  - Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,368,834, Cl. 222-593.000.
- Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, to Daussan et Compagnie. Preheating device for stopper-type tundishes. 4,368,834, Cl. 222-593.000.
- Davco, Inc.: *See—*
  - Davis, Leland L., 4,368,716, Cl. 123-557.000.
- Davies, Peter, to Exxon Research and Engineering Co. Supporting the weight of a structure in a hot environment. 4,368,695, Cl. 122-510.000.
- Davis, Earl V.; and Foster, Billy E., to United States of America, Energy. Penetrameter positioner for bore-side radiography of tubes. 4,368,996, Cl. 403-5.000.
- Davis, Leland L., to Davco, Inc. Fuel processor apparatus for diesel powered vehicles. 4,368,716, Cl. 123-557.000.
- Davis, Stephen M.: *See—*
  - Wilson, Arthur M.; Laks, David W.; and Davis, Stephen M., 4,369,090, Cl. 156-644.000.
- Davis, Steven B.; Coyle, Forrest E.; and Bedel, Denis E., to Westinghouse Electric Corp. Auxiliary equipment enclosure unit for watt-hour meter sockets. 4,368,943, Cl. 339-198.00M.
- Day, Robert H.; and Vidal-Meza, Gonzalo D., to Mono Containers (U.K.) Limited. Cups for holding ingredients for drinks. 4,368,818, Cl. 206-217.000.
- Dayco Corporation: *See—*
  - Howerton, Anderson W.; and Foley, Mark P., 4,368,656, Cl. 83-178.000.
- De Bella, Rocco: *See—*
  - Bailet, Jean-Claude; and De Bella, Rocco, 4,369,012, Cl. 411-437.000.
- deBrebisson, Michel X. M.; and Tessier, Marc, to U.S. Philips Corporation. Method of manufacturing integrated circuits by means of a multilayer mask. 4,368,573, Cl. 29-569.00R.
- de Cleur, Eckhard: *See—*
  - Mayer, Wofram; Rudolph, Hans; de Cleur, Eckhard; and Schonfelder, Manfred, 4,369,206, Cl. 427-54.100.

- Deere & Company: *See—*
  - Groves, Richard L.; and Pipho, Grant A., 4,368,638, Cl. 73-168.000.
  - Hutchinson, Eugene B.; and Dailey, Donald L., 4,368,609, Cl. 56-221.000.
- Dees, John M.: *See—*
  - Elphingstone, Eugene A.; and Dees, John M., 4,369,124, Cl. 252-316.000.
- DeGeeter, Melvin J., to Upjohn Co., The. Animal feed and process. 4,369,192, Cl. 424-326.000.
- De Grave, Isidoor: *See—*
  - Hahn, Klaus; Rath, Hans P.; Krapf, Heinz; De Grave, Isidoor; and Walter, Manfred, 4,369,227, Cl. 428-407.000.
- DeGraw, Joseph I., Jr.; and Sirotnak, Francis M. 10-Alkyl-10-deazaminopterins. 4,369,319, Cl. 544-260.000.
- Deguchi, Katsuhiko; Arisawa, Masatoshi; Ishida, Atsuo; and Ooshima, Katsuaki, to Kao Soap Co., Ltd. Creamy cleansing compositions. 4,369,134, Cl. 252-526.000.
- Degussa AG: *See—*
  - Schalke, Peter; and Kleemann, Axel, 4,369,322, Cl. 546-330.000.
- Degussa Aktiengesellschaft: *See—*
  - Hausselt, Jurgen; Schiwiora, Harry; and Stumke, Manfred, 4,369,068, Cl. 106-1.180.
- DeKalb AgResearch, Inc.: *See—*
  - Welch, Vern A., 4,368,592, Cl. 47-58.000.
- DeLange, William, III. Mailbox protector. 4,368,842, Cl. 232-17.000.
- Delfine, Frank: *See—*
  - Swartz, Jerome; Barkan, Edward; Bravman, Richard; Delfine, Frank; Harrison, Shelley A.; and Adelson, Alexander M., 4,369,361, Cl. 235-470.000.
- Delta Kogyo Co., Ltd.: *See—*
  - Kanazawa, Hirotaka; Yasuda, Yoshikazu; Harada, Kozo; and Yoshida, Susumu, 4,368,572, Cl. 29-432.000.
- Denier, Guy: *See—*
  - Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, 4,369,060, Cl. 75-60.000.
- Dennison, William T., to United Technologies Corporation. Turbine intermediate case. 4,369,016, Cl. 415-142.000.
- dePolo, Harry R. Garments formed of helically wound material and method of making same. 4,368,547, Cl. 2-409.000.
- de Reviers, Michel: *See—*
  - Cassou, Bertrand; Bonnet, Lucien; Brillard, Jean P.; Courtemanche, Jacques; and de Reviers, Michel, 4,368,732, Cl. 128-235.000.
- deRivet, Philippe-Hubert: *See—*
  - Bienvenu, Jacques; Carre, Claude; Dufond, Patrick; Tuong, Duc L.; deRivet, Philippe-Hubert; Verdier, Henri; Bradley, John J.; and Franklin, Benjamin S., 4,369,494, Cl. 364-200.000.
- Desai, Nitin V.; and Poll, Robert F., to RCA Corporation. Method for removing carbon particles from a molded article. 4,369,307, Cl. 528-488.000.
- Despouys, Jean-Bernard, to Radiall. Optical fiber connector and method. 4,368,948, Cl. 350-96.200.
- Destree, Allen. Method and apparatus for cutting concrete columns. 4,368,720, Cl. 125-14.000.
- Deutsch, Leslie J.: *See—*
  - Deutsch, Ralph; and Deutsch, Leslie J., 4,368,658, Cl. 84-1.030.
- Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Apparatus for solo harmony transfer in an electronic musical instrument. 4,368,658, Cl. 84-1.030.
- Deutsche Galatine-Fabriken Stoess & Co. GmbH: *See—*
  - Graesser, Wolfgang; Koepff, Peter J.; and Tomka, Ivan, 4,369,069, Cl. 106-125.000.
- Deutsche Gold und Silberscheideanstalt Vormals Roessler: *See—*
  - Seifert, Hermann; Waldmann, Helmut; Wirthwein, Rolf; and Hofen, Willi, 4,369,096, Cl. 203-58.000.
- Devan, Joseph M.; and Milligan, Hugh, to United States of America, Navy. Integrated dual taper waveguide expansion joint. 4,369,413, Cl. 333-34.000.
- deVries, Louis; and King, John M., to Chevron Research Company. Antioxidant combinations of molybdenum complexes and organic sulfur compounds for lubricating oils. 4,369,119, Cl. 252-42.700.
- DeYoung, David M., to Magnetic Controls Company. Terminal construction. 4,368,944, Cl. 339-221.00R.
- Diamond International Corporation: *See—*
  - Soughers, Edward K., 4,368,830, Cl. 222-321.000.
- Diamond, John A., to Vapor Corporation. Sensitive door edge Wiegand module switch assembly. 4,369,344, Cl. 200-61.430.
- Diane Mfg. Co.: *See—*
  - Cole, William A., 4,368,804, Cl. 186-57.000.
- Dickson, Jerald L.; and Green, Harvey E., Jr., to Boeing Company, The. Apparatus for applying sealant between faying surfaces of aircraft wing structures. 4,368,686, Cl. 118-411.000.
- Didier Engineering GmbH: *See—*
  - Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased; Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, 4,369,094, Cl. 201-41.000.
- Dieck, Ronald L.; Liberti, Frank N.; and Wambach, Allen D., to General Electric Company. Polybutylene terephthalate molding compositions and articles molded therefrom. 4,369,280, Cl. 524-281.000.
- Diehl GmbH & Co.: *See—*
  - Weidner, Peter, 4,368,670, Cl. 102-202.500.
- Dietrich, Robert W.: *See—*
  - Gray, John D.; Dietrich, Robert W.; and Weller, Peter A., 4,369,152, Cl. 264-46.400.
- Dietz, Erwin; Grossmann, Max; and Maikowski, Michael, to Hoechst Aktiengesellschaft. Pigment dispersions and use thereof. 4,369,270, Cl. 524-33.000.
- Director-General of Agency of Industrial Science & Technology: *See—*
  - Handa, Keiji; and Yamakado, Norio, 4,368,923, Cl. 299-8.000.
- Discovision Associates: *See—*
  - Chirra, Ramalinga R., 4,368,957, Cl. 350-469.000.
- Dobramysl, Wilhelm: *See—*
  - Czepel, Hubert; Heger, Friedl; and Dobramysl, Wilhelm, 4,369,286, Cl. 524-598.000.
- Dr. Johannes Heidenhain GmbH: *See—*
  - Schmitt, Walter, 4,369,366, Cl. 250-237.00G.
- Dodt, William C.: *See—*
  - Arter, Nelson K.; Avritt, Michael D.; Dodt, William C.; and Herman, Marion J., 4,368,977, Cl. 355-75.000.
- Dombroski, Robert M.; and Sitzman, Jerry C., to Madison-Kipp Corporation. Apparatus for dispensing fluid onto a moving mechanical system. 4,368,803, Cl. 184-15.00B.
- Donaldson Company, Inc.: *See—*
  - Stifelman, Jack, 4,369,113, Cl. 210-440.000.
  - Wagner, Wayne M., 4,368,799, Cl. 181-255.000.
- Donovan, Barbara A.: *See—*
  - Woodruff, Keith; Johnson, Donald; Hill, John H.; and Donovan, Barbara A., 4,369,158, Cl. 264-268.000.
- Dossin, Luc M., to Baxter Travenol Laboratories, Inc. Aseptic system for total parenteral nutrition and the like. 4,368,729, Cl. 128-214.00D.
- Dougherty, William E., to International Business Machines Corp. Process for producing smoother ceramic surfaces. 4,369,154, Cl. 264-63.000.
- Dow Chemical Company, The: *See—*
  - Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., 4,369,105, Cl. 204-290.00F.
  - Grainger, James L.; and Campbell, Kent D., 4,369,311, Cl. 542-443.000.
- Drake, Eric F., to Reed Rock Bit Company. Metal cutting tools utilizing gradient composites. 4,368,788, Cl. 175-374.000.
- Drebinger, Peter; and Merkle, Heinz, to Siemens Aktiengesellschaft. Method and circuit arrangement for determining the entry and/or exit of a vehicle, in particular a traffic vehicle, into and out of a predetermined monitoring zone. 4,369,427, Cl. 340-38.00L.
- Dri-Print Foils, Inc.: *See—*
  - Conner, Francis J., 4,369,157, Cl. 264-246.000.
- Droscher, Erich; Wrulich, Herwig; Zitz, Alfred; and Schetina, Otto, to Voest-Alpine Aktiengesellschaft. Process and apparatus for controlling the water supply to the cutting head of a cutting machine. 4,368,918, Cl. 299-1.000.
- Drozdov, Nikolai I.: *See—*
  - Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
- D'Silva, Themistocles D. J., to Union Carbide Corporation. Novel unsymmetrical formamidine-sulfenylated carbamate compounds. 4,369,189, Cl. 424-285.000.
- Dubiel, Oswald; and Pretzel, Dieter, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 4,368,811, Cl. 192-99.00A.
- Duchaine, Pierre J. M., to Centre d'Etudes et de Recherches de la Machine-Outil (C.E.R.M.O.). Guiding device provided with guide-blocks. 4,368,930, Cl. 308-5.00R.
- Duenke, Clarence G. Apparatus and method of drying a transformer. 4,369,353, Cl. 219-492.000.
- Dufond, Patrick: *See—*
  - Bienvenu, Jacques; Carre, Claude; Dufond, Patrick; Tuong, Duc L.; deRivet, Philippe-Hubert; Verdier, Henri; Bradley, John J.; and Franklin, Benjamin S., 4,369,494, Cl. 364-200.000.
- Dukshtau, Alexandr A.: *See—*
  - Lurie, Alexandr N.; Anchukov, Anatoly N.; Dukshtau, Alexandr A.; Schegolev, Gleb S.; Yablonsky, Gennady A.; and Steklov, Mikhail L., 4,369,386, Cl. 310-54.000.
- Dumas, Jean. Window with a pivotable frame having in closed position different inclinations with respect to the sun. 4,368,603, Cl. 52-173.00R.
- Dumler, Charles L.: *See—*
  - Galluzzo, Daniel T.; and Dumler, Charles L., 4,369,102, Cl. 204-228.000.
- Dunfield, John C. G.: *See—*
  - Gabor, Andrew; and Dunfield, John C. G., 4,369,402, Cl. 318-685.000.
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  - Adelman, Robert L.; and Turner, John J. P., 4,369,213, Cl. 427-389.900.
  - Altschuler, Lili W., 4,369,283, Cl. 524-451.000.
  - Chen, Gwendyline Y. Y. T.; and Brennan, James F., 4,369,246, Cl. 430-306.000.
  - Coates, Don M., 4,369,039, Cl. 8-513.000.
  - Emerick, Dennis P., 4,369,279, Cl. 524-267.000.
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  - Foederer, Wilhelmus T. M., 4,368,939, Cl. 339-59.00M.
  - Goff, David L.; Yuan, Edward L.; and Proskow, Stephen, 4,369,247, Cl. 430-311.000.
  - Jaffe, Edward E., 4,369,272, Cl. 524-88.000.
  - Levitt, George, 4,369,058, Cl. 71-92.000.

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  - Miller, Donald F., 4,368,844, Cl. 238-2.000.
  - Pagilagan, Rolando U., 4,369,305, Cl. 528-338.000.
  - Scopazzi, Christopher, 4,369,232, Cl. 428-425.900.
- Durham, Harvey. Insulated container and closure. 4,368,819, Cl. 206-545.000.
- Dvorscak, Richard P., to Pullman Incorporated. Distribution means for partition sheet assembly. 4,368,673, Cl. 105-248.000.
- Dvorsky, Drahomir; Cerovsky, Karel; and Socha, Jaromir, to Vyzkumny ustav zuslechtovaci. Technique for dyeing and printing of textiles with quaternary ammonium compound. 4,369,041, Cl. 8-532.000.
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  - Moseley, Fred; and Dyer, Paul N., 4,369,128, Cl. 252-429.00R.
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  - Fleckenstein, Elwin H., 4,368,597, Cl. 51-170.0EB.
- Dynamit Nobel AG: *See—*
  - Tiroux, Josef; and Weisselfels, Franz, 4,369,259, Cl. 521-108.000.
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  - Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,368,604, Cl. 52-309.800.
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- Dytch, Anthony, to Allen-Martin Electronics Limited. Current control device. 4,369,377, Cl. 307-117.000.
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  - Lamort, Jean P., 4,369,093, Cl. 162-246.000.
- Early, David. Electronic lock. 4,369,481, Cl. 361-173.000.
- Eaton, George H. Apparatus for controlled cutting down of trees. 4,368,763, Cl. 144-34.00R.
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  - Nussbaumer, Manfred, 4,368,924, Cl. 299-33.000.
- Eddy, William, to Phillips Petroleum Company. Paper container. 4,368,841, Cl. 229-5.500.
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  - Pendleton, Robert A.; Edfors, John E.; Whitford, Leonard G.; and Conroy, Walter J., 4,368,867, Cl. 248-346.000.
- Edge, William F. Pool skimming net. 4,369,109, Cl. 210-169.000.
- Edney, Kenneth J., to EMI Limited. Annular slot antenna. 4,369,447, Cl. 343-769.000.
- Egami, Kazuhito: *See—*
  - Ban, Itsuki; Shiraki, Manabu; Okada, Hideo; and Egami, Kazuhito, 4,369,388, Cl. 310-154.000.
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- Egidi, Paolo; and Squerti, Federico, to Industrie Pirelli, S.p.A. Press and process for vulcanizing annular elements. 4,369,160, Cl. 264-326.000.
- Egnew, J. C. Releasable joint connector. 4,369,000, Cl. 403-406.000.
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  - Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,369,325, Cl. 548-315.000.
- Eholzer, Ulrich: *See—*
  - Schubart, Rudiger; and Eholzer, Ulrich, 4,369,122, Cl. 252-182.000.
- Ehrlinger, Friedrich: *See—*
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- Eian, Gilbert L.; and Trend, John E., to Minnesota Mining and Manufacturing Company. Imaging process and article employing photolabile, blocked surfactant. 4,369,244, Cl. 430-257.000.
- Eibensteiner, Walter, to U.S. Philips Corporation. Recording and/or reproducing apparatus. 4,369,473, Cl. 360-85.000.
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- Elbar B.V., Industrieterrien "Spikweien": *See—*
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- Elevator Equipment Company: *See—*
  - Rued, Glen A., 4,368,805, Cl. 187-17.000.
- Elliott, Michael T.: *See—*
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- Ellsworth, Robert L., to Fortin Laminating Corporation. Solar heating panel. 4,368,726, Cl. 126-445.000.
- Elphingstone, Eugene A.; and Dees, John M., to Halliburton Company. High viscosity complexed aqueous gels and methods and additives for forming such gels. 4,369,124, Cl. 252-316.000.
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  - Inbar, Dan; and Ganin, Alexander, 4,369,495, Cl. 364-414.000.
- Elsenheimer, Gerd; and Schnabel, Wolfram, to Metallgesellschaft Aktiengesellschaft. Process of directly reducing iron oxide containing materials in a rotary kiln. 4,369,059, Cl. 75-36.000.
- Elser, Dieter; and Holub, Heinrich, to Zahnradfabrik Friedrichshafen, AG. Auxiliary power steering for motor vehicles. 4,368,794, Cl. 180-133.000.
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  - Roberts, William J.; and Owen, Gerald M., 4,368,717, Cl. 123-632.000.
- Emerick, Dennis P., to Du Pont de Nemours, E. I., and Company. Low-temperature curing polysiloxane coating composition with fluorocarbon. 4,369,279, Cl. 524-267.000.
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  - Babb, Larry F., 4,368,577, Cl. 30-92.000.
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  - Edney, Kenneth J., 4,369,447, Cl. 343-769.000.
- Emmenthal, Klaus; Schafer, Otto; Strozyk, Rudolf-Helmut; and Wehling, Wolfgang, to Volkswagenwerk Aktiengesellschaft. Fuel injection apparatus. 4,368,714, Cl. 123-531.000.
- Emrich, Robert R. Self propelled irrigation systems. 4,368,848, Cl. 239-177.000.
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  - Iwasawa, Mineo; Endo, Yukio; and Yamamoto, Hiroyuki, 4,369,459, Cl. 358-50.000.
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- Enomoto, Satoru: *See—*
  - Takita, Hitoshi; Wada, Toshihiko; Mukaida, Yutaka; Enomoto, Satoru; Nakajima, Akiyoshi; and Okubo, Azuma, 4,369,253, Cl. 435-244.000.
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  - Sternberg, Stanley R., 4,369,430, Cl. 340-146.3MA.
- EPSI Brevets et Participations S.A.: *See—*
  - von der Weid, Francois P., 4,369,025, Cl. 425-115.000.
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  - Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,369,182, Cl. 424-199.000.
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  - Hedrick, Ross M.; Woodbrey, James C.; Gabbert, James D.; and Erickson, Floyd B., 4,369,222, Cl. 428-216.000.
- Ersfeld, Heinrich, to Bayer Aktiengesellschaft. Injection nozzle for mixheads. 4,368,847, Cl. 239-125.000.
- Ertl, Wilhelm; Lachmann, Ulrich; Pertsch, Heinrich; and Wirnharter, Gunter, to Siemens Aktiengesellschaft. Magnetic gate and method of production thereof. 4,369,376, Cl. 307-99.000.
- Escales, Eberhard: *See—*
  - Huber, Leonhard; Hofler, Adolf; and Escales, Eberhard, 4,368,968, Cl. 354-133.000.
- Eschenbach, Paul W., to Milliken Research Corporation. Apparatus for forming false twisted slubyarn. 4,368,612, Cl. 57-6.000.
- Estel Hoesch Werke Aktiengesellschaft: *See—*
  - Wolzenburg, Heinrich, 4,368,932, Cl. 308-227.000.
- Etablissements Pierre Angenieux: *See—*
  - Masson, Andre, 4,368,955, Cl. 350-427.000.
- Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, to SS Pharmaceutical Co., Ltd. Thiazinobenzimidazole derivatives. 4,369,309, Cl. 542-436.000.
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  - Beck, Gunther; Sasse, Klaus; Heitzer, Helmut; Eue, Ludwig; Schmidt, Robert R.; Scheinpflug, Hans; Hammann, Ingeborg; and Brandes, Wilhelm, 4,369,186, Cl. 424-273.00R.
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- Evans, James M.; and Woo, James T. K., to SCM Corporation. Aminomethyl-phenol cross-linking compounds. 4,369,290, Cl. 525-137.000.
- Evans, Norol T.; and Nelson, Robert B., to Hughes Aircraft Company. Automatic ECM video processor. 4,369,445, Cl. 343-18.00E.
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  - Agnello, Anthony, 4,369,336, Cl. 179-1.00J.
- Evva Werk Spezialerzeugung von Zylinderschlossern Gesellschaft MbH & Co. Kommanditgesellschaft: *See—*
  - Prunbauer, Kurt, 4,368,629, Cl. 70-406.000.
- Ex-Cell-O Corporation: *See—*
  - Gray, John D.; Dietrich, Robert W.; and Weller, Peter A., 4,369,152, Cl. 264-46.400.
- Exxon Research and Engineering Co.: *See—*
  - Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,369,106, Cl. 208-10.000.
  - Davies, Peter, 4,368,695, Cl. 122-510.000.
  - Mauldin, Charles H.; and Baird, William C., Jr., 4,369,129, Cl. 252-439.000.
  - Ryer, Jack; and Bloch, Ricardo, 4,369,118, Cl. 252-39.000.
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  - Enkegaard, Torben, 4,369,067, Cl. 106-100.000.
- Fabcon, Inc.: *See—*
  - Nash, Richard C.; Hanson, David W.; and Koehn, Richard R., 4,369,153, Cl. 264-62.000.
- Fabrig, Paul, to Womako Maschinenkonstruktionen GmbH. Apparatus for stacking note books or the like. 4,369,015, Cl. 414-31.000.
- Farge, Daniel; Roy, Pierre L.; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, to Rhone-Poulenc Industries. Oxacephalosporins. 4,369,314, Cl. 544-90.000.
- Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, to Rhone-Poulenc Industries. Oxacephalosporins. 4,369,315, Cl. 544-90.000.
- Farmery, Horstine, to Union Carbide Corporation. Spray apparatus. 4,368,849, Cl. 239-222.000.
- Farnam Livestock Equipment and Insecticides, Inc.: *See—*
  - Ott, Jerry E., 4,369,176, Cl. 424-84.000.
- Fayfield, Robert W.; and Fontaine, Kenneth B., to Scovill Manufacturing Co. Valve position monitor and control system. 4,369,401, Cl. 318-565.000.

- FBC Limted: *See—*
  - Bathgate, Raymond J., 4,369,126, Cl. 252-350.000.
- Fedotov, Vasilij: *See—*
  - Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.
- Feil, Marvin: *See—*
  - Cormier, Alan D.; Feil, Marvin; and Legg, Kenneth D., 4,369,127, Cl. 436-111.000.
- Feinberg, Bernard; and O'Neil, James W., to Du Pont de Nemours, E. I., and Company. Process for preparation of photopolymerized dot-etchable masks using staging solution. 4,369,239, Cl. 430-5.000.
- Feitler, Alberg: *See—*
  - Artois, Fernand; Linden, Raymond; and Feitler, Alberg, 4,369,066, Cl. 106-98.000.
- Felici, Maurizio: *See—*
  - Menniti, Pietro; and Felici, Maurizio, 4,369,380, Cl. 307-254.000.
- Felsch, Christian. Safety device with delay. 4,369,421, Cl. 337-163.000.
- Felten & Guilleaume Carlswerk AG: *See—*
  - Schmidt, Bernhard, 4,368,949, Cl. 350-96.210.
- Fenk, Josef, to Siemens Aktiengesellschaft. Monolithically integrable transistor amplifier having gain control means. 4,369,410, Cl. 330-254.000.
- Ferranti Limited: *See—*
  - Bedford, John; and Clarke, Graham M., 4,369,365, Cl. 250-236.000.
  - Bell, Melvyn R.; and Gooch, Ian D., 4,369,485, Cl. 361-386.000.
- Fette, Bruce, to Motorola Inc. High speed NXM bit digital, repeated addition type multiplying circuit. 4,369,500, Cl. 364-758.000.
- Fiacco, Ferdinand: *See—*
  - Lowrance, Kenneth F., II; and Fiacco, Ferdinand, 4,369,032, Cl. 432-247.000.
- Fickes, Michael G., to Du Pont de Nemours, E. I., and Company. Element having images developed with dry nonelectroscopic toners. 4,369,240, Cl. 430-17.000.
- Fidrych, Alfred W., to Harvey Hubbell Incorporated. Grip for pulling fiber optic cable and method of inserting the cable into the grip. 4,368,910, Cl. 294-86.0CG.
- Filmer, David B., to Agri Plastics International Pty. Limited. Animal ear tag applicators. 4,368,735, Cl. 128-330.000.
- Finger, John F., to Sioux Steam Cleaner Corporation. Cleaning apparatus and method. 4,368,757, Cl. 137-565.000.
- Finsterwalder, Gerhard; and Saftig, Jakob, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method of operating an air-compressing, self-igniting internal combustion engine. 4,368,702, Cl. 123-261.000.
- Firmenich SA: *See—*
  - Schulte-Elte, Karl-Heinrich; Egger, Bernard; and Muller, Bernard, 4,369,328, Cl. 549-546.000.
- Fischer, John J., to Harsco Corporation. Dual shell blender with intensifier. 4,368,986, Cl. 366-170.000.
- Fischer, Klaus: *See—*
  - Weber, Manfred; von Hinleder, Dieter F.; Picht, Dieter; and Fischer, Klaus, 4,368,671, Cl. 102-401.000.
- Flach, Jurgen; Opitz, Rigobert; and Bethmann, Karl W., to Rheinmetall GmbH. Process and arrangement for introducing an automatic cleaning mechanism into a gun barrel. 4,369,071, Cl. 134-8.000.
- Fleckenstein, Elwin H., to Dynabrade, Inc. Miniature belt grinder. 4,368,597, Cl. 51-170.0EB.
- Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased (by Ziolkowski, Dagmar, heir); Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, to Bergwerksverband GmbH; and Didier Engineering GmbH. Method of preventing the entry of air into the housing of a charging device which conveys coal. 4,369,094, Cl. 201-41.000.
- Flygare, Willis H.; and Balle, Terrill J. Method and apparatus for the spectroscopic observation of particles. 4,369,404, Cl. 324-58.50C.
- FMC Corporation: *See—*
  - Henriksen, Arthur J.; Thiel, Klaus F.; and Petersen, Carl F., 4,368,676, Cl. 110-101.0CD.
- Focke & Co.: *See—*
  - Focke, Heinz H.; and Bretthauer, Hans-Jurgen, 4,368,859, Cl. 242-130.000.
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- Foederer, Wilhelmus T. M., to Du Pont de Nemours, E. I., and Company. Modular connector housing. 4,368,939, Cl. 339-59.00M.
- Foley, Mark P.: *See—*
  - Howerton, Anderson W.; and Foley, Mark P., 4,368,656, Cl. 83-178.000.
- Fontaine, Kenneth B.: *See—*
  - Fayfield, Robert W.; and Fontaine, Kenneth B., 4,369,401, Cl. 318-565.000.
- Ford, John A.: *See—*
  - Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,368,919, Cl. 299-1.000.
- Ford Motor Company: *See—*
  - Rahnke, Christian J., 4,369,020, Cl. 417-64.000.
  - Vahratian, Adam; Croswhite, Howard L.; Maynard, Roosevelt, Jr.; and Liang, Po Lung, 4,368,649, Cl. 74-695.000.
- Forest Laboratories Inc.: *See—*
  - Schor, Joseph M.; Nigalaye, Ashok; and Gaylord, Norman G., 4,369,172, Cl. 424-19.000.
- Forster, Siegfried; and Sack, Berthold, to Kernforschungsanlage Julich GmbH. Ceramic recuperator and method for the heating of combustion air. 4,369,029, Cl. 432-29.000.
- Fortin Laminating Corporation: *See—*
  - Ellsworth, Robert L., 4,368,726, Cl. 126-445.000.
- Fortino, Andres G.: *See—*
  - Bakeman, Paul E., Jr.; Fortino, Andres G.; Geipel, Henry J., Jr.; Kasold, Jeffrey P.; and Quinn, Robert M., 4,369,072, Cl. 148-1.500.
- Forzelias, Tage N. Tensioning and attachment means for display stands and similar devices. 4,368,586, Cl. 40-604.000.
- Foster, Billy E.: *See—*
  - Davis, Earl V.; and Foster, Billy E., 4,368,996, Cl. 403-5.000.
- Fraleux, Jean: *See—*
  - Blamoutier, Michel; and Fraleux, Jean, 4,369,465, Cl. 358-167.000.
- Framatome: *See—*
  - Alliot, Patrick, 4,368,693, Cl. 122-491.000.
  - Frontiere, Gilles, 4,368,580, Cl. 33-178.00R.
  - Martin, Jean, 4,369,161, Cl. 376-232.000.
- Frame, Norman J., to W. H. Brady Co. Electroluminescent display including semiconductor convertible to insulator. 4,369,393, Cl. 313-506.000.
- Franklin, Benjamin S.: *See—*
  - Bienvenu, Jacques; Carre, Claude; Dufond, Patrick; Tuong, Duc L.; deRivet, Philippe-Hubert; Verdier, Henri; Bradley, John J.; and Franklin, Benjamin S., 4,369,494, Cl. 364-200.000.
- Frater, Robert L., to Westinghouse Electric Corp. Boiler feed pump turbine control system. 4,368,773, Cl. 60-667.000.
- Freeman Chemical Corporation: *See—*
  - Cordts, Howard P.; and Karloske, Joan E., 4,369,224, Cl. 428-285.000.
- Freese, Uwe E.: *See—*
  - Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,369,219, Cl. 428-138.000.
- Frega, John F.: *See—*
  - Brass, Robert L.; and Frega, John F., 4,368,993, Cl. 400-216.200.
- Fried, Reinhard; Heller, Rudolf; and Hubner, Heimo, to BBC Brown, Boveri & Company Limited. Positioning device for an air valve arranged in the charging air line of an internal combustion engine. 4,368,708, Cl. 123-452.000.
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- Friedmann, Oswald: *See—*
  - Huber, Lothar; and Friedmann, Oswald, 4,368,701, Cl. 123-198.00F.
- Friedrich, Hans-Helmut: *See—*
  - Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, 4,369,276, Cl. 524-104.000.
  - Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, 4,369,277, Cl. 524-104.000.
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  - Pardo, John, 4,368,840, Cl. 229-2.50R.
- Frommert, Siegwart K., to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Pile fabric and method for manufacture thereof. 4,368,760, Cl. 139-397.000.
- Frontiere, Gilles, to Framatome. Apparatus for testing the diameter of a cylindrical hole machined in a very thick part. 4,368,580, Cl. 33-178.00R.
- Fuel Injection Development Corporation: *See—*
  - Leshner, Ervin; and Leshner, Michael D., 4,368,707, Cl. 123-436.000.
- Fugate, Robert L.; Schneider, Richard; and Zgud, Felix K., to GTE Products Corporation. Multiple meter switchboard. 4,369,484, Cl. 361-334.000.
- Fuji Electric Company, Ltd.: *See—*
  - Saito, Shigemasa, 4,369,077, Cl. 148-120.000.
- Fuji Jukogyo Kabushiki Kaisha: *See—*
  - Kojima, Seiichiro, 4,368,901, Cl. 280-748.000.
- Fuji Photo Film Co., Ltd.: *See—*
  - Horikawa, Kazuo, 4,369,367, Cl. 250-327.200.
- Fujimori, Yoshitugu; Kumata, Masataka; and Mizuhashi, Mamoru, to Asahi Glass Company, Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Infrared reflecting laminated glass for automobile. 4,368,945, Cl. 350-1.700.
- Fujimura, Toshiro, to Janome Sewing Machine Co. Ltd. Electronic sewing machine with multi-pattern selecting system. 4,368,680, Cl. 112-158.00E.
- Fujisawa Pharmaceutical Co., Ltd.: *See—*
  - Hashimoto, Masashi; Aratani, Matsuhiko; Hagiwara, Daijiro; Sawada, Kozo; and Onami, Tetsuo, 4,369,312, Cl. 544-16.000.
- Fujita, Toshio; Takahashi, Chigo; Yoshida, Shigemitsu; and Shimizu, Hirozo, deceased (by Shimizu, Fumiko, executrix), to Chissoasahi Fertilizer Co., Ltd. Coated granular fertilizer capable of controlling the effect of temperature upon dissolution-out rate. 4,369,055, Cl. 71-64.110.
- Fujitsu Limited: *See—*
  - Isogai, Hideaki, 4,369,502, Cl. 365-155.000.
  - Isogai, Hideaki, 4,369,503, Cl. 365-189.000.
  - Okamoto, Keizo; Tomita, Masayoshi; and Takagi, Osamu, 4,369,381, Cl. 307-279.000.
- Fujitsu Ten Limited: *See—*
  - Takayama, Kazuo, 4,369,446, Cl. 343-711.000.
- Fukaya, Masaki: *See—*
  - Yoshioka, Seishiro; Hirai, Yutaka; Fukuda, Tadaji; Fukaya, Masaki; and Nakagiri, Takashi, 4,369,372, Cl. 250-578.000.
- Fukuda, Daiki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for controlling timing of fuel supply for starting a gas turbine engine. 4,368,617, Cl. 60-39.14R.

- Fukuda, Kunio: *See—*
  - Kasahara, Hideo; Fukuda, Kunio; and Mizutani, Yukihisa, 4,369,278, Cl. 524-147.000.
- Fukuda, Masaaki: *See—*
  - Nakano, Kazuaki; Fukuda, Masaaki; Mito, Kyuichi; Shinkai, Mikio; and Aruga, Shiro, 4,369,092, Cl. 159-47.100.
- Fukuda, Mitsuhisa: *See—*
  - Kaneko, Yutaka; and Fukuda, Mitsuhisa, 4,368,946, Cl. 350-3.780.
- Fukuda, Tadaji: *See—*
  - Yoshioka, Seishiro; Hirai, Yutaka; Fukuda, Tadaji; Fukaya, Masaki; and Nakagiri, Takashi, 4,369,372, Cl. 250-578.000.
- Fukukita, Hiroshi: *See—*
  - Tachita, Ryobun; Fukukita, Hiroshi; Hayakawa, Yoshihiro; and Irioka, Kazuyoshi, 4,368,643, Cl. 73-626.000.
- Fukumoto, Yoshikatsu: *See—*
  - Anno, Gousuke; Saitou, Tamio; and Fukumoto, Yoshikatsu, 4,369,452, Cl. 346-76.0PH.
- Fukutsuka, Toshio; Shimogori, Kazutoshi; Yamamoto, Etsuo; and Miki, Kenji, to Kabushiki Kaisha Kobe Seiko Sho. Method for protecting the inner surface of a copper alloy condenser tube from corrosion. 4,369,073, Cl. 148-6.14R.
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  - Leist, William L., 4,369,050, Cl. 55-283.000.
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  - Jarai, Miklos; Piukovich, Sandor; Istvan, Sandor; Gado, Istvan; Szell, Valeria; and Barta, Istvan, 4,369,251, Cl. 435-80.000,
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  - Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., 4,369,313, Cl. 544-24.000.
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  - Vincent, Monty E.; and Corbett, Robert E., 4,369,112, Cl. 210-433.200.
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  - Campbell, Richard W., 4,369,282, Cl. 524-445.000.
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  - Dieck, Ronald L.; Liberti, Frank N.; and Wambach, Allen D., 4,369,280, Cl. 524-281.000.
  - Rickard, Jimmy R., 4,369,479, Cl. 361-1.000.
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Gondek, John T. Well point and method of driving same. 4,368,785, Cl. 175-21.000.
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  Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.
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Graesser, Wolfgang; Koepff, Peter J.; and Tomka, Ivan, to Deutsche Galatine-Fabriken Stoess & Co. GmbH. Gelatin, method for producing it and its use. 4,369,069, Cl. 106-125.000.
Graf, Roland. Inserts for the crossing points of tennis racket stringing. 4,368,886, Cl. 273-73.00D.
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  Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, 4,368,668, Cl. 101-212.000.
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Graser, Fritz; and Wickenhaeuser, Gerhard, to BASF Aktiengesellschaft. Process for drying finely divided pigments. 4,368,582, Cl. 34-15.000.
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Greb, Gregory A.; Spitza, Raymond W.; and Moe, Robert R., to Alberto-Culver Company. Molding assembly for plastic decorations. 4,368,870, Cl. 249-102.000.
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Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G. Vertical wire-rope twisting machine. 4,368,614, Cl. 57-58.520.
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Grundy, Reed H., to American Standard Inc. Fail-safe magnetic sensing arrangement. 4,368,862, Cl. 246-28.00R.
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Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, to ITT Industries, Inc. Electric drive unit. 4,369,387, Cl. 310-83.000.
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Hahn, Klaus; Rath, Hans P.; Krapf, Heinz; De Grave, Isidoor; and Walter, Manfred, to BASF Aktiengesellschaft. Particulate styrene polymers containing blowing agent. 4,369,227, Cl. 428-407.000.
Hake, Kenneth A.; and Palen, Nelson J., to Kent Manufacturing Co., Inc. Universal auxiliary implement mount. 4,368,783, Cl. 172-705.000.
Hall, Joseph E., to Texas Instruments Incorporated. Block output CCD imager. 4,369,468, Cl. 358-213.000.
Halliburton Company: *See—*
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Han, U. Yeon, to Korea Kef Oil Industrial Co., Ltd. Process for the preparation of high octane value substitute fuel for a spark ignition type internal combustion engine. 4,369,043, Cl. 44-53.000.
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Hanmura, Hisao, to Hitachi, Ltd. Serial-parallel signal converter. 4,369,504, Cl. 365-238.000.
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Hart, Bill J.; Smith, Billy E.; and Short, Maverine H., to National Union Electric Corporation. Microwave baking utensil. 4,369,346, Cl. 219-10.55E.
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Hash, Juel T., to Jorges, Shirley M., a part interest. Apparatus and method for forming tufted pile fabric. 4,368,679, Cl. 112-79.00R.
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Hausselt, Jurgen; Schiwiora, Harry; and Stumke, Manfred, to Degussa Aktiengesellschaft. Gold containing preparation for coating metallic parts. 4,369,068, Cl. 106-1.180.
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Hawkins, Warren H. Supplantary reservoir for evaporative cooler. 4,369,148, Cl. 261-36.00R.
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Hays, Dan A., to Xerox Corporation. Development process and apparatus. 4,368,970, Cl. 355-3.0DD.
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Heath, Rodney T. Vertical drip separator apparatus and method. 4,369,049, Cl. 55-80.000.
Heavner, George, to Ortho Pharmaceutical Corporation. N-Protected pentapeptides useful as intermediates in the preparation of thymopoietin pentapeptide. 4,369,137, Cl. 260-112.50R.
Hedrick, Ross M.; Woodbrey, James C.; Gabbert, James D.; and Erickson, Floyd B., to Monsanto Company. Metal-thermoplastic-metal laminates. 4,369,222, Cl. 428-216.000.
Heesen, Paul-Heinz: *See—*
  Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased; Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, 4,369,094, Cl. 201-41.000.
Heger, Friedl: *See—*
  Czepel, Hubert; Heger, Friedl; and Dobramysl, Wilhelm, 4,369,286, Cl. 524-598.000.
Heidemann, Gunter: *See—*
  Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,369,182, Cl. 424-199.000.
Heidrich, Karl; and Ginzel, Lothar, to Thomson-CSF. X Or gamma radiation detector, particularly for radiology and a radiological apparatus comprising such a detector. 4,369,369, Cl. 250-484.100.
Heintz, Richard P. Free-piston engine pump. 4,369,021, Cl. 417-364.000.
Heisterberg, Milton W., to GATX Tank Erection Corporation. Leveling system for dry seal gasholders. 4,369,044, Cl. 48-176.000.
Heitzer, Helmut: *See—*
  Beck, Gunther; Sasse, Klaus; Heitzer, Helmut; Eue, Ludwig; Schmidt, Robert R.; Scheinpflug, Hans; Hammann, Ingeborg; and Brandes, Wilhelm, 4,369,186, Cl. 424-273.00R.
Held, Manfred, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Protective arrangement against projectiles, particularly hollow explosive charge projectiles. 4,368,660, Cl. 89-36.0AE.
Helixon, Michael L., to Alcon Laboratories, Inc. Lens case and heating unit. 4,369,355, Cl. 219-521.000.
Heller, Rudolf: *See—*
  Fried, Reinhard; Heller, Rudolf; and Hubner, Heimo, 4,368,708, Cl. 123-452.000.
Helm, George D.: *See—*
  Cerny, Frank J., Jr.; Helm, George D.; and Wesoloski, Ronald G., 4,369,522, Cl. 455-333.000.
Hemmady, Jayant S.: *See—*
  Rasmussen, John F.; and Hemmady, Jayant S., 4,369,422, Cl. 337-248.000.
Hemphill, Adley W.; Lundquist, Joseph T., Jr.; and McDaniel, Carl V., to W. R. Grace & Co. Method for solution mining of complex carbonaceous materials. 4,368,922, Cl. 299-5.000.
Henriksen, Arthur J.; Thiel, Klaus F.; and Petersen, Carl F., to FMC Corporation. Apparatus for collection of gases and particulates in a furnace feed system. 4,368,676, Cl. 110-101.0CD.
Henrion, Romain: *See—*
  Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, 4,369,060, Cl. 75-60.000.
Hentze, Gunter, to Hentze, Gunter. Apparatus for differential thermal analysis. 4,368,991, Cl. 374-12.000.
Heraeus Quarzschmelze GmbH: *See—*
  Rau, Karlheinz; Lorenz, Horst; Huth, Oswald; Volkmann, Lothar; and Stenzel, Kurt, 4,368,846, Cl. 239-85.000.
Hercules Incorporated: *See—*
  Maslanka, William W.; and Spence, Gavin G., 4,369,292, Cl. 524-535.000.
Herman, Marion J.: *See—*
  Arter, Nelson K.; Avritt, Michael D.; Dodt, William C.; and Herman, Marion J., 4,368,977, Cl. 355-75.000.
Herman Miller, Inc.: *See—*
  Propst, Robert L.; and Mitchell, Terry L., 4,368,675, Cl. 108-53.100.
Hermann, Klaus-Dieter. Hand-held labelling device. 4,369,085, Cl. 156-384.000.
Hermes Precisa International: *See—*
  Gagnebin, Gustave, 4,368,992, Cl. 400-196.000.
Hestair Eagle Limited: *See—*
  Mealing, Barrie E.; Payne, Raymond H.; and Boswell, James, 4,368,554, Cl. 15-354.000.
Hewlett-Packard Company: *See—*
  Brandt, Jobst, 4,369,453, Cl. 346-136.000.
  McConica, Charles H.; Tremblay, Michael A.; and Engel, Pedro F., 4,369,455, Cl. 346-140.00R.
Heydenreich, Frieder; Wulff, Claus; Klein, Lothar; Meissner, Hans-Jurgen; and Bachem, Norbert, to Bayer Aktiengesellschaft. Catalyst for the preparation of bisphenols. 4,369,293, Cl. 525-333.500.
Heye, Hermann: *See—*
  Becker, Kurt; Geisel, Gerhard; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,369,053, Cl. 65-164.000.
Higgins, Michael G.; and Ward, Howard S. Portable cooking apparatus. 4,368,727, Cl. 126-25.00C.
High, Jarald E.: *See—*
  Smith, Donald P.; High, Jarald E.; and Plumb, William W., 4,368,664, Cl. 99-386.000.
Hill, John H.: *See—*
  Woodruff, Keith; Johnson, Donald; Hill, John H.; and Donovan, Barbara A., 4,369,158, Cl. 264-268.000.
Hilti Aktiengesellschaft: *See—*
  Jochum, Peter; and Buechel, Franz, 4,368,588, Cl. 42-1.00R.
Hirabayashi, Tsugio: *See—*
  Katada, Masayasu; Imai, Yuko; and Hirabayashi, Tsugio, 4,368,885, Cl. 273-29.00A.
Hirai, Shiro: *See—*
  Matsui, Yoshiya; Minami, Setsuo; Mochizuki, Noritaka; Harumoto, Isao; Tsunoda, Atsuo; Hirai, Shiro; and Ohkubo, Masami, 4,368,975, Cl. 355-50.000.
Hirai, Yutaka: *See—*
  Yoshioka, Seishiro; Hirai, Yutaka; Fukuda, Tadaji; Fukaya, Masaki; and Nakagiri, Takashi, 4,369,372, Cl. 250-578.000.
Hirano, Kazuhisa: *See—*
  Matsushima, Noriaki; Noguchi, Ken-ichi; and Hirano, Kazuhisa, 4,369,263, Cl. 523-152.000.
Hirata, Toshitaka, to Rocoh Company, Ltd. Apparatus for and method of processing the image signal. 4,369,471, Cl. 358-280.000.
Hirschbein, Aaron M., to Adams Rite Manufacturing Co. Exit door locking mechanism having multiple bolts. 4,368,905, Cl. 292-5.000.
Hirschberg, Eugene H.: *See—*
  Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,369,108, Cl. 208-120.000.
  Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank, 4,369,130, Cl. 252-455.00Z.
Hisamatsu, Minoru: *See—*
  Hoki, Tsuneo; and Hisamatsu, Minoru, 4,369,257, Cl. 521-7[illegible].
Hisel, Gary: *See—*
  Allen, Larry D., 4,368,711, Cl. 123-522.000.

Hitachi Chemical Company, Ltd.: *See—*
Koyama, Tohru; Narahara, Toshikazu; and Aimono, Yuji, 4,369,288, Cl. 525-48.000.
Okunaka, Masaaki; Sudo, Ryoichi; Yokono, Hitoshi; Isogai, Tokio; and Yamazaki, Mitsuo, 4,369,208, Cl. 427-54.100.
Hitachi Koki Company, Limited: *See—*
Kozawa, Hiroomi; and Hosoya, Kensei, 4,368,666, Cl. 101-93.010.
Hitachi, Ltd.: *See—*
Hanmura, Hisao, 4,369,504, Cl. 365-238.000.
Iwashimizu, Tadashi; Morita, Yasukazu; and Igarashi, Koichi, 4,369,209, Cl. 427-123.000.
Kobayashi, Nobuyuki; Hosoda, Taisei; Uzuhashi, Hideo; Innami, Tamio; and Uzuhasi, Humito, 4,369,350, Cl. 219-201.000.
Odaka, Yoshiyuki; and Miura, Kiyoshi, 4,369,241, Cl. 430-25.000.
Okunaka, Masaaki; Sudo, Ryoichi; Yokono, Hitoshi; Isogai, Tokio; and Yamazaki, Mitsuo, 4,369,208, Cl. 427-54.100.
Sone, Masazumi; and Imai, Iwao, 4,369,343, Cl. 200-19.00R.
Umeda, Jun-ichi; and Kajimura, Takashi, 4,369,513, Cl. 372-46.000.
Yamaguma, Naoto; Okamoto, Jyoji; Masai, Tadahisa; Imaizumi, Takeshi; and Okita, Yoshihiro, 4,368,621, Cl. 62-117.000.
Yamakido, Kazuo, 4,369,433, Cl. 340-347.0DA.
Hitachi Maxell, Ltd.: *See—*
Goto, Shinichi, 4,368,860, Cl. 242-199.000.
Hitco: *See—*
Beckley, Don A., 4,369,104, Cl. 204-286.000.
Ho, Bin L.; and Bibby, Stephen, to PRIAM. Enclosed disc drive with improved air flow. 4,369,475, Cl. 360-97.000.
Hochiki Kabushiki Kaisha: *See—*
Adachi, Yasaburo; Ishii, Kanji; Yuchi, Sadataka; and Furuyama, Akira, 4,369,435, Cl. 340-506.000.
Hoechst Aktiengesellschaft: *See—*
Dietz, Erwin; Grossmann, Max; and Maikowski, Michael, 4,369,270, Cl. 524-33.000.
Kuhls, Jurgen; and Weiss, Eduard, 4,369,266, Cl. 523-332.000.
Papenfuhs, Theodor, 4,369,323, Cl. 548-156.000.
Zimmermann, Wolfgang; and Harreus, Albrecht, 4,369,281, Cl. 524-379.000.
Hofen, Willi: *See—*
Seifert, Hermann; Waldmann, Helmut; Wirthwein, Rolf; and Hofen, Willi, 4,369,096, Cl. 203-58.000.
Hoffmann, Herwig: *See—*
Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.
Hoffmann-La Roche Inc.: *See—*
Kyburz, Emilio; and Aschwanden, Werner, 4,369,139, Cl. 548-539.000.
Hofler, Adolf: *See—*
Huber, Leonhard; Hofler, Adolf; and Escales, Eberhard, 4,368,968, Cl. 354-133.000.
Hojo, Shiro: *See—*
Takeno, Tsuneyuki; Iwasaki, Tetsuji; Hojo, Shiro; and Kimura, Eiichi, 4,369,057, Cl. 71-92.000.
Hoki, Tsuneo; and Hisamatsu, Minoru, to Asahi-Dow Limited. Foaming synthetic resin compositions stabilized with certain naphthyl amine compounds. 4,369,257, Cl. 521-79.000.
Holcombe, Wayne T.: *See—*
Giallanza, Frank V.; Tracey, Don M.; and Holcombe, Wayne T., 4,369,443, Cl. 340-825.470.
Holstein & Kappert GmbH: *See—*
Brakelmann, Wolfgang; and Smusch, Gunter, 4,368,753, Cl. 137-240.000.
Holtz, Leonard. Slide holder and transfer device. 4,368,912, Cl. 294-87.00R.
Holtzberg, Matthew W. Composite automobile ignition cable. 4,369,423, Cl. 338-66.000.
Holub, Heinrich: *See—*
Elser, Dieter; and Holub, Heinrich, 4,368,794, Cl. 180-133.000.
Holzknecht, Bernhard: *See—*
Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.
Homma, Rokuro: *See—*
Sekido, Yosihiro; Kurihara, Tutomu; Kazama, Munetada; and Homma, Rokuro, 4,369,451, Cl. 346-76.0PH.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Fujimori, Yoshitugu; Kumata, Masataka; and Mizuhashi, Mamoru, 4,368,945, Cl. 350-1.700.
Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Acrylic resin having excellent solvent resistance and moldability. 4,369,299, Cl. 526-329.700.
Honeywell Information Systems Inc.: *See—*
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,369,510, Cl. 371-13.000.
Pendleton, Robert A.; Edfors, John E.; Whitford, Leonard G.; and Conroy, Walter J., 4,368,867, Cl. 248-346.000.
Honke, Heinrich, to Gebr. Eickhoff Maschinen-fabrik und Eisengiesserei, m.b.H. Cutter drum assembly for a longwall mining machine. 4,368,925, Cl. 299-45.000.
Hopper, Thomas P. Movable insulation apparatus. 4,368,771, Cl. 160-121.00R.
Hori, Kouji: *See—*
Ichinose, Hisao; Katou, Shinji; Matsui, Masashi; and Hori, Kouji, 4,369,010, Cl. 410-101.000.
Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Radiation image information read out device. 4,369,367, Cl. 250-327.200.
Horino, Shigeo: *See—*
Ohba, Hiroshi; and Horino, Shigeo, 4,369,088, Cl. 156-468.000.
Hornle, Reinhold: *See—*
Aign, Volker; Wolf, Karlheinz; Hornle, Reinhold; Pusch, Norbert; and Walz, Klaus, 4,369,070, Cl. 106-308.00N.
Horstman, John W.; and Hanson, George L., to Global Games Unlimited, Inc. Paddle game apparatus. 4,368,890, Cl. 273-328.000.
Horstmann, Walter; Sommer, Richard; Trautwein, Hans; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Process for the preparation of 2-amino-6-nitrobenzothiazole. 4,369,324, Cl. 548-164.000.
Horvath, Jack W.: *See—*
Callahan, Joseph W.; Christoffel, Roy M.; and Horvath, Jack W., 4,369,121, Cl. 252-88.000.
Hoshi, Toshio, to Komori Printing Machinery Company, Ltd. Cutting and folding apparatus in rotary press. 4,368,879, Cl. 270-6.000.
Hoshino, Zenji, to Sanyo Industries, Ltd. Socket means for embedment in a concrete slab. 4,368,606, Cl. 52-711.000.
Hosoda, Taisei: *See—*
Kobayashi, Nobuyuki; Hosoda, Taisei; Uzuhashi, Hideo; Innami, Tamio; and Uzuhasi, Humito, 4,369,350, Cl. 219-201.000.
Hosoe, Kazuya: *See—*
Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,368,978, Cl. 356-1.000.
Hosono, Nagao: *See—*
Kanbe, Junichiro; Hosono, Nagao; and Takahashi, Tohru, 4,368,687, Cl. 118-653.000.
Hosoya, Kazuhiro: *See—*
Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, 4,369,299, Cl. 526-329.700.
Hosoya, Kensei: *See—*
Kozawa, Hiroomi; and Hosoya, Kensei, 4,368,666, Cl. 101-93.010.
Hotmer, Paul A., to Owens-Illinois, Inc. Forming supervisory control means for glassware forming machines. 4,369,052, Cl. 65-160.000.
Hotta, Sadayoshi; and Watanabe, Masanori, to Matsushita Electric Industrial Co., Ltd. Oxide-coated cathode and method of producing the same. 4,369,392, Cl. 313-346.00R.
Houdaille Industries, Inc.: *See—*
McLean, Ronald L.; and Kamman, Gordon W., 4,368,807, Cl. 188-379.000.
Housman, Richard J.; and Kanjo, Wajih, to American Standard Inc. Hand brake for railroad car. 4,368,648, Cl. 74-505.000.
Howbrook, Ernest, to National Research Development Corporation. Apparatus and methods for recognizing handwritten signs. 4,369,431, Cl. 340-146.3SY.
Howerton, Anderson W.; and Foley, Mark P., to Dayco Corporation. Manual tool for cutting polymeric belt body. 4,368,656, Cl. 83-178.000.
Hoyer, Georg-Alexander: *See—*
Nuesslein, Ludwig; Baumert, Dietrich; Hoyer, Georg-Alexander; and Pieroh, Ernst A., 4,369,185, Cl. 424-270.000.
Huber, Joseph B.: *See—*
Brown, Thomas A.; and Huber, Joseph B., 4,368,634, Cl. 72-273.000.
Huber, Leonhard; Hofler, Adolf; and Escales, Eberhard, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus. 4,368,968, Cl. 354-133.000.
Huber, Lothar; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbua GmbH. Internal combustion engine with means for separably coupling discrete crankshafts to each other. 4,368,701, Cl. 123-198.00F.
Hubner, Heimo: *See—*
Fried, Reinhard; Heller, Rudolf; and Hubner, Heimo, 4,368,708, Cl. 123-452.000.
Hughes Aircraft Company: *See—*
Evans, Norol T.; and Nelson, Robert B., 4,369,445, Cl. 343-18.00E.
Rogers, Howard H.; and Stadnick, Steven J., 4,369,212, Cl. 427-352.000.
Hull, Charles G., to Texas Instruments Incorporated. CMDS Frequency divider circuit having invalid signal override. 4,369,379, Cl. 307-225.00C.
Hultberg, Donald E. Solar tracking apparatus and system. 4,368,962, Cl. 353-3.000.
Hum, Robert S. H.: *See—*
Hara, Elmer H.; MacDonald, R. Ian; Hum, Robert S. H.; and Kawasaki, Brian S., 4,369,371, Cl. 250-551.000.
Hund, Franz: *See—*
Buxbaum, Gunter; Schlak, Ottfried; Hund, Franz; and Leitner, Lutz, 4,369,265, Cl. 523-212.000.
Hunziker, Werner. Apparatus for transport and simultaneous surface-treatment of discrete commodities. 4,368,599, Cl. 51-418.000.
Husmann, Horst, to Volkswagenwerk Aktiengesellschaft. Grip roller overrunning clutch. 4,368,809, Cl. 192-45.000.
Hutchins, Ned M., to Occidental Oil Shale, Inc. Non-subsidence method for developing an in situ oil shale retort. 4,368,921, Cl. 299-2.000.
Hutchinson, Eugene B.; and Dailey, Donald L., to Deere & Company. Height adjustment and safety stop for a harvester reel. 4,368,609, Cl. 56-221.000.
Hutchinson, Wendell R.; and Shurboff, John D., to Motorola Inc. Permanent fluxing agent and solder-through conformal coating. 4,369,287, Cl. 524-700.000.
Huth, Oswald: *See—*
Rau, Karlheinz; Lorenz, Horst; Huth, Oswald; Volkmann, Lothar; and Stenzel, Kurt, 4,368,846, Cl. 239-85.000.

Hydor Corporation: *See—*
Galluzzo, Daniel T.; and Dumler, Charles L., 4,369,102, Cl. 204-228.000.
I.S.C. Smelting Limited: *See—*
Monk, Hayden, 4,369,164, Cl. 423-24.000.
Ichinose, Hisao; Katou, Shinji; Matsui, Masashi; and Hori, Kouji, to Nissan Motor Co., Ltd. Reinforced vehicle frame and tie down eye structure. 4,369,010, Cl. 410-101.000.
ICI Americas Inc.: *See—*
Kruse, Walter M.; and Stephen, John F., 4,369,316, Cl. 544-94.000.
Iedlinskaya, Zoya M.: *See—*
Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.
Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combination car system. 4,368,793, Cl. 180-14.00R.
Igarashi, Koichi: *See—*
Iwashimizu, Tadashi; Morita, Yasukazu; and Igarashi, Koichi, 4,369,209, Cl. 427-123.000.
Igarashi, Sadao: *See—*
Aoki, Kazuharu; and Igarashi, Sadao, 4,369,414, Cl. 333-81.00R.
Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,368,700, Cl. 123-198.00F.
Ikeguchi, Nobuyuki; and Osaki, Yasunori, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition comprising cyanate ester and polyisocyanate. 4,369,302, Cl. 528-73.000.
Ikeguchi, Nobuyuki: *See—*
Gaku, Morio; and Ikeguchi, Nobuyuki, 4,369,304, Cl. 528-322.000.
Imai, Iwao: *See—*
Sone, Masazumi; and Imai, Iwao, 4,369,343, Cl. 200-19.00R.
Imai, Yuko: *See—*
Katada, Masayasu; Imai, Yuko; and Hirabayashi, Tsugio, 4,368,885, Cl. 273-29.00A.
Imaizumi, Takeshi: *See—*
Yamaguma, Naoto; Okamoto, Jyoji; Masai, Tadahisa; Imaizumi, Takeshi; and Okita, Yoshihiro, 4,368,621, Cl. 62-117.000.
Immuno Nuclear Corporation: *See—*
Lindall, Arnold W., 4,369,138, Cl. 260-112.50R.
Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Camera data recording device. 4,368,967, Cl. 354-106.000.
Inagaki, Kazunori: *See—*
Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, 4,369,519, Cl. 455-60.000.
Inanaga, Takuzi: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,369,474, Cl. 360-96.100.
Inasawa, Hideho; and Akiyama, Yoshinori, to Nippon Motor Company, Limited. Pintle catch. 4,368,557, Cl. 16-263.000.
Inata, Hiroo: *See—*
Matsumura, Shunichi; Inata, Hiroo; and Ogasawara, Makoto, 4,369,207, Cl. 427-54.100.
Inbar, Dan; and Ganin, Alexander, to Elscint Ltd. Method of and means for compensating for the dead time of a gamma camera. 4,369,495, Cl. 364-414.000.
Industrie Pirelli, S.p.A.: *See—*
Egidi, Paolo; and Squerti, Federico, 4,369,160, Cl. 264-326.000.
Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft Zweigniederlassung Keller & Knappich: *See—*
Steinhart, Wilhelm, 4,368,662, Cl. 92-52.000.
Inland Steel Company: *See—*
Lowrance, Kenneth F., II; and Fiacco, Ferdinand, 4,369,032, Cl. 432-247.000.
Innami, Tamio: *See—*
Kobayashi, Nobuyuki; Hosoda, Taisei; Uzuhashi, Hideo; Innami, Tamio; and Uzuhasi, Humito, 4,369,350, Cl. 219-201.000.
Innes, Charles B., Jr.: *See—*
Wentzell, Timothy H.; and Innes, Charles B., Jr., 4,368,644, Cl. 73-634.000.
Inoue, Yoshio: *See—*
Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.
InsCon Cable Inc.: *See—*
Sanchez, Florencio, 4,368,613, Cl. 57-11.000.
Institut Francais du Petrole: *See—*
Rojey, Alexandre; and Cohen, Georges, 4,368,779, Cl. 165-165.000.
Institute of Gas Technology: *See—*
Vorres, Karl S., 4,369,045, Cl. 48-197.00R.
Instrumentation Laboratory Inc.: *See—*
Cormier, Alan D.; Feil, Marvin; and Legg, Kenneth D., 4,369,127, Cl. 436-111.000.
International Business Machines Corporation: *See—*
Anastassiou, Dimitris; and Mitchell, Joan L., 4,369,463, Cl. 358-135.000.
Arter, Nelson K.; Avritt, Michael D.; Dodt, William C.; and Herman, Marion J., 4,368,977, Cl. 355-75.000.
Bahr, Dietrich J.; and Briska, Marian, 4,369,271, Cl. 524-40.000.
Bakeman, Paul E., Jr.; Fortino, Andres G.; Geipel, Henry J., Jr.; Kasold, Jeffrey P.; and Quinn, Robert M., 4,369,072, Cl. 148-1.500.
Brown, Caroll J.; and Provazek, Lionel D., 4,369,501, Cl. 365-8.000.
Dougherty, William E., 4,369,154, Cl. 264-63.000.
Judd, Ian D., 4,369,396, Cl. 315-369.000.
International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A., 4,369,133, Cl. 252-522.00R.
International Harvester Company: *See—*
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,369,261, Cl. 521-189.000.
International Jensen Incorporated: *See—*
Urban, Keith F., 4,368,866, Cl. 248-286.000.
International Standard Electric Corporation: *See—*
Weiss, Eberhard, 4,369,460, Cl. 358-67.000.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Tenzer, Walter, 4,368,690, Cl. 119-1.000.
Irioka, Kazuyoshi: *See—*
Tachita, Ryobun; Fukukita, Hiroshi; Hayakawa, Yoshihiro; and Irioka, Kazuyoshi, 4,368,643, Cl. 73-626.000.
Irion & Vosseler, Zahlerfabrik: *See—*
Rogg, Werner, 4,368,646, Cl. 73-861.550.
Irmer, Adolf, to Wavin B.V. Plastic socket pipe part and method of manufacturing same. 4,369,159, Cl. 264-296.000.
Irsid: *See—*
Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, 4,369,060, Cl. 75-60.000.
Ishida, Atsuo: *See—*
Deguchi, Katsuhiko; Arisawa, Masatoshi; Ishida, Atsuo; and Ooshima, Katsuaki, 4,369,134, Cl. 252-526.000.
Ishida, Masahide: *See—*
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,369,334, Cl. 179-1.0SM.
Ishii, Kanji: *See—*
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Ishikawa, Kohji: *See—*
Kimura, Kenji; Ishikawa, Kohji; and Narumi, Naoaki, 4,369,511, Cl. 371-21.000.
Isogai, Hideaki, to Fujitsu Limited. Semiconductor memory circuit. 4,369,502, Cl. 365-155.000.
Isogai, Hideaki, to Fujitsu Limited. Decoder circuit. 4,369,503, Cl. 365-189.000.
Isogai, Tokio: *See—*
Okunaka, Masaaki; Sudo, Ryoichi; Yokono, Hitoshi; Isogai, Tokio; and Yamazaki, Mitsuo, 4,369,208, Cl. 427-54.100.
Istvan, Sandor: *See—*
Jarai, Miklos; Piukovich, Sandor; Istvan, Sandor; Gado, Istvan; Szell, Valeria; and Barta, Istvan, 4,369,251, Cl. 435-80.000.
Ito, Toshiyasu: *See—*
Manabe, Katsuhide; Ito, Toshiyasu; and Tsutsui, Masatoshi, 4,369,225, Cl. 428-334.000.
ITT Industries, Inc.: *See—*
Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.
ITW deFrance: *See—*
Morel, Henri, 4,368,999, Cl. 403-283.000.
Ives, Donald C. A., to Danepak Limited. Statistical weighing. 4,368,790, Cl. 177-50.000.
Iwagami, Fusao; and Iwai, Hiroji, to Sharp Kabushiki Kaisha. Printer head in an ink jet system printer. 4,369,450, Cl. 346-75.000.
Iwai, Hiroji: *See—*
Iwagami, Fusao; and Iwai, Hiroji, 4,369,450, Cl. 346-75.000.
Iwao, Hachiya; and Susumu, Igarashi, to Meiji Seika Kaisha, Ltd. Method for producing fatty confectioneries having three-dimensional decoration deposited thereon. 4,369,200, Cl. 426-660.000.
Iwasaki, Tetsuji: *See—*
Takeno, Tsuneyuki; Iwasaki, Tetsuji; Hojo, Shiro; and Kimura, Eiichi, 4,369,057, Cl. 71-92.000.
Iwasawa, Mineo; Endo, Yukio; and Yamamoto, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid-state television camera. 4,369,459, Cl. 358-50.000.
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Sato, Masaaki; Osanai, Akira; and Iwase, Hajime, 4,369,478, Cl. 360-137.000.
Iwashimizu, Tadashi; Morita, Yasukazu; and Igarashi, Koichi, to Hitachi, Ltd. Method of manufacturing a magnetic bubble memory element. 4,369,209, Cl. 427-123.000.
Izumi, Tokio: *See—*
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Jackson, Christopher J.: *See—*
Meeker, James A.; Jackson, Christopher J.; and Watson, Rick D., 4,368,836, Cl. 226-172.000.
Jackson, James M. Postage estimator device. 4,368,791, Cl. 177-126.000.
Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., to V.G.A.S., Inc. Vaporous gasoline fuel system and control therefor. 4,368,712, Cl. 123-523.000.
Jacob, Lionel C.; and Yarborough, G. Wirth, to Cool Spool, Inc. Fishing reel drag. 4,368,857, Cl. 242-84.50A.
Jacobsen, Finn, to Kamyr AB. Apparatus for treatment of suspensions in movement. 4,368,628, Cl. 68-181.00R.
Jaffe, Edward E., to Du Pont de Nemours, E. I., and Company. Process for preparing polyolefin resin extended pigments comprising salt milling crude pigment with the resin. 4,369,272, Cl. 524-88.000.
Jagenberg Werke AG: *See—*
Bodewein, Jakob, 4,368,837, Cl. 226-176.000.

  - Mohn, Hans-Werner; and Zodrow, Rudolf, 4,369,089, Cl. 156-568.000.
  - Pfulb, Manfred; and Zodrow, Rudolf, 4,369,214, Cl. 427-428.000.
  - Schonmeier, Herbert; and Welp, Ewald G., 4,368,855, Cl. 242-56.00R.
- Jakob, Heinz: *See—*
  - Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.
- Jamaica Manufacturing (Canada) Co., Ltd.: *See—*
  - Roberts, Joseph S., 4,368,754, Cl. 137-315.000.
- Jan, Gerald, to Ciba-Geigy Ltd. Process for the production of colored photographic images by the silver dye-bleach process. 4,369,318, Cl. 544-234.000.
- Janome Sewing Machine Co. Ltd.: *See—*
  - Fujimura, Toshiro, 4,368,680, Cl. 112-158.00E.
  - Hanyu, Susumu; Morimoto, Shuzo; and Sano, Yasuro, 4,368,681, Cl. 112-158.00A.
  - Takenoya, Hideaki, 4,368,682, Cl. 112-158.00E.
  - Takenoya, Hideaki, 4,368,683, Cl. 112-314.000.
- Janssen Pharmaceutica N.V.: *See—*
  - Stokbroekx, Raymond A.; Luyckx, Marcel G. M.; and Willems, Joannes J. M., 4,369,184, Cl. 424-267.000.
- Jantzen, Steven L.: *See—*
  - Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., 4,368,927, Cl. 303-18.000.
  - Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., 4,368,928, Cl. 303-18.000.
- Japan Hydrazine Company, Inc.: *See—*
  - Takeno, Tsuneyuki; Iwasaki, Tetsuji; Hojo, Shiro; and Kimura, Eiichi, 4,369,057, Cl. 71-92.000.
- Jarai, Miklos; Piukovich, Sandor; Istvan, Sandor; Gado, Istvan; Szell, Valeria; and Barta, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Method for the production of sisomicin. 4,369,251, Cl. 435-80.000.
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  - Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, 4,368,668, Cl. 101-212.000.
- Jenkins, Arthur P.: *See—*
  - Coote, Jack H.; and Jenkins, Arthur P., 4,368,974, Cl. 355-35.000.
- Jennings, Robert E.: *See—*
  - Thorn, Joseph H.; and Jennings, Robert E., 4,368,636, Cl. 73-40.50R.
- Jentzsch, Arndt: *See—*
  - Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, 4,368,668, Cl. 101-212.000.
- Jochum, Peter; and Buechel, Franz, to Hilti Aktiengesellschaft. Explosive powder driven fastening fastening element setting device. 4,368,588, Cl. 42-1.00R.
- Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Printing plate mounting arrangement. 4,368,668, Cl. 101-212.000.
- Johnson, Ansell: *See—*
  - Allen, Larry D., 4,368,711, Cl. 123-522.000.
- Johnson, Donald: *See—*
  - Woodruff, Keith; Johnson, Donald; Hill, John H.; and Donovan, Barbara A., 4,369,158, Cl. 264-268.000.
- Johnson, Douglas L., to American Cyanamid Company. Polyurethane foam compositions and a process for making same using a melamine polyol. 4,369,258, Cl. 521-107.000.
- Johnson, Joseph M.: *See—*
  - Molewyk, Terry L.; and Johnson, Joseph M., 4,368,715, Cl. 123-550.000.
- Johnson, Keith R., to Copar Corporation. Means for sensing and controlling the amount of starch applied to form corrugated board. 4,369,080, Cl. 156-64.000.
- Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Soft error rewrite control system. 4,369,510, Cl. 371-13.000.
- Jolivet, B. N. Panel hanger. 4,369,014, Cl. 414-11.000.
- Jones, Addison B., to Rockwell International Corporation. Beam source for deposition of thin film alloys. 4,368,689, Cl. 118-688.000.
- Jones, Howard; Clark, Robert L.; and Zimmerman, Morris, to Merck & Co., Inc. 2-Pyridyl-1,2-benzisothiazolinone-1,1-dioxides and their use as selective protease inhibitors. 4,369,183, Cl. 424-263.000.
- Jones, John H., to Beatrice Foods Co. Tear-off postal receipt form. 4,368,903, Cl. 283-21.000.
- Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., to Glaxo Group Limited. Intermediates for use in the preparation of cephalosporin antibiotics. 4,369,313, Cl. 544-24.000.
- Jorges, Shirley M.: *See—*
  - Hash, Juel T., 4,368,679, Cl. 112-79.00R.
- Judd, Ian D., to International Business Machines Corp. Color cathode-ray tube apparatus with shadow mask. 4,369,396, Cl. 315-369.000.
- Junkers, John K. Continuous ratchet drive. 4,368,655, Cl. 81-57.390.
- Junkosha Company, Ltd.: *See—*
  - Nomi, Haruo, 4,368,766, Cl. 150-1.000.
- Kabel- und Metallwerke Gutehoffnungshutte AG: *See—*
  - Uhlmann, Otto; and Uhlmann, Klaus-Peter, 4,368,630, Cl. 72-69.000.
- Kabushiki Kaisha Daini Seikosha: *See—*
  - Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,368,990, Cl. 368-157.000.
- Kabushiki Kaisha Kobe Seiko Sho: *See—*
  - Fukutsuka, Toshio; Shimogori, Kazutoshi; Yamamoto, Etsuo; and Miki, Kenji, 4,369,073, Cl. 148-6.14R.
- Kadomaru, Kazuo: *See—*
  - Nakahama, Kozo; Kadomaru, Kazuo; and Okaniwa, Masuzo, 4,369,086, Cl. 156-403.000.
- Kai, Yasuhito; Nabeta, Teiichi; and Takemi, Akio, to Nippondenso Co., Ltd. Air conditioner control method and apparatus. 4,368,843, Cl. 236-49.000.
- Kajimura, Takashi: *See—*
  - Umeda, Jun-ichi; and Kajimura, Takashi, 4,369,513, Cl. 372-46.000.
- Kalashnikov, Vladimir I.: *See—*
  - Malkin, Daniel D.; Umerenkov, Anatoly S.; Ketsaris, Alexandr A.; Kruglov, Gennady A.; and Kalashnikov, Vladimir I., 4,369,385, Cl. 310-49.00R.
- Kamber, Bruno: *See—*
  - Rink, Hans; Sieber, Peter; and Kamber, Bruno, 4,369,179, Cl. 424-177.000.
- Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, to Pioneer Electronic Corporation. Player for magnetic tape cartridge recordings. 4,369,474, Cl. 360-96.100.
- Kamman, Gordon W.: *See—*
  - McLean, Ronald L.; and Kamman, Gordon W., 4,368,807, Cl. 188-379.000.
- Kamyr AB: *See—*
  - Jacobsen, Finn, 4,368,628, Cl. 68-181.00R.
- Kan, Fumitaka: *See—*
  - Watanabe, Tsuyoshi; Nakahata, Kimio; Kan, Fumitaka; and Sakurai, Masaaki, 4,368,971, Cl. 355-3.0DD.
- Kanai, Ryokichi: *See—*
  - Tomizawa, Akimori; Osaka, Hiroshi; and Kanai, Ryokichi, 4,369,462, Cl. 358-124.000.
- Kanazawa, Hirotaka; Yasuda, Yoshikazu; Harada, Kozo; and Yoshida, Susumu, to Toyo Kogyo Co., Ltd.; and Delta Kogyo Co., Ltd. Method of manufacturing a shaft structure having a spherical bulb. 4,368,572, Cl. 29-432.000.
- Kanbe, Junichiro; Hosono, Nagao; and Takahashi, Tohru, to Canon Kabushiki Kaisha. Method and apparatus for developing magnetic latent image. 4,368,687, Cl. 118-653.000.
- Kanegae, Hidetoshi: *See—*
  - Abo, Toshimi; and Kanegae, Hidetoshi, 4,368,616, Cl. 60-39.14R.
- Kanegafuchi Chemical Industry Company, Limited: *See—*
  - Kozaki, Yuichi; Hata, Shingo; Kawaharada, Hajime; and Watanabe, Kiyoshi, 4,369,177, Cl. 424-175.000.
- Kaneko, Hideaki: *See—*
  - Negita, Junichi; Yamada, Yuichiro; Kaneko, Hideaki; and Ogino, Takao, 4,368,776, Cl. 165-133.000.
- Kaneko, Takayuki: *See—*
  - Nishimura, Yoshinori; Kaneko, Takayuki; Zamma, Jun; and Nakajima, Youichi, 4,368,778, Cl. 165-158.000.
- Kaneko, Yutaka; and Fukuda, Mitsuhisa, to Ricoh Company, Ltd. Information recording method and apparatus. 4,368,946, Cl. 350-3.780.
- Kanjo, Wajih: *See—*
  - Housman, Richard J.; and Kanjo, Wajih, 4,368,648, Cl. 74-505.000.
- Kannenberg, Donald P.: *See—*
  - Parsons, William R.; Bible, Christopher T.; and Kannenberg, Donald P., 4,369,496, Cl. 364-417.000.
- Kansas State University Research Foundation: *See—*
  - Smalley, Edward A.; Boguski, Mark J.; Casey, Todd A.; and Chipperfield, Dwight D., 4,368,899, Cl. 280-477.000.
- Kao Soap Co., Ltd.: *See—*
  - Deguchi, Katsuhiko; Arisawa, Masatoshi; Ishida, Atsuo; and Ooshima, Katsuaki, 4,369,134, Cl. 252-526.000.
  - Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, 4,369,037, Cl. 8-127.510.
  - Takeno, Tsuneyuki; Iwasaki, Tetsuji; Hojo, Shiro; and Kimura, Eiichi, 4,369,057, Cl. 71-92.000.
- Kapreilian, Harry C.; Hart, Vincent J.; and Robeson, Robert O. Piano pedal assembly. 4,368,659, Cl. 84-228.000.
- Karl Schmidt GmbH: *See—*
  - Moebus, Horst, 4,368,697, Cl. 123-41.350.
- Karlan, Paul. Needle stream valve. 4,368,851, Cl. 239-581.000.
- Karloske, Joan E.: *See—*
  - Cordts, Howard P.; and Karloske, Joan E., 4,369,224, Cl. 428-285.000.
- Karrer, Fritz; Pedretti, Alberto; and Mellgren, Per G. Process and apparatus for liquid treatment of fiber material. 4,369,035, Cl. 8-101.000.
- Karrh, Randolph C.: *See—*
  - Mihalovits, Donna M., 4,369,180, Cl. 424-177.000.
- Karsh, Herbert, to Perkin-Elmer Corporation, The. Multi-track recording head assembly with electromagnetic cross-talk neutralization. 4,369,476, Cl. 360-123.000.
- Kasahara, Hideo; Fukuda, Kunio; and Mizutani, Yukihisa, to Asahi-Dow Limited. Resin composition for injection molding and method for producing the same. 4,369,278, Cl. 524-147.000.
- Kashiwa, Norio: *See—*
  - Toyota, Akinori; and Kashiwa, Norio, 4,369,306, Cl. 528-485.000.
- Kashulin, Sergei M.: *See—*
  - Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.

- Kasold, Jeffrey P.: *See—*
  - Bakeman, Paul E., Jr.; Fortino, Andres G.; Geipel, Henry J., Jr.; Kasold, Jeffrey P.; and Quinn, Robert M., 4,369,072, Cl. 148-1.500.
- Kasparek, Alois: *See—*
  - Wahle, Gunter; and Kasparek, Alois, 4,368,742, Cl. 131-88.000.
- Kasper, Alan H.: *See—*
  - Mathe, Istvan; and Kasper, Alan H., 4,368,942, Cl. 339-186.00M.
- Kaster, Robert L. Anastomotic fitting. 4,368,736, Cl. 128-334.00C.
- Katada, Masayasu; Imai, Yuko; and Hirabayashi, Tsugio, to Sony Corporation. Spring type ball emitting apparatus. 4,368,885, Cl. 273-29.00A.
- Kataoka, Hideto: *See—*
  - Tsurutani, Iwao; Kataoka, Hideto; and Taoka, Shinichi, 4,369,356, Cl. 219-535.000.
- Kataoka, Hiroshi, to Koei Machine Co., Ltd. Self-propelling bevel fusion-cutting machine. 4,368,876, Cl. 266-54.000.
- Katou, Shinji: *See—*
  - Ichinose, Hisao; Katou, Shinji; Matsui, Masashi; and Hori, Kouji, 4,369,010, Cl. 410-101.000.
- Katzen, Sol. Process for improving the health of animals. 4,369,199, Cl. 426-641.000.
- Kawaguchi, Masayuki: *See—*
  - Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,369,170, Cl. 423-366.000.
- Kawaharada, Hajime: *See—*
  - Kozaki, Yuichi; Hata, Shingo; Kawaharada, Hajime; and Watanabe, Kiyoshi, 4,369,177, Cl. 424-175.000.
- Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
  - Deutsch, Ralph; and Deutsch, Leslie J., 4,368,658, Cl. 84-1.030.
- Kawamata, Mitsuo: *See—*
  - Matsuzaki, Atsushi; and Kawamata, Mitsuo, 4,369,466, Cl. 358-170.000.
- Kawamura Institute of Chemical Research: *See—*
  - Miyahara, Tesshu; Arai, Yoshi; and Kimura, Kazuo, 4,369,076, Cl. 148-105.000.
- Kawasaki, Brian S.: *See—*
  - Hara, Elmer H.; MacDonald, R. Ian; Hum, Robert S. H.; and Kawasaki, Brian S., 4,369,371, Cl. 250-551.000.
- Kawasaki Kasei Chemicals Ltd.: *See—*
  - Komatsu, Tatsuyoshi; Usui, Kenji; and Numata, Shigeaki, 4,369,140, Cl. 260-369.000.
- Kawashima, Hideyuki, to Citizen Watch Company Limited. Electronic timepiece having a system for audible generation of a melody. 4,368,989, Cl. 368-74.000.
- Kazama, Munetada: *See—*
  - Sekido, Yosihiro; Kurihara, Tutomu; Kazama, Munetada; and Homma, Rokuro, 4,369,451, Cl. 346-76.0PH.
- Kearney-National Inc.: *See—*
  - Thrash, Robert N.; and Crooks, W. Ralph, 4,368,632, Cl. 72-198.000.
- Keck, Karl: *See—*
  - Maucher, Paul; Keck, Karl; and Pretzel, Dieter, 4,368,810, Cl. 192-70.280.
- Kendall Company, The: *See—*
  - Shah, Kishore R., 4,369,229, Cl. 428-421.000.
- Kennametal Inc.: *See—*
  - Brown, Thomas A.; and Huber, Joseph B., 4,368,634, Cl. 72-273.000.
- Kent Manufacturing Co., Inc.: *See—*
  - Hake, Kenneth A.; and Palen, Nelson J., 4,368,783, Cl. 172-705.000.
- Kenzie, Bryan W.: *See—*
  - Aldred, Phillip J. E.; Taylor, Peter J.; and Kenzie, Bryan W., 4,368,980, Cl. 356-240.000.
- Keogh, Michael J., to Union Carbide Corporation. Masterbatch composition comprising a matrix having a polysiloxane dispersed therein and a method for the preparation thereof. 4,369,289, Cl. 525-105.000.
- Keogh, Michael J., to Union Carbide Corporation. Ethylene polymer compositions stabilized against water treeing by an organic titanate; and the use thereof as insulation about electrical conductors. 4,369,331, Cl. 174-110.0PM.
- Kerley, Bernard J., Jr. Recovery of precious metals from difficult ores. 4,369,061, Cl. 75-103.000.
- Kernforschungsanlage Julich GmbH: *See—*
  - Forster, Siegfried; and Sack, Berthold, 4,369,029, Cl. 432-29.000.
- Kerwin, Daniel, to Meyercord Co., The. Method and apparatus for applying decals to articles. 4,369,082, Cl. 156-238.000.
- Ketsaris, Alexandr A.: *See—*
  - Malkin, Daniel D.; Umerenkov, Anatoly S.; Ketsaris, Alexandr A.; Kruglov, Gennady A.; and Kalashnikov, Vladimir I., 4,369,385, Cl. 310-49.00R.
- Keung, Chue-Kwok J.; and Rathgeber, Donald E., to Union Carbide Canada Limited. Process for dispersing carbon black in polyethylene. 4,369,267, Cl. 523-351.000.
- Khanna, Satish C., to Ciba-Geigy Corporation. Process for the manufacture of prolonged action vincamine preparations, the vincamine preparations so obtained, and medicaments containing them. 4,369,175, Cl. 424-79.000.
- Kida, Yasuji; and Shikata, Kazuo, to Tokuyama Soda Kabushiki Kaisha. Novel cured resin, process for production thereof, and lens composed of said resin from bis(alkyleneoxyphenyl)-diacrylate, bis(alkyleneoxyphenyl)diallyl ether, bis(alkyleneoxyphenyl)diallyl carbonate monomers. 4,369,298, Cl. 526-313.000.
- Kim, Tai K.; MacInnis, Martin B.; Vogt, Martin C.; and McClintic, Robert P., to GTE Products Corporation. Recovery of tungsten values from alkali tungstate solutions by solvent extraction. 4,369,165, Cl. 423-54.000.
- Kimura, Eiichi: *See—*
  - Takeno, Tsuneyuki; Iwasaki, Tetsuji; Hojo, Shiro; and Kimura, Eiichi, 4,369,057, Cl. 71-92.000.
- Kimura, Kazuo: *See—*
  - Miyahara, Tesshu; Arai, Yoshi; and Kimura, Kazuo, 4,369,076, Cl. 148-105.000.
- Kimura, Kenji; Ishikawa, Kohji; and Narumi, Naoaki, to Nippon Telegraph & Telephone Public Corp.; and Takeda Riken Kogyo Kabushiki Kaisha. Semiconductor memory test equipment. 4,369,511, Cl. 371-21.000.
- Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, to Sony Corporation; and Shin-Etsu Chemical Co., Ltd. Magnetic recording medium. 4,369,230, Cl. 428-421.000.
- Kimura, Tadashi, to Olympus Optical Co., Ltd. Zoom lens system. 4,368,953, Cl. 350-426.000.
- King, John M.: *See—*
  - deVries, Louis; and King, John M., 4,369,119, Cl. 252-42.700.
- King, Robert W., to Copeland Corporation. Valve assembly. 4,368,755, Cl. 137-512.300.
- Kinoshita, Hiroo; Suzuki, Yoshihiro; Saruhashi, Shoji; and Sato, Masayasu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Cataler Industrial Co., Ltd. Exhaust gas purifying catalyst. 4,369,132, Cl. 252-466.0PT.
- Kirn, Anthony E.: *See—*
  - Beyers, Marvin E.; Kirn, Anthony E.; and Untz, Robert W., 4,368,929, Cl. 305-11.000.
- Kirner, Hans D.; and Wegmann, Jacques, deceased (by Wegmann, Ruth, Alex Wegman, Yvonnne Wegmann, heirs), to Rohner AG Pratteln. Highly concentrated, storage-stable and heat-resistant, flowable aqueous dispersion of active ingredients which are sparingly soluble or insoluble in water. 4,369,040, Cl. 8-527.000.
- Kiss, Janos: *See—*
  - Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, 4,369,252, Cl. 435-119.000.
- Kita, Yasuo, to Shimadzu Co. Wind turbine. 4,368,692, Cl. 122-26.000.
- Kjaer, Ian; Moeller, Hans J.; and Mortensen, Niels E., to Skandinavisk Tobakskompagnie A/S. Device for spreading whole tobacco leaves. 4,368,744, Cl. 131-324.000.
- Kleemann, Axel: *See—*
  - Schalke, Peter; and Kleemann, Axel, 4,369,322, Cl. 546-330.000.
- Klein, Lothar: *See—*
  - Heydenreich, Frieder; Wulff, Claus; Klein, Lothar; Meissner, Hans-Jurgen; and Bachem, Norbert, 4,369,293, Cl. 525-333.500.
- Klein, Max. Liquid filtration method. 4,369,116, Cl. 210-778.000.
- Kline, Michael J. Pulse combustion system for boilers. 4,368,677, Cl. 110-212.000.
- Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
  - Finsterwalder, Gerhard; and Saftig, Jakob, 4,368,702, Cl. 123-261.000.
- Klug, Gerhard: *See—*
  - Schilo, Diederich; Achtsnit, Hans-Dieter; and Klug, Gerhard, 4,369,155, Cl. 264-103.000.
- Knecht, Heinz: *See—*
  - Meller, Theo; Knecht, Heinz; Kohberg, Ewald; and Lohr, Karl-Heinz, 4,368,878, Cl. 267-64.170.
- Knoche, Karl F.; Trumper, Heinrich; and Stehmeier, Dieter. Method and apparatus for use of heat taken up at low temperature. 4,368,623, Cl. 62-235.100.
- Kobayashi, Kunio: *See—*
  - Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.
- Kobayashi, Nobuyuki; Hosoda, Taisei; Uzuhashi, Hideo; Innami, Tamio; and Uzuhasi, Humito, to Hitachi, Ltd. Electric defroster heater mounting arrangement for stacked finned refrigeration evaporator. 4,369,350, Cl. 219-201.000.
- Kobayashi, Shigeru: *See—*
  - Yamamura, Yuichi; Azuma, Ichiro; and Kobayashi, Shigeru, 4,369,178, Cl. 424-177.000.
- Kober, Harald. Method of manufacturing reinforced fibers for mineral structural materials, and a structural element of a fiber-reinforced mineral structural material. 4,369,201, Cl. 427-4.000.
- Kober, Marvin; and Battaglia, Eugene, to O. K. Machine and Tool Corp. Adjustable stripping tool. 4,368,654, Cl. 81-9.50R.
- Kodama, Hisashi, to Aisin Seiki Kabushiki Kaisha. Self-contained type lash adjuster. 4,368,699, Cl. 123-90.580.
- Koehn, Richard R.: *See—*
  - Nash, Richard C.; Hanson, David W.; and Koehn, Richard R., 4,369,153, Cl. 264-62.000.
- Koei Machine Co., Ltd.: *See—*
  - Kataoka, Hiroshi, 4,368,876, Cl. 266-54.000.
- Koepff, Peter J.: *See—*
  - Graesser, Wolfgang; Koepff, Peter J.; and Tomka, Ivan, 4,369,069, Cl. 106-125.000.
- Kohberg, Ewald: *See—*
  - Meller, Theo; Knecht, Heinz; Kohberg, Ewald; and Lohr, Karl-Heinz, 4,368,878, Cl. 267-64.170.
- Kohl, Paul A.; and Ostermayer, Frederick W., Jr., to Bell Telephone Laboratories, Incorporated. Photoelectrochemical etching of semiconductors. 4,369,099, Cl. 204-129.300.

Kohmoto, Teruo: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.

Kohyama, Katsuhisa: *See—*
Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; Sakata, Katsuyuki; and Matsuno, Akira, 4,369,303, Cl. 528-173.000.

Kojima, Seiichiro, to Fuji Jukogyo Kabushiki Kaisha. Kneepad structure. 4,368,901, Cl. 280-748.000.

Kojima, Tatsuku: *See—*
Saito, Koichi; Kojima, Tatsuku; and Kosaka, Yoshikazu, 4,369,036, Cl. 8-115.500.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Satoh, Hideo; and Matsunaka, Naoto, 4,369,448, Cl. 343-781.0CA.
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,369,523, Cl. 455-601.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, 4,369,519, Cl. 455-60.000.

Kolbe, Uwe. Device for suspension of tennis rackets or the like. 4,368,865, Cl. 248-214.000.

Kollmorgen Technologies Corporation: *See—*
Langley, Lawrence W., 4,369,383, Cl. 310-12.000.

Komatsu, Tatsuyoshi; Usui, Kenji; and Numata, Shigeaki, to Kawasaki Kasei Chemicals Ltd. Process for producing hydroanthraquinones. 4,369,140, Cl. 260-369.000.

Komatsubara, Masahiro: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,369,474, Cl. 360-96.100.

Komori Printing Machinery Company, Ltd.: *See—*
Hoshi, Toshio, 4,368,879, Cl. 270-6.000.

Konczyk, Gerald P.: *See—*
Perry, John A.; Perry, Frank M.; and Konczyk, Gerald P., 4,368,845, Cl. 238-8.000.

Konig, Eberhard; Pedain, Josef; and Kreuder, Hans J., to Bayer Aktiengesellschaft. Lacquer polyisocyanates, process for the production thereof and use thereof as isocyanate component in thermosetting two-component polyurethane lacquers. 4,369,301, Cl. 528-45.000.

Koniger, Max: *See—*
Winterling, Gerhard; and Koniger, Max, 4,369,205, Cl. 427-39.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Sakaguchi, Hirofumi, 4,368,647, Cl. 74-89.220.

Korbell, George K., to Sheller-Globe Corporation. Regulator tester. 4,369,407, Cl. 324-416.000.

Korea Kef Oil Industrial Co., Ltd.: *See—*
Han, U. Yeon, 4,369,043, Cl. 44-53.000.

Korovainy, Sergei F.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.

Kosaka, Yoshikazu: *See—*
Saito, Koichi; Kojima, Tatsuku; and Kosaka, Yoshikazu, 4,369,036, Cl. 8-115.500.

Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Kozlov, Valery A.; Sukhushin, Anatoly V.; Bakunin, Vladimir A.; and Bondar, Mikhall J. Method of emptying pipes driven into earth in nontrench laying and device for carrying same into effect. 4,369,002, Cl. 405-184.000.

Kouda, Tadayuki: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.

Koyama, Tohru; Narahara, Toshikazu; and Aimono, Yuji, to Hitachi Chemical Company, Ltd. Odorless or low-odor crosslinkable compound and resin composition containing the same. 4,369,288, Cl. 525-48.000.

Kozaki, Yuichi; Hata, Shingo; Kawaharada, Hajime; and Watanabe, Kiyoshi, to Kanegafuchi Chemical Industry Company, Limited. Stable composition of S-adenosyl-L-methionine. 4,369,177, Cl. 424-175.000.

Kozawa, Hiroomi; and Hosoya, Kensei, to Hitachi Koki Company, Limited. Method and circuit arrangement for controlling print timing in a printing apparatus. 4,368,666, Cl. 101-93.010.

Kozlov, Valery A.: *See—*
Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Kozlov, Valery A.; Sukhushin, Anatoly V.; Bakunin, Vladimir A.; and Bondar, Mikhall J., 4,369,002, Cl. 405-184.000.

Kraft, Thomas: *See—*
Allen, Larry D., 4,368,711, Cl. 123-522.000.

Kragen, Horst; and Brigand, Gerard, to C E C A-S.A. Gelling compositions having a base of galactomannans and xanthan. 4,369,125, Cl. 252-316.000.

Kramer, Joseph O.; Young, Otto V.; Banner, Charles E.; and Schuster, John D., to Libbey-Owens-Ford Company. Material handling method and apparatus. 4,368,822, Cl. 211-41.000.

Krapf, Heinz: *See—*
Hahn, Klaus; Rath, Hans P.; Krapf, Heinz; De Grave, Isidoor; and Walter, Manfred, 4,369,227, Cl. 428-407.000.

Krautkramer-Branson, Inc.: *See—*
Carodiskey, Thomas J., 4,368,642, Cl. 73-623.000.

Kreuder, Hans J.: *See—*
Konig, Eberhard; Pedain, Josef; and Kreuder, Hans J., 4,369,301, Cl. 528-45.000.

Krieger, Klaus; Schneider, Volker; Vogtmann, Hans-Jorg; and Walz, Ludwig, to Robert Bosch GmbH. Apparatus for controlling the operating mixture composition in internal combustion engines. 4,368,710, Cl. 123-505.000.

Kronenberg, Allan A., to Metropolitan Life Insurance Company. Response time monitor. 4,369,493, Cl. 364-200.000.

Kroupa, Eugene A. Woodburning stove. 4,368,721, Cl. 126-4.000.

Kruglov, Gennady A.: *See—*
Malkin, Daniel D.; Umerenkov, Anatoly S.; Ketsaris, Alexandr A.; Kruglov, Gennady A.; and Kalashnikov, Vladimir I., 4,369,385, Cl. 310-49.00R.

Kruse, Walter M.; and Stephen, John F., to ICI Americas Inc. 3,1 Benzoxazine 2,4-dione. 4,369,316, Cl. 544-94.000.

Krylov-Ole-Firenko, Viktor V.: *See—*
Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.

Kuhbier GmbH & Co.: *See—*
Motsch, Alfons, 4,368,933, Cl. 308-245.000.

Kuhlmann, Gerhard, to Robert Bosch GmbH. Hand-held power grinding tool. 4,368,598, Cl. 51-170.00R.

Kuhls, Jurgen; and Weiss, Eduard, to Hoechst Aktiengesellschaft. Concentrated dispersions of fluorinated polymers and process for their preparation. 4,369,266, Cl. 523-332.000.

Kumata, Masataka: *See—*
Fujimori, Yoshitugu; Kumata, Masataka; and Mizuhashi, Mamoru, 4,368,945, Cl. 350-1.700.

Kumazawa, Katsuyoshi: *See—*
Saito, Toshihiko; Kumazawa, Katsuyoshi; and Sakamoto, Moriyoshi, 4,369,027, Cl. 431-333.000.

Kuntermann, Jurgen H., to BBC Brown, Boveri & Company Limited. Monitoring device with an optical sensor for the detection of interference arcs in electrical systems. 4,369,364, Cl. 250-227.000.

Kupfer, Karl-Heinz, to U.S. Philips Corporation. Circuit for tunable radio-frequency circuits. 4,369,417, Cl. 334-15.000.

Kuraishi, Tadayuki: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Takita, Hitoshi; Wada, Toshihiko; Mukaida, Yutaka; Enomoto, Satoru; Nakajima, Akiyoshi; and Okubo, Azuma, 4,369,253, Cl. 435-244.000.

Kurihara, Hiroshi: *See—*
Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, 4,369,519, Cl. 455-60.000.

Kurihara, Tutomu: *See—*
Sekido, Yosihiro; Kurihara, Tutomu; Kazama, Munetada; and Homma, Rokuro, 4,369,451, Cl. 346-76.0PH.

Kurita, Jiro: *See—*
Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, 4,369,299, Cl. 526-329.700.

Kurti, Mariann: *See—*
Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,369,325, Cl. 548-315.000.

Kushelman, Margarita R.: *See—*
Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.

Kuziemka, Edmund J.: *See—*
Graziano, Frank D.; and Kuziemka, Edmund J., 4,369,268, Cl. 523-435.000.

Kvasnicka, Frank, to White Consolidated Industries, Inc. Billet turning mechanism. 4,368,815, Cl. 198-413.000.

Kyburz, Emilio; and Aschwanden, Werner, to Hoffmann-La Roche Inc. 1-(P-Methoxy p-hydroxy, and p-benzyloxy benzoyl)-2-pyrrolidinones. 4,369,139, Cl. 548-539.000.

Kyogoku, Hiroshi; and Terasawa, Koji, to Canon Kabushiki Kaisha. Recording apparatus. 4,369,454, Cl. 346-140.00R.

Kyrian, Bohumil; Milavec, Johann; and Tschol, Wilhelm, to Patelhold Patentverwertungs- & Elektro-Holding A.G. Low-frequency power amplifier. 4,369,409, Cl. 330-10.000.

Lachmann, Ulrich: *See—*
Ertl, Wilhelm; Lachmann, Ulrich; Pertsch, Heinrich; and Wirnharter, Gunter, 4,369,376, Cl. 307-99.000.

Lacrex Brevetti S.A.: *See—*
Pasbrig, Max, 4,368,728, Cl. 128-26.000.

Laks, David W.: *See—*
Wilson, Arthur M.; Laks, David W.; and Davis, Stephen M., 4,369,090, Cl. 156-644.000.

Lambert, Louis J. Fluid dispensing valve having a deformable diaphragm. 4,368,832, Cl. 222-509.000.

Lamberti, Vincent; and Pease, Wilder F., to Lever Brothers Company. Preparation and use of alkali metal isethionates from ethionic acid. 4,369,144, Cl. 260-513.00R.

Lambrecht, Dietrich. Device for securing winding bars in slots of electric machines, especially turbo-generators. 4,369,389, Cl. 310-214.000.

Lammers, Henri T., to Akzo N.V. Fibre, thread bundle and cord from poly-p-phenylene terephthalamide. 4,368,615, Cl. 57-251.000.

Lamort, Jean P., to E et M Lamort (Societe Anonyme). Processes and devices for the disintegration of cellulose materials. 4,369,093, Cl. 162-246.000.

Landa, Benzion, to Savin Corporation. Friction paper feeder. 4,368,881, Cl. 271-122.000.

Landa, Helmut: *See—*
Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.

Langley, Lawrence W., to Kollmorgen Technologies Corporation. Linear DC permanent magnet motor. 4,369,383, Cl. 310-12.000.

Lanz, Werner, to PMA, Elektro AG. Connection fitting. 4,368,904, Cl. 285-175.000.

Larkin, Mark E.; and Tripp, Edward S., to Abbott Laboratories. Flexible bag with recessed scrapless hanger. 4,368,765, Cl. 150-1.000.

Lassig, Wolfgang: *See—*
Credner, Hans-Heinrich; Lassig, Wolfgang; and Schranz, Karl-Wilhelm, 4,369,243, Cl. 430-223.000.

Launay, Noel, to Societe d'Assistance Technique pour Produits Nestle S.A. Die assembly for decorating pastries and desserts. 4,368,684, Cl. 118-25.000.

Laurel Bank Machine Co., Ltd.: *See—*
Tsuji, Keiji, 4,369,360, Cl. 235-379.000.

Lautzenheiser, William J., to American District Telegraph Company. Anti-bridging cable supervision circuit. 4,369,436, Cl. 340-506.000.

Lawrence, Clifford L.: *See—*
Tullos, Charles E., 4,368,581, Cl. 33-265.000.

Lay, Larry D., to Lay, Larry D. Bowling ramp attachment for wheelchairs. 4,368,898, Cl. 280-289.0WC.

Lebed, Ljudmila P.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.

Lectrolarm Custom Systems, Inc.: *See—*
Smith, William V., 4,369,467, Cl. 358-210.000.

Leder, Roland: *See—*
Adamec, Alfred; and Leder, Roland, 4,368,774, Cl. 164-418.000.

Lee, Maw H.; and Chen, Chun F., to Clopay Corporation. Control circuit for a motor-driven door operator. 4,369,399, Cl. 318-467.000.

Lee, Maw H., to Scott & Fetzer Company, The. Power factor controller for induction motor. 4,369,403, Cl. 318-729.000.

Lee, Raymond: *See—*
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,369,261, Cl. 521-189.000.

Leesona Corporation: *See—*
Valois, Rene J., 4,368,854, Cl. 242-47.010.

Legg, Kenneth D.: *See—*
Cormier, Alan D.; Feil, Marvin; and Legg, Kenneth D., 4,369,127, Cl. 436-111.000.

Leigh, Johnnie S.: *See—*
Nelson, Alvin I.; and Leigh, Johnnie S., 4,369,195, Cl. 426-62.000.

Leist, William L., to G. A. Kleissler Company, The. Self cleaning paper trap. 4,369,050, Cl. 55-283.000.

Leistritz, Hans K. Cavity-forming support element made of extruded hollow sections in combination with closure members of other materials or alloys. 4,369,217, Cl. 428-596.000.

Leitner, Lutz: *See—*
Buxbaum, Gunter; Schlak, Ottfried; Hund, Franz; and Leitner, Lutz, 4,369,265, Cl. 523-212.000.

Lengyel nee Szemenyei, Zsuzsa: *See—*
Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, 4,369,252, Cl. 435-119.000.

Lenhart, Ronald A., to Precision Metal Fabricators, Inc. Air conveyor. 4,369,005; Cl. 406-88.000.

Lennartson, Douglas G.: *See—*
Lotspeich, Joseph A.; and Lennartson, Douglas G., 4,368,829, Cl. 221-75.000.

Lentz, James M., to Allied Corporation. Seat belt buckle with plastic cover. 4,368,563, Cl. 24-230.00A.

Le Roy, Pierre: *See—*
Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, 4,369,315, Cl. 544-90.000.

Leshner, Ervin; and Leshner, Michael D., to Fuel Injection Development Corporation. Adaptive charge forming system for controlling the air/fuel mixture supplied to an internal combustion engine. 4,368,707, Cl. 123-436.000.

Leshner, Michael D.: *See—*
Leshner, Ervin; and Leshner, Michael D., 4,368,707, Cl. 123-436.000.

Leusner, Bernhard: *See—*
Walkowiak, Michael; Podszun, Wolfgang; Leusner, Bernhard; Suling, Carlhans; and Schulz, Hans-Hermann, 4,369,262, Cl. 523-109.000.

Leveque, Alain; and Triollier, Michel, to Rhone-Poulenc Industries. Purification of solutions of gallium values by liquid/liquid extraction. 4,369,166, Cl. 423-112.000.

Lever Brothers Company: *See—*
Lamberti, Vincent; and Pease, Wilder F., 4,369,144, Cl. 260-513.00R.

Levering, Richard M.: *See—*
Bruschek, Dieter K.; and Levering, Richard M., 4,369,046, Cl. 51-298.000.

Levesque, Jean-Paul. Centrifugal chambers gas turbine. 4,368,619, Cl. 60-39.350.

Levitt, George, to Du Pont de Nemours, E. I., and Company. N-(Heterocyclicaminocarbonyl)arylsulfonamides. 4,369,058, Cl. 71-92.000.

Levitt, George; Yeh, Chin-Lung; and Budzinski, John C., to Du Pont de Nemours, E. I., and Company. N-[Heterocyclicaminocarbonyl]-8-quinolinesulfonamides. 4,369,320, Cl. 544-320.000.

Levonaitis, Raymond: *See—*
Venkataramani, Rajagopala; and Levonaitis, Raymond, 4,369,095, Cl. 202-241.000.

Lewis, Delmar D. Column climbing device. 4,368,801, Cl. 182-134.000.

Lewis, Peter J.: *See—*
Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., 4,369,456, Cl. 346-140.00R.

Liang, Po Lung: *See—*
Vahratian, Adam; Croswhite, Howard L.; Maynard, Roosevelt, Jr.; and Liang, Po Lung, 4,368,649, Cl. 74-695.000.

Libbey-Owens-Ford Company: *See—*
Kramer, Joseph O.; Young, Otto V.; Banner, Charles E.; and Schuster, John D., 4,368,822, Cl. 211-41.000.
Meeker, James A.; Jackson, Christopher J.; and Watson, Rick D., 4,368,836, Cl. 226-172.000.

Liberti, Frank N.: *See—*
Dieck, Ronald L.; Liberti, Frank N.; and Wambach, Allen D., 4,369,280, Cl. 524-281.000.

Liebschner, Fritz: *See—*
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, 4,368,668, Cl. 101-212.000.

Lignes Telegraphiques et Telephoniques: *See—*
Breton, Jean P.; and Maciaszek, Adalbert, 4,369,525, Cl. 455-618.000.

Lin, Nan J.: *See—*
O'Rell, Dennis D.; Choi, Wai M.; and Lin, Nan J., 4,369,236, Cl. 429-147.000.

Lindall, Arnold W., to Immuno Nuclear Corporation. Parathyroid radioimmunoassay. 4,369,138, Cl. 260-112.50R.

Linden, Raymond: *See—*
Artois, Fernand; Linden, Raymond; and Feitler, Alberg, 4,369,066, Cl. 106-98.000.

Lindler, James M.; and Bailey, Joe B., Jr., to Shakespeare Company, The. Wireless umbrella frame. 4,368,749, Cl. 135-20.00R.

Lisec, Peter. Apparatus for producing insulating glass filled with a gas other than air. 4,369,084, Cl. 156-382.000.

Litt, Ferdinand; Neff, Daniel; Schneider, Gilbert; Sprauel, Roger; and Wotling, Guy, to Societe Anonyme dite: la Telephonie Industrielle et Commerciale - TELIC. Method of assembling a relay. 4,368,574, Cl. 29-602.00R.

Litton Industrial Products, Inc.: *See—*
Ozawa, Thomas S., 4,369,517, Cl. 378-130.000.

Loeb, Marvin P.: *See—*
Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,369,219, Cl. 428-138.000.

Logan Graphic Products, Inc.: *See—*
Logan, Malcolm, 4,368,584, Cl. 40-152.000.

Logan, Malcolm, to Logan Graphic Products, Inc. Picture frame assembly components. 4,368,584, Cl. 40-152.000.

Lohmann, Joachim W.: *See—*
Ranz, Erwin; Schutz, Heinz-Dieter; and Lohmann, Joachim W., 4,369,248, Cl. 430-376.000.

Lohr, Karl-Heinz: *See—*
Meller, Theo; Knecht, Heinz; Kohberg, Ewald; and Lohr, Karl-Heinz, 4,368,878, Cl. 267-64.170.

Lombard, Didier: *See—*
Brossard, Pierre; and Lombard, Didier, 4,369,512, Cl. 371-43.000.

Lopusinski, Andrzej: *See—*
Michalski, Jan; Potrzebowski, Marek; and Lopusinski, Andrzej, 4,369,147, Cl. 260-935.000.

Lorang, Lucien: *See—*
Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, 4,369,060, Cl. 75-60.000.

Lorenz, Horst: *See—*
Rau, Karlheinz; Lorenz, Horst; Huth, Oswald; Volkmann, Lothar; and Stenzel, Kurt, 4,368,846, Cl. 239-85.000.

Lotspeich, Joseph A.; and Lennartson, Douglas G., to Gross-Given Manufacturing Company. Can dispensing unit for spiral vendor. 4,368,829, Cl. 221-75.000.

Love, Franklin S., III, to Milliken Research Corporation. Method and apparatus for non-impact printing on barrier coated substrate. 4,368,669, Cl. 101-426.000.

Lovera, Bruno; and Pancotti, Santino, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Helicopter rotor comprising elastomer joints. 4,369,019, Cl. 416-134.00A.

Lowrance Electronics, Inc.: *See—*
Weber, Ronald G., 4,369,508, Cl. 367-115.000.

Lowrance, Kenneth F., II; and Fiacco, Ferdinand, to Inland Steel Company. Reheat furnace. 4,369,032, Cl. 432-247.000.

Lowry, George W., Sr., to Triple/S Dynamics, Inc. Method and apparatus for monitoring vibrating equipment. 4,369,398, Cl. 318-114.000.

Lucas, Klaus: *See—*

Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.

Luciano, William A.: *See—*

Curry, Thomas H.; and Luciano, William A., 4,369,081, Cl. 156-148.000.

Luebke, Rebecca A.: *See—*

Barke, Martin B.; and Luebke, Rebecca A., 4,368,591, Cl. 47-57.600.

Luk Lamellen und Kupplungsbau GmbH: *See—*

Dubiel, Oswald; and Pretzel, Dieter, 4,368,811, Cl. 192-99.00A.

Maucher, Paul; Keck, Karl; and Pretzel, Dieter, 4,368,810, Cl. 192-70.280.

Steeg, Klaus, 4,368,812, Cl. 192-106.200.

Luk Lamellen und Kupplungsbua GmbH: *See—*

Huber, Lothar; and Friedmann, Oswald, 4,368,701, Cl. 123-198.00F.

Lukaszewicz, Raymond: *See—*

Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,368,919, Cl. 299-1.000.

Lundquist, Joseph T., Jr.: *See—*

Hemphill, Adley W.; Lundquist, Joseph T., Jr.; and McDaniel, Carl V., 4,368,922, Cl. 299-5.000.

Lurie, Alexandr N.; Anchukov, Anatoly N.; Dukshtau, Alexandr A.; Schegolev, Gleb S.; Yablonsky, Gennady A.; and Steklov, Mikhail L. Arrangement for liquid supply into the rotor of an electric machine. 4,369,386, Cl. 310-54.000.

Luyckx, Marcel G. M.: *See—*

Stokbroekx, Raymond A.; Luyckx, Marcel G. M.; and Willems, Joannes J. M., 4,369,184, Cl. 424-267.000.

Lynch, Richard A. Device and method for converting wood into thermal energy. 4,368,722, Cl. 126-77.000.

Mabuchi Co., Ltd.: *See—*

Okamura, Kouichi; Mizumura, Nobuya; and Nigorikawa, Ei, 4,368,839, Cl. 227-91.000.

Mabuchi Motor Co., Ltd.: *See—*

Mabuchi, Takaichi, 4,368,938, Cl. 339-31.00R.

Mabuchi, Takaichi, to Mabuchi Motor Co., Ltd. Small electric motor. 4,368,938, Cl. 339-31.00R.

MacArthur, Dennis C., to Amoco Chemicals Corporation. Method and apparatus for making pile fabrics. 4,369,087, Cl. 156-435.000.

MacDonald, R. Ian: *See—*

Hara, Elmer H.; MacDonald, R. Ian; Hum, Robert S. H.; and Kawasaki, Brian S., 4,369,371, Cl. 250-551.000.

MacDougall, James B. Linearly polarized omnidirectional antenna. 4,369,449, Cl. 343-790.000.

Machat, Gotz D., to G. L. Rexroth GmbH. Pressure fluid regulating valve, particularly pressure reducing valve. 4,368,872, Cl. 251-63.000.

Maciaszek, Adalbert: *See—*

Breton, Jean P.; and Maciaszek, Adalbert, 4,369,525, Cl. 455-618.000.

MacInnis, Martin B.: *See—*

Kim, Tai K.; MacInnis, Martin B.; Vogt, Martin C.; and McClintic, Robert P., 4,369,165, Cl. 423-54.000.

Madison-Kipp Corporation: *See—*

Dombroski, Robert M.; and Sitzman, Jerry C., 4,368,803, Cl. 184-15.00B.

Maeda, Hiroaki: *See—*

Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, 4,368,653, Cl. 74-868.000.

Maggi, Gian P.: *See—*

Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, 4,369,146, Cl. 260-544.00N.

Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, to Chimica Bulciago S.r.l. Method for chlorinating the carboxylic group of α-aminoacids. 4,369,146, Cl. 260-544.00N.

Magnetic Controls Company: *See—*

DeYoung, David M., 4,368,944, Cl. 339-221.00R.

Martin, Ronald G., 4,368,941, Cl. 339-183.000.

Maikowski, Michael: *See—*

Dietz, Erwin; Grossmann, Max; and Maikowski, Michael, 4,369,270, Cl. 524-33.000.

Mailliet, Pierre, to Paul Wurth S.A. Distribution chute control apparatus and method. 4,368,813, Cl. 193-3.000.

Mainka, Manfred; Bleeck, Heinz; Wehrmeister, Gerhard; and Czapay, Milan, to Saurer-Allma GmbH, Firma. Apparatus for producing effect yarn. 4,368,611, Cl. 57-6.000.

Makita, Kunio: *See—*

Sato, Masahiro; and Makita, Kunio, 4,369,405, Cl. 324-174.000.

Malkin, Daniel D.; Umerenkov, Anatoly S.; Ketsaris, Alexandr A.; Kruglov, Gennady A.; and Kalashnikov, Vladimir I. Single-phase step micromotor. 4,369,385, Cl. 310-49.00R.

Malkowski, Joseph L.: *See—*

Grabill, Louis C.; Malkowski, Joseph L.; and Wells, Calvin G., 4,368,802, Cl. 184-6.120.

Malocha, Donald C.; Wagers, Robert S.; and Goll, Jeffrey H., to Texas Instruments Incorporated. Symmetric beam width compression multistrip coupler. 4,369,390, Cl. 310-313.00B.

Mammel, Erich: *See—*

Wetzel, Ludwig; and Mammel, Erich, 4,368,560, Cl. 17-21.000.

Manabe, Katsuhide; Ito, Toshiyasu; and Tsutsui, Masatoshi, to Toyoda Gosei Kabushiki Kaisha. Flexible lustrously metallized resinous articles and a process for manufacturing same. 4,369,225, Cl. 428-334.000.

Manten, Heinrich. Mobile drilling rig having a retractable guiding mount or mast. 4,368,602, Cl. 52-115.000.

Marcon, Giuliano: *See—*

Maggi, Rodolfo; Maggi, Gian P.; and Marcon, Giuliano, 4,369,146, Cl. 260-544.00N.

Mark Controls Corporation: *See—*

Carlson, Donald E., deceased, 4,368,756, Cl. 137-541.000.

Martin, Jean, to Framatome. Rack and pinion mechanism for moving a unit absorbing neutrons in a nuclear reactor. 4,369,161, Cl. 376-232.000.

Martin, Leo, to Miami Metal Products Inc. Clip for assembling the base to the top ring of metal framework tables. 4,368,564, Cl. 24-259.00R.

Martin, Ronald G., to Magnetic Controls Company. Electrical jack frame. 4,368,941, Cl. 339-183.000.

Maryland Cup Corporation: *See—*

Boyle, Patrick T., 4,368,665, Cl. 101-93.010.

Masahiro, Aoe: *See—*

Nobuo, Imaizumi; and Masahiro, Aoe, 4,369,075, Cl. 148-102.000.

Masai, Tadahisa: *See—*

Yamaguma, Naoto; Okamoto, Jyoji; Masai, Tadahisa; Imaizumi, Takeshi; and Okita, Yoshihiro, 4,368,621, Cl. 62-117.000.

Masaki, Kenji, to Nissan Motor Company, Limited. Fast idle device for carburetor. 4,368,704, Cl. 123-339.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,369,292, Cl. 524-535.000.

Massachusetts Institute of Technology: *See—*

Broos, Michael S., 4,369,439, Cl. 340-710.000.

Quint, David; and Pratt, George W., Jr., 4,369,363, Cl. 250-211.00R.

Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., to CNG Research Company. Method and apparatus for heating liquids and agglomerating slurries. 4,369,351, Cl. 219-284.000.

Masson, Andre, to Etablissements Pierre Angenieux. Variable-focal-length objective. 4,368,955, Cl. 350-427.000.

Masunaga, Makoto: *See—*

Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,368,978, Cl. 356-1.000.

Material Sciences Corporation: *See—*

Graziano, Frank D.; and Kuziemka, Edmund J., 4,369,268, Cl. 523-435.000.

Mathe, Istvan; and Kasper, Alan H., to Bunker Ramo Corporation. Keyed connector to prevent intermating with a standard connector. 4,368,942, Cl. 339-186.00M.

Mather & Platt Limited: *See—*

Bray, Geddes A., 4,368,782, Cl. 169-90.000.

Mathes, Nikolaus; and Wechs, Friedbert, to Akzona Incorporated. Process for the preparation of fibrillated fiber structures. 4,369,156, Cl. 264-147.000.

Matsui, Masashi: *See—*

Ichinose, Hisao; Katou, Shinji; Matsui, Masashi; and Hori, Kouji, 4,369,010, Cl. 410-101.000.

Matsui, Yoshiya; Minami, Setsuo; Mochizuki, Noritaka; Harumoto, Isao; Tsunoda, Atsuo; Hirai, Shiro; and Ohkubo, Masami, to Canon Kabushiki Kaisha. Projection device. 4,368,975, Cl. 355-50.000.

Matsumura, Shunichi; Inata, Hiroo; and Ogasawara, Makoto, to Teijin Limited. Process for production of laminated film structure of aromatic polyester. 4,369,207, Cl. 427-54.100.

Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, to Kao Soap Co., Ltd. Hair treatment cosmetics containing cationic keratin derivatives. 4,369,037, Cl. 8-127.510.

Matsunaka, Naoto: *See—*

Satoh, Hideo; and Matsunaka, Naoto, 4,369,448, Cl. 343-781.0CA.

Matsuno, Akira: *See—*

Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; Sakata, Katsuyuki; and Matsuno, Akira, 4,369,303, Cl. 528-173.000.

Matsuo, Noritaka; Takeuchi, Kohichiro; and Muramatsu, Tokuzi, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for internal combustion engines. 4,368,698, Cl. 123-52.00M.

Matsuo, Yushin: *See—*

Tahara, Iwao; Aihara, Toshiharu; Takahashi, Naoki; Matsuo, Yushin; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, legal representative, 4,368,988, Cl. 368-63.000.

Matsushima, Noriaki; Noguchi, Ken-ichi; and Hirano, Kazuhisa, to Sumitomo Durez Company Ltd. Friction material containing steel wool as reinforcing agent. 4,369,263, Cl. 523-152.000.

Matsushita Electric Industrial Co., Ltd.: *See—*

Hotta, Sadayoshi; and Watanabe, Masanori, 4,369,392, Cl. 313-346.00R.

Okamura, Kouichi; Mizumura, Nobuya; and Nigorikawa, Ei, 4,368,839, Cl. 227-91.000.

Tachita, Ryobun; Fukukita, Hiroshi; Hayakawa, Yoshihiro; and Irioka, Kazuyoshi, 4,368,643, Cl. 73-626.000.

Takeshita, Isao, 4,368,624, Cl. 62-238.300.

Matsushita Electric Works, Ltd.: *See—*

Ritter, Heinz, 4,369,482, Cl. 361-210.000.

Matsuzaki, Atsushi; and Kawamata, Mitsuo, to Sony Corporation. Video signal processing circuit. 4,369,466, Cl. 358-170.000.

Mattes, Gerd, to Robert Bosch GmbH. Scene-start and -end referenced indicator arrangement for projector storing scene-start and -end frame counts. 4,368,961, Cl. 352-129.000.

Maucher, Paul; Keck, Karl; and Pretzel, Dieter, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 4,368,810, Cl. 192-70.280.

Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research and Engineering Co. Production of rhenium-containing reforming catalysts. 4,369,129, Cl. 252-439.000.

Mayer, Erwin: *See—*

Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.

Mayer, Wofram; Rudolph, Hans; de Cleur, Eckhard; and Schonfelder, Manfred, to Bayer Aktiengesellschaft. Ammonium salts of α-ketocarboxylic acids. 4,369,206, Cl. 427-54.100.

Maynard, James L.: *See—*

Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., 4,368,712, Cl. 123-523.000.

Maynard, Roosevelt, Jr.: *See—*

Vahratian, Adam; Croswhite, Howard L.; Maynard, Roosevelt, Jr.; and Liang, Po Lung, 4,368,649, Cl. 74-695.000.

Mazere, Michel, to Albany International Corp. Felt for dehydration of a fiber web. 4,369,218, Cl. 428-91.000.

McClintic, Robert P.: *See—*

Kim, Tai K.; MacInnis, Martin B.; Vogt, Martin C.; and McClintic, Robert P., 4,369,165, Cl. 423-54.000.

McClintock, Michael. Solar energy collector. 4,368,725, Cl. 126-432.000.

McConica, Charles H.; Tremblay, Michael A.; and Engel, Pedro F., to Hewlett-Packard Company. Ink jet printer drive pulse for elimination of multiple ink droplet ejection. 4,369,455, Cl. 346-140.00R.

McDaniel, Carl V.: *See—*

Hemphill, Adley W.; Lundquist, Joseph T., Jr.; and McDaniel, Carl V., 4,368,922, Cl. 299-5.000.

McDaniel, Max P., to Phillips Petroleum Company. Impregnated second valence chromium compound in supported catalyst. 4,369,295, Cl. 526-96.000.

McDowell, Philip R., to Paccar Inc. Combination curtain and restraint system for a vehicle bunk. 4,368,902, Cl. 280-749.000.

McFeaters, Earl W.: *See—*

Van Arnam, Donald E.; McFeaters, Earl W.; and Baggarley, Richard R., 4,368,982, Cl. 356-445.000.

McGowan, Earsel, Jr., to Ciba-Geigy Corporation. Silver containing conductive coatings. 4,369,063, Cl. 106-1.140.

McGraw-Edison Company: *See—*

Rasmussen, John F.; and Hemmady, Jayant S., 4,369,422, Cl. 337-248.000.

McGuffey, Patrick J. Precision comb. 4,368,745, Cl. 132-45.00A.

McKee, Arnold D.: *See—*

Simonds, Gary; and McKee, Arnold D., 4,368,718, Cl. 124-23.00R.

McLean, Ronald L.; and Kamman, Gordon W., to Houdaille Industries, Inc. Rubber/viscous torsional vibration dampers. 4,368,807, Cl. 188-379.000.

McLeod, Francis D., Jr., to Powers Manufacturing, Inc. Out-of-round detector. 4,368,641, Cl. 73-597.000.

McMaster, Harold A. Glass conveyor roll finishing technique. 4,368,567, Cl. 29-121.100.

McMinn, Fred: *See—*

Parbhoo, Kantilal R.; and McMinn, Fred, 4,369,051, Cl. 65-10.100.

Mealing, Barrie E.; Payne, Raymond H.; and Boswell, James, to Hestair Eagle Limited. Road sweeping apparatus. 4,368,554, Cl. 15-354.000.

Meckel, Joachim F.: *See—*

Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased; Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, 4,369,094, Cl. 201-41.000.

Medway, John G.: *See—*

Blackwood, Rodger; and Medway, John G., 4,369,024, Cl. 425-112.000.

Meeker, James A.; Jackson, Christopher J.; and Watson, Rick D., to Libbey-Owens-Ford Company. Sheet feeding apparatus. 4,368,836, Cl. 226-172.000.

Mehl, Wolfgang, to Ciba-Geigy Ltd. Transfer-printing paper, its manufacture and uses. 4,369,038, Cl. 8-471.000.

Meiji Seika Kaisha, Ltd.: *See—*

Iwao, Hachiya; and Susumu, Igarashi, 4,369,200, Cl. 426-660.000.

Meinunger, Helmut, to Gizeh-Werk GmbH. Device for rolling of cigarettes. 4,368,741, Cl. 131-55.000.

Meissner, Hans-Jurgen: *See—*

Heydenreich, Frieder; Wulff, Claus; Klein, Lothar; Meissner, Hans-Jurgen; and Bachem, Norbert, 4,369,293, Cl. 525-333.500.

Meller, Theo; Knecht, Heinz; Kohberg, Ewald; and Lohr, Karl-Heinz, to Boge GmbH. Self pumping, hydropneumatic, telescopic, spring damping device with internal level regulation. 4,368,878, Cl. 267-64.170.

Mellgren, Per G.: *See—*

Karrer, Fritz; Pedretti, Alberto; and Mellgren, Per G., 4,369,035, Cl. 8-101.000.

Meltzer, Peter M.; and Gallagher, Donald G., to Bradford Exchange, Ltd., The. Display frame for decorative object. 4,368,585, Cl. 40-152.100.

Mendoza, Alejandro V. Apparatus and method for calculating break-even point of enterprise. 4,369,359, Cl. 235-89.00R.

Menegatto, Carlo, to O.M.M. Officine Meccaniche Menegatto S.p.A. Crochet knitting machine with weft bar adjustment and guide assembly. 4,368,626, Cl. 66-203.000.

Menniti, Pietro; and Felici, Maurizio, to SGS-ATES Componenti Elettronici S.p.A. Circuit for controlling a transistor static switch for d.c. loads with high turn-on current. 4,369,380, Cl. 307-254.000.

Merck & Co., Inc.: *See—*

Christensen, Burton G.; and Ratcliffe, Ronald W., 4,369,187, Cl. 424-274.000.

Jones, Howard; Clark, Robert L.; and Zimmerman, Morris, 4,369,183, Cl. 424-263.000.

Merino, Alphonso: *See—*

Gelvezon, Aaron E.; and Merino, Alphonso, 4,368,869, Cl. 248-656.000.

Merkel, Wolfgang, to REPA Feinstanzwerk GmbH. Emergency distress signal system for motor vehicles. 4,369,426, Cl. 340-32.000.

Merkle, Heinz: *See—*

Drebinger, Peter; and Merkle, Heinz, 4,369,427, Cl. 340-38.00L.

Merritt, David T., to Otis Engineering Corporation. Kickover tool. 4,368,780, Cl. 166-117.500.

Messenger, Joseph U., to Mobil Oil Corporation. Arrangement for removing borehole cuttings by reverse circulation with a downhole bit-powered pump. 4,368,787, Cl. 175-319.000.

Messerschmitt-Boelkow-Blohm GmbH: *See—*

Beusse, Hans, 4,368,900, Cl. 280-707.000.

Brunsch, Klaus; and Nowak, Franz, 4,369,018, Cl. 416-134.00A.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*

Held, Manfred, 4,368,660, Cl. 89-36.0AE.

Winterling, Gerhard; and Koniger, Max, 4,369,205, Cl. 427-39.000.

Meta Systems, Inc.: *See—*

Giallanza, Frank V.; Tracey, Don M.; and Holcombe, Wayne T., 4,369,443, Cl. 340-825.470.

Metallgesellschaft Aktiengesellschaft: *See—*

Elsenheimer, Gerd; and Schnabel, Wolfram, 4,369,059, Cl. 75-36.000.

Supp, Emil, 4,369,255, Cl. 518-712.000.

Metallurgical Process Limited: *See—*

Monk, Hayden, 4,369,164, Cl. 423-24.000.

Metropolitan Life Insurance Company: *See—*

Kronenberg, Allan A., 4,369,493, Cl. 364-200.000.

Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Lorang, Lucien; Henrion, Romain; Grosjean, Jean-Claude; Denier, Guy; and Bauler, Claude, to Arbed S.A.; and Irsid. Process of refining of a metal bath in a crucible with oxygen blast at the top and crucible used. 4,369,060, Cl. 75-60.000.

Meyercord Co., The: *See—*

Kerwin, Daniel, 4,369,082, Cl. 156-238.000.

Meyerle, Michael; and Ehrlinger, Friedrich, to Zahnradfabrik Friedrichshafen AG. Automatic control device of an infinitely variable transmission gear driven by an internal combustion engine, especially for motorized vehicles. 4,368,798, Cl. 180-307.000.

Miami Metal Products Inc.: *See—*

Martin, Leo, 4,368,564, Cl. 24-259.00R.

Michael, Dietrich: *See—*

Sanderson, John R.; Neuray, Dieter; Michael, Dietrich; and Bonten, Heinrich, 4,369,285, Cl. 524-538.000.

Michalski, Jan; Potrzebowski, Marek; and Lopusinski, Andrzej, to Bayer Aktiengesellschaft. Preparation of novel S-brom-dithiophosphoric, dithiophosphonic and dithiophosphinic acid derivatives. 4,369,147, Cl. 260-935.000.

Micheron, Francois, to Thomson -CSF. Pressure-sensing transducer device having a piezoelectric polymer element and a method of fabrication of said device. 4,369,391, Cl. 310-800.000.

Micro-Mega S.A.: *See—*

Garnier, Marcel; and Seigneurin, Michel, 4,369,034, Cl. 433-115.000.

Midian Electronics, Inc.: *See—*

Soulliard, Charles, 4,369,338, Cl. 179-84.0VF.

Mihalovits, Donna M., to Karrh, Randolph C., a part interest. Cosmetic facial preparation containing aloe vera. 4,369,180, Cl. 424-177.000.

Mikami, Tsukasa, to Takeda Riken Kogyo Kabushikikaisha. Auto-calibrated D-A converter. 4,369,432, Cl. 340-347.0DA.

Miki, Kenji: *See—*

Fukutsuka, Toshio; Shimogori, Kazutoshi; Yamamoto, Etsuo; and Miki, Kenji, 4,369,073, Cl. 148-6.14R.

Mikulski, James J.: *See—*

Cerny, Frank J., Jr.; and Mikulski, James J., 4,369,520, Cl. 455-137.000.

Milam Corporation: *See—*

Milam, William O.; and Morrow, Ransoma L., 4,368,594, Cl. 49-67.000.

Milam, William O.; and Morrow, Ransoma L., to Milam Corporation. Storm window. 4,368,594, Cl. 49-67.000.

Milavec, Johann: *See—*

Kyrian, Bohumil; Milavec, Johann; and Tschol, Wilhelm, 4,369,409, Cl. 330-10.000.

Miller, Donald F., to Du Pont de Nemours, E. I., and Company. Railroad support fabric. 4,368,844, Cl. 238-2.000.

Miller, Jon P.; and Zmolek, Wesley W., to SRI International. Process for treating proliferative skin diseases using certain 6,8-substituted ribofuranosylpurine-3',5'-cyclic phosphates. 4,369,181, Cl. 424-180.000.

Miller, Peter T.: *See—*

Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., 4,369,456, Cl. 346-140.00R.

Miller, Richard H. Upholstery machine. 4,368,566, Cl. 29-91.400.

Miller, Walter P.: *See—*

Carter, Richard G.; Miller, Walter P.; and Watson, Stuart L., Jr., 4,369,300, Cl. 528-28.000.

Milligan, Hugh: *See—*

Devan, Joseph M.; and Milligan, Hugh, 4,369,413, Cl. 333-34.000.

Milliken Research Corporation: *See—*

Eschenbach, Paul W., 4,368,612, Cl. 57-6.000.

Love, Franklin S., III, 4,368,669, Cl. 101-426.000.

Minami, Hiroo, to Yoshida Kogyo K. K. Ornamental attachment for slide fastener sliders. 4,368,562, Cl. 24-205.11L.
Minami, Setsuo: *See—*
Matsui, Yoshiya; Minami, Setsuo; Mochizuki, Noritaka; Harumoto, Isao; Tsunoda, Atsuo; Hirai, Shiro; and Ohkubo, Masami, 4,368,975, Cl. 355-50.000.
Minchenkov, Jury P.: *See—*
Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.
Minnesota Mining and Manufacturing Company: *See—*
Arimilli, Padmanabham A.; and Aspen, Frank E., 4,369,242, Cl. 430-58.000.
Beruto, Marco; and Ramello, Piero, 4,369,245, Cl. 430-264.000.
Eian, Gilbert L.; and Trend, John E., 4,369,244, Cl. 430-257.000.
Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori, 4,368,967, Cl. 354-106.000.
Mirensky, Igor G.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
Mischikha, Vladimir F.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
Mitchell, Joan L.: *See—*
Anastassiou, Dimitris; and Mitchell, Joan L., 4,369,463, Cl. 358-135.000.
Mitchell, Terry L.: *See—*
Propst, Robert L.; and Mitchell, Terry L., 4,368,675, Cl. 108-53.100.
Mito, Kyuichi: *See—*
Nakano, Kazuaki; Fukuda, Masaaki; Mito, Kyuichi; Shinkai, Mikio; and Aruga, Shiro, 4,369,092, Cl. 159-47.100.
Mitsubishi Chemical Industries Limited: *See—*
Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; Sakata, Katsuyuki; and Matsuno, Akira, 4,369,303, Cl. 528-173.000.
Uchi, Osamu; and Hatanaka, Chiaki, 4,369,198, Cl. 426-271.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Okamoto, Kouichi; and Sakuyama, Masaki, 4.368,895, Cl. 277-203.000.
Satoh, Hideo; and Matsunaka, Naoto, 4,369,448, Cl. 343-781.0CA.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Gaku, Morio; and Ikeguchi, Nobuyuki, 4,369,304, Cl. 528-322.000.
Ikeguchi, Nobuyuki; and Osaki, Yasunori, 4,369,302, Cl. 528-73.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Toyota, Akinori; and Kashiwa, Norio, 4,369,306, Cl. 528-485.000.
Mitter & Co.: *See—*
Mitter, Mathias, 4,368,667, Cl. 101-120.000.
Mitter, Mathias, to Mitter & Co. Roller squeegee for screen printing. 4,368,667, Cl. 101-120.000.
Miura, Kiyoshi: *See—*
Odaka, Yoshiyuki; and Miura, Kiyoshi, 4,369,241, Cl. 430-25.000.
Miyahara, Tesshu; Arai, Yoshi; and Kimura, Kazuo, to Dainippon Ink & Chemicals Inc.; and Kawamura Institute of Chemical Research. Process for producing magnetic metal powder. 4,369,076, Cl. 148-105.000.
Miyamoto, Takahiro, to Alps Electric Co. Ltd. Slide rheostat. 4,369,424, Cl. 338-161.000.
Mizuhashi, Mamoru: *See—*
Fujimori, Yoshitugu; Kumata, Masataka; and Mizuhashi, Mamoru, 4,368,945, Cl. 350-1.700.
Mizumura, Nobuya: *See—*
Okamura, Kouichi; Mizumura, Nobuya; and Nigorikawa, Ei, 4,368,839, Cl. 227-91.000.
Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, to Aisin Seiki Kabushiki Kaisha. Hydromechanical transmission. 4,368,653, Cl. 74-868.000.
Mizuno, Masayoshi; and Tsuchiya, Hiroyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing polymeric image and photosensitive element therefor. 4,369,249, Cl. 430-537.000.
Mizutani, Yukihisa: *See—*
Kasahara, Hideo; Fukuda, Kunio; and Mizutani, Yukihisa, 4,369,278, Cl. 524-147.000.
Mobil Oil Corporation: *See—*
Messenger, Joseph U., 4,368,787, Cl. 175-319.000.
Mochizuki, Noritaka: *See—*
Matsui, Yoshiya; Minami, Setsuo; Mochizuki, Noritaka; Harumoto, Isao; Tsunoda, Atsuo; Hirai, Shiro; and Ohkubo, Masami, 4,368,975, Cl. 355-50.000.
Modica, Frank: *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank, 4,369,130, Cl. 252-455.00Z.
Modica, Frank S.: *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,369,108, Cl. 208-120.000.
Moe, Robert R.: *See—*
Greb, Gregory A.; Spitza, Raymond W.; and Moe, Robert R., 4,368,870, Cl. 249-102.000.
Moebus, Horst, to Karl Schmidt GmbH. Liquid-cooled piston for internal combustion engines. 4,368,697, Cl. 123-41.350.
Moeller, Hans J.: *See—*
Kjaer, Ian; Moeller, Hans J.; and Mortensen, Niels E., 4,368,744, Cl. 131-324.000.
Mohn, Hans-Werner; and Zodrow, Rudolf, to Jagenberg-Werke AG. Apparatus for changing the label magazine boxes of labelling machines. 4,369,089, Cl. 156-568.000.
Molder, Karl P.: *See—*
Brockmann, Karl-Heinz; Molder, Karl P.; and Wauer, Gerd, 4,368,913, Cl. 294-106.000.
Molewyk, Terry L.; and Johnson, Joseph M., to Cummins Engine Company, Inc. Fuel burner for heating internal combustion engine intake air. 4,368,715, Cl. 123-550.000.
Moll, Klaus; and Schulze, Helmut, to Brown, Boveri & Cie AG. Device for the protection of a converter which converts an impressed D-C current from a current source into an A-C current fed to a load. 4,369,492, Cl. 363-58.000.
Momiyama, Kikuo: *See—*
Yamada, Yasuyuki; and Momiyama, Kikuo, 4,368,956, Cl. 350-432.000.
Monk, Hayden, to Metallurgical Process Limited; and I.S.C. Smelting Limited. Recovery of copper from arsenical drosses by ammonium arsenate leach. 4,369,164, Cl. 423-24.000.
Mono Containers (U.K.) Limited: *See—*
Day, Robert H.; and Vidal-Meza, Gonzalo D., 4,368,818, Cl. 206-217.000.
Monsanto Company: *See—*
Hedrick, Ross M.; Woodbrey, James C.; Gabbert, James D.; and Erickson, Floyd B., 4,369,222, Cl. 428-216.000.
Morgan, Albert W.; and Ribaudo, Roland G., 4,369,135, Cl. 524-294.000.
Morel, Henri, to ITW deFrance. Coupling or connecting end part for flexible elements such as cables, wires or other elements. 4,368,999, Cl. 403-283.000.
Morgan, Albert W.; and Ribaudo, Roland G., to Monsanto Company. Adhesive compositions. 4,369,135, Cl. 524-294.000.
Morgan, John A.; and Hachmuth, Henry K., to Phillips Petroleum Company. Control of the fuel/oxygen ratio for a combustion process. 4,369,026, Cl. 431-12.000.
Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; Sakata, Katsuyuki; and Matsuno, Akira, to Mitsubishi Chemical Industries Limited. Process for producing an aromatic polyesterpolycarbonate. 4,369,303, Cl. 528-173.000.
Morikoshi, Yutaka: *See—*
Nogota, Isao, 4,368,633, Cl. 72-239.000.
Morimoto, Shuzo: *See—*
Hanyu, Susumu; Morimoto, Shuzo; and Sano, Yasuro, 4,368,681, Cl. 112-158.00A.
Morishita, Teru; Sugiyama, Matuyosi; and Suzuki, Toshikazu, to Toyota Jidosha Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,368,853, Cl. 239-703.000.
Morita, Toyoo, to Yoshida Kogyo K. K. Method of and apparatus for attaching top and bottom stops to a slide fastener chain. 4,368,570, Cl. 29-408.000.
Morita, Yasukazu: *See—*
Iwashimizu, Tadashi; Morita, Yasukazu; and Igarashi, Koichi, 4,369,209, Cl. 427-123.000.
Morrow, Ransoma L.: *See—*
Milam, William O.; and Morrow, Ransoma L., 4,368,594, Cl. 49-67.000.
Mortensen, Niels E.: *See—*
Kjaer, Ian; Moeller, Hans J.; and Mortensen, Niels E., 4,368,744, Cl. 131-324.000.
Moseley, Fred; and Dyer, Paul N., to Air Products and Chemicals, Inc. Catalyst for oxidation. 4,369,128, Cl. 252-429.00R.
Moser, Hans, to Ciba-Geigy Corporation. Process for producing N-phosphonomethylglycine. 4,369,142, Cl. 260-502.50F.
Motier, John F., to Atlantic Richfield Company. Process to improve isocyanate yield upon pyrolysis of a polyfunctional urethane which has been extracted with a combination of hydrochloric acid and alcohol. 4,369,141, Cl. 260-453.00P.
Motill, Richard M., to Standard Oil Company (Indiana). Self-standing bottle structure. 4,368,825, Cl. 215-1.00C.
Motorola, Inc.: *See—*
Byrns, John P., 4,369,516, Cl. 375-110.000.
Cerny, Frank J., Jr.; and Mikulski, James J., 4,369,520, Cl. 455-137.000.
Cerny, Frank J., Jr.; Helm, George D.; and Wesoloski, Ronald G., 4,369,522, Cl. 455-333.000.
Fette, Bruce, 4,369,500, Cl. 364-758.000.
Hutchinson, Wendell R.; and Shurboff, John D., 4,369,287, Cl. 524-700.000.
Motsch, Alfons, to Kuhbier GmbH & Co. Housing of a bearing with a pressure-compensating arrangement. 4,368,933, Cl. 308-245.000.
Moutonnier, Claude: *See—*
Farge, Daniel; Roy, Pierre L.; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, 4,369,314, Cl. 544-90.000.
Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, 4,369,315, Cl. 544-90.000.
Mueller, Kurt H., to Gretag Aktiengesellschaft. Enciphering/deciphering system. 4,369,434, Cl. 340-347.0DD.

Mukaida, Yutaka: *See—*
Takita, Hitoshi; Wada, Toshihiko; Mukaida, Yutaka; Enomoto, Satoru; Nakajima, Akiyoshi; and Okubo, Azuma, 4,369,253, Cl. 435-244.000.
Muller, Bernard: *See—*
Schulte-Elte, Karl-Heinrich; Egger, Bernard; and Muller, Bernard, 4,369,328, Cl. 549-546.000.
Munekata, Kenichi: *See—*
Wada, Ryuji; Munekata, Kenichi; Unno, Kunihiko; Shimizu, Norihiko; and Suzuki, Yasuo, 4,368,596, Cl. 51-165.770.
Murakami, Kyoichi: *See—*
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,369,411, Cl. 330-257.000.
Muramatsu, Tokuzi: *See—*
Matsuo, Noritaka; Takeuchi, Kohichiro; and Muramatsu, Tokuzi, 4,368,698, Cl. 123-52.00M.
Murata, Yasuzo; and Sato, Hiroshi, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Magnetic display panel using reversal magnetism. 4,368,952, Cl. 350-362.000.
Murphy, Arthur D. Back carrier. 4,368,835, Cl. 224-153.000.
Musolova, Ljubov F.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
Myhre, Kjell E. Transducer diaphragm elements and methods and apparatus for making same. 4,369,349, Cl. 219-121.0ED.
Nabeta, Teiichi: *See—*
Kai, Yasuhito; Nabeta, Teiichi; and Takemi, Akio, 4,368,843, Cl. 236-49.000.
Nagai, Rikisaburo: *See—*
Tamamori, Hideo; and Nagai, Rikisaburo, 4,368,752, Cl. 137-112.000.
Nagai, Sumiyoshi; and Izumi, Tokio, to Sansho Pharmaceutical Co., Ltd. Cosmetic composition containing kojic acid ester. 4,369,174, Cl. 424-62.000.
Nagy, Lajos: *See—*
Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, 4,369,252, Cl. 435-119.000.
Nakagiri, Takashi: *See—*
Yoshioka, Seishiro; Hirai, Yutaka; Fukuda, Tadaji; Fukaya, Masaki; and Nakagiri, Takashi, 4,369,372, Cl. 250-578.000.
Nakahama, Kozo; Kadomaru, Kazuo; and Okaniwa, Masuzo, to Sumitomo Rubber Industries, Ltd. Bead supply apparatus. 4,369,086, Cl. 156-403.000.
Nakahata, Kimio: *See—*
Watanabe, Tsuyoshi; Nakahata, Kimio; Kan, Fumitaka; and Sakurai, Masaaki, 4,368,971, Cl. 355-3.0DD.
Nakajima, Akiyoshi: *See—*
Takita, Hitoshi; Wada, Toshihiko; Mukaida, Yutaka; Enomoto, Satoru; Nakajima, Akiyoshi; and Okubo, Azuma, 4,369,253, Cl. 435-244.000.
Nakajima, Tsuyoshi: *See—*
Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, 4,369,170, Cl. 423-366.000.
Nakajima, Youichi: *See—*
Nishimura, Yoshinori; Kaneko, Takayuki; Zamma, Jun; and Nakajima, Youichi, 4,368,778, Cl. 165-158.000.
Nakamura, Katsuhiko: *See—*
Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; Sakata, Katsuyuki; and Matsuno, Akira, 4,369,303, Cl. 528-173.000.
Nakano, Kazuaki; Fukuda, Masaaki; Mito, Kyuichi; Shinkai, Mikio; and Aruga, Shiro, to Chisso Corporation. Process for removing monomer from vinyl chloride resin slurry by steam treatment and apparatus employed therefor. 4,369,092, Cl. 159-47.100.
Nakashima, Toshiaki: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Audible announcement in an electronic cash register. 4,369,334, Cl. 179-1.0SM.
Namiki Precision Jewel Co., Ltd.: *See—*
Nobuo, Imaizumi; and Masahiro, Aoe, 4,369,075, Cl. 148-102.000.
Narahara, Toshikazu: *See—*
Koyama, Tohru; Narahara, Toshikazu; and Aimono, Yuji, 4,369,288, Cl. 525-48.000.
Naramore, Raymond A., to Xerox Corporation. Very high speed duplicator with finishing function. 4,368,972, Cl. 355-14.0SH.
Nardi, Givoanni, to Whitehead Motofides S.p.A. Alternator for a marine engine. 4,369,384, Cl. 310-42.000.
Narumi, Naoaki: *See—*
Kimura, Kenji; Ishikawa, Kohji; and Narumi, Naoaki, 4,369,511, Cl. 371-21.000.
Nash, Richard C.; Hanson, David W.; and Koehn, Richard R., to Fabcon, Inc. Machine for casting concrete members. 4,369,153, Cl. 264-62.000.
National Engineering Company: *See—*
Rikker, Leslie D., 4,368,984, Cl. 366-15.000.
National Research Development Corporation: *See—*
Howbrook, Ernest, 4,369,431, Cl. 340-146.3SY.
National Starch and Chemical Corporation: *See—*
Trubiano, Paolo C., 4,369,308, Cl. 536-106.000.
National Union Electric Corporation: *See—*
Hart, Bill J.; Smith, Billy E.; and Short, Maverine H., 4,369,346, Cl. 219-10.55E.
Nautamix B.V.: *See—*
Snel, Martinus A., 4,369,273, Cl. 524-89.000.
Nave, William E., to Bendix Corporation, The. Manually operated metering valve for a fuel control. 4,368,618, Cl. 60-39.28R.
Nebrensky, Jiri R.: *See—*
Arscott, Hedley C.; Nebrensky, Jiri R.; and Wilson, Christopher J., 4,369,047, Cl. 55-38.000.
Nedovizy, Ivan N.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
Neff, Daniel: *See—*
Litt, Ferdinand; Neff, Daniel; Schneider, Gilbert; Sprauel, Roger; and Wotling, Guy, 4,368,574, Cl. 29-602.00R.
Negita, Junichi; Yamada, Yuichiro; Kaneko, Hideaki; and Ogino, Takao, to Nippondenso Co., Ltd.; and Nihon Pakerizing Co., Ltd. Aluminum heat exchanger. 4,368,776, Cl. 165-133.000.
Neisius, Vinzenz, to AluTeam Sport and Freizeit GmbH. Goal frame. 4,368,891, Cl. 273-400.000.
Neisius, Vinzenz: *See—*
Weiss, Juergen; and Neisius, Vinzenz, 4,368,875, Cl. 256-59.000.
Nelson, Alvin I.; and Leigh, Johnnie S., to University of Illinois Foundation, The. Extrusion texturization of full-fat soybean and product thereof. 4,369,195, Cl. 426-62.000.
Nelson, Richard L., Jr. Long intestinal catheter. 4,368,739, Cl. 604-54.000.
Nelson, Robert B.: *See—*
Evans, Norol T.; and Nelson, Robert B., 4,369,445, Cl. 343-18.00E.
Nemoto, Kazuyuki, to Olympus Optical Company Ltd. Photometric assembly for camera. 4,368,965, Cl. 354-23.00R.
Neufeld, Henry L., to Brunswick Corporation. Folding crank handle for a fishing reel. 4,368,856, Cl. 242-84.10J.
Neuray, Dieter: *See—*
Sanderson, John R.; Neuray, Dieter; Michael, Dietrich; and Bonten, Heinrich, 4,369,285, Cl. 524-538.000.
Nevada Post Office Corporation: *See—*
Offen, Matt D.; and Sanders, Frederick M., 4,369,215, Cl. 428-4.000.
Nezu, Satoshi; Goto, Keijin; and Yano, Seisuke, to Asahi Kasei Kogyo Kabushiki Kaisha. Method and apparatus of distillation for readily polymerizable liquid. 4,369,097, Cl. 203-100.000.
Nibby, Chester M., Jr.: *See—*
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,369,510, Cl. 371-13.000.
Nigalaye, Ashok: *See—*
Schor, Joseph M.; Nigalaye, Ashok; and Gaylord, Norman G., 4,369,172, Cl. 424-19.000.
Nigorikawa, Ei: *See—*
Okamura, Kouichi; Mizumura, Nobuya; and Nigorikawa, Ei, 4,368,839, Cl. 227-91.000.
Nihon Mukiseni Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Takao; and Takahashi, Wataru, 4,369,238, Cl. 429-252.000.
Nihon Pakerizing Co., Ltd.: *See—*
Negita, Junichi; Yamada, Yuichiro; Kaneko, Hideaki; and Ogino, Takao, 4,368,776, Cl. 165-133.000.
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, to Sony Corporation. Circuit for converting single-ended input signals to a pair of differential output signals. 4,369,411, Cl. 330-257.000.
Nineuil, Guy; Boutin, Jean; and Chambon, Maurice, to Rhone-Poulenc Industries. Pretreatment of crude wet process phosphoric acid. 4,369,169, Cl. 423-321.00R.
Nippon Air Brake Co., Ltd.: *See—*
Tamamori, Hideo; and Nagai, Rikisaburo, 4,368,752, Cl. 137-112.000.
Nippon Kogaku K.K.: *See—*
Hagyuda, Nobuyoshi, 4,368,966, Cl. 354-33.000.
Nippon Motor Company, Limited: *See—*
Inasawa, Hideho; and Akiyama, Yoshinori, 4,368,557, Cl. 16-263.000.
Nippon Steel Corporation: *See—*
Nitto, Hajime; Sakai, Kango; and Saito, Katushi, 4,369,211, Cl. 427-349.000.
Nippon Telegraph & Telephone Public Corp.: *See—*
Kimura, Kenji; Ishikawa, Kohji; and Narumi, Naoaki, 4,369,511, Cl. 371-21.000.
Nippondenso Co., Ltd.: *See—*
Kai, Yasuhito; Nabeta, Teiichi; and Takemi, Akio, 4,368,843, Cl. 236-49.000.
Negita, Junichi; Yamada, Yuichiro; Kaneko, Hideaki; and Ogino, Takao, 4,368,776, Cl. 165-133.000.
Sato, Masahiro; and Makita, Kunio, 4,369,405, Cl. 324-174.000.
Nishimura, Yoshinori; Kaneko, Takayuki; Zamma, Jun; and Nakajima, Youichi, to Toyo Engineering Corporation. Heat exchanger with U-tubes. 4,368,778, Cl. 165-158.000.
Nissan Motor Co., Ltd.: *See—*
Abo, Toshimi; and Kanegae, Hidetoshi, 4,368,616, Cl. 60-39.14R.
Ichinose, Hisao; Katou, Shinji; Matsui, Masashi; and Hori, Kouji, 4,369,010, Cl. 410-101.000.
Masaki, Kenji, 4,368,704, Cl. 123-339.000.

  Sone, Masazumi; and Imai, Iwao, 4,369,343, Cl. 200-19.00R.
  Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,368,700, Cl. 123-198.00F.
  Tanaka, Toshiyuki, 4,369,428, Cl. 340-69.000.
  Torii, Hiromasa, 4,368,915, Cl. 296-213.000.
  Yasuhara, Seishi, 4,368,706, Cl. 123-370.000.
  Yasuhara, Seishi, 4,368,709, Cl. 123-502.000.
  Yoshida, Kenichi, 4,368,635, Cl. 73-35.000.
Nitto, Hajime; Sakai, Kango; and Saito, Katushi, to Nippon Steel Corporation. Process for producing a hot dip galvanized steel strip. 4,369,211, Cl. 427-349.000.
Niwa, Yukichi: *See—*
  Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,368,978, Cl. 356-1.000.
Nobuo, Imaizumi; and Masahiro, Aoe, to Namiki Precision Jewel Co., Ltd. Method of manufacturing permanent magnet alloys. 4,369,075, Cl. 148-102.000.
Nogota, Isao, to Morikoshi, Yutaka. Cold roll forming apparatus proceding for the exchange of rolls as a unit. 4,368,633, Cl. 72-239.000.
Noguchi, Ken-ichi: *See—*
  Matsushima, Noriaki; Noguchi, Ken-ichi; and Hirano, Kazuhisa, 4,369,263, Cl. 523-152.000.
Nomi, Haruo, to Junkosha Company, Ltd. Self-cooling water container. 4,368,766, Cl. 150-1.000.
Nordson Corporation: *See—*
  Sharp, William J.; Beam, Harold D.; and Armstrong, William A., 4,368,852, Cl. 239-695.000.
Norris Industries, Inc.: *See—*
  Gelvezon, Aaron E.; and Merino, Alphonso, 4,368,869, Cl. 248-656.000.
Northam, William D., to Codex Corporation. Linear phase digital filter. 4,369,499, Cl. 364-724.000.
Northern Telecom Limited: *See—*
  Parlor, Bryan R., 4,369,337, Cl. 179-81.00R.
Nowak, Franz: *See—*
  Brunsch, Klaus; and Nowak, Franz, 4,369,018, Cl. 416-134.00A.
Nuesslein, Ludwig; Baumert, Dietrich; Hoyer, Georg-Alexander; and Pieroh, Ernst A., to Schering Aktiengesellschaft. Fungicidal 2-sulfinyl-5-sulfonyl-1,3,4-thiadiazole derivatives. 4,369,185, Cl. 424-270.000.
Nukem GmbH: *See—*
  Wolff, Willi; Pfahls, Ottomar; and Schumacher, Reinhold, 4,369,101, Cl. 204-224.00R.
Numata, Shigeaki: *See—*
  Komatsu, Tatsuyoshi; Usui, Kenji; and Numata, Shigeaki, 4,369,140, Cl. 260-369.000.
Numazawa, Akio; Arai, Hajime; and Haga, Shoji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Compact transmission, including a main transmission and a subtransmission. 4,368,650, Cl. 74-740.000.
Nussbaumer, Manfred, to Ed. Zublin Aktiengesellschaft. Driving shield. 4,368,924, Cl. 299-33.000.
NYBY Uddeholm AB: *See—*
  Aslund, Christer, 4,369,078, Cl. 148-126.000.
O. K. Machine and Tool Corp.: *See—*
  Kober, Marvin; and Battaglia, Eugene, 4,368,654, Cl. 81-9.50R.
O.M.M. Officine Meccaniche Menegatto S.p.A.: *See—*
  Menegatto, Carlo, 4,368,626, Cl. 66-203.000.
Obrezkov, Alexandr I.: *See—*
  Tabakov, Vladimir P.; and Obrezkov, Alexandr I., 4,368,920, Cl. 299-2.000.
Occidental Oil Shale, Inc.: *See—*
  Hutchins, Ned M., 4,368,921, Cl. 299-2.000.
Ochiai, Chiaki: *See—*
  Ohmi, Atsushi; and Ochiai, Chiaki, 4,368,661, Cl. 91-376.00R.
Odaka, Yoshiyuki; and Miura, Kiyoshi, to Hitachi, Ltd. Method of forming a fluorescent screen of a black matrix type color picture tube. 4,369,241, Cl. 430-25.000.
Oepping, Wilfried; and Beneke, Ulrich, to Paul Hettich & Co. Furniture hinge. 4,368,559, Cl. 16-386.000.
Offen, Matt D.; and Sanders, Frederick M., to Nevada Post Office Corporation. Finger held pompon. 4,369,215, Cl. 428-4.000.
Ogasawara, Makoto: *See—*
  Matsumura, Shunichi; Inata, Hiroo; and Ogasawara, Makoto, 4,369,207, Cl. 427-54.100.
Ogawa, Youichiro: *See—*
  Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.
Ogino, Takao: *See—*
  Negita, Junichi; Yamada, Yuichiro; Kaneko, Hideaki; and Ogino, Takao, 4,368,776, Cl. 165-133.000.
Ohba, Hiroshi; and Horino, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for binding article with elongated binding material in cross shape. 4,369,088, Cl. 156-468.000.
Ohio Agricultural Research & Development Center: *See—*
  Basel, Richard M.; and Gould, Wilbur A., 4,369,197, Cl. 426-270.000.
Ohkubo, Masami: *See—*
  Matsui, Yoshiya; Minami, Setsuo; Mochizuki, Noritaka; Harumoto, Isao; Tsunoda, Atsuo; Hirai, Shiro; and Ohkubo, Masami, 4,368,975, Cl. 355-50.000.
Ohmi, Atsushi; and Ochiai, Chiaki, to Aisin Seiki Kabushiki Kaisha. Control valve for brake booster. 4,368,661, Cl. 91-376.00R.
Ohsato, Hiroshi. Frame connecting member of a kite. 4,368,861, Cl. 244-153.00R.
Okada, Hideo: *See—*
  Ban, Itsuki; Shiraki, Manabu; Okada, Hideo; and Egami, Kazuhito, 4,369,388, Cl. 310-154.000.
Okamoto, Jyoji: *See—*
  Yamaguma, Naoto; Okamoto, Jyoji; Masai, Tadahisa; Imaizumi, Takeshi; and Okita, Yoshihiro, 4,368,621, Cl. 62-117.000.
Okamoto, Keizo; Tomita, Masayoshi; and Takagi, Osamu, to Fujitsu Limited. CMOS Schmitt-trigger circuit. 4,369,381, Cl. 307-279.000.
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  Kimura, Tadashi, 4,368,953, Cl. 350-426.000.
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Pendleton, Robert A.; Edfors, John E.; Whitford, Leonard G.; and Conroy, Walter J., to Honeywell Information Systems Inc. Tilt base for a CRT display terminal. 4,368,867, Cl. 248-346.000.
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Peterson, Arnold N.; Peterson, Dale A.; and Sprague, Lawrence A., to Wilber Peterson & Sons, Inc. Rotary multiple log debarker. 4,368,764, Cl. 144-208.00J.
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  McDaniel, Max P., 4,369,295, Cl. 526-96.000.
  Morgan, John A.; and Hachmuth, Henry K., 4,369,026, Cl. 431-12.000.
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Ploss, Helmut, to Warner Electric Brake & Clutch Company. Preloaded ball screw assembly. 4,369,011, Cl. 411-223.000.
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- Plus Manufacturing Co., Inc.: *See—*
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- PMA, Elektro AG: *See—*
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- Polaroid Corporation: *See—*
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- Polfus, William F.: *See—*
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  - Bednar, Jiri, 4,368,651, Cl. 74-752.00E.
- Powers Manufacturing, Inc.: *See—*
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- PPG Industries, Inc.: *See—*
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  - Maucher, Paul; Keck, Karl; and Pretzel, Dieter, 4,368,810, Cl. 192-70.280.
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- Price, Harry A. Gutter improvement. 4,368,601, Cl. 52-16.000.
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- Pringle, Ronald E., to Camco, Incorporated. Subsurface conduit setting and pulling tool. 4,368,911, Cl. 294-86.150.
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- Pullman Incorporated: *See—*
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- Purdue Research Foundation: *See—*
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- Quint, David; and Pratt, George W., Jr., to Massachusetts Institute of Technology. Optical pulse detector and encoder. 4,369,363, Cl. 250-211.00R.
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  - Risch, Alan P.; and Rabo, Jule A., 4,369,131, Cl. 252-459.000.
- Racon Incorporated: *See—*
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- Raineri, Giuseppe, to Pietro Laverda S.p.A. Castor wheel support assembly for an agricultural machine. 4,368,806, Cl. 188-2.00R.
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- Ranz, Erwin; Schutz, Heinz-Dieter; and Lohmann, Joachim W., to Agfa-Gevaert Aktiengesellschaft. Photographic recording material and its use for the production of images. 4,369,248, Cl. 430-376.000.
- Rappaport, Robert E.: *See—*
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  - Keung, Chue-Kwok J.; and Rathgeber, Donald E., 4,369,267, Cl. 523-351.000.
- Rau, Karlheinz; Lorenz, Horst; Huth, Oswald; Volkmann, Lothar; and Stenzel, Kurt, to Heraeus Quarzschmelze GmbH. Melting burner made of vitreous silica for the production of massive vitreous silica. 4,368,846, Cl. 239-85.000.
- Rawson, Eric G.; Scifres, Donald R.; and Burnham, Robert D., to Xerox Corporation. Single component transceiver device for linear fiber optical network. 4,369,524, Cl. 455-606.000.
- Ray, Jimmy C., to Texas Aim, Inc. Automatic ice bagger. 4,368,608, Cl. 53-440.000.
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  - Archer, John R., 4,369,418, Cl. 335-211.000.
  - Desai, Nitin V.; and Poll, Robert F., 4,369,307, Cl. 528-488.000.
  - Prabhu, Ashok N.; and Hang, Kenneth W., 4,369,220, Cl. 428-209.000.
  - Prabhu, Ashok N.; and Hang, Kenneth W., 4,369,254, Cl. 501-21.000.
  - Pruitt, Duard L., 4,369,489, Cl. 363-28.000.
  - Rockett, Leonard R., Jr., 4,369,378, Cl. 307-221.00D.
  - Schwarzmann, Alfred, 4,369,415, Cl. 333-127.000.
  - Thorn, Joseph H.; and Jennings, Robert E., 4,368,636, Cl. 73-40.50R.
- Read, Graham L. Motor control apparatus for a motorized vehicle, and method therefor. 4,369,397, Cl. 318-54.000.
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  - Drake, Eric F., 4,368,788, Cl. 175-374.000.
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  - West, George C.; and Polfus, William F., 4,369,231, Cl. 428-421.000.
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  - Blasin, Serge, 4,368,916, Cl. 297-341.000.
- Reinhardt, Weldon E. Electrolytic supplemental fuel generation for motor vehicles. 4,368,696, Cl. 123-3.000.
- Reker, Louis M., Jr. Game apparatus for simulating school experience. 4,368,889, Cl. 273-243.000.
- Rembaum, Alan, to California Institute of Technology. Polyglutaraldehyde synthesis and protein bonding substrates. 4,369,226, Cl. 428-334.000.
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  - Palmer, John R., 4,368,590, Cl. 42-84.000.
- Ren, Gerald J. Golf putting device. 4,368,888, Cl. 273-176.0FB.
- Renner, Rolf: *See—*
  - Wanner, Karl; Wiesner, Herbert; and Renner, Rolf, 4,368,556, Cl. 16-111.00R.
- REPA Feinstanzwerk GmbH: *See—*
  - Merkel, Wolfgang, 4,369,426, Cl. 340-32.000.

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  - Flach, Jurgen; Opitz, Rigobert; and Bethmann, Karl W., 4,369,071, Cl. 134-8.000.
- Rhone-Poulenc Industries: *See—*
  - Farge, Daniel; Roy, Pierre L.; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, 4,369,314, Cl. 544-90.000.
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  - Leveque, Alain; and Triollier, Michel, 4,369,166, Cl. 423-112.000.
  - Nineuil, Guy; Boutin, Jean; and Chambon, Maurice, 4,369,169, Cl. 423-321.00R.
  - Soula, Gerard, 4,369,145, Cl. 260-543.00F.
- Ribaudo, Roland G.: *See—*
  - Morgan, Albert W.; and Ribaudo, Roland G., 4,369,135, Cl. 524-294.000.
- Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
  - Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, 4,369,252, Cl. 435-119.000.
- Rickard, Jimmy R., to General Electric Company. Safety power cutoff for appliances. 4,369,479, Cl. 361-1.000.
- Ricoh Company, Ltd.: *See—*
  - Kaneko, Yutaka; and Fukuda, Mitsuhisa, 4,368,946, Cl. 350-3.780.
- Rieber & Son: *See—*
  - Parmann, Gunnar, 4,368,894, Cl. 277-166.000.
- Rikker, Leslie D., to National Engineering Company. Mixer apparatus. 4,368,984, Cl. 366-15.000.
- Rink, Hans; Sieber, Peter; and Kamber, Bruno, to Ciba-Geigy Corporation. Acylpeptides. 4,369,179, Cl. 424-177.000.
- Risch, Alan P.; and Rabo, Jule A., to Union Carbide Corporation. Enhanced catalyst stability for cyclic co methanation operations. 4,369,131, Cl. 252-459.000.
- Ritter, Heinz, to SDS-Elektro GmbH; and Matsushita Electric Works, Ltd. Electromagnetic relay. 4,369,482, Cl. 361-210.000.
- Ritzmann, Gotz: *See—*
  - Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,369,182, Cl. 424-199.000.
- Rizzi, Luigi, to Societa Italiana Telecomunicazioni Siemens. Protective circuitry for transistorized d-c/d-c converter. 4,369,491, Cl. 363-56.000.
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  - Krieger, Klaus; Schneider, Volker; Vogtmann, Hans-Jorg; and Walz, Ludwig, 4,368,710, Cl. 123-505.000.
  - Kuhlmann, Gerhard, 4,368,598, Cl. 51-170.00R.
  - Mattes, Gerd, 4,368,961, Cl. 352-129.000.
  - Wanner, Karl; Wiesner, Herbert; and Renner, Rolf, 4,368,556, Cl. 16-111.00R.
  - Wunsch, Steffen; and Walz, Heinz, 4,368,784, Cl. 173-12.000.
- Roberts, Joseph S., to Jamaica Manufacturing (Canada) Co., Ltd. Washerless valve structure particularly for faucets. 4,368,754, Cl. 137-315.000.
- Roberts, William J.; and Owen, Gerald M., to Eltra Corporation. Automatic shut-off circuit for electronic ignition system. 4,368,717, Cl. 123-632.000.
- Robeson, Lloyd M.; Claus, William D., Jr.; and Batleman, Harvey L., to Union Carbide Corporation. Poly(aryl ether) containing blends. 4,369,136, Cl. 524-371.000.
- Robeson, Robert O.: *See—*
  - Kapreilian, Harry C.; Hart, Vincent J.; and Robeson, Robert O., 4,368,659, Cl. 84-228.000.
- Rockett, Leonard R., Jr., to RCA Corporation. Quantizing circuits using a charge coupled device with a feedback channel. 4,369,378, Cl. 307-221.00D.
- Rockwell International Corporation: *See—*
  - Carroll, William J.; and Patrick, James W., 4,368,578, Cl. 33-1.0SA.
  - Grabill, Louis C.; Malkowski, Joseph L.; and Wells, Calvin G., 4,368,802, Cl. 184-6.120.
  - Jones, Addison B., 4,368,689, Cl. 118-688.000.
  - Soclof, Sidney I.; and Elliott, Michael T., 4,369,406, Cl. 324-252.000.
- Rocoh Company, Ltd.: *See—*
  - Hirata, Toshitaka, 4,369,471, Cl. 358-280.000.
- Rodionov, Boris: *See—*
  - Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.
- Rody, Jean, to Ciba-Geigy AG. Malonate derivatives as stabilizers for organic materials. 4,369,275, Cl. 524-103.000.
- Roeder, George K. Valve assembly for hydraulically actuated downhole pumps. 4,369,022, Cl. 417-571.000.
- Roediger, Markus, to Techtransfer GmbH & Co. KG. Activated sludge system. 4,369,111, Cl. 210-199.000.
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  - Harper, William P.; and Taylor, Michael J., 4,369,269, Cl. 523-459.000.
- Rogers, Howard H.; and Stadnick, Steven J., to Hughes Aircraft Company. Process for removing residues from gas electrodes. 4,369,212, Cl. 427-352.000.
- Rogg, Werner, to Irion & Vosseler, Zahlerfabrik. Flow meter for liquid or gaseous media. 4,368,646, Cl. 73-861.550.
- Rohner AG Pratteln: *See—*
  - Kirner, Hans D.; and Wegmann, Jacques, deceased, 4,369,040, Cl. 8-527.000.
- Rojey, Alexandre; and Cohen, Georges, to Institut Francais du Petrole. Compact heat exchanger. 4,368,779, Cl. 165-165.000.
- Romano, Joseph. Power generation from tidal changes. 4,369,375, Cl. 290-53.000.
- Ronbeck, Arne I., to AB Volvo. Device for separating an end blank from a stack of blanks. 4,368,882, Cl. 271-135.000.
- Rookasin, Jerome L. Tire chain. 4,368,769, Cl. 152-218.000.
- Ropakov, Stanislav A.: *See—*
  - Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
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  - Haseke, Horst, 4,368,821, Cl. 211-41.000.
- Rose, Harry: *See—*
  - Allen, Larry D., 4,368,711, Cl. 123-522.000.
- Ross, Bernard M. Apparatus for picking up animal waste. 4,368,907, Cl. 294-1.0BA.
- Roy, Pierre L.: *See—*
  - Farge, Daniel; Roy, Pierre L.; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, 4,369,314, Cl. 544-90.000.
- Rozenberg, Vladimir M.: *See—*
  - Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.
- Rudolph, Hans: *See—*
  - Mayer, Wofram; Rudolph, Hans; de Cleur, Eckhard; and Schonfelder, Manfred, 4,369,206, Cl. 427-54.100.
  - Wolfers, Heinrich; Rudolph, Hans; and Alberts, Heinrich, 4,369,329, Cl. 556-442.000.
- Rued, Glen A., to Elevator Equipment Company. Hydraulic control unit for elevators. 4,368,805, Cl. 187-17.000.
- Ruell, Hartwig, to Siemens Corporation. Automobile identification system. 4,368,979, Cl. 356-71.000.
- Ryer, Jack; and Bloch, Ricardo, to Exxon Research & Engineering Co. Process of inhibiting haze in lubricating oil compositions. 4,369,118, Cl. 252-39.000.
- S.K.Y. Polmers: *See—*
  - Stoy, Vladimir A., 4,369,294, Cl. 525-340.000.
- Saarberg & Dr. C. Otto Gesellschaft fur Kohledruckvergasung mbH: *See—*
  - Grams, Wolfgang, 4,369,006, Cl. 406-93.000.
- SAB Nife AB: *See—*
  - Bursell, Martin S. O., 4,369,235, Cl. 429-27.000.
- Sack, Berthold: *See—*
  - Forster, Siegfried; and Sack, Berthold, 4,369,029, Cl. 432-29.000.
- Saftig, Jakob: *See—*
  - Finsterwalder, Gerhard; and Saftig, Jakob, 4,368,702, Cl. 123-261.000.
- Saito, Katushi: *See—*
  - Nitto, Hajime; Sakai, Kango; and Saito, Katushi, 4,369,211, Cl. 427-349.000.
- Saito, Koichi; Kojima, Tatsuku; and Kosaka, Yoshikazu, to Toray Industries, Inc. Method of modifying synthetic or natural polyamide products. 4,369,036, Cl. 8-115.500.
- Saito, Shigemasa, to Fuji Electric Company, Ltd. Method of manufacturing an electromagnetic core. 4,369,077, Cl. 148-120.000.
- Saito, Toshihiko; Kumazawa, Katsuyoshi; and Sakamoto, Moriyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid fuel combustion apparatus. 4,369,027, Cl. 431-333.000.
- Saitou, Tamio: *See—*
  - Anno, Gousuke; Saitou, Tamio; and Fukumoto, Yoshikatsu, 4,369,452, Cl. 346-76.0PH.
- Sakaguchi, Haruo: *See—*
  - Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,369,523, Cl. 455-601.000.
- Sakaguchi, Hirofumi, to Konishiroku Photo Industry Co., Ltd. Reciprocating driving device. 4,368,647, Cl. 74-89.220.
- Sakai, Kango: *See—*
  - Nitto, Hajime; Sakai, Kango; and Saito, Katushi, 4,369,211, Cl. 427-349.000.
- Sakamoto, Moriyoshi: *See—*
  - Saito, Toshihiko; Kumazawa, Katsuyoshi; and Sakamoto, Moriyoshi, 4,369,027, Cl. 431-333.000.
- Sakamoto, Takashi, to Dainippon Screen Mfg., Co., Ltd. Image observation device having glass piled half mirror. 4,368,950, Cl. 350-174.000.
- Sakamoto, Yuichi. Long life heat conductive body for utilization of solar heat energy and water heater for making use of same. 4,369,210, Cl. 427-160.000.
- Sakano, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Audio amplifier. 4,369,412, Cl. 330-298.000.
- Sakata, Katsuyuki: *See—*
  - Mori, Hazime; Kohyama, Katsuhisa; Nakamura, Katsuhiko; Sakata, Katsuyuki; and Matsuno, Akira, 4,369,303, Cl. 528-173.000.
- Sakurai, Masaaki: *See—*
  - Watanabe, Tsuyoshi; Nakahata, Kimio; Kan, Fumitaka; and Sakurai, Masaaki, 4,368,971, Cl. 355-3.0DD.
- Sakuyama, Masaki: *See—*
  - Okamoto, Kouichi; and Sakuyama, Masaki, 4,368,895, Cl. 277-203.000.
- Salerno, Michael T. Sliding door safety device. 4,368,555, Cl. 16-83.000.
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Samuel, David N.; and Sinnott, Kenneth M., to W. R. Grace & Co. Sealing compositions. 4,368,828, Cl. 220-81.00R.

Sanchez, Florencio, to InsCon Cable Inc. Tape wrapped conductor. 4,368,613, Cl. 57-11.000.

Sanders, Frederick M.: *See—*
Offen, Matt D.; and Sanders, Frederick M., 4,369,215, Cl. 428-4.000.

Sanderson, John R.; Neuray, Dieter; Michael, Dietrich; and Bonten, Heinrich, to Bayer Aktiengesellschaft. Polyamide moulding compositions with improved toughness. 4,369,285, Cl. 524-538.000.

Sandganger, Karl. Wave-motion-driven power generator station. 4,369,374, Cl. 290-53.000.

Sanidas, John D. Invalid feces collecting and examination device for medical study of stool and examination of the genitalia. 4,368,733, Cl. 128-283.000.

Sano, Yasuro: *See—*
Hanyu, Susumu; Morimoto, Shuzo; and Sano, Yasuro, 4,368,681, Cl. 112-158.00A.

Sansho Pharmaceutical Co., Ltd.: *See—*
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Sanyo Industries, Ltd.: *See—*
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Saruhashi, Shoji: *See—*
Kinoshita, Hiroo; Suzuki, Yoshihiro; Saruhashi, Shoji; and Sato, Masayasu, 4,369,132, Cl. 252-466.0PT.

Sasse, Klaus: *See—*
Beck, Gunther; Sasse, Klaus; Heitzer, Helmut; Eue, Ludwig; Schmidt, Robert R.; Scheinpflug, Hans; Hammann, Ingeborg; and Brandes, Wilhelm, 4,369,186, Cl. 424-273.00R.

Sato, Hiroshi: *See—*
Murata, Yasuzo; and Sato, Hiroshi, 4,368,952, Cl. 350-362.000.

Sato, Masaaki; Osanai, Akira; and Iwase, Hajime, to Olympus Optical Co., Ltd. Automobile magnetic tape playing apparatus. 4,369,478, Cl. 360-137.000.

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Kinoshita, Hiroo; Suzuki, Yoshihiro; Saruhashi, Shoji; and Sato, Masayasu, 4,369,132, Cl. 252-466.0PT.

Sato, Susumu: *See—*
Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.

Satoh, Hideo; and Matsunaka, Naoto, to Kokusai Denshin Denwa Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Microwave antenna with radiation scattering support member elements. 4,369,448, Cl. 343-781.0CA.

Saurenman, Phillip E.: *See—*
Casler, William A.; and Saurenman, Phillip E., 4,368,931, Cl. 384-192.000.

Saurer-Allma GmbH, Firma: *See—*
Mainka, Manfred; Bleeck, Heinz; Wehrmeister, Gerhard; and Czapay, Milan, 4,368,611, Cl. 57-6.000.

Savin Corporation: *See—*
Landa, Benzion, 4,368,881, Cl. 271-122.000.

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Hashimoto, Masashi; Aratani, Matsuhiko; Hagiwara, Daijiro; Sawada, Kozo; and Onami, Tetsuo, 4,369,312, Cl. 544-16.000.

Sawada, Takeshi, to Sony Corporation. Radio receiving apparatus using headphone connector cable as an antenna. 4,369,521, Cl. 455-270.000.

Sawyer, Harold T. Method for enhancing chemical reactions. 4,369,100, Cl. 204-157.10S.

Saxon, John W. C.: *See—*
Sheffield, David J.; and Saxon, John W. C., 4,368,838, Cl. 227-55.000.

Saylor, James R.: *See—*
Wiens, Lewis H.; Saylor, James R.; and Blume, Orville E., 4,368,674, Cl. 105-377.000.

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Schafer, Inge: *See—*
Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,369,325, Cl. 548-315.000.

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Emmenthal, Klaus; Schafer, Otto; Strozyk, Rudolf-Helmut; and Wehling, Wolfgang, 4,368,714, Cl. 123-531.000.

Schalke, Peter; and Kleemann, Axel, to Degussa AG. Process for the production of substituted acetonitriles. 4,369,322, Cl. 546-330.000.

Schegolev, Gleb S.: *See—*
Lurie, Alexandr N.; Anchukov, Anatoly N.; Dukshtau, Alexandr A.; Schegolev, Gleb S.; Yablonsky, Gennady A.; and Steklov, Mikhail L., 4,369,386, Cl. 310-54.000.

Scheinpflug, Hans: *See—*
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Schenk, Wolfgang: *See—*
Behre, Horst; Blank, Heinz U.; and Schenk, Wolfgang, 4,369,143, Cl. 260-505.00C.

Schering Aktiengesellschaft: *See—*
Nuesslein, Ludwig; Baumert, Dietrich; Hoyer, Georg-Alexander; and Pieroh, Ernst A., 4,369,185, Cl. 424-270.000.

Schetina, Otto: *See—*
Droscher, Erich; Wrulich, Herwig; Zitz, Alfred; and Schetina, Otto, 4,368,918, Cl. 299-1.000.

Schilo, Diederich; Achtsnit, Hans-Dieter; and Klug, Gerhard, to Akzona Incorporated. Method for the production of melt-spun and molecular-oriented drawn, crystalline filaments. 4,369,155, Cl. 264-103.000.

Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, to Brennstoffinstitut Freiberg DDR; and Gosudarstvenny Nauchno-Issledovatelsky I Proektny Institut Azortnoi promyshlennosti I Produktor Organicheskogo Sinteza. Thermal shielding for bottoms and covers of reaction vessels. 4,369,163, Cl. 422-202.000.

Schiwiora, Harry: *See—*
Hausselt, Jurgen; Schiwiora, Harry; and Stumke, Manfred, 4,369,068, Cl. 106-1.180.

Schlak, Ottfried: *See—*
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Schleimer, Francois: *See—*
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Schlumberger Technology Corp.: *See—*
Poupon, Andre; and Gaymard, Robert G., 4,369,497, Cl. 364-422.000.
Young, David E., 4,368,871, Cl. 251-58.000.

Schmid & Wezel: *See—*
Wetzel, Ludwig; and Mammel, Erich, 4,368,560, Cl. 17-21.000.

Schmidt, Bernhard, to Felten & Guilleaume Carlswerk AG. Coupling device for terminals having light-conductive filaments. 4,368,949, Cl. 350-96.210.

Schmidt, Johannes E.: *See—*
Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.

Schmidt, Robert R.: *See—*
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Schmidt, Thomas: *See—*
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Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Photoelectric digital measuring instrument balancing circuit. 4,369,366, Cl. 250-237.00G.

Schnabel Foundation Company: *See—*
Weatherby, David E., 4,369,004, Cl. 405-262.000.

Schnabel, Wolfram: *See—*
Elsenheimer, Gerd; and Schnabel, Wolfram, 4,369,059, Cl. 75-36.000.

Schneider, Gilbert: *See—*
Litt, Ferdinand; Neff, Daniel; Schneider, Gilbert; Sprauel, Roger; and Wotling, Guy, 4,368,574, Cl. 29-602.00R.

Schneider, Richard: *See—*
Fugate, Robert L.; Schneider, Richard; and Zgud, Felix K., 4,369,484, Cl. 361-334.000.

Schneider, Theodor: *See—*
Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.

Schneider, Volker: *See—*
Krieger, Klaus; Schneider, Volker; Vogtmann, Hans-Jorg; and Walz, Ludwig, 4,368,710, Cl. 123-505.000.

Schonfelder, Manfred: *See—*
Mayer, Wofram; Rudolph, Hans; de Cleur, Eckhard; and Schonfelder, Manfred, 4,369,206, Cl. 427-54.100.

Schonmeier, Herbert; and Welp, Ewald G., to Jagenberg Werke AG. Web-cutting apparatus. 4,368,855, Cl. 242-56.00R.

Schor, Joseph M.; Nigalaye, Ashok; and Gaylord, Norman G., to Forest Laboratories Inc. Prolonged release therapeutic compositions based on hydroxypropylmethylcellulose. 4,369,172, Cl. 424-19.000.

Schramm, Heinrich W. Pistol-type syringe. 4,368,731, Cl. 128-215.000.

Schranz, Karl-Wilhelm: *See—*
Credner, Hans-Heinrich; Lassig, Wolfgang; and Schranz, Karl-Wilhelm, 4,369,243, Cl. 430-223.000.

Schraube, Hansfritz, deceased: *See—*
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,368,604, Cl. 52-309.800.

Schraube, Maria K., heir: *See—*
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,368,604, Cl. 52-309.800.

Schubart, Rudiger; and Eholzer, Ulrich, to Bayer Aktiengesellschaft. Vulcanization acceleration based on melamine derivatives, rubber compositions containing melamine derivatives, and a process for the vulcanization of rubber. 4,369,122, Cl. 252-182.000.

Schubert, Karl-Friedrich: *See—*
Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.

Schuh, Manfred: *See—*
Plohn, Gerhard; Schuh, Manfred; and Worner, Manfred, 4,369,408, Cl. 328-154.000.

Schulte-Elte, Karl-Heinrich; Egger, Bernard; and Muller, Bernard, to Firmenich SA. Oxygenated alicyclic compounds and process for preparing same. 4,369,328, Cl. 549-546.000.

Schulte, Eric F., to Texas Instruments Incorporated. Photoluminescent powered calculator. 4,369,498, Cl. 364-707.000.

Schulte, Thomas L. Analgesic composition and use thereof to ameliorate intractable pain. 4,369,190, Cl. 424-308.000.

Schultz, Wilhelm: *See—*
Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.

Schulz, Hans-Hermann: *See—*
Walkowiak, Michael; Podszun, Wolfgang; Leusner, Bernhard; Suling, Carlhans; and Schulz, Hans-Hermann, 4,369,262, Cl. 523-109.000.

Schulz, Johann G.: *See—*
Selwitz, Charles M.; and Schulz, Johann G., 4,369,123, Cl. 252-312.000.

Schulze, Helmut: *See—*
Moll, Klaus; and Schulze, Helmut, 4,369,492, Cl. 363-58.000.

Schumacher, Reinhold: *See—*
Wolff, Willi; Pfahls, Ottomar; and Schumacher, Reinhold, 4,369,101, Cl. 204-224.00R.

Schumann, Gunter: *See—*
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, 4,368,668, Cl. 101-212.000.

Schurmann, Horst: *See—*
Schafer, Hans G.; Vogts, Axel; Poppel, Gunter; and Schurmann, Horst, 4,369,042, Cl. 44-15.00R.

Schuster, John D.: *See—*
Kramer, Joseph O.; Young, Otto V.; Banner, Charles E.; and Schuster, John D., 4,368,822, Cl. 211-41.000.

Schutz, Heinz-Dieter: *See—*
Ranz, Erwin; Schutz, Heinz-Dieter; and Lohmann, Joachim W., 4,369,248, Cl. 430-376.000.

Schwarz, Eckhard C. A., to Biax-Fiberfilm Corporation. Grooved roller assembly for laterally stretching film. 4,368,565, Cl. 26-99.000.

Schwarzer, Siegfried: *See—*
Becker, Kurt; Geisel, Gerhard; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,369,053, Cl. 65-164.000.

Schwarzmann, Alfred, to RCA Corporation. Space-loaded coaxial coupler. 4,369,415, Cl. 333-127.000.

Scifres, Donald R.: *See—*
Rawson, Eric G.; Scifres, Donald R.; and Burnham, Robert D., 4,369,524, Cl. 455-606.000.

SCM Corporation: *See—*
Evans, James M.; and Woo, James T. K., 4,369,290, Cl. 525-137.000.

Scopazzi, Christopher, to Du Pont de Nemours, E. I., and Company. Dispersants for coating compositions isocyanatoalkylacrylates as inorganic pigment dispersant on metal substrates. 4,369,232, Cl. 428-425.900.

Scott Bader Company Limited: *See—*
Phillips, Cecil L., 4,369,223, Cl. 428-285.000.

Scott & Fetzer Company, The: *See—*
Lee, Maw H., 4,369,403, Cl. 318-729.000.

Scovill Manufacturing Co.: *See—*
Fayfield, Robert W.; and Fontaine, Kenneth B., 4,369,401, Cl. 318-565.000.

SDS-Elektro GmbH: *See—*
Ritter, Heinz, 4,369,482, Cl. 361-210.000.

Seidel, Hans-Georg: *See—*
Becker, Kurt; Geisel, Gerhard; Schwarzer, Siegfried; and Seidel, Hans-Georg, 4,369,053, Cl. 65-164.000.

Seidman, Elisabeth. Face protecting device. 4,368,545, Cl. 2-174.000.

Seifert, Hermann; Waldmann, Helmut; Wirthwein, Rolf; and Hofen, Willi, to Bayer Aktiengesellschaft; and Deutsche Gold und Silberscheideanstalt Vormals Roessler. Process for the purification of epoxides. 4,369,096, Cl. 203-58.000.

Seigneurin, Michel: *See—*
Garnier, Marcel; and Seigneurin, Michel, 4,369,034, Cl. 433-115.000.

Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, to Kokusai Denshin Denwa Co., Ltd. Remote control system of an optical repeater. 4,369,523, Cl. 455-601.000.

Sekido, Yosihiro; Kurihara, Tutomu; Kazama, Munetada; and Homma, Rokuro, to Oki Electric Industry Co., Ltd. Thermal printing device. 4,369,451, Cl. 346-76.0PH.

Selwitz, Charles M.; and Schulz, Johann G., to Gulf Research & Development Company. Stable emulsions of substantially pure alkenylsuccinic acid and their preparation. 4,369,123, Cl. 252-312.000.

Semonov, Vladimir: *See—*
Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.

Serrin, Gunter: *See—*
Grumer, Peter; Wiese, Wolfgang; and Serrin, Gunter, 4,368,688, Cl. 118-674.000.

Sestanj, Kazimir, to Ayerst, McKenna & Harrison Inc. 2-Thioxobenz[c-d]indole-1(2H)-acetic acid derivatives. 4,369,188, Cl. 424-274.000.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
Menniti, Pietro; and Felici, Maurizio, 4,369,380, Cl. 307-254.000.

Shaffer, John W.: *See—*
Bricker, Daniel W.; and Shaffer, John W., 4,369,028, Cl. 431-362.000.

Shah, Kishore R., to Kendall Company, The. Composite hydrogel-forming article and method of making same. 4,369,229, Cl. 428-421.000.

Shakespeare Company, The: *See—*
Lindler, James M.; and Bailey, Joe B., Jr., 4,368,749, Cl. 135-20.00R.

Shakhpazov, Khristofor S.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.

Sharp Kabushiki Kaisha: *See—*
Iwagami, Fusao; and Iwai, Hiroji, 4,369,450, Cl. 346-75.000.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,369,334, Cl. 179-1.0SM.
Shin, Yasuo, 4,369,347, Cl. 219-10.55B.

Sharp, William J.; Beam, Harold D.; and Armstrong, William A., to Nordson Corporation. Combination spray gun and pressure regulator. 4,368,852, Cl. 239-695.000.

Sharrock, Nigel. Intravenous catheter. 4,368,730, Cl. 604-158.000.

Shaw, Graham C., to Thiokol Corporation. Solid non-azide nitrogen gas generant compositions. 4,369,079, Cl. 149-2.000.

Sheffield, David J.; and Saxon, John W. C., to Aerpat A.G. Blind riveting machine. 4,368,838, Cl. 227-55.000.

Sheller-Globe Corporation: *See—*
Korbell, George K., 4,369,407, Cl. 324-416.000.

Shemtov, Sami, to Berger Industries, Inc. Pivot joint. 4,368,997, Cl. 403-59.000.

Sherwood Medical Industries Inc.: *See—*
Gindler, E. Melvin, 4,369,250, Cl. 435-18.000.

Shibata, Hirotaka, to Yamaha, Hatsudoki, Kabushiki, Kaisha. Two stroke engine having exhaust timing control valve means. 4,368,703, Cl. 123-323.000.

Shida, Masaharu: *See—*
Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,368,990, Cl. 368-157.000.

Shikata, Kazuo: *See—*
Kida, Yasuji; and Shikata, Kazuo, 4,369,298, Cl. 526-313.000.

Shimadzu Co.: *See—*
Kita, Yasuo, 4,368,692, Cl. 122-26.000.

Shimizu, Fumiko, executrix: *See—*
Fujita, Toshio; Takahashi, Chigo; Yoshida, Shigemitsu; and Shimizu, Hirozo, deceased, 4,369,055, Cl. 71-64.110.

Shimizu, Hirozo, deceased: *See—*
Fujita, Toshio; Takahashi, Chigo; Yoshida, Shigemitsu; and Shimizu, Hirozo, deceased, 4,369,055, Cl. 71-64.110.

Shimizu, Masaaki. Machine for feeding sheets of paper. 4,368,880, Cl. 271-121.000.

Shimizu, Norihiko: *See—*
Wada, Ryuji; Munekata, Kenichi; Unno, Kunihiko; Shimizu, Norihiko; and Suzuki, Yasuo, 4,368,596, Cl. 51-165.770.

Shimogori, Kazutoshi: *See—*
Fukutsuka, Toshio; Shimogori, Kazutoshi; Yamamoto, Etsuo; and Miki, Kenji, 4,369,073, Cl. 148-6.14R.

Shin-Etsu Chemical Co., Ltd.: *See—*
Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.

Shin, Yasuo, to Sharp Kabushiki Kaisha. Damper activation in a combined microwave and electric heating oven. 4,369,347, Cl. 219-10.55B.

Shinholster, Leavie J., Jr.; and Tully-Wilkins, Charles H. Fiber/slag composition. 4,369,054, Cl. 71-25.000.

Shinkai, Mikio: *See—*
Nakano, Kazuaki; Fukuda, Masaaki; Mito, Kyuichi; Shinkai, Mikio; and Aruga, Shiro, 4,369,092, Cl. 159-47.100.

Shirakawa, Takashi, to Alps Electric Co., Ltd. Trimmer capacitor. 4,369,483, Cl. 361-291.000.

Shiraki, Manabu: *See—*
Ban, Itsuki; Shiraki, Manabu; Okada, Hideo; and Egami, Kazuhito, 4,369,388, Cl. 310-154.000.

Shogren, David K., to Xerox Corporation. Variable speed scanning system. 4,368,976, Cl. 355-55.000.

Short, Maverine H.: *See—*
Hart, Bill J.; Smith, Billy E.; and Short, Maverine H., 4,369,346, Cl. 219-10.55E.

Shtykh, Nikolai P.: *See—*
Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.

Shurboff, John D.: *See—*
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Siamp Cedap Reunies: *See—*
Bailet, Jean-Claude; and De Bella, Rocco, 4,369,012, Cl. 411-437.000.

Siccardi, Frank J. System for controlled heating and ventilating of poultry houses. 4,369,030, Cl. 432-37.000.

Sieber, Peter: *See—*
Rink, Hans; Sieber, Peter; and Kamber, Bruno, 4,369,179, Cl. 424-177.000.

- Siegers, Gunter, to Bayer Aktiengesellschaft. Adsorption process with resin transfer. 4,369,114, Cl. 210-661.000.
- Siemens Aktiengesellschaft: *See—*
  - Crucius, Michael; and Hassan, Mohamed A., 4,369,480, Cl. 361-128.000.
  - Drebinger, Peter; and Merkle, Heinz, 4,369,427, Cl. 340-38.00L.
  - Ertl, Wilhelm; Lachmann, Ulrich; Pertsch, Heinrich; and Wirnharter, Gunter, 4,369,376, Cl. 307-99.000.
  - Fenk, Josef, 4,369,410, Cl. 330-254.000.
  - Goedecke, Ludger; and von Hayek, Hans, 4,369,354, Cl. 219-506.000.
  - Plohn, Gerhard; Schuh, Manfred; and Worner, Manfred, 4,369,408, Cl. 328-154.000.
  - Wickl, Rudolf, 4,368,758, Cl. 137-601.000.
- Siemens Corporation: *See—*
  - Ruell, Hartwig, 4,368,979, Cl. 356-71.000.
- Silfvast, William T.; and Wood, Obert R., II, to Bell Telephone Laboratories, Incorporated. Recombination laser. 4,369,514, Cl. 372-89.000.
- Silverberg, Morton, to Xerox Corporation. Recirculating document feeder. 4,368,973, Cl. 355-3.0SH.
- Simonds, Gary; and McKee, Arnold D., to Victor United, Inc. Compound bow with two-track lever cams. 4,368,718, Cl. 124-23.00R.
- Singer Company, The: *See—*
  - Sweeney, David F., 4,368,994, Cl. 400-320.000.
  - Turner, James A.; and Stubbart, John C., 4,369,400, Cl. 318-561.000.
- Sinnott, Kenneth M.: *See—*
  - Samuel, David N.; and Sinnott, Kenneth M., 4,368,828, Cl. 220-81.00R.
- Sioux Steam Cleaner Corporation: *See—*
  - Finger, John F., 4,368,757, Cl. 137-565.000.
- Sirotnak, Francis M.: *See—*
  - DeGraw, Joseph I., Jr.; and Sirotnak, Francis M., 4,369,319, Cl. 544-260.000.
- Sitzman, Jerry C.: *See—*
  - Dombroski, Robert M.; and Sitzman, Jerry C., 4,368,803, Cl. 184-15.00B.
- Skandinavisk Tobakskompagnie A/S: *See—*
  - Kjaer, Ian; Moeller, Hans J.; and Mortensen, Niels E., 4,368,744, Cl. 131-324.000.
- Smalley, Edward A.; Boguski, Mark J.; Casey, Todd A.; and Chipperfield, Dwight D., to Kansas State University Research Foundation. Hitch mechanism for tractors and implements. 4,368,899, Cl. 280-477.000.
- Smit, Hermanus, to U.S. Philips Corporation. Method of forming an end connection arrangement on a co-axial cable. 4,368,576, Cl. 29-828.000.
- Smith, Billy E.: *See—*
  - Hart, Bill J.; Smith, Billy E.; and Short, Maverine H., 4,369,346, Cl. 219-10.55E.
- Smith, Donald P.; High, Jarald E.; and Plumb, William W., to Smith, Donald P. Apparatus to transfer heat to a product and side loading door therefor. 4,368,664, Cl. 99-386.000.
- Smith, Ellis L. Convertible necktie structure. 4,368,544, Cl. 2-153.000.
- Smith-Johannsen, Robert, to Ramu International. Freezing organic particulate slurries. 4,369,151, Cl. 264-28.000.
- Smith, William V., to Lectrolarm Custom Systems, Inc. Video camera monitoring system. 4,369,467, Cl. 358-210.000.
- Smusch, Gunter: *See—*
  - Brakelmann, Wolfgang; and Smusch, Gunter, 4,368,753, Cl. 137-240.000.
- Snedegar, Leo D.: *See—*
  - Thompson, Robert E., Jr.; and Snedegar, Leo D., 4,369,437, Cl. 340-539.000.
- Snel, Martinus A., to Nautamix B.V. Liquid stabilizing composition and chlorine containing thermoplastics stabilized therewith. 4,369,273, Cl. 524-89.000.
- Socha, Jaromir: *See—*
  - Dvorsky, Drahomir; Cerovsky, Karel; and Socha, Jaromir, 4,369,041, Cl. 8-532.000.
- Societa Italiana Telecomunicazioni Siemens: *See—*
  - Rizzi, Luigi, 4,369,491, Cl. 363-56.000.
- Societe Agricole et Fonciere S.A.F. S.A.: *See—*
  - Arsovic, Hans M., 4,369,194, Cl. 426-59.000.
- Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
  - Frommert, Siegwart K., 4,368,760, Cl. 139-397.000.
- Societe Anonyme des Etablissements Ph. Bonvillain & E. Ronceray: *See—*
  - Churlaud, Henri A., 4,368,985, Cl. 366-28.000.
- Societe Anonyme dite: la Telephonie Industrielle et Commerciale - TELIC: *See—*
  - Litt, Ferdinand; Neff, Daniel; Schneider, Gilbert; Sprauel, Roger; and Wotling, Guy, 4,368,574, Cl. 29-602.00R.
- Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
  - Launay, Noel, 4,368,684, Cl. 118-25.000.
- Soclof, Sidney I.; and Elliott, Michael T., to Rockwell International Corporation. Semiconductor magneto-transistor device. 4,369,406, Cl. 324-252.000.
- Solver, Peter E., to A/S Niro Atomizer. Method and apparatus for drying a liquid product. 4,369,091, Cl. 159-4.0CC.
- Somers, Giles N., to Claire Corporation AG. Storage cabinet for cassettes boxes. 4,368,934, Cl. 312-13.000.
- Somezawa, Masashi: *See—*
  - Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.
- Sommer, Richard: *See—*
  - Horstmann, Walter; Sommer, Richard; Trautwein, Hans; and Wolfrum, Gerhard, 4,369,324, Cl. 548-164.000.
- Sone, Masazumi; and Imai, Iwao, to Nissan Motor Co., Ltd.; and Hitachi, Ltd. Ignition distributor having electrodes with thermistor discharging portions. 4,369,343, Cl. 200-19.00R.
- Sony Corporation: *See—*
  - Akagiri, Kenzo, 4,369,509, Cl. 369-174.000.
  - Katada, Masayasu; Imai, Yuko; and Hirabayashi, Tsugio, 4,368,885, Cl. 273-29.00A.
  - Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.
  - Matsuzaki, Atsushi; and Kawamata, Mitsuo, 4,369,466, Cl. 358-170.000.
  - Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,369,411, Cl. 330-257.000.
  - Sawada, Takeshi, 4,369,521, Cl. 455-270.000.
  - Tanaka, Masato; and Furukawa, Shunsuke, 4,369,472, Cl. 360-40.000.
- Sopira, Michael M.: *See—*
  - Thomas, Richard N.; and Sopira, Michael M., 4,369,458, Cl. 357-30.000.
- Sorathia, Usman A. K.: *See—*
  - Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,369,261, Cl. 521-189.000.
- Souder, Alan M., to Trafcon, Inc. Traffic signal housing adapter. 4,369,429, Cl. 340-119.000.
- Soughers, Edward K., to Diamond International Corporation. Locking means for liquid dispensers. 4,368,830, Cl. 222-321.000.
- Soula, Gerard, to Rhone-Poulenc Industries. Preparation of fluorobenzenesulfonyl fluorides by exchange fluorination. 4,369,145, Cl. 260-543.00F.
- Soulliard, Charles, to Midian Electronics, Inc. Sub-miniature tone decoder. 4,369,338, Cl. 179-84.0VF.
- Spatz, Steven D. Valved cosmetic applicator. 4,368,746, Cl. 132-88.500.
- Spence, Gavin G.: *See—*
  - Maslanka, William W.; and Spence, Gavin G., 4,369,292, Cl. 524-535.000.
- Sperry Corporation: *See—*
  - Andersen, David P.; and Chicoine, Eugene P., 4,369,425, Cl. 340-26.000.
- Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased (by Schraube, Maria K., heir), to Dynamit Nobel Aktiengesellschaft. Insulating panel for roof coverings. 4,368,604, Cl. 52-309.800.
- Spitza, Raymond W.: *See—*
  - Greb, Gregory A.; Spitza, Raymond W.; and Moe, Robert R., 4,368,870, Cl. 249-102.000.
- Spohr, Reimar, to Gesellschaft fur Schwerionenforschung mbH Darmstadt. Method for producing nuclear traces or microholes originating from nuclear traces of an individual ion. 4,369,370, Cl. 378-160.000.
- Sprague, Lawrence A.: *See—*
  - Peterson, Arnold N.; Peterson, Dale A.; and Sprague, Lawrence A., 4,368,764, Cl. 144-208.00J.
- Sprague, Robert A., to Xerox Corporation. Reverse polarity differential encoding for fringe field responsive electro-optic line printers. 4,369,457, Cl. 346-160.000.
- Sprauel, Roger: *See—*
  - Litt, Ferdinand; Neff, Daniel; Schneider, Gilbert; Sprauel, Roger; and Wotling, Guy, 4,368,574, Cl. 29-602.00R.
- Sprecker, Mark A., to International Flavors & Fragrances Inc. Use of norbornyl ethers in augmenting or enhancing the aroma of perfumes and colognes. 4,369,133, Cl. 252-522.00R.
- Spuhl, AG: *See—*
  - Spuhl, Walter, 4,368,761, Cl. 140-92.800.
- Spuhl, Walter, to Spuhl, AG. Centering device for a spring core mounting machine. 4,368,761, Cl. 140-92.800.
- Squerti, Federico: *See—*
  - Egidi, Paolo; and Squerti, Federico, 4,369,160, Cl. 264-326.000.
- SRI International: *See—*
  - Miller, Jon P.; and Zmolek, Wesley W., 4,369,181, Cl. 424-180.000.
- SS Pharmaceutical Co., Ltd.: *See—*
  - Eto, Hiromichi; Kohmoto, Teruo; Kouda, Tadayuki; Ogawa, Youichiro; Sato, Susumu; Kuraishi, Tadayuki; and Nakashima, Toshiaki, 4,369,309, Cl. 542-436.000.
- Stadnick, Steven J.: *See—*
  - Rogers, Howard H.; and Stadnick, Steven J., 4,369,212, Cl. 427-352.000.
- Standard Oil Company: *See—*
  - Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank, 4,369,130, Cl. 252-455.00Z.
- Standard Oil Company (Indiana): *See—*
  - Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,369,108, Cl. 208-120.000.
  - Motill, Richard M., 4,368,825, Cl. 215-1.00C.
- Starchenko, Vitaly S.: *See—*
  - Groza, Viktor F.; Shakhpazov, Khristofor S.; Shtykh, Nikolai P.; Nedovizy, Ivan N.; Drozdov, Nikolai I.; Korovainy, Sergei F.; Chernenko, Nikolai P.; Starchenko, Vitaly S.; Chernichenko, Jury I.; Lebed, Ljudmila P.; Musolova, Ljubov F.; Mischikha, Vladimir F.; Psarev, Sergei D.; Ropakov, Stanislav A.; and Mirensky, Igor G., 4,368,614, Cl. 57-58.520.
- Steeg, Klaus, to Luk Lamellen und Kupplungsbau GmbH. Clutch plate. 4,368,812, Cl. 192-106.200.

- Stehmeier, Dieter: *See—*
  - Knoche, Karl F.; Trumper, Heinrich; and Stehmeier, Dieter, 4,368,623, Cl. 62-235.100.
- Steimel, Richard. Device for degreasing, tumbling and washing of industrially manufactured objects. 4,368,748, Cl. 134-96.000.
- Steinhart, Wilhelm, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft Zweignieder-Lassung Keller & Knappich. Cylinder arrangement for friction-welding machine. 4,368,662, Cl. 92-52.000.
- Steklov, Mikhail L.: *See—*
  - Lurie, Alexandr N.; Anchukov, Anatoly N.; Dukshtau, Alexandr A.; Schegolev, Gleb S.; Yablonsky, Gennady A.; and Steklov, Mikhail L., 4,369,386, Cl. 310-54.000.
- Stelz, Dale E.; Whaley, Wilson M.; and Carroll, Frank I., to Racon Incorporated. Refrigeration liquid with leak indicator and process of using same. 4,369,120, Cl. 252-68.000.
- Stempeck, John W., to Polaroid Corporation. Electronic flash with safety switch feature. 4,369,395, Cl. 315-241.00P.
- Stenzel, Kurt: *See—*
  - Rau, Karlheinz; Lorenz, Horst; Huth, Oswald; Volkmann, Lothar; and Stenzel, Kurt, 4,368,846, Cl. 239-85.000.
- Stephen, John F.: *See—*
  - Kruse, Walter M.; and Stephen, John F., 4,369,316, Cl. 544-94.000.
- Sterling Drug, Inc.: *See—*
  - Bauer, Gerald L., 4,369,115, Cl. 210-761.000.
- Sternberg, Stanley R., to Environmental Research Institute of Michigan. Image analyzer with cyclical neighborhood processing pipeline. 4,369,430, Cl. 340-146.3MA.
- Stetson, Karl A.; and Banas, Conrad M., to United Technologies Corporation. Method and apparatus for high frequency optical beam oscillation. 4,369,348, Cl. 219-121.0LP.
- Stetter, Jorg: *See—*
  - Thomas, Rudolf; Schmidt, Thomas; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., 4,369,056, Cl. 71-92.000.
- Stevens, Gunther A. Method and apparatus for winterizing a swimming pool. 4,368,550, Cl. 4-507.000.
- Stevenson, Thomas T.; Szentes, John F.; and Zenios, Marios C., to Caterpillar Tractor Co. Engine control system. 4,368,705, Cl. 123-357.000.
- Stifelman, Jack, to Donaldson Company, Inc. High strength spin-on filter. 4,369,113, Cl. 210-440.000.
- Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, to BASF Aktiengesellschaft. Preparation of phthalic anhydride. 4,369,327, Cl. 549-248.000.
- Stokbroekx, Raymond A.; Luyckx, Marcel G. M.; and Willems, Joannes J. M., to Janssen Pharmaceutica N.V. 1-(Cyclohexyl)-4-aryl-4-piperidinecarboxylic acid derivatives. 4,369,184, Cl. 424-267.000.
- Stolov, Michael. Multicolor image or picture projecting system using electronically controlled slides. 4,368,963, Cl. 353-31.000.
- Stoy, Vladimir A., to S.K.Y. Polmers. Novel block copolymers including acrylonitrile sequences and glutarimide units and processes for preparing same. 4,369,294, Cl. 525-340.000.
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  - Emmenthal, Klaus; Schafer, Otto; Strozyk, Rudolf-Helmut; and Wehling, Wolfgang, 4,368,714, Cl. 123-531.000.
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  - Turner, James A.; and Stubbart, John C., 4,369,400, Cl. 318-561.000.
- Stumke, Manfred: *See—*
  - Hausselt, Jurgen; Schiwiora, Harry; and Stumke, Manfred, 4,369,068, Cl. 106-1.180.
- Sturzinger, Oskar: *See—*
  - Gemperle, Bruno; and Sturzinger, Oskar, 4,369,333, Cl. 178-22.130.
- Sudo, Ryoichi: *See—*
  - Okunaka, Masaaki; Sudo, Ryoichi; Yokono, Hitoshi; Isogai, Tokio; and Yamazaki, Mitsuo, 4,369,208, Cl. 427-54.100.
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- Sugiura, Shigekata, to Alps Electric Co., Ltd. Multipurpose coaxial connector. 4,368,940, Cl. 339-177.00E.
- Sugiyama, Ichirou, to Crown Screw Corporation. Method of making self tapping thread forming screw. 4,368,552, Cl. 10-10.00R.
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  - Morishita, Teru; Sugiyama, Matuyosi; and Suzuki, Toshikazu, 4,368,853, Cl. 239-703.000.
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- Sukhushin, Anatoly V.: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Kozlov, Valery A.; Sukhushin, Anatoly V.; Bakunin, Vladimir A.; and Bondar, Mikhall J., 4,369,002, Cl. 405-184.000.
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  - Podszun, Wolfgang; Suling, Carlhans; and Alberts, Heinrich, 4,369,296, Cl. 526-209.000.
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  - Matsushima, Noriaki; Noguchi, Ken-ichi; and Hirano, Kazuhisa, 4,369,263, Cl. 523-152.000.
- Sumitomo Rubber Industries, Ltd.: *See—*
  - Nakahama, Kozo; Kadomaru, Kazuo; and Okaniwa, Masuzo, 4,369,086, Cl. 156-403.000.
- Sundstrand Corporation: *See—*
  - Burton, Robert V., 4,368,750, Cl. 137-85.000.
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  - Truitt, Robert E.; and Berry, Homer E., 4,368,914, Cl. 294-83.00R.
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  - Banko, Anton, 4,368,734, Cl. 128-305.000.
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  - Iwao, Hachiya; and Susumu, Igarashi, 4,369,200, Cl. 426-660.000.
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  - Wada, Ryuji; Munekata, Kenichi; Unno, Kunihiko; Shimizu, Norihiko; and Suzuki, Yasuo, 4,368,596, Cl. 51-165.770.
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- Swartz, Jerome; Barkan, Edward; Bravman, Richard; Delfine, Frank; Harrison, Shelley A.; and Adelson, Alexander M., to Symbol Technologies, Inc. Portable, stand-alone, desk-top laser scanning workstation for intelligent data acquisition terminal and method of scanning. 4,369,361, Cl. 235-470.000.
- Sweeney, David F., to Singer Company, The. Single servo driven printer. 4,368,994, Cl. 400-320.000.
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- Szekely, George. Dry aerosol generator. 4,368,850, Cl. 239-333.000.
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  - Jarai, Miklos; Piukovich, Sandor; Istvan, Sandor; Gado, Istvan; Szell, Valeria; and Barta, Istvan, 4,369,251, Cl. 435-80.000.
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  - Urai, Muneharu, 4,368,917, Cl. 297-452.000.
- Tachita, Ryobun; Fukukita, Hiroshi; Hayakawa, Yoshihiro; and Irioka, Kazuyoshi, to Matsushita Electric Industrial Company, Limited. Ultrasonic imaging by radial scan beams emanating from a hypothetical point located behind linear transducer array. 4,368,643, Cl. 73-626.000.
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  - Yoshinaga, Makoto; and Takabayashi, Yutaka, 4,368,947, Cl. 350-509.000.
- Takagi, Osamu: *See—*
  - Okamoto, Keizo; Tomita, Masayoshi; and Takagi, Osamu, 4,369,381, Cl. 307-279.000.
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  - Fujita, Toshio; Takahashi, Chigo; Yoshida, Shigemitsu; and Shimizu, Hirozo, deceased, 4,369,055, Cl. 71-64.110.
- Takahashi, Naoki: *See—*
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  - Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, 4,368,653, Cl. 74-868.000.
- Takahashi, Tohru: *See—*
  - Kanbe, Junichiro; Hosono, Nagao; and Takahashi, Tohru, 4,368,687, Cl. 118-653.000.
- Takahashi, Wataru: *See—*
  - Hasegawa, Takao; and Takahashi, Wataru, 4,369,238, Cl. 429-252.000.
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  - Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.
- Takayama, Kazuo, to Fujitsu Ten Limited. Antenna input circuit. 4,369,446, Cl. 343-711.000.
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  - Yamamura, Yuichi; Azuma, Ichiro; and Kobayashi, Shigeru, 4,369,178, Cl. 424-177.000.
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  - Kimura, Kenji; Ishikawa, Kohji; and Narumi, Naoaki, 4,369,511, Cl. 371-21.000.
- Takeda Riken Kogyo Kabushikikaisha: *See—*
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  - Kai, Yasuhito; Nabeta, Teiichi; and Takemi, Akio, 4,368,843, Cl. 236-49.000.
- Takeno, Tsuneyuki; Iwasaki, Tetsuji; Hojo, Shiro; and Kimura, Eiichi, to Kao Soap Co., Ltd.; and Japan Hydrazine Company, Inc. Plant growth inhibiting composition. 4,369,057, Cl. 71-92.000.
- Takenoya, Hideaki, to Janome Sewing Machine Co. Ltd. Electronic sewing machine with pattern elongation system. 4,368,682, Cl. 112-158.00E.
- Takenoya, Hideaki, to Janome Sewing Machine Co. Ltd. Sewing machine with feed dog dropping system. 4,368,683, Cl. 112-314.000.
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  - Matsuo, Noritaka; Takeuchi, Kohichiro; and Muramatsu, Tokuzi, 4,368,698, Cl. 123-52.00M.
- Takita, Hitoshi; Wada, Toshihiko; Mukaida, Yutaka; Enomoto, Satoru; Nakajima, Akiyoshi; and Okubo, Azuma, to Kureha Kagaku Kogyo Kabushiki Kaisha. Growth promoting method for basidiomycetes. 4,369,253, Cl. 435-244.000.
- Tamamori, Hideo; and Nagai, Rikisaburo, to Nippon Air Brake Co., Ltd. Compound check valve. 4,368,752, Cl. 137-112.000.
- Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Method and apparatus for forming images. 4,369,461, Cl. 358-75.000.
- Tanaka, Masato; and Furukawa, Shunsuke, to Sony Corporation. Method and apparatus for encoding digital data. 4,369,472, Cl. 360-40.000.
- Tanaka, Toshiyuki, to Nissan Motor Co., Ltd. Parking brake warning system. 4,369,428, Cl. 340-69.000.
- Tanikawa, Osamu, to USM Corporation. Automatic setting tool. 4,368,631, Cl. 72-114.000.
- Tanner Electronic Systems Technology, Inc.: *See—*
  - Olson, John M., 4,369,518, Cl. 455-3.000.
- Taoka, Shinichi: *See—*
  - Tsurutani, Iwao; Kataoka, Hideto; and Taoka, Shinichi, 4,369,356, Cl. 219-535.000.
- Tarkett AB: *See—*
  - Brixius, Darryl W., 4,369,065, Cl. 106-27.000.
- Taylor, Frank J. P. Dishwasher. 4,368,747, Cl. 134-93.000.
- Taylor, Michael J.: *See—*
  - Harper, William P.; and Taylor, Michael J., 4,369,269, Cl. 523-459.000.
- Taylor, Peter J.: *See—*
  - Aldred, Phillip J. E.; Taylor, Peter J.; and Kenzie, Bryan W., 4,368,980, Cl. 356-240.000.
- Tech Products Corporation: *See—*
  - Tobey, Richard D., 4,368,864, Cl. 248-188.900.
- Techtransfer GmbH & Co. KG: *See—*
  - Roediger, Markus, 4,369,111, Cl. 210-199.000.
- Teijin Limited: *See—*
  - Matsumura, Shunichi; Inata, Hiroo; and Ogasawara, Makoto, 4,369,207, Cl. 427-54.100.
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  - Ramey, Robert M., 4,368,549, Cl. 4-493.000.
- Temesvary, Louis, to Verbatim Corporation. Unitary hinged box-type container. 4,368,817, Cl. 206-45.200.
- Temime, Jean-Pierre. Digital video signal encoding and decoding system. 4,369,464, Cl. 358-136.000.
- Tenzer, Walter, to Internationale Octrooi Maatschappij "Octropa" B.V. Packaging container for the treatment of pupae. 4,368,690, Cl. 119-1.000.
- Teraoka, Masao, to Tochigi-Fuji Sangyo Kabushiki Kaisha. Hub clutch. 4,368,808, Cl. 192-36.000.
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  - Kyogoku, Hiroshi; and Terasawa, Koji, 4,369,454, Cl. 346-140.00R.
- Tersteegen, Bernd; and van Endert, Gunter. Cannula. 4,368,738, Cl. 604-180.000.
- Tessier, Marc: *See—*
  - deBrebisson, Michel X. M.; and Tessier, Marc, 4,368,573, Cl. 29-569.00R.
- Texas Aim, Inc.: *See—*
  - Ray, Jimmy C., 4,368,608, Cl. 53-440.000.
- Texas Instruments Incorporated: *See—*
  - Hall, Joseph E., 4,369,468, Cl. 358-213.000.
  - Hull, Charles G., 4,369,379, Cl. 307-225.00C.
  - Malocha, Donald C.; Wagers, Robert S.; and Goll, Jeffrey H., 4,369,390, Cl. 310-313.00B.
  - Schulte, Eric F., 4,369,498, Cl. 364-707.000.
  - Wilson, Arthur M.; Laks, David W.; and Davis, Stephen M., 4,369,090, Cl. 156-644.000.
- Thermco Products Corporation: *See—*
  - Goldman, Jon C.; and Rappaport, Robert E., 4,369,031, Cl. 432-198.000.
- Thiel, Klaus F.: *See—*
  - Henriksen, Arthur J.; Thiel, Klaus F.; and Petersen, Carl F., 4,368,676, Cl. 110-101.0CD.
- Thiokol Corporation: *See—*
  - Shaw, Graham C., 4,369,079, Cl. 149-2.000.
- Thomas & Betts Corporation: *See—*
  - Peterpaul, Joseph, 4,368,762, Cl. 140-93.00A.
- Thomas, Richard N.; and Sopira, Michael M., to Westinghouse Electric Corp. Self-aligned, flip-chip focal plane array configuration. 4,369,458, Cl. 357-30.000.
- Thomas, Rudolf; Schmidt, Thomas; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Substituted pyrazolylmethyl-haloacetanilide compounds and herbicidal compositions. 4,369,056, Cl. 71-92.000.
- Thomas, Walter M., to American Cyanamid Company. Hindered amine light stabilizers for polymers. 4,369,274, Cl. 524-99.000.
- Thomasson, William R., to Coles Cranes Limited. Safe load indicator. 4,368,824, Cl. 212-150.000.
- Thompson, Mortimer S. Bottles with attached handles and a method of forming the same. 4,368,826, Cl. 215-100.00A.
- Thompson, Mortimer S. Container with integral handle and method of forming same. 4,368,827, Cl. 215-100.00A.
- Thompson, Robert E., Jr.; and Snedegar, Leo D. Security and alarm apparatus. 4,369,437, Cl. 340-539.000.
- Thomson-CSF: *See—*
  - Blamoutier, Michel; and Fraleux, Jean, 4,369,465, Cl. 358-167.000.
  - Heidrich, Karl; and Ginzel, Lothar, 4,369,369, Cl. 250-484.100.
  - Micheron, Francois, 4,369,391, Cl. 310-800.000.
- Thorn, Joseph H.; and Jennings, Robert E., to RCA Corporation. System for handling a volatile and flammable liquid. 4,368,636, Cl. 73-40.50R.
- Thrash, Robert N.; and Crooks, W. Ralph, to Kearney-National Inc. Apparatus for reducing the cross sectional area of a wire. 4,368,632, Cl. 72-198.000.
- Tidwell, Hubert. Economy safety passenger vehicle. 4,368,795, Cl. 180-212.000.
- Tiggelbeck, Donald D.: *See—*
  - Wells, Bruce D.; and Tiggelbeck, Donald D., 4,369,168, Cl. 423-313.000.
- TII Industries, Inc.: *See—*
  - Ahuja, Omprakash G., 4,369,341, Cl. 179-175.20R.
- Tiktin, Gary. Weighted exercise glove. 4,368,883, Cl. 272-67.000.
- Tiroux, Josef; and Weisselfels, Franz, to Dynamit Nobel AG. Color-stabilized phenolic foams. 4,369,259, Cl. 521-108.000.
- Tkach, Khaim B.: *See—*
  - Kostylev, Alexandr D.; Gileta, Vladimir P.; Grigoraschenko, Vladimir A.; Tkach, Khaim B.; Kozlov, Valery A.; Sukhushin, Anatoly V.; Bakunin, Vladimir A.; and Bondar, Mikhall J., 4,369,002, Cl. 405-184.000.
- Tobey, Richard D., to Tech Products Corporation. Isolating foot pad or mount. 4,368,864, Cl. 248-188.900.
- Tochigi-Fuji Sangyo Kabushiki Kaisha: *See—*
  - Teraoka, Masao, 4,368,808, Cl. 192-36.000.
- Tokarz, Richard D., to United States of America, Energy. Liquid level sensing device. 4,368,640, Cl. 73-311.000.
- Tokuyama Soda Kabushiki Kaisha: *See—*
  - Kida, Yasuji; and Shikata, Kazuo, 4,369,298, Cl. 526-313.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Anno, Gousuke; Saitou, Tamio; and Fukumoto, Yoshikatsu, 4,369,452, Cl. 346-76.0PH.
  - Endo, Yukio; and Yoshida, Okio, 4,369,469, Cl. 358-213.000.
  - Iwasawa, Mineo; Endo, Yukio; and Yamamoto, Hiroyuki, 4,369,459, Cl. 358-50.000.
  - Ohba, Hiroshi; and Horino, Shigeo, 4,369,088, Cl. 156-468.000.
  - Ozeki, Takeshi, 4,368,981, Cl. 356-352.000.
  - Saito, Toshihiko; Kumazawa, Katsuyoshi; and Sakamoto, Moriyoshi, 4,369,027, Cl. 431-333.000.
  - Sakano, Hideki, 4,369,412, Cl. 330-298.000.
- Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, to EGYT Gyogyszervegyeszeti Gyar. 1,3-Diaryl-2-imino-imidazolidines and compounds. 4,369,325, Cl. 548-315.000.
- Tomita, Masayoshi: *See—*
  - Okamoto, Keizo; Tomita, Masayoshi; and Takagi, Osamu, 4,369,381, Cl. 307-279.000.
- Tomizawa, Akimori; Osaka, Hiroshi; and Kanai, Ryokichi, to Clarion Co., Inc. Coding system for pay television. 4,369,462, Cl. 358-124.000.
- Tomka, Ivan: *See—*
  - Graesser, Wolfgang; Koepff, Peter J.; and Tomka, Ivan, 4,369,069, Cl. 106-125.000.
- Tomlinson, David: *See—*
  - Collins, Thomas H.; and Tomlinson, David, 4,369,193, Cl. 426-19.000.
- Tomlinson, Richard G.: *See—*
  - Glenn, William H.; and Tomlinson, Richard G., 4,368,645, Cl. 73-705.000.
- Toray Industries, Inc.: *See—*
  - Saito, Koichi; Kojima, Tatsuku; and Kosaka, Yoshikazu, 4,369,036, Cl. 8-115.500.
- Torii, Hiromasa, to Nissan Motor Company, Limited. Automotive vehicle sunroof water drain fitting structure. 4,368,915, Cl. 296-213.000.
- Torisawa, Akira: *See—*
  - Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,368,990, Cl. 368-157.000.
- Torri, Giangiacomo: *See—*
  - Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, 4,369,256, Cl. 521-25.000.
- Toyo Engineering Corporation: *See—*
  - Nishimura, Yoshinori; Kaneko, Takayuki; Zamma, Jun; and Nakajima, Youichi, 4,368,778, Cl. 165-158.000.
- Toyo Kogyo Co., Ltd.: *See—*
  - Kanazawa, Hirotaka; Yasuda, Yoshikazu; Harada, Kozo; and Yoshida, Susumu, 4,368,572, Cl. 29-432.000.
- Toyoda Gosei Kabushiki Kaisha: *See—*
  - Manabe, Katsuhide; Ito, Toshiyasu; and Tsutsui, Masatoshi, 4,369,225, Cl. 428-334.000.

- Toyoda Koki Kabushiki Kaisha: *See—*
  - Wada, Ryuji; Munekata, Kenichi; Unno, Kunihiko; Shimizu, Norihiko; and Suzuki, Yasuo, 4,368,596, Cl. 51-165.770.
- Toyota, Akinori; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Method for treating olefin polymer for removing catalyst. 4,369,306, Cl. 528-485.000.
- Toyota Jidosha Kabushiki Kaisha: *See—*
  - Morishita, Teru; Sugiyama, Matuyosi; and Suzuki, Toshikazu, 4,368,853, Cl. 239-703.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Akagi, Motonobu, 4,368,759, Cl. 137-625.480.
  - Fukuda, Daiki, 4,368,617, Cl. 60-39.14R.
  - Igarashi, Isao, 4,368,793, Cl. 180-14.00R.
  - Kinoshita, Hiroo; Suzuki, Yoshihiro; Saruhashi, Shoji; and Sato, Masayasu, 4,369,132, Cl. 252-466.0PT.
  - Numazawa, Akio; Arai, Hajime; and Haga, Shoji, 4,368,650, Cl. 74-740.000.
- Tracey, Don M.: *See—*
  - Giallanza, Frank V.; Tracey, Don M.; and Holcombe, Wayne T., 4,369,443, Cl. 340-825.470.
- Trafcon, Inc.: *See—*
  - Souder, Alan M., 4,369,429, Cl. 340-119.000.
- Transformer Service (Ohio), Inc.: *See—*
  - Bennett, Jack D., 4,369,221, Cl. 428-216.000.
- Trautwein, Hans: *See—*
  - Horstmann, Walter; Sommer, Richard; Trautwein, Hans; and Wolfrum, Gerhard, 4,369,324, Cl. 548-164.000.
- Tremblay, Michael A.: *See—*
  - McConica, Charles H.; Tremblay, Michael A.; and Engel, Pedro F., 4,369,455, Cl. 346-140.00R.
- Trend, John E.: *See—*
  - Eian, Gilbert L.; and Trend, John E., 4,369,244, Cl. 430-257.000.
- Triollier, Michel: *See—*
  - Leveque, Alain; and Triollier, Michel, 4,369,166, Cl. 423-112.000.
- Triple/S Dynamics, Inc.: *See—*
  - Lowry, George W., Sr., 4,369,398, Cl. 318-114.000.
- Tripp, Edward S.: *See—*
  - Larkin, Mark E.; and Tripp, Edward S., 4,368,765, Cl. 150-1.000.
- Trivedi, Harish S.: *See—*
  - Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., 4,369,313, Cl. 544-24.000.
- Trubiano, Paolo C., to National Starch and Chemical Corporation. Low swelling starches as tablet disintegrants. 4,369,308, Cl. 536-106.000.
- Truitt, Robert E.; and Berry, Homer E., to Superior Concrete Accessories, Inc. Pickup unit for releasable connection to a partially embedded member. 4,368,914, Cl. 294-83.00R.
- Trumper, Heinrich: *See—*
  - Knoche, Karl F.; Trumper, Heinrich; and Stehmeier, Dieter, 4,368,623, Cl. 62-235.100.
- Trutzschler GmbH & Co. KG: *See—*
  - Trutzschler, Hermann, 4,368,561, Cl. 19-111.000.
- Trutzschler, Hermann, to Trutzschler GmbH & Co. KG. Apparatus for stripping revolving card flats. 4,368,561, Cl. 19-111.000.
- Tschol, Wilhelm: *See—*
  - Kyrian, Bohumil; Milavec, Johann; and Tschol, Wilhelm, 4,369,409, Cl. 330-10.000.
- Tsuchiya, Hiroyuki: *See—*
  - Mizuno, Masayoshi; and Tsuchiya, Hiroyuki, 4,369,249, Cl. 430-537.000.
- Tsuji, Keiji, to Laurel Bank Machine Co., Ltd. Bank note depositing apparatus. 4,369,360, Cl. 235-379.000.
- Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Compact zoom objective. 4,368,954, Cl. 350-427.000.
- Tsunekawa, Tokuichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Image scanning system. 4,368,978, Cl. 356-1.000.
- Tsunoda, Atsuo: *See—*
  - Matsui, Yoshiya; Minami, Setsuo; Mochizuki, Noritaka; Harumoto, Isao; Tsunoda, Atsuo; Hirai, Shiro; and Ohkubo, Masami, 4,368,975, Cl. 355-50.000.
- Tsurutani, Iwao; Kataoka, Hideto; and Taoka, Shinichi, to Ube Industries, Ltd. Heat-shrinkable cover sheet. 4,369,356, Cl. 219-535.000.
- Tsushima, Rikio: *See—*
  - Matsunaga, Kinjiro; Okumura, Takeo; and Tsushima, Rikio, 4,369,037, Cl. 8-127.510.
- Tsutsui, Masatoshi: *See—*
  - Manabe, Katsuhide; Ito, Toshiyasu; and Tsutsui, Masatoshi, 4,369,225, Cl. 428-334.000.
- Tullos, Charles E., to Palowsky, Stanley R., Jr.; and Lawrence, Clifford L., part interest to each. Bow sight. 4,368,581, Cl. 33-265.000.
- Tully-Wilkins, Charles H.: *See—*
  - Shinholster, Leavie J., Jr.; and Tully-Wilkins, Charles H., 4,369,054, Cl. 71-25.000.
- Tuong, Duc L.: *See—*
  - Bienvenu, Jacques; Carre, Claude; Dufond, Patrick; Tuong, Duc L.; deRivet, Philippe-Hubert; Verdier, Henri; Bradley, John J.; and Franklin, Benjamin S., 4,369,494, Cl. 364-200.000.
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  - Adelman, Robert L.; and Turner, John J. P., 4,369,213, Cl. 427-389.900.
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  - Tsurutani, Iwao; Kataoka, Hideto; and Taoka, Shinichi, 4,369,356, Cl. 219-535.000.
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- Uhlig, Herbert K.; and Zegelbrier, August M., to Bendix Corporation, The. Apparatus for sorting electrical contact pieces. 4,368,820, Cl. 209-540.000.
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  - Uhlmann, Otto; and Uhlmann, Klaus-Peter, 4,368,630, Cl. 72-69.000.
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- Ulfhielm, Torbjorn, to UTEC AB of Fack. Door, preferably for industrial buildings. 4,368,770, Cl. 160-84.00R.
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- Ulveling, Leon, to Paul Wurth S.A. Injection of pulverized material into a pressurized furnace. 4,368,678, Cl. 110-347.000.
- Umeda, Jun-ichi; and Kajimura, Takashi, to Hitachi, Ltd. Semiconductor laser device. 4,369,513, Cl. 372-46.000.
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  - Malkin, Daniel D.; Umerenkov, Anatoly S.; Ketsaris, Alexandr A.; Kruglov, Gennady A.; and Kalashnikov, Vladimir I., 4,369,385, Cl. 310-49.00R.
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  - Keung, Chue-Kwok J.; and Rathgeber, Donald E., 4,369,267, Cl. 523-351.000.
- Union Carbide Corporation: *See—*
  - Carter, Richard G.; Miller, Walter P.; and Watson, Stuart L., Jr., 4,369,300, Cl. 528-28.000.
  - D'Silva, Themistocles D. J., 4,369,189, Cl. 424-285.000.
  - Farmery, Horstine, 4,368,849, Cl. 239-222.000.
  - Keogh, Michael J., 4,369,289, Cl. 525-105.000.
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  - Risch, Alan P.; and Rabo, Jule A., 4,369,131, Cl. 252-459.000.
  - Robeson, Lloyd M.; Claus, William D., Jr.; and Batleman, Harvey L., 4,369,136, Cl. 524-371.000.
- United Filing Corporation: *See—*
  - White, David A., 4,368,935, Cl. 312-184.000.
- United States of America
  - Air Force: *See—*
    - Bilow, Norman, 4,369,297, Cl. 526-284.000.
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    - Davis, Earl V.; and Foster, Billy E., 4,368,996, Cl. 403-5.000.
    - Tokarz, Richard D., 4,368,640, Cl. 73-311.000.
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    - Bennett, Harold E., 4,368,983, Cl. 356-445.000.
    - Devan, Joseph M.; and Milligan, Hugh, 4,369,413, Cl. 333-34.000.
    - Waters, William M., 4,368,987, Cl. 368-46.000.
    - Wolf, Alfred A.; and Halpern, Ernest H., 4,369,204, Cl. 427-13.000.
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  - Contant, Cornelis J., 4,369,470, Cl. 358-227.000.
  - deBrebisson, Michel X. M.; and Tessier, Marc, 4,368,573, Cl. 29-569.00R.
  - Eibensteiner, Walter, 4,369,473, Cl. 360-85.000.
  - Kupfer, Karl-Heinz, 4,369,417, Cl. 334-15.000.
  - Smit, Hermanus, 4,368,576, Cl. 29-828.000.
- United Technologies Corporation: *See—*
  - Dennison, William T., 4,369,016, Cl. 415-142.000.
  - Glenn, William H.; and Tomlinson, Richard G., 4,368,645, Cl. 73-705.000.
  - Stetson, Karl A.; and Banas, Conrad M., 4,369,348, Cl. 219-121.0LP.
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  - Brune, David E., 4,368,691, Cl. 119-2.000.
- University of Illinois Foundation, The: *See—*
  - Nelson, Alvin I.; and Leigh, Johnnie S., 4,369,195, Cl. 426-62.000.
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  - Goepp, Robert A.; Freese, Uwe E.; and Loeb, Marvin P., 4,369,219, Cl. 428-138.000.
- Unno, Kunihiko: *See—*
  - Wada, Ryuji; Munekata, Kenichi; Unno, Kunihiko; Shimizu, Norihiko; and Suzuki, Yasuo, 4,368,596, Cl. 51-165.770.
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  - Beyers, Marvin E.; Kirn, Anthony E.; and Untz, Robert W., 4,368,929, Cl. 305-11.000.
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  - DeGeeter, Melvin J., 4,369,192, Cl. 424-326.000.
- Urai, Muneharu, to Tachikawa Spring Co., Ltd. Vehicle seat member integrally formed of synthetic resin material. 4,368,917, Cl. 297-452.000.
- Urban, Keith F., to International Jensen Incorporated. Mounting bracket and mounting arrangement. 4,368,866, Cl. 248-286.000.
- Urban, Milfred W. Break-away rearview mirror and bracket. 4,368,868, Cl. 248-549.000.
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  - Tanikawa, Osamu, 4,368,631, Cl. 72-114.000.

- Usui, Kenji: *See—*
  - Komatsu, Tatsuyoshi; Usui, Kenji; and Numata, Shigeaki, 4,369,140, Cl. 260-369.000.
- UTEC AB of Fack: *See—*
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  - Kobayashi, Nobuyuki; Hosoda, Taisei; Uzuhashi, Hideo; Innami, Tamio; and Uzuhasi, Humito, 4,369,350, Cl. 219-201.000.
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  - Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., 4,368,712, Cl. 123-523.000.
- Vahratian, Adam; Croswhite, Howard L.; Maynard, Roosevelt, Jr.; and Liang, Po Lung, to Ford Motor Company. Automatic transaxle driveline having four forward driving ratios and a single reverse ratio. 4,368,649, Cl. 74-695.000.
- Valdes, Jose L., to GTE Automatic Electric Labs Inc. Clock synchronization circuit. 4,369,515, Cl. 375-108.000.
- Valois, Rene J., to Leesona Corporation. Yarn feeder motor control. 4,368,854, Cl. 242-47.010.
- Van Arnam, Donald E.; McFeaters, Earl W.; and Baggarley, Richard R., to Avery International Corporation. Retroreflectometer. 4,368,982, Cl. 356-445.000.
- Van Dam, John, Jr. Hose clamp tool. 4,368,569, Cl. 29-229.000.
- van der Lely, Cornelis. Row-crop front and rear wheel drive articulated tractor for heavy-duty operations. 4,368,797, Cl. 180-235.000.
- van Endert, Gunter: *See—*
  - Tersteegen, Bernd; and van Endert, Gunter, 4,368,738, Cl. 604-180.000.
- Van Roeyen, Harry P., to Barristo, Ltd. Method of manufacturing abrasive articles. 4,369,098, Cl. 204-16.000.
- van Schaik, Teunis, to Elbar B.V., Industrieterrien "Spikweien". Process to apply a protecting silicon containing coating on specimen produced from superalloys and product. 4,369,233, Cl. 428-678.000.
- Vapor Corporation: *See—*
  - Diamond, John A., 4,369,344, Cl. 200-61.430.
- Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
  - Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; Liebschner, Fritz; Gutsche, Rolf; and Grafe, Frank, 4,368,668, Cl. 101-212.000.
- Velo-Bind, Inc.: *See—*
  - Abildgaard, William H.; and Groswith, Charles T., III, 4,369,013, Cl. 412-38.000.
- Venkataramani, Rajagopala; and Levonaitis, Raymond, to Wilputte Corporation. Ascension pipe cover seat cleaner. 4,369,095, Cl. 202-241.000.
- Verbatim Corporation: *See—*
  - Temesvary, Louis, 4,368,817, Cl. 206-45.200.
- Verber, Carl M.; and Wood, Van E., to Canon Kabushiki Kaisha. Method of adjusting a Luneburg lens. 4,369,202, Cl. 427-8.000.
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- Victor Hassel Blad Aktiebilag: *See—*
  - Carlson, Ulf R., 4,368,964, Cl. 353-113.000.
- Victor United, Inc.: *See—*
  - Simonds, Gary; and McKee, Arnold D., 4,368,718, Cl. 124-23.00R.
- Vidal-Meza, Gonzalo D.: *See—*
  - Day, Robert H.; and Vidal-Meza, Gonzalo D., 4,368,818, Cl. 206-217.000.
- Vincent, Andrew W., to A. W. Vincent Associates Inc. Timer circuit for a stroboscope. 4,369,394, Cl. 315-200.00A.
- Vincent, Monty E.; and Corbett, Robert E., to Gelman Sciences Inc. Filter device. 4,369,112, Cl. 210-433.200.
- Violett, Robert S. Carburetor for model jet power plant. 4,369,149, Cl. 261-44.00A.
- Voest-Alpine Aktiengesellschaft: *See—*
  - Droscher, Erich; Wrulich, Herwig; Zitz, Alfred; and Schetina, Otto, 4,368,918, Cl. 299-1.000.
- Vogt, Martin C.: *See—*
  - Kim, Tai K.; MacInnis, Martin B.; Vogt, Martin C.; and McClintic, Robert P., 4,369,165, Cl. 423-54.000.
- Vogtmann, Hans-Jorg: *See—*
  - Krieger, Klaus; Schneider, Volker; Vogtmann, Hans-Jorg; and Walz, Ludwig, 4,368,710, Cl. 123-505.000.
- Vogts, Axel: *See—*
  - Schafer, Hans G.; Vogts, Axel; Poppel, Gunter; and Schurmann, Horst, 4,369,042, Cl. 44-15.00R.
- Volkmann, Lothar: *See—*
  - Rau, Karlheinz; Lorenz, Horst; Huth, Oswald; Volkmann, Lothar; and Stenzel, Kurt, 4,368,846, Cl. 239-85.000.
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  - Emmenthal, Klaus; Schafer, Otto; Strozyk, Rudolf-Helmut; and Wehling, Wolfgang, 4,368,714, Cl. 123-531.000.
  - Husmann, Horst, 4,368,809, Cl. 192-45.000.
- von Bonin, Wulf, to Bayer Aktiengesellschaft. Non-inflammable foamable molding compositions. 4,369,064, Cl. 106-18.150.
- von der Weid, Francois P., to EPSI Brevets et Participations S.A. Apparatus for manufacturing elements by means of a hardenable binding agent to which a liquid is added. 4,369,025, Cl. 425-115.000.
- von Hayek, Hans: *See—*
  - Goedecke, Ludger; and von Hayek, Hans, 4,369,354, Cl. 219-506.000.
- von Hinleder, Dieter F.: *See—*
  - Weber, Manfred; von Hinleder, Dieter F.; Picht, Dieter; and Fischer, Klaus, 4,368,671, Cl. 102-401.000.
- Vorres, Karl S., to Institute of Gas Technology. Fluidized bed gasification process with agglomerated solids removal. 4,369,045, Cl. 48-197.00R.
- Vyzkumny ustav zuslechtovaci: *See—*
  - Dvorsky, Drahomir; Cerovsky, Karel; and Socha, Jaromir, 4,369,041, Cl. 8-532.000.
- W. C. Heraeus GmbH: *See—*
  - Wagner, Armin; and Harmsen, Nils, 4,369,162, Cl. 420-503.000.
- W. H. Brady Co.: *See—*
  - Frame, Norman J., 4,369,393, Cl. 313-506.000.
- W. R. Grace & Co.: *See—*
  - Hemphill, Adley W.; Lundquist, Joseph T., Jr.; and McDaniel, Carl V., 4,368,922, Cl. 299-5.000.
  - O'Rell, Dennis D.; Choi, Wai M.; and Lin, Nan J., 4,369,236, Cl. 429-147.000.
  - Samuel, David N.; and Sinnott, Kenneth M., 4,368,828, Cl. 220-81.00R.
- Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, to Richter Gedeon Vegyeszeti Gyar Rt. Fermentation process for the preparation of ergot alkaloids, primarily ergocornine and β-ergocryptine. 4,369,252, Cl. 435-119.000.
- Wada, Ryuji; Munekata, Kenichi; Unno, Kunihiko; Shimizu, Norihiko; and Suzuki, Yasuo, to Toyoda Koki Kabushiki Kaisha. Feed safety apparatus for movable member. 4,368,596, Cl. 51-165.770.
- Wada, Toshihiko: *See—*
  - Takita, Hitoshi; Wada, Toshihiko; Mukaida, Yutaka; Enomoto, Satoru; Nakajima, Akiyoshi; and Okubo, Azuma, 4,369,253, Cl. 435-244.000.
- Wagers, Robert S.: *See—*
  - Malocha, Donald C.; Wagers, Robert S.; and Goll, Jeffrey H., 4,369,390, Cl. 310-313.00B.
- Wagner, Armin; and Harmsen, Nils, to W. C. Heraeus GmbH. Silver base casting alloy for dental use. 4,369,162, Cl. 420-503.000.
- Wagner, Wayne M., to Donaldson Company, Inc. Straight-through flow muffler. 4,368,799, Cl. 181-255.000.
- Wahle, Gunter; and Kasparek, Alois, to Hauni-Werke Korber & Co. KG. Apparatus for replenishing the supplies of filter rod sections in the magazines of filter tipping machines. 4,368,742, Cl. 131-88.000.
- Wakabayashi, Shigemasa, legal representative: *See—*
  - Tahara, Iwao; Aihara, Toshiharu; Takahashi, Naoki; Matsuo, Yushin; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, legal representative, 4,368,988, Cl. 368-63.000.
- Wakabayashi, Takuo, deceased: *See—*
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- Waldmann, Helmut: *See—*
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- Walkden, Arthur: *See—*
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- Walkowiak, Michael; Podszun, Wolfgang; Leusner, Bernhard; Suling, Carlhans; and Schulz, Hans-Hermann, to Bayer Aktiengesellschaft. Dental material based on crosslinked plastic and polymerizable binder. 4,369,262, Cl. 523-109.000.
- Walter, Manfred: *See—*
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- Walz, Heinz: *See—*
  - Wunsch, Steffen; and Walz, Heinz, 4,368,784, Cl. 173-12.000.
- Walz, Klaus: *See—*
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- Walz, Ludwig: *See—*
  - Krieger, Klaus; Schneider, Volker; Vogtmann, Hans-Jorg; and Walz, Ludwig, 4,368,710, Cl. 123-505.000.
- Wambach, Allen D.: *See—*
  - Dieck, Ronald L.; Liberti, Frank N.; and Wambach, Allen D., 4,369,280, Cl. 524-281.000.
- Wamser, Kurt: *See—*
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- Wanner, Karl; Wiesner, Herbert; and Renner, Rolf, to Robert Bosch GmbH. Handle assembly. 4,368,556, Cl. 16-111.00R.
- Ward, Charles T.; and Creek, Ronald B., to Combustion Engineering, Inc. Leak detection system for a steam generator. 4,368,694, Cl. 122-504.000.
- Ward, Howard S.: *See—*
  - Higgins, Michael G.; and Ward, Howard S., 4,368,727, Cl. 126-25.00C.
- Ward, John D. Hydraulic power equipment. 4,368,775, Cl. 165-1.000.
- Warner Electric Brake & Clutch Company: *See—*
  - Ploss, Helmut, 4,369,011, Cl. 411-223.000.
- Watanabe, Atsuo, to Yamauchi Rubber Industry Co., Ltd. Elastomeric material covered rolls and a method of making the same. 4,368,568, Cl. 29-130.000.
- Watanabe, Kiyoshi: *See—*
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- Watanabe, Masanori: *See—*
  - Hotta, Sadayoshi; and Watanabe, Masanori, 4,369,392, Cl. 313-346.00R.

- Watanabe, Nobuatsu; Nakajima, Tsuyoshi; and Kawaguchi, Masayuki, to Central Glass Co., Ltd. Intercalation compound of a graphite with a thiazyl salt, a process for producing the same, and an electrically conductive material comprising the intercalation compound of a graphite with a thiazyl salt. 4,369,170, Cl. 423-366.000.
- Watanabe, Tsukasa: *See—*
  - Mizuno, Kiyohumi; Maeda, Hiroaki; Takahashi, Shigeo; and Watanabe, Tsukasa, 4,368,653, Cl. 74-868.000.
- Watanabe, Tsuyoshi; Nakahata, Kimio; Kan, Fumitaka; and Sakurai, Masaaki, to Canon Kabushiki Kaisha. Developing device. 4,368,971, Cl. 355-3.0DD.
- Waters, William M., to United States of America, Navy. Conjugate-phase, remote-clock synchronizer. 4,368,987, Cl. 368-46.000.
- Watson, Rick D.: *See—*
  - Meeker, James A.; Jackson, Christopher J.; and Watson, Rick D., 4,368,836, Cl. 226-172.000.
- Watson, Stuart L., Jr.: *See—*
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- Wauer, Gerd: *See—*
  - Brockmann, Karl-Heinz; Molder, Karl P.; and Wauer, Gerd, 4,368,913, Cl. 294-106.000.
- Wavin B.V.: *See—*
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- Weatherby, David E., to Schnabel Foundation Company. Earth retaining method and structure. 4,369,004, Cl. 405-262.000.
- Webb, David E.; and Andrews, Lawrence F., to "A"-Company, Inc. Orthodontic bracket assembly. 4,369,033, Cl. 433-9.000.
- Weber, Manfred; von Hinleder, Dieter F.; Picht, Dieter; and Fischer, Klaus, to Dynamit Nobel Aktiengesellschaft. Dome-shaped molded component for operative elements, especially mines. 4,368,671, Cl. 102-401.000.
- Weber, Martin: *See—*
  - Haar, Gerhard; Jakob, Heinz; Landa, Helmut; Mayer, Erwin; Prohaska, Hans; Schneider, Theodor; Schubert, Karl-Friedrich; and Weber, Martin, 4,369,387, Cl. 310-83.000.
- Weber, Ronald G., to Lowrance Electronics, Inc. Sonar having signal amplitude differentiation and noise suppression. 4,369,508, Cl. 367-115.000.
- Wechs, Friedbert: *See—*
  - Mathes, Nikolaus; and Wechs, Friedbert, 4,369,156, Cl. 264-147.000.
- Wegmann, Jacques, deceased: *See—*
  - Kirner, Hans D.; and Wegmann, Jacques, deceased, 4,369,040, Cl. 8-527.000.
- Wegmann, Ruth, Alex Wegman, Yvonnne Wegmann, heirs: *See—*
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- Wehrmeister, Gerhard: *See—*
  - Mainka, Manfred; Bleeck, Heinz; Wehrmeister, Gerhard; and Czapay, Milan, 4,368,611, Cl. 57-6.000.
- Weidner, Peter, to Diehl GmbH & Co. Detonator without initiating explosive. 4,368,670, Cl. 102-202.500.
- Weir, Alexander, Jr. Process for treating stack gases. 4,369,167, Cl. 423-210.000.
- Weisgerber, David J., to Omark Industries, Inc. Log lifter. 4,368,874, Cl. 254-131.000.
- Weiss, Eberhard, to International Standard Electric Corporation. Color-picture tube without shadow mask and with only one electron gun. 4,369,460, Cl. 358-67.000.
- Weiss, Eduard: *See—*
  - Kuhls, Jurgen; and Weiss, Eduard, 4,369,266, Cl. 523-332.000.
- Weiss, Juergen; and Neisius, Vinzenz, to Aluteam Sport- und Freizeit GmbH. Fence support structure, especially for equestrian show jumping. 4,368,875, Cl. 256-59.000.
- Weiss, Richard: *See—*
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- Weisselfels, Franz: *See—*
  - Tiroux, Josef; and Weisselfels, Franz, 4,369,259, Cl. 521-108.000.
- Welch, Vern A., to DeKalb AgResearch, Inc. Semi-dwarf maize and method. 4,368,592, Cl. 47-58.000.
- Weller, Peter A.: *See—*
  - Gray, John D.; Dietrich, Robert W.; and Weller, Peter A., 4,369,152, Cl. 264-46.400.
- Wells, Bruce D.; and Tiggelbeck, Donald D., to Calgon Corporation. Regeneration of carbon employed in the wet process production of alkali metal phosphates. 4,369,168, Cl. 423-313.000.
- Wells, Calvin G.: *See—*
  - Grabill, Louis C.; Malkowski, Joseph L.; and Wells, Calvin G., 4,368,802, Cl. 184-6.120.
- Welp, Ewald G.: *See—*
  - Schonmeier, Herbert; and Welp, Ewald G., 4,368,855, Cl. 242-56.00R.
- Wentzell, Timothy H.; and Innes, Charles B., Jr., to Combustion Engineering, Inc. Tool for inspecting defects in irregular weld bodies. 4,368,644, Cl. 73-634.000.
- Wenzel, Winfried: *See—*
  - Schingnitz, Manfred; Berger, Friedrich; Lucas, Klaus; Peise, Helmut; Wenzel, Winfried; Gudymov, Ernest; Semonov, Vladimir; Fedotov, Vasilij; Avraamov, Evginij; and Rodionov, Boris, 4,369,163, Cl. 422-202.000.
- Werner & Pfleiderer Corporation: *See—*
  - Burker, George W., 4,368,833, Cl. 222-575.000.
- Werth, Robert L.; and Brehm, Timothy L., to Werth, Robert L. Code controlled microcontroller readout from coin operated machine. 4,369,442, Cl. 340-825.350.
- Wesoloski, Ronald G.: *See—*
  - Cerny, Frank J., Jr.; Helm, George D.; and Wesoloski, Ronald G., 4,369,522, Cl. 455-333.000.
- West, George C.; and Polfus, William F., to Reeves Brothers, Inc. Method of application, and product thereof. 4,369,231, Cl. 428-421.000.
- Westinghouse Electric Corp.: *See—*
  - Blewitt, Donald D., 4,369,420, Cl. 337-148.000.
  - Cooper, Frank W., Jr., 4,368,571, Cl. 29-421.00R.
  - Davis, Steven B.; Coyle, Forrest E.; and Bedel, Denis E., 4,368,943, Cl. 339-198.00M.
  - Frater, Robert L., 4,368,773, Cl. 60-667.000.
  - Thomas, Richard N.; and Sopira, Michael M., 4,369,458, Cl. 357-30.000.
- Wetzel, Ludwig; and Mammel, Erich, to Schmid & Wezel. Arrangement for removing skin of slaughtered animals. 4,368,560, Cl. 17-21.000.
- Whaley, Wilson M.: *See—*
  - Stelz, Dale E.; Whaley, Wilson M.; and Carroll, Frank I., 4,369,120, Cl. 252-68.000.
- Whirlpool Corporation: *See—*
  - Platt, Clark I., 4,368,625, Cl. 62-378.000.
- White, Alice C. Athletic undergarment. 4,368,546, Cl. 2-239.000.
- White Consolidated Industries, Inc.: *See—*
  - Kvasnicka, Frank, 4,368,815, Cl. 198-413.000.
- White, David A., to United Filing Corporation. Vertical filing system. 4,368,935, Cl. 312-184.000.
- White, Fred K., to American Hospital Supply Corporation. Serum separating method and apparatus. 4,369,117, Cl. 210-782.000.
- White, Preston S., to PPG Industries, Inc. Solid polymer electrolyte cell. 4,369,103, Cl. 204-252.000.
- White, William P. Swat ball game apparatus. 4,368,892, Cl. 273-411.000.
- Whitehead Motofides S.p.A.: *See—*
  - Nardi, Givoanni, 4,369,384, Cl. 310-42.000.
- Whitford, Leonard G.: *See—*
  - Pendleton, Robert A.; Edfors, John E.; Whitford, Leonard G.; and Conroy, Walter J., 4,368,867, Cl. 248-346.000.
- Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., to Coal Industry (Patents) Limited. Holder assemblies for sensitized cutter tools on mining machines. 4,368,919, Cl. 299-1.000.
- Wichmann, Ewald: *See—*
  - Zapp, Robert; and Wichmann, Ewald, 4,369,416, Cl. 333-175.000.
- Wickenhaeuser, Gerhard: *See—*
  - Graser, Fritz; and Wickenhaeuser, Gerhard, 4,368,582, Cl. 34-15.000.
- Wickhen Products, Inc.: *See—*
  - Causland, Robert H.; and Calogero, Americo V., 4,369,173, Cl. 424-35.000.
- Wickl, Rudolf, to Siemens Aktiengesellschaft. Device for controlling a steam or gas turbine. 4,368,758, Cl. 137-601.000.
- Wiens, Lewis H.; Saylor, James R.; and Blume, Orville E., to Aero Plastics of K.C., Inc. Hatch cover for railroad hopper cars. 4,368,674, Cl. 105-377.000.
- Wiese, Wolfgang: *See—*
  - Grumer, Peter; Wiese, Wolfgang; and Serrin, Gunter, 4,368,688, Cl. 118-674.000.
- Wiesner, Herbert: *See—*
  - Wanner, Karl; Wiesner, Herbert; and Renner, Rolf, 4,368,556, Cl. 16-111.00R.
- Wilber Peterson & Sons, Inc.: *See—*
  - Peterson, Arnold N.; Peterson, Dale A.; and Sprague, Lawrence A., 4,368,764, Cl. 144-208.00J.
- Wilhelmi, Joseph R. Sump pump detection and alarm system. 4,369,438, Cl. 340-623.000.
- Willems, Joannes J. M.: *See—*
  - Stokbroekx, Raymond A.; Luyckx, Marcel G. M.; and Willems, Joannes J. M., 4,369,184, Cl. 424-267.000.
- Williams, Gloria J. Race computer. 4,369,357, Cl. 235-78.00G.
- Williams, James B.: *See—*
  - Bode, Howard E., Sr.; and Williams, James B., 4,368,627, Cl. 68-13.00R.
- Willinger, Allan H., to Willinger Bros., Inc. Artificial aquarium plant. 4,369,216, Cl. 428-17.000.
- Willinger Bros., Inc.: *See—*
  - Willinger, Allan H., 4,369,216, Cl. 428-17.000.
- Wilputte Corporation: *See—*
  - Venkataramani, Rajagopala; and Levonaitis, Raymond, 4,369,095, Cl. 202-241.000.
- Wilsch, Herbert; and Zanner, Johann, to Agfa-Gevaert AG. Camera with device for illuminating a mark on a film edge. 4,368,960, Cl. 352-92.000.
- Wilson, Arthur M.; Laks, David W.; and Davis, Stephen M., to Texas Instruments Incorporated. Process for etching sloped vias in polyimide insulators. 4,369,090, Cl. 156-644.000.
- Wilson, Christopher J.: *See—*
  - Arscott, Hedley C.; Nebrensky, Jiri R.; and Wilson, Christopher J., 4,369,047, Cl. 55-38.000.
- Windish, Willis E., to Caterpillar Tractor Co. Friction assemblies for use in planetary transmissions. 4,368,652, Cl. 74-764.000.
- Winterling, Gerhard; and Koniger, Max, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method for manufac-

turing semiconductor elements from amorphous silicon. 4,369,205, Cl. 427-39.000.

- Wintermantel, Klaus: *See—*
  - Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.
- Wirnharter, Gunter: *See—*
  - Ertl, Wilhelm; Lachmann, Ulrich; Pertsch, Heinrich; and Wirnharter, Gunter, 4,369,376, Cl. 307-99.000.
- Wirth, Friedrich: *See—*
  - Stockburger, Dieter; Schultz, Wilhelm; Schmidt, Johannes E.; Wirth, Friedrich; Hoffmann, Herwig; Holzknecht, Bernhard; and Wintermantel, Klaus, 4,369,327, Cl. 549-248.000.
- Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, to Ciba-Geigy Corporation. Pyrrole stabilizers for chlorine-containing thermoplastics. 4,369,276, Cl. 524-104.000.
- Wirth, Hermann O.; Bussing, Jurgen; and Friedrich, Hans-Helmut, to Ciba-Geigy Corporation. Pyrrole-stabilized chlorine-containing thermoplastics. 4,369,277, Cl. 524-104.000.
- Wirthwein, Rolf: *See—*
  - Seifert, Hermann; Waldmann, Helmut; Wirthwein, Rolf; and Hofen, Willi, 4,369,096, Cl. 203-58.000.
- Wiseman, Ben W. Method and apparatus for generating electricity from the flow of fluid through a well. 4,369,373, Cl. 290-2.000.
- Wohlmuth, Louis. Display control system. 4,369,441, Cl. 340-733.000.
- Wolf, Alfred A.; and Halpern, Ernest H., to United States of America, Navy. Integrated fire-resistant flexible metal conductor derived insulated coating. 4,369,204, Cl. 427-13.000.
- Wolf, Karlheinz: *See—*
  - Aign, Volker; Wolf, Karlheinz; Hornle, Reinhold; Pusch, Norbert; and Walz, Klaus, 4,369,070, Cl. 106-308.00N.
- Wolfers, Heinrich; Rudolph, Hans; and Alberts, Heinrich, to Bayer Aktiengesellschaft. Substituted tartaric acid esters, a process for their production and their use as polymerization initiators. 4,369,329, Cl. 556-442.000.
- Wolff, Willi; Pfahls, Ottomar; and Schumacher, Reinhold, to Nukem GmbH. Apparatus for electropolishing tubes. 4,369,101, Cl. 204-224.00R.
- Wolfrum, Gerhard: *See—*
  - Horstmann, Walter; Sommer, Richard; Trautwein, Hans; and Wolfrum, Gerhard, 4,369,324, Cl. 548-164.000.
- Wolzenburg, Heinrich, to Estel Hoesch Werke Aktiengesellschaft. Sheet-metal ring mount for anti-friction bearing. 4,368,932, Cl. 308-227.000.
- Womako Maschinenkonstruktionen GmbH: *See—*
  - Fabrig, Paul, 4,369,015, Cl. 414-31.000.
- Woo, James T. K.: *See—*
  - Evans, James M.; and Woo, James T. K., 4,369,290, Cl. 525-137.000.
- Wood, Obert R., II: *See—*
  - Silfvast, William T.; and Wood, Obert R., II, 4,369,514, Cl. 372-89.000.
- Wood, Van E.: *See—*
  - Verber, Carl M.; and Wood, Van E., 4,369,202, Cl. 427-8.000.
- Woodbrey, James C.: *See—*
  - Hedrick, Ross M.; Woodbrey, James C.; Gabbert, James D.; and Erickson, Floyd B., 4,369,222, Cl. 428-216.000.
- Woodruff, Keith; Johnson, Donald; Hill, John H.; and Donovan, Barbara A., to American Cyanamid Company. Stick antiperspirant package and process. 4,369,158, Cl. 264-268.000.
- Worner, Manfred: *See—*
  - Plohn, Gerhard; Schuh, Manfred; and Worner, Manfred, 4,369,408, Cl. 328-154.000.
- Worrallo, Anthony C. Glass panel support structure. 4,368,936, Cl. 312-257.00A.
- Wotling, Guy: *See—*
  - Litt, Ferdinand; Neff, Daniel; Schneider, Gilbert; Sprauel, Roger; and Wotling, Guy, 4,368,574, Cl. 29-602.00R.
- Wrulich, Herwig: *See—*
  - Droscher, Erich; Wrulich, Herwig; Zitz, Alfred; and Schetina, Otto, 4,368,918, Cl. 299-1.000.
- Wulff, Claus: *See—*
  - Heydenreich, Frieder; Wulff, Claus; Klein, Lothar; Meissner, Hans-Jurgen; and Bachem, Norbert, 4,369,293, Cl. 525-333.500.
- Wunsch, Steffen; and Walz, Heinz, to Robert Bosch GmbH. Power screwdriver. 4,368,784, Cl. 173-12.000.
- Xerox Corporation: *See—*
  - Gabor, Andrew; and Dunfield, John C. G., 4,369,402, Cl. 318-685.000.
  - Hays, Dan A., 4,368,970, Cl. 355-3.0DD.
  - Naramore, Raymond A., 4,368,972, Cl. 355-14.0SH.
  - Rawson, Eric G.; Scifres, Donald R.; and Burnham, Robert D., 4,369,524, Cl. 455-606.000.
  - Shogren, David K., 4,368,976, Cl. 355-55.000.
  - Silverberg, Morton, 4,368,973, Cl. 355-3.0SH.
  - Sprague, Robert A., 4,369,457, Cl. 346-160.000.
- Yablonsky, Gennady A.: *See—*
  - Lurie, Alexandr N.; Anchukov, Anatoly N.; Dukshtau, Alexandr A.; Schegolev, Gleb S.; Yablonsky, Gennady A.; and Steklov, Mikhail L., 4,369,386, Cl. 310-54.000.
- Yamada, Matsuichi: *See—*
  - Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, 4,369,519, Cl. 455-60.000.
- Yamada, Yasuyuki; and Momiyama, Kikuo, to Canon Kabushiki Kaisha. Compact photographic objective. 4,368,956, Cl. 350-432.000.
- Yamada, Yuichiro: *See—*
  - Negita, Junichi; Yamada, Yuichiro; Kaneko, Hideaki; and Ogino, Takao, 4,368,776, Cl. 165-133.000.
- Yamaguma, Naoto; Okamoto, Jyoji; Masai, Tadahisa; Imaizumi, Takeshi; and Okita, Yoshihiro, to Hitachi, Ltd. Method of operating air conditioner. 4,368,621, Cl. 62-117.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Matsuo, Noritaka; Takeuchi, Kohichiro; and Muramatsu, Tokuzi, 4,368,698, Cl. 123-52.00M.
  - Shibata, Hirotaka, 4,368,703, Cl. 123-323.000.
- Yamakado, Norio: *See—*
  - Handa, Keiji; and Yamakado, Norio, 4,368,923, Cl. 299-8.000.
- Yamakido, Kazuo, to Hitachi, Ltd. Digital-to-analog converter and PCM encoder using the converter. 4,369,433, Cl. 340-347.0DA.
- Yamakoshi, Akira: *See—*
  - Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,369,411, Cl. 330-257.000.
- Yamamoto, Etsuo: *See—*
  - Fukutsuka, Toshio; Shimogori, Kazutoshi; Yamamoto, Etsuo; and Miki, Kenji, 4,369,073, Cl. 148-6.14R.
- Yamamoto, Hachizou: *See—*
  - Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,369,334, Cl. 179-1.0SM.
- Yamamoto, Hiroyuki: *See—*
  - Iwasawa, Mineo; Endo, Yukio; and Yamamoto, Hiroyuki, 4,369,459, Cl. 358-50.000.
- Yamamura, Yuichi; Azuma, Ichiro; and Kobayashi, Shigeru, to Takeda Chemical Industries, Ltd. Glucosamine peptide derivatives, their production and use. 4,369,178, Cl. 424-177.000.
- Yamauchi Rubber Industry Co., Ltd.: *See—*
  - Watanabe, Atsuo, 4,368,568, Cl. 29-130.000.
- Yamazaki, Mitsuo: *See—*
  - Okunaka, Masaaki; Sudo, Ryoichi; Yokono, Hitoshi; Isogai, Tokio; and Yamazaki, Mitsuo, 4,369,208, Cl. 427-54.100.
- Yano, Seisuke: *See—*
  - Nezu, Satoshi; Goto, Keijin; and Yano, Seisuke, 4,369,097, Cl. 203-100.000.
- Yarborough, G. Wirth: *See—*
  - Jacob, Lionel C.; and Yarborough, G. Wirth, 4,368,857, Cl. 242-84.50A.
- Yasuda, Yoshikazu: *See—*
  - Kanazawa, Hirotaka; Yasuda, Yoshikazu; Harada, Kozo; and Yoshida, Susumu, 4,368,572, Cl. 29-432.000.
- Yasuhara, Seishi, to Nissan Motor Co., Ltd. Distributor-type fuel injection pump governor. 4,368,706, Cl. 123-370.000.
- Yasuhara, Seishi, to Nissan Motor Company, Limited. Fuel injection pump with an injection timing control device. 4,368,709, Cl. 123-502.000.
- Yatsuzuka, Yohtaro: *See—*
  - Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,369,523, Cl. 455-601.000.
- Yeh, Chin-Lung: *See—*
  - Levitt, George; Yeh, Chin-Lung; and Budzinski, John C., 4,369,320, Cl. 544-320.000.
- Yokono, Hitoshi: *See—*
  - Okunaka, Masaaki; Sudo, Ryoichi; Yokono, Hitoshi; Isogai, Tokio; and Yamazaki, Mitsuo, 4,369,208, Cl. 427-54.100.
- Yoshida, Kenichi, to Nissan Motor Company, Limited. Knocking detector. 4,368,635, Cl. 73-35.000.
- Yoshida Kogyo K. K.: *See—*
  - Minami, Hiroo, 4,368,562, Cl. 24-205.11L.
  - Morita, Toyoo, 4,368,570, Cl. 29-408.000.
- Yoshida, Okio: *See—*
  - Endo, Yukio; and Yoshida, Okio, 4,369,469, Cl. 358-213.000.
- Yoshida, Shigemitsu: *See—*
  - Fujita, Toshio; Takahashi, Chigo; Yoshida, Shigemitsu; and Shimizu, Hirozo, deceased, 4,369,055, Cl. 71-64.110.
- Yoshida, Susumu: *See—*
  - Kanazawa, Hirotaka; Yasuda, Yoshikazu; Harada, Kozo; and Yoshida, Susumu, 4,368,572, Cl. 29-432.000.
- Yoshinaga, Makoto; and Takabayashi, Yutaka, to Olympus Optical Co., Ltd. Turret condenser for microscopes. 4,368,947, Cl. 350-509.000.
- Yoshioka, Hiroshi: *See—*
  - Kimura, Shigeo; Somezawa, Masashi; Kobayashi, Kunio; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,369,230, Cl. 428-421.000.
- Yoshioka, Seishiro; Hirai, Yutaka; Fukuda, Tadaji; Fukaya, Masaki; and Nakagiri, Takashi, to Canon Kabushiki Kaisha. Photo electro transducer device. 4,369,372, Cl. 250-578.000.
- Younes, Usama E., to Atlantic Richfield Company. Phosphorus-containing alternating copolymers. 4,369,260, Cl. 521-189.000.
- Young, David E., to Schlumberger Technology Corporation. Lubricator valve apparatus. 4,368,871, Cl. 251-58.000.
- Young, Otto V.: *See—*
  - Kramer, Joseph O.; Young, Otto V.; Banner, Charles E.; and Schuster, John D., 4,368,822, Cl. 211-41.000.
- Yuan, Edward L.: *See—*
  - Goff, David L.; Yuan, Edward L.; and Proskow, Stephen, 4,369,247, Cl. 430-311.000.
- Yuchi, Sadataka: *See—*
  - Adachi, Yasaburo; Ishii, Kanji; Yuchi, Sadataka; and Furuyama, Akira, 4,369,435, Cl. 340-506.000.
- Yuuki, Hironori; Kurihara, Hiroshi; Baba, Noboru; Arai, Makoto; Inagaki, Kazunori; and Yamada, Matsuichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Cross polarization compensation system. 4,369,519, Cl. 455-60.000.

- Zahnradfabrik Friedrichshafen, AG: *See—*
  - Elser, Dieter; and Holub, Heinrich, 4,368,794, Cl. 180-133.000.
  - Meyerle, Michael; and Ehrlinger, Friedrich, 4,368,798, Cl. 180-307.000.
- Zalai, Karoly: *See—*
  - Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, 4,369,252, Cl. 435-119.000.
- Zamma, Jun: *See—*
  - Nishimura, Yoshinori; Kaneko, Takayuki; Zamma, Jun; and Nakajima, Youichi, 4,368,778, Cl. 165-158.000.
- Zanner, Johann: *See—*
  - Wilsch, Herbert; and Zanner, Johann, 4,368,960, Cl. 352-92.000.
- Zapp, Robert; and Wichmann, Ewald, to Brown, Boveri & Cie AG. Band-stop filter for equipment with carrier-frequency utilization of low-voltage lines. 4,369,416, Cl. 333-175.000.
- Zaromb, Solomon. Electrochemical power generation. 4,369,234, Cl. 429-13.000.
- Zegelbrier, August M.: *See—*
  - Uhlig, Herbert K.; and Zegelbrier, August M., 4,368,820, Cl. 209-540.000.
- Zenios, Marios C.: *See—*
  - Stevenson, Thomas T.; Szentes, John F.; and Zenios, Marios C., 4,368,705, Cl. 123-357.000.
- Zgud, Felix K.: *See—*
  - Fugate, Robert L.; Schneider, Richard; and Zgud, Felix K., 4,369,484, Cl. 361-334.000.
- Zimmerle, James R.: *See—*
  - Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., 4,368,927, Cl. 303-18.000.
  - Billingsley, Robert H.; Jantzen, Steven L.; and Zimmerle, James R., 4,368,928, Cl. 303-18.000.
- Zimmerman, Morris: *See—*
  - Jones, Howard; Clark, Robert L.; and Zimmerman, Morris, 4,369,183, Cl. 424-263.000.
- Zimmermann, Wolfgang; and Harreus, Albrecht, to Hoechst Aktiengesellschaft. Polyvinyl alcohol composition, process for its preparation and its use. 4,369,281, Cl. 524-379.000.
- Zinkevich, Oleg S.: *See—*
  - Bodyako, Mikhail N.; Alexeev, Gennady P.; Goncharov, Mikhail P.; Astapchik, Stanislav A.; Zinkevich, Oleg S.; Kushelman, Margarita R.; Krylov-Ole-Firenko, Viktor V.; Minchenkov, Jury P.; Bozhok, Viktor P.; Iedlinskaya, Zoya M.; Kashulin, Sergei M.; Fursova, Ljudmila M.; Rozenberg, Vladimir M.; and Chernikova, Alla V., 4,369,074, Cl. 148-11.50C.
- Ziolkowski, Dagmar, heir: *See—*
  - Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased; Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, 4,369,094, Cl. 201-41.000.
- Ziolkowski, Gunter, deceased: *See—*
  - Flockenhaus, Claus; Gabriel, Gunter; Ziolkowski, Gunter, deceased; Heesen, Paul-Heinz; Meckel, Joachim F.; and Galow, Manfred, 4,369,094, Cl. 201-41.000.
- Zitz, Alfred: *See—*
  - Droscher, Erich; Wrulich, Herwig; Zitz, Alfred; and Schetina, Otto, 4,368,918, Cl. 299-1.000.
- Zmolek, Wesley W.: *See—*
  - Miller, Jon P.; and Zmolek, Wesley W., 4,369,181, Cl. 424-180.000.
- Zodrow, Rudolf: *See—*
  - Mohn, Hans-Werner; and Zodrow, Rudolf, 4,369,089, Cl. 156-568.000.
  - Pfulb, Manfred; and Zodrow, Rudolf, 4,369,214, Cl. 427-428.000.
- Zoppetti, Giorgio: *See—*
  - Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, 4,369,256, Cl. 521-25.000.
- Zsoka nee Somkuti, Erzsebet: *See—*
  - Wack, Geza; Kiss, Janos; Lengyel nee Szemenyei, Zsuzsa; Nagy, Lajos; Udvardy Nagy nee Cserey Pechany, Eva; Zalai, Karoly; and Zsoka nee Somkuti, Erzsebet, 4,369,252, Cl. 435-119.000.
- Zubovics, Zoltan: *See—*
  - Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,369,325, Cl. 548-315.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JANUARY, 1983

Note.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Alberto-Culver Company: *See—*
  - Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., Re. 31,126, Cl. 132-7.000.
- Childs, Jerry D.; and Love, Roosevelt, to Halliburton Company. Oil well cementing process. Re. 31,127, Cl. 166-293.000.
- Cichy, Paul: *See—*
  - Walker, Thomas B.; Seider, Robert J.; and Cichy, Paul, Re. 31,128, Cl. 51-309.000.
- Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., to Alberto-Culver Company. Quaternary ammonium compounds in pretreatment of hair before shampooing with an anionic shampoo. Re. 31,126, Cl. 132-7.000.
- Dwyer, Robert M., to Massey-Ferguson Inc. Articulated vehicle steering system. Re. 31,125, Cl. 60-386.000.
- Halliburton Company: *See—*
  - Childs, Jerry D.; and Love, Roosevelt, Re. 31,127, Cl. 166-293.000.
- Kennecott Corporation: *See—*
  - Walker, Thomas B.; Seider, Robert J.; and Cichy, Paul, Re. 31,128, Cl. 51-309.000.
- Love, Roosevelt: *See—*
  - Childs, Jerry D.; and Love, Roosevelt, Re. 31,127, Cl. 166-293.000.
- Massey-Ferguson Inc.: *See—*
  - Dwyer, Robert M., Re. 31,125, Cl. 60-386.000.
- O'Cull, Kathleen A.: *See—*
  - Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., Re. 31,126, Cl. 132-7.000.
- Rasmussen, Max O. H., to Suominen, Heikki S. Method and apparatus for producing continuous surface elements. Re. 31,129, Cl. 156-193.000.
- Schamper, Thomas J.: *See—*
  - Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., Re. 31,126, Cl. 132-7.000.
- Seider, Robert J.: *See—*
  - Walker, Thomas B.; Seider, Robert J.; and Cichy, Paul, Re. 31,128, Cl. 51-309.000.
- Suominen, Heikki S.: *See—*
  - Rasmussen, Max O. H., Re. 31,129, Cl. 156-193.000.
- Walker, Thomas B.; Seider, Robert J.; and Cichy, Paul, to Kennecott Corporation. Fused aluminum oxide abrasive grain containing reduced titanium oxide. Re. 31,128, Cl. 51-309.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Baker, Richard William, to ALZA Corp. Controlled release delivery system by an osmotic bursting mechanism. B1 3,952,741, Cl. 128-260.
- ALZA Corp.: *See—*
  - Baker, Richard William. B1 3,952,741.
- Hessel, Stephen Roy, to C. R. Bard, Inc. Suction collection system. B1 4,111,204, Cl. 128-276.
- C. R. Bard, Inc.: *See—*
  - Hessel, Stephen Roy. B1 4,111,204.
- Heller, Anton H., to Poweray Infrared Corp. Vehicular enclosure for maintaining material therein at an elevated temperature. B1 3,386,435, Cl. 126-343.5 A.
- Poweray Infrared Corp.: *See—*
  - Heller, Anton H. B1 3,386,435.

LIST OF DESIGN PATENTEES

- Allgood, Charles H., II. Trophy. 267,636, 1-18-83, Cl. D11-157.000.
- Allibert S.A. Societe Anonyme: *See—*
  - Vrignaud, Guy, 267,606, Cl. D6-122.000.
- Aurora S.p.A.: *See—*
  - Verona, Franco E., 267,655, Cl. D19-51.000.
- Baconet, Daniel; Leguay, Jacques; and Morizur, Jean-Yves, to Poclain. Cab for earth-moving and handling machinery or the like. 267,647, 1-18-83, Cl. D15-30.000.
- Baconet, Daniel; Leguay, Jacques; and Morizur, Jean-Yves, to Poclain. Cab for earth-moving and handling machinery or the like. 267,648, 1-18-83, Cl. D15-30.000.
- Barr, Josef J. Necklace ornament or similar article. 267,634, 1-18-83, Cl. D11-79.000.
- Barr, Josef J. Jewelry finding or similar article. 267,635, 1-18-83, Cl. D11-87.000.
- Barr, Richard G., to Singer Company, The. Combined chest of drawers and open deck or similar article. 267,614, 1-18-83, Cl. D6-153.000.
- Beechuk, Timothy J., to Procter & Gamble Company, The. Bottle. 267,631, 1-18-83, Cl. D9-376.000.
- Berkline Corporation, The: *See—*
  - Long, Stapleton, 267,602, Cl. D6-63.000.
- Blosser, Edward E. Hoop stick. 267,660, 1-18-83, Cl. D21-101.000.
- Bluestein, Bernard B.: *See—*
  - Ernest, Robert O.; Steinkamp, Norman A.; and Bluestein, Bernard B., 267,673, Cl. D32-70.000.
- Brandsma, Sies K., to U.S. Philips Corporation. Radio receiver. 267,645, 1-18-83, Cl. D14-71.000.
- Brescia, Anthony J.; and Rhoads, Spencer, to Syroco, Inc. Combined storage unit and display board therefor. 267,608, 1-18-83, Cl. D6-131.000.
- Brother Industries, Ltd.: *See—*
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Holtkamp, Reinhold. African Violet plant. 4,975, 1-18-83, Cl. 69.000.

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27	4,369,065
98	4,369,066
100	4,369,067
125	4,369,069
308 N	4,369,070
CLASS 108	
53.1	4,368,675
CLASS 110	
101 CD	4,368,676
212	4,368,677
347	4,368,678
CLASS 112	
79 R	4,368,679
158 A	4,368,681
158 E	4,368,680
	4,368,682
314	4,368,683
CLASS 118	
25	4,368,684
109	4,368,685
411	4,368,686
653	4,368,687
674	4,368,688
688	4,368,689
CLASS 119	
1	4,368,690
2	4,368,691
CLASS 122	
26	4,368,692
491	4,368,693
504	4,368,694
510	4,368,695
CLASS 123	
3	4,368,696
41.35	4,368,697
52 M	4,368,698
90.58	4,368,699
198 F	4,368,700
	4,368,701
261	4,368,702
323	4,368,703
339	4,368,704
357	4,368,705
370	4,368,706
436	4,368,707
452	4,368,708
502	4,368,709
505	4,368,710
522	4,368,711
523	4,368,712
527	4,368,713
531	4,368,714
550	4,368,715
557	4,368,716
632	4,368,717
CLASS 124	
23 R	4,368,718
88	4,368,719
CLASS 125	
14	4,368,720
CLASS 126	
4	4,368,721
25 C	4,368,727
77	4,368,722
181	4,368,723
420	4,368,724
432	4,368,725
445	4,368,726
343.5 A	B1 3,386,435
CLASS 128	
26	4,368,728
214 D	4,368,729
215	4,368,731
235	4,368,732
283	4,368,733
305	4,368,734
330	4,368,735
334 C	4,368,736
718	4,368,740
260	B1 3,952,741
276	B1 4,111,204
CLASS 131	
55	4,368,741
88	4,368,742
	4,368,743
324	4,368,744
CLASS 132	
7	Re.31,126
45 A	4,368,745
88.5	4,368,746
CLASS 134	
8	4,369,071
93	4,368,747
96	4,368,748
CLASS 135	
20 R	4,368,749
CLASS 137	
85	4,368,750
98	4,368,751
112	4,368,752
240	4,368,753
315	4,368,754
512.3	4,368,755
541	4,368,756
565	4,368,757
601	4,368,758
625.48	4,368,759
CLASS 139	
397	4,368,760
CLASS 140	
92.8	4,368,761
93 A	4,368,762
CLASS 144	
34 R	4,368,763
208 J	4,368,764
CLASS 148	
1.5	4,369,072
6.14 R	4,369,073
11.5 C	4,369,074
102	4,369,075
105	4,369,076
120	4,369,077
126	4,369,078
CLASS 149	
2	4,369,079
CLASS 150	
1	4,368,765
	4,368,766
29	4,368,767
52 G	4,368,768
CLASS 152	
218	4,368,769
CLASS 156	
64	4,369,080
148	4,369,081
193	Re.31,129
238	4,369,082
307.3	4,369,083
382	4,369,084
384	4,369,085
403	4,369,086
435	4,369,087
468	4,369,088
568	4,369,089
644	4,369,090
CLASS 159	
4 CC	4,369,091
47.1	4,369,092
CLASS 160	
84 R	4,368,770
121 R	4,368,771
232	4,368,772
CLASS 162	
246	4,369,093
CLASS 164	
418	4,368,774
CLASS 165	
1	4,368,775
133	4,368,776
154	4,368,777
158	4,368,778
165	4,368,779
CLASS 166	
117.5	4,368,780
252	4,368,781
293	Re.31,127
CLASS 169	
90	4,368,782
CLASS 172	
705	4,368,783
CLASS 173	
12	4,368,784
CLASS 174	
52 FP	4,369,330
110 PM	4,369,331
CLASS 175	
21	4,368,785
78	4,368,786
319	4,368,787
374	4,368,788
418	4,368,789
CLASS 177	
50	4,368,790
126	4,368,791
147	4,368,792
CLASS 178	
22.07	4,369,332
22.13	4,369,333
CLASS 179	
1 GA	4,369,335
1 J	4,369,336
1 SM	4,369,334
81 R	4,369,337
84 C	4,369,339
84 VF	4,369,338
146 R	4,369,340
175.2 R	4,369,341
CLASS 180	
14 R	4,368,793
133	4,368,794
212	4,368,795
215	4,368,796
235	4,368,797
307	4,368,798
CLASS 181	
255	4,368,799
CLASS 182	
82	4,368,800
134	4,368,801
CLASS 184	
6.12	4,368,802
15 B	4,368,803
CLASS 186	
57	4,368,804
CLASS 187	
17	4,368,805
CLASS 188	
2 R	4,368,806
379	4,368,807
CLASS 192	
36	4,368,808
45	4,368,809
70.28	4,368,810
99 A	4,368,811
106.2	4,368,812
CLASS 193	
3	4,368,813
CLASS 194	
1 A	4,368,814
CLASS 198	
413	4,368,815
624	4,368,816
CLASS 200	
5 E	4,369,342
19 R	4,369,343
61.43	4,369,344
CLASS 201	
41	4,369,094
CLASS 202	
241	4,369,095
CLASS 203	
58	4,369,096
100	4,369,097
CLASS 204	
16	4,369,098
129.3	4,369,099
157.1 S	4,369,100
224 R	4,369,101
228	4,369,102
252	4,369,103
286	4,369,104
290 F	4,369,105
CLASS 206	
45.2	4,368,817
217	4,368,818
545	4,368,819

CLASSIFICATION OF PATENTS

CLASS 208	
10	4,369,106
	4,369,107
120	4,369,108
CLASS 209	
540	4,368,820
CLASS 210	
169	4,369,109
180	4,369,110
199	4,369,111
433.2	4,369,112
440	4,369,113
661	4,369,114
761	4,369,115
778	4,369,116
782	4,369,117
CLASS 211	
41	4,368,821
	4,368,822
113	4,368,823
CLASS 212	
150	4,368,824
CLASS 215	
1 C	4,368,825
100 A	4,368,826
	4,368,827
CLASS 219	
10.43	4,369,345
10.55 B	4,369,347
10.55 E	4,369,346
121 ED	4,369,349
121 LP	4,369,348
201	4,369,350
284	4,369,351
413	4,369,352
492	4,369,353
506	4,369,354
521	4,369,355
535	4,369,356
CLASS 220	
81 R	4,368,828
CLASS 221	
75	4,368,829
CLASS 222	
321	4,368,830
400.7	4,368,831
509	4,368,832
575	4,368,833
593	4,368,834
CLASS 224	
153	4,368,835
CLASS 226	
172	4,368,836
176	4,368,837
CLASS 227	
55	4,368,838
91	4,368,839
CLASS 229	
2.5 R	4,368,840
5.5	4,368,841
CLASS 232	
17	4,368,842
CLASS 235	
78 G	4,369,357
79.5	4,369,358
89 R	4,369,359
379	4,369,360
470	4,369,361
495	4,369,362
CLASS 236	
49	4,368,843
CLASS 238	
2	4,368,844
8	4,368,845
CLASS 239	
85	4,368,846
125	4,368,847
177	4,368,848
222	4,368,849
333	4,368,850
581	4,368,851
695	4,368,852
703	4,368,853
CLASS 242	
47.01	4,368,854
56 R	4,368,855
84.1 J	4,368,856
84.5 A	4,368,857
129.5	4,368,858
130	4,368,859
199	4,368,860
CLASS 244	
153 R	4,368,861
CLASS 246	
28 R	4,368,862
CLASS 248	
117.7	4,368,863
188.9	4,368,864
214	4,368,865
286	4,368,866
346	4,368,867
549	4,368,868
656	4,368,869
CLASS 249	
102	4,368,870
CLASS 250	
211 R	4,369,363
227	4,369,364
236	4,369,365
237 G	4,369,366
327.2	4,369,367
357.1	4,369,368
484.1	4,369,369
551	4,369,371
578	4,369,372
CLASS 251	
58	4,368,871
63	4,368,872
CLASS 252	
39	4,369,118
42.7	4,369,119
68	4,369,120
88	4,369,121
182	4,369,122
312	4,369,123
316	4,369,124
	4,369,125
350	4,369,126
429 R	4,369,128
439	4,369,129
455 Z	4,369,130
459	4,369,131
466 PT	4,369,132
522 R	4,369,133
526	4,369,134
CLASS 254	
29 R	4,368,873
131	4,368,874
CLASS 256	
59	4,368,875
CLASS 260	
112.5 R	4,369,137
	4,369,138
369	4,369,140
453 P	4,369,141
502.5 F	4,369,142
505 C	4,369,143
513 R	4,369,144
543 F	4,369,145
544 N	4,369,146
935	4,369,147
CLASS 261	
36 R	4,369,148
44 A	4,369,149
97	4,369,150
CLASS 264	
28	4,369,151
46.4	4,369,152
62	4,369,153
63	4,369,154
103	4,369,155
147	4,369,156
246	4,369,157
268	4,369,158
296	4,369,159
326	4,369,160
CLASS 266	
54	4,368,876
99	4,368,877
CLASS 267	
64.17	4,368,878
CLASS 270	
6	4,368,879
CLASS 271	
121	4,368,880
122	4,368,881
135	4,368,882
CLASS 272	
67	4,368,883
123	4,368,884
CLASS 273	
29 A	4,368,885
73 D	4,368,886
144 B	4,368,887
176 FB	4,368,888
243	4,368,889
328	4,368,890
400	4,368,891
411	4,368,892
CLASS 277	
12	4,368,893
166	4,368,894
203	4,368,895
CLASS 280	
5.24	4,368,896
202	4,368,897
289 WC	4,368,898
477	4,368,899
707	4,368,900
748	4,368,901
749	4,368,902
CLASS 283	
21	4,368,903
CLASS 285	
175	4,368,904
CLASS 290	
2	4,369,373
53	4,369,374
	4,369,375
CLASS 292	
5	4,368,905
305	4,368,906
CLASS 294	
1 BA	4,368,907
64 R	4,368,908
69 R	4,368,909
83 R	4,368,914
86 CG	4,368,910
86.15	4,368,911
87 R	4,368,912
106	4,368,913
CLASS 296	
213	4,368,915
CLASS 297	
341	4,368,916
452	4,368,917
CLASS 299	
1	4,368,918
	4,368,919
2	4,368,920
	4,368,921
5	4,368,922
8	4,368,923
33	4,368,924
45	4,368,925
CLASS 303	
7	4,368,926
18	4,368,927
	4,368,928
CLASS 305	
11	4,368,929
CLASS 307	
99	4,369,376
117	4,369,377
221 D	4,369,378
225 C	4,369,379
254	4,369,380
279	4,369,381
CLASS 308	
5 R	4,368,930
227	4,368,932
245	4,368,933
CLASS 310	
11	4,369,382
12	4,369,383
42	4,369,384
49 R	4,369,385
54	4,369,386
83	4,369,387
154	4,369,388
214	4,369,389
313 B	4,369,390
800	4,369,391
CLASS 312	
13	4,368,934
184	4,368,935
257 A	4,368,936
325	4,368,937
CLASS 313	
346 R	4,369,392
506	4,369,393
CLASS 315	
200 A	4,369,394
241 P	4,369,395
369	4,369,396
CLASS 318	
54	4,369,397
114	4,369,398
467	4,369,399
561	4,369,400
565	4,369,401
685	4,369,402
729	4,369,403
CLASS 324	
58.5 C	4,369,404
174	4,369,405
252	4,369,406
416	4,369,407
CLASS 328	
154	4,369,408
CLASS 330	
10	4,369,409
254	4,369,410
257	4,369,411
298	4,369,412
CLASS 333	
34	4,369,413
81 R	4,369,414
127	4,369,415
175	4,369,416
CLASS 334	
15	4,369,417
CLASS 335	
211	4,369,418
255	4,369,419
CLASS 337	
148	4,369,420
163	4,369,421
248	4,369,422
CLASS 338	
66	4,369,423
161	4,369,424
CLASS 339	
31 R	4,368,938
59 M	4,368,939
177 E	4,368,940
183	4,368,941
186 M	4,368,942
198 M	4,368,943
221 R	4,368,944
CLASS 340	
26	4,369,425
32	4,369,426
38 L	4,369,427
69	4,369,428
119	4,369,429
146.3 MA	4,369,430
146.3 SY	4,369,431
347 DA	4,369,432
	4,369,433
347 DD	4,369,434
506	4,369,435
	4,369,436
539	4,369,437
623	4,369,438
710	4,369,439
711	4,369,440
733	4,369,441
825.35	4,369,442
825.47	4,369,443
CLASS 343	
8	4,369,444
18 E	4,369,445
711	4,369,446
769	4,369,447
781 CA	4,369,448
790	4,369,449
CLASS 346	
75	4,369,450
76 PH	4,369,451
	4,369,452
136	4,369,453
140 R	4,369,454
	4,369,455
	4,369,456
160	4,369,457
CLASS 350	
1.7	4,368,945
3.78	4,368,946
96.20	4,368,948
96.21	4,368,949
174	4,368,950
320	4,368,951
362	4,368,952
426	4,368,953
427	4,368,954
	4,368,955
432	4,368,956
469	4,368,957
509	4,368,947
CLASS 351	
204	4,368,958
243	4,368,959
CLASS 352	
92	4,368,960
129	4,368,961
CLASS 353	
3	4,368,962
31	4,368,963
113	4,368,964
CLASS 354	
23 R	4,368,965
33	4,368,966
106	4,368,967
133	4,368,968
339	4,368,969
CLASS 355	
3 DD	4,368,970
	4,368,971
3 SH	4,368,973
14 SH	4,368,972
35	4,368,974
50	4,368,975
55	4,368,976
75	4,368,977
CLASS 356	
1	4,368,978
71	4,368,979
240	4,368,980
352	4,368,981
445	4,368,982
	4,368,983
CLASS 357	
30	4,369,458
CLASS 358	
50	4,369,459
67	4,369,460
75	4,369,461
124	4,369,462
135	4,369,463
136	4,369,464
167	4,369,465
170	4,369,466
210	4,369,467
213	4,369,468
	4,369,469
227	4,369,470
280	4,369,471
CLASS 360	
40	4,369,472
85	4,369,473
96.1	4,369,474
97	4,369,475
123	4,369,476
126	4,369,477
137	4,369,478
CLASS 361	
1	4,369,479
128	4,369,480
173	4,369,481
210	4,369,482
291	4,369,483
334	4,369,484
386	4,369,485
CLASS 362	
32	4,369,486
258	4,369,487
268	4,369,488
CLASS 363	
28	4,369,489
48	4,369,490
56	4,369,491
58	4,369,492
CLASS 364	
200	4,369,493
	4,369,494
414	4,369,495
417	4,369,496
422	4,369,497
707	4,369,498
724	4,369,499
758	4,369,500
CLASS 365	
8	4,369,501
155	4,369,502
189	4,369,503
238	4,369,504
CLASS 366	
15	4,368,984
28	4,368,985
170	4,368,986
CLASS 367	
13	4,369,505
31	4,369,506
56	4,369,507
115	4,369,508
CLASS 368	
46	4,368,987
63	4,368,988
74	4,368,989
157	4,368,990
CLASS 369	
174	4,369,509
CLASS 371	
13	4,369,510
21	4,369,511
43	4,369,512
CLASS 372	
46	4,369,513
89	4,369,514
CLASS 374	
12	4,368,991
CLASS 375	
108	4,369,515
110	4,369,516
CLASS 376	
232	4,369,161
CLASS 378	
130	4,369,517
160	4,369,370
CLASS 384	
192	4,368,931
CLASS 400	
196	4,368,992
216.2	4,368,993
320	4,368,994
CLASS 402	
39	4,368,995
CLASS 403	
5	4,368,996
59	4,368,997
171	4,368,998
283	4,368,999
406	4,369,000
CLASS 404	
94	4,369,001
CLASS 405	
184	4,369,002
260	4,369,003
262	4,369,004
CLASS 406	
88	4,369,005
93	4,369,006
CLASS 409	
190	4,369,007
CLASS 410	
29.1	4,369,008
35	4,369,009
101	4,369,010
CLASS 411	
223	4,369,011
437	4,369,012
CLASS 412	
38	4,369,013
CLASS 414	
11	4,369,014
31	4,369,015
CLASS 415	
142	4,369,016
157	4,369,017
CLASS 416	
134 A	4,369,018
	4,369,019
CLASS 417	
64	4,369,020
364	4,369,021
571	4,369,022
CLASS 420	
503	4,369,162
CLASS 422	
202	4,369,163

CLASSIFICATION OF PATENTS

CLASS 423	
24	4,369,164
54	4,369,165
112	4,369,166
210	4,369,167
313	4,369,168
321 R	4,369,169
366	4,369,170
461	4,369,171
CLASS 424	
19	4,369,172
35	4,369,173
62	4,369,174
79	4,369,175
84	4,369,176
175	4,369,177
177	4,369,178
	4,369,179
	4,369,180
180	4,369,181
199	4,369,182
263	4,369,183
267	4,369,184
270	4,369,185
273 R	4,369,186
274	4,369,187
	4,369,188
285	4,369,189
308	4,369,190
319	4,369,191
326	4,369,192
CLASS 425	
10	4,369,023
112	4,369,024
115	4,369,025
CLASS 426	
19	4,369,193
59	4,369,194
62	4,369,195
104	4,369,196
270	4,369,197
271	4,369,198
641	4,369,199
660	4,369,200
CLASS 427	
4	4,369,201
8	4,369,202
10	4,369,203
13	4,369,204
39	4,369,205
54.1	4,369,206
	4,369,207
	4,369,208
123	4,369,209
160	4,369,210
349	4,369,211
352	4,369,212
389.9	4,369,213
428	4,369,214
CLASS 428	
4	4,369,215
17	4,369,216
91	4,369,218
138	4,369,219
209	4,369,220
216	4,369,221
	4,369,222
285	4,369,223
	4,369,224
334	4,369,225
	4,369,226
407	4,369,227
412	4,369,228
421	4,369,229
	4,369,230
	4,369,231
425.9	4,369,232
596	4,369,217
678	4,369,233
CLASS 429	
13	4,369,234
27	4,369,235
147	4,369,236
218	4,369,237
252	4,369,238
CLASS 430	
5	4,369,239
17	4,369,240
25	4,369,241
58	4,369,242
223	4,369,243
257	4,369,244
264	4,369,245
306	4,369,246
311	4,369,247
376	4,369,248
537	4,369,249
CLASS 431	
12	4,369,026
333	4,369,027
362	4,369,028
CLASS 432	
29	4,369,029
37	4,369,030
198	4,369,031
247	4,369,032
CLASS 433	
9	4,369,033
115	4,369,034
CLASS 435	
18	4,369,250
80	4,369,251
119	4,369,252
244	4,369,253
CLASS 436	
111	4,369,127
CLASS 455	
3	4,369,518
60	4,369,519
137	4,369,520
270	4,369,521
333	4,369,522
601	4,369,523
606	4,369,524
618	4,369,525
CLASS 501	
21	4,369,254
CLASS 518	
712	4,369,255
CLASS 521	
25	4,369,256
79	4,369,257
107	4,369,258
108	4,369,259
189	4,369,260
	4,369,261
CLASS 523	
109	4,369,262
152	4,369,263
209	4,369,264
212	4,369,265
332	4,369,266
351	4,369,267
435	4,369,268
459	4,369,269
CLASS 524	
33	4,369,270
40	4,369,271
88	4,369,272
89	4,369,273
99	4,369,274
103	4,369,275
104	4,369,276
	4,369,277
147	4,369,278
267	4,369,279
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	4,369,054		4,369,167		4,369,232		4,369,261		4,369,229		4,368,719
04 :	4,368,889		4,369,181		4,369,246		4,369,268		4,369,236		4,368,848
	4,369,008		4,369,190		4,369,272		4,369,344		4,369,237	32 :	4,369,151
	4,369,061		4,369,212		4,369,316		4,369,345		4,369,395	33 :	4,369,152
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05 :	4,368,819		4,369,317		4,369,117		4,369,516		4,368,625		4,368,903
	4,369,030		4,369,319		4,369,149		4,369,517		4,368,649		4,368,908
06 :	4,368,545		4,369,335		4,369,287		4,369,520		4,368,663		4,368,979
	4,368,549		4,369,349		4,369,290		4,369,522		4,368,675		4,369,050
	4,368,566		4,369,402		4,369,390	18 :	4,368,618		4,368,716		4,369,095
	4,368,578		4,369,406		4,369,429		4,368,636		4,368,722		4,369,099
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	4,368,830		4,368,733		4,368,705		4,369,352		4,368,799		4,369,240
	4,368,869		4,368,921		4,368,739		4,369,479		4,368,829		4,369,254
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	4,368,897		4,369,005		4,368,756		4,368,627		4,368,941		4,369,289
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents*
and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,454,226, Re. S.N. 413,134, Filed Aug. 30, 1982, Cl. 239/224, ATOMIZER WHEEL FOR THE ATOMIZATION OF SUSPENSIONS OF HARD-WEARING MATERIALS, Kaj Nielsen, Owner of Record: *Inventor,* Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 313

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue.

National Inventors Day

The Patent and Trademark Office and the National Council of Patent Law Associations will sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 12, 1983, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 13, 1983, from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 11, 1983, at 5:00 p.m. The removal of all personal property from the Search Room by the early closing time would be appreciated.

GERALD J. MOSSINGHOFF,
Nov. 12, 1982. *Commissioner of Patents*
and Trademarks.

Status of PTO Services

The following is an update of the status of PTO services as of Jan. 3, 1983:

Service Item	FY 1983 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts:			
Patents	22	46	Reduced by 10 days in the past month.
Trademarks	30	92	Delays continue due to extremely large number of applications filed during September.
Patent Copies:			
Window Coupons	5	81% within 5 days	Problems encountered in the initial phase of implementing an automated control system are being overcome.
Mail Coupons*	29	97% within 29 days	
Letter Orders*	34	99% within 34 days	
Certified Copies:			
Trademark Registrations	30	18	
Applications-As-Filed	20	100% within 20 days	
File-Wrapper/Contents	N/A	100% within 15 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	93	Delays continue due to extremely large number of applications filed during September.
Filing Reg. Certificates	3	3	
Assignments			
Patents	15	57	Goals and the method of computing actual time are being revised.
Trademark	21	93	Goals and the method of computing actual time are being revised.
Patent Official Gazette			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 1/2 day late	
Patent Grants Mailed	Issue Date	2 days late	
Patent Copies Available	Issue Date	75%	90% available by day after Issue Date.
Trademark Official Gazette			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 3 days late	Dec. 7 issue was 8 days late due to GPO's problems; now back on schedule.
Trademark Regs. Mailed	Issue Date	1 day late	

*Goal now includes mail processing and delivery time. A recent survey of mail delivery time for these services yielded the fact that the *average* amount of time required for one-way delivery is seven calendar days. Therefore the prior goal was increased by 14 days to reflect average time from mailing by requestors to receipt of copies.

IMPROVEMENTS TO SERVICES

- *Use of Deposit Accounts*—Effective immediately, the Crystal Plaza certification desk, located in the Public Search Room, will accept the use of deposit accounts for certification services. If a deposit account is to be charged, the Deposit Account Order Form, PTO 140, should be used. In addition, the hours of service for the desk have been extended to cover the normal office hours of 8:30 a.m.—5:00 p.m., Monday through Friday.
- For other improvements made in services, see the Official Gazettes for Oct. 26, Nov. 30, and Dec. 28, 1982.

THERESA A. BRELSFORD,
Jan. 3, 1983. *Assistant Commissioner*
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 25, 1983

D. 266,587
3,853,099
4,099,246
4,123,441
4,217,389
4,233,433
4,258,161
4,261,894
4,272,362
4,277,591
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4,292,592
4,301,694
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4,331,785
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4,355,909
4,356,548
4,357,497
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4,359,302
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4,360,785

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 27, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director .... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-19-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director .... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	8-28-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director .... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-18-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director .... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-17-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director .... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-16-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director .... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director .... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director .... Industrial Arts; Household, Personal and Fine Arts.	12-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director .... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-02-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director .... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director .... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director .... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-09-80

Expiration of patents: The patents within the range of numbers indicated below expire during November 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,214,767 to 3,221,338, inclusive
Plant Patents	Numbers 2,566 to 2,576 inclusive

REEXAMINATIONS

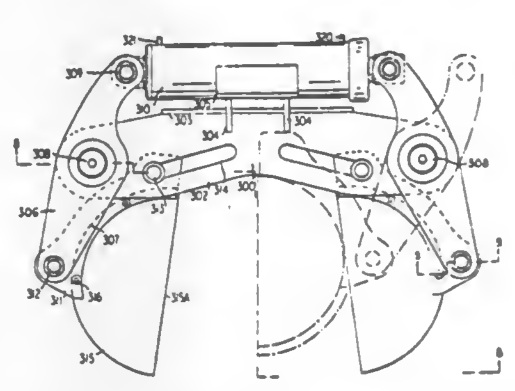
JANUARY 25, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,625,268 (45th)

FELLING HEAD RECIPROCATING BLADE TYPE

Carl Kempe, Ornskoldsvik, Sweden, assignor to Logging Development Corp., Montreal, Quebec, Canada.
Reexamination Request No. 90/000,031, Jul. 20, 1981.
Reexamination Certificate for Patent No. 3,625,268, issued Dec. 7, 1971, Ser. No. 9,391, Feb. 6, 1970.
U.S. Cl. 144/34 E Int. Cl.^{3} A01G 23/08.



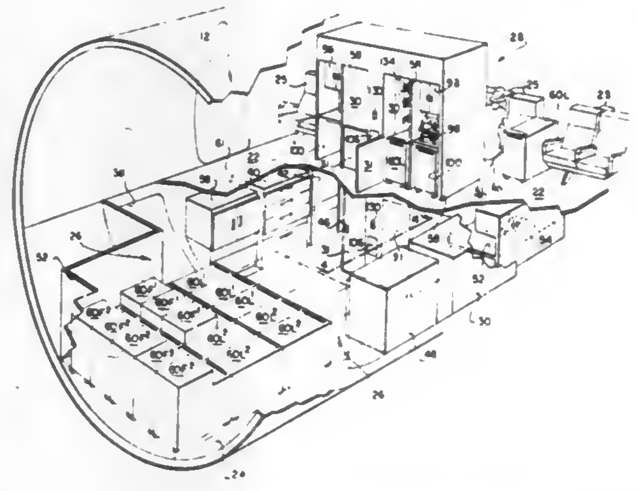
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–77 is confirmed.

B1 3,517,899 (46th)

UNITIZED AIRCRAFT FOOD AND BEVERAGE SERVICE

Richard I. Vernon, Glendale, Calif., assignor to Lockheed Corporation, Burbank, Calif.
Reexamintion Request No. 90/000,144, Jan. 27, 1982.
Reexamination Certificate for Patent No. 3,517,899, issued Jun. 30, 1970, Ser. No. 718,691, Apr. 4, 1968.
U.S. Cl. 244/118.5 Int. Cl.^{3} B64D 11/04.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 12 are determined to be patentable as amended:

Claims 2-11, dependent on amended claims, are determined to be patentable.

1. In an aircraft having a fuselage containing an upper deck and a lower deck, the upper deck being adapted to carry passengers, the improvement which comprises:

a kitchen located on the lower deck *for the storage and preparation of beverage and individual servings of food items to be served to passengers on the upper deck,*

a service module located above said kitchen on the upper deck, said service module dividing said aircraft into separate passenger areas,

a plurality of temperature controllable serving units normally carried in said kitchen, said serving units having wheels and being adapted to contain said items to be served to passengers in said aircraft,

elevator means disposed within said service module [for] *and* connecting said kitchen and said service module *for providing a passage for aircraft passenger service personnel between decks during the course of a flight and for prepositioning individual serving units* [whereby items] from said kitchen [are prepositioned] within said service module *at passenger deck level* [by said elevator means],

[a plurality of serving units normally carried in said kitchen, each of said serving units have wheels and being adapted to contain items to be served to passengers in said aircraft],

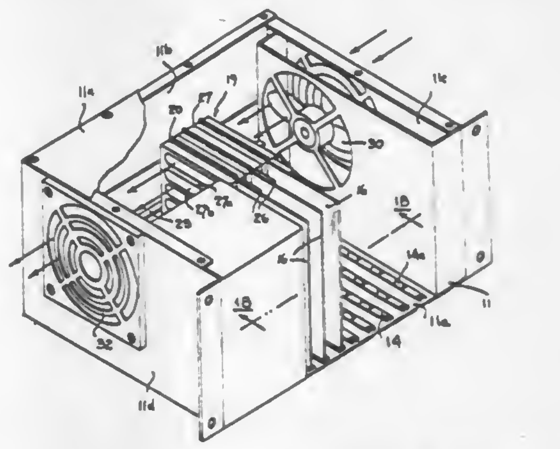
said serving units being capable of being transported from said kitchen to said service module through said elevator means and being adapted to be stored within said elevator means *at either deck level* and being further adapted to permit *said* items held by said serving units to be dispensed to the passengers within said aircraft when said serving unit is in situ within said service module and when circulated among passengers, *and*

built-in cold storage means and built-in oven means located within said kitchen separate from said serving units for use by said personnel in the performance of food and beverage storage and preparation tasks.

B1 4,122,508 (47th)

MODULAR PRINTED CIRCUIT BOARD ASSEMBLY HAVING COOLING MEANS INCORPORATED THEREIN

Paul S. Rumbaugh, Garden Grove, Calif., assignor to Altec Corporation, Anaheim, Calif.
Reexamination Request No. 90/000,049, Aug. 7, 1981.
Reexamination Certificate for Patent No. 4,122,508, issued Oct. 24, 1978, Ser. No. 831,066, Sep. 6, 1977.
U.S. Cl. 361/384 Int. Cl.^{3} H05K 7/20.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended:

Claims 2–7, dependent on amended claims, are determined to be patentable.

1. A modular printed circuit board assembly comprising:

a plurality of similar modular units, each of said units including a heat sink element having a main body portion in the form of a plurality of cooling fins between which openings are formed and a flange portion in the form of a plate which extends from the main body portion; and a printed circuit board attached to the flange portion to form an integral unit with the heat sink element,

a housing having a base and top cover for said modular units,

means for removably supporting said modular units in said housing in side by side relationship to form a stack with corresponding openings in said modular units aligned with each other in series to form a plurality of parallel unimpeded channels extending through said stack from one side to the opposite side thereof, *all of said channels being substantially parallel to each other,* and

means for circulating ambient air *from outside the housing* through said channels *and out from the housing in substantially unidirectional straight lines* comprising a blower mounted in a wall of said housing at one *open* end of *all of* said channels and a vent mounted in a wall of said housing opposite said first mentioned wall at the other *open* end *of all* of said channels, *each of said channels being directly aligned longitudinally in a substantially straight line path between said blower and said vent,* whereby air streams are flowed in substantially *unidirectional* straight lines from outside said housing across the fins and out from the housing through the vent.

B1 3,328,231 (48th)

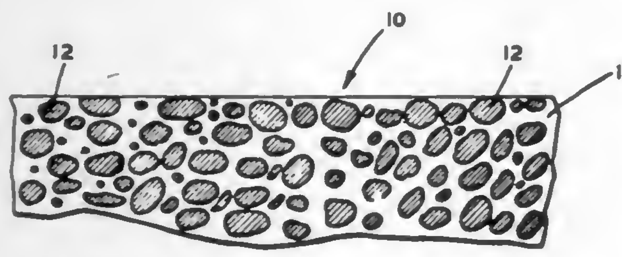
METHOD OF PRODUCING CAST SURFACES AND PRODUCT OBTAINED THEREBY

John A. Sergovic, Severna Park, Md., assignor to The Burns & Russell Company of Baltimore City, Baltimore, Md.

Reexamination Request No. 90/000,072, Sep. 18, 1981.

Reexamination Certificate for Patent No. 3,328,231, issued Jun. 27, 1967, Ser. No. 542,368, Apr. 13, 1966.

U.S. Cl. 428/451 Int. Cl.^{3} B32B 13/12; E04C 2/04.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-5 and 9 is confirmed.

Claim 11, having been finally determined to be unpatentable, is cancelled.

Claims 6, 10 and 13 are determined to be patentable as amended:

Claims 7, 8 and 12, dependent on amended claims, are determined to be patentable.

6. The method of providing *a masonry block with* a cast resin surface which is hard and abrasion resistant and resistant to staining over long periods of use, which *method* comprises polymerizing *on a masonry block* a resinous composition of an ethylenically unsaturated polymerizable resin and sand particles treated with a bonding agent comprising an alkylene substituted silane, *the silane used in an amount equal to from about 0.1 to 2% by weight of the sand particles,* said sand comprising at least 50% by weight of said composition, [and wherein] the sand particles [have] *having* a moisture content of from about ⅙ to about 3 times the weight of alkylene substituted silane employed as the bonding agent, *and essentially all the sand particles being from about one-sixteenth to two millimeters in diameter.*

10. The method of producing *on a masonry block* a cast resin surface which is hard and abrasion resistant and resistant to staining over long periods of use, which *method* comprises treating sand particles with an alkylene substituted silane bonding agent, *the silane used in an amount equal to from about 0.1 to 2% by weight of the sand particles and* said sand particles having a moisture content of from about 1/6 up to 3 times the weight of alkylene substituted silane bonding agent employed, heating the treated sand particles at a temperature of at least about 160° F., polymerizing *on a masonry block* a composition comprising the thus treated sand particles and an ethylenically unsaturated polymerizable resin, said sand particles comprising at least about 50% by weight of said composition *and essentially all the sand particles being from about one-sixteenth to two millimeters in diameter.*

13. A masonry block having an integral molded facing layer of a composition comprising the reaction product of an ethylenically unsaturated alkyd resin and a plymerizable vinyl monomer and sand as a filler, the latter being in an amount of at least about 50% and not over 90% of the total of the resin, monomer and filler by weight, the composition of said facing layer permeating the adjacent surface of said block, said composition being cured to permanently interlock said facing layer and block and to form a facing layer having a hard, abrasion resistant surface substantially free of pits and pinholes and possessing elasticity enabling the layer to be resistant to peeling, crazing, staining and cracking due to blows and to differences in coefficients of expansion and contraction between the said block and the said facing thereon, said sand particles and said reaction product being bonded to one another by a bonding agent comprising between about 0.1% and 2% by weight of sand of an alkylene substituted silane, *said silane being bonded to the sand using a moisture content on the sand of from about 1/6 up to 3 times the weight of the silane,* said ethylenically unsaturated alkyd resin and polymerizable vinyl monomer being present in an amount of from about 40 to 80 parts of the former for each 100 parts of combined weight of ethylenically unsaturated alkyd resin and polymerizable vinyl monomer *and essentially all the sand particles being from about one-sixteenth to two millimeters in diameter.*

REISSUES

JANUARY 25, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,130

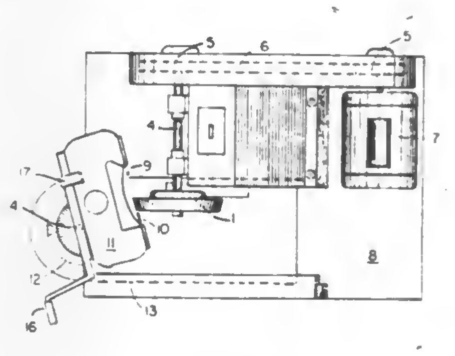
WOOD TURNING PROCESS AND APPARATUS FOR MAKING CYLINDROCONICAL WOOD PRODUCTS

Robert W. Bebout, Spring Hill, Fla., assignor to John Totten, Orlando, Fla.

Original No. 4,082,126, dated Apr. 4, 1978, Ser. No. 788,270, Apr. 18, 1977. Application for reissue Mar. 28, 1980, Ser. No. 135,379

Int. Cl.^{3} B23B *1/00, 5/26*

U.S. Cl. 142—1 13 Claims



7. Apparatus for turning cylindroconical rings from wood blanks comprising:

frame means;

wood blank holding means mounted on said frame means, said holding means rotatable at a selected speed of rotation;

table means mounted on said frame means and adapted to be slidably movable with respect to said frame means in a direction parallel to a wood blank held by said wood blank holding means;

a pair of wood cutting bits;

bit holding means for holding said pair of wood cutting bits in a horizontally opposed position with the cutting edges of said bits spaced by distance greater than the thickness of the wood blank to be turned;

adjustment means attached to said table means for supporting said bit holding means, said adjustment means adapted to adjust the angle of said bits with respect to the plane of the wood blank to be turned;

bit moving means for selectably moving each of said cutting bits horizontally and so as to cause said cutting edges to engage a face of the wood blank to be turned;

drive means for rotating said wood blank holding means; and at least one movable template attachable to said frame means and having a series of spaced locking notches to permit accurate positioning of said table means during each turning operation.

13. The method of turning cylindroconical rings from wood blanks for use as components of cylindroconical wood products comprising the steps of:

a. attaching a wood blank to a rotatable shaft;

b. rotating the shaft at a selected cutting speed;

c. disposing a pair of horizontally opposed wood cutting bits having the tooth ends spaced greater than the thickness of the wood blank and with the wood blank between but not in contact with the pair of bits;

d. adjusting the angle between the plane of the pair of bits and the plane of the wood blank to a desired cylindroconical angle;

e. adjusting the positions of the pair of bits relative to the axis of the rotatable shaft to cut the outer cylindroconical surface of the first ring;

f. moving the pair of bits in a first direction to cause one of the bits to cut into one face of the wood blank to a depth approximately equal to one half the thickness of the blank;

g. moving the pair of bits in a second direction to cause the other of the bits to cut into the opposite face of the wood blank to a depth sufficient to connect with the cut made in step f above;

h. moving the pair of bits to the position defined in step c above;

i. adjusting the position of the pair of bits relative to the axis of the rotatable shaft to cut the inner cylindroconcial surface of the first ring simultaneously with the outer cylindroconical surface of a second ring; and

j. repeating steps f through i until a desired number of cylindroconical rings has been produced.

Re. 31,131

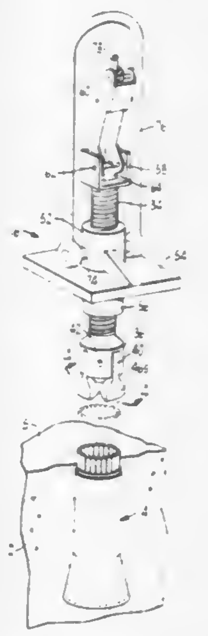
CONCRETE SLAB HOISTING APPARATUS

Philip A. Torbet, Port Washington, N.Y., and Thomas Eager, San Anselmo, Calif., assignors to The Burke Company, San Mateo, Calif.

Original No. 4,068,879, dated Jan. 17, 1978, Ser. No. 704,368, Jul. 12, 1976. Application for reissue Aug. 21, 1978, Ser. No. 935,513

Int. Cl.^{3} B66C *1/66*

U.S. Cl. 294—89 11 Claims



11. Apparatus for the releasable connection to a tubular member embedded in an object, the member defining an opening in the object and including an inwardly facing shoulder disposed interiorly of the opening, the apparatus comprising: plate means adapted to be placed across the opening and including an aperture for alignment with the opening; an elongate housing extending through the aperture and having an axial bore, the inner end of the housing being adapted for positioning in said opening, and including a laterally extending cutout, a locking lug carried by the housing for lateral movement within the cutout from a first position in which the lug is out of engagement with the shoulder to a second position in which a portion of the lug protrudes laterally from the housing into engagement with the shoulder; and actuating means slidably disposed in the bore for moving the lug between the first and second positions responsive to movement of the actuating means longitudinally in the bore between corresponding first and second positions; the actuating means including means for positively and mechanically locking the lug in its second position when the actuating means is in its second position.

Re. 31,132

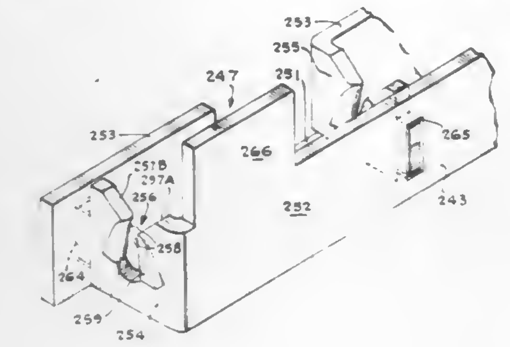
ELECTRICAL CONNECTOR AND INSULATION-PIERCING CONTACT MEMBER

Paul P. Hoppe, Jr., Arlington Heights, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Original No. 3,926,498, dated Dec. 16, 1975, Ser. No. 288,998, Sep. 14, 1972. Application for reissue Feb. 16, 1977, Ser. No. 769,106

Int. Cl.^{3} H01R *9/00, 13/58*

U.S. Cl. 339—97 R **41 Claims**



1. A unitary contact member formed from a single piece of thin, conductive sheet metal, comprising:

an active contact element;

and an integral terminal element, comprising side and bottom walls forming an elongated channel of U-shaped cross-sectional configuration with inner and outer end portions,

said terminal element including at least one terminal flange, formed by at least one flange element struck from one of said walls of said channel and bent to extend transversely of said channel, said flange extending completely across said channel and interlocked with at least one other wall of said channel,

said flange having an upwardly open notch for receiving an insulation-covered electrical conductor, the upper portion of said notch converging downwardly and having thin edges to afford a cutting section for shearing through the insulation on the conductor,

the medial portion of said notch having gradually thickened edges constituting a transition section for spreading the insulation on the conductor,

and the lower portion of said notch having smooth, curved thickened edges affording a terminal section with a resilient pressure jaw engaging the electrical conductor in wiping contact.

Re. 31,133

EXTRUSION METHODS

Rudolf Niessner, Bogen, and Max Sonnleitner, Oberaltaich, near Bogen, both of Fed. Rep. of Germany, assignors to Thyssen Plastik Anger KG, Munich, Fed. Rep. of Germany

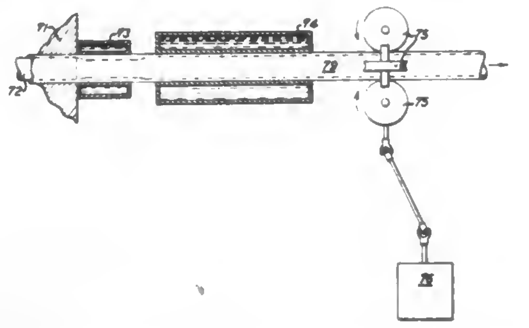
Original No. 3,264,383, dated Aug. 2, 1966, Ser. No. 176,179, Feb. 23, 1962. Division of Ser. No. 176,179, Feb. 23, 1962, Pat. No. 3,205,535. Application for reissue Jun. 1, 1976, Ser. No. 691,828

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1961, K 43,015

Int. Cl.^{3} B29F *3/02;* **B29C** *17/07*

U.S. Cl. 264—541 **11 Claims**

1. A process for the production of plastic tubes which have at least at one end thereof an increased wall thickness for a predetermined length, said process comprising continuously advancing plastic material through an extruder to produce a continuous extruded cylinder, cooling the extruded cylinder as it is discharged from the extruder whereby the plastic material is hardened thereat, engaging the thus cooled cylinder to draw the same through the extruder and past the region where the cylinder is cooled, periodically increasing the ratio of the speed at which the material is fed to the extruder relative to the speed at which the cylinder is drawn from the extruder *by periodically decreasing the speed at which the cylinder is drawn from the extruder* to upset the tube where it is discharged from the extruder to form periodic increases in thickness in the cylinder *at selected areas* and dividing the cylinder thus formed with the periodic increases in thickness to produce tubes which have increased wall thickness at least at one end thereof.



Re. 31,134

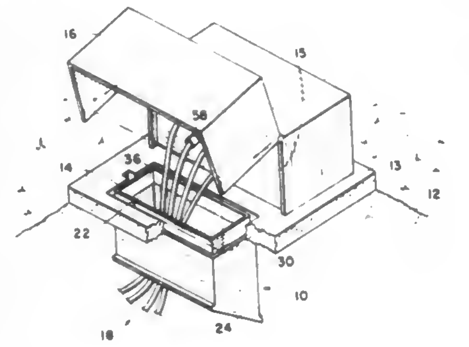
GROUND LEVEL TRANSFORMER UNIT

Robert J. Lux, Jr., Broken Arrow, Okla., assignor to Thermodynamics Corporation, Broken Arrow, Okla.

Original No. 4,213,111, dated Jul. 15, 1980, Ser. No. 937,517, Aug. 28, 1978. Application for reissue Dec. 22, 1980, Ser. No. 218,659

Int: Cl.^{3} H01F *15/02*

U.S. Cl. 336—65 **5 Claims**



5. A ground level transformer unit for connecting to underground cables, comprising:

a horizontal pad having an upper and a lower surface, the lower surface being adapted to rest upon the earth and the upper surface adapted to receive a transformer thereon, the pad having a vertical opening providing means to receive underground cables therethrough;

a transformer positioned on said pad having means for connection to underground cable extending through said cable opening; and

a cable vault of vertical, hollow, open-top and open-bottom construction, and of cross-sectional dimensions, in a plane parallel to said upper and lower surfaces, greater than said pad cable opening and less than said pad, the vault adapted for burial beneath the earth's surface and to receive underground cables therethrough while providing space to accept slack in the cables, the cable vault having an open top portion configured to communicate with said pad cable opening, the cable vault top portion being in contiguous relationship with said pad lower surface, providing a passageway for slacked underground cables to connect to said transformer.

PLANT PATENTS

GRANTED JANUARY 25, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,977

PLUM TREE

William E. Hengst, Exeter, Calif., assignor to Alan D. Ewen, Sacramento, Calif.

Filed Oct. 26, 1981, Ser. No. 314,924

Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree as described, illustrated and identified by the characteristics enumerated above.

4,978

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Fremont, and William E. Duffett, Salinas, both of Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 5, 1980, Ser. No. 175,754

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Klondike, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; dark yellow ray floret color; diameter across face of capitulum ranging from 95 to 110 mm. at maturity; uniform nine week flowering response; tall plant height; and semi-spreading branching pattern.

PATENTS

GRANTED JAN. 25, 1983

ERRATA

For CLASS	See PATENT NO.
604–390	4,369,786
604–096	4,369,789
604–280	4,369,790
494–008	4,369,915
384–154	4,370,005
436–120	4,370,146
420–582	4,370,163
420–503	4,370,164
378–120	4,370,555

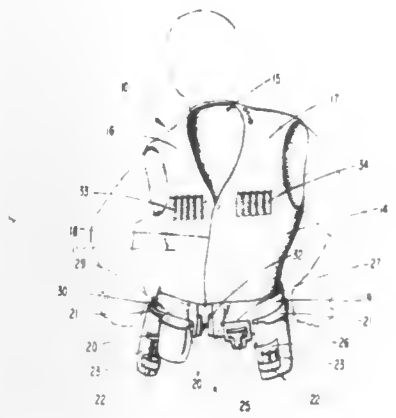
PATENTS

GRANTED JANUARY 25, 1983

GENERAL AND MECHANICAL

4,369,526
UTILITY VEST

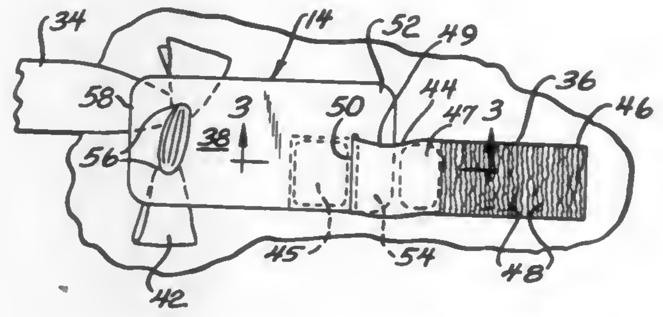
Earnest H. Clutts, 3906 Venus Cir., Huntsville, Ala. 35810
Filed Oct. 8, 1980, Ser. No. 194,927
Int. Cl.^{3} A41D *13/04*
U.S. Cl. 2—51 **6 Claims**



1. A utility vest comprising
a sleeveless vest made of a lightweight, strong material having an integral body comprising a back panel, two side panels, two front panels and a shoulder panel connecting each front panel to the back panel;
front panel closing means connected to the front panels for closing and opening the front panels of the vest;
a utility apron made of a cloth material;
utility apron connecting means located beneath the front panel closing means and attached to and around the lower periphery of the vest panels and to the top of the utility apron for detachably connecting the utility apron to and around the lower periphery of the vest panels;
a plurality of pouches adapted to hold tools and supplies of various kinds;
pouch connecting means attached to the utility apron at desired locations and to the top of each pouch for detachably and interchangeably connecting each pouch to the utility apron at the desired locations; and
buckle means located beneath the utility apron connecting means and attached to each end of the utility apron for detachably securing the ends of the utility apron.

4,369,527
DISPOSABLE GARMENT WITH CARD LOOP

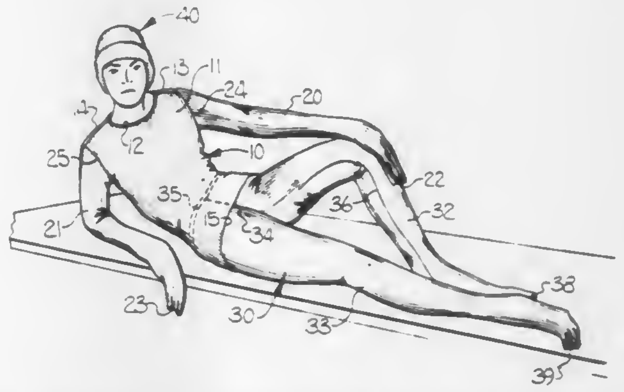
Amy S. Paul, Wayland, Mass., assignor to The Kendall Company, Boston, Mass.
Filed Apr. 22, 1982, Ser. No. 370,875
Int. Cl.^{3} A41B *13/10*
U.S. Cl. 2—51 **8 Claims**



1. A disposable garment, comprising:
a gown having a pair of sleeves, a front, and a pair of side margins defining an open back for the gown;
a first belt having one end secured to the gown and the other end being free;
a second belt having one end secured to the gown at spaced locations defining a loop between said locations; and
a transfer card having a slit, and means for releasably attaching the other end of the first belt to the card, with the card slit being received on the second belt loop to hold the card in place on the gown.

4,369,528
GARMENT FOR MAINTAINING BODY TEMPERATURE AND METHOD OF MAKING SAME

H. Ryland Vest, Raleigh, and Walter S. Boone, Valdese, both of N.C., assignors to Alba-Waldensian, Inc., Valdese, N.C.
Filed Feb. 23, 1981, Ser. No. 236,667
Int. Cl.^{3} A41D *13/00*
U.S. Cl. 2—69 **14 Claims**



8. A garment for maintaining the body temperature of a patient, particularly during the time the patient is undergoing surgery in an operating room where the ambient temperature is usually maintained below the normal body temperature, said garment being constructed of cut segments of stretchable circular knit seamless fabric so that said garment has sufficient stretchability to fit a wide range of body sizes, said garment including an upper body portion comprising an upper trunk covering portion including an upper neck opening and having a free open lower end, said trunk covering portion being of a sufficient length to cover and extend below the waist of the wearer, a pair of sleeve openings, seams extending from opposite sides of said neck opening and to said sleeve openings, and a pair of sleeves having upper ends seamed to said sleeve openings of said trunk covering portion and having free open lower ends, said sleeves being of a sufficient length to cover and extend beyond the hands of the wearer, said upper trunk covering portion and said sleeves comprising cut fabric segments including opposing ends, one end of which will ravel and the other end of which will not ravel, said cut fabric segments being oriented so that said free open lower ends of said upper trunk covering portion and said sleeves are formed of the nonraveling raw cut ends of said cut segments.

14. A method of forming a garment for maintaining the body temperature of a patient, particularly during the time the patient is undergoing surgery in an operating room where the ambient temperature is usually maintained below the normal body temperature, said garment including an upper body portion comprising an upper trunk covering portion of sufficient length to cover and extend below the waist and having a free open lower end, and a pair of sleeves having upper ends seamed to said upper trunk covering portion and being of sufficient length to cover and extend beyond the hands of the wearer with free open lower ends, said method comprising the steps of transversely cutting a first stretchable circular knit seamless fabric to form a cut body segment of a sufficient

length to form said upper trunk covering portion, transversely cutting a second stretchable circular knit seamless fabric to form a pair of cut sleeve segments of a sufficient length to form said sleeves, said cut body segment and said cut sleeve segments each including one raw end which will ravel and an opposing nonraveling raw end, orienting said cut body segment so that said nonraveling end forms said free open lower end of said trunk covering portion, orienting said cut sleeve segments so that said nonraveling ends form said free open lower ends of said sleeves, and seaming said raveling ends of said cut sleeve segments to said cut body segment adjacent said raveling end thereof.

4,369,529

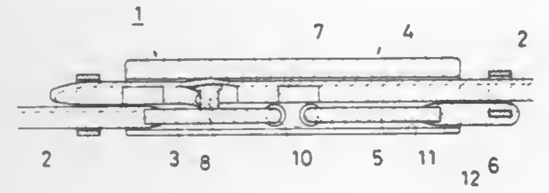
BELT WITH BUCKLE

Eiji Yahata, 1506-4, Oaza-chizu, Chizucho, Yazugun, Tottori, Japan

Filed Dec. 1, 1980, Ser. No. 211,570

Int. Cl.³ A41F *3/00*

U.S. Cl. 2—322 **4 Claims**



1. A belt with a buckle, which comprises a belt having a plurality of holes provided at proper intervals on its back side at its free end, each of said holes having an opening only on the back side of said belt, a base having a projection provided on its upper surface, to the left-hand end of which the other end of said belt is secured, a cover having a pair of sides bent downward, said cover being rotatably mounted on said base in such a manner that the head of said projection may abut against the back side of said cover and that the junction of said belt and said base may be positioned at the left-hand end on the backside of said cover, and an adjusting belt having the same thickness as that of said belt, said adjusting belt being rotatably attached to said sides of said cover opposite to said base.

4,369,530

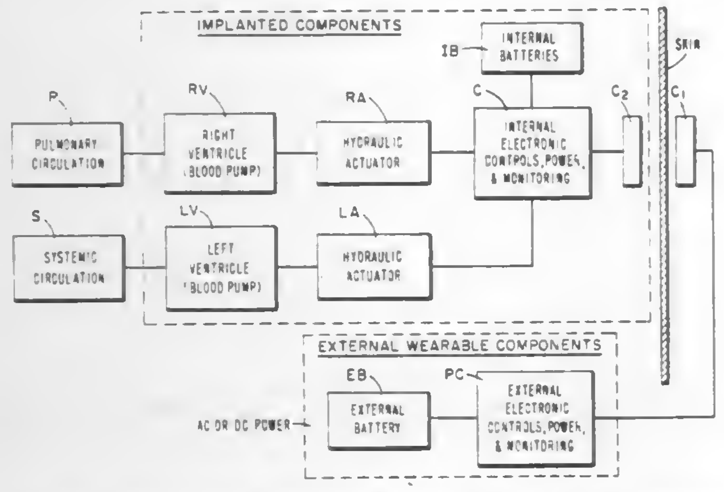
HYDRAULICALLY ACTUATED CARDIAC PROSTHESIS AND METHOD OF ACTUATION

Thomas C. Robinson, and Sotiris Kitrilakis, both of Berkeley, Calif., assignors to Foxcroft Associates, San Antonio, Tex.

Filed May 19, 1981, Ser. No. 265,100

Int. Cl.³ A61F *1/24;* A61M *1/03*

U.S. Cl. 3—1.7 **56 Claims**


IMPLANTED COMPONENTS
IB
INTERNAL BATTERIES
SKIN
P
PULMONARY CIRCULATION
RV
RIGHT VENTRICLE (BLOOD PUMP)
RA
HYDRAULIC ACTUATOR
C
INTERNAL ELECTRONIC CONTROLS, POWER, & MONITORING
C2
C1
S
SYSTEMIC CIRCULATION
LV
LEFT VENTRICLE (BLOOD PUMP)
LA
HYDRAULIC ACTUATOR
EXTERNAL WEARABLE COMPONENTS
EB
PC
EXTERNAL BATTERY
EXTERNAL ELECTRONIC CONTROLS, POWER, & MONITORING
AC OR DC POWER

1. An implantable hydraulic actuation system for supplying motive power to a blood pumping chamber having a flexible portion comprising:

an actuation fluid reservoir;

actuation fluid pumping means in fluid communication with said reservoir for providing intermittent pulses of actuation fluid;

an actuation chamber having an actuation fluid inlet path in fluid communication with said pumping means, and a separate actuation fluid outlet path in fluid communication with said reservoir; said actuation chamber being adapted to cause displacement of the flexible portion of said blood pumping chamber in response to changes in volume of actuation fluid in said actuation chamber; and

valve means associated with said actuation chamber adapted to close or open said actuation fluid outlet path primarily in response to forces which vary as a function of actuation fluid flow through said actuation fluid inlet path.

4,369,531

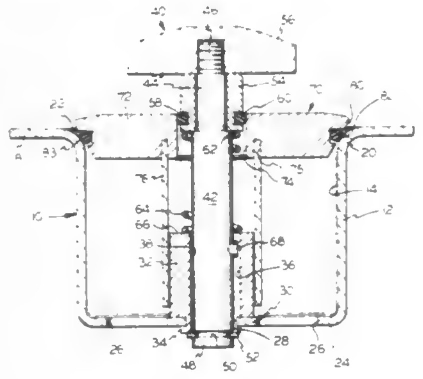
LIQUID FLOW CONTROL STRAINER

Richard G. Swanson, West Hartford, Conn., assignor to Macristy Industries, Inc., New Britain, Conn.

Filed May 4, 1981, Ser. No. 260,085

Int. Cl.³ A47K *1/14*

U.S. Cl. 4—295 **16 Claims**



1. A strainer for controlling liquid flow through the drain of a tub or similar vessel, comprising: a body defining an axial passageway and having a seat portion providing a sealing surface adjacent the inlet end thereof; a plunger having a stem extending into said passageway and mounted on said body for axial reciprocation between an extended outward position and a depressed inward position; means for biasing said plunger to said outward position; stopper means slideably mounted on said plunger stem and having a stopper aligned over said seat portion of said body for seating thereon to close said strainer, said stopper having an outer peripheral edge portion adapted to sealingly engage said sealing surface of said body when said stopper is in said seated position, said stopper means having an axial bore with a surface portion dimensioned and configured to conform to the corresponding portion of said plunger stem; and a resiliently deformable sealing ring fixedly mounted on and extending about said plunger stem portion at a position spaced inwardly from the outer end of said stem; whereby said strainer may be opened from its closed condition by depressing and then releasing said plunger, inward movement of said plunger causing said sealing ring to be displaced to a position of binding engagement on said bore surface portion, and subsequent outward movement under the force of said biasing means causing said plunger to lift said stopper means and to displace said stopper from said seat portion of said body.

4,369,532

SINK ASSEMBLY

Stanley L. Houchins, Rte. #2, Box 302, and Thomas B. Jackson, Rte. #2, Box 3A, both of Max Meadows, Va. 24360

Filed Nov. 26, 1980, Ser. No. 210,718

Int. Cl.³ A47K *1/04*

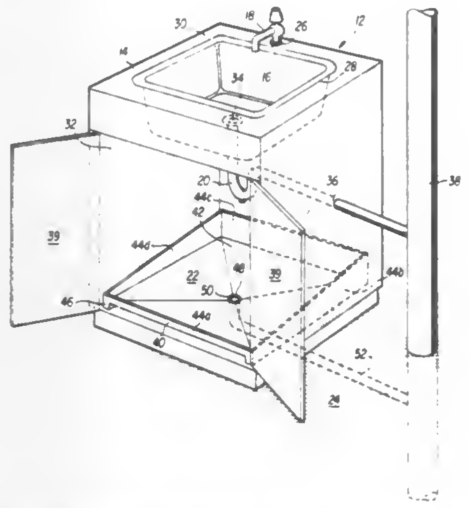
U.S. Cl. 4—619 **13 Claims**

1. A sink assembly for use in a house comprising:

a cabinet for supporting a sink from a floor, said cabinet having an upper surface with a sink opening therein and including enclosing cabinet walls and a lower-most floor below said opening for defining an enclosed space below said sink opening, said cabinet walls including a cabinet door on a front side thereof for allowing access into said enclosed space below said sink opening;

a sink bowl supported by the upper surface of said cabinet, said sink bowl extending into said sink opening, said sink bowl having a drain opening located in said enclosed space;

a water-supply means located above said upper surface for supplying water into said sink bowl;



a first drain pipe connected to said sink bowl at said drain opening for exhausting water from said sink outside of said house;

a separate liquid-impervious cabinet liner supported by the lower-most floor of said cabinet within said enclosed space below said sink bowl for catching water dripping from said sink bowl and said first drain pipe, said separate liquid-impervious cabinet liner having a liner floor means adjacent said cabinet floor for forming a drain pan supported to be above the lowermost floor of the cabinet for receiving goods to be stored thereon.

4,369,533

BED FOR SICK PERSON

Hermann Gisiger, Nischenweg 3, CH-3013 Bern, Switzerland

PCT No. PCT/CH80/00042, § 371 Date Nov. 25, 1980, § 102(e) Date Nov. 25, 1980, PCT Pub. No. WO80/02109, PCT Pub. Date Oct. 16, 1980

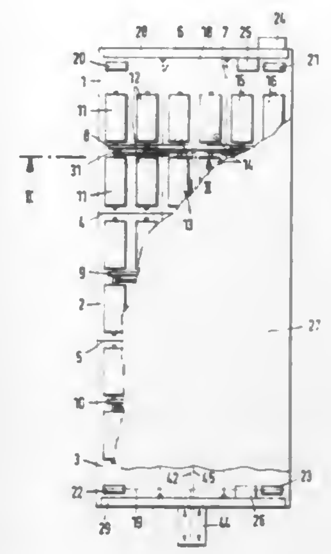
PCT Filed Apr. 3, 1980, Ser. No. 224,558

Claims priority, application Switzerland, Apr. 3, 1979, 3063/79

Int. Cl.³ A61G *7/00*

U.S. Cl. 5—61 **12 Claims**

1. Bed for sick and disabled persons comprising a plurality of juxtaposed rollers, and endless belt (17) surrounding said plurality of rollers and being movable to and fro in the transverse direction of the bed and a mattress (27) mounted on said endless belt (17), said plurality of rollers including first rollers (11,16), arranged along the longitudinal borders of the bed and second rollers (12,15) arranged between said first rollers (11,16) and the center line of the bed, at least one of said second rollers (12,15) being liftable on both sides of the bed to such a height that the sick person can be turned from the supine position into one side position and said first rollers (11,16) being shiftable in such a way that they (11,16) are shifted perforce, during the lifting and lowering of such second rollers (12, 15), in the direction toward the center line of the bed and back toward the outside.



4,369,534

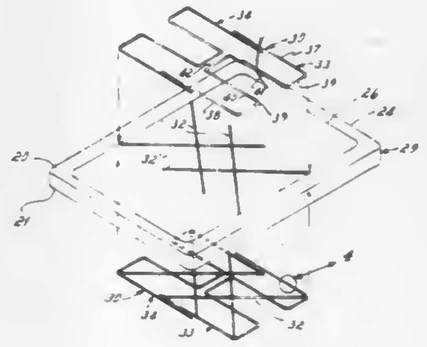
CENTER REINFORCED MATTRESS

Ronald E. Wright, P.O. Box 245, Jasper, Mo. 64755

Filed Oct. 20, 1980, Ser. No. 199,052

Int. Cl.³ A47C *23/04, 23/05*

U.S. Cl. 5—475 **3 Claims**



1. An improved mattress comprising,

a coil spring matrix including a plurality of coil springs arranged in a matrix configuration having a plurality of transverse coil spring rows and a plurality of longitudinal coil spring columns, said transverse rows and longitudinal columns of coil springs having end loops interconnected by helical lacing wires, said end loops being located in and defining the top and bottom surfaces of said spring matrix,

two grid assemblies sized to overlie a central one-third surface area of said coil spring matrix, one of said grid assemblies being located on the top surface of said mattress, and the other of said grid assemblies being located on the bottom surface of said mattress, each of said grid assemblies comprising,

a pair of grid elements, each of said grid elements comprising a wire having a pair of opposed legs interconnected by a web section, the opposed legs of one grid element partially overlapping the opposed legs of the other grid element, said web section of each of said grid elements having a generally U-shaped offset formed therein, said offset having a pair of leg sections interconnected by a web section such that each of said grid elements is generally M-shaped in configuration, said legs of said grid elements extending parallel to said transverse rows of coil springs, and

diagonally extending non-metallic straps located between the top surface of said coil spring matrix and said grid elements, said straps extending diagonally relative to said transverse rows and longitudinal columns of coil springs and being connected at their ends to said grid elements, and

connector means connecting each of said grid elements to said end loops of said coil springs of said coil spring matrix.

4,369,535

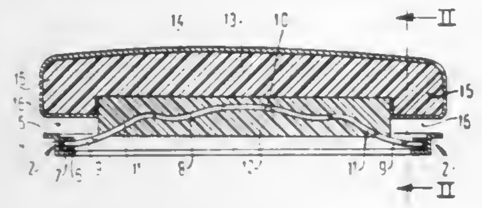
MATTRESS ASSEMBLY

Pierre J. Ekkerink, Maastricht, Netherlands, assignor to Vredestein N.V., Velp, Netherlands

Filed Dec. 19, 1980, Ser. No. 218,034

Int. Cl.³ A47C *27/15, 27/16*

U.S. Cl. 5—481 **13 Claims**



1. A mattress assembly comprising an elongated framework, a plurality of parallel laths fastened therein in the direction of width and a mattress consisting at least partly of foam material, characterized in that the central parts of the laths are located in the and surrounded by the foam material and in that the two end parts emerge from the mattress.

4,369,536

APPARATUS FOR USE IN HEAT SETTING A LASTED SHOE UPPER

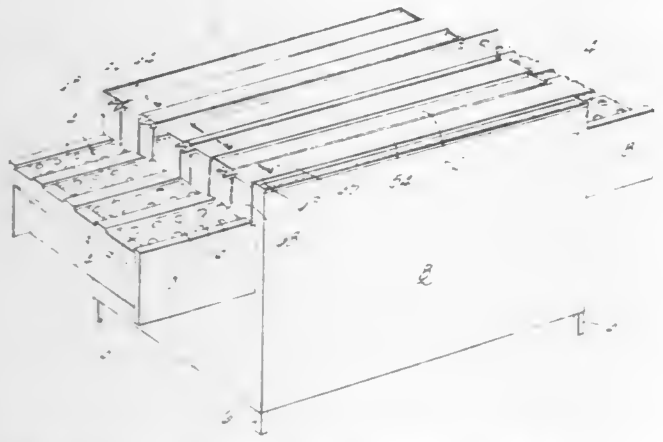
Raymond Hanson, Rearsby, and Anthony M. White, Oadby, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Dec. 8, 1980, Ser. No. 214,232

Claims priority, application United Kingdom, Feb. 19, 1980, 8005558

Int. Cl.³ A43D *11/00*

U.S. Cl. 12—1 A **8 Claims**



1. A machine for use in heat setting a lasted shoe upper, said machine comprising:

a plurality of substantially enclosed channels having air inlets arranged along both sides thereof;

conveying means operable to convey lasted shoe uppers longitudinally along the channels;

air blowing means and air moistening means operable to blow moistenable air through the inlets into the channels so that a lasted shoe upper passing through a channel is subjected to air blown thereonto from both sides of the channel; and

heating means operable to heat the air blown by the air blowing means to an elevated temperature.

4,369,537

METHOD OF FORMING A FOOTWEAR COMPONENT

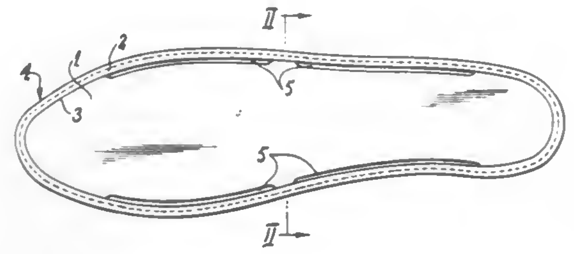
Noel H. Midgley, 361 Dandenong Rd., Armadale, Victoria 3143, Australia

Filed May 12, 1980, Ser. No. 149,289

Claims priority, application Australia, May 9, 1979, PD8727; Dec. 19, 1979, PE1777

Int. Cl.³ A43D *9/00;* **A43B** *13/39, 3/12, 13/08*

U.S. Cl. 12—142 RS **11 Claims**



1. A method of forming a footwear component comprising simultaneously forming by cutting from a single piece of sheet material a rand and an innersole, said rand extending at least part-way around said innersole, said rand and innersole being substantially co-planar whereby said rand forms a substantially planar lateral extension of said innersole, wherein the boundary between said rand and said innersole is formed by a score line extending at least part-way through the material whereby said rand may be integral with, separate or separable from said innersole in the components so formed, and wherein said boundary between said rand and said innersole formed by said score line comprises a series of partial bridges and perforations wherein the bridges are formed by cutting part-way through the material along said boundary whereby said innersole is separable from said rand.

4,369,538

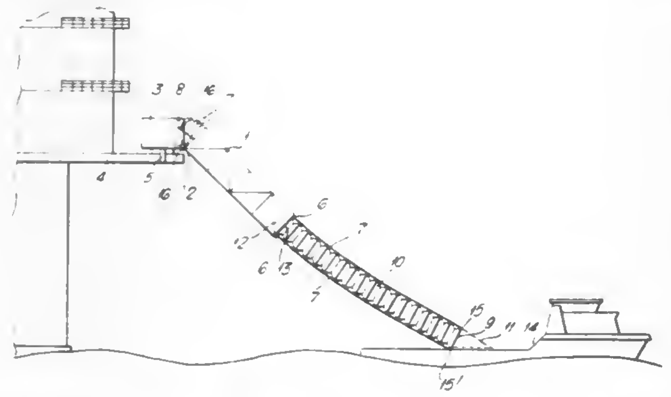
APPARATUS FOR TRANSFER OF PERSONS AND GOODS BETWEEN STRUCTURES OFFSHORE

Arne Smedal, Torjusholmen, 4818 Pusnes, Norway

Filed Mar. 3, 1980, Ser. No. 126,575

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—69.5 **5 Claims**



1. Apparatus for offshore transfer of persons and goods, preferably between a supply vessel and a fixed platform or a moored drilling/production platform or vessel, comprising a rigid gangway of which one end is pivotably suspended on a vertical and a horizontal axis arranged on a vessel, the second end of the rigid gangway having a transition to one end of a longitudinally extensible and retractable bellowshaped gangway where changes of the total length is approximately equalized between the various bellows elements, the second end of the bellowshaped gangway being attachable to a vessel, and the bellowshaped gangway when it is in use being supported by at least one elongated flexible supporting member maintained in tension within predetermined limits, said member being fixed at one end and having an opposite end connected to a tension adjusting winch controlled by signals from a sensor which is responsive to the tension in said member.

4,369,539

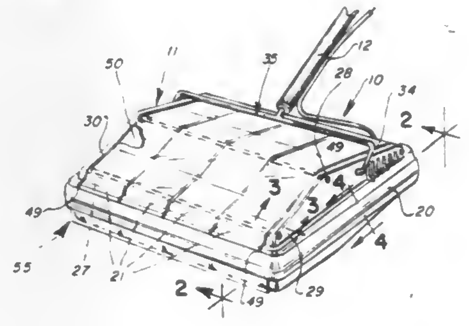
POWERED FLOOR SWEEPER

Erwin E. Nordeen, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 7, 1981, Ser. No. 223,099

Int. Cl.³ A47L *11/18*

U.S. Cl. 15—49 C **17 Claims**



1. In a floor sweeping appliance having a rotatable sweeper brush, the improvement comprising:

a wheeled housing for housing the brush, said housing comprising a plurality of similar generally tubular, hollow wall segments having internal wall portions cooperatively defining separated brush mounting and dirt-collecting spaces, and tie rod means extending fully through the segments lengthwise thereof for retaining the segments in assembled side-by-side relationship.

4,369,540

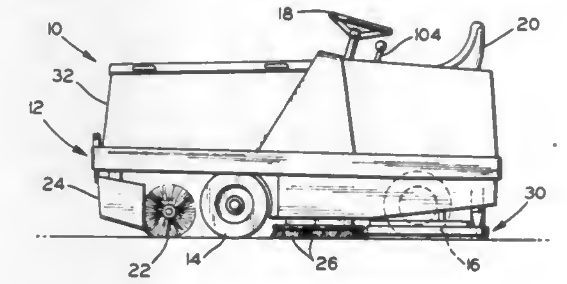
FLOOR CLEANING MACHINE

Jack L. Burgoon, and David J. Karpanty, both of Toledo, Ohio, assignors to The Scott & Fetzer Company, Lakewood, Ohio

Filed Mar. 27, 1981, Ser. No. 248,298

Int. Cl.³ A47L *11/24, 11/30*

U.S. Cl. 15—49 R **26 Claims**



1. A floor cleaning machine comprising a frame, a rotary broom having a shaft, a first arm having an end portion rotatably carrying a first end of said shaft, a second arm having an end portion rotatably carrying a second end of said shaft, a drive motor carried by said second arm and connected to said shaft near said second end to turn said shaft and said broom, a hopper removably mounted on said arms, a lift shaft having end portions affixed to the other end portions of said arms, means rotatably supporting said lift shaft from said frame, and means for turning said lift shaft to rotate said arms and to raise and lower said broom and said hopper.

4,369,541

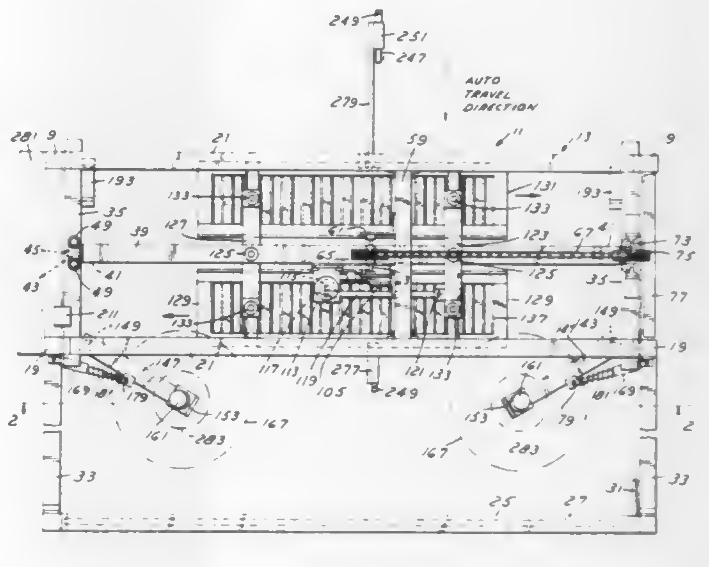
RETRACTABLE WAX, BUFF AND POLISH APPARATUS FOR CARS

James A. Belanger, Northville; Robert J. Wentworth, Ann Arbor; Douglas J. Calvin, Livonia, and Graham J. Astley, Novi, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Apr. 6, 1981, Ser. No. 251,596

Int. Cl.³ B60S *3/04*

U.S. Cl. 15—97 B **26 Claims**



1. A retractable wax, buff and polish apparatus for a car comprising an upright open framework upon a floor through which a car is adapted to pass;

said framework including a pair of spaced upright side supports at its ends and top cross beams spanning said supports;

upright guide means upon said side supports;

a transverse carriage extending between said side supports at its ends movably mounted upon said guide means for vertical adjustments thereon;

an upright mount plate secured to said carriage intermediate its ends;

a counterweight guidably positioned within one pair of said side supports;

a sprocket chain including spaced idler sprockets journalled upon said framework, said chain at one end secured to said counterweight and at its other end secured to said mount plate;

a pair of laterally spaced horizontal mount arms pivotally mounted intermediate their ends upon said carriage transversely thereof;

a pair of horizontal parallel spaced coplanar curtain racks below said carriage centrally thereof;

support rods on and depending from end portions of said mount arms respectively and pivotally connected to said racks centrally thereof adjacent their opposite ends respectively;

a plurality of elongated parallel spaced flexible fabric panels at their upper ends secured to and depending from said racks;

rotative power means on said mount plate eccentrically connected to one of said mount arms for transversely oscillating said racks relative to said carriage;

said panels defining a segmented curtain adapted on lowering of said carriage for buffing and polishing engagement with the car;

and reciprocal power means upon said framework below said counterweight and connected thereto for selectively raising and lowering said counterweight repsectively for correspondingly lowering and raising said curtain.

4,369,542
MIRROR APPARATUS HAVING WIPER MEANS

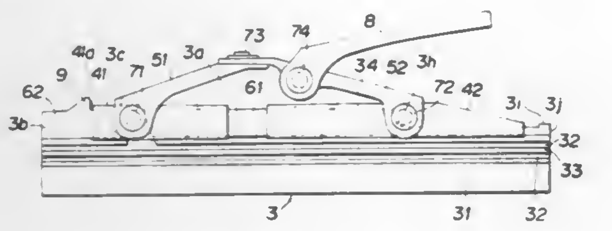
Takeo Tamura; Takayoshi Kido, both of Yokohama, and Tatsuo Nakamura, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Ichikoh Industries Limited, Tokyo, both of, Japan

Filed Aug. 10, 1981, Ser. No. 291,504

Claims priority, application Japan, Jan. 11, 1980, 55-1087[U]; Aug. 14, 1980, 55-114448[U]

Int. Cl.³ B60S *1/38*

U.S. Cl. 15—250 B **4 Claims**



1. A mirror apparatus having a wiper means intended to wipe a surface of a mirror supported on a mirror holder, wherein said wiper means comprises:

a rubber ribbon for wiping the mirror surface;

a pair of holders for supporting said rubber ribbon; and

a pair of stays for supporting said pair of holders, respectively, to cause them to exert wiping operations,

said rubber ribbon being provided with a curvable intermediate portion and a curvable end portion which are respectively resulted from arrangement of said rubber ribbon being supported by said pair of holders excluding an intermediate portion and at least one end portion of said rubber ribbon,

said pair of stays being coupled to each other by a shaft member at a site just above said intermediate portion of said rubber ribbon to provide for pivotable actions of these stays,

that particular holder which is located on said curvable end portion side of said rubber ribbon being coupled to its mating stay at a site located within a groove formed at a corresponding site of said rubber ribbon.

4,369,543
REMOTE-CONTROL RADIO VACUUM CLEANER

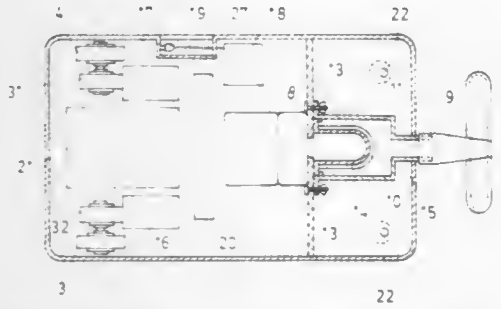
Jen Chen, and Hong Chen, both of 36, La. 290, Kuan-Fu South Rd., Taipei, Taiwan

Filed Apr. 13, 1981, Ser. No. 253,496

Claims priority, application Taiwan, Apr. 14, 1980, 6921719

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—319 **8 Claims**



1. A remote-control radio vacuum cleaning system comprising:

(a) remote radio signal transmitting means capable of generating a carrier matched with multivibrator generated frequencies as control signals, and having plural push-button control means for controlling transmission and generation of said carrier matched frequencies; and

(b) vacuum cleaning means comprising, a vacuum cleaning device having drive means comprising a pair of d.c. motor sets for propulsing said vacuum cleaning device, rechargeable d.c. power supply means for supplying power to said pair of d.c. motor sets, electronic control means comprising four sets of relay channels, one of said four sets of relay channels controlling on and off operation of said vacuum cleaning device, and the others of the said four sets of relay channels associated with said drive means for controlling propulsive movement of said vacuum cleaning device, and radio signal receiving means associated with said four sets of relay channels for receiving and demodulating control signals of the multivibrator frequencies from said remote radio signal transmitting means for controlling the closing and opening of respective ones of said four sets of relay channels, whereby cleaning operation can be performed under control of said remote radio signal transmitting means.

4,369,544
MACHINE TO WASH SURFACES

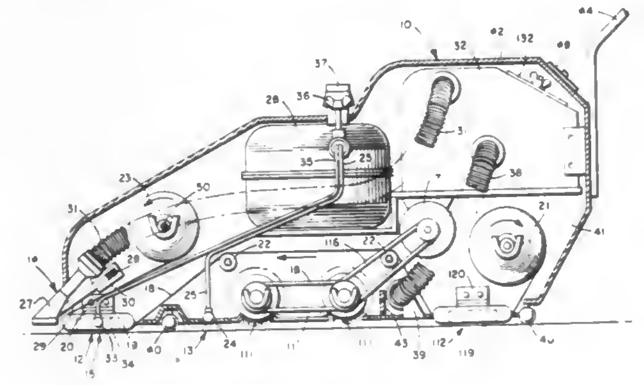
Sebastiano Parisi, Rome, Italy, assignor to Novum in Elettrodomestica Srl, Trieste, Italy

Filed Jan. 2, 1981, Ser. No. 222,260

Claims priority, application Italy, Jan. 14, 1980, 83305 A/80

Int. Cl.³ A47L *11/282, 11/29, 11/30*

U.S. Cl. 15—320 **14 Claims**



1. A machine to wash surfaces to be walked on having a front and back which comprises suction means in the front directed toward the surface to pick up loose materials from the surface,

absorbing means positioned behind said suction means contactable with said surface to wipe up material loosened from the surface, humidifier means cooperating with said absorbing means to loosen material from the surface,

sprayer means positioned behind said absorbing means directed toward said surface to moisten and loosen material from the surface, and

brush means positioned behind said sprayer means and contactable with said surface to loosen material from the surface.

4,369,545
DOUBLE ACTION DOOR CLOSURE MECHANISM

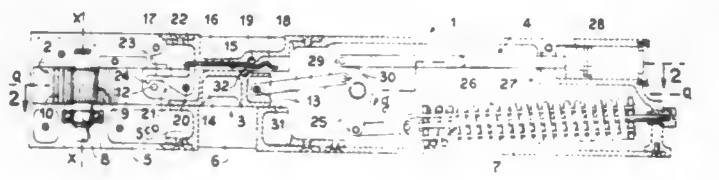
Georges Maublanc, St. Germain du Plain, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Nov. 10, 1980, Ser. No. 205,496

Claims priority, application France, Nov. 15, 1979, 79 28192

Int. Cl.³ E05F *3/00*

U.S. Cl. 16—64 **9 Claims**



1. In a double-action door-closure mechanism including a spindle whose rotation is linked to the opening movement of a door and to a door restoration assembly which includes a rotatable lever means coupled to a return spring and to a shock absorber, the improvement comprising:

a rack and pinion assembly comprising a pinion formed on the spindle, and two oppositely facing parallel racks permanently meshing with said pinion so that the racks slide in opposite directions for opposite opening directions, respectively, of the door; and

selective linkage means, coupled to said rotatable lever means, for selectively engaging only a different one of said racks with said rotatable lever means during movement of the door in the opposite directions, respectively, and for disengaging the same at the end of a door-closing movement, so that only one rack engages said rotatable lever means for each opening and closing movement, and so that neither rack engages said lever means in the closed position of the door.

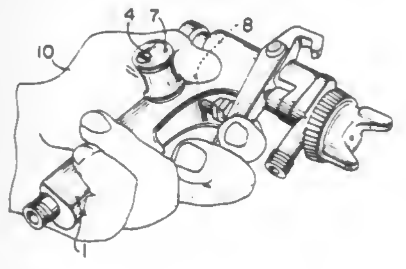
4,369,546
HAND HELD TOOLS AND UTENSILS STABILIZER BAR, ADJUSTABLE AND NON-ADJUSTABLE

Stanley V. Zientara, 5243 S. Normandy Ave., Chicago, Ill. 60638

Filed Dec. 28, 1979, Ser. No. 108,271

Int. Cl.³ A47B *95/02*

U.S. Cl. 16—110 R **15 Claims**



1. In a handle for a hand tool, to be grasped by one hand of a user, the improvement comprising:

a stabilizer bar secured to said handle and extending laterally from a side wall thereof for engagement by the thumb of the hand of the user, said stabilizing bar having a base portion adjacent the handle, a body portion having a length substantially equal to the width of the user's thumb at the knuckle thereof to receive and mate with the user's thumb to provide a stable grip for the tool, and an end surface remote from the handle.

4,369,547
ANIMAL SKINNING MACHINE

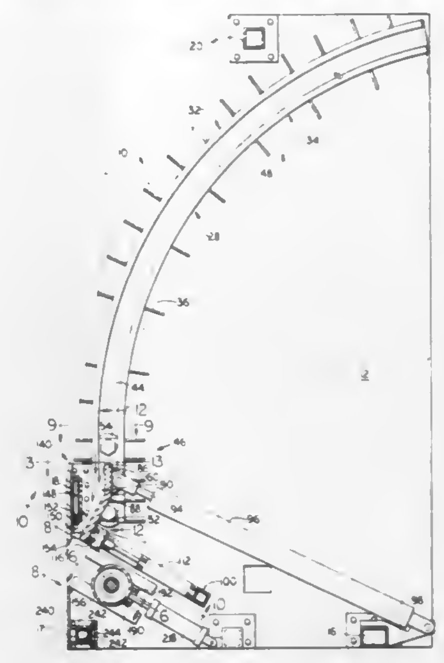
Donald E. Robertson, P.O. Box 341; Randall E. Robertson, 8700 Sarah La.; Darrin D. Robertson, and Brooks A. Robertson, both of P.O. Box 341, all of Liberty, Mo. 64068

Filed Aug. 12, 1981, Ser. No. 292,255

Int. Cl.³ A22B *5/16*

U.S. Cl. 17—21 **4 Claims**

1. An animal skinning machine which comprises upper and lower base frame members, means for supporting the base frame members in spaced relation, upper and lower clamp guide trackways mounted on the upper and lower base frame members, clamp carriages mounted on the clamp guide trackways for moving therealong between entry ends and output ends of the clamp guide trackways, a clamp body carried by the clamp carriages, first clamp means mounted on the clamp body, a clamp frame carried by the clamp body, clamp actuator means carried by the clamp frame, a second clamp means carried by the clamp actuator means and movable by the clamp actuator means between a released position spaced from the first clamp means and an engaged position for cooperating with the first clamp means for engaging a leading edge portion of an animal skin, an elongated knife member mounted between the base frame members adjacent the entry ends of the clamp guide trackways for separating the skin from a carcass of the animal as the clamp carriages and the clamp body move along the clamp guide trackways from the entry ends toward the output ends, upper and lower roller guide trackways mounted on the upper and lower base frame members adjacent the knife member, roller carriages mounted on the roller guide trackways for moving therealong, and a roller rotatably mounted on the roller carriages and movable therewith between a retracted position at which the roller is spaced from the knife member and an advanced position adjacent the knife member and spaced therefrom sufficiently to permit the skin to pass between the knife member and the roller.



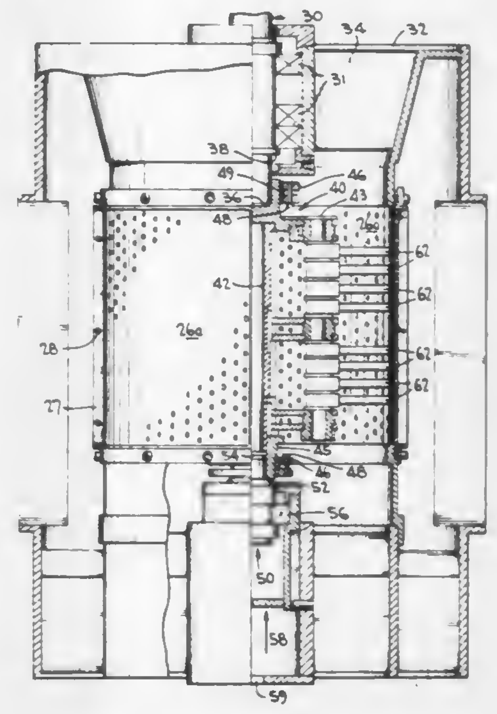
4,369,548
DEPITHER

Frank J. Malinak, 40 Columbus Dr., South, Hamilton, Ohio 45013

Filed Jul. 23, 1980, Ser. No. 171,956

Int. Cl.³ D01B *1/30;* **B02C** *13/18*

U.S. Cl. 19—26 **13 Claims**



1. A fiber conditioner for depithing fibrous megitable material comprising:

(a) an upright casing supported by a frame and having a top opening for receiving said material and a bottom portion adjacent to said frame;

(b) a screen comprising a plurality of independently removeable sections detachably connected to one another, said screen positioned within and spaced from said casing;

(c) at least one hammer assembly rotatably mounted within said screen for beating and separating material received through said top opening, said at least one assembly comprising a plurality of hammers for beating material against said screen;

(d) a multi-piece shaft for rotating said at least one assembly, said shaft comprising an upper stub shaft assembly mounted adjacent to said top opening, a distinct lower stub shaft assembly mounted adjacent to said enclosure bottom, and a distinct rotor shaft assembly intermediate said two stub shaft assemblies, said rotor shaft assembly being connected to said at least one hammer assembly, whereby each of said assemblies removed from said conditioner by removing at least one of said screen sections and removing said assembly through the space created by the removal of said at least one screen section;

(e) means for rotatably driving said upper stub shaft assembly; and

(f) means for connecting the upper stub shaft assembly and the rotor shaft assembly in secure abutting relationship such that rotation of said upper stub shaft assembly will rotate said rotor shaft assembly and said at least one hammer assembly, said connecting means comprising a first ringfeder for securely clamping one end of said rotor shaft assembly about one end of said upper stub shaft assembly, a second ringfeder for securely clamping a second end of said rotor shaft assembly about one end of said lower stub shaft assembly, and means for forcing said lower stub shaft upwardly into abutment with said rotor shaft assembly and said rotor assembly into abutment with said upper stub shaft assembly.

4,369,549

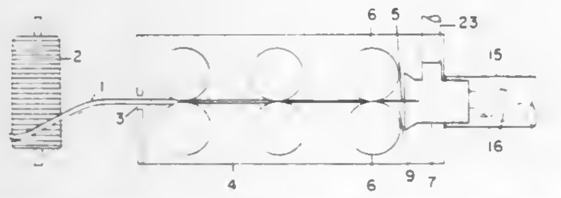
BLENDING METHOD USING A ROVING DISINTEGRATOR-DISPENSER

John H. Sanders, Newport News, Va., assignor to Badische Corporation, Williamsburg, Va.

Filed May 16, 1980, Ser. No. 150,517

Int. Cl.^{3} D01G *13/00;* D01H *5/22*

U.S. Cl. 19—145.7 **12 Claims**



1. A method of blending a primary staple with a secondary staple, comprising the steps of:

(a) drafting a textile roving in a drafting frame;

(b) exerting a continuous pulling force on a drawn roving with an air flow amplifier which pulls continuously upon the drawn roving in both disintegrate the drawn roving into the secondary staple and to transport the secondary staple to a blending machine;

(c) blending the secondary staple with the primary staple on a blending machine already working the primary staple.

4,369,550

METHOD OF LEVELLING OUT VARIATIONS OF A FIBRE SLIVER AND APPARATUS FOR IMPLEMENTING THE METHOD

Hanspeter Meile, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

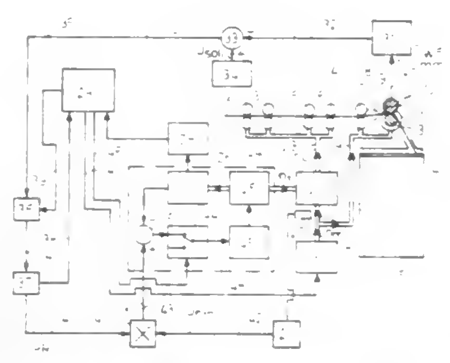
Filed Mar. 16, 1981, Ser. No. 244,050

Claims priority, application Switzerland, Mar. 28, 1980, 2459/80

Int. Cl.^{3} D01H *5/32, 5/38*

U.S. Cl. 19—240 **16 Claims**

1. Method of levelling out variations in linear density of a fibre sliver drafted from a plurality of fibre slivers in a drafting arrangement of an autolevelling drawframe, the linear density of which sliver is measured at the exit of the drafting arrangement and is compared with a preset value, a signal proportional to deviations in linear density being transmitted to a control device, which in turn transmits the adaptation commands using an adaptation value to adaptation means, which adjust the sliver input speed using a differential gear arrangement driven by the main motor and by a control motor, until the preset value is reached, characterized in that the adaptation value transmitted to the adaptation means (48) is formed by the multiplication product of a voltage proportional to the rotational speed of the motor and of a voltage determined by the deviation in linear density.



4,369,551

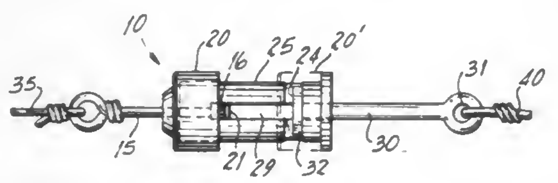
QUICK RELEASE DEVICE FOR FISHING LEADER LINES

Juan Heredia, 2711 SW. 93rd Ct., Miami, Fla. 33165

Filed May 11, 1981, Ser. No. 262,229

Int. Cl.^{3} A44B *17/00*

U.S. Cl. 24—201 A **3 Claims**



1. A quick release device for attaching and detaching a fishing line to a leader line, comprising:

(a) a swivel body member of substantially tubular shape provided with a partially longitudinal through slot having an axial aperture extending longitudinally from the inner end of said slot to the end of said swivel body member and the other end being provided with a built-in recess and a radial slot relatively adjacent to said recess;

(b) a swivel pin partially housed within said aperture and tied to said fishing line;

(c) a T-shape pin having an eye termination on one end that is connected to said leader line and a T-shape termination on the other end that is removably positioned inside said radial slot, and

(d) means for locking said T-shape pin in place.

4,369,552

LOCKING ASSEMBLY

Saul Gottlieb, 159 W. 53rd St., Apt. 23C, New York, N.Y. 10019

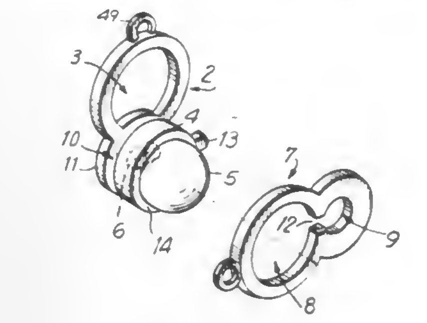
Filed Mar. 26, 1981, Ser. No. 247,723

Int. Cl.^{3} A44B *19/00*

U.S. Cl. 24—230 R **18 Claims**

1. A clasp device including: a female member defined by an annular body; a male member, said male member being adapted to be received into said female member; said female member being of unitary construction having a first opening and a second opening; said first and second openings being spaced apart from one another and having a passage way formed

therebetween; said male member comprises an assembly having a base member and a projecting member, said projecting member being affixed to and spaced apart from said base member through a positioning means disposed therebetween in a space formed between said base member and said projecting member, said positioning means being slidable through said passage way of said female member, after said male member is inserted into said first opening of said female member and said female member is positioned between said base member and said projecting member, said male member being slidable into locking engagement with said female member by urging said positioning means through said passageway into said second female opening, whereby locking of said male and female members takes place by rotational movement of said male member to urge said positioning means to assume an orientation with respect to said second female opening, sufficient to inhibit slidable movement of said male member with respect to said female member, through said passage way.



4,369,553

BUCKLE

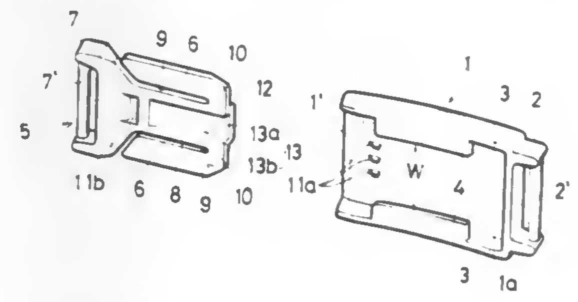
Takuo Yuda, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Apr. 13, 1981, Ser. No. 254,552

Claims priority, application Japan, Apr. 18, 1980, 55-51813[U]

Int. Cl.^{3} A44B *19/00*

U.S. Cl. 24—230 R **4 Claims**



1. A buckle comprising a receptacle member adapted to be fastened to one end of a belt and an insertion member adapted to be fastened to the other end of said belt and brought into separable union with said receptacle member; said receptacle member including a first portion of an engaging means formed on the rear surface of said receptacle member and a socket comprising two vertically opposed side walls formed on the rear surface of said receptacle member and guide wings extended from said side walls toward each other over the rear surface of said receptacle member; said insertion member including a central piece of a width smaller than the distance between said two guide wings and provided on the front surface thereof with another portion of an engaging means and a pair of guide pieces of a thickness small enough for passage between the rear surface of said receptacle member and said guide wings, connected to the leading end of said central piece and separated by intervening slits from the upper and lower ends of said central piece; said insertion member being inserted into said receptacle member through one end of said socket thereby bringing said receptacle member and said insertion member into inextricable engagement by the engagement of said engaging means portions.

4,369,554

METHOD FOR THE MANUFACTURE OF NON-WOVEN TEXTILE FABRICS

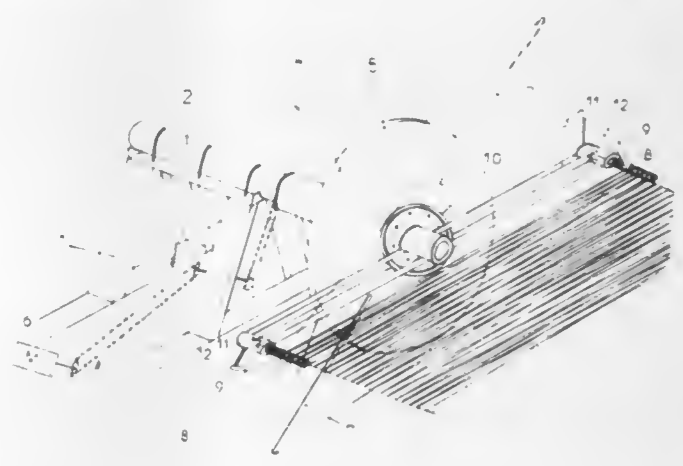
Jean Curinier, Le Cheylard, and Charles Vandermarliere, Pont-de-Cherruy, both of France, assignors to Les Fils d'Auguste Chomarat & Cie, Paris, France

Division of Ser. No. 898,577, Apr. 21, 1978, Pat. No. 4,242,779. This application Dec. 24, 1980, Ser. No. 219,596

Claims priority, application France, Apr. 27, 1977, 77 13991; Jul. 13, 1977, 77 22475

Int. Cl.^{3} D04H *3/04*

U.S. Cl. 28—101 **2 Claims**



1. A method of forming a web of weft yarns, which may be incorporated in a non-woven fabric, wherein the weft yarns are strictly parallel to one another and run transversely relative to the length of the web, said method comprising the steps of:

(a) providing a pair of laterally spaced, substantially parallel helical yarn guide members, each comprising a plurality of individual helices imbricated with one another, wherein the number of helices is equal to the number of weft yarns being fed;

(b) rotating each of said helical yarn guide members about its own axis;

(c) rotating an even number of at least four yarn feed elements about an axis parallel to and between said two laterally spaced helical yarn guide members, wherein the yarn feed elements are rotated at a speed which is one-half that of the individual helices;

(d) feeding a weft yarn through each of said yarn feed elements whereby the weft yarns are wrapped around said laterally spaced helical yarn guide members;

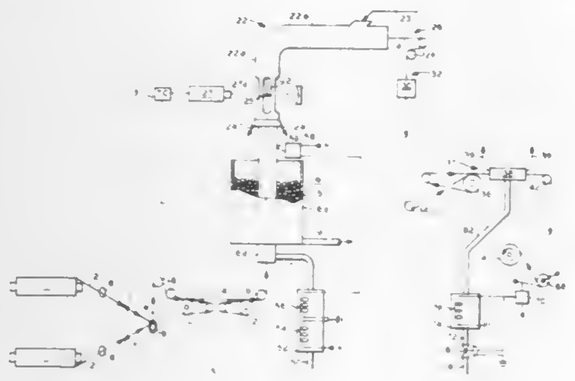
(e) providing a yarn guide ramp adjacent each helical yarn guide member, each yarn guide ramp including two fixed guides tangential to the helical yarn guide member, one upstream inclined away from the direction of the advance of the web, and one downstream inclined toward the direction of the advance of the web, and at a distance from one another equal to the pitch of the helical yarn guide member minus the thickness of the material forming the helical yarn guide member; and

(f) guiding said weft yarns on said yarn guide ramps so that yarns from a first half of the yarn feed elements, said first half including feed elements adjacent one to the other and having their outlet ends positioned upstream of the upstream fixed guides, are laid down in a common vertical plane and guided into spaces between turns of the helices by the upstream fixed guide for each helical yarn guide member and yarns from a second half of the yarn feed elements, said second half including feed elements adjacent one to the other and having their outlet ends positioned downstream of the downstream fixed guides, are laid down in a common plane and guided into spaces between turns of the helices by the downstream fixed guide for each helical yarn guide member.

4,369,555
YARN PROCESSING APPARATUS

Ronnie D. Nikkel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 955,047, Oct. 26, 1978, Pat. No. 4,235,000, which is a division of Ser. No. 822,177, Aug. 5, 1977, Pat. No. 4,135,511, which is a continuation of Ser. No. 692,713, Jun. 4, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,584
Int. Cl.³ D02G *1/12, 1/16, 1/20*
U.S. Cl. 28—221 **13 Claims**

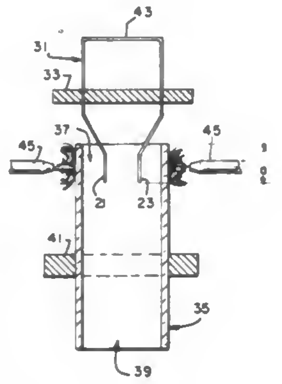


1. Apparatus comprising:
yarn crimping means for heating a yarn with a heated fluid and producing a yarn plug;
fluid heating means, comprising first and second heating elements, for selectively heating a fluid to either a first temperature by operation of said first heating element or to a second temperature by simultaneous operation of said first and second heating elements, said second temperature being the temperature used for crimping the yarn and said first temperature being the temperature used for stringing up the apparatus, said second temperature being a higher temperature than said first temperature;
means connecting the fluid heating means to the yarn crimping means for passing of the heated fluid from the fluid heating means to the yarn crimping means;
control means positioned downstream of said crimping means for regulating the temperature of the heated fluid heated by the heating means to the first temperature or the second temperature in response to whether the yarn plug is detected at a predetermined point by the control means so that the heated fluid is heated to the first temperature if the yarn plug is not detected at said point and the heated fluid is heated to the second temperature if the yarn plug is detected at said point.

11. Apparatus comprising:
yarn heating means for heating a yarn with a heated fluid;
fluid heating means for heating a fluid to a temperature;
valve means for shutting off the flow of fluid to said fluid heating means;
means connecting the fluid heating means to the yarn heating means for passage of the heated fluid from the fluid heating means to the yarn heating means;
constant tension winding means positioned to wind the yarn heated in said yarn heating means; and
fluid control means for maintaining said valve means open to permit the passage of fluid to the fluid heating means and heating the fluid to said temperature in response to the winding of yarn so that heating fluid is passed to the yarn heating means only if yarn is being wound, said fluid control means comprising means for actuating said valve means to shut off the flow of fluid to said fluid heating means when yarn is not being wound.

4,369,556
METHOD OF MAKING A PHOTOFLASH LAMP HAVING NEW LEAD SEAL STRUCTURE

Andre C. Bouchard, Peabody; Harold H. Hall, Jr., Marblehead, and Frederick A. Loughridge, Ipswich, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jul. 21, 1980, Ser. No. 170,509
Int. Cl.³ H01J *9/32*
U.S. Cl. 29—25.15 **17 Claims**

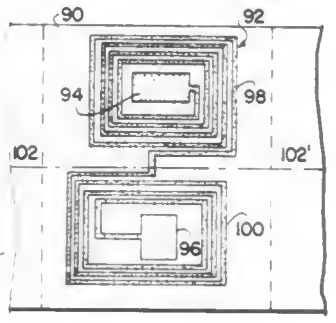


1. A method of making an electrically-activated photoflash lamp, said method comprising:
securedly retaining an elongated glass tubing member having first and second opposing open end portions such that said first open end portion is located vertically above said second open end portion;
positioning a pair of spaced-apart electrical conductors within said first open end portion of said glass tubing member such that said conductors project downwardly in a vertical direction a predetermined distance within said first open end portion;
heating preselected external areas of said first open end portion of said glass tubing member having said conductors projecting therein to a preestablished temperature to cause said first open end portion of said glass tubing member to deform and surround said conductors projecting downwardly therein and provide a seal therewith, said deformation resulting in the formation of a groove along the internal surface of said sealed first end portion such that said conductors are located within and along the deepest portion of said groove, the glass material of said heated first end not covering the terminations of said conductors, said terminations being substantially flush with the internal surface of said glass material;
applying a quantity of primer material through said opposing second open end portion of said glass tubing member such that said primer material will occupy said groove and contact said terminations of said conductors so as to bridge said terminations;
positioning a predetermined quantity of filamentary combustible material within said glass tubing member through said second open end portion; and thereafter
tipping off said second open end portion of said glass tubing member to provide a seal thereat and thereby provide a hermetically sealed envelope, said method not including utilization of a glass bead or similar member in contact with the portions of said electrical conductors which project downwardly within said first open end portion of said glass tubing member during said heating and deformation thereof.

4,369,557
PROCESS FOR FABRICATING RESONANT TAG CIRCUIT CONSTRUCTIONS

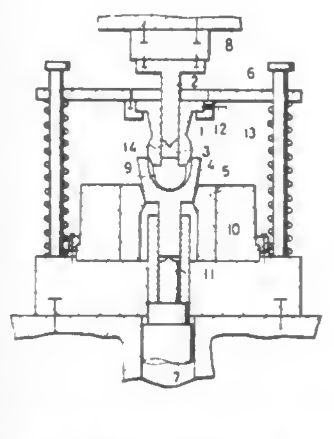
Jan Vandebult, 32 Averill St., Topsfield, Mass. 01983
Filed Aug. 6, 1980, Ser. No. 176,061
Int. Cl.³ H01G *4/26;* **H01F** *41/04*
U.S. Cl. 29—25.42 **19 Claims**

1. A method for fabricating a plurality of individual planar resonant tags, each tag having at least one self-contained operative tuned circuit with integrally formed circuit elements including an inductor and a capacitor, the method comprising the steps of:
providing an insulative substrate web of material of predetermined thickness and dielectric characteristics and having first and second faces and a conductive surface on said first face;
printing on said conductive surface with an etchant-resistive material a repetitive circuit pattern defining an inductor and first and second conductive areas electrically connected to respective ends of said inductor;
etching said conductive surface to remove unprinted portions of said conductive surface thereby to provide a repetitive circuit pattern conforming to said printed circuit pattern;
folding said web and said repetitive circuit pattern such that a double layer of the insulative substrate web lies between the folded printed circuit pattern and such that the first and second conductive areas are at least in part mutually aligned to form respective plates of said capacitor, with said double layer of the insulative substrate web therebetween forming a dielectric of the capacitor;
sealing the double layer of the insulative substrate at least in a region over which the first and second conductive areas are mutually aligned, thereby fixing the capacitance of the capacitor; and
separating said web between adjacent said repetitive circuit patterns to provide individual planar resonant tags.



4,369,558
OUTER RACE WORKING METHOD AND APPARATUS THEREFOR

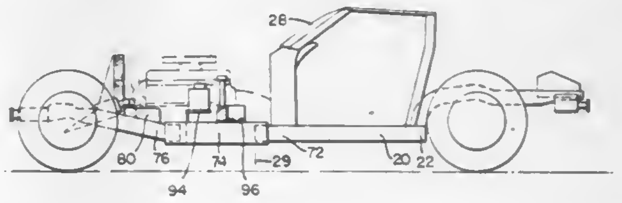
Yasuo Iwata, and Hisao Shirai, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Dec. 1, 1980, Ser. No. 211,848
Claims priority, application Japan, Sep. 10, 1980, 55-125692
Int. Cl.³ B21K *1/04*
U.S. Cl. 29—148.4 R **5 Claims**



1. An outer race working method comprising the steps of:
ironing the inner surface of the groove, which is formed in the roughly shaped outer race workpiece of a Birfield type constant-velocity ball joint such that it is made axially straight at its portion above the joint center, while being made suitably smaller than a working mandrel, and such that it is made to have an axial curvature at its portion below the joint center, so that said groove may become a ball rolling groove, by inserting a hexagonal-pillar guide punch and a split mandrel composed of six segments into said groove;
forming both a center hole corresponding to the center of said ball rolling groove and a face for providing a reference for the axial center of the groove center at a later half of the groove ironing step; and
ironing said roughly shaped workpiece by means of an ironing die, whereby the ball rolling groove is plastically worked all over its surface from its upper portion to its lower portion.

4,369,559
METHOD OF CONVERTING A SPORTS CAR TO A REPRODUCTION OF A VINTAGE MOTOR CAR

Charles W. Phillips, 1519 SW. 6 Ter., Boca Raton, Fla. 33432
Filed Aug. 6, 1980, Ser. No. 175,640
Int. Cl.³ B23P *17/00;* **B60R** *27/00*
U.S. Cl. 29—401.1 **15 Claims**



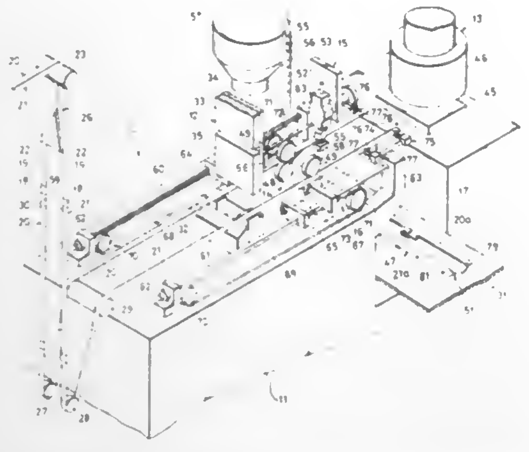
1. A method of converting a production car to to provide a lengthened engine compartment and a lengthened wheelbase to form a vintage car which comprises the steps of:
removing the engine compartment hood, front and rear fenders, and the front and rear body sections from the frame of said production car;
severing the frame transversely at the engine compartment and longitudinally separating the severed rear and front sections of the frame thereat;
inserting two longitudinal frame segments between the separated sections of the frame at the engine compartment and joining each of said inserted longitudinal frame segments at each end to the adjoining sections of the frame;
fastening a cross member in the engine compartment so as to extend from one inserted frame segment to the other inserted frame segment;
mounting the engine on said cross member between said at least two longitudinal frame segments; and
attaching an elongated engine compartment top hood, rear and front fenders, windshield cowl, grille, vintage style wheels and a vintage style outer body to the frame of said production car.

4,369,560
METHOD OF MANUFACTURING SLIDE FASTENERS

Minoru Ueda, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Division of Ser. No. 105,899, Dec. 21, 1979, Pat. No. 4,300,283. This application Jul. 31, 1981, Ser. No. 288,801
Claims priority, application Japan, Dec. 29, 1978, 53-162847
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—408 **2 Claims**

1. A method of manufacturing slide fasteners, comprising the steps of:
(a) feeding a pair of continuous slide fastener stringers having longitudinally spaced, element-free portions, along a longitudinal path;
(b) during said feeding, threading one of said slide fastener stringers through a slider fixedly held in said path;
(c) stopping said feeding;
(d) severing the slide fastener stringers transversely across

one of said element-free portions which is behind said slider; and



(e) forming a separable end stop including a pin and a receptive box respectively on the slide fastener stringers at their leading ends in advance of said slider.

4,369,561
PROCESS FOR ALIGNING DIFFUSION MASKS WITH RESPECT TO ISOLATING WALLS OF COFFERS IN INTEGRATED CIRCUITS

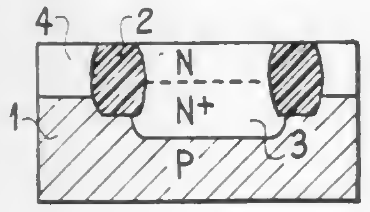
Eugene Tonnel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 4, 1980, Ser. No. 212,974

Claims priority, application France, Dec. 21, 1979, 79 31483

Int. Cl.^{3} H01L *21/22*

U.S. Cl. 29—576 W **7 Claims**



1. A process for aligning diffusion masks with respect to isolating walls of coffers in integrated circuits, these coffers being formed in a layer having a first type of conductivity and a thickness less than 3 microns obtained by epitaxial growth on a substrate having a second type of conductivity in which there are implanted, in zones corresponding to the bottom of the coffers, doping impurities of the first type of conductivity, these coffers being limited laterally by isolating walls; the improvement comprising implanting doping impurities of the second type of conductivity in the substrate along the contour of the isolating walls and then after formation of the epitaxial layer in causing these impurities to diffuse towards and as far as the surface of the epitaxial layer; and further comprising the step which consists in making the upper surface flush zone of the insulating walls visible at the surface of the epitaxial layer in order to facilitate alignment.

4,369,562
PROCESS FOR THE MANUFACTURE OF A PROFILE FOR METAL JOINERY HAVING A THERMAL GAP

Christian Lyonnet, Fontenay sous Bois, France, assignor to Societe de vente de L'Aluminium Pechniney, Paris, France

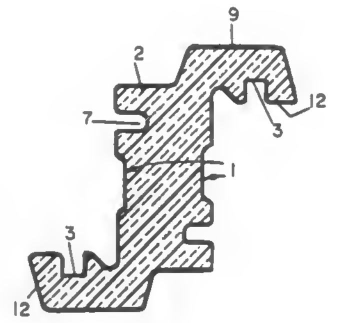
Filed Apr. 6, 1978, Ser. No. 894,028

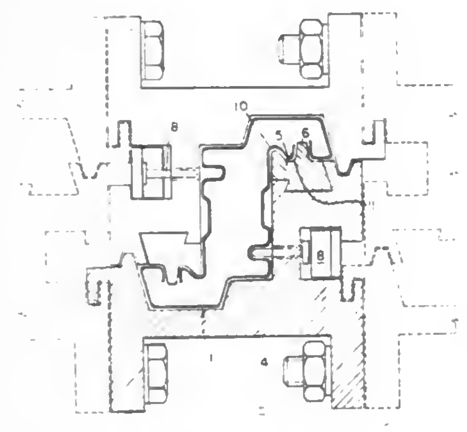
Claims priority, application France, May 11, 1977, 77 15182

Int. Cl.^{3} B22D *11/126*

U.S. Cl. 29—527.1 **9 Claims**

1. A process for the manufacture of composite profiles of large dimension having a thermal gap, said profiles being composed of two thin metal profiles combined with a foamed plastic core, comprising providing a two piece mold, each piece of said mold having an internal face of generally L-shape in cross section, applying the two thin and flexible metal profiles of generally L-shape in cross section each onto a respective one of said internal faces, each L-shaped profile having a long branch and a short branch with each branch terminating in a free end, said profile being applied with the face end of a long branch of one profile adjacent the face end of a short branch of the other profile and with the free ends of the two profiles being separated by elastomer jointing integral with the shell, pressing the jointings between the corresponding edges of the profile, said jointing having an end base with a groove, and then injecting a foaming material between the two metal profiles at one end of said mold in which the long branch of the L is turned towards the exterior in a direction opposite to the small branch of the L, corresponding to an N-shaped section forming a rib followed by a groove which engages in the end groove in the jointing.





4,369,563
AUTOMATED MACHINE TOOL INSTALLATION WITH STORAGE MEANS

David T. N. Williamson, London, England, assignor to Molins Limited, London, England and John Conventry Smith, Jr., Arlington, Va.

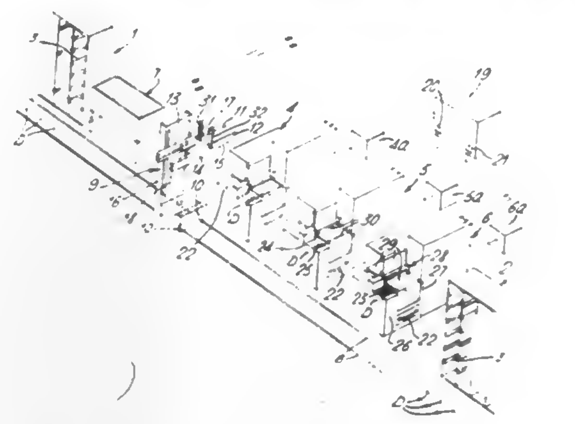
Continuation-in-part of Ser. No. 695,817, Dec. 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 578,318, Sep. 9, 1966, abandoned, and Ser. No. 636,993, May 8, 1967, abandoned. This application Oct. 29, 1970, Ser. No. 85,289

Claims priority, application United Kingdom, Sep. 13, 1965, 38937/65; May 12, 1966, 21223/66; Mar. 15, 1967, 12196/67; May 5, 1967, 21109/67

Int. Cl.^{3} B23Q *7/00*

U.S. Cl. 29—568 **184 Claims**

1. A machine tool installation for machining workpieces of different types requiring different machining operations and comprising a plurality of complementary numerically-controlled machine tools located adjacent a predetermined path, a store located adjacent said path and having a plurality of storage means for storing workpieces, transport means for transporting workpieces between the store and the machine tools along said path from which there is access to any of said storage means in the store and to any of the machine tools and operable to convey selected workpieces independently of other workpieces, and a central programmed control means and means connecting said central programmed control means with each of said machine tools and with said transport means to control movement of each of said workpieces by said transport means between a predetermined selection of the storage means in the store and a predetermined selection of the machine tools, and to control predetermined selected machining operations performed by each of the selection of machine tools on the workpiece, the pattern of movement of said workpieces along said path and the machining operations performed by said selection of machine tools on said workpieces being different for each of said types of workpieces.



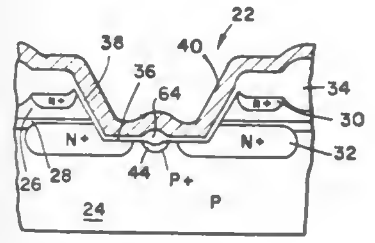
4,369,564
VMOS MEMORY CELL AND METHOD FOR MAKING SAME

William R. Hiltpold, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Division of Ser. No. 89,612, Oct. 29, 1979, Pat. No. 4,271,418. This application Dec. 22, 1980, Ser. No. 219,296

Int. Cl.^{3} H01L *21/20*

U.S. Cl. 29—571 **5 Claims**



1. A method for making a semiconductor memory device having a plurality of memory cells, each memory cell being capable of storing one bit, said method comprising the steps of:

- providing a substrate of semiconductor material of a first conductivity type;
- forming buried source regions of a second conductivity type opposite to said first conductivity type in said substrate;
- forming an epitaxial layer over said substrate and said source region;
- forming bit lines of said second conductivity type in said epitaxial layer;
- forming an insulating layer over said epitaxial layer and said bit lines;
- forming elongated V-groove recesses between pairs of bit lines and between pairs of buried source regions;
- forming a transverse channel stopping region between the ends of each said recess;
- forming a dielectric layer within each said recess; and
- forming conductive word lines extending perpendicular to said bit lines and into said recesses to form transistor gate means, wherein each said recess provides two distinct memory cells.

4,369,565
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING ETCH AND REFILL TO FORM ISOLATION REGIONS

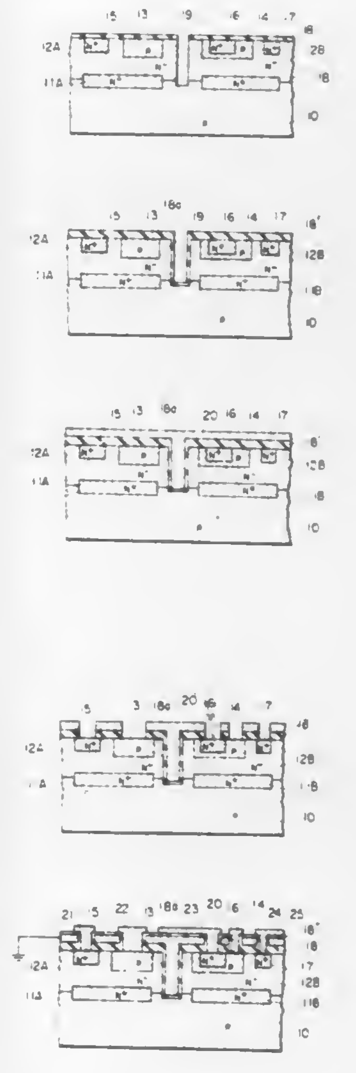
Akira Muramatsu, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 179,983

Claims priority, application Japan, Aug. 31, 1979, 54-110423

Int. Cl.^{3} H01L *21/283, 21/76*

U.S. Cl. 29—580 **12 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

- forming a semiconductor epitaxial layer on a semiconductor substrate;
- forming a groove extending from a main surface of said epitaxial layer into said semiconductor substrate through said epitaxial layer thereby to divide said epitaxial layer into at least two island parts;
- depositing a semiconductor layer on a first insulating film which is formed on the surface of said groove and on the surfaces of said island parts, thereby to fill said groove;
- selectively removing at least one portion of said semiconductor layer overlying each of said island parts thereby to form a plurality of holes in said semiconductor layer, corresponding to circuit elements formed in each of said island parts, and to provide a remaining semiconductor layer that continuously extends over said groove and said at least two island parts except for said plurality of holes;
- forming a second insulating film on the remaining surface of said semiconductor layer; and
- forming electrode layers for circuit elements formed in each of said island parts so as to extend over a surface of said second insulating film into the corresponding hole of said semiconductor layer.

4,369,566

PROCESS OF PRODUCING FRONT COMMUTATORS FOR THE ROTORS OF DIRECT CURRENT MACHINES

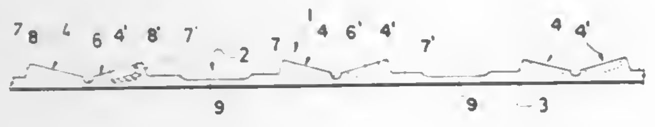
Karel Skrdlant, and Lubor Milota, both of Prague, Czechoslovakia, assignors to PIKAZ, inzenyrsky podnik, Prague, Czechoslovakia

Filed Apr. 30, 1981, Ser. No. 259,144

Claims priority, application Czechoslovakia, Apr. 30, 1980, 3055-80

Int. Cl.^{3} H01R *43/08*

U.S. Cl. 29—597 **6 Claims**



1. A process of producing front commutators for the rotors of direct current machines, comprising forming a linear shaped copper strip, said shaped strip incorporating a plurality of serially connected pairs of segment halves, the halves of each pair being mirror images of each other, the shaped strip having a generally flat lower surface and an upper part which is shaped into said plurality of connected pairs of segment halves, the segment halves of each pair thereof having plane parts which include an obtuse angle between them, a cut-out portion in the upper part of the shaped strip between the two segment halves of each pair thereof, successive pairs of segment halves being connected by a thin section of the shaped strip, the parts of the strip between each successive pair of segment halves and outwardly from the slots at the ends of the segment halves in each pair thereof connected by a strap having plateaus of reduced height; after the formation of said shaped strip bending it alternately in an upward direction in the locations of the cut-outs for bending and in a downward direction in the locations of the connecting straps to form an intermediate product in which both plane upper surfaces of the segment halves of each pair thereof are pressed together and the plateaus of reduced height form a groove for receiving a rotor winding, and further bending the resulting intermediate product into a circle so that there is formed a commutator ring with a plurality of confronting pairs of segment halves disposed in radial directions; between the bent, initially upper shaped parts of the shaped strip there being formed slots for the reception of the rotor winding between confronting segment halves; and between the bent, initially lower linear parts of the shaped strip there being formed air gaps between the consecutive segments of the commutator.

4,369,567

METHOD OF MANUFACTURING A PERMANENT MAGNET WHICH IS TO BE ARRANGED IN AN AIR GAP OF A TRANSFORMER CORE

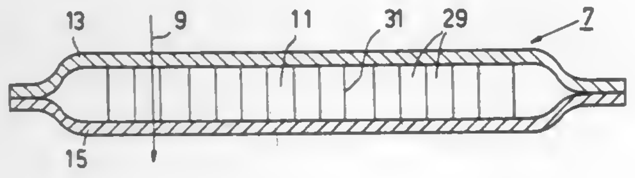
Gerrit Bosch; Arnoldus W. Kok, and Harmen Giethoorn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,842

Claims priority, application Netherlands, Sep. 25, 1979, 7907115

Int. Cl.^{3} B65B *61/24;* **B26F** *3/00;* **H01F** *7/00, 7/02*

U.S. Cl. 29—607 **5 Claims**



1. A method of manufacturing a plate-shaped permanent magnet which is to be arranged in an air gap of a core for a transformer or choke coil and which includes a number of permanent magnetic portions which are made of a metal alloy having a high magnetic remanence and which are magnetized perpendicularly to the plane of the plate, the method comprising the steps of fixing and attaching a plate of the alloy between two insulating foils to form a sandwich assembly in which the magnetic plate is attached to the two insulating foils, arranging this assembly on a flat backing and rolling a cylinder whose outer surface is provided with grooves over said assembly in two mutually perpendicular directions to break the plate into a number of permanent magnetic portions.

4,369,568

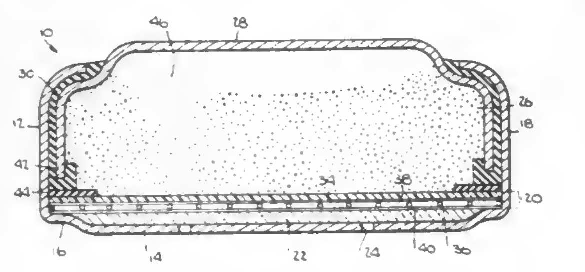
METHOD FOR MANUFACTURING CELLS UTILIZING CENTRIFUGING TECHNIQUES

Robert B. Dopp, Madison, Wis., assignor to Ray-O-Vac Corporation, Madison, Wis.

Filed Feb. 9, 1981, Ser. No. 232,431

Int. Cl.^{3} H01M *4/04, 4/38*

U.S. Cl. 29—623.2 **5 Claims**



1. An improved method of manufacturing a metal-air button cell, the method including:

(a) providing a cathode can,

(b) placing a cathode assembly and a separator into the cathode can to form a cathode portion,

(c) providing an anode cover,

(d) placing a grommet upon the anode cover,

(e) placing anode material into the anode cover to form an anode portion,

(f) fitting the anode portion and fitting it into the cathod portion,

(g) crimping the cathode cap upon the grommet to form a leak-resistant cell, wherein the improvement comprises centrifuging the cell to form a void between the anode material and the anode cover.

4,369,569

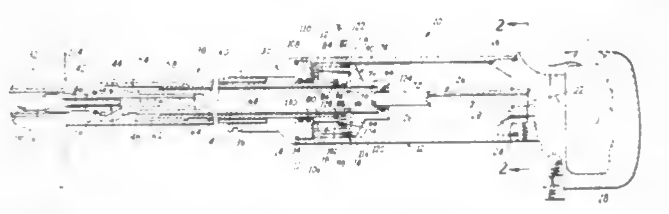
TUBE-PULLING APPARATUS

Robert S. Armstrong, Jr., and Robert S. Armstrong, both of Manasquan, N.J., assignors to Armstrong & Sons, Manasquan, N.J.

Filed Jun. 6, 1981, Ser. No. 269,906

Int. Cl.^{3} B23P *19/04, 15/26*

U.S. Cl. 29—726 **6 Claims**



1. Tube-pulling apparatus, comprising a cylinder, having a front end and a rear end; a stationary feed pipe extending into said cylinder from said rear end thereof, said feed pipe including supplying means for supplying fluid to said cylinder; a first piston slideably mounted on said feed pipe for reciprocating movement in said cylinder, said first piston including an interior cavity; a second piston mounted for reciprocating movement within said cavity of said first piston, said second piston cooperating with said first piston to form a chamber therebetween; expandable gripping means for releasably gripping an inner wall of a tube to be pulled from a tube sheet when said gripping means is expanded, said gripping means being fixedly connected to said second piston, whereby said gripping means is moveable conjointly with said second piston; expanding means for expanding said gripping means, said expanding means being fixedly connected to said first piston, whereby said expanding means is moveable conjointly with said first piston; first providing means for providing fluid communication between said feed pipe and said chamber, whereby fluid supplied to said chamber move said first piston towards said rear end of said cylinder while urging said second piston towards said front end of said cylinder; second providing means for providing fluid communication between said chamber and a front portion of said cylinder after said first piston has moved rearward a predetermined distance relative to said second piston, whereby fluid supplied to said front portion of said cylinder from said chamber causes the conjoint rearward movement of said first and second pistons, said second providing means including first inhibiting means for inhibiting fluid to flow from said chamber to said front portion of said cylinder until said first piston has moved rearward said predetermined distance; third providing means for providing fluid communication between said front portion of said cylinder and said chamber during the forward movement of said first piston in said cylinder, whereby fluid in said front portion of said cylinder is exhausted therefrom through said third providing means during the forward movement of said first piston in said cylinder, said third providing means including second inhibiting means for inhibiting fluid to flow from said chamber to said front portion of said cylinder at least until said first piston has moved rearward said predetermined distance, said second inhibiting means cooperating with said first inhibiting means to prevent any rearward movement of said second piston and hence said gripping means until said first piston and hence said expanding means move rearward said predetermined distance, thereby preventing rearward movement of said second piston and hence said gripping means in situations where said gripping means fully engages a tube to be pulled before said first piston and hence said expanding means move rearward said predetermined distance, whereby tube-pulling operations are automatically aborted in such situations to prevent damage to a tube sheet from which a tube is to be pulled.

4,369,570

APPARATUS FOR INSERTING INSULATING DISC IN CELL CONTAINER

James A. Madden, and Kenneth C. LeDuc, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 923,261, Jul. 10, 1978, abandoned. This application Feb. 6, 1980, Ser. No. 119,013

Int. Cl.^{3} B23P *19/04*

U.S. Cl. 29—730 **2 Claims**

1. An apparatus for aligning and inserting insulator discs, having apertures therein, into the open ends of electro-chemical cells each of which has an upstanding terminal, said apparatus comprising:

a plunger having a central bore large enough to encircle the upstanding terminals of said cells;

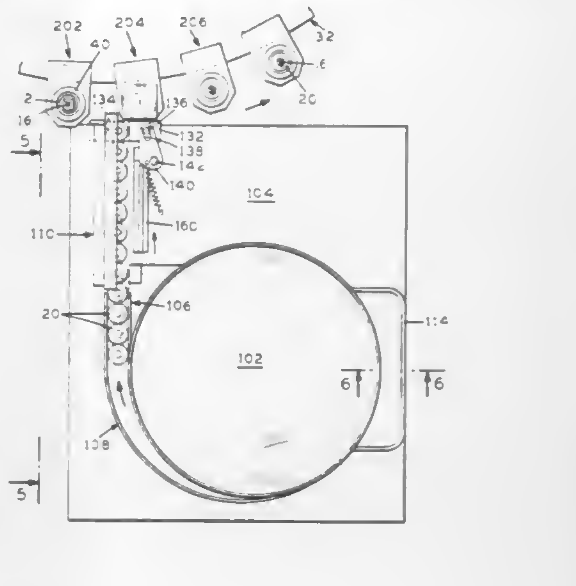
means for positioning one of said cells with its upstanding terminal in alignment with the axis of said plunger bore;

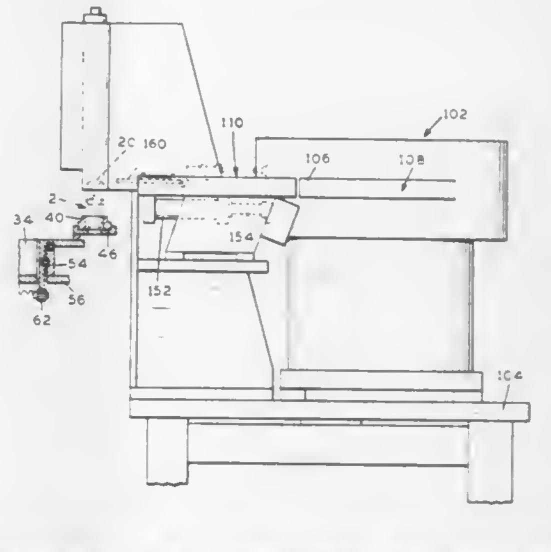
means for advancing said plunger axially along a path of travel toward said positioned cell;

means for releasably holding one of said discs with the aperture thereof in registration with said plunger bore, said holding means being engageable by said plunger upon advancement thereof for causing said holding means to release said one disc, said plunger upon further advancement thereof pressing said one disc into the open end of said cell, with the upstanding terminal protruding through the aperture of the disc and into said plunger bore;

shuttle means for conveying one of said discs to a site alongside said path of travel;

actuator means supported for movement across said shuttle to said path of travel for displacing said one disc from said shuttle means to said holding means, said actuator means movable independent of relative movement between said plunger and said releasable holding means; and





latch means coupled to said shuttle means, and positioned for engagement with said actuator means, an advancement of said actuator means operating said latch means to drive said shuttle means from a first position wherein said one disc may be loaded onto said shuttle means to a second position wherein said one disc is alongside said path of travel.

4,369,571

SHUTTLE PLATE GUIDE FOR AUTOMATIC WINDING MACHINES

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

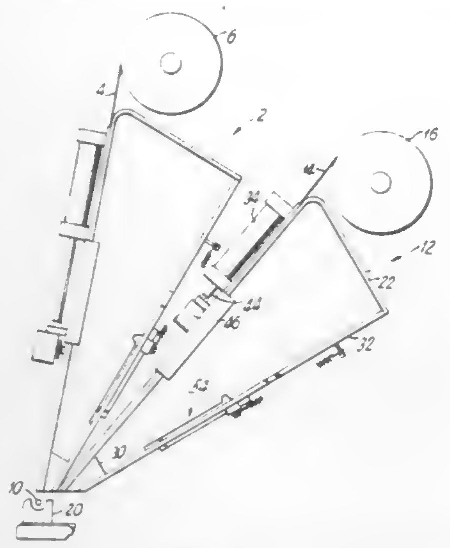
Continuation of Ser. No. 888,535, Mar. 21, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,705

Int. Cl.^{3} B23P *19/04*

U.S. Cl. 29—731 **7 Claims**

1. In an apparatus for feeding and guiding a separator strip and a battery plate blank to an arbor for coiling said strip and blank into a coil, the apparatus having an arbor for receiving the end of a separator strip and a battery plate blank and for coiling said strip and said blank into a coil, a first frame member, a second frame member, said first and said second frame members converging toward said arbor, feed means on said first frame member for feeding a separator strip along said first frame to said arbor, platform means on said second frame member for receiving a plate blank, means on said platform means for pushing said platform means along said second frame

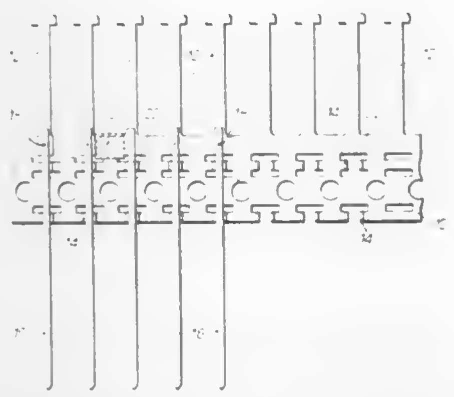
member for feeding a plate blank thereon to said separator strip and said arbor, means for retracting said platform means when said pushing means is released, and wherein said second frame member includes guide means for said platform means and said retracting means includes a spring which is tensioned as said platform is pushed along such second frame member and which retracts said platform means when said pushing means is released.



4,369,572

METHODS OF MAKING ELECTRICAL CONNECTORS

Sidney H. Atkins, Towcester, England, assignor to Plessey Overseas Limited, Essex, England
Filed Aug. 25, 1980, Ser. No. 180,869
Claims priority, application United Kingdom, Aug. 31, 1979, 7930351
Int. Cl.^{3} H01R *43/02*
U.S. Cl. 29—879 **6 Claims**

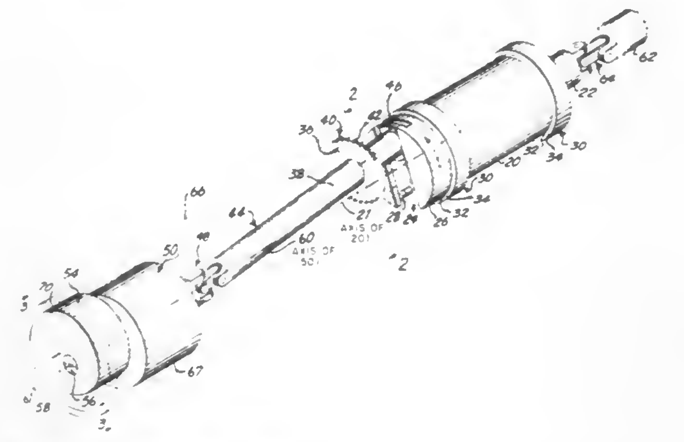


1. A method of making electrical connectors, comprising the steps of:
   - producing an elongate planar strip, said elongate planar strip being shaped with a plurality of separate elongate contact portions extending outwardly at right angles with respect to one side of the longitudinal axis of said strip, said separate elongate portions being adapted to form electrical contact members, said strip also being formed with spaced apart lugs projecting perpendicularly from the plane of said strip and located in line with each of said separate elongate contact portions;
   - locating a plurality of rigid contact legs on said elongate planar strip, each contact leg being supported by said spaced apart lugs axially in line with one of said separate elongate contact portions, with one end being adjacent to the inner end of said elongate contact portion;
   - welding each said contact leg to said elongate planar strip at a spot adjacent to said one end; and
   - severing each said elongate contact portion from said elongate planar strip;
   - whereby said elongate contact portion is retained on said contact leg by said weld, and said contact leg is retained on said elongate planar strip by said spaced apart lugs.

4,369,573

PIPE CUTTER

Steven Vitale, 269 Greencroft Ave., Staten Island, N.Y. 10308
Filed Oct. 6, 1980, Ser. No. 194,219
Int. Cl.^{3} B23D *21/14*
U.S. Cl. 30—105 **25 Claims**

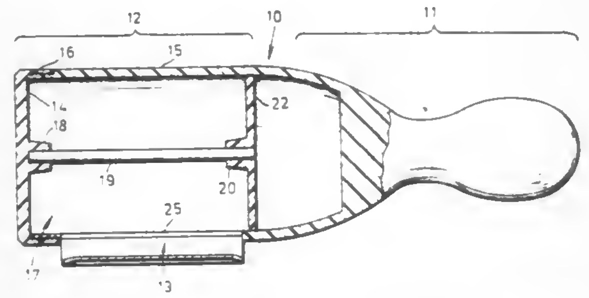


23. A pipe cutter comprising:
(a) a body having a body axis;
(b) means for supporting said body within the pipe to be cut so that said body is rotatable about said body axis; and
(c) a blade swingably connected to said body for orbital movement relative thereto about a pivot axis transverse to said body axis, said blade being movable between a retracted position and an extended position in which said blade protrudes beyond the periphery of said body.

4,369,574

PEEL CONCENTRATING CLEARANCE BOX

Liao Hsien-Sen, No. 128, Pi-Shan Rd., Tsao-Tun Town, Nan-Tou Hsien, Taiwan
Filed Dec. 23, 1980, Ser. No. 219,523
Int. Cl.^{3} A47J *17/02*
U.S. Cl. 30—123.5 **6 Claims**

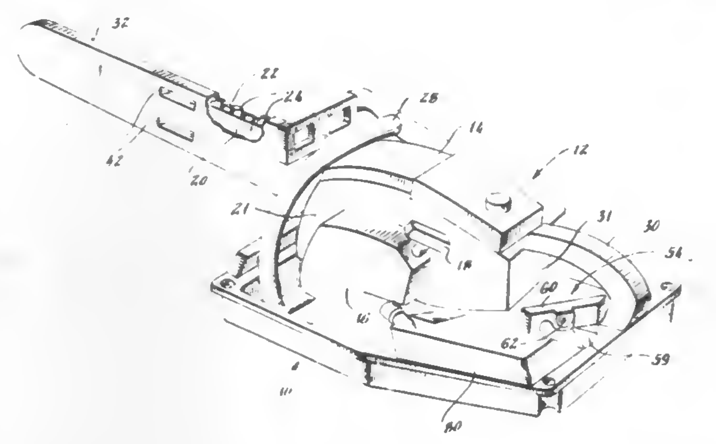


1. A peeling device comprising in combination:
a column shaped box having a necked down handle portion at one end and a threaded lip at a remote end,
a threaded lid capping said remote end which includes an axially extending longitudinal linkage bar fastened to a scraper plate,
said scraper plate dimensioned to snugly reside within a bore defined by an interior of said box,
whereby removal of said cap translates said scraper plate to remove peels within said box,
and peeler means disposed on said box adapted to place peels therewithin.

4,369,575

TOTE DEVICE

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Filed Jan. 30, 1981, Ser. No. 230,304
Int. Cl.^{3} B65D *85/00*
U.S. Cl. 30—151 **14 Claims**

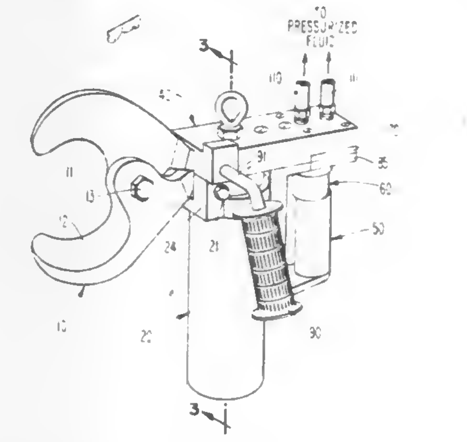


1. A tote device for an article including a main body and a member projecting from one side of said body; said tote device comprising:
   - means for supporting said body when at rest including a base formed with an upwardly open recess configured to receive at least a portion of said body;
   - scabbard means mountable on said member to enclose and protect a portion thereof;
   - first means for linking said scabbard means, when mounted on said member, to said base in the region of said one side of said body; and
   - second means for linking said base to said body when said portion of said body is received in said recess, at a location remote from said one side;
   - whereby upward movement of said body and said member results in upward movement of said scabbard means and, by interaction of said scabbard means and said body with said base through said first and second linking means, of said base.

4,369,576

HAND-HELD CABLE CUTTER

Arthur K. McVaugh, 2009 Old Sumneytown Pike, Harleysville, Pa. 19438
Filed May 22, 1981, Ser. No. 266,457
Int. Cl.^{3} B26B *15/00*
U.S. Cl. 30—228 **5 Claims**

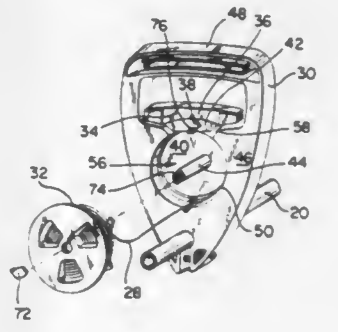


1. A hand-held fluid-drive cable-cutter tool comprising:
a. a pair of cutter jaws one of which is pivotally fixed and the other of which is pivotally movable;
b. a manifold having fluid passageways and input and return ports;
c. fixed means connecting said fixed jaw pivotally to said manifold;
d. a piston rod having fluid ducts therein;
e. fixed means securing one end of said piston rod to said manifold;
f. a piston head on the other end of said piston rod;
g. a piston cylinder concentric with and movable axially relative to said piston rod;
h. means connecting said cylinder pivotally to said movable cutter jaw;
i. a control handle;
j. support means supporting said control handle from said manifold;
k. a trigger;
l. spring means biasing said trigger to a position eccentric with respect to said control handle, said trigger being movable manually from said eccentric position to a position concentric with said control handle;
m. a drive spool coaxially disposed within said control handle, said spool extending through said trigger and projecting therebeyond;
n. means connecting said spool to said control handle;
o. means connecting said spool to said trigger;
p. a disc valve element having fluid ports and fluid slots;
q. a valve housing supporting said valve element for rotational movement, the projecting end of said spool being connected to said valve element so that rotational movement of said control handle provides corresponding rotational movement of said valve element;
r. fluid feed lines extending from a source of pressurized fluid to said input and return ports in said manifold;
s. a first of said fluid ducts in said piston rod extending from said one end of said piston rod to the other end of said piston rod beyond said piston head;
t. a second of said fluid ducts in said piston rod extending from said one end of said piston rod to a side surface of said piston rod before said piston head;
u. said fluid passageways in said manifold extending from said first and second fluid ducts in said piston rod to first and second ports in said disc valve element;
v. said slots in said valve element providing direct communication from said manifold input port to said return port when said valve element is in the OFF position;
w. said slots in said valve element providing communication between said manifold input and return ports and said manifold passageways when said valve element is in either of two drive positions.

4,369,577

FEED MECHANISM FOR FILAMENT TYPE VEGETATION TRIMMER

Glenn A. Gise, East New Market, and Calvin M. Edleblute, Ridgely, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 8, 1980, Ser. No. 176,289
Int. Cl.^{3} A01D *50/00*
U.S. Cl. 30—276 **13 Claims**



1. In a filament type vegetation trimmer of the variety having:

- a housing,
- a wand,
- a handle mounted on said wand,
- a prime mover mounted in said housing and having a rotary power output means,
- a slinger head, drivingly coupled with said rotary power output means,
- a stationary supply of filament, and
- means for guiding a free end of said filament through a longitudinal passage to said slinger head, for radial rotation therewith,
- a feed mechanism for releasing filament to said slinger head, said feed mechanism being positioned on said wand and comprising:
- spool means for storing said filament,
- indexing means associated with said spool means; and
- control means which coact with said indexing means to limit the rotation of said spool, said control means being actuable to permit said spool to unwind a limited amount and a controlled amount of filament to be drawn therefrom;
- wherein said indexing means comprises first and second rows of opposed, staggered teeth positioned around the circumference of said spool, and wherein said control means comprises a detent, configured to engage said first row of teeth and a control bar, operable to bring said detent into engagement with said second row of teeth; and
- wherein said detent is deployed on said control bar, and wherein actuation of said control bar effects movement of said detent between said rows of teeth by means of a living hinge element.

4,369,578
ENCAPSULATED ANGLE MEASURING APPARATUS

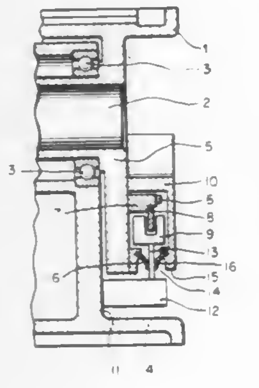
Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 75,136

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841501

Int. Cl.³ G01D *5/34*

U.S. Cl. 33—1 PT **4 Claims**



1. An apparatus for measuring the angular position of a first element, rotatably mounted with respect to a second element by means of a guide, said apparatus comprising:

- an arcuate scale mounted to the first element, said scale extending over an angular range of less than 360°;
- an arcuate housing substantially enclosing the scale, said housing defining an arcuate slit extending along the housing;
- a pair of sealing elements, one disposed on either side of the slit to substantially seal the slit;
- a scanning unit disposed to move within the housing adjacent the scale for measuring relative motion between the scanning unit and the scale; and
- a blade shaped coupling member, coupled to the scanning unit, extending through the slit between the sealing members and mounted to the second element such that rotational movement between the first and second elements about the guide causes the scanning unit to move along the scale.

4,369,579
DEVICE FOR DRAWING A PATTERN ON A SUPPORT, PARTICULARLY FOR USE AS A TOY

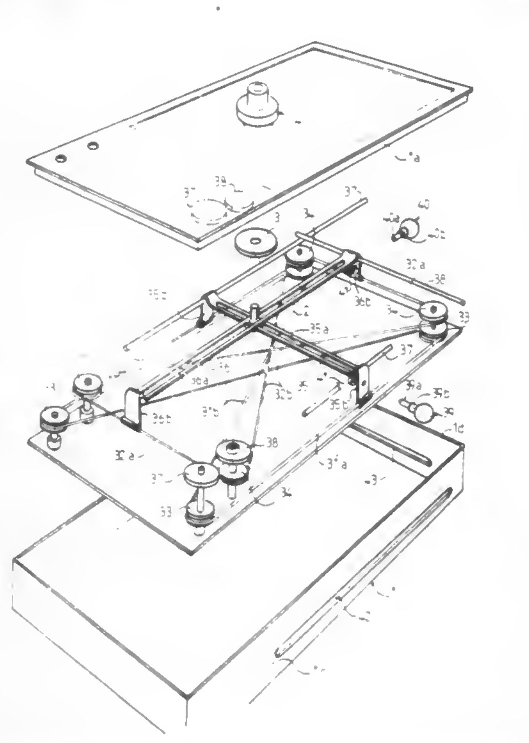
Henri Mizoule, Versailles, France, assignor to William Gardel, Ville d'Avray, France

Filed Apr. 30, 1981, Ser. No. 258,907

Claims priority, application France, May 5, 1980, 80 09998

Int. Cl.³ G01D *15/00*

U.S. Cl. 33—1 M **10 Claims**



1. Device for drawing a pattern or design on a support, comprising a pencil holder fast with a magnetic piece sliding on a plate and moved, through said plate, by a first magnet, characterized in that said device comprises:

- a box, generally parallelepipedic in form, with an upper wall composed of non-magnetic material,
- in this box: a carriage movable along the X- and Y-axes relatively to the plane of the upper wall of the box,
- control means for displacing the carriage along the X- and Y-axes,
- a first magnet mounted on the carriage, one of its magnetic poles, called first pole, facing the upper wall of the box,
- a pencil-holder adapted to rest on the outer face of said upper wall of the box, this pencil-holder comprising:
  - (a) a guide for receiving and holding at least laterally a pencil with the axis thereof not parallel to the plane of said upper wall and with the active tip of the pencil in contact with a drawing support resting on the upper wall of the box, (b) a second ring magnet adapted to cooperate with the first magnet, its pole opposite that of said first pole facing downwards, the opening of the second magnet being placed opposite the guide so as to surround the end of the pencil, and (c) at least one sliding member by which the pencil holder is adapted to slide on said drawing support.

4,369,580
DRAFTING PEN ACCESSORY

Richard C. Pruitt, 6509 Ellis Rd., Fort Worth, Tex. 76112

Filed Apr. 18, 1980, Ser. No. 141,582

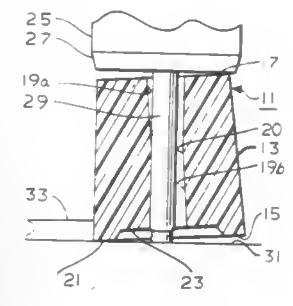
Int. Cl.³ B43L *13/00*

U.S. Cl. 33—42 **7 Claims**

1. A device for drawing parallel, curved ink lines with a template comprising in combination:

- a drafting pen of the type having a tubular tip depending downwardly from a collar;

- a guide having an axial passage for receiving the tip, an outer surface concentric with the passage for rolling contact with the edge of the template, a top and a bottom, the axial passage being larger in diameter than the tip to allow the guide to tilt as the guide is pressed against the template to avoid contact of the bottom with the ink while wet;



- the height of the guide being selected so that the top will be in sliding contact with the collar to limit the amount of tilt as the guide is moved about the template;
- the portion of the outer surface that contacts the template being a frustum of a cone, being larger at the bottom than at the top.

4,369,581
METHOD AND APPARATUS FOR THE DETERMINATION OF THE AXIS OF ROTATION OF A CIRCULAR TABLE IN MULTIPLE COORDINATE MEASURING INSTRUMENTS

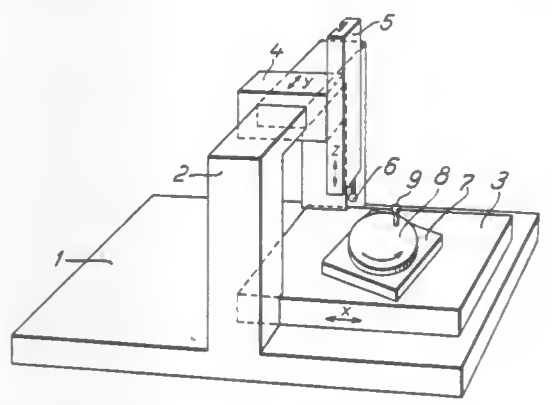
Karl J. Lenz, Wetzlar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Postfach, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,717

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940633

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—169 C **15 Claims**



1. A method for determining the axis of rotation of a rotatable table in a multiple coordinate measuring instrument equipped with at least one tracer, comprising the steps of:

- arranging a spatial contact surface excentrically to the axis of rotation of the rotatable table;
- determining the position of a point associated with the contact surface, in the coordinate system of the multiple coordinate measuring instrument by contacting the contact surface with the tracer;
- repeating the determination of the position of said point in at least two additional different angular positions of the rotatable table;
- determining the direction of the normal to a plane which contains the points determined in the at least three angular positions of the rotatable table; and
- determining the center of a circle passing through the at least three points, whereby the axis of rotation of the rotatable table is the normal passing through the center of the circle.

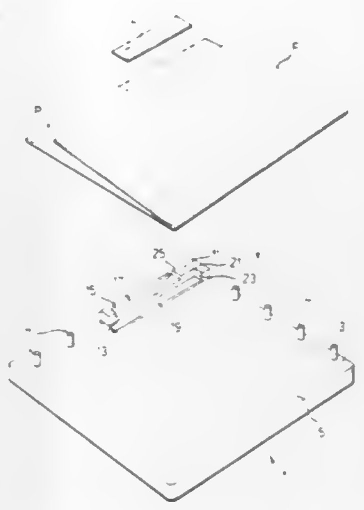
4,369,582
MANUAL LABEL APPLYING TEMPLATE

George B. Pfeffer, Minnetonka, Minn., assignor to Datafile Limited, Willowdale, Canada

Continuation-in-part of Ser. No. 205,168, Nov. 12, 1980, abandoned. This application Oct. 30, 1981, Ser. No. 316,346

Int. Cl.³ G01B *5/00*

U.S. Cl. 33—180 R **27 Claims**



1. Guide means adapted to guide accurate manual application of an adhesive member at an edge of a file panel, said guide means comprising a panel edge guide, an adhesive member guide raised relative to the panel edge guide and an adhesive member seat at generally right angles to and between the panel edge guide and adhesive member guide, said adhesive member seat being adapted to seat a first part of the adhesive member with the arrangement being such that when the panel edge is fitted along said panel edge guide, and the first part of the adhesive member is seated on the adhesive member seat with an edge of the first part of the adhesive member fitted along the adhesive member guide, a second part of the adhesive member overhangs the adhesive member seat where it is exposed for application to the file panel thereby locating the adhesive member in position on the panel, said adhesive member seat having low affinity for the adhesive member and being adapted to readily release the first part of the adhesive member to enable completion of the manual application of the adhesive member at the file panel edge.

2. A template adapted to guide accurate manual application of an adhesive label around an edge of a file panel from one side of the panel to an opposing side of the panel, said template comprising a label jig, a file panel supporting portion, and guide means for positioning the file panel on the file panel supporting portion with the file panel edge at the label jig, said label jig having a steplike construction and comprising a first riser, a second riser raised relative to said first riser and a generally horizontal tread portion which extends between said risers from the upper end of said first riser to the base of said second riser, the arrangement being such that said second riser is adapted to receive an edge of the label with the label being partially seated on said tread portion such that part of the label overhangs said first riser, where it is exposed for application to the one side of the file panel, thereby locating the label in position on the panel, said tread portion having low affinity for the adhesive label, so that it is adaped to readily release the seated part of the label to enable wrapping of the label around the panel edge and application of the released parat of the label to the opposing side of the panel.

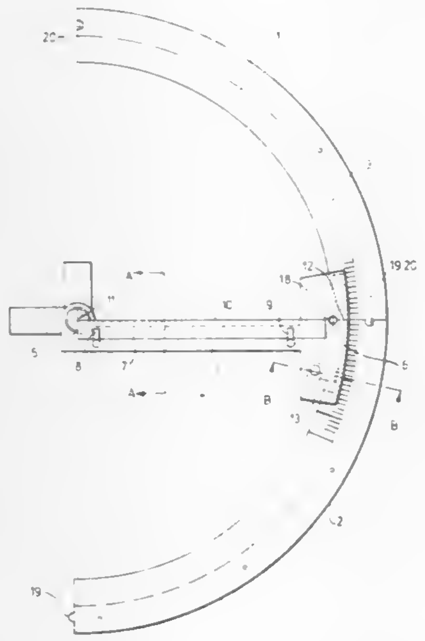
11. A template adapted to guide accurate manual application of an adhesive member at an edge of a file panel, said template comprising a file panel supporting portion for supporting the file panel and guide means for fitting into said file panel supporting portion, said file panel supporting portion having a receiving region for said guide means which comprises at least one jig segment moveable to different guiding positions in said receiving region and means for locking said at least one jig

segment at the different guiding positions, said at least one jig segment having a step-like structure comprising a panel edge guide, an adhesive member guide generally parallel and raised relative to said panel edge guide and a seat portion between said panel edge guide and said adhesive member guide, said jig segment being arranged such that when the edge of the file panel is fitted along said adhesive member guide a first part of the adhesive member is seated on said seat portion and a second part of the adhesive member extends beyond the seat portion overhanging said panel edge guide of said jig segment where the second part of the adhesive member is exposed for adhering to the file panel located therebeneath, to initiate application of the adhesive member, said seat portion of said jig segment having low affinity to adhesive and being adapted to readily release the first part of the adhesive member for adhering to the file panel to complete the accurate manual application of the adhesive member at the file panel edge.

4,369,583

PLOTTING DEVICE

Sidney G. Brighty, Nova Guest House, 76 Nova Rd., West Croydon, Surrey, England
Continuation of Ser. No. 83,780, Oct. 11, 1979, abandoned. This application Jan. 8, 1982, Ser. No. 338,193
Int. Cl.^{3} B43L *7/00*
U.S. Cl. 33—403 8 Claims



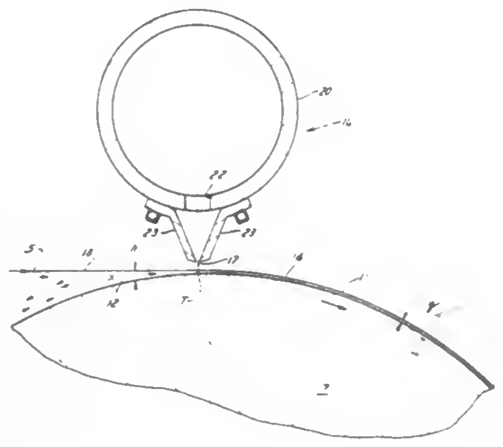
1. A plotting device for plotting points on a drawing surface comprising:

(a) a central island member adapted for mounting on said drawing surface over a pre-selected point,
(b) a peripheral protractor having an arcuate inner edge defining at least part of a circle and adapted to be mounted on said drawing surface at a selected position with respect to said island member so that said island member is the center of said circle, said protractor having an angular scale thereon,
(c) a radius arm having an inner end and an outer end,
(d) means operably connected to an outer end of said radial arm for locating said selected position,
(e) second means removably and pivotally securing said inner end to said island member,
(f) a vernier angular scale at the outer end of said arm coacting with said angular scale, and
(g) a longitudinal distance scale on said arm between said inner end and said outer end.

4,369,584

PREVENTING AIR FILM BETWEEN WEB AND ROLLER

Robert A. Daane, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.
Filed Apr. 16, 1981, Ser. No. 254,989
Int. Cl.^{3} F26B *5/00*
U.S. Cl. 34—12 7 Claims



1. In apparatus wherein a web is confined to lengthwise motion in one direction along a defined path and wherein said path has one portion in which the web extends substantially straight and has another portion which begins at the termination of said one portion and in which the web is curved in partial wrapping engagement with a cylindrical surface of a roller that rotates to have the peripheral speed of its said surface match the speed of lengthwise motion of the web, means for substantially preventing the intrusion of an air film between the roller and the web to ensure intimate contact between them, said means comprising:

A. an air nozzle at the side of the web opposite said roller, having an elongated and narrow outlet that opens towards the web, the outlet of said nozzle
  (1) having its length extending transversely to the the length of the web, substantially across the full width of the web,
  (2) having a width substantially less than 0.1 inch (2.5 mm),
  (3) being located within a small distance in said direction of web motion from the termination of said one portion of said path, and
  (4) being spaced from said surface of the roller by a distance not substantially greater than is sufficient to accommodate the thickness of the web between the nozzle and said surface of the roller and to permit air to issue from said outlet as a stream that impacts the web in a zone having very small extension in said direction; and
B. means for conducting pressurized air to said nozzle to issue from said outlet.

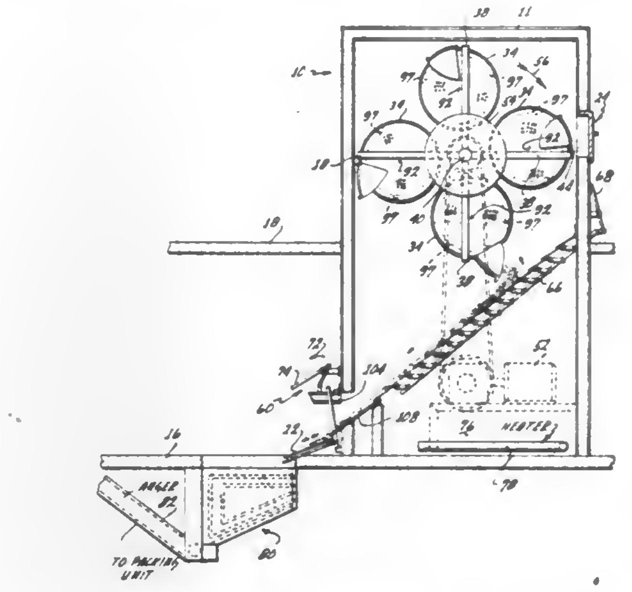
4,369,585

WET AND DRY ROASTING APPARATUS AND PROCESS FOR NUT, BEAN AND SEED-LIKE PRODUCT

William Berkoff, 6143 W. Olympic Blvd., Los Angeles, Calif. 90048, and Walter O. Martens, Los Angeles, Calif., assignors to William Berkoff, Los Angeles, Calif.
Filed Dec. 8, 1980, Ser. No. 214,184
Int. Cl.^{3} F26B *11/04*
U.S. Cl. 34—63 10 Claims

1. Container means for holding a quantity of nut, bean and seed-like product while said product is roasted by heated air at roasting temperatures, comprising:

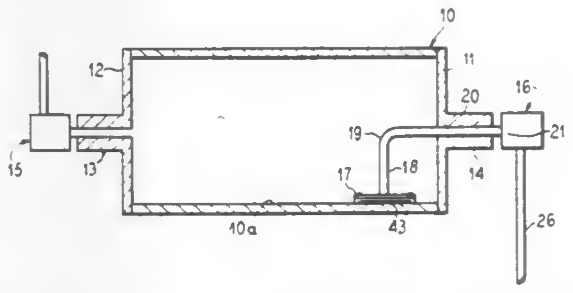
a. a plurality of containers having perforations for draining treated and untreated liquids from said product and for allowing said air at said roasting temperatures to pass through, but capable of holding a quantity of said product, each said container being rotatable about a center of rotation and being substantially cylindrical and having a generally horizontal axis;
b. container moving means for interconnecting said containers and for providing translational movement of said container through the heated air thereabout; and
c. a container discharge means for discharging the product including; a hinged door comprising part of the surface area along substantially the length of said containers, and comprising latch means for securing each of said doors shut, each of said doors being openable by gravity when said latch means is unsecured and said container is rotated to a position where the door occupies the lower portion of the cylindrical container so as to allow said product to evacuate.



4,369,586

DRYER SIPHON

Gregory L. Wedel, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Apr. 20, 1981, Ser. No. 255,844
Int. Cl.^{3} F26B *13/08*
U.S. Cl. 34—125 10 Claims



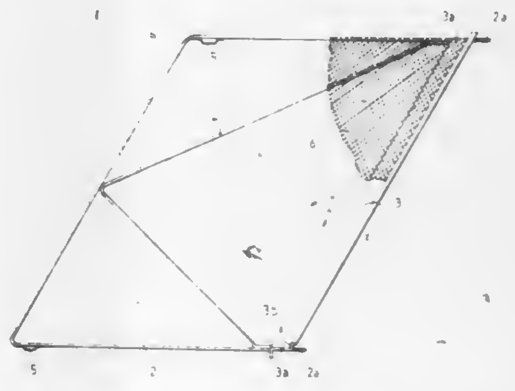
1. A paper machine dryer mechanism comprising in combination:

a rotary annular hollow cylindrical dryer drum shell having a smooth inner surface and having means for delivering steam to the interior for heating the outer surface of the drum to dry a paper web in contact with the outer surface;
a condensate siphon conduit means leading from the interior of the drum to the exterior for removing condensate forming on the inner surface of the shell;
and a siphon shoe connected to the inlet end of the conduit means for receiving condensate from the inner surface of the shell, said shoe having an elongate planar leading face extending axially and tapered toward the inner surface of the shell with said tapered face defining a condensate receiving gap between said edge and said shell inner surface with said gap being of uniform radial depth in an axial direction across the shell, said shoe having an elongate planar trailing face tapered toward the inner surface of the shell and having a trailing condensate delivery gap with said trailing gap being of uniform radial depth in an axial direction across the shell, said shoe having an inner axially elongate chamber between said planar faces for receiving the flow of condensate with the chamber communicating with the siphon conduit means and with each of said leading and trailing gaps.

4,369,587

DRIER FOR SCREEN PRINTED SHEETS

Bernard David, 20, rue de Rambervilliers, 75012 Paris, France
Continuation-in-part of Ser. No. 51,414, Jun. 25, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,917
Int. Cl.^{3} F26B *15/14*
U.S. Cl. 34—150 10 Claims



1. A drier for sheets printed by serigraphy, comprising a chassis formed as a duct; an endless conveyor supplied by said chassis; a plurality of sheet-receiving trays hingedly connected with said conveyor and each having a frame and a solid airtight sheet support mounted on said frame, said frame of each of said trays having one side which is adjacent to said conveyor and is hingedly connected with the latter; a deflector edge fixed to said one side of said frame of each of said trays; a plurality of nippers placed on said deflector edge at said one side of said frame of each of said trays; means for hingedly connecting said trays to said conveyor and being connected with said one side of said frame of each of said trays and with said conveyor; an air-blowing device connected with said duct-forming chassis, so that a current of air blown by said air-blowing device is directed by said duct-forming chassis to a bottom of each of said trays and then travels between said trays; means for immobilizing said trays in a predetermined position; means for correcting a position of said trays; cooperating means which cooperate with said immobilizing and correcting means for alternately releasing the same from said tray and replacing them in a path of said trays; means for rotating said conveyor with said trays; and a micro-contact placed in the path of said trays and arranged so that it interrupts the operation of said means for rotating said conveyor and actuates said cooperating means for correcting a next one of said trays so as to put the same exactly to a position where a wet sheet is to be placed.

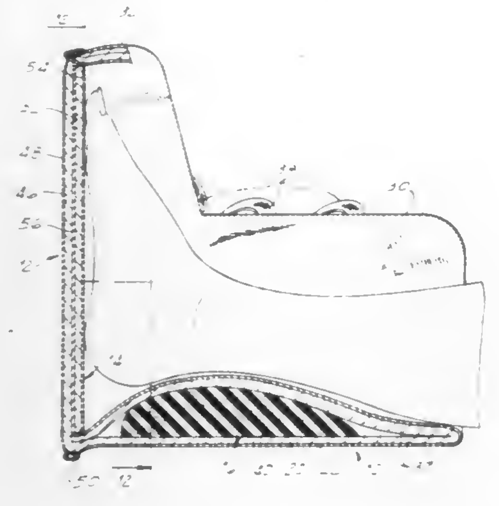
4,369,588

ISOTHERMIC PROTECTIVE BOOT

Ramon Berguer, West Bloomfield, Mich., assignor to Lunax Corporation, West Bloomfield, Mich.
Filed Jan. 22, 1981, Ser. No. 227,367
Int. Cl.^{3} A43B *1/02, 1/10, 7/14*
U.S. Cl. 36—9 R 18 Claims

1. An isothermic protective boot having a foot-receiving part and a contiguous leg-receiving part adapted to extend up to at least the lower portion of the calf of a patient, said boot having a complete inner lining of relatively soft, non-allergenic material, said boot also having a layer of relatively soft, flexible, compressible isothermic protective material throughout

the full extent of both its parts and a body of weight-bearing material along at least a portion of the back of said leg-receiving part in a position to extend along the heel cord of the wearer such that when the wearer is lying on his back the weight-bearing surface of the extremity of the wearer will be over the heel cord and lower aspect of the calf and not the bottom of the heel.



4,369,589

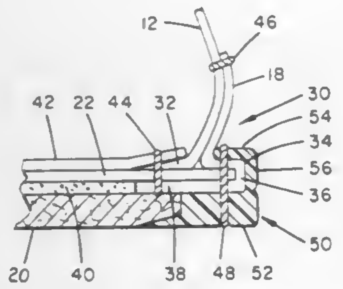
SHOES

Walter R. Summey, 18014 Granada Ave., Fontana, Calif. 92335

Filed Jul. 7, 1980, Ser. No. 166,352

Int. Cl.^{3} A43C *13/14;* **A43B** *5/00*

U.S. Cl. 36—77 R **15 Claims**



1. In a shoe of the type that has an interconnected upper, midsole, and sole and in which the midsole and sole extend beyond the upper in the region of the toe of the shoe, the improvement which comprises the addition of a wrap-around member in the region of the shoe's toe in the form of an element which is fastened to the upper at a point above its junction with the midsole and which extends over and under the midsole to a position between the midsole and the main sole; and

said wrap-around member extending over, around and under the outer margin of said midsole and being fastened to both the upper and the lower faces of said midsole.

4,369,590

REAR MOUNTED SCRAPER FOR VEHICLES

Michael E. Miller, 204 W. Church St., Savoy, Ill. 61874

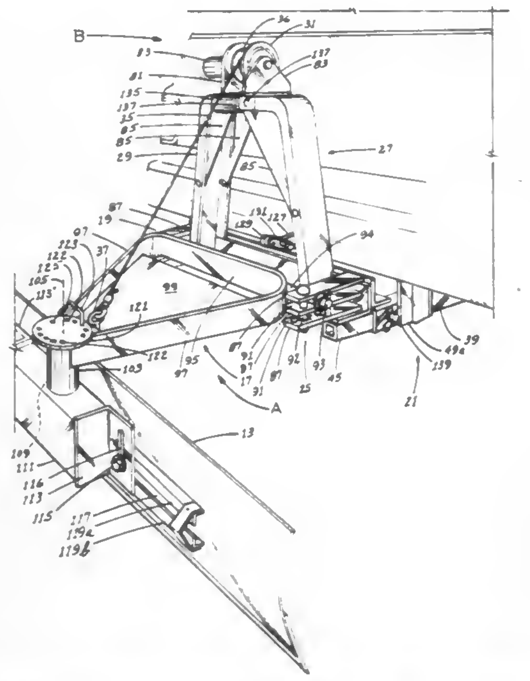
Filed Dec. 3, 1980, Ser. No. 212,360

Int. Cl.^{3} E01H *5/06*

U.S. Cl. 37—231 **4 Claims**

1. In combination, self-contained scraper apparatus for quick attachment to, and detachment from, the rear of a light truck vehicle or the like, and attachment means suspended from the frame of said vehicle, the entirety of said attachment means being positioned at a level substantially at or below the bumper level of said vehicle characterized by said scraper apparatus comprising a securement frame having a pair of laterally spaced forwardly projecting telescoping frame members, said attachment means including an attachment frame mounted to the chassis of said vehicle at the rear thereof and having a pair of socket-defining recesses at opposite sides of said vehicle for telescopingly receiving corresponding ones of said telescoping frame members, means for securing said telescoping frame members in the respective socket-defining members, said scraper apparatus being thereby attachable to and carryable by said vehicle solely by telescoping frame members being received in said socket-defining members, a scraper blade, a blade-carrying frame, means for pivotally connecting said scraper blade to said blade-carrying frame, means providing pivotal interengagement of said blade-carrying frame to said securement frame to permit rotation of said blade-carrying frame about a transverse pivot axis, an electric winch carried by said securement frame, a winch cable extending from said electric winch to a transverse pivot axis-remote location on said blade-carrying frame, said winch being energizable in response to voltage supplied by said vehicle, whereby said winch effects raising of said blade-carrying frame by rotation about said transverse pivot axis under operator remote control,

said means for pivotally connecting said blade to said blade-carrying frame including a sleeve carried by said blade-carrying frame at a location remote from said transverse pivot axis, a shaft secured to said blade and rotatable in said sleeve, and means for locking said shaft relative to said sleeve for permitting a preselected angular relationship between said blade and the longitudinal axis of said vehicle, said blade being pivotable by rotation of said shaft between forward facing and rearward facing orientations, said blade-carrying frame when raised by said winch pivoting upon said transverse pivot axis to raise said blade out of contact with the surface upon which said vehicle stands, and to a position proximate the rear of said vehicle, and when lowered by said winch permitting said blade to contact said surface with said blade-carrying frame extending rearwardly from said securement frame and from said vehicle with said blade having either forwardly or rearwardly facing orientation, whereby said scraper apparatus may be either quickly attached to or detached from said attachment by telescoping movement of said telescoping frame means members relative to said socket-defining members.



4,369,591

INFLATABLE DISPLAY STRUCTURE

Robert K. Vicino, 8847 Complex Dr., San Diego, Calif. 92123

Filed Jun. 3, 1981, Ser. No. 270,082

Int. Cl.^{3} G09F *15/00*

U.S. Cl. 40—610 **12 Claims**

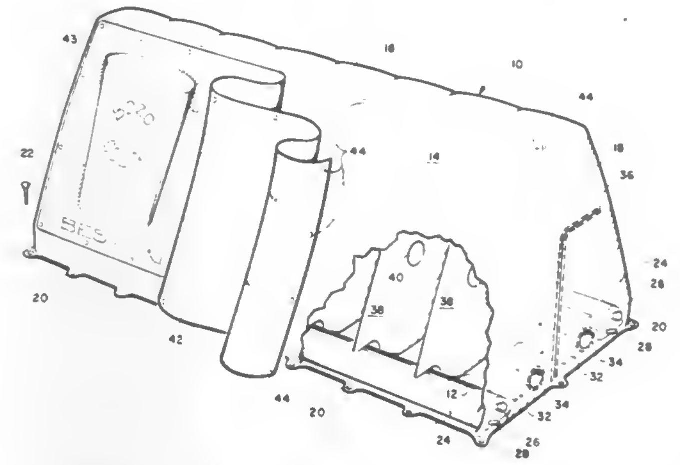
1. An inflatable billboard comprising:

(a) a body having an inflatable flexible skin defining an enclosure;

(b) said body defining a base panel to rest on an underlying surface

(c) anchor means for securing said body in place with said base panel secured to the underlying surface;

(d) a portion of said skin defining a side panel oriented to be generally upright when said base panel is anchored;



(e) a plurality of gussets within said enclosure, said gussets being fastened to said skin to hold said side panel substantially flat when said skin is inflated; and

(f) means securing a display on said side panel, whereby said inflatable billboard can be anchored on location and inflated for use as a display, or deflated into a compact form for shipment and storage.

4,369,592

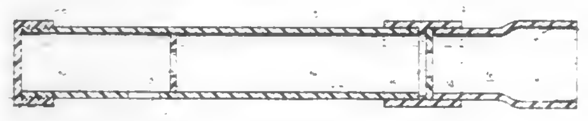
PROPELLING METHOD AND DEVICE

J. E. Perry, P.O. Box 483, Murrells Inlet, S.C. 29576

Filed Nov. 19, 1980, Ser. No. 208,147

Int. Cl.^{3} F41C *3/06*

U.S. Cl. 42—54 **16 Claims**



1. A method, for propelling an object from a device comprising a loading chamber, a loading mechanism, and a firing chamber portion with an open end, comprising:

a. placing said object in said open end of said firing chamber portion;

b. positioning an explosive device with a fuse within said loading mechanism, with said loading mechanism secured within said loading chamber of said device;

c. igniting said fuse of said explosive device;

d. injecting the portion of said loading mechanism holding said explosive device with said fuse, which has been ignited, into said firing chamber portion of said device; and

e. dropping said explosive device with said fuse which has been ignited from said loading mechanism into said firing chamber portion,

whereby said explosive device explodes propelling said object from said device.

4,369,593

FIRING MECHANISM FOR PISTOLS

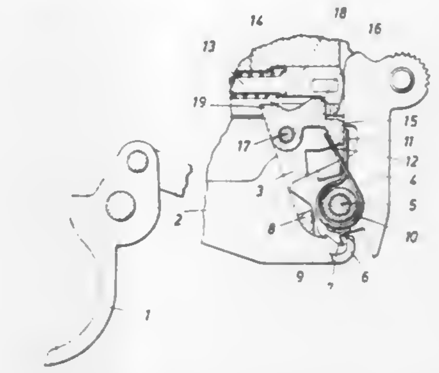
Ulrich Zedrosser, and Satish K. Malhotra, both of Steyr, Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Feb. 17, 1981, Ser. No. 235,073

Claims priority, application Austria, Mar. 10, 1980, 1304/80

Int. Cl.^{3} F41C *17/04*

U.S. Cl. 42—70 F **6 Claims**



1. In a firing mechanism for a pistol, comprising

a pivoted hammer, which is pivotally movable in a cocking sense from an uncocked position to a cocked position and in a striking sense from said cocked position to said uncocked position,

a hammer spring urging said hammer in said striking sense,

a firing pin which is axially movable between a retracted position and a firing position, said hammer when urged by said spring from said cocked position to said uncocked position being arranged to strike on said firing pin when it is in said retracted position and to cause said firing pin to move to said firing position, and

a catch lever, which is pivotally movable between a position of rest and an actuated position and when in said actuated position is arranged to engage said hammer in said cocked position so as to hold said hammer in said cocked position, said catch lever being adapted to release said hammer for a movement in said striking sense,

the improvement residing in that

said catch lever has first and second locking surfaces,

said first locking surface is arranged to engage said hammer and to prevent a movement of said hammer in said striking sense when said hammer is in said uncocked position and said catch lever is in said position of rest, and

said second locking surface is arranged to engage said firing pin and to prevent a movement of said firing pin toward said firing position when said hammer is in said uncocked position, said firing pin is in said retracted position, and said catch lever is in said position of rest.

4,369,594

MAGAZINE FOR MUZZLE LOADER

Joe F. Zurga, Rte. 8, Box 44, Harrison, Ark. 72601

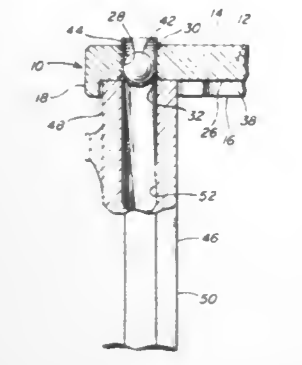
Filed Oct. 21, 1980, Ser. No. 199,302

Int. Cl.^{3} F41C *27/00*

U.S. Cl. 42—90 **7 Claims**

1. A muzzle loading device for a muzzle loader gun, said device including a body having a top face, a bottom face and a vertical dimension, a downwardly opening recess formed in said bottom face, a plurality of laterally spaced upstanding and cylindrical shot bores formed in said body opening upwardly through said top face and downwardly into said recess spaced from the periphery thereof, a plurality of patch embraced slot balls frictionally wedged in said shot bores and displaceable axially therethrough, the lower portions of said shot balls and the embracing portions of said patches projecting at least significantly downwardly into said recess, those portions of said patch embraced shot balls projecting downwardly into said recess serving as locaters for and being losely receivable in the muzzle end of a gun barrel bore whose muzzle is displaced

upwardly into said recess and thereby aligning said barrel bore with a shot bore and the patch embraced shot ball disposed therein for projection of said patch embraced shot ball from the lower end of the corresponding shot bore directly into the barrel bore.



4,369,595
ANIMAL TRAP

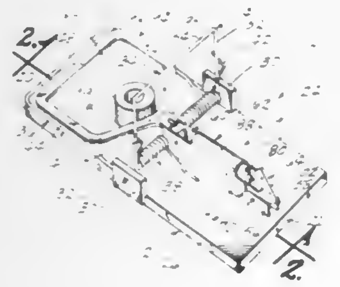
Lester E. Kness, Granger; Marvin E. Kness, and Arnold A. Kness, both of Albia, all of Iowa, assignors to Kness Manufacturing Co., Inc., Albia, Iowa

Continuation-in-part of Ser. No. 149,188, May 12, 1980, Pat. No. 4,297,805. This application Nov. 3, 1980, Ser. No. 203,311

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ A01M *23/30*

U.S. Cl. 43—83.5 **10 Claims**



1. An animal trap comprising:

a base having an upper surface, opposite sides and opposite ends;

a bait receiving means fixed to said upper surface of said base;

a jaw member pivotally mounted on said base for pivotal movement about a first horizontal axis from a cocked position to a sprung position, said jaw member having at least one horizontal bar extending transversely of said base and being movable in an arc during said pivotal movement of said jaw member,

spring means yieldably urging said jaw member to said sprung position,

a catch member pivotally mounted to said base for pivotal movement about a second horizontal axis, said catch member having a catch pawl thereon for retentively engaging said bar when said jaw member is in said cocked position,

said catch member being pivotal about said second horizontal axis from a catch position wherein said catch pawl retentively engages said bar in said cocked position to a release position wherein said catch pawl moves out of retentive engagement with said bar,

a trip member pivotally mounted on said base for pivotal movement about a third horizontal axis, said trip member having a catch receiving surface, said trip member being pivotal about said axis from a set position wherein said catch receiving surface engages said catch and holds said catch against movement from said catch position, said trip member being pivotal to a trip position wherein said catch receiving surface frees said catch member for movement to said release position, thereby freeing said jaw member for movement to said sprung position,

said trip member having a perimetric edge surrounding and defining an opening therein, said opening being located above said bait receiving means; and

a reset member movably mounted to said base and including a foot at one end thereof and a reset cam, said reset cam being engageable with said bar of said jaw member during movement of said jaw member to said cocked position, said reset member being movable in response to engagement between said bar and said reset cam so as to cause said foot to engage said trip member and move said trip member from said set position to said trip position whereby said catch member will fall by gravity to said release position.

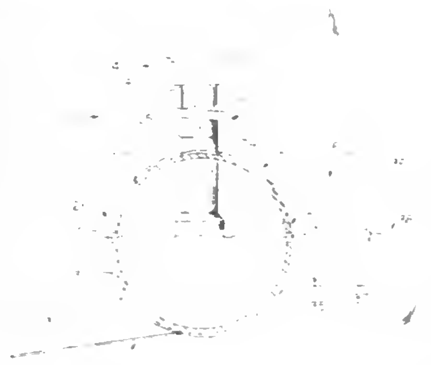
4,369,596
LIQUID APPLYING APPARATUS

Thomas D. Hartford, 4221 Lewis Ave., Great Falls, Mont. 59405

Continuation-in-part of Ser. No. 109,804, Feb. 6, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,885

Int. Cl.³ A01M *21/00*

U.S. Cl. 47—1.5 **10 Claims**



1. Liquid applying apparatus mountable on a lawnmower, said apparatus including a liquid storing portion, a liquid distributing portion and a mounting portion; said liquid storing portion including a substantially airtight chamber, an opening adjacent the bottom of said storing chamber, conduit means extending downwardly from said storing chamber opening to said liquid distributing portion; said liquid distributing portion including a substantially horizontal distribution chamber, said distribution chamber having a length substantially greater than the cross section thereof, said distribution chamber including an inlet opening adjacent the top thereof, said inlet opening being connectable with said conduit means, a plurality of spaced outlet openings in said distribution chamber, said outlet openings being arranged along at least one substantially horizontal line disposed longitudinally of said distribution chamber and located intermediate the top and bottom of said chamber, said conduit means extending through said inlet opening of said distribution chamber to a point adjacent said horizontal line of openings in said chamber, textile material associated with said distribution chamber, said textile material being disposed with one section wrapped around the periphery of said distribution chamber and the opposite end section extending from said wrapped section a distance greater than the diameter of said distribution chamber; said mounting portion including at least one bracket means having one end affixible to said distribution chamber, said bracket means including a connector section extending from said distribution chamber, fastening means disposed adjacent the free end of said connector section, said fastening means being connectable to a lawnmower housing, support means extending upwardly from said connector section capable of supporting said liquid storing portion above said distribution chamber.

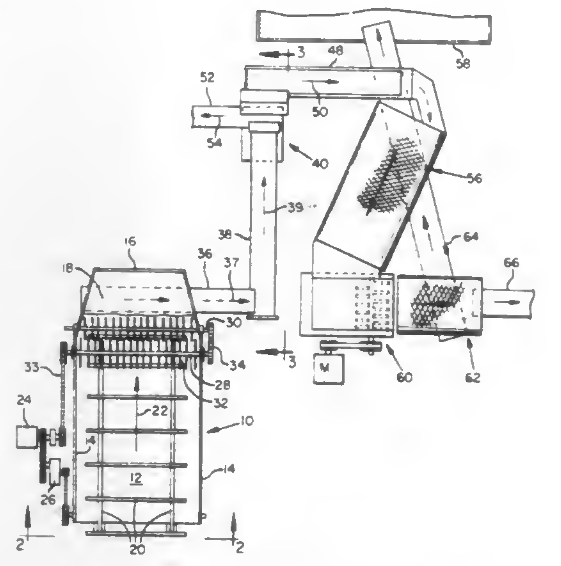
4,369,597
PELLETIZED MINT MULCH AND METHOD OF MAKING

Ronald B. Leep, P.O. Box D, Madras, Oreg. 97741, and Stanley A. Kaber, Culver, Oreg., assignors to Ronald B. Leep, Madras, Oreg.

Filed Mar. 24, 1981, Ser. No. 247,169

Int. Cl.³ A01G *1/00*

U.S. Cl. 47—9 **17 Claims**



1. A method of making mint mulch for use in mulching the surface of bare soil to encourage the growth of ground cover thereon, the method comprising:

drying mint slugs to a moisture content of about 15% to 20%;

chopping the dried mint slugs to a fiber length of less than about one inch; and

pelletizing the dried, chopped mint slugs to produce mint mulch pellets.

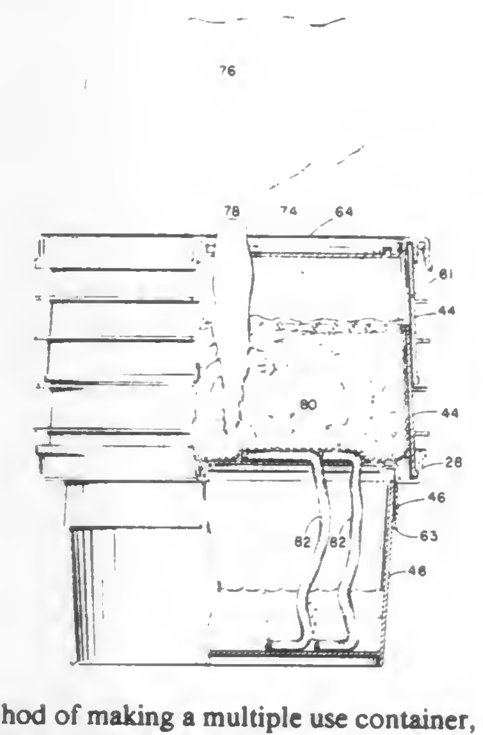
4,369,598
CONTAINER ELEMENT COMBINATION FOR SEED SPROUTING OR PLANT CULTURE

Thomas F. Beckwith, 223-14th Ave. East, Apt. 1, Seattle, Wash. 98112

Filed Mar. 19, 1981, Ser. No. 245,327

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—66 **13 Claims**



1. A method of making a multiple use container, adapted for growing plants, sprouting seeds or the, like, from utility pails and mateing lids comprising the steps of:

(a) selecting a circular utility bucket of the type having tapered side walls and an enclosing bottom;

(b) selecting a lid which has a circumferential, circular groove on its bottom surface mateable with the top edge of the bucket and a circumferential, circular groove on its top of a smaller diameter than that on its bottom surface;

(c) cutting the bucket on a transverse plane to form a ring structure to which the lid may be attached and the entire ring and lid inverted and to form an open top container whose top will receivably engage the groove in the top of the lid which when inverted forms a lid for the open top container.

4,369,599
CULTIVATION BALLS

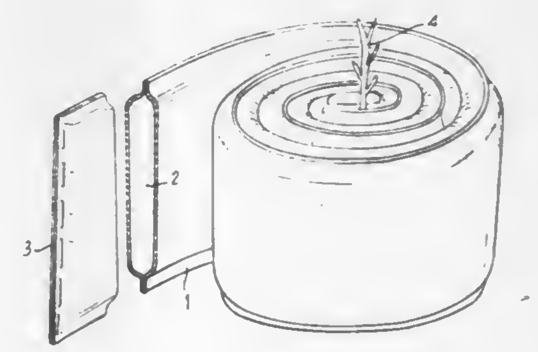
Andre Franclet, Donnemarie, and Pierre Favereau, Echouboulains, both of France, assignors to Association Foret-Cellulose, Paris, France

Continuation of Ser. No. 5,230, Jan. 22, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,501

Claims priority, application France, Feb. 9, 1978, 78 03708

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—74 **6 Claims**



1. A plant cultivation ball comprising at least one envelope in the form of a flattened elongated tube having an inner wall and an outer wall, a powdery cultivation substrate within the tube, means closing each end of the tube to prevent escape of the cultivation substrate from the tube, said tube being wound around the plant and around itself to form a ball of at least one convolution within which the plant is separated from said substrate by at least one wall of said envelope, said inner wall of said tube comprising a first sheet, and said outer wall of said tube comprising a second sheet, said sheets being joined together along their longitudinal edges, said sheets forming said walls of said envelope each comprising a material through which the roots of the plant can pass once the ball has been set to grow and said tube being devoid of any attached root impermeable covering so that the roots of a plant within the ball can pass freely through the ball into the medium in which the plant is set to grow.

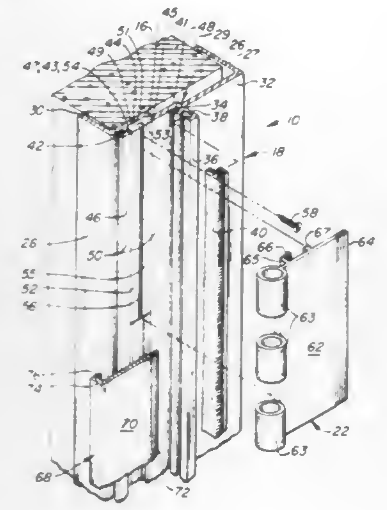
4,369,600
DOOR FRAME ASSEMBLY WITH IMPROVED CHARACTERISTICS

Alexander E. Passovoy, 241 Village Gate Rd., Orinda, Calif. 94563

Filed May 14, 1981, Ser. No. 263,534

Int. Cl.^{3} E06B *1/04*

U.S. Cl. 49—504 **12 Claims**



1. Apparatus for constructing a door frame in an opening formed in a wall to accommodate a door, said apparatus comprising:

- a frame member including a central web adapted to span the width of the wall and a pair of side flanges extending from the lateral edges of the web and adapted to fit over the edges of the wall circumscribing the opening, said web including a pair of grooves opening in a common transverse direction, one said groove located proximate the center of said web and the other said groove located proximate one lateral edge of the web, the web further including a longitudinally-extending recess between said grooves;
- at least two hinge members each having a hinge plate which includes a set of elongate tongues adapted to engage and mate with the respective grooves in the frame member and a separate elongate tongue projecting normal to the remaining tongues into the recess of the frame member;
- at least two bars slidable in the recess of the frame member, said bars each defining a longitudinally-extending slot on the outer surface thereof to engage the separate elongate tongue of the respective hinge member when the bars are moved into position beneath the hinge members; and
- a plurality of cover plate sections each including a pair of elongate tongues adapted to engage and mate with the respective grooves in the frame member, said cover plate sections adapted to be cut to fit the gaps between hinge plates and the ends of the frame member so that the space between the hinge plates is covered, to provide a sturdy, aesthetically pleasing door frame.

4,369,601
APPARATUS FOR TRACKING BELT FOR ABRASIVE GRINDING MACHINE

Dennis J. Gerber, Minneapolis, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.

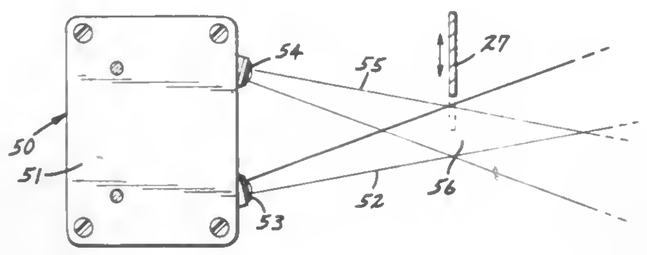
Filed Jan. 27, 1981, Ser. No. 228,946

Int. Cl.^{3} B24B *21/18*

U.S. Cl. 51—135 BT **14 Claims**

1. An abrasive grinding machine including a grinding head having an endless abrasive belt movably carried by at least two spaced rollers to define at least two spaced flights, drive means for driving one of the rollers and tracking means operative in first and second modes for respectively causing the abrasive belt to move laterally back and forth over the rollers, the improvement which comprises:

(a) photodetector means comprising a radiation source generating a beam of radiated energy and a detector having a radiation detecting view field, means mounting the source and detector so that the radiation beam and view field intersect in a predetermined region, and so that said source and detector are protectively disposed between said flights and arranged so that said predetermined region is traversed by only one edge of the abrasive belt;



(b) said photodetector means generating a first signal upon entry of said one edge of the abrasive belt into the predetermined region, and a second signal upon said one edge of the abrasive belt leaving said predetermined region;

(c) and control means operatively connected to the photodetector means for causing the tracking means to operate in one of said first and second modes in response to said first signal and for operating in the other of said first and second modes in response to said second signal.

4,369,602
SURFACE FINISHING DEVICE

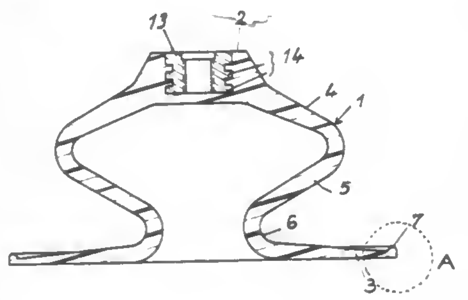
Charles G. Amicel, Carrieres-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

Filed Dec. 10, 1980, Ser. No. 214,996

Claims priority, application France, Jun. 18, 1980, 80 13484

Int. Cl.^{3} B24B *41/00*

U.S. Cl. 51—168 **3 Claims**



1. In combination with a drive shaft and a surface finishing accessory, a device for transmitting to said surface finishing accessory the rotary motion provided from said drive shaft through a single-piece mechanical transmission consisting solely and exclusively in a generally bell-shaped resilient intermediate member having at the input end thereof a flared central vertex couplable to said drive shaft and at the output end thereof a flared peripheral base fittable to said surface finishing accessory, wherein the improvement comprises, between said flared central vertex and said flared peripheral base, an intermediate tapering portion forming a single annular constrictive indentation in the outer surface of said single-piece transmission, whereby the latter is bestowed with universal deformation capacity about its axis of rotation, said surface finishing accessory bearing base being displaceable longitudinally along, laterally from and angularly about said axis.

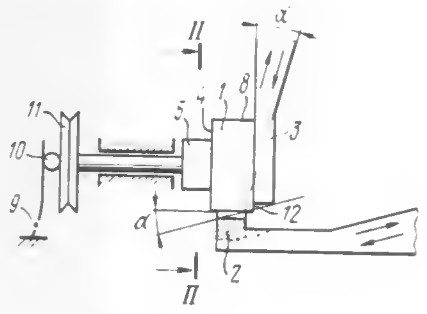
4,369,603
METHOD OF POSITIONING AND ROTATING WORKPIECE AND ARRANGEMENT IMPLEMENTING SAME

Iosif D. Gebel, Svetlanovsky prospekt, 35, kv. 94; Arkady A. Zykov, prospekt Smirnova, 15, kv. 51; Vladimir M. Lvov, Manchesterskaya, 16, kv. 58; Askold I. Nefedov, 2 Nikitinskaya ulitsa, 8, kv. 5; Viktor I. Parshikov, prospekt K. Marxa, 70, kv. 93; Marina Y. Starkina, prospekt Shvernika, 3, kv. 121; Mendel S. Klibanov, all of Leningrad, U.S.S.R.; Alexandr S. Ryss, deceased, late of Leningrad, U.S.S.R., and by Maria I. Ryss, legal representative, ulitsa Vavilovykh, 15, korpus 3, kv. 85, Leningrad, U.S.S.R.

Continuation of Ser. No. 965,036, Nov. 30, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,150

Int. Cl.^{3} B24B *41/06*

U.S. Cl. 51—236 **22 Claims**



1. A method for positioning and rotating a workpiece shaped like a body of rotation, the method being used during workpiece machining and controlling dimensions and shape of the workpiece, the method comprising the following steps:

- positioning said workpiece on a support system comprising an axial support and a radial support, thus ensuring the respective lines of contact between said workpiece and said supports;
- engaging a surface of said workpiece with a rotary driving member;
- bringing said workpiece into rotation by torque transmitted from said rotary driving member to said workpiece due to the forces of friction developed therebetween;
- feeding independent ultrasonic mechanical vibrations to each of said supports of said support system in a direction parallel to or at an angle not exceeding 10 degrees with the line of contact between said workpiece and respective ones of said supports;
- whereby the frictional interaction between said driving member and said workpiece is maintained substantially without interference from said ultrasonic mechanical vibrations, while the forms of friction developed between said workpiece and said support system are significantly reduced due to said ultrasonic mechanical vibrations fed thereto.

4,369,604
METHOD FOR MECHANICALLY PREPARING STYLUS LAPPING DISCS

Grzegorz Kaganowicz, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

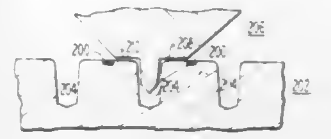
Filed Feb. 27, 1981, Ser. No. 238,805

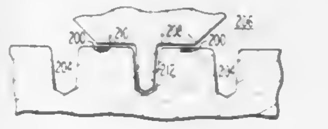
Int. Cl.^{3} B24B *1/00;* **G11B** *3/00*

U.S. Cl. 51—281 R **6 Claims**

1. A method for preparing a groove having a given depth for use in lapping a keel on a playback stylus, said playback stylus being suitable for playing back prerecorded signals from a disc record groove of a given width, said keel being defined by a constricted terminal region on a tip of said playback stylus, said constricted terminal region being narrower than said given width and having a dimension along at least one face thereof which is substantially equal to said given depth, said method comprising the steps of:

- mounting a metal substrate on a turntable;
- establishing relative motion between a cutting stylus and said metal substrate;
- introducing a cutting tip of said cutting stylus into a surface of said metal substrate during said relative motion for mechanically cutting a groove into said surface of said metal substrate, said cutting tip having a shape complementary to the shape of said keel of said playback stylus, said relative motion being established such that said





groove is formed in said substrate surface in a spiral pattern;
- recording a signal on said surface of said metal substrate, said signal being provided for monitoring a playback stylus lapping process on a replica;
- forming a metal part from said grooved metal substrate; and
- stamping said replica from said metal part, said replica having a groove shape and size substantially similar to the shape and size of the groove cut into said metal substrate.

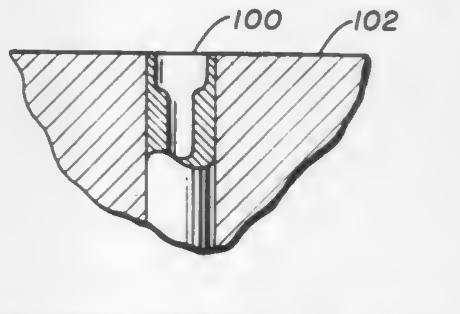
4,369,605
METHODS FOR PREPARING TUBE SHEETS FOR PERMEATORS HAVING HOLLOW FIBER MEMBRANES

Edward J. Opersteny, Chesterfield, Mo., and Alfred K. Fritzsche, Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 11, 1980, Ser. No. 168,937

Int. Cl.^{3} B24B *1/00*

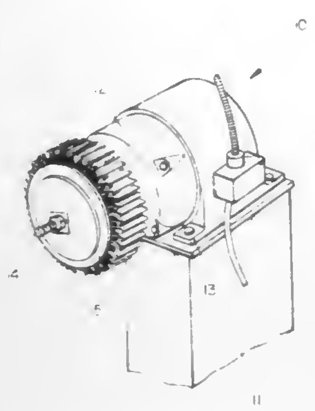
U.S. Cl. 51—319 **18 Claims**



1. A method for opening the entrance to bores of hollow fiber membranes embedded in a solid potting material to form a tube sheet wherein the hollow fiber membranes terminate at at least one face of the tube sheet comprising externally blasting the surface of said at least one face of the tube sheet with a particulate abrasive having an average maximum cross-sectional dimension of less than about 70 percent of the minimum cross-sectional dimension of the bores of the hollow fiber membranes at a velocity sufficient to erode the surface of the hollow fiber membranes.

4,369,606
ABRASIVE HEAD

Ralph E. Reiman, Indianapolis, Ind., assignor to Grinding & Polishing Machinery Corp., Indianapolis, Ind.
Filed Sep. 11, 1980, Ser. No. 186,233
Int. Cl.^{3} B24D *9/06*
U.S. Cl. 51—334 **11 Claims**

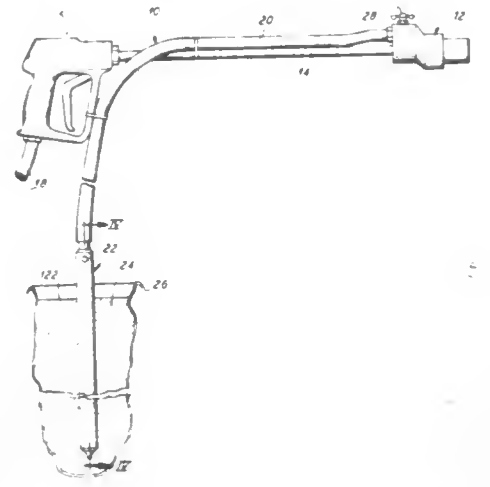


1. An abrasive head mountable on a rotatable spindle:
a first plate and a second plate spaced apart and parallel having a centrally located hole extending therethrough to receive a spindle rotatable on an axis of rotation;
a plurality of outwardly extending brushes spaced from each other around said axis and positioned between said first plate and second plate;
brush holders securing said brushes between said first plate and second plate, said holders having parallel but offset side mounting flanges with said flanges of each holder overlapping and secured to flanges of adjacent holders and to said first plate, said holders also each having a rear flange secured to said first plate;
a plurality of abrasive strips mounted within said head and including free distal ends extending outwardly therefrom between adjacent brushes;
first means mounted to said first plate and second plate holding said strips therebetween; and,
a plurality of clips, each extending between and secured to one of said side mounting flanges and a rear flange of said holders distributing force therebetween as said head is rotated exerting centrifugal force on said holders.

4,369,607
SAND BLASTING APPARATUS

William L. Bruggeman, Bethel, and Claude B. Myers, Brooklyn Park, both of Minn., assignors to Cat Pumps Corporation, Minneapolis, Minn.
Filed Jun. 18, 1980, Ser. No. 160,589
Int. Cl.^{3} B24B *5/04, 7/00*
U.S. Cl. 51—427 **8 Claims**

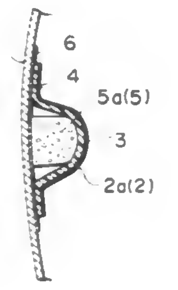
6. In a blaster for jetting abrasive and water, the improvement of:
a discharge device with passage means formed in said discharge device,
said passage means comprising:
first and second parallel axial inlet passages,
an enlarged mixing zone communicating with said axial passages, and
a discharge opening passage parallel with said axial passages and communicating with said mixing zone,
said first axial passage being an abrasive passage and having a first parallel inlet leg in a second leg angled towards said mixing zone and having a wall susceptible to erosion by the flow of abrasive from said first leg to said second leg,



a controllable air inlet between said two legs which will admit air and form an air curtain over said wall of said second leg, thereby to protect said wall against erosion.

4,369,608
PANEL FOR AUTOMOBILE

Toshikatsu Miura, Higashikurume; Hiroto Kikuchi, Hiratsuka; Yukio Okada, Kodaira, and Tsutomu Yoshioka, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Sep. 3, 1980, Ser. No. 183,691
Claims priority, application Japan, Sep. 8, 1979, 54-114731
Int. Cl.^{3} B32B *7/08;* **B60R** *13/04*
U.S. Cl. 52—309.9 **4 Claims**

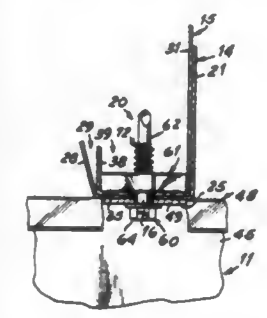


1. A panel for an automotive vehicle comprising:
an outer panel of the vehicle;
a rust-proofing film bonded to the inner side of said outer panel;
a main reinforcing member bonded at its periphery to the inner side of said film, said main reinforcing member being made of a hardened thermosetting resin;
an auxiliary reinforcing member bonded to and covering the entire inner side of said main reinforcing member; and
a core element completely encapsulated between the inner side of said film and the outer side of said main reinforcing member, said core element being made of a foamed resin material that is heat-expanded to cause said main reinforcing member and said auxiliary reinforcing member to bulge inwardly to form a rib-like projection to strengthen the panel.

4,369,609
PREFABRICATED BUILDING SYSTEM

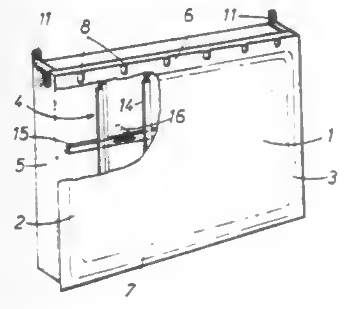
Robert W. Sheldon, 560 Carriage Dr., NE., Atlanta, Ga. 30328, and Richard W. Mullin, Fox Ridge Rd., Eufaula, Ala. 36027
Filed Aug. 18, 1980, Ser. No. 178,953
Int. Cl.^{3} E04B *5/52*
U.S. Cl. 52—478 **6 Claims**

1. A fastener assembly for use in attaching a plurality of juxtaposed work pieces together where the work pieces have a prescribed total thickness at the point of attachment including:
a screw including a shank; an enlarged head at one end of said shank; a drill tip at the opposite end of said shank; and a self tapping thread around said shank, said self tapping thread having a leading end adjacent said drill tip and a trailing end spaced a prescribed distance from said head substantially equal to the prescribed total thickness of said work pieces, said drill tip adapted to drill holes through said work pieces sized to just receive said shank therethrough so that said self tapping thread will tap through said work pieces as said screw is rotated after said drill tip forms the holes to allow said head on said screw to move toward one side of said work pieces whereby said thread successively releases the work pieces as said head moves toward the one side of the work pieces to cause the work pieces to be clamped together in the juxtaposed position as the trailing end of said thread threadedly passes through that work piece opposite said head and whereby said thread threadedly disengages said work pieces when said head is juxtaposed with the one side of said work pieces so that said screw is free to rotate with respect to said work pieces yet the trailing end of said thread maintains said work pieces clamped together; and
a locking member adapted to be threadedly engaged by said thread on said screw and screwed down against the work pieces opposite said head as said screw is rotated with respect to said work pieces to clamp said work pieces between said locking member and said head on said screw.



4,369,610
EXTERNAL REVETMENT PANEL FOR BUILDINGS

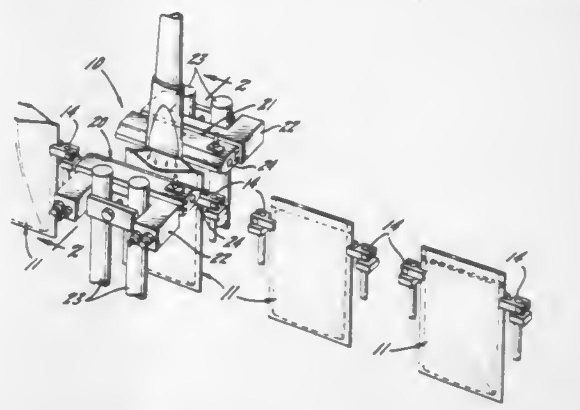
Daniel Volan, Grisy les Platres, France, assignor to Luchaire S.A., Paris, France
Filed Dec. 9, 1980, Ser. No. 214,676
Claims priority, application France, Dec. 11, 1979, 79 30337
Int. Cl.^{3} E04B *1/62, 2/00*
U.S. Cl. 52—509 **12 Claims**



1. An external revetment panel for buildings and more particularly a ventilated insulating revetment panel comprising in succession from the exterior to the interior a shell having parallel ribs along its vertical edges, a screening panel and insulating material, said screening panel maintaining the insulating material in spaced relationship with the shell, in which:
the shell has an upper and a lower edges in parallel stepped relationship to the surface, the depth of the lower step being smaller than the depth of the upper step, the edge of the upper step being bent into a channel section and the transverse web of the channel section having holes formed therein,
gapping means provided on at least one of the stepped edges of the panel,
at least one bracket fixed to the free flange of the channel section, and
the insulating material fixed to spacing means which are in turn fixed to the internal surface of the shell.

4,369,611
TOP HEAT SEALING UNIT FOR POUCHES

Allen B. Canfield, Sarasota, Fla., assignor to Rexham Corporation, New York, N.Y.
Filed Jul. 7, 1980, Ser. No. 166,072
Int. Cl.^{3} B65B *51/14, 55/04*
U.S. Cl. 53—127 **8 Claims**



1. A packaging machine having means for advancing upright pouches along an upright path, each of said pouches having an open upper end portion and being defined by two opposing upright side panels made of heat sealable material, each of said pouches receiving a product at a filling station positioned along said path, means downstream of said filling station for introducing steam into each filled pouch to drive air out of the pouch, a heat sealing unit for sealing the upper end portion of each pouch after steam has been introduced therein, said heat sealing unit comprising first and second elongated and generally horizontal opposing rigid bars adapted to close and apply heat and pressure upon the upper end portion of each pouch below the upper edge thereof, and means for heating at least one of said bars, said packaging machine being characterized in that said one bar has an active forward side defined by a set of upper and lower generally planar and inclined faces which converge into intersecting relation with one another upon progressing forwardly, the included angle of convergence between said faces being obtuse with the surface defined along the intersection of said faces forming the forwardmost extremity of said one bar and defining a sealing surface, said sealing surface engaging the upper end portion of one of said side panels when said rigid bars are closed to apply heat and pressure so as to form a narrow, single line-type seal along the upper end portion of the pouch only at the intersection of said rigid bar faces, said inclined faces being positioned closely adjacent said one side panel when the latter is engaged by said sealing surface with the heat emanating from said inclined faces serving to drive moisture created by the steam upwardly and downwardly off of the inner sides of said panels in the area of said seal so as to leave said seal area substantially moisture-free.

4,369,612

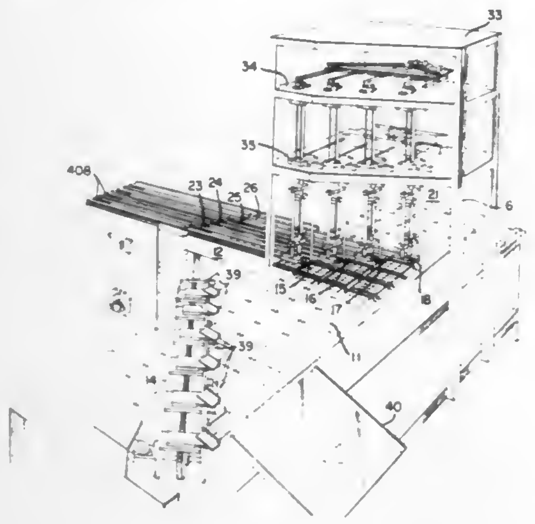
AUTOMATIC CONFECTION PACKAGING MACHINE

Edward M. Wight, Austin, Tex., assignor to Glacier Industries, Inc., Austin, Tex.

Continuation of Ser. No. 47,573, Jun. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 918,376, Jun. 23, 1978, abandoned. This application Jan. 15, 1981, Ser. No. 225,377

Int. Cl.^{3} B65B *57/14, 35/44, 43/42*

U.S. Cl. 53—494 **21 Claims**



1. Apparatus for transporting confection pieces from a confection production apparatus and packing said pieces in rectilinear arrays, said arrays containing a plurality of confections in each row and a plurality of such rows within containers, comprising,

product transport means for conveying in a first plane in a first direction parallel columns of individual confection prices along individual lanes to a series of individual lane termination points, each of said lane termination points being displaced from one another in said first direction,

container transport means for conveying a plurality of said containers in parallel columns moving in a second direction perpendicular to said first direction, said transport means moving said containers underneath the plane of said product transport means, and

loading means for ejecting a plurality of said confection pieces sufficient to fill each row from each of said lane termination points into said containers.

4,369,613

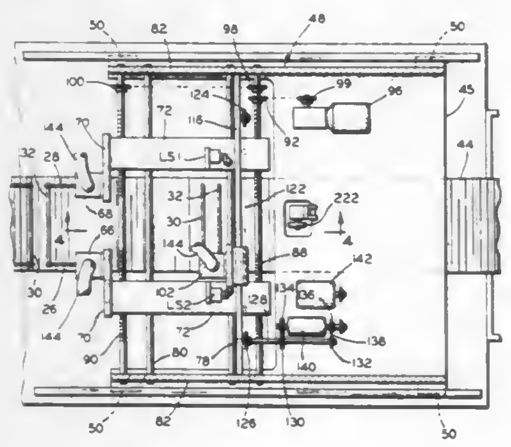
APPARATUS FOR PRODUCING PACKAGES OF TWO WEBS OF VARYING LENGTHS AND WIDTHS

Larry C. Gess, 9270 Secor Rd., Temperance, Mich. 48182

Filed Mar. 26, 1981, Ser. No. 247,740

Int. Cl.^{3} B65B *9/02, 51/02, 59/00*

U.S. Cl. 53—553 **2 Claims**



1. Apparatus for making a package comprising a bed having a flat surface, means for guiding and moving a first web of packaging material in a longitudinal path along said surface, a supporting housing positioned on said bed and supported on the bed on each side of the first web, a first applicator for depositing a first strip of adhesive material longitudinally along an edge portion of the first web, a second applicator for depositing a second strip of adhesive material longitudinally along another edge portion of the first web, means supporting said first and said second applicators by said supporting housing, means for depositing a first transverse strip of adhesive material on the first web between the longitudinal strips and for depositing a second transverse strip of adhesive material on the first web between the longitudinal strips, means for depositing a second web of packaging material on the first web, means for pressing the two webs together, and means for severing the webs between adjacent transverse strips, said means supporting said first and second applicators comprising a first supporting member for said first applicator and a second supporting member for said second applicator, means carried by said supporting housing for moving said first supporting member and said second supporting member toward and away from one another substantially equal distances, means for moving said transverse strip depositing means across the first web, and means carried by each of said supporting members for reversing the movement of said moving means when engaged by said transverse strip depositing means.

4,369,614

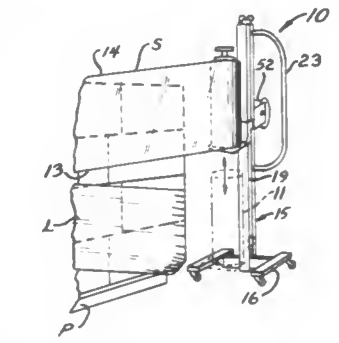
WRAPPING APPARATUS

Siegfried K. Tetzner, 5307 W. Lake Shore Dr., Wonder Lake, Ill. 60097

Filed Nov. 17, 1980, Ser. No. 207,788

Int. Cl.^{3} B65B *11/02, 13/04*

U.S. Cl. 53—556 **10 Claims**



1. Apparatus for wrapping a load on a floor-carried pallet comprising:

a carriage having a wheeled base for rolling movement of the carriage on the floor about the pallet-carried load, an upright upstanding from said base, and handle means for manipulation of the carriage in causing the rolling movement thereof;

a carrier for carrying a roll of sheet material on a core for rotation about the roll axis including a flat plate defining a bottom wall support, a spindle upstanding from said bottom roll support rotatably coaxially carrying said roll and having an upper outer end, threaded means coaxially on said outer end of the spindle, a threaded member coaxially threadedly mounted to said threaded means and having an annular shoulder means, a cap having a radial slot permitting said cap to be brought laterally about said member into a dispostion axially outwardly adjacent said spindle outer end with said shoulder means spaced axially outwardly thereof, and means for threading said member on said threaded means to urge said shoulder means axially inwardly and against said cap and retain said cap on said spindle to retain the sheet material roll coaxially on said spindle against movement outwardly from said outer end, wherein said means for threading said threaded member on said threaded means comprises a manipulating handle at its distal end of a size smaller than said core, about which member and handle the roll is coaxially passed during placement of a sheet material roll on, and during withdrawal of the sheet material roll from, the spindle upon removal of said cap and without removal of said member from said spindle; and

moving means for moving the carrier vertically along the upright as the carriage is moved about the pallet-carried load between a lowermost position wherein the lower edge of sheet material roll on the carrier is disposed substantially at floor level adjacent the bottom of the pallet and an uppermost position wherein the top of the roll is at a position substantially above the top of the upright to permit the upper edge of sheet material withdrawn from said roll to be adjacent the top of the load on the pallet notwithstanding the disposition of the top of the load at an elevation substantially above that of the top of the upright to wrap the entire pallet and load thereon as desired, said moving means including manually operable means disposed adjacent said handle means for facilitated concurrent movement of the carriage about the pallet-carried load and movement of the carrier on the upright in effecting the spiral wrapping.

4,369,615

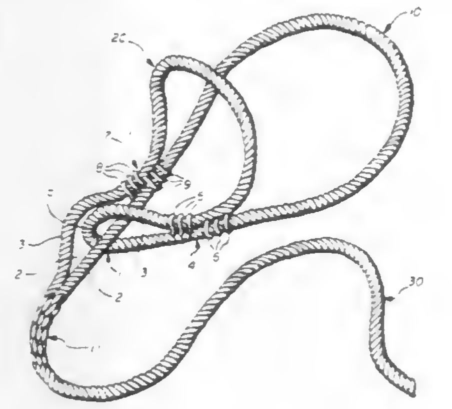
ANIMAL HALTER

Darrell R. Bloodworth, Rte. 2, Box 217-A, Waller, Tex. 77484

Filed Jul. 17, 1981, Ser. No. 283,909

Int. Cl.^{3} B68B *1/02*

U.S. Cl. 54—24 **10 Claims**



1. An animal halter formed only from a single length of rope and without other components comprising:

an eye loop formed by a double portion of said rope, the opposite first and second parts of which are connected at a first point for disposition near one side of the lower jaw of an animal;

a headstall loop formed by an extended and doubled portion of said first part;

a noseband loop formed by an extended and doubled portion of said second part, said extended first and second parts which form said headstall and noseband loops being connected at a second point for disposition near the other side of said lower jaw; and

said first and second parts further extending generally side by side from said second point for connection at a third point for disposition below the lower jaw of said animal forming an elongated slot engaged by the bend of said eye loop to allow limited movement of said eye loop between said second and third points and consequent limited adjustment of said headstall and nose band loops.

4,369,616

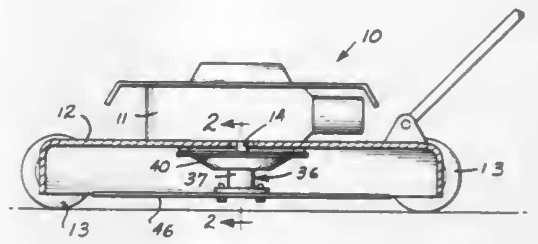
CENTRIFUGAL CLUTCH AND BRAKE FOR LAWNMOWER

John M. Cody, 1954 W. Sharon St., and William L. Weaks, 650 S. Virginia St., both of Quincy, Fla. 32351

Filed Oct. 27, 1980, Ser. No. 200,825

Int. Cl.^{3} A01D *75/00*

U.S. Cl. 56—11.3 **7 Claims**



1. A centrifugal clutch and brake apparatus for selectively connecting a rotatable driven element to a power plant having a drive shaft and which is mounted on a support comprising engaging means carried by the drive shaft of the power plant, return means urging said engaging means toward the axis of the shaft, said return means retracting said engaging means when the power plant is operated at idling speed and permitting said engaging means to be extended by centrifugal action when the power plant is operated at operating speed, said engaging means having a first frictional surface, a housing mounted for rotational and axial movement on the drive shaft of the power plant, said housing including a portion having a second frictional surface which normally is in spaced relationship with said first frictional surface, said housing having first brake means, second brake means fixed to the power plant support, means normally urging said first brake means into engagement with said second brake means, whereby when the drive shaft of the power plant is rotating at idling speed, said engaging means is retracted and said first and second brake means are in engagement with each other, and when the drive shaft is rotating at operating speed, said engaging means is extended so that said first frictional surface is extended into engagement with said second frictional surface of said housing and moves said first brake means out of engagement with said second brake means and causes said housing to be rotated substantially at the speed of rotation of the drive shaft.

4,369,617

FEEDER IDLER DRUM SHAFT WITH REMOVABLE EXTENSIONS

Roger D. Hanaway, Blue Springs, Mo., and Larry R. James, Olathe, Kans., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 16, 1981, Ser. No. 283,975

Int. Cl.^{3} A01D *41/06;* **B65G** *23/44;* **A01D** *57/20*

U.S. Cl. 56—14.6 **4 Claims**

1. An agricultural harvester having an endless belt conveyor disposed between a pair of vertical side walls of a housing characterized by

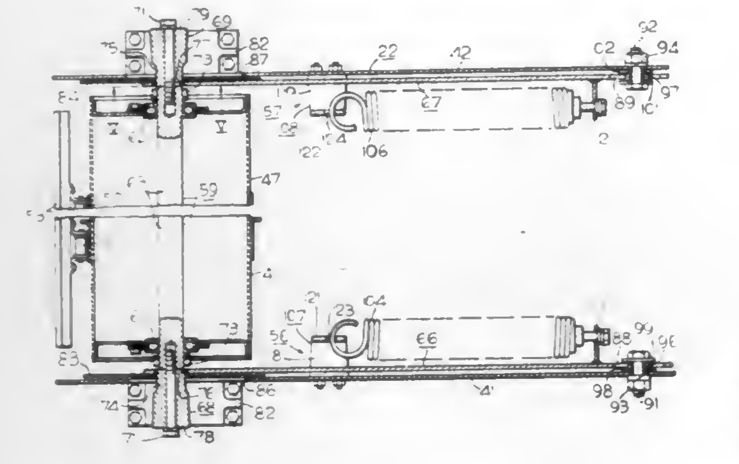
an idler drum carrying one end of said conveyor,

a pair of aligned openings in said side walls at opposite ends of said drum,

a nonrotating shaft having a central portion rotatably carrying said idler drum for rotation about a first transverse horizontal axis and a pair of removable extensions at opposite ends thereof extending through said aligned openings, the length of said central portion of said shaft being less than the distance between said side walls,

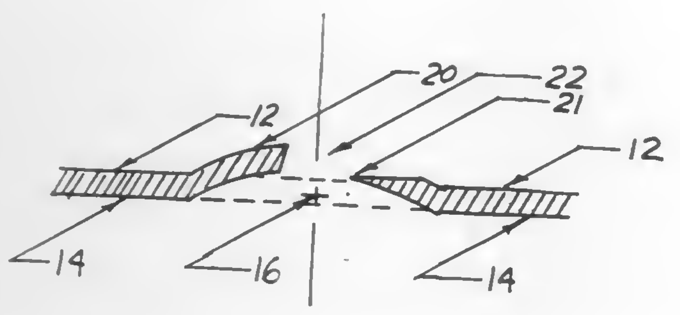
a pair of support arms having first corresponding ends connected respectively to said extensions and second corresponding ends pivotally connected to said side walls on a second transverse horizontal axis spaced from said first transverse axis in the direction toward the other end of said conveyor whereby said shaft is vertically swingable about said second axis to provide a vertical floating condition of said idler drum relative to said housing, and

stop means on the outboard sides of said walls in vertically confronting relation to said extensions limiting vertical swinging movement of said shaft between predetermined limits, said openings in said side walls being of sufficient size to permit said vertical swinging movement between said limits,



said idler drum and said central portion of said shaft being removable radially as a unit from said housing upon removal of said extensions without removal of said support arms.

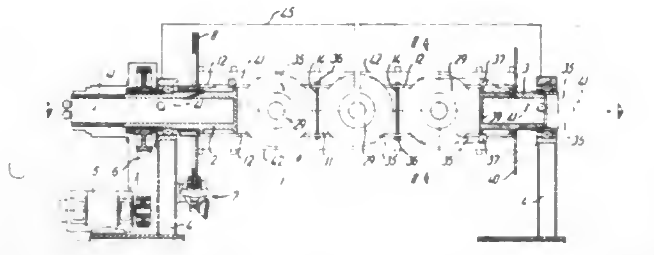
4,369,618
SAFETY-VAC LAWN MOWER BLADE
Joseph C. Dell, R.D. #1, Box 214B, McConnellsburg, Pa. 17233
Filed Aug. 27, 1981, Ser. No. 296,845
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **4 Claims**



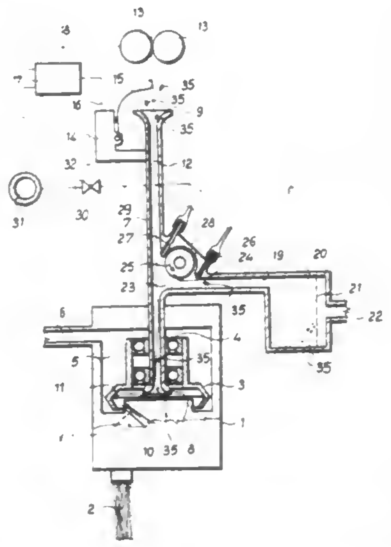
1. A rotary lawn mower blade comprising a circular sheet of material forming a disc adapted to rotate about an axis, said disc having a top plane and a bottom plane, said plaines being parallel to each other, said disc having vortex generating elements thereon extending radially from the axis and axially from one of said planes of said disc, said elements having radial slots or openings therein, said slots or openings having a trailing edge forming the cutting blade, said slots or openings and said cutting blades being on the same axial side of said disc.

4,369,619
CABLE STRANDING MACHINE
Erik S. Nielsen, Stenlose, and Poul Stäcker, Vanlose, both of Denmark, assignors to I. Bager & Co. A/S, Rodovre, Denmark
Filed Apr. 27, 1981, Ser. No. 258,012
Claims priority, application Denmark, Apr. 30, 1980, 1916/80
Int. Cl.³ D07B *3/04, 7/06*
U.S. Cl. 57—58.34 **5 Claims**

1. A cable stranding machine, comprising an elongate rotor supported for rotation about a longitudinal axis and having at least one pair of opposed longitudinal beams; and a plurality of pairs of opposed bobbin bearing devices locked to the longitudinal beams in spaced relationship along the longitudinal direction of the rotor, each bobbin bearing device including a pintle support secured to the respective beam, a pintle rotatably supported by the corresponding pintle support for supporting one end of a thread bobbin for rotation about an axis perpendicular to the rotor axis, and means in connection with at least one pintle support of each pair for axially displacing the associated pintle relative to its pintle support towards and away from the opposed pintle, at least one pintle support of each pair being stepwise displaceable in the direction of the pintle axis relative to the associated rotor beam between a finite number of predetermined, axially spaced positions, and means for selectively locking each stepwise displaceable pintle support to said rotor beam in each of said predetermined positions.

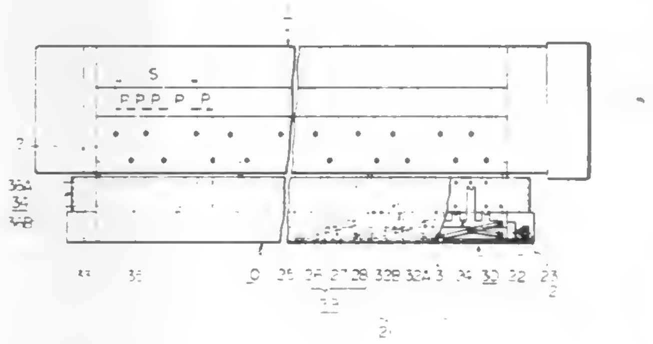


4,369,620
APPARATUS FOR SPINNING-IN YARNS IN OPEN-END ROTOR SPINNING UNITS
Frantisek Burysek, Usti nad Orlici; Karel Mikulecky, Chocen; Jiri Elias, Brandys nad Orlici; Stanislav Esner; Stanislav Skoda, both of Usti nad Orlici, and Jan Janousek, Brandys nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usit nad Orlici, Czechoslovakia
Filed Feb. 11, 1981, Ser. No. 233,398
Claims priority, application Czechoslovakia, Feb. 13, 1980, 1070-80
Int. Cl.³ D01H *15/02*
U.S. Cl. 57—263 **4 Claims**



1. In an apparatus for spinning-in yarns in an open-end rotor spinning unit having a spinning-in device for returning a yarn end through a take-off duct into the spinning rotor, a severing device for shortening the yarn end to a predetermined length, and a withdrawing duct which communicates with the take-off duct and which is designed, on the one hand, for holding the yarn end by the action of a vacuum which, in the contact region of the two ducts, exceeds the working vacuum in the take-off duct, and, on the other hand, for withdrawing the severed yarn end, the improvement comprising a subatmospheric pressure source connected to the withdrawing duct during both spinning and spinning-in processes, and at least one air nozzle which opens into the withdrawing duct, which nozzle is designed for introducing a fresh end of yarn into the take-off duct by a controlled air outflow in a predetermined phase of the spinning-in process.

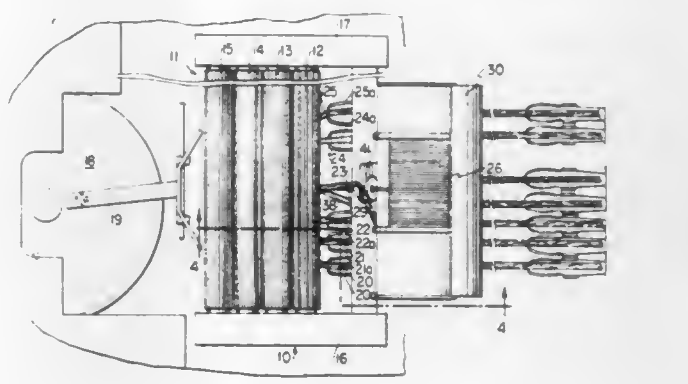
4,369,621
METHOD FOR SIMULTANEOUSLY CHANGING BOBBINS IN A FLY FRAME AND APPARATUS FOR CARRYING OUT THE METHOD
Takashi Kogiso, Mizunami, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 20, 1981, Ser. No. 323,703
Claims priority, application Japan, Nov. 20, 1980, 55-164281
Int. Cl.³ D01H *9/08*
U.S. Cl. 57—267 **13 Claims**



1. Method for simultaneously changing bobbins in a fly frame wherein flyers supported from above are arranged in a zigzag fashion in front and back rows extending in the longitudinal direction of said fly frame, which method comprises: supplying empty bobbins in a zigzag fashion on pegs mounted on a conveyor of a bobbin changing apparatus before stoppage of said fly frame upon completion of full bobbins; advancing bobbin changing arms of said bobbin changing apparatus from a standby position thereof to full bobbins on the fly frame after the stoppage of said fly frame; simultaneously doffing said full bobbins by said bobbin changing arms; retracting said bobbin changing arms with said full bobbins and moving said conveyor so as to pass said full bobbins through spaces between adjacent empty bobbins; inserting said full bobbins onto empty pegs of the conveyor; moving said conveyor to locate said empty bobbins at positions corresponding to said bobbin changing arms; advancing said bobbin changing arms to remove said empty bobbins from said pegs; further advancing said arms with said empty bobbins toward the fly frame and moving said conveyor so as to pass said empty bobbins through spaces between adjacent full bobbins on the conveyor; donning said empty bobbins on said fly frame; and retracting said arms to said standby position.

7. Apparatus for simultaneously changing bobbins in a fly frame, wherein flyers are arranged in a zigzag fashion in front and back rows extending in the longitudinal direction of said fly frame, which apparatus comprises: bobbin changing arms having bobbin supporting parts at the free ends thereof, said bobbin supporting parts being arranged in a zigzag fashion corresponding to said zigzag arranged flyers; a connecting member for supporting all of said bobbin changing arms; reciprocation means for horizontally reciprocating said connecting member towards said fly frame and therefrom; lifting means for lifting said connecting member; a conveyor located under said bobbin changing arms at a standby position and having two rows of pegs, half of said pegs being arranged corresponding to the zigzag arranged flyers, and the remaining half of said pegs being equally and longitudinally shifted from the other half of said pegs a predetermined certain distance in one direction; conveyor moving means for moving said conveyor to and fro; means for controlling said lifting means; and means for controlling the cooperative movements of said reciprocating means with said conveyor moving means so as to pass bobbins supported by said bobbin changing arms through spaces between adjacent bobbins mounted on said pegs of said conveyor.

4,369,622
METHOD AND APPARATUS FOR DRAWING AND BLENDING TEXTILE MATERIALS
Richard K. Teed, Greenwood, and Arther M. Pressley, Ware Shoals, both of S.C., assignors to Riegel Textile Corporation, Ware Shoals, S.C.
Filed Mar. 24, 1980, Ser. No. 132,785
Int. Cl.³ D01G *1/06, 13/00;* D01H *5/00*
U.S. Cl. 57—315 **18 Claims**



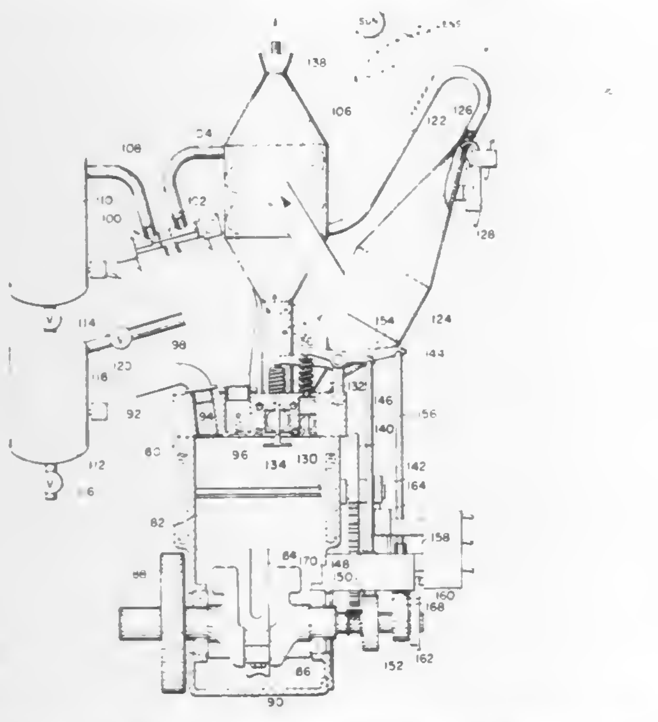
1. A method of drawing and blending at least two bundles of fibrous materials while maintaining contact with each other comprising:
(a) feeding at least one bundle of a first fibrous material through draw rollers of a drawing frame;
(b) supporting a roll of a bundle of second fibrous material adjacent the rearmost rollers of the drawing frame;
(c) unwinding said roll of said bundle of second fibrous material adjacent said rearmost rollers of the drawing frame;
(d) feeding said second fibrous material bundle into said rearmost rollers of the drawing frame simultaneously with said first fibrous material bundle; and
(e) guiding said first fibrous material bundle and said second fibrous material bundle relative to each other such that the latter is continuously cushioned by said first material bundle with respect to said draw rollers when passing therethrough.

12. An apparatus for supporting at least one spool of a bundle of textile fibrous material and for permitting unwinding of said bundle of fibrous material for introduction into a drawing frame for blending with at least a second fibrous material comprising a drawing frame, a support container having a generally arcuate cross-sectional configuration for nestled reception of the spool therein and positioned so as to permit continuous unwinding of the bundle of fibrous material when tension is applied thereto, means for guiding the bundle of fibrous material adjacent the container so as to guide the fibrous material in a predetermined direction into the rearmost draw rollers of the drawing frame after unwinding from the spool.

4,369,623
POSITIVE DISPLACEMENT ENGINE WITH SEPARATE COMBUSTION CHAMBER
David E. Johnson, 173 West Ave., Canandaigua, N.Y. 14424
Continuation of Ser. No. 863,858, Dec. 20, 1977, abandoned, and a continuation of Ser. No. 710,092, Jul. 30, 1976, abandoned, which is a continuation of Ser. No. 558,371, Mar. 14, 1975, abandoned. This application Sep. 18, 1980, Ser. No. 188,573
Int. Cl.³ F02G *1/02*
U.S. Cl. 60—39.6 **11 Claims**

1. A low pressure, low combustion temperature engine of the Brayton or Joule type having reduced level of pollutants in its exhaust and having a steady state mode, a braking mode and a peak power mode, the engine comprising: means defining at least one power stage including a positive displacement chamber; a combustion chamber located externally of said displacement chamber to supply a power fluid to said displacement

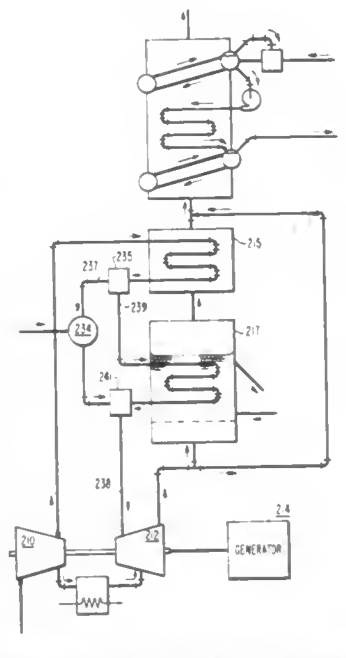
chamber; a reciprocating piston provided in said displacement chamber and driven by said power fluid during power strokes of an operating cycle; air inlet means including a first valve opening into said displacement chamber for supplying air at ambient atmospheric pressure to said displacement chamber and air outlet means including a second valve opening out of said displacement chamber for allowing compressed air to exit said displacement chamber, said air inlet means and said air outlet means operating during a portion of engine operation to provide compressed air for passage via said outlet means to said combustion chamber to form part of the power fluid during power strokes in the steady state mode, said air outlet means supplying air from said displacement chamber during about each fifth stroke of said piston during the normal steady state mode of the engine; and accumulator coupled to said displacement chamber to receive compressed air therefrom via said air outlet means and to supply stored compressed air to said combustion chamber; control means effective during a braking mode of operation to interrupt flow of power fluid from said combustion chamber to said displacement chamber via a third valve and flow of exhaust from said displacement chamber via a fourth valve and to enable said piston to compress air on each compressing stroke and pass compressed air to said accumulator; and means to selectively supply compressed air from said accumulator to said combustion chamber both on starting the engine and during the full power mode of the operating cycle while interrupting flow of air from said displacement chamber to said accumulator.



4,369,624
HIGH TEMPERATURE GAS TURBINE SYSTEMS
James R. Hamm, Murrysville, and William E. Young, Churchill, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 2, 1981, Ser. No. 222,093
Int. Cl.^{3} F02B *43/08*
U.S. Cl. 60—39.12 **1 Claim**

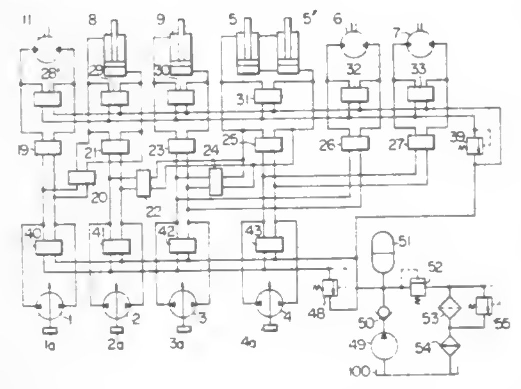
1. A high temperature gas turbine generation system comprising:
- a compressor;
- means for conducting a gaseous oxidant to said compressor;
- a combustion heater wherein one of a fuel gas and a pulverized carbonaceous material is combusted to produce heat and reaction products;
- means for conducting compressed gaseous oxidant to and through said combustion heater so as to heat said oxidant;
- a reactor housing a fluidized bed wherein particulate coal is reacted with a discharge gas to produce heat and said fuel gas;
- means for conducting said fuel gas from said reactor to said combustion heater;
- a combustor producing a high temperature gaseous product from said heated oxidant and a gaseous fuel;
- means for conducting said gaseous fuel to said combustor;
- means for conducting a first portion of said heated oxidant to said combustor;
- means for conducting a second portion of said heated oxidant to and through said reactor so as to further heat said second portion of oxidant;



- means for mixing said high temperature gaseous product and said further heated second portion of oxidant into a mixture;
- an expander having an inlet for receiving said mixture and an outlet for discharging said discharge gas;
- means for conducting said mixture to said expander inlet; and
- means for conducting said discharge gas from said expander outlet to said reactor.

4,369,625
DRIVE SYSTEM FOR CONSTRUCTION MACHINERY AND METHOD OF CONTROLLING HYDRAULIC CIRCUIT MEANS THEREOF
Eiki Izumi, Chiyodamura; Kazuo Honma, Amimachi; Katsuro Abe, Matsudo; Masaaki Uno, Toride, and Kichio Nakajima, Chiyodamura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

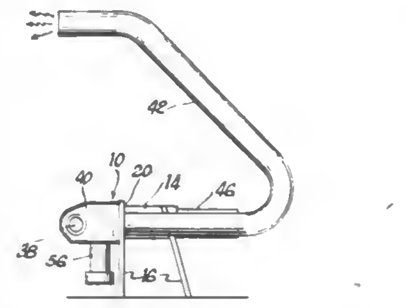
Filed Feb. 20, 1980, Ser. No. 123,087
Claims priority, application Japan, Jun. 27, 1979, 54-80212; Oct. 19, 1979, 54-134259
Int. Cl.^{3} F16H *39/46*
U.S. Cl. 60—327 **13 Claims**



8. A method of controlling hydraulic circuit means of a drive system for construction machinery in which said hydraulic circuit means includes a plurality of variable-displacement hydraulic pumps and a plurality of hydraulic actuators, each said pump being connected in closed circuit to one or a plurality of said actuators through a solenoid-operated valve or valves to drive a movable member or members connected to the actuator or respective actuators when pressurized fluid is supplied to the actuator or actuators from the pump, at least one of the selected hydraulic actuators being further connected in closed circuit through a solenoid-operated valve to at least one of the hydraulic pumps other than the hydraulic pump which is connected in closed circuit to the selected hydraulic actuator, characterized in that said method comprises the steps of: setting a preprogrammed priority order of hydraulic communication between each hydraulic pump and the hydraulic actuators to which said hydraulic pump is connected in closed circuit through the respective solenoid-operated valves generating command signals by an operator; closing all of said solenoid-operated valves when no command signals for driving said actuators are produced; when a command signal for driving at least one actuator is produced, opening the solenoid-operated valve associated with said one actuator or the actuator higher in the priority order of hydraulic communication with said hydraulic pump while controlling the delivery of the pump by the command signal for driving the actuator with which said opened valve is associated; when at least one of command signals which have been produced to drive at least one actuator is removed, closing the solenoid-operated valve associated with the actuator which have been driven by the removed command signal and/or opening or keeping open the solenoid-operated valve associated with the other actuator or actuator higher in the priority order of hydraulic communication with said hydraulic pump among the other actuators while controlling the delivery of the pump by the command signal for driving the actuator with which said opened or opening-kept valve is associated; and conducting any switching of each said solenoid-operated valve only when the delivery of said pump is zero or has been reduced substantially to zero.

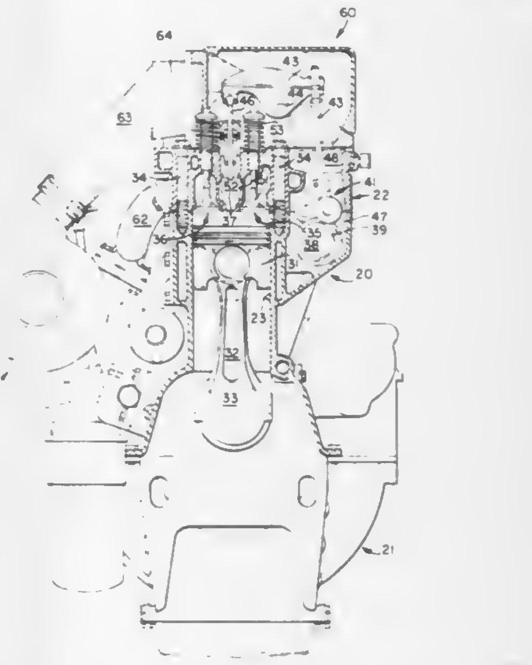
4,369,626
HOT-AIR DISTRIBUTION SYSTEM
Thomas T. Frankie, 2415 Plaza Del Mar, Escondido, Calif. 92025

Filed Jul. 30, 1981, Ser. No. 288,619
Int. Cl.^{3} F23H *13/00;* F02G *1/02*
U.S. Cl. 60—517 **15 Claims**



1. A heated fluid distributor for space heating which utilizes a heat source to both operate a Stirling engine and heat fluid moved by a mechanical fluid mover operated by said Stirling engine, said distributor comprising:
- (a) a frame;
- (b) a Stirling engine mounted on said frame with the hot end of the displacement cylinder extendable into thermal contact with said heat source when the distributor is in its operative mode;
- (c) means defining a fluid path passing relatively cool ambient air in thermal contact with said heat source when the distributor is in operative mode to warm said air, and said fluid path being hermetically separated therefrom to prevent the admixture of any combustion gases from said source to said air to adulterate same, said fluid path also being directed into and terminating in communication with the ambient space to be heated to deliver unadulterated air so warmed thereinto; and
- (d) a mechanical fluid mover operated by said engine to drive said fluid along said path.

4,369,627
INTERNAL COMBUSTION ENGINE
Edward W. Kasting, Seymour, and Richard E. Glasson, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Continuation of Ser. No. 958,532, Nov. 7, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 160,004
Int. Cl.^{3} F02F *1/42*
U.S. Cl. 60—605 **18 Claims**



1. An internal combustion engine comprising a block having at least one pair of engine cylinders formed therein, a head fastened to said block and having two air intake ports and two exhaust ports formed therein for each cylinder, said ports communicating with the associated cylinders, a turbocharger mounted on one side of said block and said head, said two air intake ports and said two exhaust ports of each cylinder being arranged at substantially 90° intervals around the cylinder axis, one of said exhaust ports being adjacent said one side, one of said intake ports being adjacent the opposite side of said head, and the remaining intake and exhaust ports being between said one intake and said one exhaust ports, an exhaust opening for each cylinder formed in said one side of said head, an exhaust passage for each cylinder formed in said head and communicating with said exhaust opening and exhaust ports of the associated cylinder, said head including an upper wall, a bottom wall, and internal walls between said upper and bottom walls, an intake opening formed in said upper wall of said head substantially between the cylinders of said pair of cylinders, said walls forming an enlarged intake air chamber in said head and communicating with said intake opening, said internal walls extending around said intake air ports of said pair of cylinders, said chamber extending to said bottom wall and including the areas adjacent said air intake ports of said pair of cylinders, the intake air flowing generally parallel to said cylinders out of said chamber and through said air ports, a rocker housing fastened to said upper wall of said head, an intake air passage formed in said rocker housing, an intake air duct connected to said turbocharger and to said housing on said one side of the engine which is adjacent the exhaust openings, said intake air passage of said rocker housing communicating with said intake air duct and with said intake opening of said head, and exhaust ducts on said one side and connecting said turbocharger with said exhaust openings.

4,369,628

METHOD AND APPARATUS FOR IMPROVING THE FIREDAMP SAFETY OF AN INTERNAL COMBUSTION ENGINE FOR UNDERGROUND OPERATION

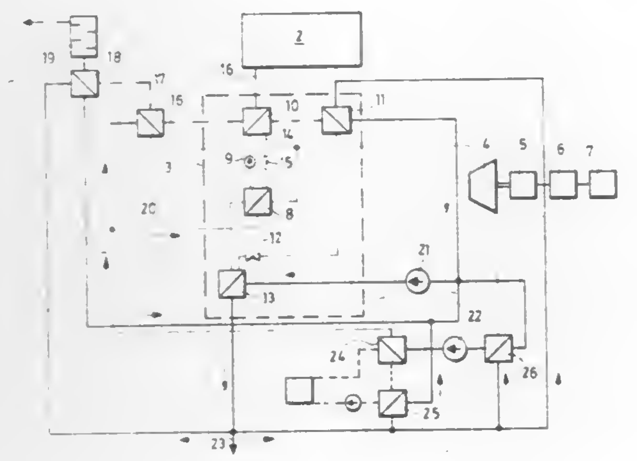
Martin Brunn, Bonn, Fed. Rep. of Germany, assignor to Brunn GmbH & Co. KG, Bonn, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,820

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933137

Int. Cl.³ F02G *5/04*

U.S. Cl. 60—618 **8 Claims**



1. A method for improving the firedamp safety of an assembly for use in underground mine workings, the assembly including an internal combustion engine generating hot exhaust gases, an absorption-type refrigeration machine having a refrigerant circuit for generation of a refrigerated fluid stream, a turbine having a discharge side and a turbine circuit which includes a working medium and a heat exchanger, said method comprising the steps of:

- operating the absorption-type refrigeration machine by passing the hot exhaust gases of the internal combustion engine through said refrigeration machine in a manner to effect heat exchange;
- cooling the exhaust gases of the internal combustion engine which exit the refrigeration machine by transferring heat therefrom to the refrigerated fluid stream;
- heating the turbine working medium by transferring heat thereto from the exhaust gases of the internal combustion engine in the turbine heat exchanger; and
- cooling in the refrigerant circuit with the turbine working medium.

4,369,629

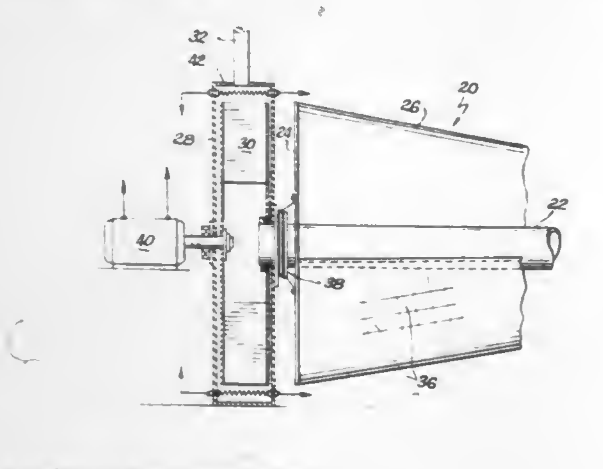
NATURAL ENERGY EXTRACTOR

Lawrence B. Lockwood, 5935 Folsom, La Jolla, Calif. 92037

Filed Jan. 8, 1981, Ser. No. 223,235

Int. Cl.³ F24J *3/00*

U.S. Cl. 60—698 **7 Claims**



1. A wind rotor comprising:

(a) a heat-conductive rotary shaft;

(b) heat conductive wind vanes extending from said shaft to deliver absorbed solar heat to said shaft; and

(c) heat accumulation means operative with said shaft to collect the heat delivered therefrom.

4,369,630

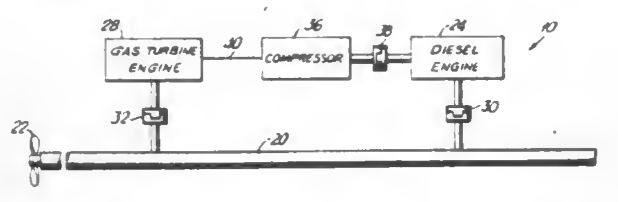
COMBINATION DRIVE SYSTEM FOR SHIPS

Warren Bloomfield, Norwalk, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Feb. 19, 1981, Ser. No. 235,956

Int. Cl.³ F02B *73/00*

U.S. Cl. 60—718 **4 Claims**



1. A drive system for supplying power to a propeller shaft of a ship comprising in combination:

- a main driving engine detachably coupled to said shaft for generating a low power output with high fuel efficiency;
- a gas turbine engine detachably coupled to said shaft, said gas turbine engine generating high power output; and
- a compressor detachably coupled to said main driving engine and fluidly communicating with said gas turbine engine to supply compressed air to the inlet thereof for increasing the power generated by said gas turbine engine, maximum total output power to the shaft being generated by detaching said main driving engine from said shaft and coupling said main driving engine to said compressor such that the power output generated by said main driving engine is utilized to drive said compressor, which functions to supercharge the air input to said gas turbine engine.

4,369,631

REFRIGERATED MERCHANDIZER DISPLAY CASE ADAPTED FOR ENERGY CONSERVATION

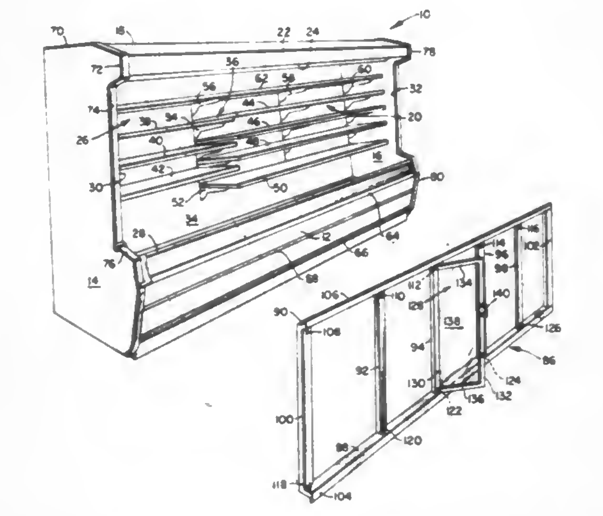
Fayez F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, which is a continuation-in-part of Ser. No. 25,473, Jun. 30, 1979, Pat. No. 4,245,482, and Ser. No. 58,916, Jul. 19, 1979, Pat. No. 4,242,882. This application Apr. 18, 1980, Ser. No. 141,359

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ F25D *21/12;* **A47F** *3/04*

U.S. Cl. 62—82 **98 Claims**



1. In an open front display cabinet having refrigeration means and a display space therein; aperture means in at least one wall thereof for communicating ambient outside air with the air in said cabinet, said aperture means comprising an access opening for permitting products to be moved into and out of said display space; at least one air conduit positioned about said display space and having an outlet opening and an inlet opening at opposite ends thereof so that air leaving said air conduit outlet opening will be directed toward and received by said inlet opening; an air moving means for propelling at least one air band comprising a refrigerated air band through said air conduit during a refrigeration cycle and for propelling ambient air through said cabinet during a defrost cycle; and said refrigeration means arranged within said air conduit; the improvement comprising: a barrier door retrofitted into said display cabinet for substantially covering said access opening, air defrost means arranged in association with said display cabinet for selectively creating a gap between said barrier door and said access opening for enabling passage of ambient air into said air conduit to remove frost from said refrigeration means during a defrost cycle of operation, and said air moving means enabling propulsion of ambient air within said air conduit during a defrost cycle of operation to facilitate frost removal from said refrigeration means.

70. A method of improving the energy efficiency of a refrigerated display cabinet having an air defrost system, a display space therein, aperture means in at least one wall thereof for communicating ambient outside air with the air in the cabinet, the aperture means comprising an access opening for permitting products to be moved into and out of the display space, at least one air band circulated within the cabinet for selectively maintaining a flow pattern inside of the cabinet across the access opening and cooled by contact with a refrigeration means during a refrigeration cycle of operation and, a control means for selectively operating the air band and the refrigeration means to refrigerate the cabinet during a refrigeration cycle and to defrost the refrigeration means during a defrost cycle; the method comprising the steps of: installing covering means for the aperture means including at least one barrier door for substantially covering the access opening, fitting an air defrost means comprising at least one door operating mechanism into association with the display cabinet for enabling creation of a gap between the barrier door and the access opening; adjusting the control means of the display cabinet to enable operation during a refrigeration cycle including, circulating the air band through the display cabinet to form an air curtain across the access opening along a path inside of the barrier door, and propelling the air band through the refrigeration means; adjusting the control means to enable operation during a defrost cycle including, reducing operation of the refrigeration means, causing ambient air to be drawn into the cabinet and pass through the refrigeration means, ejecting defrost ambient air from the cabinet, and creating a gap between the barrier door and the access opening by operating the air defrost means to enable ambient air through-flow; whereby the barrier door increases the energy efficiency by decreasing contact of the ambient air with the air band during a refrigeration cycle in which the barrier door is not open, and wherein ambient air is drawn across the refrigeration means during a defrost cycle of operation to defrost the same.

4,369,632

REFRIGERATED MERCHANDIZER DISPLAY CASE

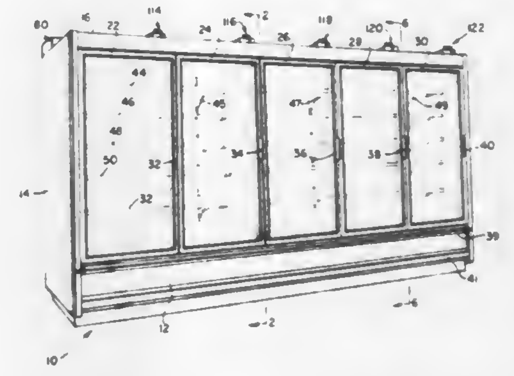
Fayez F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 101,069, Dec. 7, 1979, Pat. No. 4,265,090, which is a continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, Pat. No. 4,245,482, and Ser. No. 58,916, Jul. 19, 1979, Pat. No. 4,242,882. This application Apr. 18, 1980, Ser. No. 141,360

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ F25D *21/12, 23/02*

U.S. Cl. 62—82 **92 Claims**



1. In a display cabinet having refrigeration means and a display space therein, aperture means in at least one wall of said cabinet for communicating ambient outside air with the air in said cabinet, said aperture means comprising an access opening for permitting products to be moved into and out of said display space, air moving means for circulating at least one air band within said cabinet and into contact with said refrigeration means during a refrigeration cycle, covering means for said aperture means including a barrier door for substantially covering said access opening, and said refrigeration means including a low temperature element; the improvement comprising: air defrost means for selectively creating a gap between said barrier door and said access opening, said air defrost means causing said air moving means to pass ambient air through said cabinet and through the gap between said barrier door and said access opening during a defrost cycle to bring the ambient air into contact with said low temperature element to remove frost therefrom and to thereafter eject the defrost ambient air from said cabinet, means for providing a plurality of air bands for circulation within said cabinet during a refrigeration cycle, and, control means for selectively operating said air defrost means and said refrigeration means to defrost said low temperature element during a defrost cycle and to refrigerate said cabinet during a refrigeration cycle.

73. A method of operating a refrigerated display cabinet comprising a cabinet having a display space therein, and aperture means in at least one wall thereof for communicating ambient outside air with the air in the cabinet, the aperture means comprising an access opening for permitting products to be moved into and out of the display case, covering means for the aperture means including a barrier door for substantially covering the access opening, the barrier door being movable for enabling access to the cabinet, at least one air conduit extending about the display space and having an outlet opening and an inlet opening at opposite ends thereof, with the outlet opening and inlet opening being arranged in aerodynamic alignment so that air leaving the air conduit outlet opening will be directed toward the received by the inlet opening, and an air moving means for propelling a refrigerated air band through the air conduit during a refrigeration cycle and for propelling ambient air through the cabinet during a defrost cycle, and a refrigeration means arranged within the air conduit; the method comprising the steps of: selectively operating the display cabinet in a refrigeration cycle of operation and in a defrost cycle of operation; during a refrigeration cycle, circulating the air band through the air conduit so that air is expelled from the outlet opening and received by the inlet opening so as

to form an air curtain across the access opening in the cabinet along a path inside of the barrier door, and propelling the air band through the refrigeration means; during a defrost cycle operation, terminating operation of the refrigeration means, causing ambient air to be drawn into the cabinet, pass through a substantial portion of the air conduit, and across the refrigeration means, causing the defrost ambient air to be ejected from the cabinet, and creating a gap between the barrier door and the access opening to enable ambient air through-flow; whereby ambient air is drawn into the air band and across the refrigeration means to defrost the same by communicating ambient air with the air band in the display cabinet.

4,369,633

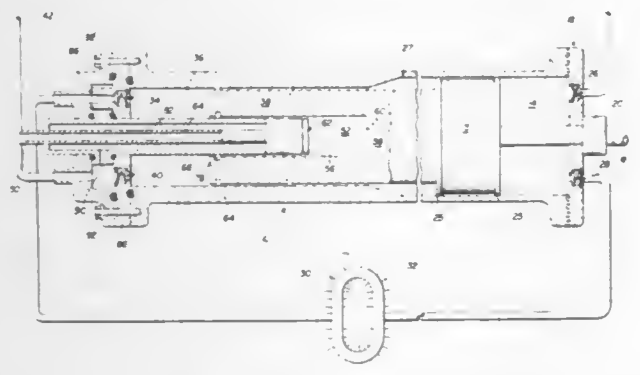
MULTIPLE STAGE COMPRESSOR WITH FLASH GAS INJECTION ASSEMBLY

David A. Snyder, 9350 W. Jamaica, Baton Rouge, La. 70815

Filed Sep. 3, 1981, Ser. No. 299,215

Int. Cl.^{3} F25B *5/00*

U.S. Cl. 62—117 **25 Claims**



1. In a multi-stage fluid compression system having at least a low pressure compression stage and a higher pressure compression stage receiving pressurized fluid from said low pressure stage and providing higher pressure output fluid, the improvement comprising:

an intermediate pressure fluid injection system connected to said higher pressure compression stage, including:

first inlet means for the intermediate pressure fluid;

a first compression chamber for increasing the pressure of the intermediate pressure fluid to a raised pressure level;

first valve means for passage of the intermediate pressure fluid from said first inlet to said first compression chamber therefor;

second valve means for passage of the raised pressure fluid from said first compression chamber; and

outlet means for the higher pressure fluid and the raised pressure fluid output by said higher pressure compression stage and by said first compression chamber, respectively.

4,369,634

FUEL-FLOW MONITOR AND AUTOMATIC AIR-COMPRESSOR CUT-OFF

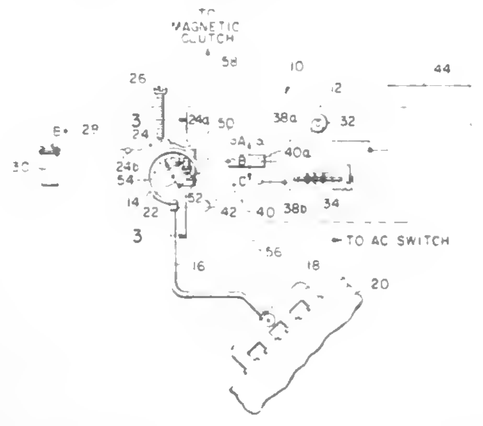
Howard Ratto, 811 Fire Island Ave., West Islip, N.Y. 11795

Continuation-in-part of Ser. No. 140,310, Apr. 14, 1980, abandoned. This application Jan. 9, 1981, Ser. No. 223,790

Int. Cl.^{3} F25B *49/00;* **B60Q** *1/00*

U.S. Cl. 62—126 **11 Claims**

1. A fuel-flow monitor and automatic air compressor cut-off comprising a vacuum responsive means operatively connected to the vacuum of an engine and displaceable in response to changes in the engine vacuum, first switch means spaced from and acapted to be activated by a given displacement of said responsive means, signal means electrically connected with said first switch means, second switch means in electrical circuit with the magnetic clutch of the air compressor, said second switch means being normally closed and adapted to be operated by said responsive means upon a given displacement of same, and means for independently adjusting the position of said first and second switch means relative to said responsive means so that when changes in engine vacuum cause said displacements of said responsive means, a defined movement of said responsive means operates said second switch means opening same to terminate electrical power to the magnetic clutch and operates said first switch means to apply power to said signal means to indicate that the engine is being operated inefficiently.



4,369,635

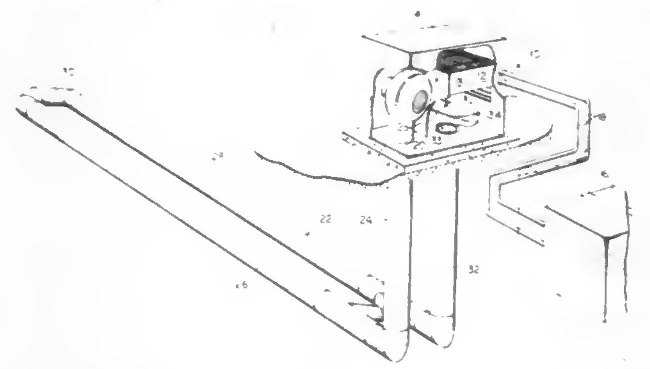
SUBTERRANEAN HEATING AND COOLING SYSTEM

Roland Lambert, Longwood, Fla., assignor to Ladek Corporation, Longwood, Fla.

Continuation-in-part of Ser. No. 51,405, Jun. 25, 1979, Pat. No. 4,279,291. This application Mar. 27, 1981, Ser. No. 248,427

Int. Cl.^{3} F25B *29/00*

U.S. Cl. 62—260 **8 Claims**



1. A method of operating a heat pump having only a single inlet for air from which heat is to be extracted, said air inlet being disposed outside of a building to be heated or cooled, said method comprising:

providing an underground pathway for air travel, said pathway having an inlet and an outlet and being located at a level beneath the surface of the ground where the temperature is substantially constant;

coupling said underground pathway outlet with said heat pump inlet whereby air for said heat pump is provided solely by said pathway; and forcing a quantity of air through said pathway for operation of said heat pump.

4,369,636

METHODS AND APPARATUS FOR REDUCING HEAT INTRODUCED INTO SUPERCONDUCTING SYSTEMS BY ELECTRICAL LEADS

John R. Purcell; Wilkie Y. Chen, both of San Diego, and Walter E. Toffolo, Solana Beach, all of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Jul. 6, 1981, Ser. No. 280,325

Int. Cl.^{3} F25B *19/00*

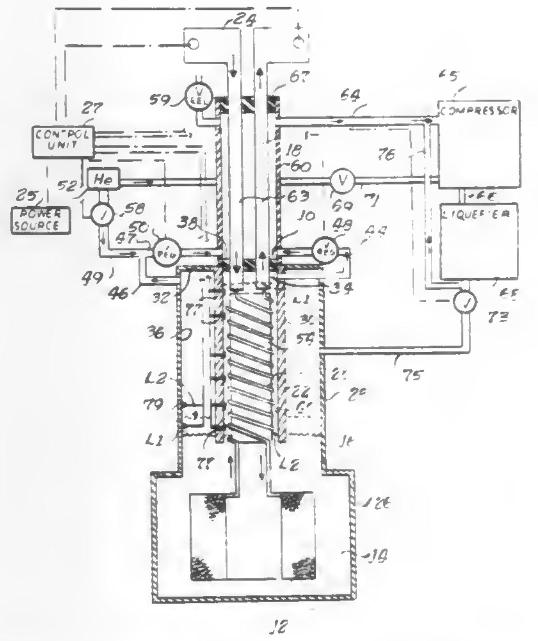
U.S. Cl. 62—514 R **10 Claims**

1. In combination,

a superconducting magnet and cooling apparatus therefor, said cooling apparatus comprising:

a containment vessel for cryogenic liquid, said superconducting magnet being disposed within said containment vessel;

electrical leads connected at a lower end to said superconducting magnet and extending a vertical distance thereabove within said containment vessel and exterior of said containment vessel for connection to an external power source, said electrical leads having superconductive portions; and



level adjustment means to alternately lower and raise the level of cryogenic liquid within said vessel around said leads between a lower level, at which selected superconductive segments of said leads within said containment vessel lie above the cryogenic liquid providing thermally insulating barriers between said cryogenic liquid and exteriorly extending lead segements, and an upper level, at which said selected superconductive segments are immersed in cryogenic liquid and are electrically superconducting.

4,369,637

CIRCULAR KNITTING MACHINES

Arrigo Micheletti, Viale Papa Giovanni XXIII°, No. 3, Fucecchio, Firenze, Italy

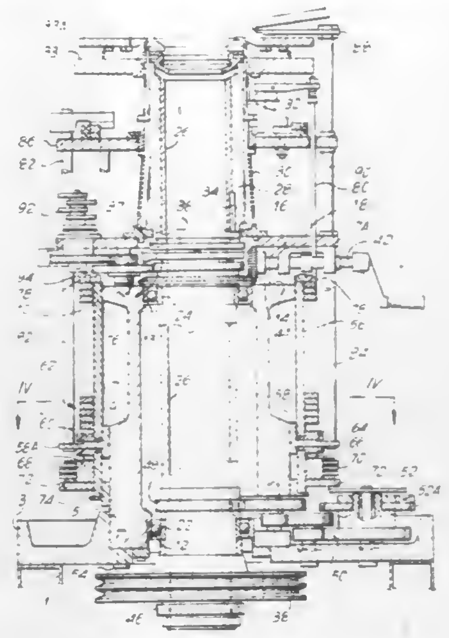
Filed Jul. 3, 1980, Ser. No. 165,698

Claims priority, application Italy, Jul. 9, 1979, 11726/79[U]

Int. Cl.^{3} D04B *9/02, 15/66*

U.S. Cl. 66—8 **2 Claims**

1. In a circular knitting machine having a rotatable assembly (**26**) including a needle cylinder (**28**), a cam drum (**56**), a program drum (**68**), and a pair of bearings (**24, 22**) for rotatably supporting the rotatable assembly, the improvement comprising a single hollow supporting body (**7**) having: an upper annular flange (**7***a*) with a top lathe-turned radially extending surface (**18**) and a bottom lathe-turned radially extending surface (**16**); a lower annular flange with top radially extending lathe-turned surface (**14**) spaced from and facing said upper flange bottom surface (**16**) to form therewith facing component-mounting surfaces, and a first outer cylindrical lathe-turned surface (**10**), a second outer cylindrical lathe-turned surface (**9**) on said supporting body spaced below said outer cylindrical surface (**10**) and adjacent a lower end of said body; a centering element (**58**) mounted over said second outer cylindrical surface (**9**); a first inner lathe-turned cylindrical surface (**13**) defined on an interior of said body adjacent a top end thereof; and a second inner lathe-turned cylindrical surface (**12**) defined on the interior of said body adjacent the lower end thereof; one of the pair of rotatable assembly bearings connected between the rotatable assembly and each of said first and second inner cylindrical surfaces with the needle cylinder extending upwardly of said first inner cylindrical surface; the cam lathe-turned mounted on said first outer cylindrical surface (**10**) and said centering element (**58**) at respective upper and lower ends of the cam drum; a ring (**74**) on said second outer cylindrical surface (**9**); the program drum mounted under said centering element (**58**) and over said ring (**74**).



4,369,638

METHOD AND APPARATUS FOR KNITTING HOLLOW ARTICLES

Henri L. Estingoy, 104 rue Navarrot, Oloron-Ste. Marie, France (64400)

Continuation-in-part of Ser. No. 960,163, Nov. 13, 1978, abandoned. This application Oct. 27, 1980, Ser. No. 201,169

Claims priority, application France, Nov. 17, 1977, 77 34610

Int. Cl.^{3} D04B *9/40*

U.S. Cl. 66—148 **9 Claims**

1. In a method of manufacturing a hollow knitted article including knitting a flat piece having opposite ends by using at least some of the needles in one bed of a flat bed knitting machine, said ends containing an equal number of knit loops, and then seaming the corresponding loops of said ends together by sewing, the improvement comprising:

knitting a first row of loops to forme one end of said piece;

transferring said first row of loops onto the points of a first support located underneath and substantially in vertical alignment with the front end of said needles in said needle bed in their knocking over position, said first support having a number of points equal to the number of loops in said first row;

continuing the knitting of said piece until a row of loops forming the other end is completed while keeping said first row of loops on the points of said first support adjacent said needles to cause said piece to fold while being knit with its finished side on the inside; and

upon completion of knitting of said piece, transferring the loops from said other end onto a second support having points arranged to retain loops from both said ends;

transferring the first row loops from the points of the first support to corresponding points of the second support;

bringing the corresponding loops of said ends adjacent each other on the points of said second support;

and,

joining said corresponding loops together on the points of said second support by sewing while the finished sides of the piece lie between the ends of the article facing each other.

4,369,639

WARP KNITTING MACHINE APPARATUS

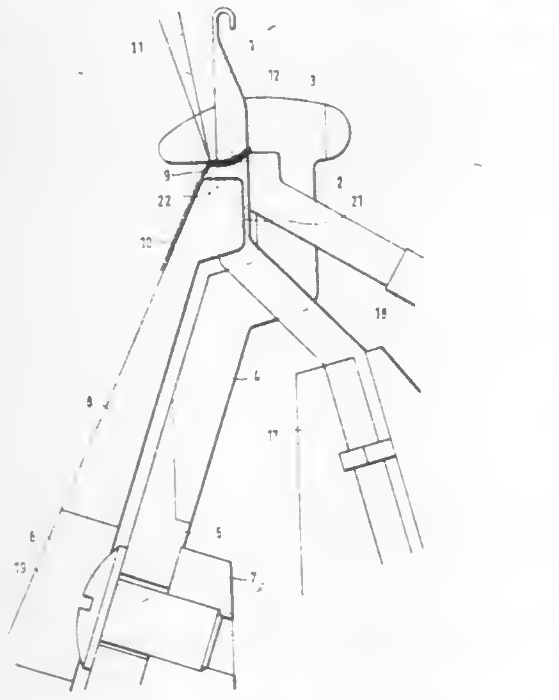
Roland Wunner, Bernstein, Fed. Rep. of Germany, assignor to LIBA Maschinenfabrik GmbH, Naila, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,231

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008277

Int. Cl.^{3} D04B *23/00*

U.S. Cl. 66—203 **2 Claims**



1. A warp knitting machine apparatus which withdraws a fabric (10) over a fixed knock-over edge (9) of a knock-over bar (8), has a piercing comb including single sinkers (3) moveble to and fro between needles (1) that hold the fabric, a needle slider (2) for moving each needle, said sinker (3) having a lower edge extending approximately at right angles to the needles (1) in a specific position in relation to the knock-over edge (9) characterized in that a sinker bar (7) for a sinker mounting (5) is disposed between the knock-over bar (8) and a needle bar (17) for the needle (1).

4,369,640

APPARATUS FOR OBTAINING UNIFORM SOLID COLORS OR VARIEGATED PATTERNS IN FABRICS

Gary R. Fox, Ringgold, Ga., assignor to Wadsworth-Greenwood Corporation, Fort Oglethorpe, Ga.

Continuation-in-part of Ser. No. 179,752, Aug. 20, 1980, abandoned. This application Jan. 23, 1981, Ser. No. 227,939

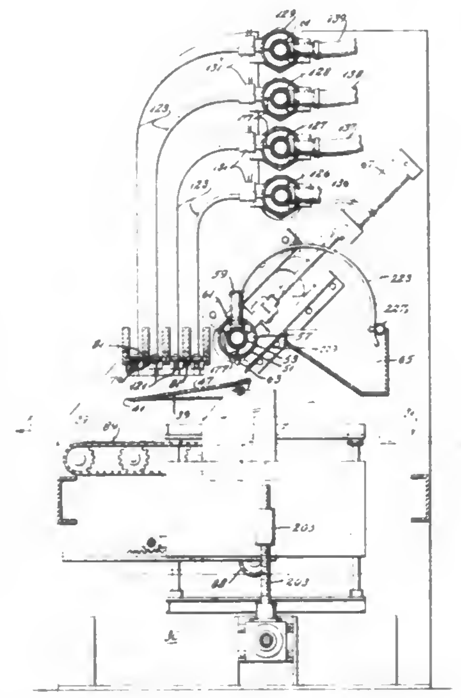
Int. Cl.^{3} D06B *1/06*

U.S. Cl. 68—205 R **16 Claims**

1. Apparatus for producing dye coloration in fabric comprising:

(a) a supporting bed for supporting the fabric substantially horizontally;

(b) an applicator member including
  (i) an applicator edge positionable across the width of a moving length of said fabric, and
  (ii) a smooth upper surface inclined toward said applicator edge;



(c) means for delivering a primary coating material onto said smooth upper surface to form a continuous sheet thereof flowing by gravity toward said applicator edge, the means including a conduit having a plurality of outlet ports spaced apart in a row extending across the supporting bed; and

(d) foamer means for causing the coating material to be in a foamed condition as it is delivered from the outlet ports and as it forms the continuous sheet.

4,369,641

TIMELOCK DEVICE

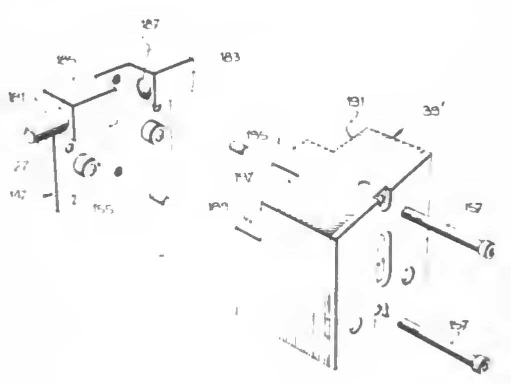
Erich Wallach, 1615 St-Jean Baptiste, St-Roch Comte Vercheres, Quebec, Canada (J0L 2R0)

Filed Jul. 18, 1980, Ser. No. 170,173

Claims priority, application Canada, Jul. 19, 1979, 332116

Int. Cl.^{3} E05B *43/00*

U.S. Cl. 70—272 **5 Claims**



1. A timelock device comprising:

a first fixed part, said first part including a base member, and fastening means for mounting the base member at a location where the device is to be used;

a second detachable part, said second part including a housing, a channel in the back of the housing, a locking pin and a timer carried by the housing, and a mechanism operable by the timer for moving the locking pin through the channel; and

fastening means for detachably mounting the second part to the first part;

wherein the base member closes the channel when the housing is detachably mounted on the base member to define therewith a passageway for a locking bolt, and the locking pin, when moved into the channel, blocks passage of the locking bolt through the passageway, the timer being operable to withdraw the locking pin from the channel after a predetermined period of time.

4,369,642

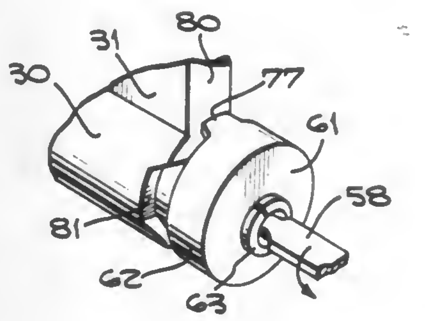
DETAINED KEY ASSEMBLY

Gary J. Grell, Bellflower, Calif., assignor to Norris Industries, Inc., Long Beach, Calif.

Filed Mar. 25, 1981, Ser. No. 247,381

Int. Cl.^{3} E05B *11/00*

U.S. Cl. 70—389 **7 Claims**



1. A deadlock device including a dead bolt, an inside key actuated mechanism having a tailpiece in operating engagement with the dead bolt for shifting said dead bolt between an extended locked position and a retracted unlocked position, said key actuated mechanism comprising a relatively stationary housing, a cylinder within the housing having a chamber and a cylinder plug rotatably mounted in said chamber and in operating engagement with the tailpiece, complementary pin chambers respectively in said cylinder and said plug adapted for alignment with each other in unlocked position whereby a key can be inserted and withdrawn, the improvement comprising means for effecting detention of the key in said plug when the dead bolt is in locked position and release of the key when the dead bolt is in unlocked position, said means comprising cam means including a relatively rotatable cam element in engagement with said tailpiece and a relatively stationary complementary cam element, said cam elements having positions of mutual engagement in one rotative position of the tailpiece with the dead bolt in unlocked position wherein the pin chambers respectively of said cylinder and said plug are held in longitudinal alignment to permit withdrawal of the key, said cam elements having positions of mutual release in another rotative position of the tailpiece with the dead bolt in locked position enabling longitudinal misalignment of the pin chambers respectively of said cylinder and said plug to prevent withdrawal of the key.

4,369,643

CLOSURE WITH SMOOTH EDGE

Cosmo J. Cianciolo, Wolcott; John R. Snyder, Oakville, both of Conn., and Roderick V. King, Girard, Pa., assignors to Ethyl Products Company, Richmond, Va.

Filed Nov. 28, 1980, Ser. No. 211,319

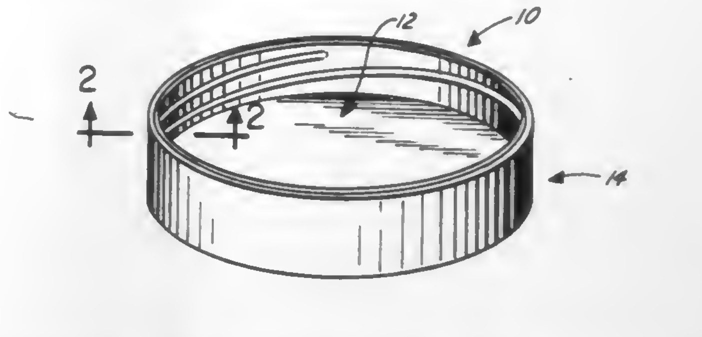
Int. Cl.^{3} B21C *37/30;* B24B *39/00*

U.S. Cl. 72—75 **4 Claims**

1. A method for rounding the edge of a cylindrical, hollow metal closure having a closed end and an open end having a sharp outer edge portion produced by pinch trimming waste material from the open end of the closure comprising:

a. holding the metal closure so that its open end is free;

b. contacting only the sharp outer edge portion of the open end of the metal closure solely with a plurality of metal spheres rotatably mounted in a single circular pattern in a plate; and



c. orbiting the metal spheres around the metal closure to roll inwardly the sharp outer edge portion of the closure to produce a smooth edge on the closure that does not protrude outwardly or inwardly.

4,369,644

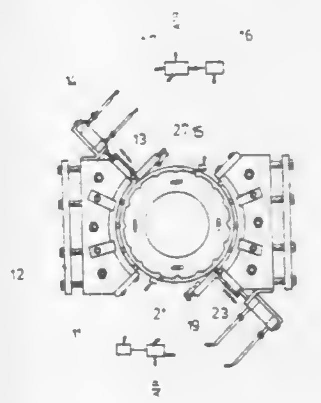
HIGH SPEED TWO TRAVELS THREAD ROLLING MACHINE

Chen Min-Chin, and Chen Tung-Chen, both of No. 150, Li Te St., Taichung City, Taiwan

Continuation of Ser. No. 965,415, Dec. 1, 1978, abandoned. This application Jul. 17, 1980, Ser. No. 169,639

Int. Cl.^{3} B21H *3/02*

U.S. Cl. 72—92 **8 Claims**



1. A planetary rolling machine for forming screw threads on work piece blanks comprising in combination:

a substantially disc-shaped central rotary die having a thread forming surface on a side face thereof,

at least one stationary segment die having a thread forming surface spaced from but proximate to said rotary die so as to allow passage of blanks between said side face of said rotary die and said thread forming surface on said stationary die,

a feeder holder proximate to an inlet area between said stationary die and said rotary die and a discharge area proximate to a terminal portion of said stationary die remote from said inlet area,

means for actuating said feeding holder,

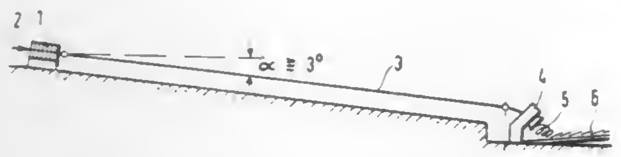
cam means fixedly mounted on said rotary die for rotation therewith,

normally inoperative switch means for controlling said feeding holder actuating means,

said switch means including a microswitch for periodic engagement by portions of said cam means during the rotation of said rotary die at each of plural starting points for actuation of said feeding holder,

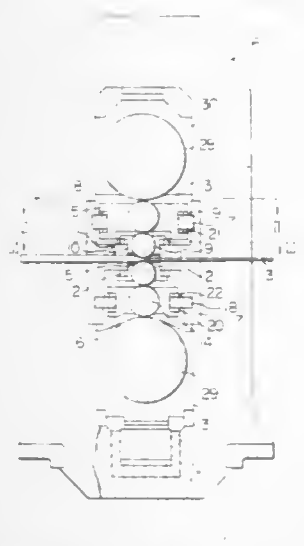
said cam means being arranged to operatively condition said switch means periodically during the rotation of said rotary die corresponding to the starting points of a threading operation on said blanks for actuation of said feeding holder to feed a blank, into said inlet area, and time adjusting means for altering the control between said switch and said feeding holder actuating means while the machine is running.

4,369,645
METHOD AND APPARATUS FOR COOLING WIRE ROD
Hans Brauer, Leichlingen, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Company, Hilden, Fed. Rep. of Germany
Filed Jun. 25, 1980, Ser. No. 162,954
Int. Cl.^{3} B21B *43/00, 45/02;* **C21D** *1/62, 9/52*
U.S. Cl. 72—201 **8 Claims**



1. In a cooling section for cooling hot-rolled wire, in which a tubular initial cooling section segment that plays a cooling liquid on the stretched wire is provided beyond a last roll stand of a multiple stand finishing roll block, each of said roll stands defining a work passage axis between working rolls thereof, the said cooling section segment sloping downwardly from said last roll stand, the improvement comprising that, in addition to the initial cooling section segment, said passage axes of all roll stands making up the finishing block are also inclined downward in line with respect to the horizontal by substantially the same angle of inclination as the following cooling section segment.

4,369,646
ROLLING MILL AND METHOD FOR ROLLING A SHEET MATERIAL
Toshiyuki Kajiwara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 29, 1980, Ser. No. 191,911
Claims priority, application Japan, Oct. 4, 1979, 54-128732
Int. Cl.^{3} B21B *29/00*
U.S. Cl. 72—243 **18 Claims**



1. A rolling mill comprising:
a pair of work rolls of low rigidity performing rolling of a material to be rolled by contact therewith;
a pair of intermediate rolls positioned vertically outwardly of the respective work rolls in contact therewith, said pair of intermediate rolls each having a diameter greater than that of said work rolls;
a pair of back-up rolls supporting the respective intermediate rolls;
means for axially displacing each of said intermediate rolls to position the end portion of the roll barrel thereof on or near a vertical lateral end surface of the rolled material to compensate for a deflection caused by a rolling force at one portion of a respective one of said work rolls; and
means for applying to each of the intermediate rolls a bending force to compensate for a deflection caused by the rolling force at the other portion of the respective one of said work rolls so that the shape of the rolled material can be controlled by the combination of adjustments of the axial position of the intermediate rolls and application of an intermediate roll bending action.

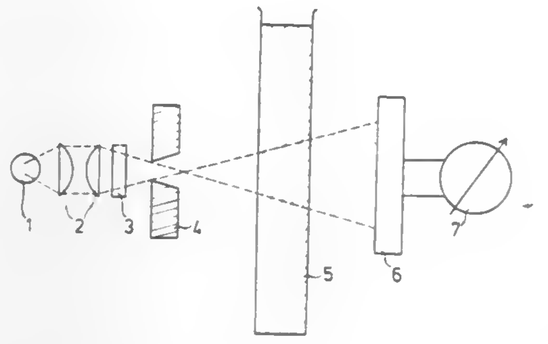
4,369,647
GAS LEAKAGE DETECTOR
Tesshi Shigemori, Nishinomiya; Yoshinao Nozawa, Suita; Teruhisa Kojima, Kawasaki, and Satoshi Kitajima, Hiratsuka, all of Japan, assignors to New Cosmos Electric Company Limited, Osaka, Japan
Filed Mar. 21, 1980, Ser. No. 133,650
Int. Cl.^{3} G08B *17/10;* **G01N** *31/00*
U.S. Cl. 73—27 R **32 Claims**

1. A gas leakage detector comprising:
a solid state gas sensor having a sintered metallic oxide block which changes its thermal conductivity with chemical adsorption thereto and a wire for transforming changes of thermal conductivity into a gas sensor electrical signal,
a gas intake path for conducting gas to said gas sensor,
a suction pump for drawing gas through the intake path to said gas sensor,
a voltage-frequency converter (VFC) for providing a pulse output frequency that is a function of the gas sensor electrical signal, and
an alarm indicator including sound and/or light controlled to pulsate in response to said VFC,
wherein the sound and/or light of said alarm indicator is controlled to pulse in a manner that the frequency of pulsation changes between a predetermined lower limit which corresponds to a lower limit of concentration of gas to be detected and a predetermined higher limit which corresponds to a higher level of concentration of gas to be detected, the time duration of each pulsation of light and/or sound being uniform regardless of any change of pulsation frequency, the light and sound being continuous at said higher limit.

4,369,648
TESTING METHOD FOR DETERMINING THE MAGNETIC PROPERTIES OF FERROMAGNETIC POWDERS
Karlheinz Uhle, Brühl, and Horst Krämer, Hürth-Hermülheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed May 8, 1981, Ser. No. 261,744
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018640
Int. Cl.^{3} G01N *15/04*
U.S. Cl. 73—61.4 **2 Claims**

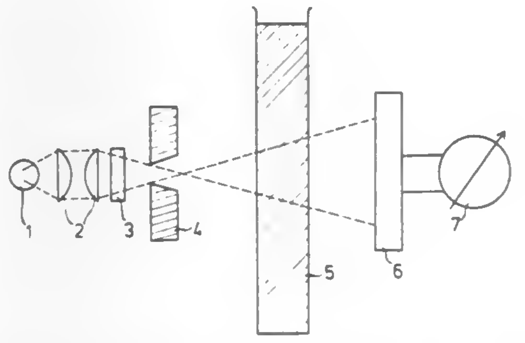
1. A method permitting ferromagnetic powders to be readily

tested for their qualification for use in heavy medium suspensions for the float-sink dressing of minerals, which comprises:
(a) admixing ferromagnetic powder particles with a size within the range 63 to 100μ with a quantity of a glycerol/-water mixture necessary to obtain a heavy medium suspension having a specific density within the range 1.45 to 1.55 g/cm^3; and subjecting the suspension to the following three magnetic operations comprising:
(b) demagnetizing the heavy medium suspension in a cyclicly decreasing alternating field at maximum field strengths within the range 1200 to 1600 amperes/cm and determining its relative sedimentation velocity by means of a sedimentometer;



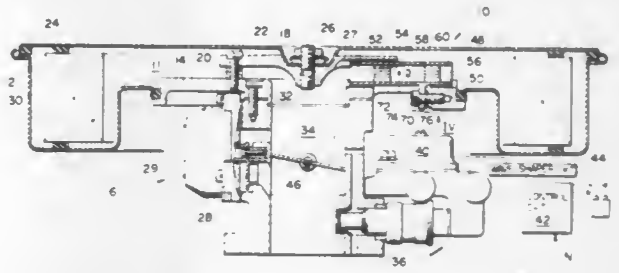
(c) magnetizing the demagnetized heavy medium suspension in a magnetic steady field at field strengths within the range 700 to 900 amperes/cm and determining its relative sedimentation velocity by means of a sedimentometer; and
(d) demagnetizing the magnetized heavy medium suspension in a cyclicly decreasing alternating field at maximum field strengths within the range 1200 to 1600 amperes/cm and determining its relative sedimentation velocity by means of a sedimentometer; the ferromagnetic powder being fully serviceable for use in heavy medium suspensions in the event of the relative sedimentation velocity determined in step (b) being smaller than 0.25 cm/second, that determined in step (c) being greater than 2.5 cm per second and that determined in step (d) being smaller than 0.4 cm/second.

4,369,649
TESTING METHOD FOR DETERMINING THE MAGNETIC PROPERTIES OF FERROMAGNETIC POWDERS
Karlheinz Uhle, Brühl, and Horst Krämer, Hürth-Hermülheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed May 8, 1981, Ser. No. 261,769
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018639
Int. Cl.^{3} G01N *15/04*
U.S. Cl. 73—61.4 **2 Claims**



1. A method permitting ferromagnetic powders for use in heavy medium suspensions for the float sink dressing of minerals to be tested as to their efficiency in magnetic separation and demagnetization, which comprises:
(a) removing a heavy medium suspension specimen from the purification cycle directly downstream of the magnetic separation stage, freeing the specimen from impurities by decantation, and determining the relative sedimentation velocity with the aid of a sedimentometer;
(b) removing a heavy medium suspension specimen from the purification cycle downstream of the demagnetization stage, freeing the specimen from impurities by decantation, and determining its relative sedimentation velocity with the aid of a sedimentometer; and
(c) demagnetizing the heavy medium suspension specimen according to (b) in a cyclicly decreasing magnetic alternating field with a maximum field strength which is 1.1 to 1.5 times the maximum field strength of the magnetic separator, and determining the relative sedimentation velocity of the specimen with the aid of a sedimentometer,
the ferromagnetic powder being reliably separable magnetically and demagnetizable with the aid of a demagnetizing means in the event of the relative sedimentation velocity according to (a) being at least ten times greater than the relative sedimentation velocity according to (b), and the relative sedimentation velocity according to (c) being at most 10% lower than that according to (b).

4,369,650
ADJUSTABLE AIR FLOW SENSOR ARRANGEMENT
Tadahiro Yamamoto, Yokosuka, and Kenji Masaki, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Nov. 21, 1980, Ser. No. 209,186
Claims priority, application Japan, Nov. 22, 1979, 54-161096[U]
Int. Cl.^{3} G01M *15/00*
U.S. Cl. 73—118 **4 Claims**



1. In an internal combustion engine having a combustion chamber and an induction passage leading from the ambient atmosphere to said combustion chamber,
an air flow sensor comprising:
a duct in said induction passage, said duct having an inlet and an outlet and through which flows a fraction of the total intake air received via said induction passage;
flow velocity increasing means for locally increasing the rate of flow of the air passing through said induction passage to create a pressure gradient zone; and
an adjusting device for varying the fraction of the total intake air permitted to flow through said duct, said adjusting device including a mechanism for moving said duct within said pressure gradient zone to vary the pressure differential across the inlet and outlet of said duct.

4,369,651

NON-CONTACTING MULTI-FUNCTION SENSOR ARRANGEMENT

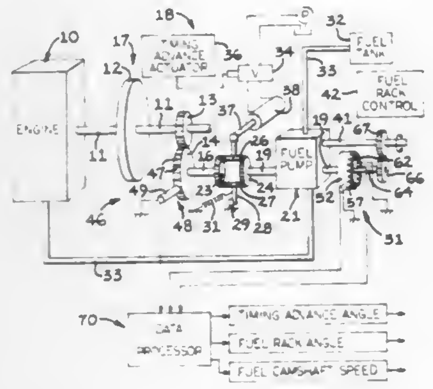
John F. Szentes, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00267, § 371 Date Mar. 3, 1981, § 102(e) Date Mar. 3, 1981, PCT Pub. No. W082/03124, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 3, 1981, Ser. No. 278,498

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **21 Claims**



1. In a system having first and second rotatable shafts (**16,19**), timing means (**18**) for rotatably driving one (**19**) of said shafts by the other (**16**) and for varying the angular relationship between said shafts (**16,19**), drive means (**17**) for rotating said shafts (**16,19**) at a selectable speed of rotation, the improvement comprising: .

- at least one first sensible member (**47**) rotatable at a speed constantly proportional to the speed of said first shaft (**16**) and movable through a first circular path;
- a first signal generator means (**48**) for generating a first signal (**71**) in response to movement of said first sensible member (**47**) past a predetermined point (**49**) in said first circular path;
- at least one second sensible member (**53**) rotatable at a speed constantly proportional to the speed of said second shaft (**19**) and movable through a second circular path;
- a second signal generator means (**51**) for generating a second signal (**72**) in response to movement of said second sensible member (**53**) past a predetermined point (**59**) in said second circular path;
- clock means (**76**) for generating a series of clock pulses; and
- counting means (**78,79**) for counting the number of said clock pulses occurring in the interval beginning with a signal (**72**) from one (**51**) of said first and second signal generator means (**48,51**) and ending with the next succeeding signal (**71**) from the other (**48**) of said first and second signal generator means (**48,51**).

4,369,652

METHOD FOR MEASURING THE VOLUME OF SOLID BODIES AND A MEASURING AND/OR REFERENCE CHAMBER FOR PERFORMING SAID METHOD

Bertus L. Gundlach, Wageningen, Netherlands, assignor to De Rijkslandbouwhogeschool, Wageningen, Netherlands

PCT No. PCT/NL80/00020, § 371 Date Feb. 3, 1981, § 102(e) Date Feb. 3, 1981, PCT Pub. No. WO80/02639, PCT Pub. Date Dec. 11, 1980

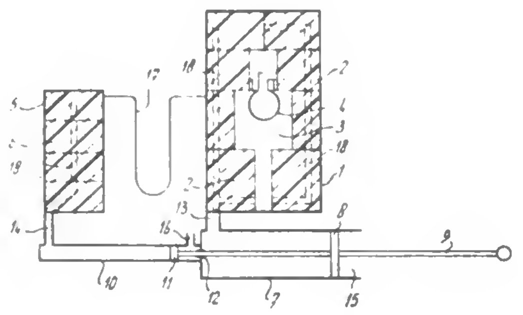
PCT Filed Jun. 5, 1980, Ser. No. 233,591

Claims priority, application Netherlands, Jun. 5, 1979, 7904400

Int. Cl.³ G01F *17/00*

U.S. Cl. 73—149 **9 Claims**

1. Method for measuring the volume of solid bodies by plethysmometry, i.e. by measuring the change in pressure caused by changing the volume to a predetermined known extent of a chamber in which the bodies to be measured are taken up, and which is closed from the surroundings, characterized in that, apart from the body to be measured the space within the chamber is filled for at least a major part thereof with a solid filler material having a plurality of interconnected cavities.



4,369,653

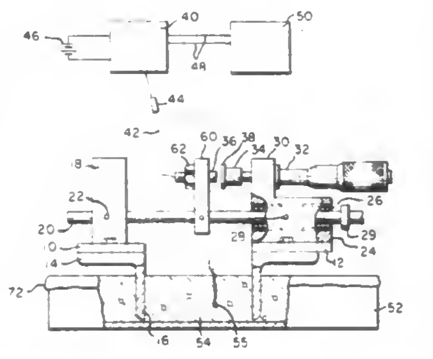
SHRINKAGE GAUGE AND METHOD

Bernard M. Ciosek, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1981, Ser. No. 251,990

Int. Cl.³ G01N *33/38, 33/34*

U.S. Cl. 73—150 R **9 Claims**



1. A shrinkage gauge comprising:

- an elongated bridge member;
- a pair of dependent blades, one fixed, the other slidable with respect to said bridge member;
- means releasably locking said slidable blade with respect to the bridge member with the blades a set distance apart;
- a proximity transducer fixedly attached to the bridge member; and
- a target attached to said slidable blade, said transducer having a probe tip spaced from and aligned with said target, said blades being in substantial parallelism and adapted for insertion in poured cementitious materials.

4,369,654

SELECTIVE EARTH FORMATION TESTING THROUGH WELL CASING

Bobby J. Hallmark, 158 Afton Rd., Fort Worth, Tex. 76134

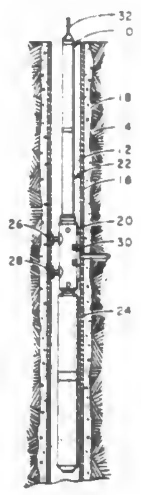
Filed Dec. 23, 1980, Ser. No. 219,865

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—151 **20 Claims**

1. A method of testing earth formation through the wall of a well casing, comprising the steps of:

- (a) placing a formation testing means within said well casing at a position adjacent the earth formation to be tested;
- (b) establishing a fluid tight seal between the interior face of said casing and said testing means to permit fluid pressure and flow communication solely between said interior face and the interior of said testing means;
- (c) providing a designated potential fluid pressure change from within said testing means to said interior face which becomes an actual pressure change when said seal proves to be actually fluid tight;
- (d) releasing a pressure responsive firing means in response to said actual pressure change to actuate a casing perforating means;
- (e) perforating a hole through said casing and into said formation at a position surrounded by said fluid tight seal to establish fluid communication solely between said formation and the interior of said testing means; and
- (f) testing said earth formation through said hole.



4,369,655

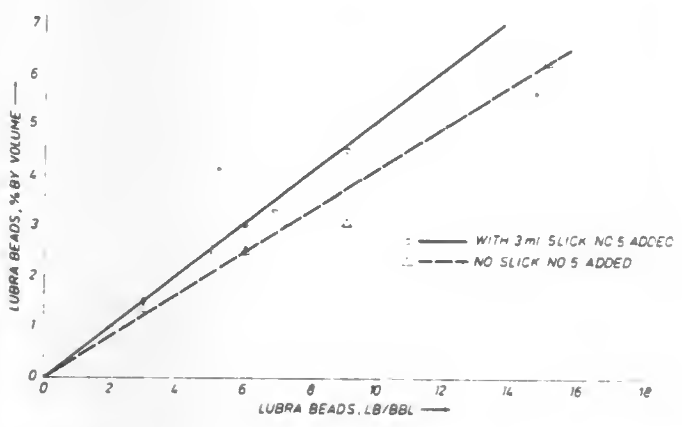
METHOD OF DETERMINING THE CONCENTRATION OF SOLID LUBRICANTS IN DRILLING FLUIDS

Forest A. Scearce, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Dec. 12, 1980, Ser. No. 215,677

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—153 **13 Claims**



1. A method for determining the concentration of spherical solids used as a lubricant in a drilling fluid comprising:

- (a) adding a liquid to a given volume of said drilling fluid;
- (b) agitating the mixture of said drilling fluid and said liquid;
- (c) passing the mixture of said drilling fluid and said liquid through a sieve of smaller mesh size than said spherical solids;
- (d) removing said spherical solids and any other solids from said sieve;
- (e) mixing said mixture of said spherical solids and said other solids with a wetting agent for said spherical solids;
- (f) permitting said mixture of said spherical solids and said other solids to settle in a graduated measuring means; and
- (g) determining the volume of said spherical solids contained in said given volume of said drilling fluid.

4,369,656

AIR INTAKE MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINE

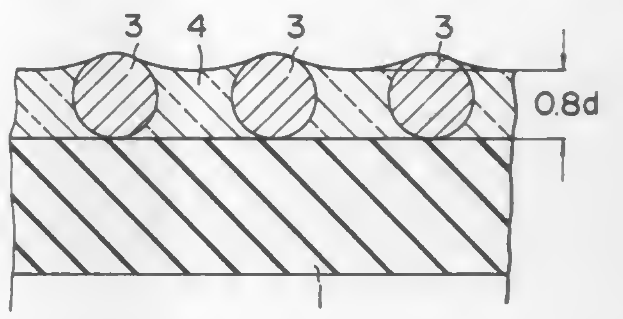
Sadayasu Ueno; Kanemasa Sato; Yoshishige Oyama; Yutaka Nishimura, and Kazuhiko Miya, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,804

Claims priority, application Japan, Jan. 31, 1980, 55/11344

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **7 Claims**



1. An air intake measuring device of a fuel supply system of an internal combustion engine for supplying a fuel of an amount commensurate with the flow rate of air drawn into the internal combustion engine, comprising:

- an air flow rate sensor element, such air flow rate sensor element comprising:
- a support formed of a ceramic electric insulating material;
- a platinum resistor wire, the characteristic of which depends on temperature, wound on said support in convolutions;
- and a signal equalizing member formed of lead glass uniformly applied as a coating on only a portion of the surface of said resistor wire in such a manner that a part of the surface of the resistor wire is exposed, while the rest thereof is covered with the coating of the signal equalizing member, said signal equalizing member rigidly securing the resistor wire to said support.

4,369,657

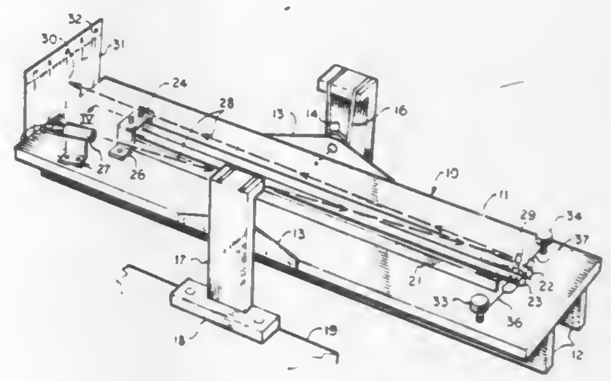
GRAVIMETER

Samuel T. Alexander, 272 Morada La., Santa Barbara, Calif. 93105

Continuation-in-part of Ser. No. 108,487, Dec. 31, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,592

Int. Cl.³ G01V *7/04*

U.S. Cl. 73—382 R **7 Claims**



1. A gravimeter comprising:

- (a) a table movable from a horizontal to a vertical position;
- (b) a pair of elastic rods of dissimilar material disposed parallel to each other on the table;
- (c) means for supporting adjacent ends of the rods when the table is rotated to a vertical position;
- (d) and means for measuring the differential change in length of the rods at the other ends of the rods as the table is rotated from a horizontal to a vertical position.

4,369,658
DEVICE FOR DETECTING DIFFERENCES IN THE SPEEDS OF ROTATION OF TWO SHAFTS

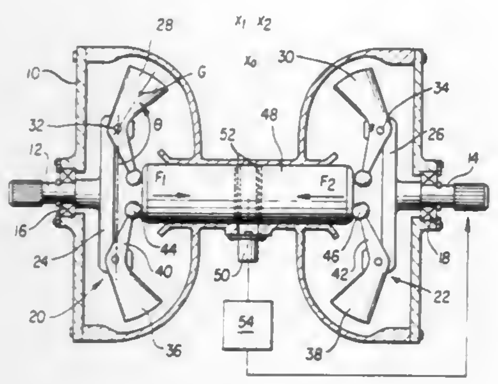
Jean-Max M. Silhouette, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Oct. 16, 1980, Ser. No. 197,528

Claims priority, application France, Oct. 16, 1979, 79 25647

Int. Cl.³ G01P *3/04;* F02D *25/02;* G05D *13/62*

U.S. Cl. 73—507 **8 Claims**



1. A device for detecting a differential angular velocity between a first and a second revolving shaft comprising:
   a first dead-head system for producing a first centrifugal force at a first angular velocity and a first tension operatively associated with said first shaft,
   a second dead-head system for producing a second centrifugal force at a second angular velocity and a second tension operatively associated with said second shaft and disposed opposite said first dead-head system;
   a movable body disposed between and operatively associated with said first and said second dead-head systems such that said first and said second centrifugal forces are opposingly applied to said movable body and wherein a sum of said first tension and said second tension is negative such that a displacement of said movable body is representative of said differential angular velocity.

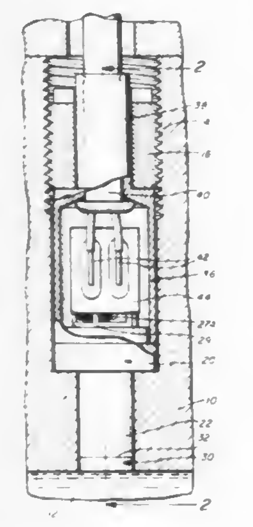
4,369,659
PRESSURE TRANSDUCER

William M. Wareham, Marion, Mass., assignor to Bofors America, Inc., Norwood, Mass.

Filed Aug. 11, 1980, Ser. No. 176,863

Int. Cl.³ G01L *9/04, 19/04*

U.S. Cl. 73—708 **12 Claims**



1. A pressure transducer comprising;
   a frame having an elongated bore therein extending from one end of the frame to another sensing end,
   a filler rod in the elongated bore and dimensioned in comparison with the bore dimensions to provide a minimum volume,
   a diaphragm closing the one end of the frame and defining with the frame a compartment in communication with the bore,
   a liquid filled deformable sensor defined at the sensing end of the frame including a reduced thickness wall surrounded by thicker wall portions and sensing means at the reduced thickness wall for sensing deformation of the diaphragm,
   and a liquid filling the transducer for applying pressure exerted against the diaphragm to the sensing means,
   said filler rod extending substantially the entire length of said bore from said liquid filled deformable sensor to the diaphragm defined compartment,
   said diaphragm defined compartment being thin and disc-shaped and also defined by at least an end of the filler rod,
   said filler rod being constructed of a material having a low temperature coefficient of expansion in comparison to that of the liquid fill and said filler rod extending from said sensing end of the frame to the diaphragm compartment,
   said filler rod in combination with a close tolerance bore in the frame providing a small internal liquid volume.

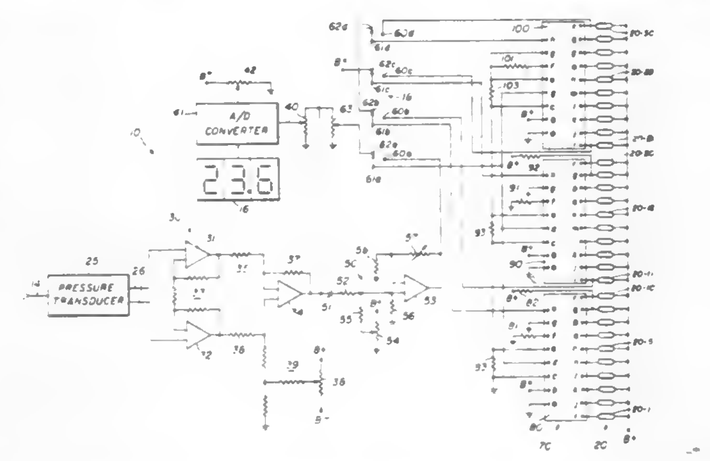
4,369,660
ELECTRONIC PRESSURE MEASURING APPARATUS

Richard P. Lentz; Thomas J. Lasky, both of Kenosha, and Stephen B. Servais, Franksville, all of Wis., assignors to Snap-On Tools Corporation, Kenosha, Wis.

Filed Apr. 13, 1981, Ser. No. 253,582

Int. Cl.³ G01L *9/04*

U.S. Cl. 73—753 **12 Claims**



1. Electronic pressure measuring apparatus for measuring the pressure in a chamber, comprising a pressure transducer adapted to be coupled to the chamber for generating a composite electrical signal having an amplitude related to the magnitude of the pressure in the chamber, the composite electrical signal having a DC component and an AC component, means for converting the composite electrical signal into digital signals, means for displaying digits corresponding to the digital signals, means for passing only the AC component of the composite electrical signal, driver means being operable in first and second modes and having an input and a plurality of outputs respectively corresponding to a plurality of amplitudes of an electrical signal applied to said input, said driver means in the first mode thereof being constructed and arranged to produce an energizing current on all of said outputs up through the output corresponding to the amplitude of an electrical signal applied to said input, said driver means in the second mode thereof being constructed and arranged to produce an energizing current on only the one of said outputs corresponding to the amplitude of the electrical signal, means for coupling the composite electrical signal to said driver means when in the first mode thereof and for coupling the AC component to said driver means when in the second mode thereof, and a plurality of separate lights respectively coupled to said outputs and being illuminated in the presence of energizing currents.

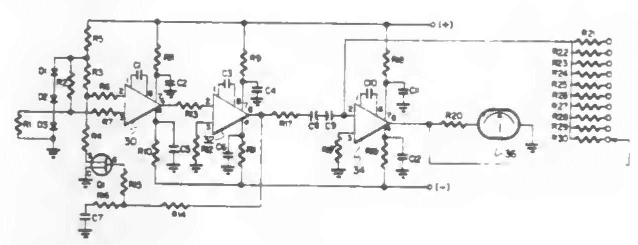
4,369,661
AUTOMATIC NULLING CIRCUIT FOR TRANSIENT PRESSURE RATE CHANGES

Owen L. Gibb, 2218 Clark La., Redondo Beach, Calif. 90278

Filed Aug. 15, 1980, Ser. No. 178,619

Int. Cl.³ G01L *21/12*

U.S. Cl. 73—755 **10 Claims**



1. In a pressure sensing apparatus having means for generating an electrical signal corresponding in magnitude to a sensed pressure, the improvement comprising means for isolating and detecting short term transient disturbances in the rate of change of the sensed pressure, said means comprising:
   an adjustable reference circuit establishing an adjustable reference signal,
   a comparison circuit for comparing the pressure signal with the reference signal and for producing an output signal representative of the differential between the compared signals, and
   a feedback circuit having a response time which together with the response time of the comparison circuit introduces an overall response time which is greater than substantially the duration of the transient disturbance sought to be detected, said feedback circuit being connected from the output of the comparison circuit to the adjustable reference circuit to adjust the reference signal to a predetermined relationship with respect to the pressure signal, as delayed by said overall response time,
   whereby substantially constant rates of pressure change appear as steady state signals at the output of the comparison circuit and short term transient deviations from said constant rates appear at the output of the comparison circuit as deviations from said steady state signals.

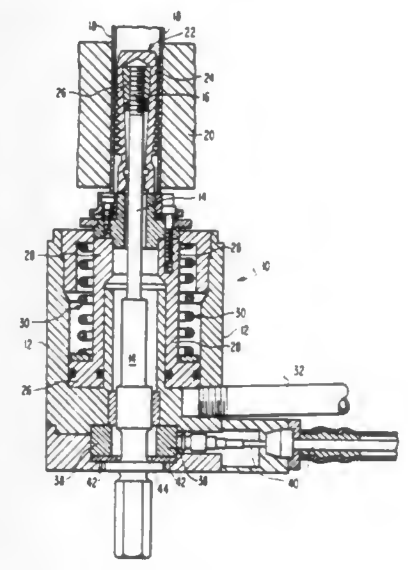
4,369,662
PLUG INSTALLATION APPARATUS

Stuart L. Rieben, Pittsburgh; John J. Wilhelm, New Kensington, and Mark E. Wylie, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 25, 1981, Ser. No. 238,260

Int. Cl.³ G01L *5/00*

U.S. Cl. 73—862.01 **9 Claims**



1. A plug installation apparatus including a housing with a slider member disposed therein, a rod slidably disposed in said slider member and means for moving said rod relative to said slider member for expanding a plug in a tube, the improvement comprises:
   a contact member disposed on said slider member for contacting the end of said tube; and
   switch means mounted on said contact member and arranged to contact said slider member for indicating that said contact member has been moved relative to said slider member.

4,369,663
TRANSDUCER WITH SIX DEGREES OF FREEDOM

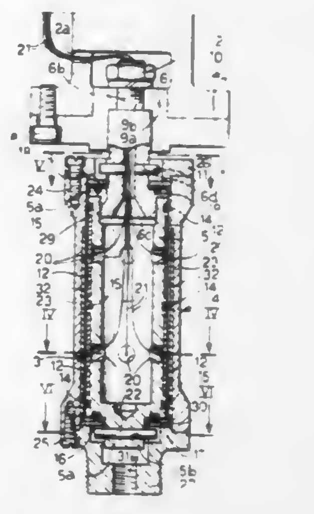
Giorgio Venturello, and Osvaldo Salvatore, both of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Feb. 3, 1981, Ser. No. 231,065

Claims priority, application Italy, Mar. 7, 1980, 67359 A/80

Int. Cl.³ G01L *5/16*

U.S. Cl. 73—862.04 **8 Claims**



1. A transducer having six degrees of freedom, for converting the forces and moments applied to a movable member, particularly to the movable arm of a robot, into electrical signals, said transducer comprising
   a rigid body of substantially cylindrical form intended to be connected to the said movable member, said body having a lateral surface which comprises a first and a second axial portion;
   a respective set of four metal plates provided on each of said first and second axial portions of said body, the plates of each set being equi-angularly spaced around the body and being arranged diametrically opposite one another in pairs, the generatrices of the said lateral surface which are tangential to each plate carried by the said first axial portion of the said surface, being tangential to a corresponding plate carried by the said second portion;
   a rigid casing having a substantially cylindrical inner surface which surrounds the said body;
   resilient spacer means resiliently mounting said casing on the said body in such a way that the casing can perform limited displacements with six degrees of freedom with respect to the body;
   two substantially semi-cylindrical equi-angularly spaced metal plates provided on the inner surface of said casing, said semi-cylindrical plates being positioned facing the plates carried by the said body in such a way as to define therewith a narrow interspace and to constitute eight capacitors the capacitances of which depend on the relative positions between the plates of the casing and the plates of the body; and
   detector means connected to the said capacitors for measuring, in use, the instantaneous values of the capacitance of each of the said capacitors and for providing, on the basis of this measurement, electrical signals indicative of the forces and the moments applied to the said movable member.

4,369,664

PIPETTE MEANS

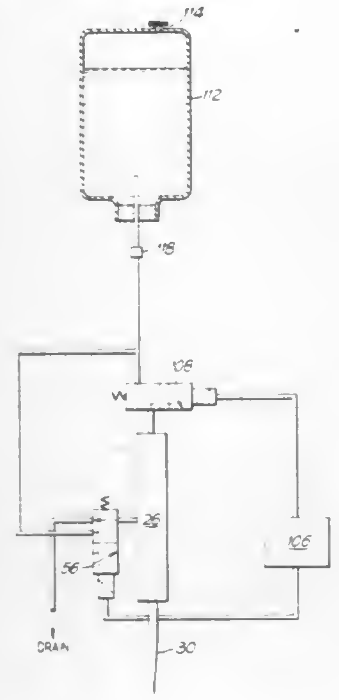
Roger A. Bunce, Bourneville; John E. C. Gibbons, Stirchley, and Larry J. Kricka, Bourneville, all of England, assignors to National Research Development Corporation, London, England

Filed Oct. 24, 1980, Ser. No. 200,583

Claims priority, application United Kingdom, Oct. 31, 1979, 7937750

Int. Cl.^{3} B01L *3/02*

U.S. Cl. 73—864.12 **6 Claims**



1. Pipette means having aspirating and expelling means and a substantially cylindrical tube connected to a pipette tip for fluid flow therebetween; the expelling means being arranged to apply pressure to the outer surface of the cylindrical tube, the diameter and wall thickness of which being chosen so that said tube is compressed elastically and substantially uniformly and circumferentially to reduce the internal volume thereof, tending to expel any liquid from the pipette tip; and the aspirating means being arranged to relieve pressure from the outer surface of said tube, allowing the tube to expand substantially circumferentially and uniformly so that liquid may thereby be drawn into the pipette tip; the said expelling and aspirating means operating the application and relief respectively of fluid pressure to and from the cylindrical tube; said pipette means also having means for diluting a sample including diluent valve means for permitting a controlled amount of liquid diluent to pass through the cylindrical tube to the pipette tip to dilute a sample when the expelling means applies pressure to the cylindrical tube and wherein the source of fluid pressure is the source of liquid diluent arranged as a head tank at a level about the cylindrical tube great enough to provide pressure adequately to compress the cylindrical tube.

4,369,665

MANUALLY HOLDABLE AUTOMATIC PIPETTE

Paul S. Citrin, Danbury, Conn., assignor to Indicon Inc., Brookfield Center, Conn.

Continuation of Ser. No. 868,687, Jan. 11, 1978, abandoned. This application Apr. 25, 1979, Ser. No. 33,044

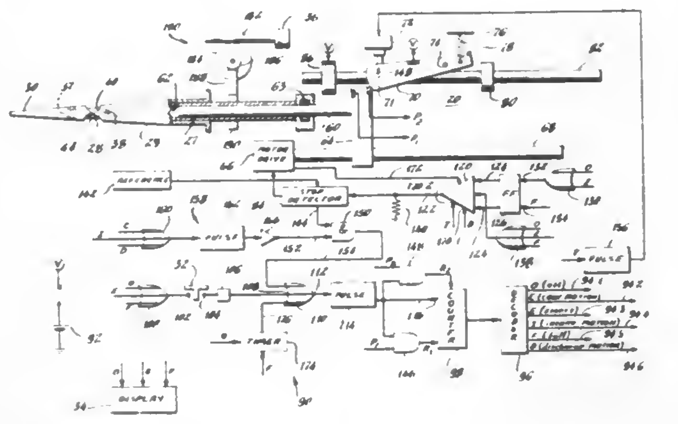
Int. Cl.^{3} B01L *3/02*

U.S. Cl. 73—864.18 **28 Claims**

1. An automatically operable pipette for taking up and discharging liquid comprising:

a main housing having a liquid flow control port at one end to control the flow of liquid, said main housing being shaped to be conveniently held in a single hand;

displacement means mounted in the main housing and having a variable displacement volume in fluid communication with the liquid flow control port of the main housing to produce cycles of take-up and discharge of fluid through said port; said displacement means including a cylinder in fluid communication with the liquid flow control port and a piston operatively mounted for intake and discharge strokes in the cylinder to vary the volume therein for the control of the intake and discharge of liquid, said cylinder having an effective length selected to enable said piston to move a distance which is substantially greater than the normally effective range of a finger actuated motion of a piston for a pipette, said cylinder having a crossectional area which is selected sufficiently small to significantly enhance the accuracy of the pipette for relatively small displacement volumes;



motor means mounted in said main housing and operatively coupled to said piston to drive the piston through fluid intake and fluid discharge cycles; and

control means mounted in said main housing to control operation of said motor means through the fluid intake and fluid discharge cycles of the displacement means and cause said piston to be moved between precisely defined intake positions, said control means including:

i. first stop means for precisely defining the initial position of the piston at the beginning of the intake stroke of the piston;

ii. second stop means for precisely defining the position of the piston at the end of the intake stroke; and

iii. means for varying the operative location of said second stop means to correspondingly vary the stroke length of the piston to form a variable volume pipette.

4,369,666

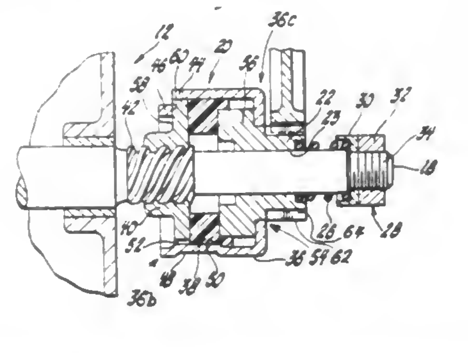
STARTER DRIVE ASSEMBLY

Calvin V. Kern, Maumee, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Nov. 19, 1980, Ser. No. 208,367

Int. Cl.^{3} F02N *15/06;* **B21D** *39/00*

U.S. Cl. 74—7 R **10 Claims**



1. A starter motor pinion gear assembly comprising:

a cylindrical cup having a first closed end and a second open end;

said first end defining an opening therethrough, said opening having a periphery in the shape of an endwise profile of a pinion gear and being adapted to receive a pinion gear therethrough;

a spline follower positioned within said cup and defining a spline opening therethrough;

a pinion gear positioned within said cup and having teeth projecting radially outward from a bottom land and having intertooth fillets projecting radially outward from said bottom land at one end thereof;

said teeth being disposed through said opening, and said intertooth fillets being disposed within said cup to retain said gear in said cup;

a resilient means interposed between said gear and said spline follower;

said cup having a plurality of circumferentially-spaced portions adjacent said second open end being displaced radially inward adjacent a surface of said spline follower distant to said resilient means;

said circumferentially-spaced displaced portions forming retaining step portions for entrapping said spline follower in alignment with said pinion gear;

said spline follower including a plurality of grooves defined in a periphery of said spline follower, said grooves being aligned with an axis of said cylindrical cup;

said cup defining a plurality of depressions in an outer periphery thereof, each said depression defining protrusions from an inner periphery of said cup;

said protrusions and said grooves being adapted to cooperate to restrain said spline follower from rotation with said cup;

said spline opening of said spline follower being a helically spline opening;

said cylindrical cup defining a plurality of notches, each said notch being disposed adjacent one said displaced portion for allowing said portion to be displaced without shearing the material of said cylindrical cup.

4,369,667

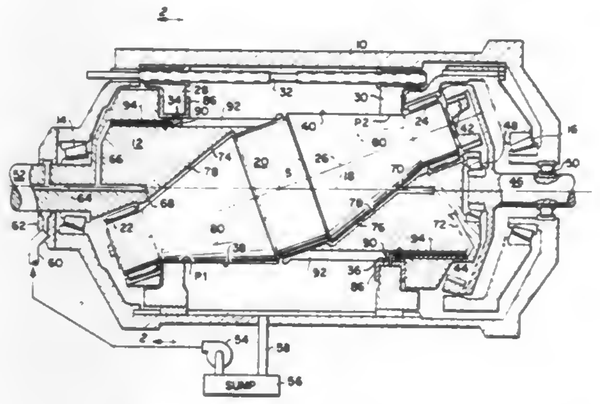
TRACTION SURFACE COOLING METHOD AND APPARATUS

Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Filed Jul. 10, 1981, Ser. No. 282,233

Int. Cl.^{3} F16H *15/16, 57/04, 15/50*

U.S. Cl. 74—191 **15 Claims**



1. In a traction drive torque transmission having a closed housing, an alpha body supported in said housing for rotation about a first axis, a beta body supported for relative rotation from said alpha body on a second axis inclined with respect to and intersecting said first axis at a point of axes intersection, said beta body defining a pair of conical traction surfaces concentric with said second axis, one on each side of said point of axes intersection, a pair of rings defining inside traction surfaces of revolution about said first axis and shiftable axially toward and away from each other, said conical traction surfaces being in rolling friction engagement with said inside traction surfaces at two diametrically opposite points of contact, the improvement comprising:

means carried rotatably by said alpha body to define clearance spaces extending arcuately through a defined sector of and adjacent to each said conical traction surfaces and said inside traction surfaces, respectively; and

means for circulating a traction lubricant through both of said clearance spaces.

4,369,668

AXIAL THRUST COMPENSATION SYSTEM

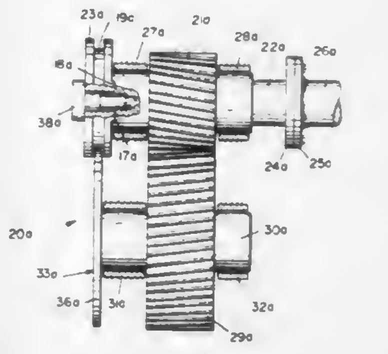
Erich Pollak-Banda, and Erich John, both of Augsburg, Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,441

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1979, 2924349

Int. Cl.^{3} F16H *1/08, 1/20*

U.S. Cl. 74—414 **11 Claims**



1. In a gearing assembly comprising two gears in engagement, a pair of gear shafts, each gear being secured to a shaft, the improvement comprising an axial thrust compensation system, the system including disc means projecting from one of the shafts, the disc means being fixed to the one shaft against axial displacement, the other shaft including thrust collar means for accommodatingly receiving the disc means, threaded securement means coaxial with the other shaft for fixing the thrust collar means to the other shaft against axial displacement, a side surface of the disc means engaging the thrust collar means for transfer of forces in an axial direction therebetween and for restraining axial displacement of the disc means relative to the thrust collar means, the periphery of the disc means being free of engagement with the thrust collar means, the gearing assembly further including a pair of journal bearings associated with each shaft, a zone of each shaft on opposite sides of its respective gear being received within a journal bearing, one journal bearing being positioned between the disc means and the gear secured to the one shaft and another journal bearing being positioned between the thrust collar means and the gear secured to the other shaft, whereby high speed gear engagement may be maintained and axial thrust compensated while shaft fixture is minimized.

4,369,669

RACK AND PINION ASSEMBLY

David H. Allen, Yatton, England, assignor to Cam Gears Limited, Hitchin, England

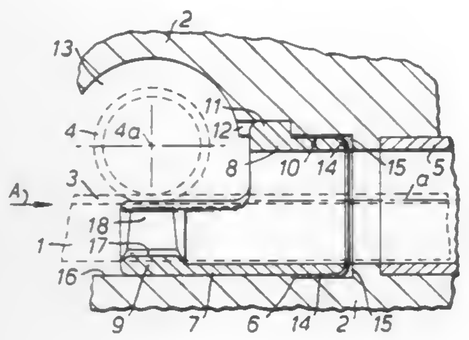
Filed Jul. 23, 1980, Ser. No. 171,349

Int. Cl.^{3} F16H *19/04;* **B62D** *3/12*

U.S. Cl. 74—422 **12 Claims**

1. A rack and pinion assembly comprising a housing, a rack bar having a longitudinally extending axis and being longitudinally displaceable in said housing, a pinion rotatably mounted in said housing and having its teeth in engagement with the teeth of said rack bar so that rotation of said pinion effects a longitudinal displacement of said rack bar relative to said housing, a bearing member located between said rack bar and said housing, said bearing member having a tubular retaining portion through which the rack bar is longitudinally displaceable and a bearing portion extending longitudinally from said tubular retaining portion, the length of said bearing portion measured along the rack bar axis being less than the length of

said retaining portion measured along the rack bar axis, said bearing portion slidably supporting said rack bar to maintain the teeth of said rack bar in engagement with the teeth of said pinion, said tubular retaining portion being spaced from said rack bar, said bearing portion being located between said rack bar and said housing on the side of said rack bar remote from said pinion and opposite to the region of engagement between the teeth of said rack bar and pinion, and means carried on said tubular retaining portion and cooperating with respective means in said housing for retaining said bearing member from longitudinal and rotational displacement relative to said housing.



4,369,670

MULTI-LINK DRIVE PEDAL OF PLASTIC MATERIAL

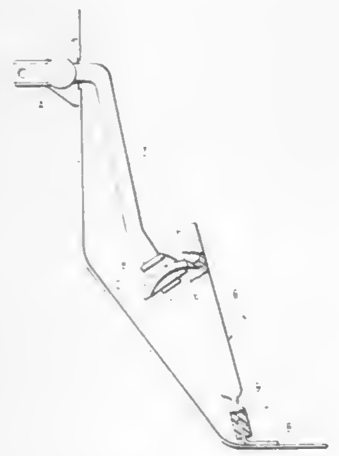
Dieter Papenhagen, Backnang-Heiningen, and Norbert Komoschinski, Winnenden, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,059

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932671

Int. Cl.^{3} G05G *1/14;* F16B *7/20*

U.S. Cl. 74—513 **7 Claims**



1. A multiple-link gas pedal for motor vehicles including a foot plate, a connecting means for enabling a connection of the gas pedal to a pivotable actuating lever, hinge means for articulatingly connecting the connecting means on a rear side of the foot plate in an area of an upper end thereof, mounting means for mounting the actuating lever to the connecting means, and a further hinge means for articulatingly connecting the mounting means to the connecting means, the mounting means includes a bore adapted to receive a free end of the actuating lever, characterized in that the bore is provided with at least one flaring portion, and in that a lower end of the actuating lever is provided with at least one projection having a shape corresponding to the flaring portion of the bore whereby, after an introduction of an end of the actuating lever into the bore and a mutual twisting between the actuating lever and the mounting means, the at least one projection rests on an underside of the mounting means along marginal zones of the bore which are not widened.

4,369,671

TORQUE TRANSFER MECHANISM WITH HYDRAULIC CONTROL SYSTEM FOR A FOUR WHEEL DRIVE VEHICLE

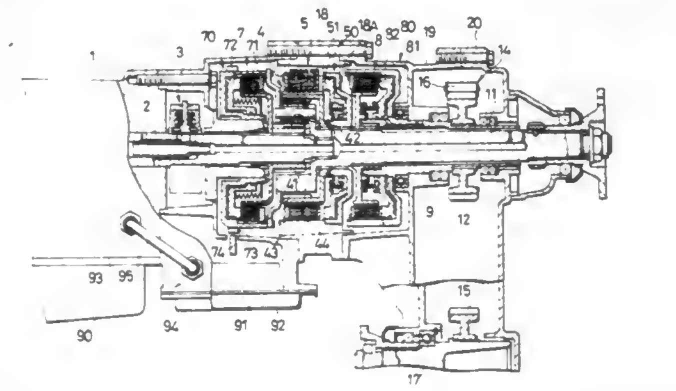
Goichi Matsumoto, Okazaki, and Yoichi Hayakawa, Toyoake, both of Japan, assignors to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Dec. 5, 1980, Ser. No. 213,715

Claims priority, application Japan, Dec. 12, 1979, 54-161339

Int. Cl.^{3} B60K *17/34, 41/04*

U.S. Cl. 74—665 GA **18 Claims**



1. A torque transfer mechanism for a four wheel drive vehicle having an automatic transmission, said torque transfer mechanism comprising:

an input shaft for receiving torque from said automatic transmission;

a first output shaft connected to one of front and rear drive axles of the vehicle;

a second output shaft connected to the other one of the drive axles;

speed reducer means for transmitting the rotation of said input shaft to said first output shaft at a reduced speed of said output shaft when said speed reducer is engaged;

means for nullifying the operation of said reducer means and directly coupling said input shaft with said first output shaft;

means engaging said reducer for speed reduction;

a mechanism for transmitting the rotation of said first output shaft to said second output shaft;

a hydraulic control system including:

a source of a first pressurized fluid;

first conduit means for supplying said first pressurized fluid to a first driving means, said first driving means selectively engaging said means for directly coupling and nullifying said reducer means operation;

second conduit means for supplying said first pressurized fluid to a second driving means, said second driving means selectively engaging and disengaging said means for engaging said reducer for speed reduction;

a source of a second pressurized fluid;

valve means for selectively connecting said first pressurized fluid to either said first or said second conduit means, said valve means being adapted to sense the pressure of said second fluid and connecting said first pressurized fluid to said second conduit means to engage and operate said reducer means only when said second pressurized fluid pressure falls below a predetermined level.

4,369,672

CHANGE-SPEED TRANSMISSION WITH SELECTIVE BYPASS OF HYDROKINETIC UNIT

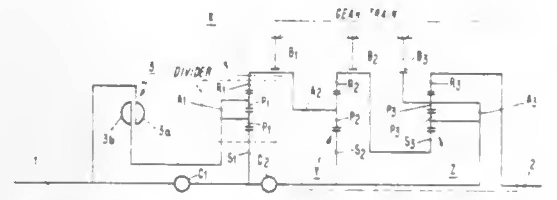
Kunio Ohtsuka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 899,991, Apr. 25, 1978. This application Jun. 16, 1981, Ser. No. 274,292

Claims priority, application Japan, May 13, 1977, 52-54206

Int. Cl.^{3} F16H *47/08*

U.S. Cl. 74—688 **11 Claims**



10. A change-speed transmission comprising:

an input member (1) to receive the input torque;

an output member (2) to provide the output torque;

a hydrokinetic unit (3) having a pump (3*a*) connected to said input member for simultaneous rotation therewith and a turbine (3*b*);

a first and a second clutch;

a divider in the form of a planetary gear set having at least a first, a second and a third rotary element;

a planetary gear train having at least a first, a second and a third rotary element;

said first rotary element of said divider being connected to said first rotary element of said gear train for simultaneous rotation therewith;

said second rotary element of said divider being connectable through said second clutch (C_2) to said second rotary element of said gear train for simultaneous rotation therewith when said clutch is engaged;

said output member (2) being connected to said third rotary element of said gear train for simultaneous rotation therewith;

said turbine being connected to said third rotary element of said divider for simultaneous rotation therewith; and

said input member being connectable through said first clutch (C_1) to said second rotary element of said divider for simultaneous rotation therewith so as to bypass said hydrokinetic unit when said clutch is engaged;

whereby upon engagement of said first clutch (C_1) the input torque of the input member may be split providing a portion of the input torque to the output member bypassing said hydrokinetic unit and providing the remaining portion of the input torque to the output member passing through said hydrokinetic unit, irrespective of the condition of said second clutch (C_2); and wherein

said planetary gear set (X) of said divider comprises:

a first sun gear (S_1) as said second rotary element of said divider;

a first ring gear (R_1) as said first rotary element of said divider; and

a first carrier (A_1) as said third rotary element of said divider, said first carrier rotatably carrying a plurality of pairs of intermeshing first pinions (P_1, P_1'), one of said intermeshing first pinions of each pair (P_1) meshing with said first sun gear (S_1), the other one of said intermeshing first pinions of each pair (P_1') meshing with said first ring gear (R_1); in which said planetary gear train comprises:

a second planetary gear set (Y) which comprises

a second sun gear (S_2) as said second rotary element of said gear train;

a second ring gear (R_2); and

a second carrier (A_2) as said first rotary element of said gear train, said second carrier (A_2) rotatably carrying a plurality of second pinions (P_2), each meshing with both of said second sun gear (S_2) and second ring gear (R_2); and

a third planetary gear set which comprises

a third sun gear (S_3) connected to said second ring gear (R_2) for simultaneous rotation therewith;

a third ring gear (R_3) as said third rotary element of said gear train;

a third carrier (A_3) rotatably carrying a plurality of pairs of intermeshing third pinions (P_3, P_3'), one of said intermeshing third pinions of each pair (P_3) meshing with said third sun gear (S_3), the other one of said intermeshing third pinions of each pair (P_3') meshing with said third ring gear (R_3), said third carrier (A_3) being connected to said second sun gear (S_2) for simultaneous rotation therewith; and, in which said planetary gear train further comprises

a first brake (B_1) operable to anchor said first ring gear (R_1) and second carrier (A_2);

a second brake (B_2) operable to anchor said second ring gear (R_2) and third sun gear (S_3); and

a third brake (B_3) operable to anchor said third carrier (A_3) and second sun gear (S_2).

4,369,673

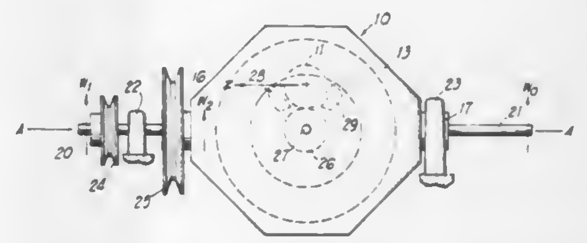
MECHANICAL TORQUE CONVERTER

Eugene I. Odell, c/o Dept. of Mechanical Engineering, Univ. of South Alabama, Mobile, Ala. 36688

Filed Jun. 26, 1980, Ser. No. 163,227

Int. Cl.^{3} F16H *3/74, 37/06, 15/50*

U.S. Cl. 74—751 **20 Claims**



1. A gyroscopic traction drive assembly comprising, in combination:

a frame, a spherical gryroscopic mass carried by said frame and means for rotating said frame about a fixed axis whereby said mass is caused to rotate at an angular velocity ω_z about a first axis passing through the center of said mass;

traction input means and traction output means rotatably carried by said frame for engaging said gyroscopic mass at respective contact points which lie in a plane orthogonal to said fixed axis and which define, with the center of the mass, respective axes y and x which are orthogonal to each other;

means carried by said frame for positively locating said gyroscopic mass in fixed relation to said frame such that the center of said mass and said respective contact points remain in said plane and including roller means for engaging said mass at a third contact point lying in said plane to force said mass to bear upon said traction input and traction output means at said respective contact points;

means for causing said traction input means to impart to said mass an angular velocity ω_x about said x axis whereby said gyroscopic mass is caused to precess at an angular velocity ω_y about said y axis; and

said roller means causing said mass to bear upon said traction input and traction output means at said respective contact points with sufficient force such that said angular velocity ω_y imparts an output torque to said traction output means which is independent of the rotational speed of such traction output means.

4,369,674
POWER TRANSMISSION DEVICE

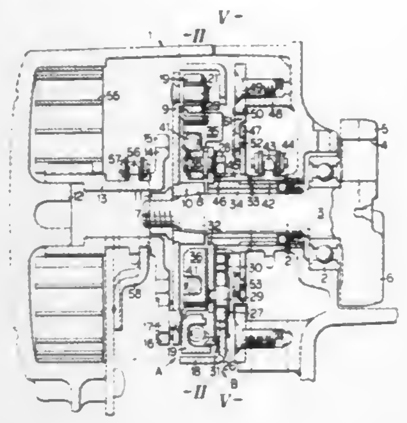
Masumi Hamane, Kawagoe, and Makoto Kondo, Ooi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1980, Ser. No. 150,620

Claims priority, application Japan, May 18, 1979, 54-61750

Int. Cl.³ F16H *3/74*

U.S. Cl. 74—752 E **9 Claims**



1. In a power transmission device for transmitting power from a drive shaft to a driven shaft by way of a planetary gear mechanism, said planetary gear mechanism having a ring gear, a sun gear disposed concentrically on the radially inner side of said ring gear, and planetary gears disposed between and engaged with said sun gear and said ring gear, the improvement comprising a pair of side plate means attached to said planetary gear mechanism for holding the meshing portions of said planetary gears, said ring gear and said sun gear from the opposite sides of the gears so as to permit free sliding movement of all of these gears relative thereto and, at the same time, acting to suppress relative axial movements of all of these gears, said side plate means serving to support at least one of said ring gear, said planetary gears and said sun gear, said side plate means being in sliding contact with only opposite side surfaces of all of the respective gears.

4,369,675
METHOD AND APPARATUS FOR CONTROLLING AN INFINITELY VARIABLE TRANSMISSION OF A MOTOR VEHICLE

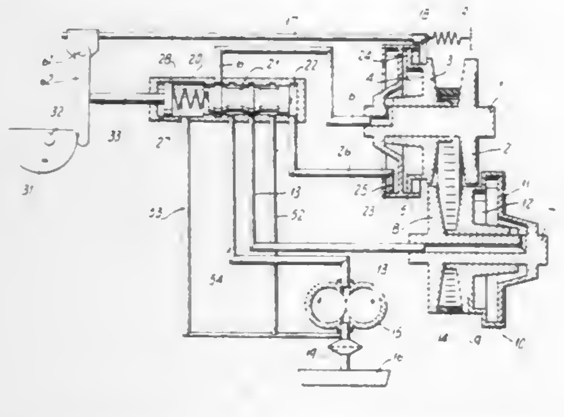
Petrus H. van Deursen, Deurne, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Continuation of Ser. No. 92,732, Nov. 9, 1979, abandoned. This application Dec. 11, 1981, Ser. No. 329,827

Claims priority, application Netherlands, Nov. 13, 1978, 7811192

Int. Cl.³ B60K *41/12;* **F16H** *11/06*

U.S. Cl. 74—864 **5 Claims**



1. In apparatus for controlling the transmission ratio of an infinitely variable V-belt transmission having variable pitch input and output pulleys operable by hydraulic cylinders, each pulley being formed of a pair of conical discs, at least one of which is axially movable relative to the other disc of that pair and said input pulley being rotatably driven by a power source: a hydraulic control valve for operating said cylinders, said valve having an internal axially movable spool; means responsive to the speed of said input pulley for urging said spool in one direction; compression spring means urging said spool in an opposite direction, said spring means being loaded through intermediate connecting means movable by external loading means and additionally movable by additional loading means dependent on the actual transmission ratio.

4,369,676
KICK-DOWN CIRCUIT FOR AUTOMATIC CHANGE-SPEED TRANSMISSIONS

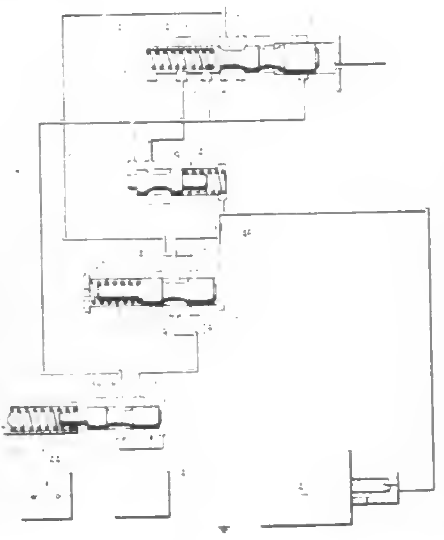
Hermann Gaus, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 21, 1980, Ser. No. 169,520

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929573

Int. Cl.³ B60K *41/10*

U.S. Cl. 74—868 **8 Claims**



1. A kick-down circuit for an automatic change-speed transmission, the circuit including a kick-down control means for transmitting a kick-down control signal when an accelerator pedal of the vehicle in which the transmission is installed is depressed to a predetermined position, characterized in that means are provided for limiting a duration of the kick-down control signal for a predetermined time period independently of a position of the accelerator pedal.

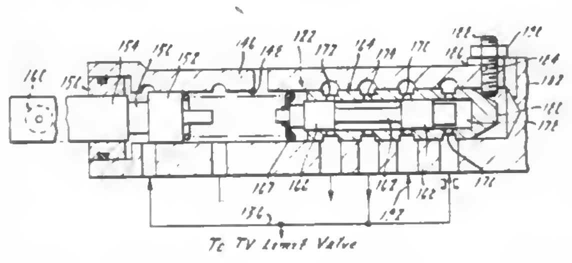
4,369,677
TRANSMISSION THROTTLE PRESSURE REGULATOR ASSEMBLY

Charles W. Lewis, Wayne, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 3, 1980, Ser. No. 165,883

Int. Cl.³ B60K *41/04*

U.S. Cl. 74—869 **6 Claims**



1. In a control valve circuit for an automatic transmission having fluid pressure operated clutch and brake servos adapted to control the relative motion of gear elements of said transmission:

- a throttle valve assembly comprising a valve body, a valve opening in said valve body;
- a valve sleeve in said opening having a line pressure supply port, an exhaust port, a throttle valve pressure supply port and a throttle valve pressure feedback port;
- a movable valve spool slidably disposed in said valve sleeve, said valve spool having spaced pressure regulating lands registering with said line pressure supply port and said exhaust port, said feedback port communicating with the interior of said sleeve at one end of said valve spool whereby the line pressure in said line pressure supply port is modulated;
- a valve plunger in said opening, means for slidably positioning said plunger;
- spring means between said plunger and the other end of said valve spool for exerting a variable force on said valve spool that is dependent upon plunger displacement;
- and means for manually adjusting the position of said sleeve in said valve opening whereby the pressure modulating characteristic of said throttle valve assembly may be controlled.

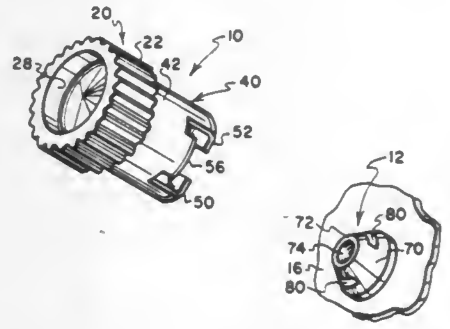
4,369,678
TOOL AND OPERATOR HEAD FOR A TOOL-OPERATED LOCK

Donald L. Cooper, and Gordon G. Zeidman, both of Columbus, Ohio, assignors to The Eastern Company, Cleveland, Ohio

Filed Oct. 22, 1980, Ser. No. 199,559

Int. Cl.³ B25B *13/00*

U.S. Cl. 81—90 C **7 Claims**



1. A tool and operator head for rotating a rotatable member, comprising:

(a) an operator head having an outer surface of truncated cone configuration, an end surface located near the smaller end of the truncated cone, and a pair of slots formed in opposite sides of the outer surface and defining a pair of parallel-extending driving surfaces at the bottoms of the slots;

(b) a tool including structure defining a pair of spaced, opposed driving means which are insertable into the slots for engaging the driving surfaces for drivingly connecting the tool and the head; and,

(c) detent means for releasably retaining the tool on the head including interfitting formation means on the tool and on the end surface which formation means are interfittingly engaged when the tool is drivingly connected to the head, and biasing means for biasing the interfitting formation means into engagement with each other.

4,369,679
PORTABLE ROTARY MACHINING DEVICE

Norman E. Jones, Box 124, Tracyton, Wash. 98393

Filed Nov. 12, 1980, Ser. No. 206,207

Int. Cl.³ B23B *3/24*

U.S. Cl. 82—4 R **4 Claims**

1. A rotary machining device comprising:

(a) a housing, a cutting tool, a vertical feed mechanism, a horizontal feed mechanism and a rotation drive mechanism;

(b) said vertical feed mechanism, said horizontal feed mechanism and said rotation drive mechanism mounted on and within said housing;

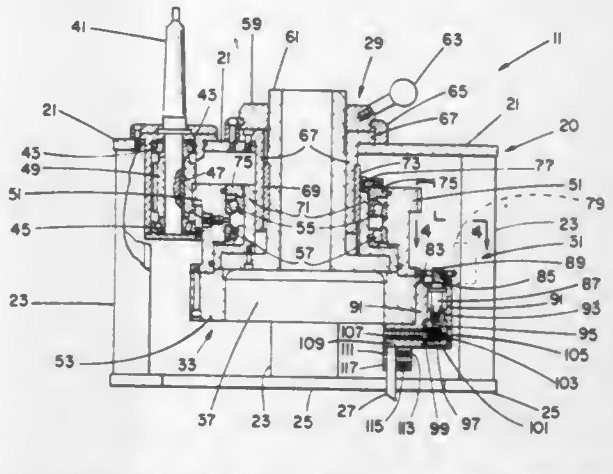
(c) said cutting tool mounted on said horizontal feed mechanism for imparting horizontal movement to said cutting tool;

(d) said vertical feed mechanism centrally mounted within said housing and supporting said horizontal feed mechanism for imparting vertical movement thereto;

(e) said rotational drive mechanism mounted on said periphery of said housing and operatively connected to said horizontal feed mechanism for imparting rotational movement thereto;

(f) whereby said cutting tool may be moved vertically, horizontally and rotationally to make circular cuts in material that is positioned outside of said housing;

(g) said housing includes a top plate, a base and legs;



(h) said top plate having a central opening, said base having a central opening and said legs interconnecting said top plate and said plate in a spaced apart relationship;

(i) said vertical feed mechanism includes a feed nut, and a vertical feed column;

(j) said vertical feed column having a central opening;

(k) said feed nut and said vertical feed column being in threaded engagement whereby rotation of said feed nut in one direction raises said vertical feed column and rotation in the other direction lowers said vertical feed column;

(l) said vertical feed mechanism includes a slip ring, said slip ring mounted on said top plate for rotationally supporting said feed nut; and

(m) said vertical feed mechanism includes a column guide, said column guide being mounted on said top plate and extending into said housing and including a central opening for supporting said vertical feed column.

4,369,680
METHOD AND APPARATUS FOR CHANGING SLICER CUTTING PARAMETERS IN A ROTARY FOOD PROCESSOR

James E. Williams, Stamford, Conn., assignor to Cuisinarts Research & Development Inc., Greenwich, Conn.

Filed Nov. 26, 1980, Ser. No. 210,272

Int. Cl.³ B26D *7/00*

U.S. Cl. 83—13 **21 Claims**

12. A method for changing the thickness of cut pieces produced by a rotary food processing tool in a food processor of the type including a housing having an electric motor drive, a bowl mountable on said housing for enclosing a rotary food processing tool within said bowl, said tool being rotatable within said bowl by said electric motor drive, a removable cover adapted to be secured in position on said bowl, a feed tube forming a passageway for feeding food items into said bowl, said food processing tool having an elongated hub with a head on one end thereof and a coupling melns on the other end thereof adapted to be coupled to and rotated by said electric motor drive, and a horizontal disc-like member secured to said hub head and having an opening therethrough with slicing

means positioned at an elevated location relative to said disc-like member, said slicing means being located near said opening for allowing the cut pieces of food items to pass down through said opening, the thickness of the cut pieces produced being determined by the difference in elevation between said slicing means and the top of said disc-like member,

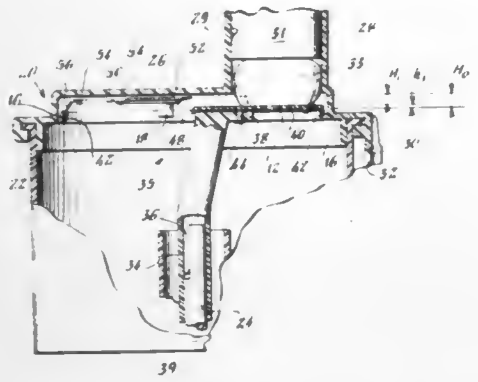
said method comprising the steps of:

selecting a cover disc of predetermined thickness,

fitting said cover disc of predetermined thickness in mounted relationship over said disc-like member with the cover disc remaining in continuous contact with the upper surface of the disc-like member for changing the elevation between said slicing means and the top of said disc-like member, and

engaging said cover disc with said tool for causing said cover disc to rotate with said tool for defining a smaller difference in elevation between the slicing means and the top surface of said cover disc,

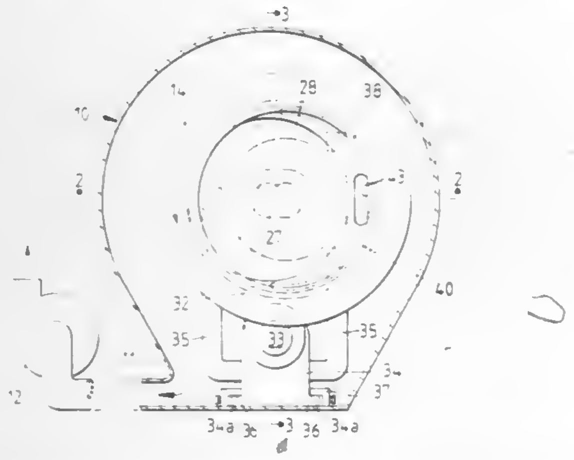
whereby the cut pieces are now equal to said smaller difference in elevation.



4,369,681

INSIDE-OUT CUTTER FOR ELONGATED MATERIAL SUCH AS TOW

Donald W. Van Doorn, and James B. Hawkins, both of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.
Filed Nov. 19, 1980, Ser. No. 208,160
Int. Cl.³ D10G *1/04, 1/00*
U.S. Cl. 83—100 **17 Claims**



2. In apparatus for cutting elongated fiber-like material into short lengths,

(a) a driven rotary reel carrying a plurality of spaced apart circularly arranged knives having inwardly directed cutting edges,

(b) means to feed the material to be cut into overlapping layers with the outermost layer in contact with the cutting edges of the knives,

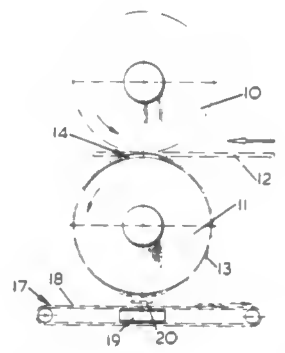
(c) a single pressure roller disposed to contact a segment of the innermost of the layers and force the outermost ones thereof into cutting engagement with the knives adjacent said segment, and

(d) means mounting the pressure roller for radial movement from a working position located offset from the axial center of the reel to a non-working position nearer the axial center of the reel.

4,369,682

ROTARY DIE CUTTERS HAVING MAGNETICALLY-ATTRACTED WASTE EJECTOR

Thomas K. Bunnell, Prestbury, England, assignor to Dolan Corrugated Containers Limited, Stalybridge, England
Filed Jan. 30, 1981, Ser. No. 230,184
Claims priority, application United Kingdom, Feb. 23, 1980, 8006211
Int. Cl.³ B21D *45/04*
U.S. Cl. 83—112 **2 Claims**



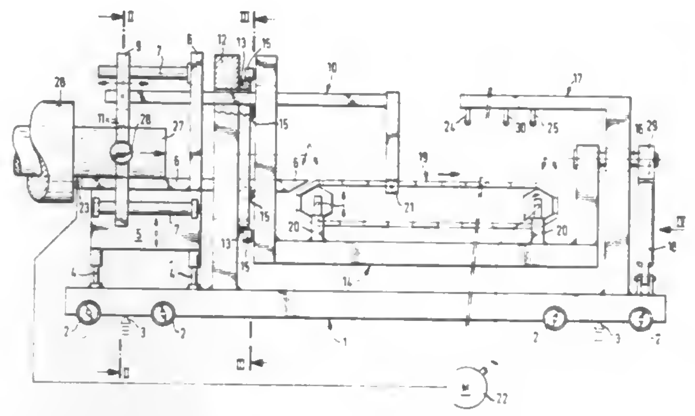
1. A rotary die cutter, comprising: an upper rotary anvil, a lower rotary anvil defining with the upper rotary anvil a nip through which board to be cut can be passed, at least one cutting rule mounted on the circumference of the lower rotary anvil and defining an area adapted to be cut in a board by the rule, a metallic pusher supported within the area defined by the cutting rule for movement radially of the lower rotary anvil whereat it protrudes outwardly of the cutting rule to eject any cut waste board contained within the cutting rule, a waste-removal conveyor disposed below the lower rotary anvil, and magnetic means disposed below an upper run of the conveyor to attract the pusher as its associated cutting rule passes the conveyor and cause the pusher to move radially outwards and eject the cut waste board.

4,369,683

DISCHARGING DEVICE FOR AN EXTRUSION PRESS

Hartmut Bieg, Augsburg; Hans Jonas, Gersthofen, both of Fed. Rep. of Germany; Heinz Rosswurm, Hickman, Ky.; Wilhelm Demmer, Frankfurt am Main, and Ludwig Döbel, Darmstadt-Arheilgen, both of Fed. Rep. of Germany, assignors to Sigri Elektrographit GmbH, Meitingen bei Augsburg, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 247,815
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3046270
Int. Cl.³ B30B *11/06;* B28B *11/16*
U.S. Cl. 83—157 **3 Claims**

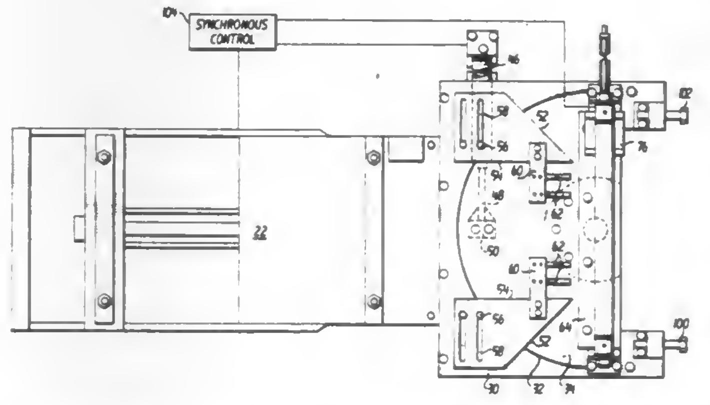
1. Discharging device for an extrusion press, comprising a frame being movable in the axial direction of the press; a first part being connected to said frame and adjustable in height, said first part including a substantially flat plate and cutting means; a second part being movable relative to said frame and being adjustable in height, said second part including a horizontally disposed axle, a conveyor belt being suspended from said axle and tiltable about the axis of the press, and a coupling for said conveyor belt; a coupling rod for said cutting means being engageable with said coupling for periodically connecting said cutting means to said conveyor belt; and a continuously variable drive driving said conveyor belt.



4,369,684

APPARATUS FOR CUTTING STRIP MATERIAL

Gifford T. Perman, and David A. Poff, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.
Filed Nov. 18, 1980, Ser. No. 208,103
Int. Cl.³ B26D *1/18, 1/20*
U.S. Cl. 83—216 **3 Claims**



1. Apparatus for cutting a strip of sheet material into segments, comprising:

a source of strip material, said strip having an axis;

means for feeding said strip material;

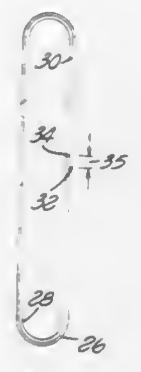
means operatively associated with said means for feeding, both for cutting said strip across its width starting on one side at a first angle to and at a first position along said axis, and for cutting said strip across its width starting on the other side at a second, different angle to and at a second position along said axis, said second position being spaced from said first position due to movement of said strip by said means for feeding; said means for cutting comprising a support table having a top surface onto which said strip is fed by said means for feeding; a cutting plate mounted on said table and oriented across the path traversed by said strip, said cutting plate having a first cutting edge; a guide track supported on said support table adjacent said cutting plate and across said path, said guide track comprising a gear rack on one side thereof; a carriage mounted for movement on said guide track, said carriage comprising a cutting wheel having at its periphery a second cutting edge, a shaft for mounting said cutting wheel for rotation with said second cutting edge adjacent said first cutting edge, a gear mounted on said shaft for rotation with said cutting wheel and gear means meshed with said gear and said gear rack for rotating said cutting wheel in opposite directions for cutting said strip at said first and second angles; means for moving said carriage along said guide track; and means for rotating said cutting plate, said guide track and said carriage between said first and second angles; and

control means for timing the operation of said means for feeding and said means for cutting to intermittently and automatically feed said strip and stop it to effect a cut at said first angle; adjust said means for cutting for operation at said second, different angle; feed said strip and stop it to effect a cut at said second, different angle; and adjust said means for cutting for operation at said first angle.

4,369,685

BAND SAW BLADE

Donald L. Trigg, 10934 Gazette Ave., Chatsworth, Calif. 91311
Filed Oct. 10, 1980, Ser. No. 195,989
Int. Cl.³ B23D *61/12*
U.S. Cl. 83—661 **7 Claims**



1. In a band saw blade having a belt-like configuration to allow the blade to circulate during operation, the improvement comprising:

(a) said blade comprising a first blade member and a second blade member laminated thereto, each of said blade members being planar, of substantially constant thickness, and having opposed ends;

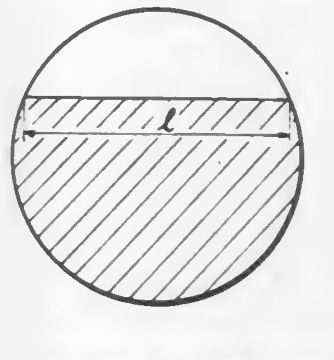
(b) said blade members being of substantially equal lengths and aligned with their ends offset to form a joint; and

(c) means associated with said joint, said means comprising interlocking mating members including first mating means associated with said first blade member and a second mating means associated with said second blade member for securing said joint so that said blade may be threaded through an interior portion of a work piece and assembled into a belt-like configuration for operation.

4,369,686

METAL-SAWING MACHINE

Tadahiro Sugimoto, Amagasaki, Japan, assignor to Daito Seiki Company Limited, Osaka, Japan
Filed Jan. 23, 1981, Ser. No. 227,717
Claims priority, application Japan, Jan. 31, 1980, 55-11177
Int. Cl.³ B23D *55/08*
U.S. Cl. 83—801 **5 Claims**



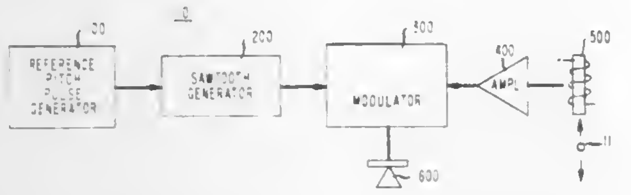
1. A metal-sawing machine for cutting a work in the rocking motion of a saw blade, which machine comprises:

a guide frame vertically movable with respect to a vice mounted on a bed, said vice being adapted to hold a work;

- a saw carrier including a pair of saw wheels on which an endless saw blade is carried so as to run in a loop around said saw wheels;
- a pair of servo-cylinders one on the left-hand section and the other on the right-hand section of said saw carrier;
- each of said servo-cylinders being connected at its one end to said guide frame at a first pivotal point while the opposite end thereof is connected to said saw carrier at a second pivotal point;
- rocking motion control means for alternately differentiating the distance between said first and second pivotal points of each of said servo-cylinders, thereby enabling said saw carrier to rock in the cutting plane with respect to said work held on said vice; and
- guide means for preventing said saw carrier from horizontal displacement with respect to said work.

4,369,687
PITCH SENSOR

Stanley T. Meyers, 122 N. Riverside Ave., Red Bank, N.J. 07701
Filed Jun. 11, 1980, Ser. No. 158,474
Int. Cl.³ G01R *23/14;* G10G *7/02*
U.S. Cl. 84—454 **17 Claims**



1. A pitch sensor for determining the frequency of a first signal from a first signal source comprising:
- reference pitch pulse generating means for providing a plurality of equal-time interval reference pitch pulses;
- saw-tooth generating means being responsive to said reference pitch pulse generating means for providing a plurality of equal-time interval ramp wave-forms;
- probe sensing means being responsive to said first signal source for providing a first electrical signal representative of said first signal; and
- modulator means being jointly responsive to said saw-tooth generating means and to said probe sensing means for sampling said saw-tooth ramp wave-form with said first electrical signal, the output of said modulator means indicating whether the frequency of said first signal is above or below said reference pitch pulses.

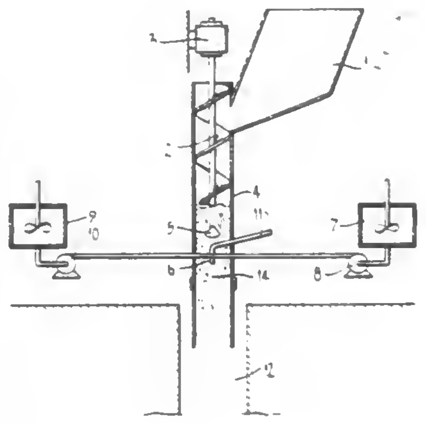
4,369,688
METHOD AND APPARATUS FOR PRODUCING A DETONATING CORD

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 842,096, Oct. 17, 1977, Pat. No. 4,232,606, which is a continuation-in-part of Ser. No. 762,824, Jan. 26, 1977, abandoned. This application May 19, 1980, Ser. No. 151,243
Int. Cl.³ C06B *21/00*
U.S. Cl. 86—1 R **11 Claims**

1. A method of producing a detonating cord comprising
- (a) forming a mixture of cap-sensitive crystalline high explosive compound and a binding agent therefor into a continuous solid core;
- (b) drawing strands of yarn under tension sufficient to form a moving cage of substantially parallel longitudinal strands;
- (c) allowing said moving cage to entrain said core within it, whereby said cage becomes a conveyor for said core;
- (d) applying a layer of soft plastic material around said moving cage while effecting substantially no change in the diameter of said core after its entrainment within said cage; and
- (e) hardening the plastic material.

4,369,689
METHOD FOR MIXING AND PLACING EXPLOSIVE COMPOSITIONS

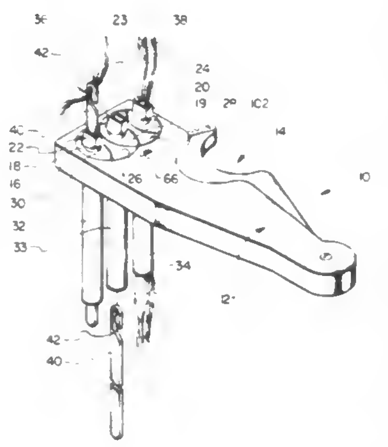
Paul F. Donaghue, Bundoora; Thomas L. Love, Deer Park; Kenneth A. W. Mitchell, Cheltenham, and Maxwell G. Pitt, Prahran, all of Australia, assignors to ICI Australia Limited, Victoria, Australia
Filed Sep. 24, 1980, Ser. No. 190,251
Claims priority, application Australia, Oct. 5, 1979, PE0804
Int. Cl.³ C06D *1/08*
U.S. Cl. 86—20 C **8 Claims**



1. A process for the preparation of an explosive composition comprising a dispersion of an explosive component located in and immobilized by a solidified foamed non-explosive matrix which process comprises: forming a hollow stream of solid particles of said explosive component; mixing said stream of solid particles with a stream of liquid droplets comprising a precursor for said foamed non-explosive matrix by generating a stream of said liquid droplets within said hollow stream of solid particles; and introducing said stream of solid particles and liquid droplets into a container.

4,369,690
HAIR BRAIDING APPARATUS

Jurgis Sapkus, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Sep. 18, 1981, Ser. No. 303,336
Int. Cl.³ A45D *2/00, 6/00, 1/00;* D04C *7/00*
U.S. Cl. 87—33 **11 Claims**

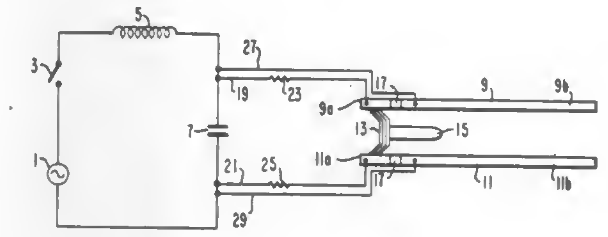


1. In hair braiding apparatus, the combination comprising:
- housing means configured for being hand held;
- lever means pivotally supported within said housing, said lever means being configured for hand operation;
- rack means operable in conjunction with said lever means;
- first, second and third gear means in aligned relation, each of said gear means being movably supported within said housing means and having aperture means for passage therethrough of a strand of hair to be braided; and
- means operable by said rack means and coacting with said first, second and third gear means for interchanging the positions of a first two adjacent ones of said gear means in response to pivoting of said lever means in one direction, and for interchanging the positions of the third of said gear means with the adjacently positioned gear means in response to pivoting of said lever means in the opposite direction, whereby repeated pivoting of said lever means cause the braiding of the strands of hair.

6. In hair braiding apparatus, the combination comprising:
- housing means configured for being hand held;
- lever means pivotally supported within said housing, said lever means being configured for hand operation;
- arcuately configured rack means on said lever means;
- bias means coacting with said lever means for urging said lever means in a first direction;
- first, second and third generally identically configured elliptical gear members positioned in aligned relation, each of said elliptical gear members being movably supported within said housing means and having aperture means for passage therethrough of strands of hair to be braided;
- first and second generally identically configured sector gear members positioned between adjacent ones of said elliptical gear members, one of said sector gear members and the adjacent ones of said elliptical gear members being configured for providing a rotatable composite gear member;
- a pinion gear member having the axle thereof mounted within a pair opposing elongate slots within said housing means, said pinion gear member being in constant meshing engagement with said rack means and movable into meshing engagement with a first composite gear member for interchanging the positions of a first two adjacent ones of said elliptical gear members in response to pivoting of said lever means in one direction, and movable into meshing engagement with a second composite gear member for interchanging the positions of the third of said elliptical gear members with the adjacently positioned elliptical gear member in response to pivoting of said lever means in the opposite direction, whereby repeated pivoting of said lever means causes braiding of the strands of hair.

4,369,691
PROJECTILE LAUNCHING SYSTEM WITH RESISTIVE INSERT IN THE BREECH

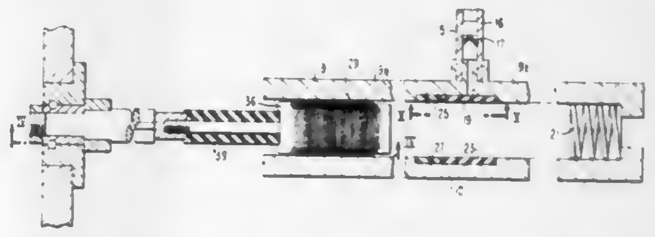
Frederick J. Baehr, Jr., Murrysville Boro; George A. Kemeny, Wilkins Township, Allegheny County, both of Pa., and John P. Barber, Kettering, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 10, 1980, Ser. No. 185,706
Int. Cl.³ F41F *1/00*
U.S. Cl. 89—8 **16 Claims**



1. An electromagnetic projectile launching system comprising:
- a pair of conductive rails;
- means for conducting current between said rails and for propelling a projectile from the leading ends of said rails to the other ends;
- a high current source;
- means for switching current from said current source to said rails;
- and a resistance electrically connected between said switching means and said means for conducting current between said rails and for propelling a projectile so that the resistance is only in the circuit during the initial movement at the leading ends of the rails of the means for conducting current between the rails and for propelling the projectile.

4,369,692
SWITCHING SYSTEM FOR HIGH DC CURRENT

George A. Kemeny, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 100,302, Dec. 4, 1979, abandoned. This application Jul. 2, 1981, Ser. No. 279,925
Int. Cl.³ F41F *1/02*
U.S. Cl. 89—8 **25 Claims**



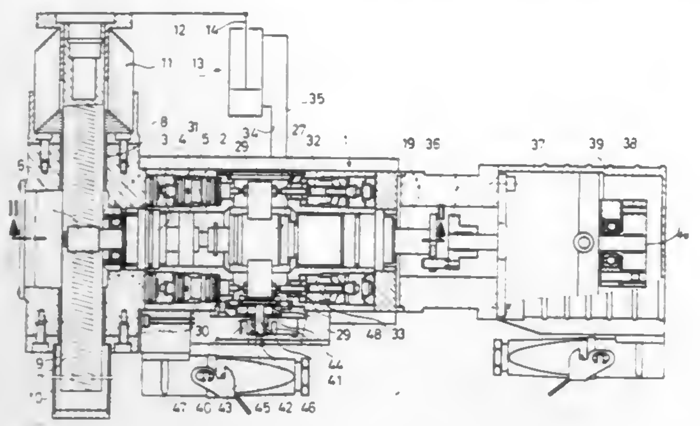
22. A rail gun switching system for switching high DC current fed into a first pair of generally rail parallel conductors from an electrical power source to a second pair of conductors, said switching system comprising:
- a separate conductor disposed generally parallel to said first pair of conductors,
- an armature disposed between each conductor of said first pair of conductors and said separate conductor,
- means for initially restraining said armatures adjacent one end of said first pair of conductors,
- means for rapidly propelling said armatures from one end of said first pair of conductors to the other,
- said second pair of conductors being spaced from said one end of said first pair of conductors,
- an insulating strip disposed on each conductor of said first pair,
- a pair of insulation strips disposed on said separate conductor adjacent said insulating strips on said first pair of conductors, whereby multiple series arcs are formed between said armatures, said first pair of conductors and said separate conductor.

4,369,693
ELECTROHYDRAULIC SERVOMECHANISM

Eckehart Schulze, Weissach-Flacht, Fed. Rep. of Germany, assignor to Hartmann & Lämmle GmbH & Co. KG, Rutesheim, Fed. Rep. of Germany
Filed Mar. 5, 1980, Ser. No. 127,402
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910530
Int. Cl.³ F15B *21/02*
U.S. Cl. 91—35 **23 Claims**

1. A servomechanism, comprising a housing having one end and another end; a stepper motor casing on said one end and accomodating a stepper motor therein connected to a coupling; a rack on said other end; a sleeve-shaped tap extending rearwardly from the coupling into the housing and surrounding a major part of a threaded spindle extending coaxially to the tap and supporting a pinion on its one end remote from the stepper motor, the pinion meshing with the rack which is in an oblique position to the spindle; a fixed first ball bearing connected with the spindle and extending from the spindle end remote from the pinion along a part of the spindle and being arranged between the spindle and the tap, the ball bearing including a cage having an outside facing the tap and provided

with a first group of balls separated by said cage and in engagement with respective grooves arranged on the surface of the tap facing the ball bearing for permitting a relative movement in axial direction between the tap and the spindle; and a switching mechanism associated with the tap and connected to a working unit via a plurality of control valves, the working unit being connected to one end of the rack for rotating the spindle.



4,369,694

POWER STEERING FOR MOTOR VEHICLES

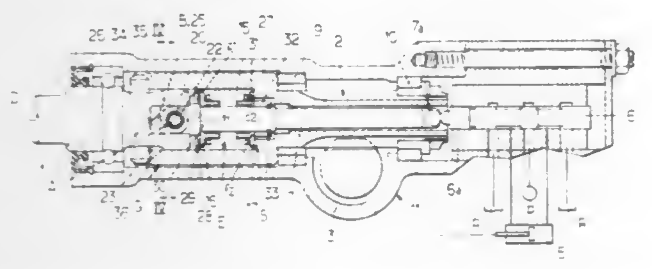
Jean Perineau, Fresnes, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Jun. 16, 1980, Ser. No. 159,498

Claims priority, application France, Jun. 22, 1979, 79 16131

Int. Cl.^{3} F15B *9/10*

U.S. Cl. 91—368 **3 Claims**



1. Power steering with rotary shaft adapted to drive a pinion cooperating with a rack, comprising:

a distributor of pressurized fluid for controlling a motor assisting the movement of the rack, which distributor comprises a slide valve coaxial with the pinion and situated on the side opposite the shaft;

a connection rod passing axially through the pinion and connecting, particularly by means of a jointed coupling, one end of the slide valve to a piece linked in rotation with said shaft, but free to slide with respect to said shaft, said piece being adapted to cooperate, when it rotates, with a bearing surface immovable in the direction of the axis of the pinion and sloping with respect to this axis, so that said piece, and so the rod and the slide valve, move axially in response to a rotational movement of the shaft, said piece being formed by a transverse pin adapted to cooperate with a drive fork integral with the shaft, this pin being extended radially beyond the shaft so as to cooperate with said bearing surface formed by edges, sloping with respect to the axis of the pinion, of an aperture provided in an extension of a tubular part of the pinion which is locked axially,

said power steering further comprising a resilient double-acting means for returning the slide valve to the neutral position, provided in the form of a spring disposed inside the tubular part extension and surrounding the rod, said spring being disposed axially between two stop zones provided in the tubular part extension and fixed in the direction of the axis of the pinion and situated radially outwardly of two bearing zones, and said two bearing zones connected axially to said rod.

4,369,695

POWER STEERING APPARATUS FOR VEHICLE

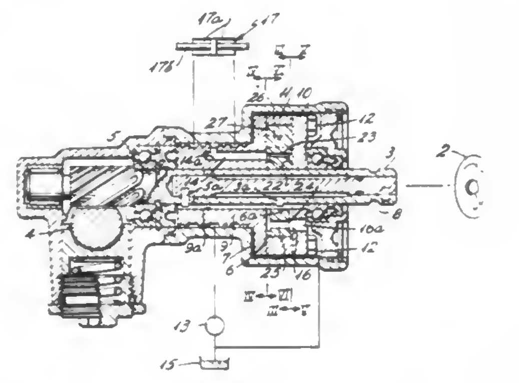
Masao Nishikawa, Niiza; Yoshihiko Toshimitsu, and Takashi Aoki, both of Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 928,076, Jul. 26, 1978, Pat. No. 4,240,331. This application Jul. 21, 1980, Ser. No. 171,015

Claims priority, application Japan, Jul. 29, 1977, 52/90261; Jul. 29, 1977, 52/90262

Int. Cl.^{3} F15B *9/08*

U.S. Cl. 91—375 A **1 Claim**



1. A rotary valve in combination with a power steering apparatus for a vehicle having a steering shaft, said rotary valve comprising a valve housing, a rotary type valve body in said housing arranged to be turned in either one direction or the other by turning operation of said steering shaft, an oil supply port in said housing connected to an oil pressure pump, and two cylinder ports in said housing connected to respective left and right chambers of a power cylinder, said valve body selectively connecting said oil supply port to either of said cylinder ports, said valve body having an opening therethrough for passing oil pressure from said oil supply port to the selected cylinder port and two non-annular pressure receiving surfaces formed in opposite faces of said valve body surrounding said opening, one of the pressure receiving surfaces is positioned immediately downstream of said oil pressure pump having a larger surface area than the other pressure receiving surface and said oil pressure acts solely on the pressure receiving surfaces which allows the valve to remain fixed axially along the steering shaft as the oil pressure acts on the larger receiving surface to prevent chattering.

4,369,696

ELECTRO-PNEUMATIC CONTROL VALVE FOR PNEUMATIC DOOR ACTUATOR

Alfred Klatt, Wathlingen, and Günther Singbartl, Hanover, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,077

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006259

Int. Cl.^{3} F15B *13/04, 11/08*

U.S. Cl. 91—465 **5 Claims**

1. A control valve device for a pneumatic actuator comprising:

(a) an inlet to which a source of compressed air is connected;

(b) first and second outlets connected respectively to the opposite sides of said pneumatic actuator;

(c) a first two-way valve member having a first position in which compressed air is connected from said inlet to said first outlet and having a second position in which compressed air is exhausted from said first outlet;

(d) a second two-way valve member having a first position in which compressed air is connected from said inlet to said second outlet, and having a second position in which compressed air is exhausted from said second outlet;

(e) each said first and second valve member comprising:

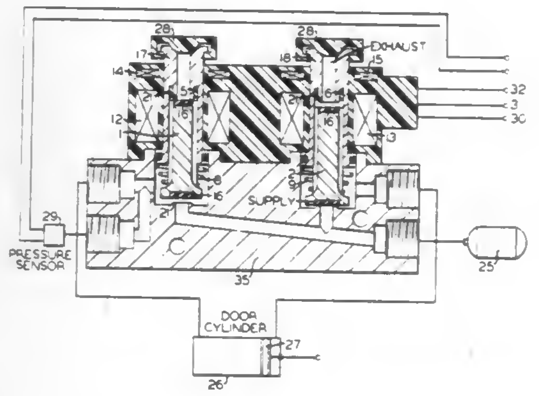
(i) a spring acting on said respective valve member to urge movement thereof toward a first position;

(ii) a primary coil having an electro-magnetic force when energized to urge said respective valve member toward a second position in opposition to said spring;

(iii) a permanent magnet arranged in such proximity of said respective valve member in said second position thereof as to magnetically atract and thereby maintain said respective valve member in said second position following de-energization of said primary coil; and

(iv) a secondary coil arranged to magnetically counteract said permanent magnet when energized; and

(f) said primary and secondary coils of said first and second valve members being connected to one another so that a momentary impulse of electric current thereto causes said primary coil of one valve member and secondary coil of the second valve member to be simultaneously energized, whereby one of said valve members is operated to said first position and the other of said valve members is operated to said second position.



4,369,697

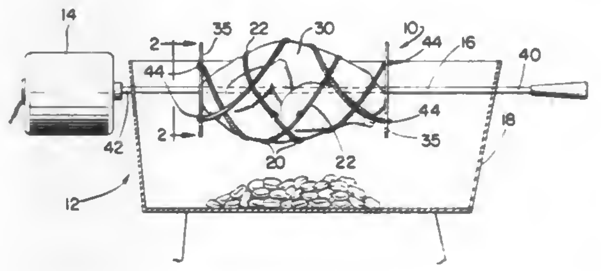
SKEWER ATTACHMENT

Daniel R. Millington, 15921 Rhodolite Ct., Fountain Valley, Calif. 92708

Filed Apr. 13, 1981, Ser. No. 253,695

Int. Cl.^{3} A47J *00/00*

U.S. Cl. 99—351 **5 Claims**



1. An improved attachment for securing a food product firmly in place on a rotatable skewer for barbecuing and the like, comprising:

a first end plate adapted to be received and positioned on said skewer so as to rotate therewith;

a second end plate adapted to be received and positioned on said skewer so as to rotate therewith, whereby said food product is interposed between each end plate;

said end plates being defined by a disc including a central hole having a configuration compatible with that of said skewer, to prevent lateral movement of said disc on said skewer;

means for firmly securing said end plates against said food product and firmly engaging said food product as said food product rotates relative to said rotating skewer;

wherein said securing means comprise a plurality of longitudinal stretchable members having free ends adapted to be removably connected to said end plates, and wherein said end plates include connecting means thereon;

wherein said connecting means comprise a plurality of radially extended slots formed in each of said plates.

4,369,698

ARRANGEMENT FOR SEPARATING FRUITS INTO FRUIT PULP, FRUIT SKIN AND FRUIT CORE

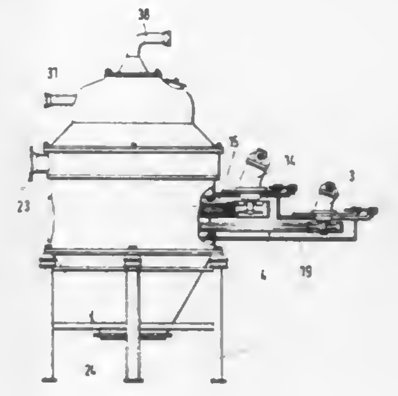
Heinrich Hemfort, Oelde, Fed. Rep. of Germany; August Peitzmann, Woodside, Calif.; Wilhelm Neukötter, Oelde, Fed. Rep. of Germany; Gunthard Pautsch, Oelde, Fed. Rep. of Germany, and Hubert Güunnewig, Oelde, Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 238,989

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008132

Int. Cl.^{3} A23N *1/00*

U.S. Cl. 99—486 **17 Claims**



1. An arrangement for continuously separating a fruit pulp from a fruit skin and a fruit core of a fruit having a predetermined diameter, comprising a housing; a conical sieve element rotating in said housing; a hammer element rotating inside said sieve element so that the latter surrounds the former and including a plurality of conical hammer units detachably arranged and spaced from one another in an axial direction; means for rotating said hammer element with a predetermined speed of rotation and including a hollow shaft carrying said hammer units of said hammer element so as to form an axis of rotation of the latter and a driven shaft having a pin engaging in said hollow shaft; means for rotating said sieve element with a speed of rotation which is lower than the speed of rotation of said hammer element, so that the relation between the speed of rotation of said hammer element and the speed of rotation of said sieve element is within the region of between 2:1 and 4:1; means for adjusting said hammer units and arranged between said hollow shaft and said pin of said driven shaft; and a regulating disc located inside said sieve element above said hammer element and spaced from an inner surface of said sieve element by a distance which is greater than the diameter of the fruit.

4,369,699

CAN FOLDING AND FLATTENING DEVICE

Harold E. Dailey, 6043 W. Crestwood Way #3, Glendale, Ariz. 85301

Filed Mar. 9, 1981, Ser. No. 241,481

Int. Cl.^{3} B30B *3/02*

U.S. Cl. 100—156 **20 Claims**

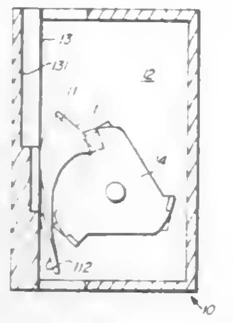
1. A can folding device for folding cans, said cans having first and second ends nominally lying in planes perpendicular to the cylindrical axis of said cans comprising:

first and second rotary means having a common axis of rotation

said first rotary means comprising:

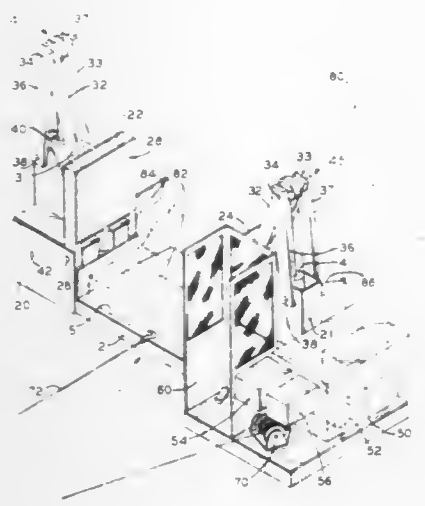
means for rotating a first end of a can to a first plane essentially parallel to the cylindrical axis of the can; and, coupled thereto

said second rotary means comprising:



means for rotating a second end of the can to a second plane essentially parallel to the cylindrical axis of the can.

4,369,700
APPARATUS FOR SALVAGE COMPACTING
Rodger H. Flagg, 1415 Lynn Ave., Ft. Wayne, Ind. 46805
Filed Sep. 8, 1980, Ser. No. 184,820
Int. Cl.^{3} B30B *9/32*
U.S. Cl. 100—215 **36 Claims**



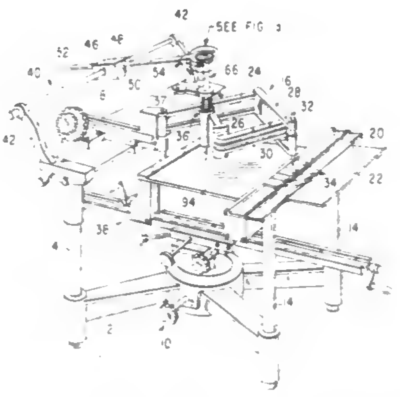
1. An apparatus for compacting salvage comprising:

a generally horizontally disposed frame having a horizontal bed and having secured thereto a frame end upstanding from the frame bed; a crushing pad pivotably attached to said frame end and pivotable from a generally vertical position to a generally horizontal position; first and second link arms pivotally connected near first of their respective ends; said first arm pivotally connected near its other end to said pad; said second arm being pivotally connected near its other end to said frame end;

a fluid cylinder assembly having one end pivotally connected to said first ends;

said assembly also being pivotally connected to said frame end whereby extension of said fluid assembly will push said link arms to pivot said pad toward said vertical position and retraction of said assembly will pull said link arms to pivot said pad downwardly toward said horizontal position in a power crushing stroke while at the same time reducing the bending moment on the fluid assembly as the pad is lowered and the resistance to crushing pad movement is increased and as the salvage is compacted between the crushing pad and the frame bed.

4,369,701
CALLIGRAPHIC APPARATUS AND METHOD
William A. Richardson, 608 Snyder Ave., and Douglas A. Richardson, 27 Canterbury La., both of Berkeley Heights, N.J. 07922
Filed Mar. 4, 1981, Ser. No. 240,574
Int. Cl.^{3} B41F *1/07;* **B43L** *13/10*
U.S. Cl. 101—32 **38 Claims**



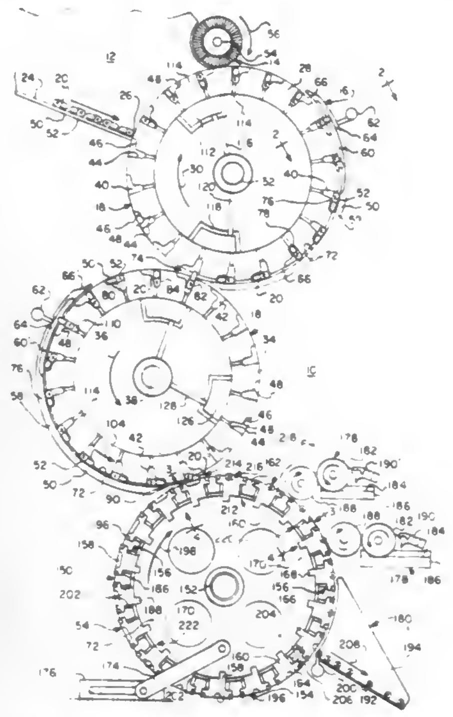
1. A method of producing calligraphic lettering employing apparatus including holding means for holding a workpiece to be lettered, lettering means for lettering a workpiece held by said holding means, positioning means for fixedly positioning single-line indicia relative to a workpiece held by said holding means, following means for following single-line indicia fixedly positioned by said positioning means, connecting means for connecting said lettering means to said following means such that the movement of said lettering means copies the movement of said following means, said method comprising the step of attaching said lettering means to said connecting means such that said lettering means continuously and automatically rotates relative to said connecting means without rotating relative to a workpiece held by said holding means during the movement of said lettering means as it copies the movement of said following means, whereby single-line indicia fixedly positioned by said positioning means may be used to produce calligraphic lettering on a workpiece held by said holding means.

4,369,702
MATERIAL ORIENTATION AND PRINTING APPARATUS
E. Michael Ackley, 1273 N. Church St., Moorestown, N.J. 08057
Continuation-in-part of Ser. No. 65,337, Aug. 9, 1979, Pat. No. 4,266,478, which is a continuation-in-part of Ser. No. 954,243, Oct. 24, 1978, Pat. No. 4,266,477. This application Feb. 5, 1981, Ser. No. 231,925
Claims priority, application Canada, Sep. 20, 1979, 236036
The portion of the term of this patent subsequent to May 12, 1999, has been disclaimed.
Int. Cl.^{3} B65G *47/24;* **B41F** *17/36*
U.S. Cl. 101—40 **6 Claims**

1. Apparatus for printing indicia on articles comprising:

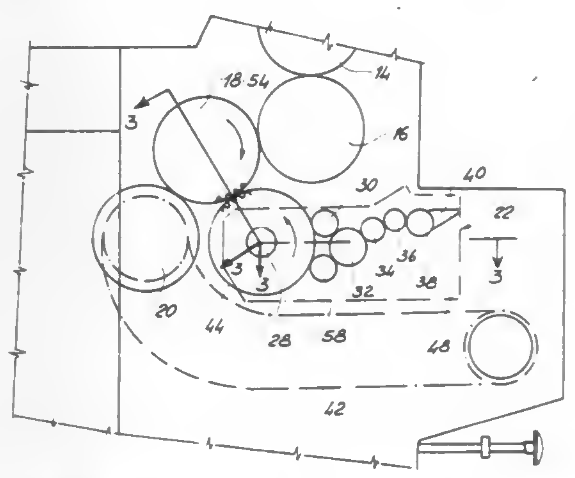
means for supplying a plurality of articles which are to be marked with indicia;

conveying means for moving said articles along a predetermined path, said conveying means including (1) a plurality of carriers mounted for rotary movement about turning axes disposed perpendicular to said path and each having a pocket sized to receive one of said articles and permit rotation within said pocket of said article about its longitudinal axis, and (2) means for rotating said carriers about said turning axes from a position in which said pockets extend in the direction of said path to a position in which said pockets extend transverse to said path;



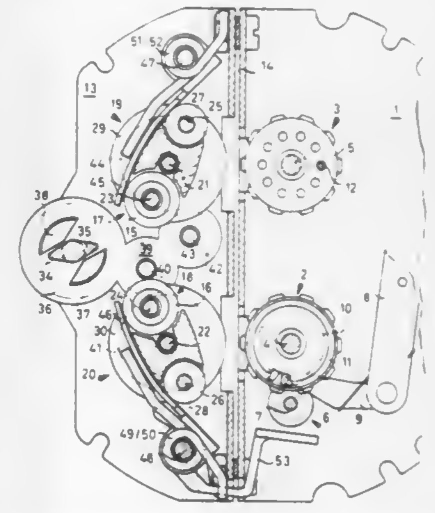
and spin printing means positioned adjacent said path and downstream from the point at which said pockets extend transverse to said path for applying indicia to said articles.

4,369,703
DEVICES FOR NUMERATION, OVERPRINTING, PERFORATION AND CUTTING ON OFFSET SHEET PRINTING MACHINES
Roberto Jarach, via Monte Rosa, 17, 20100 Milano, Italy
Filed Apr. 6, 1981, Ser. No. 251,301
Claims priority, application Italy, May 2, 1980, 21757 A/80
Int. Cl.^{3} B41F *13/14*
U.S. Cl. 101—76 **12 Claims**



1. In a sheet-fed offset machine, having a stationary machine frame having shoulders (**24**, **26**), a sheet feeder (**10**), which delivers sheets to a printing cylinder (**18**), said printing cylinder cooperating with a rubber cylinder and a plate cylinder (**14**), an inking mechanism, for the numeration device, perforation device and cutting device, a sheet delivery outlet (**20**), gear wheels for actuating the printing cylinder, the numeration device, and the inking mechanism, the improvement which comprises a subassembly slidable as a drawer (**22**) between said shoulders of the machine and arranged on the side of the sheet delivery outlet, said subassembly including the numeration device which comprises shaft (**28**), the inking roller (**30**), milling roller (**32**), intermediate roller (**34**), transfer roller (**36**) ink fountain (**40**), said numeration device being engageable with the printing cylinder (**18**), the perforation device, and the cutting device, a first gear wheel (**44**) for actuating the components of the drawer subassembly, which first gear wheel is supported by said shaft (**28**) and is actuated by a second gear wheel (**54**) coupled to the third gear wheel (**52**) of said printing cylinder.

4,369,704
PRINTING DEVICE FOR DISTANCE COUNTER MECHANISM
Heinz Kelch, Königsfeld, and Eduard Schuh, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany
Filed Dec. 3, 1980, Ser. No. 212,577
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950118
Int. Cl.^{3} B30B *9/06, 9/00*
U.S. Cl. 101—110 **4 Claims**

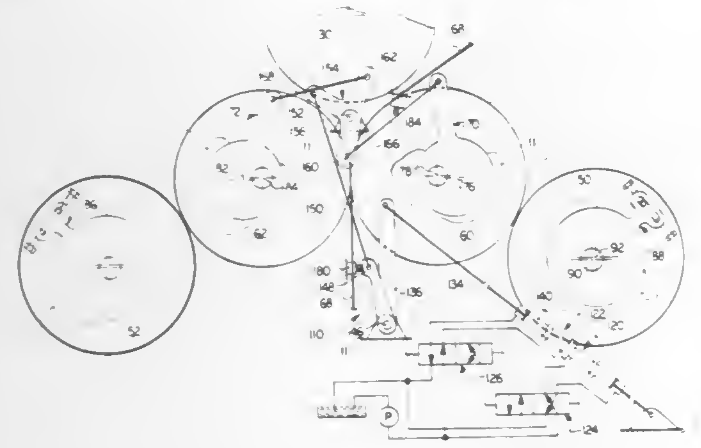


1. A printing mechanism for recorders comprising at least two sets of type wheels juxtaposed relative to each other for rotation about parallel axes, means for enabling transfer of information contained in said type wheels into printed form onto a voucher, platen means coordinated for operation with said type wheel sets, and rotatably mounted platen carrier means having said platen means eccentrically mounted thereon, said type wheel sets and said platen carrier means being rotatable about axes which are disposed in planes parallel in pairs, said platen carrier means being interconnected by gear means such that said platen means rotate in directions opposite to each other, said platen means comprising at least one platen carrier, said mechanism further comprising a spring loaded lever designed to cooperate with said platen carrier, with a guide roll being disposed on at least said platen carrier interacting with said spring loaded lever so that a shaft of said guide roll will lie in a plane determined by shafts of said platen means and of said platen carrier means and wherein the sum of the radius of said platen carrier plus the center distance between said platen carrier and a platen mounted thereon is greater than the sum of the radius of said guide roll plus the center distance between said platen carrier and the guide roll.

4,369,705
PRINTING PRESS
Wilfred R. Gelinas, Jewett City, Conn., assignor to Harris Corporation, Melbourne, Fla.
Filed Sep. 24, 1980, Ser. No. 190,344
Int. Cl.^{3} B41F *7/10, 7/12*
U.S. Cl. 101—177 **11 Claims**

1. An offset printing press comprising a frame, a pair of rotatable plate cylinders supported in said frame, a pair of rotatable blanket cylinders supported in said frame, an impression cylinder rotatable about an axis fixed in said frame, said blanket cylinders having perfecting positions in which said blanket cylinders print on opposite sides of a web advanced therebetween and multi-impression positions in which said blanket cylinders print on a web advanced between each of

said blanket cylinders and said impression cylinder, means for shifting said blanket cylinders between said perfecting and multi-impression positions, said plate cylinders having first positions in which said plate cylinders engage said blanket cylinders when said blanket cylinders are in said perfecting positions and second positions in which said plate cylinders engage said blanket cylinders when said blanket cylinders are in said multi-impression positions, and means for shifting said plate cylinders between said first and second positions, said means for shifting said blanket cylinders including eccentric means mounted in said frame and supporting said blanket cylinders for movement along arcuate paths, linkage means connected with said eccentric means for actuating said eccentric means, and remotely actuatable motor means having a first portion connected to said frame and a second portion connected with said linkage means for moving said linkage means to four predetermined and distinct positions, one of said positions of said linkage means corresponding to said perfecting positions of said pair of blanket cylinders, one of said positions of said linkage means corresponding to said multi-impression positions of said pair of blanket cylinders, and the remaining two positions of said linkage means corresponding to throw off positions for said pair of blanket cylinders, said motor means comprising first and second cylinder assemblies each including a cylinder and a piston slidable within a respective one of said cylinder assemblies, said cylinder assemblies being connected with each other in tandem.



4,369,706

CONTROL DEVICE FOR REMOTE ADJUSTMENTS OF INK ZONES IN PRINTING PRESSES

Karl-Heinz Förster, Dresden; Hans Johne, Radebeul; Helmut Schuck, Coswig, and Ludwig Friedrich, Dresden, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

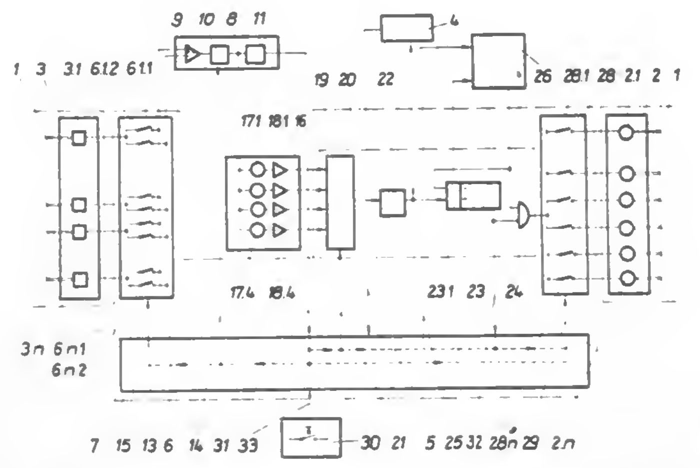
Filed Apr. 8, 1981, Ser. No. 252,126

Claims priority, application German Democratic Rep., Apr. 10, 1980, 220346

Int. Cl.³ B41F *31/04*

U.S. Cl. 101—365 **20 Claims**

1. In a control device for remote adjustments of ink zones in printing presses of the type having a control system, an adjustment device cooperating with an ink knife and a position measuring indicator cooperating with ink knife support elements for balancing the unsteady course of the positions of the ink knife support elements to the steady function of the knife bending curve, the improvement wherein the control system includes a plurality of multiplexers at the input and output sides thereof connected, respectively, with said adjustment device, a single motor control unit, and a program request control arranged with the multiplexers at the input side of the motor control system, said single motor control unit and the multiplexers at the output side of the control system one after another in sequence, the device further including a differential former and a computer, said differential former being interconnected between the multiplexers at the input side of said control system and said program request control, and said computer being interconnected between said differential former and said single motor control unit.



4,369,707

SHORT CIRCUIT FUSE FOR ELECTRICAL IGNITERS

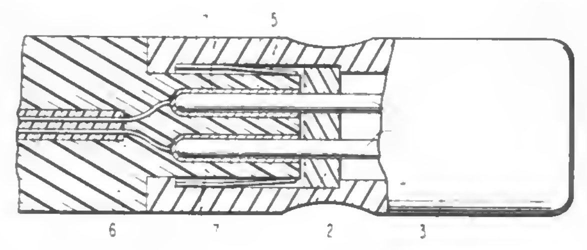
Volker Budde, Grosskarlbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1979, Ser. No. 56,233

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830552

Int. Cl.³ F42B *3/10*

U.S. Cl. 102—202.2 **8 Claims**



1. A short-circuit fuse for a plug-in type electrical igniter, the fuse being adapted to automatically eliminate a short-circuit upon a connection of the igniter to a current carrying lead means, characterized in that a common socket means is provided for surrounding at least one electrode extending out of the igniter, at least one elongated leaf contact spring means extending essentially in parallel to the at least one electrode is disposed in the socket means so as to normally engage the at least one electrode and short-circuit the same when the igniter is unconnected to the current carrying lead means, the at least one contact spring means is arranged in the socket so as to be lifted off the at least one electrode means upon an insertion of a circuit connector plug of the current carrying lead means into the socket means.

4,369,708

DELAY BLASTING CAP

Paul J. Bryan, Hewitt, and Daniel R. Morse, Bloomingdale, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

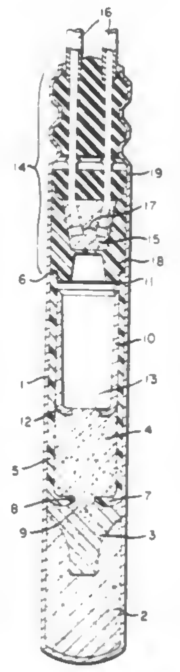
Filed Sep. 21, 1979, Ser. No. 77,718

Int. Cl.³ F42B *3/16*

U.S. Cl. 102—202.13 **11 Claims**

1. In a delay blasting cap comprising a tubular metal shell integrally closed at one end and containing, in sequence from the closed end, (a) a base charge of a detonating explosive composition, (b) a priming charge of a heat-sensitive detonating explosive composition, (c) a delay charge of an exothermic-burning composition, and (d) an ignition assembly for igniting said delay charge, the improvement comprising a carrier element for said delay charge, said carrier element consisting of a capsule or tube whose side wall provides a layer of polyethylene, polypropylene, or polytetrafluoroethylene between said delay charge and the inner wall of said tubular metal shell, said layer having a thickness in the range of about from 0.5 mm to 1.7 mm, said delay charge having been pressed into said carrier element with a force of at least about 890 Newtons, and said priming charge being inhibited from penetrating into said delay charge by at least one of the following means: (1) pressing said priming charge into said shell with a force of at least about 225 Newtons, and (2) a barrier layer between said delay charge and said priming charge.

9. In a delay blasting cap comprising a tubular metal shell integrally closed at one end and containing, in sequence from the closed end, (a) a base charge of a detonating explosive composition, (b) a priming charge of a heat-sensitive detonating explosive composition, (c) a delay charge of an exothermic-burning composition, and (d) an ignition assembly for igniting said delay charge, the improvement comprising (1) a tubular polyolefin or polyfluorocarbon capsule holding said delay charge and nested within said tubular metal shell, said tubular polyolefin or polyfluorocarbon capsule having one open extremity and a closure at the other extremity provided with an axial orifice therethrough, said closure on said polyolefin or polyfluorocarbon capsule being adjacent to said priming charge; and (2) a tubular rigid metal capsule nested within said polyolefin or polyfluorocarbon delay-charge-carrying capsule, said rigid metal capsule having one open extremity and a closure at the other extremity provided with an axial orifice therethrough, said closure on said rigid metal capsule being adjacent to said delay charge.



4,369,709

UNDERWATER DETONATING DEVICE

Guenter Backstein, Meerbusch; Hans W. Unger, Krefeld; Michael Guenther, Duesseldorf; Dieter Kaltbeitzer, Duesseldorf, all of Fed. Rep. of Germany, and Hendrik Veldhoen, Overijse, Belgium, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

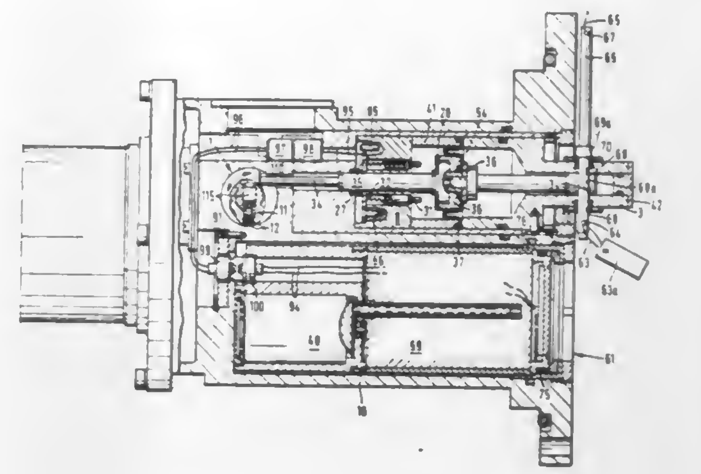
Filed Sep. 24, 1980, Ser. No. 190,420

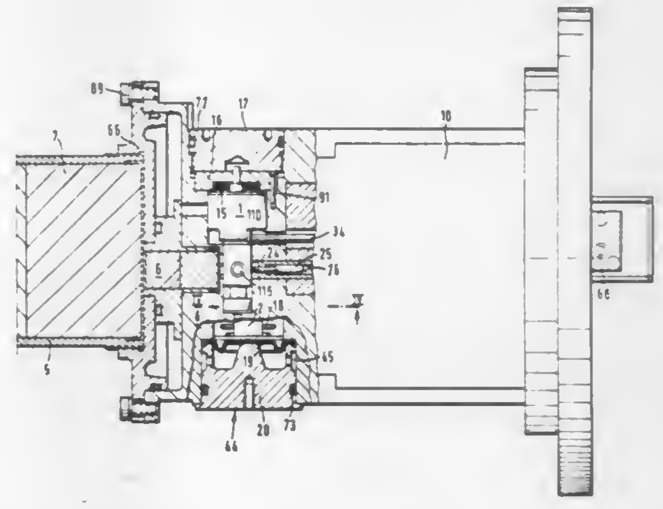
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939700; Sep. 29, 1979, 2939711

Int. Cl.³ F42C *15/32*

U.S. Cl. 102—229 **35 Claims**

1. Underwater ignition device comprising
a rotor;
a detonator disposed at the rotor;
a safety pin;
a locking pin secured in position by the safety pin;
a release pin maintained in position by the locking pin;
a first water pressure safety device normally engaging the rotor and preventing a rotating motion of the rotor into an ignition position; and
a second water pressure safety device actuable after the locking pin is removed and after the first water pressure safety device has been actuated and capable of actuating the release pin for rotating the rotor into an ignition position.





4,369,710

END-BURNING GAS-GENERATING COMPOSITION GRAIN CONTAINING INTERTWISTED WIRES

Hisao Okamoto, Sayama, and Daizo Fukuma, Sakado, both of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Mar. 16, 1981, Ser. No. 243,894

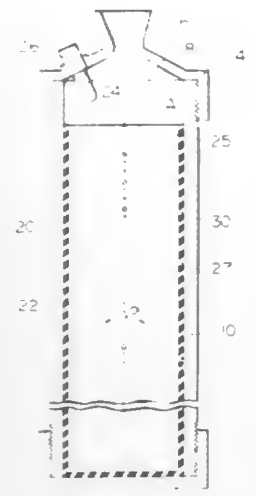
Claims priority, application Japan, Mar. 18, 1980, 55-35649

Int. Cl.³ F42B *1/00*

U.S. Cl. 102—289 **8 Claims**

1. In an end-burning grain of a solid gas-generating composition containing embedded therein an elongate metal heat-conducting element to increase mass burning rate of the grain by the effect of heat transferred during combustion of the grain

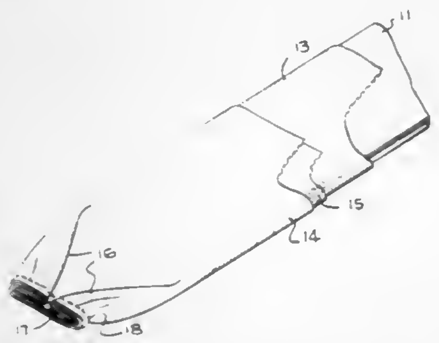
from the hot combustion gas to the unburned portion of the grain through the heat-conducting element,



the improvement comprising said heat-conducting element being constituted of at least two wires which are loosely twisted together.

4,369,711
BAG FOR EXPLOSIVES WITH LOWER REINFORCING SLEEVES

Harold Leader, Box 400, Industrial Park, Helena, Ala. 35080
Filed Nov. 24, 1980, Ser. No. 209,985
Int. Cl.³ F42B *3/00*
U.S. Cl. 102—324 **2 Claims**

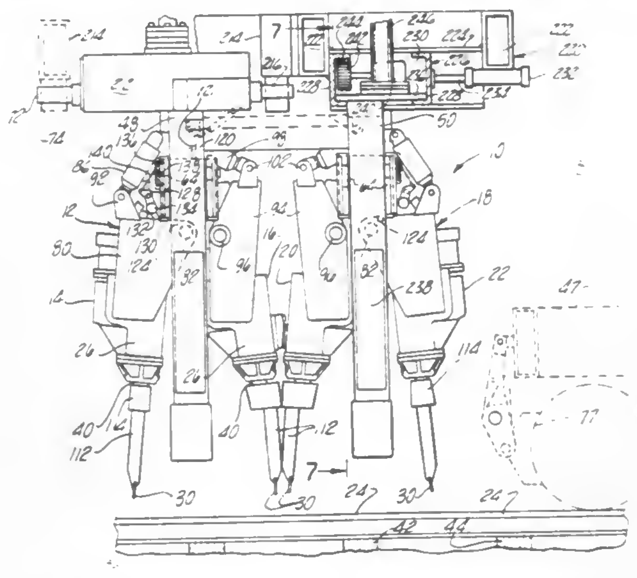


1. A bag for explosives, said bag comprising: an inner tubular plastic liner adapted to receive a quantity of granular explosive material therein, an outer woven plastic body member having said tubular liner therein, sleeves mounted on the lower portion of the bag and surrounding approximately the lowermost one-third portion of said body member, the lower end portion of the bag being folded inwardly and over upon itself, the lower end of the bag being secured closed to form a closed bottom end, and a tie member for closing the upper end of the bag, said bag being free of longitudinal seams.

4,369,712
RAILROAD TAMPING MACHINE

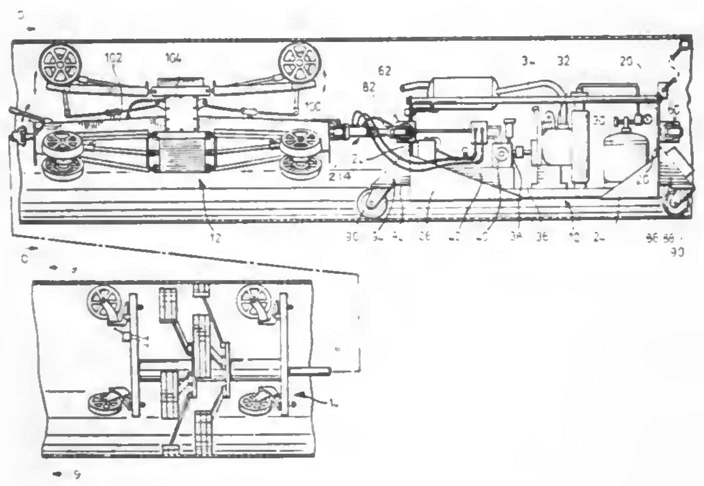
Helmuth von Beckmann, Columbia, S.C., assignor to Canron Corporation, West Columbia, S.C.
Continuation-in-part of Ser. No. 84,307, Oct. 12, 1979, Pat. No. 4,282,815. This application Feb. 11, 1981, Ser. No. 233,555
Int. Cl.³ E01B *27/014*
U.S. Cl. 104—12 **6 Claims**

1. A railroad tamping machine mounted on a railroad vehicle for movement along a railroad track comprising: a pair of longitudinally spaced workheads each including a pair of tamping units arranged longitudinally of a rail of a railroad track with said pair of tamping units of each workhead being disposed at opposite sides of one tie of a pair of adjacent ties, one tamping unit of each of said workheads being disposed between adjacent ties, said pair of tamping units of each workhead being supported for swinging movement toward and away from each other about horizontal transverse axes and at opposite sides of an associated tie, said workheads being supported relative to said vehicle for vertical movement simultaneously and independently of each other, one of said workheads being supported for independent horizontal lateral movement to selected positions relative to the other of said workheads, said vehicle and said rail, and means to hold said other of said pair of workheads in an elevated inoperative position.



4,369,713
PIPELINE CRAWLER

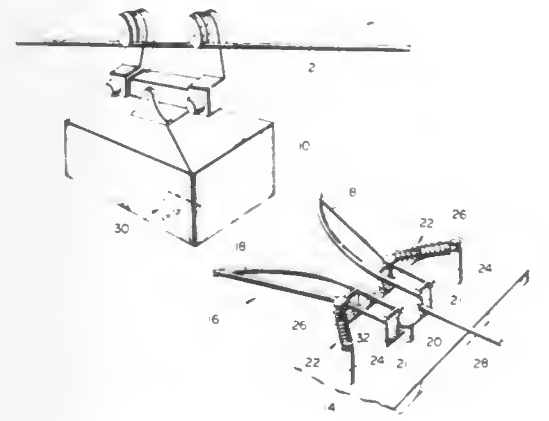
Anthony C. Richardson, Agincourt, Canada, assignor to Transcanada Pipelines Ltd., Scarborough, Canada
Filed Oct. 20, 1980, Ser. No. 198,492
Int. Cl.³ B61B *13/10*
U.S. Cl. 104—138 G **27 Claims**



2. A pipeline crawler comprising a tractor unit having a plurality of driven wheels for engagement with the interior wall of a pipeline, a self-righting power unit and means connecting said tractor unit to said power unit, said connecting means comprising power transmission means for transmitting power from said power unit to said tractor unit, said power transmission means comprising a first rotary connection, and mechanical connection means for transmitting traction forces from said tractor unit to said power unit, said mechanical connection means comprising a second rotary connection and said first and second rotary connections being coaxial to permit rotation of said tractor unit relative to said power unit.

4,369,714
CABLE CAR DOCKING SWAY ARRESTER MECHANISM

Masaaki Morita, Yokosuka; Michio Yamaguchi, Yokohama, and Hiroyuki Asano, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Nov. 21, 1980, Ser. No. 209,027
Claims priority, application Japan, Nov. 27, 1979, 54-164477[U]; Apr. 7, 1980, 55-45790[U]; Apr. 8, 1980, 55-46416[U]; Sep. 24, 1980, 55-135708[U]; Sep. 26, 1980, 55-137452[U]
Int. Cl.³ B61B *3/02, 7/06, 12/04*
U.S. Cl. 104—250 **10 Claims**

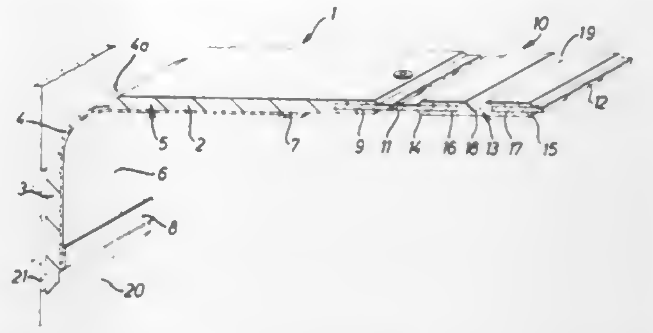


1. A vehicular system comprising:
a cable car suspended on a cable extending from a cable car station;
an arrester mechanism for damping the swinging motion of said cable car as it approaches and enters said station, said arrester mechanism being disposed at one end of said station and arranged to extend beyond said end of said station and which includes:
first and second arrester trumpet bars pivotally mounted at one end to said station, said trumpet bars flaring outwardly to define an opening therebetween;
a damper device interconnecting one of said trumpet bars and said station, said damper device including means for absorbing kinetic energy;
contact means on said cable car for entering the space defined between said trumpet bars and for alternatively contacting the inboard surfaces of said trumpet bars as said cable car approaches said station; and
linkage means interconnecting said trumpet bars for causing said trumpet bars to move together so that upon impact of said contact means on said first trumpet bar and displacement thereof from a home position, said second trumpet bar will be displaced to increase the distance through which it may be subsequently displaced and the amount of kinetic energy of the cable car which is absorbed by said subsequent displacement, said damper device returning said first trumpet bar to said home position.

4,369,715
RESILIENT HINGE ASSEMBLY FOR A DISPLAY STRUCTURE

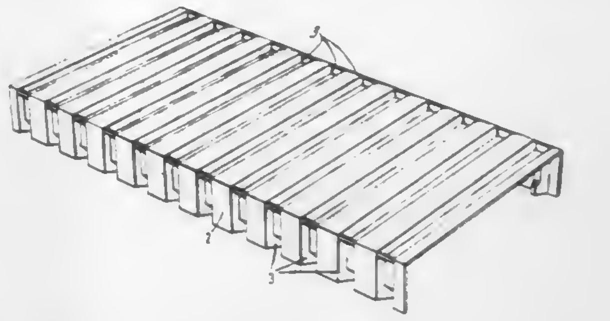
Brian Ingersoll, Marietta, and Ferris L. Hutchins, Jr., Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Jul. 31, 1980, Ser. No. 174,080
Int. Cl.³ A47F *5/12*
U.S. Cl. 108—2 **6 Claims**

1. A resilient hinge assembly comprising a generally flat band of plastics material formed to provide a pair of spaced end elements, a flexible connecting piece integrally joined to said end elements for providing a bendable bridge therebetween, said bendable bridge being formed by a portion of said band having a reduced thickness in relation to said end elements, and an external leaf spring detachably connected to said end elements and extending along an undersurface of said bendable bridge, wherein said leaf spring imparts a restoring force to the bendable bridge so as to urge the assembly from a strained condition in which said bridge is flexed into a generally arcuate configuration, into an unstrained condition in which said end elements and said bendable bridge are generally co-planar, said hinge assembly further comprising guide means provided by said end elements for releasably receiving said leaf spring in which said guide means comprises integral rib elements depending from said undersurface adjacent the unconnected edges of said end elements, said rib elements each including a portion spaced from the undersurface to provide a slot for receiving an edge portion of said leaf spring.



4,369,716
DISPLAY PALLET

Edmund Munk, Oberstenfeld, and Helmuth Huber, Oberstenfeld-Gronau, both of Fed. Rep. of Germany, assignors to Furnier-U. Sperrholzwerk, J. F. Werz Jr. KG, Oberstenfeld, Fed. Rep. of Germany
Filed May 2, 1980, Ser. No. 146,176
Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918574
Int. Cl.³ B65D *19/24*
U.S. Cl. 108—51.1 **11 Claims**



1. A display pallet which is adapted to be placed on a transport pallet and transported with the latter, comprising a substantially rectangular body having a rectangular load-bearing wall with two longitudinal and two transverse sides; two lateral supporting walls each extending along a respective one of said longitudinal sides of said load-bearing wall and having a lower edge forming a supporting face, and a plurality of depressions forming a plurality of ribs spaced from each other in direction of elongation of said body and separate from one another over their entire length, each of said ribs extending over said load-bearing wall, both said supporting walls to the lower ends of the latter, and forming at said lower ends inwardly directed extensions.

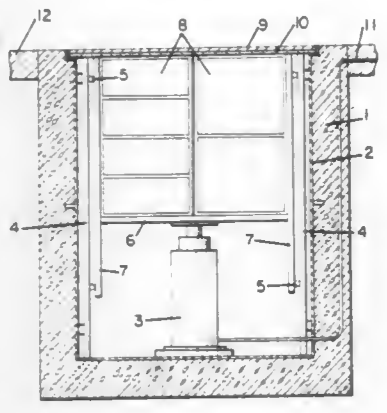
4,369,717
DISAPPEARING UNDERGROUND SAFE

J. F. Bollier, Adliswil, Switzerland, assignor to Patmark Consultants, Newark, N.J.

Filed May 27, 1980, Ser. No. 153,692

Int. Cl.^{3} E05G ***1/00***

U.S. Cl. 109—45 **14 Claims**



1. A disappearing safe comprising

an outer shell from reinforced, high hardness and water-proof concrete;

an inner shell of a corrosion resistant steel casing attached to the outer shell;

a stop at the upper edge of the inner shell;

an elevating mechanism inside of the inner shell;

a steel platform connected to the elevating mechanism and which steel platform can be lifted up or lowered down by the elevating mechanism where the steel platform is attached to a steel frame with rollers guiding the motion of the steel frame;

a safe positioned on the steel platform; and

an armored plate on top of the safe, where in the lowered position of the safe the upper side of the armored plate is flush with the surrounding area and adapted to the contour of the upper edge of the shell and secured in position by the stop whereby if the safe is in the upper position the steel platform is about at the ground level and supported from below by the frame.

4,369,718
SHUT-OFF SYSTEM FOR FLUE GAS CONDUITS OR AIR INTAKE CONDUITS IN OIL AND GAS FIRE SYSTEMS

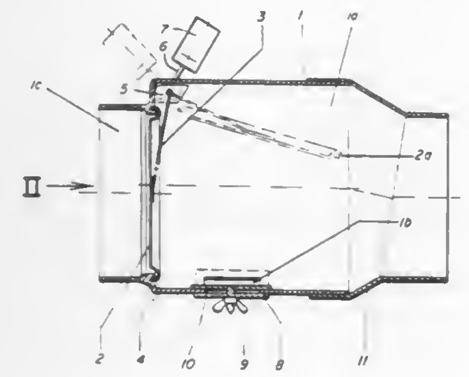
Otto Eppinger, and Mariao Eppinger, both of Akazienweg 2, D-8898 Schrobenhausen 1, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,098

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1979, 2936296

Int. Cl.^{3} F23L ***1/00***

U.S. Cl. 110—163 **7 Claims**



1. A closure system for regulating the flow of exhaust gases or feed air of a fuel combustion system and preventing energy losses when combustion is not taking place, comprising a conduit for such gases or air; a rotatable shaft; a closure for controlling gaseous flow in said conduit between two conduit portions and biased normally into the closed position; said closure being supported by and movable with said rotatable shaft between alternate fully closed and fully open positions in said conduit; said conduit portions being of differing cross-sectional area; said closure being positioned between said two portions and arranged to permit gaseous flow from the smaller portion to the larger portion when in the open position; means interconnecting said closure with said rotatable shaft; said closure being responsive to slight pressure differences between said conduit portions tending to open said closure whereby said closure is readily movable about said shaft into the fully open position; counterweight means mounted on an arm connected to said rotatable shaft for urging said shaft in a direction of rotation resulting in biasing said closure into the closed position when said closure is in the closed position and for urging said shaft in a direction of rotation resulting in biasing said closure into the open position when said closure is in the open position; said closure requiring decreasing opening pressure for moving into the fully open position with increasing movement thereof away from the closed position, and being of such weight as to return to its normal closed position in opposition to said counterweight means upon substantial equalization of the pressure in said two conduit portions; and sealing means disposed between said two conduit portions; said closure effecting a substantially gas-tight seal and compressing said sealing means when in the fully closed position.

4,369,719
VERMICULITE AS A DEPOSIT MODIFIER IN COAL FIRED BOILERS

Gary G. Engstrom, Kenosha, Wis., and Douglas I. Bain, Cincinnati, Ohio, assignors to Dearborn Chemical Company, Lake Zurich, Ill.

Filed Nov. 14, 1980, Ser. No. 207,006

Int. Cl.^{3} F23J ***11/00***

U.S. Cl. 110—345 **8 Claims**

1. Method of rendering fly ash deposits in a coal-fired furnace more friable, thereby facilitating their removal by steam or air probe, comprising injecting uncalcined vermiculite into the furnace at 3000°-1200° F.

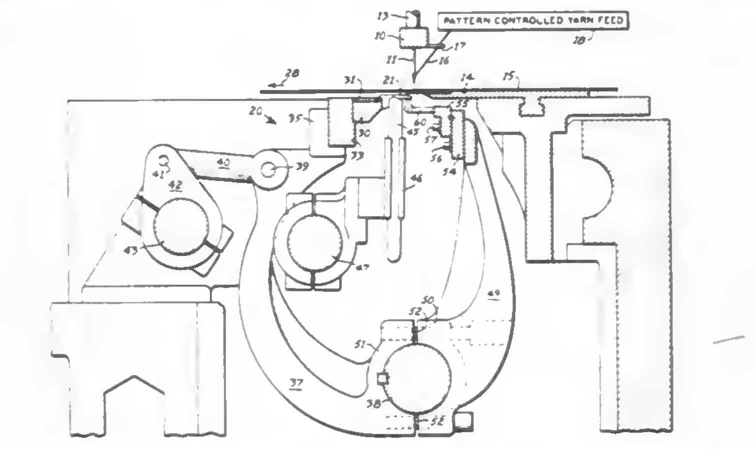
4,369,720
TUFTING LOOPER APPARATUS WITH OPPOSED CLIP SUPPORT

Max M. Beasley, Chattanooga, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Aug. 10, 1981, Ser. No. 291,256

Int. Cl.^{3} D05C ***15/36***

U.S. Cl. 112—79 A **6 Claims**



1. In a tufting machine having means for supporting the base fabric for longitudinal movement in the feeding direction through said machine, a plurality of transversely spaced reciprocal needles for introducing yarns through the base fabric to form loops, means for selectively controlling the length of a yarn fed to each of said needles, looper apparatus comprising:

(a) a hook for each needle cooperating with said corresponding needle to form a loop thereon,

(b) each of said hooks having a shank and a bill projecting longitudinally from said shank and terminating in a free end portion,

(c) reciprocal hook bar means supporting said hooks transversely spaced apart with said free end portions extending in the direction opposite said feed direction,

(d) a knife for each hook,

(e) knife supporting means supporting said knives transversely so that each knife cooperates with the bill of the corresponding hook for cutting a loop on said bill,

(f) a looper clip for each hook having a mounting portion and a clamp portion,

(g) clip support means securing said mounting portions so that said clips oppose said corresponding hooks and each of said clamp portions projects from said mounting portion in said feeding direction and is biased to normally engage said free end portion of said corresponding bill to normally hold the loops formed on said bill, but yieldable to predetermined yarn tension in a loop on said bill to force said clamp portion away from said bill to permit said tensioned loop to be withdrawn from the free end of said hook to form an uncut loop, and

(h) means connecting said clip support means to said reciprocal hook bar means for unitary movement of said clips and said hooks.

4,369,721
EMBROIDERING MACHINE WITH THREAD CHANGER

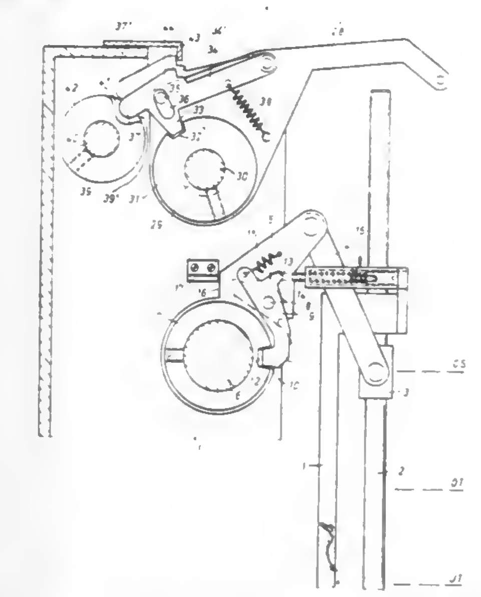
Kurt Bolidorf, Kaiserslautern, and Ernst Brückner, Neuwied, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,895

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938903

Int. Cl.^{3} D05C ***3/02***

U.S. Cl. 112—98 **6 Claims**



1. A thread changer for an embroidering machine, having a plurality of needles for different threads, comprising, drive means, a plurality of thread levers loosely mounted on said drive means, a coupling part for each thread lever connected to said drive means and movable with said drive means, and clutch means connected between said drive means and thread levers for coupling a selected one of said thread levers to said drive means to move said selected one of said thread levers into association with a selected one of the needles.

4,369,722
CONTROL SYSTEM FOR A PLURALITY OF EMBROIDERY SEWING MACHINES

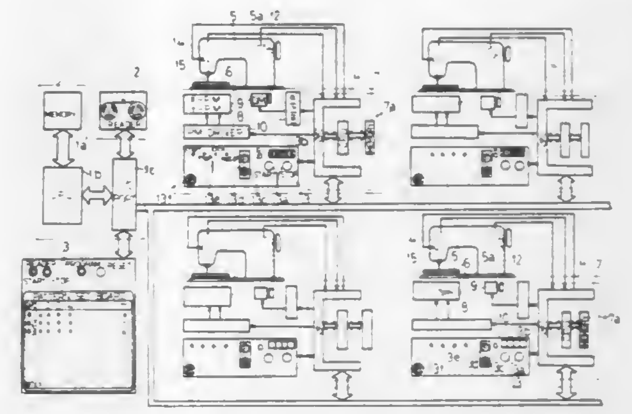
Koji Nishida, Anjyo, and Osamu Miyake, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Feb. 3, 1981, Ser. No. 231,089

Claims priority, application Japan, Feb. 8, 1980, 55-15580[U]; Feb. 21, 1980, 55-21213; Mar. 3, 1980, 55-26438

Int. Cl.^{3} D05C ***5/04;*** **D05B** ***21/00***

U.S. Cl. 112—103 **11 Claims**



1. A control system for a plurality of embroidery sewing machines, comprising

a plurality of branch electronic controllers each corresponding to one of the plurality of embroidery sewing machines, each of the branch controllers including buffer memory means, the branch controllers reading embroidery sewing control data from the buffer memory means and supplying it to an embroidery frame driver of the associated embroidery sewing machine, the branch controllers also presenting a request for embroidery sewing control data which is to be stored in the buffer memory means;

a random access memory capable of storing a plurality of sets of embroidery sewing control data;

and a main electronic controller responsive to a request for embroidery sewing control data from each of the branch controllers for reading a given number of blocks of embroidery sewing control data in a preselected set which is preselected to correspond to the requesting branch controller and supplying it to the requesting branch controller.

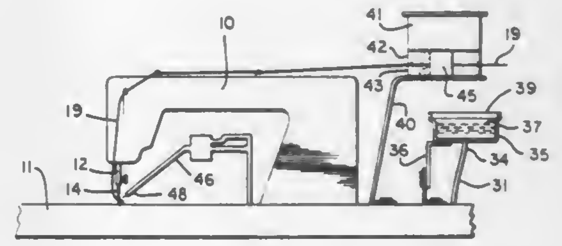
4,369,723
NEEDLE LUBRICATOR SYSTEM

William C. Griffith, Jr., and Charles E. Brocklehurst, both of Fountain Inn, S.C., assignors to Opelika Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 97,553, Nov. 26, 1979, abandoned, which is a continuation of Ser. No. 954,934, Oct. 26, 1978, abandoned. This application Feb. 25, 1981, Ser. No. 238,037

Int. Cl.^{3} D05B ***71/04***

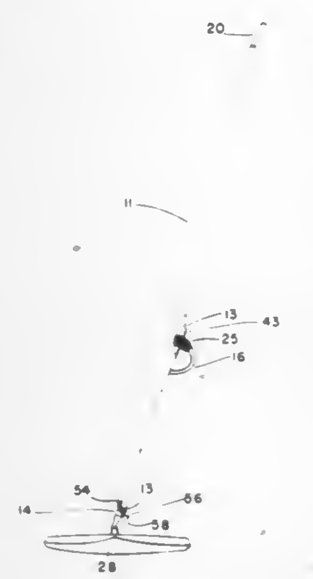
U.S. Cl. 112—281 **4 Claims**



1. Apparatus for treating the tip of a sewing machine needle as the needle tip reciprocates from a position above the work piece, downwardly through the work piece to a position at a predetermined distance below the work piece, and then up-

wardly back through the work piece during its sewing function, said apparatus comprising an open ended tube for receiving a liquid lubricant therein, means for positioning said tube in the path of the needle tip with one of its openings supported in a stationary position facing upwardly and in alignment with the needle tip and at a distance below the work piece which is less than the distance the needle tip travels in a downward direction below the work piece so that the tip of the needle enters the upper opening of the tube as it reaches the bottom of its downward stroke, and means for supplying a liquid medium only lubricant to said tube through the other end of said tube to form a body of liquid medium only lubricant in said tube with a surface maintained at a level higher than the lowest movement of the needle tip, whereby the tip of the needle contacts the surface of the liquid medium lubricant in the tube as the needle reaches the bottom of its downward stroke.

4,369,724
WINGSAIL
John Weiss, 873 Arctic St., Lindenhurst, N.Y. 11757
Filed Aug. 5, 1980, Ser. No. 175,503
Int. Cl.³ B63B *15/02*
U.S. Cl. 114—39 **11 Claims**

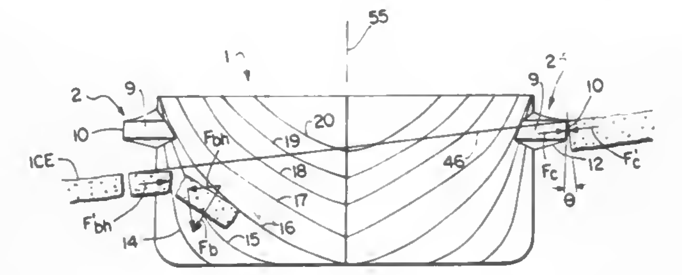


1. A flexible wing sail capable of cross-wind performance, reversible with respect to direction of air flow across the sail, and equipped with internal spars, comprising:

permanently windward and permanently leeward webs of flexible sheet material connected together at their edges and engaged there with tension strand means for extending said webs in wing sail form and for adjusting the airfoil profile to the reversible direction of air flow, said leeward web being of greater extent than said windward web in the general reversible direction of intended wind flow along the sail, so as to facilitate formation of an airfoil section having substantial thickness at its mid-portion; and

spar means for supporting said tension strand means, said spar means including a mast and a leewardly convex curved boom adjacently crossing each other in the space between said webs and running at least for most of their respective lengths between said webs, said tension strand means being supported at or near opposite ends of said mast and of said boom.

4,369,725
METHOD AND MEANS FOR INCREASING THE MANEUVERABILITY OF A SHIP IN ICE-COVERED WATERS
Steven M. Lord, Stoneham, Mass., and Hiroshi Tabuchi, Tokyo, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 920,797, Jun. 30, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,641
Int. Cl.³ B63B *35/10*
U.S. Cl. 114—40 **11 Claims**

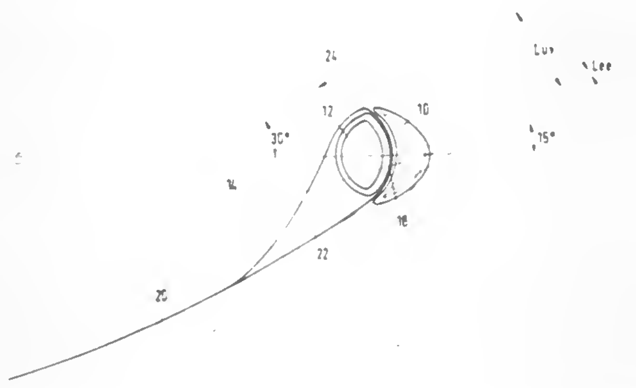


1. A method for increasing the maneuverability of a ship in ice-covered water, such ship comprising a hull including port and starboard sides, each side having sloped portions for applying generally symmetrically distributed force to the ice covering on either side of said hull during straightforward travel and generally vertically oriented wall portions located above said sloped portions on each side of said ship, comprising the steps of:

positioning said ship such that said generally vertically oriented wall portion on one side of said ship is brought into contact with said ice covering while maintaining said sloped portion on an opposite side of said ship in contact with said ice covering; and

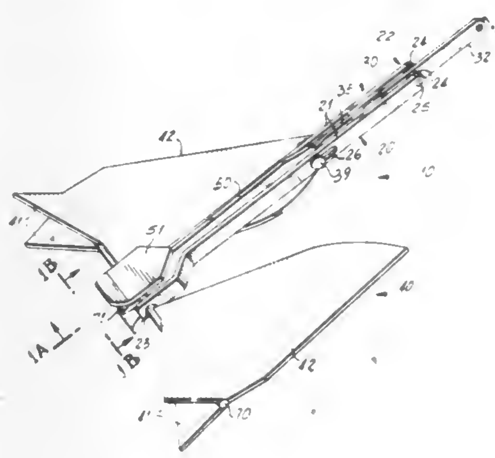
propelling said ship in a forward direction while maintaining said generally vertically oriented wall portion on said one side of said ship in contact with said ice while continuing to maintain said sloped portion on said opposite side of said ship in contact with said ice covering for a time sufficient to assist in a turning maneuver of said ship in the direction of said opposite side.

4,369,726
SAILBOAT MAST
Paul Mader, Klausenerplatz 20, 1000 Berlin 19, Fed. Rep. of Germany
PCT No. PCT/DE80/00020, § 371 Date Nov. 1, 1980, § 102(e) Date Oct. 27, 1980, PCT Pub. No. WO80/01787, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 26, 1980, Ser. No. 212,719
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907908
Int. Cl.³ B63B *15/00;* B63H *9/10*
U.S. Cl. 114—90 **6 Claims**



1. A sailboat mast comprising of two mast parts extending upwards from the boat hull with their longitudinal axes in the longitudinal vertical midplane of the hull, the aft one (12) of said mast parts being shaped and equipped for carrying a sail and being supported at its upper end on the forward mast part (10), said forward mast part (20) having a concave channel (32) along its aft side and being rigged to the hull (16) by means of shrouds and stays, said aft mast part (12) being free of standing rigging, both said mast parts having lower ends seated on the hull in suitable fittings, said sail (20) being fastenable to said aft mast part in a manner providing for said sail to set so that when working in a wind having a substantial athwartship component of direction, it always extends from the mast in a direction substantially tangential to the composite mast, and further comprising means (28), located at or near the mast top, for guiding and guidably supporting at least the upper portion of said aft mast part and connecting it to the upper portion of said forward mast part and also permitting said aft mast part to be bent away from said forward mast part for affecting the shape of the sail.

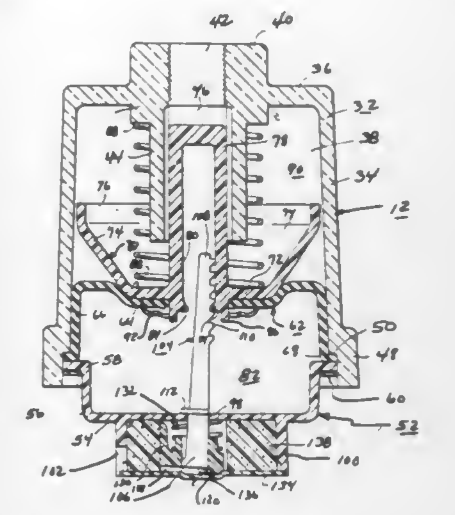
4,369,727
ANCHOR
Rudolph Fasco, 2210 SW. 100th Ave., Miami, Fla. 33165
Filed Nov. 17, 1980, Ser. No. 207,252
Int. Cl.³ B63B *21/44*
U.S. Cl. 114—297 **3 Claims**



1. In an anchor of the type having a shank assembly comprising a pair of parallel longitudinal support bars spaced apart from each other, an axle perpendicular to said shank assembly and mounted on one end thereof, said axle having a U-shaped built-in protrusion in the middle and a plurality of flukes rigidly secured to said axle on opposite sides of said shank assembly, the improvement comprising:

- (a) a chain lever pivotally mounted on the other end of said shank assembly, between said support bars, and having one end connected to the anchor line,
- (b) a longitudinal bar member pivotally mounted on said axle on one end, positioned between said support bars, and provided with a pair of stoppers which contact said protrusion when said bar member is pivotally rotated, and
- (c) a plurality of tripping palms rigidly mounted to said axle; and
- (d) tripping means pivotally connected to the other end of said chain lever and positioned in cooperative support for said longitudinal bar member when the angle of said chain lever with respect to the shank assembly is below a tripping angle.

4,369,728
AIR FILTER RESTRICTION INDICATING DEVICE
Joseph N. Nelson, Waterloo, Iowa, assignor to Engineered Products Company, Waterloo, Iowa
Filed Feb. 9, 1981, Ser. No. 232,422
Int. Cl.³ G01L *19/12*
U.S. Cl. 116—276 **5 Claims**



1. In an improved air filter restriction indicating device for an air filter used with an internal combustion engine wherein the improved indicating device is in communication with the air flowing from the air filter to the air intake of the internal combustion engine and wherein the improved indicating device includes: a housing having a first end, a second end, and a side wall that includes a transparent portion, with the first and second ends and side wall defining a cylindrical, overall chamber in the housing and with the second end having an opening therein; a flexible diaphragm member disposed within the housing, with the diaphragm member having a central portion and an edge portion secured to the housing so that the diaphragm member divides the overall chamber into a first chamber, adjacent to the first end of the housing, and a second chamber, adjacent to the second end of the housing, and with the central portion of the diaphragm member being movable between an infold portion wherein it is more closely adjacent to the second end of the housing and an outfold position wherein it is more closely adjacent to the first end of the housing; an indicating member that is disposed within the first chamber in the housing and that is mounted on and carried by the diaphragm member, the indicating member being visible through the transparent portion of the side wall of the housing at least as the diaphragm member moves between its infold position and its outfold position; means for permitting communication between the air flowing from the air filter to the air intake of the internal combustion engine and the first chamber in the housing; means for permitting communication between the atmosphere and the second chamber in the housing; a coil compression spring disposed in the first chamber of the housing, with one end of the compression spring being in contact with the first end of the housing and the other end of the compression spring being in contact with the indicating member, with the compression spring having a compression force sufficient to balance the differential between atmospheric pressure in the second chamber of the housing and the vacuum being drawn in the first chamber by the air flowing from the air filter to the air intake of the internal combustion engine so that the indicating member will deform the diaphragm member into its infold position when the vacuum in the first chamber is relatively low and so that the diaphragm member, and the indicating member, will be moved from its infold position toward its outfold position in response to increases in the vacuum in the first chamber; and lock-up means for progressively locking the indicating member in the various positions which the indicating member attains within the first chamber as the diaphragm member moves from its infold position to its outfold position and for maintaining the indicating member in

its last such position even though the diaphragm member may thereafter return towards its infold position due to a subsequent decrease in the vacuum in the first chamber; the lock-up means including a centrally disposed cylindrical rod which is mounted on and carried by the central portion of the diaphragm member, which is in part disposed in the first chamber, and which projects from the diaphragm member toward the first end of the housing, with the cylindrical rod having a recess defined by a closed end, projecting towards the first end of the housing, an internal side wall, and an open end that is in communication with the second chamber; the lock-up means also including an elongated locking member having a first end and a second end, with the locking member being supported, for pivotal movement intermediate its ends, by a first portion of the second end of the housing, so that the second end of the locking member may be selectively, pivotably moved in the recess in the cylindrical rod through a predetermined arc, and with the second end of the locking member normally being disposed adjacent to the open end of the cylindrical rod and cooperating with the open end of the cylindrical rod so that the indicating member is progressively locked and maintained in position by engagement between the second end of the locking member and the cylindrical rod, the improvement comprising:

means for selectively pivoting the first end of the locking member through the predetermined arc and thus causing the second end of the locking means to pivot through the predetermined arc, in the recess in the cylindrical rod, the pivoting means including means carried by the first end of the locking member; a relatively flexible resetting cover which has an external surface and an internal surface, which is mounted on a second portion of the second end of the housing spaced from the first portion of the second end of the housing in a direction parallel to the path of movement of the indicating member, and which is disposed adjacent to the carried means and in a plane substantially perpendicular to the path of movement of the indicating member; the resetting cover being deformable toward the first portion of the second end of the housing when a person or object pushed against its external surface, so that the internal surface of the resetting disc will contact the carried means when the resetting cover is deformed and will thereby cause the first end of the locking member to be pivoted through the predetermined arc.

4,369,729
IMAGE RECORDING APPARATUS

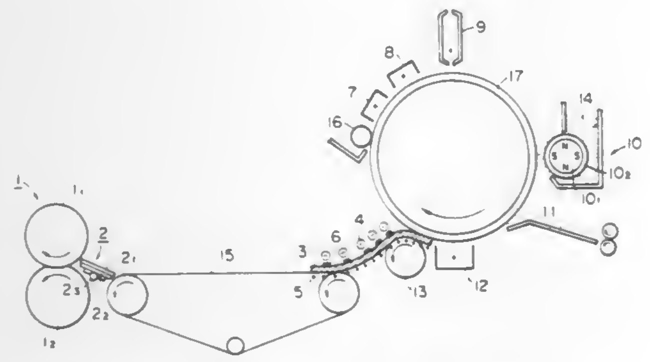
Michio Shigenobu, Tokyo, and Masaharu Ohkubo, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,632

Claims priority, application Japan, Aug. 18, 1980, 55-113228; Aug. 18, 1980, 55-113229

Int. Cl.^{3} B05C *11/00*

U.S. Cl. 118—60 **20 Claims**



1. An image recording apparatus, comprising:

an image depositing station for providing an unfixed image on an image bearing member;

a fixing station for fixing the unfixed image on the image bearing member; and

a guiding member for guiding the image bearing member from said image depositing station to said fixing station, said guiding member including a portion which is slidingly contactable with the image bearing member and a portion which is not contactable therewith;

wherein said non-contact portion has a first resistivity, and said contact portion has a second resistivity which is lower than the first resistivity.

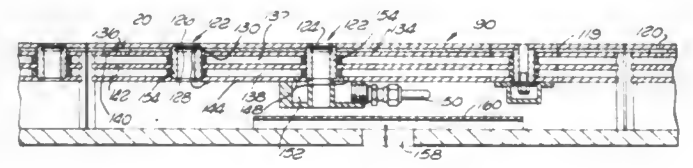
4,369,730
CATHODE FOR GENERATING A PLASMA

Masatsugu Izu, Birmingham; Timothy J. Barnard, Rochester, and David A. Gattuso, Pontiac, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Mar. 16, 1981, Ser. No. 244,383

Int. Cl.^{3} C23C *11/00*

U.S. Cl. 118—723 **12 Claims**



1. Apparatus for providing a substantially uniform supply of gas to a substrate comprising:

(a) a source of gas;

(b) a gas dispenser having a planar surface, said dispenser being engaged to said source;

(c) said surface being spaced from said substrate and including a first plurality of openings for delivering said gas thereto and a second plurality of openings for removing gas therefrom;

(d) gas evacuation means in communication with said second plurality of openings;

(e) a plurality of baffles arranged in substantially parallel relationship, each of said baffles having a plurality of apertures therein, the apertures of adjacent baffles being mismatched so that substantially equal gas path lengths exist from said source to said first plurality openings; and

(f) means for substantially equalizing the gas path lengths from said second plurality of openings to said gas evacuation means.

6. A cathode for use in generating a plasma by the application of an electrical field to a reaction gas comprising:

(a) a planar electrode;

(b) a source of electrical power engaged to said electrode;

(c) a source of reaction gas;

(e) said electrode having a first plurality of openings in communication with said source of reaction gas and a second plurality of openings in communication with said gas evacuation means said electrode;

(d) gas evacuation means;

(f) a plurality of baffles arranged in substantially parallel relationship, each of said baffles having a plurality of apertures therein, the apertures of adjacent baffles being mismatched so that substantially equal gas paths exist from said source to said first plurality of openings; and

(g) means for substantially equalizing the gas paths from said second plurality of openings to said gas evacuation means.

4,369,731
COATING APPARATUS HAVING AN INTERNAL LEVELING BLADE

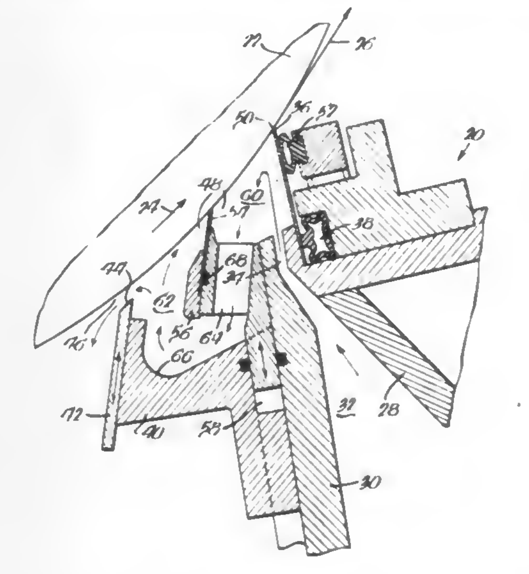
Wayne A. Damrau, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Sep. 2, 1981, Ser. No. 298,762

Int. Cl.^{3} B05C *5/02*

U.S. Cl. 118—410 **4 Claims**

1. In an apparatus for applying a coating liquid to at least one face of a moving web of paper, wherein said apparatus has a body portion having a chamber therein and an elongate opening to said chamber positionable generally adjacent to, below and transversely of the web and a coater blade extending from a rear or downstream side of said chamber opening substantially across and against the web, said chamber for receiving coating liquid under pressure and directing the same upwardly through said opening onto the web and said coater blade doctoring the coating liquid on the web, the improvement comprising a housing mounted on said body portion in said chamber intermediate said downstream side and an upstream side of said chamber opening and extending below and transversely across the web, and a leveling blade supported in and extending transversely along an upper end of said housing and extending upwardly through said chamber opening intermediate said downstream side and said upstream side thereof substantially across and against the web, said leveling blade leveling coating liquid applied on the web upstream thereof to cause coating penetration and filling of any voids and valleys in the web, said coater blade then doctoring coating liquid applied on the web downstream of said leveling blade, said leveling blade and said housing dividing said opening into an upstream coating liquid application zone between said upstream side of said opening and said leveling blade and housing and a downstream coating liquid application zone between said leveling blade and housing and said coater blade, said coating liquid in said chamber being introduced into said downstream application zone and said housing having at least one passage extending therethrough and providing communication between said downstream and upstream application zones for a flow of coating liquid from said downstream to said upstream application zone.



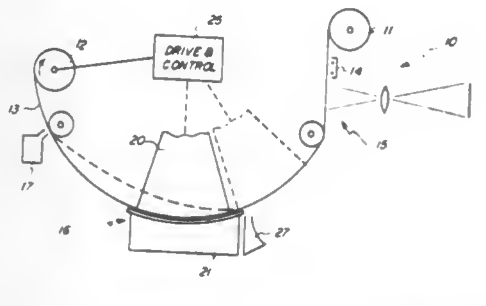
4,369,732
IMAGING APPARATUS ADAPTED FOR DEVELOPING INTERMITTENTLY MOVING WEBS

David R. Jackson, Rochester, and Allen J. Rushing, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1981, Ser. No. 239,221

Int. Cl.^{3} G03D *3/10;* G03G *15/10*

U.S. Cl. 118—681 **6 Claims**



1. In imaging apparatus of the kind having an operative path, including imaging and development zones, along which successive portions of a strip of imaging material can be moved for forming a succession of images and along which such movement may be continuous or intermittent, an improved development device comprising:

(a) development means, disposed along said path at said development zone from a strip ingress to said development zone to a strip egress from said development zone, for developing images on said material moving therepast along said path;

(b) transport means for moving such material through said development zone; and

(c) development control means, movable along said development zone, for: (1) in a first condition, constraining material in said development zone into developing relation with said development means from said ingress to said egress, (2) in response to cessation of material movement, releasing successive portions of material in said zone from said development relation, sequentially from said egress to said ingress and (3) in response to recommencement of material movement, re-establishing constraint of said material to said first condition sequentially from said ingress to said egress.

4,369,733
TONER CONCENTRATION CONTROL APPARATUS

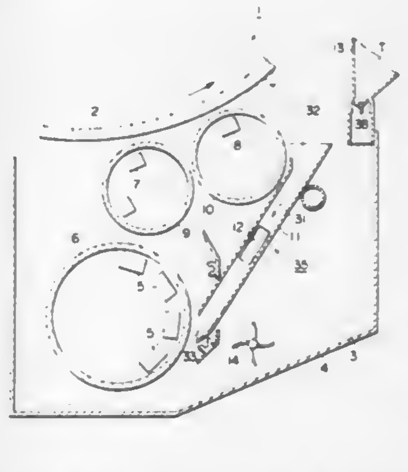
Koji Hirakura, Yokohama; Yasuo Sawada, Sayama; Kenta Watase, Tokyo, and Takahiko Kitamura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,808

Claims priority, application Japan, Nov. 7, 1979, 54-143960

Int. Cl.^{3} G03G *15/09, 21/00*

U.S. Cl. 118—691 **9 Claims**



1. A toner concentration control apparatus for controlling the concentration of toner in a dry type developer comprising at least toner and carrier for use in an electrophotographic copying apparatus comprising:

toner concentration detection means for outputting a current signal consisting of A.C. component signals and D.C. component signals, which A.C. component signals and D.C. component signals are in accordance, respectively, with the flow of said developer through a light-transmitting toner concentration detector portion of said toner concentration detection means, and the toner concentration of said developer, by illuminating said developer as it flows through said detector portion and converting light reflected by said developer to current signals;

A.C. and D.C. component signal separation means for separating said A.C. component signals from said D.C. component signals in said current signal;

developer-flow-abnormality detection means for indicating that the flow speed of said developer is out of a predetermined range, by comparing the level of said separated A.C. component signal with said developer flow reference signal; and

toner replenishment means for replenishing toner to said developer or stopping replenishment thereof in accordance with the level of said D.C. component signals as compared with a predetermined D.C. component level.

4,369,734

VARNISHING ASSEMBLY IN A PRINTING PRESS HAVING SELF-CLEANING FEATURE

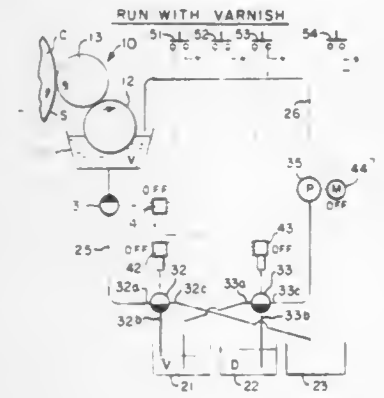
Friedrich Preuss, Dreieich/Sprendlingen, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,659

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 8007271[U]

Int. Cl.^{3} B05C *1/02*

U.S. Cl. 118—702 **5 Claims**



2. A varnishing assembly in a printing press for applying a layer of varnish to a sheet on a press cylinder comprising, in combination, a varnish fountain including a tray and fountain roller, an applicator roller interposed between the fountain roller and the cylinder, a varnish storage tank, a fresh detergent storage tank, a used detergent storage tank, the tray having an outlet line and an inlet line, the outlet line having a two-position shut-off valve and the inlet line having a pump and pump drive motor, a two-position three-connection drain valve having (1) an inlet connected to the outlet line of the tray, (2) a first outlet connected to the varnish tank and (3) a second outlet connected to the used detergent tank, a two-position three-connection fill valve having (1) a first inlet connected to the varnish tank, (2) a second inlet connected to the fresh detergent tank and (3) an outlet connected to the tray inlet line, control means including switches having "on" and "off" positions and clustered at a remote control location for energizing the valves and the pump motor to produce a cleaning cycle in which (a) unused varnish is drained from the tray into the varnish tank, (b) fresh detergent is pumped to the tray from the fresh detergent tank for cleaning up the residual varnish, and (c) the used detergent is drained from the tray into the used detergent tank.

4,369,735

MOVING DAM WATERWAY CLEANER

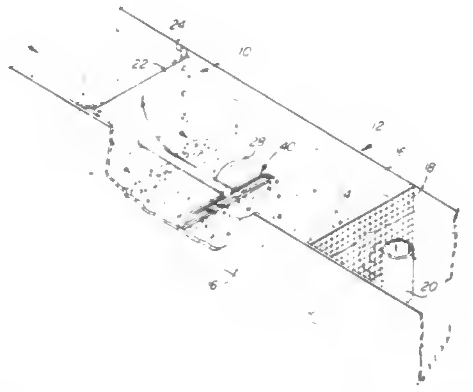
Neil Van Gaalen, P.O. Box 578, Glenwood Springs, Colo. 81601

Filed Apr. 21, 1981, Ser. No. 256,013

Int. Cl.^{3} A01K *63/00*

U.S. Cl. 119—3 **11 Claims**

1. A cleaning device for elongated water channels having a bottom and a pair of opposite side walls, comprising:
(a) dam means for, in use, retaining a head of water flowing through said channel therebehind to propel the device;
(b) support means attached to said dam means for maintaining the dam means in water-head retaining position while permitting the movement of the dam means along the elongated channel; and
(c) wherein the dam means defines a water passageway substantially along the bottom edge thereof, said water passageway being in communication with the rear face of the dam means for, in use, receiving water under the pressure of the retained water head and discharging the water forwardly of the dam means and against the channel bottom.



4,369,736

INTAKE AIR HEATER

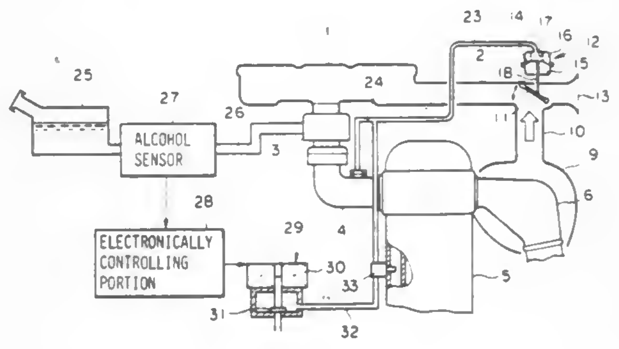
Sumio Ito, Gotenba, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 27, 1981, Ser. No. 257,619

Claims priority, application Japan, Oct. 30, 1980, 55-151391

Int. Cl.^{3} F02B *75/12*

U.S. Cl. 123—1 A **9 Claims**



1. An intake air heater comprising:
an alcohol sensor for detecting the concentration of alcohol in a fuel containing alcohol;
a control valve for controlling the flow rate of hot air being introduced into an intake system; and
a control means responsive to said alcohol sensor for increasing the opening of said control valve as the concentration of alcohol in the fuel increases.

4,369,737

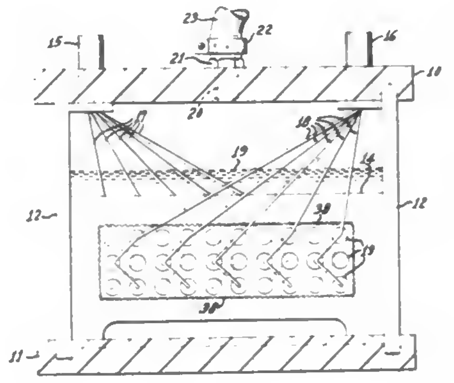
HYDROGEN-OXYGEN GENERATOR

Cledith A. Sanders; Margaret M. Sanders, and Cledith A. Sanders, II, all of 7391 Wending Ct., S., Jacksonville, Fla. 32210

Filed Jun. 2, 1980, Ser. No. 155,788

Int. Cl.^{3} F02B *43/08*

U.S. Cl. 123—3 **12 Claims**



1. An accessory system to an internal combustion engine

comprising a cell for generating hydrogen and oxygen gas to be burned in said engine after being introduced into the carburetor of the engine, said cell comprising a nonconductive gas-tight housing having a hydrogen and oxygen exit port adjacent the top of said housing; a plurality of regularly spaced parallel metallic electrode rods positioned substantially parallel to the bottom of said housing; means for supporting said electrode rods within said housing in a plurality of horizontal rows with each of said rows being spaced vertically from each other and with their ends being in spaced vertical planes; an aqueous electrolyte immersing all of said electrode rods; means for interconnecting at their said ends in one said plane one half of said rods to a source of direct current electricity to render same positive and for interconnecting the other half of said rods at their ends in the other said plane to ground to render same negative; said rods being positioned such that each positive electrode rod is adjacent solely to said negative electrode rods and each negative electrode rod is adjacent solely to said positive electrode rods; said plurality of electrode rods being encircled by at least one layer of nonconductive netting having openings of $\frac{1}{8}$ to $\frac{1}{4}$ inch for collecting small gas bubbles being produced and causing same to coalesce into larger gas bubbles which quickly rise through and escape from said electrolyte; and a conduit attached to said exit to conduct a mixture of hydrogen and oxygen gas from said cell to said carburetor.

4,369,738

ENGINE COOLING SYSTEM WITH OPTIONALLY COMMUNICABLE HEAD COOLING CIRCUIT AND BLOCK COOLING CIRCUIT, AND METHOD OF OPERATING THE SAME

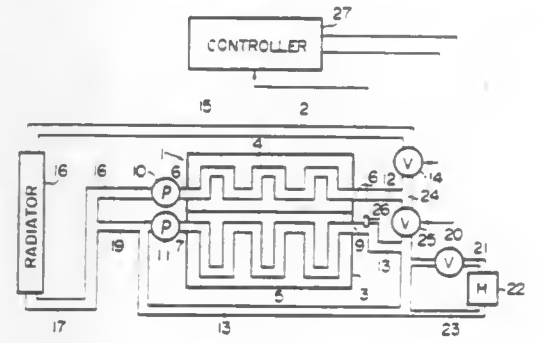
Tsutomu Hirayama, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 18, 1981, Ser. No. 264,866

Claims priority, application Japan, May 21, 1980, 55-68036

Int. Cl.^{3} F01P *3/02, 7/16*

U.S. Cl. 123—41.1 **26 Claims**



1. For an internal combustion engine comprising:
(a) a cylinder head formed with a head cooling jacket for cooling said cylinder head, said head cooling jacket being formed with a cylinder head inlet and a cylinder head outlet;
(b) a cylinder block formed with a block cooling jacket for cooling said cylinder block, said block cooling jacket being formed with a cylinder block inlet and a cylinder block outlet; and
(c) a radiator formed with an inlet and an outlet;
a cooling system, comprising:
(d) a first pump for impelling cooling fluid through said head cooling jacket from said cylinder head inlet towards said cylinder head outlet;
(e) a second pump for impelling cooling fluid through said block cooling jacket from said cylinder block inlet towards said cylinder block outlet;
(f) a block output fluid temperature sensor for sensing the temperature of the cooling fluid which passes out through said cylinder block outlet of said block cooling jacket, and for generating a sensed block output temperature signal representative of said temperature;
(g) a block recirculation conduit system leading from said cylinder block outlet of said block cooling jacket so as to supply flow of cooling fluid, from a downstream part of said block recirculation conduit system, to said cylinder block inlet of said block cooling jacket;
(h) a main recirculation conduit system, an upstream part of which is communicated to said cylinder head outlet of said head cooling jacket, and a downstream part of which is communicated to said inlet of said radiator;
(i) a radiator output conduit system, leading from said outlet of said radiator both to said cylinder head inlet of said head cooling jacket and also to said cylinder block inlet of said block cooling jacket, said downstream part of said block recirculation conduit system being thereby communicated also to said cylinder head inlet of said head cooling jacket;
(j) a first conrol valve for controlling flow of cooling fluid through said radiator according to a radiator flow regulation signal;
(k) a flow mixing conduit which communicates a part of said main recirculation conduit system with a part of said block recirculation conduit system;
(l) a second control valve for controlling flow of cooling fluid through said flow mixing conduit according to a block flow regulation signal;
and
(m) a controller, which receives said sensed block output temperature signal from said block output fluid temperature sensor, and which produces, based thereon, said radiator flow regulation signal which is sent to said first control valve, and also said block flow regulation signal which is sent to said second control valve;
(n) whereby said controller can vary the amount of cooling operation provided for said internal combustion engine, by varying the opening amount of said first control valve, thus varying the amount of cooling fluid passing through said radiator; and can also vary the amount of mixing between the cooling circuit for said cylinder head and the cooling circuit for said cylinder block, by varying the opening amount of said second control valve, thus varying the amount of cooling fluid passing through said flow mixing conduit.

17. A method for operating a cooling system having:
(a) a cylinder head formed with a head cooling jacket for cooling said cylinder head, said head cooling jacket being formed with a cylinder head inlet and a cylinder heat outlet;
(b) a cylinder block formed with a block cooling jacket for cooling said cylinder block, said block cooling jacket being formed with a cylinder block inlet and a cylinder block outlet; and
(c) a radiator formed with an inlet and an outlet;
a cooling system, comprising:
(d) a first pump for impelling cooling fluid through said head cooling jacket from said cylinder head inlet towards said cylinder head outlet;
(e) a second pump for impelling cooling fluid through said block cooling jacket from said cylinder block inlet towards said cylinder block outlet;
(f) a block output fluid temperature sensor for sensing the temperature of the cooling fluid which passes out through said cylinder block outlet of said block cooling jacket, and for generating a sensed block output temperature signal representative of said temperature;
(g) a block recirculation conduit system leading from said cylinder block outlet of said block cooling jacket so as to supply flow of cooling fluid, from a downstream part of said block recirculation conduit system, to said cylinder block inlet of said block cooling jacket;
(h) a main recirculation conduit system, an upstream part of which is communicated to said cylinder head outlet of said head cooling jacket, and a downstream part of which is communicated to said inlet of said radiator;

(i) a radiator output conduit system, leading from said outlet of said radiator both to said cylinder head inlet of said head cooling jacket and also to said cylinder block inlet of said block cooling jacket, said downstream part of said block recirculation conduit system being thereby communicated also to said cylinder head inlet of said head cooling jacket;

(j) a first control valve for controlling flow of cooling fluid through said radiator according to a radiator flow regulation signal;

(k) a flow mixing conduit which communicates a part of said main recirculation conduit system with a part of said block recirculation conduit system;

(l) a second control valve for controlling flow of cooling fluid through said flow mixing conduit according to a block flow regulation signal;

and

(m) a controller, which receives said sensed block output temperature signal from said block output fluid temperature sensor, and which produces, based thereon, said radiator flow regulation signal which is sent to said first control valve, and also said block flow regulation signal which is sent to said second control valve;

(n) whereby said controller can vary the amount of cooling operation provided for said internal combustion engine, by varying the opening amount of said first control valve, thus varying the amount of cooling fluid passing through said radiator; and can also vary the amount of mixing between the cooling circuit for said cylinder head and the cooling circuit for said cylinder block, by varying the opening amount of said second control valve, thus varying the amount of cooling fluid passing through said flow mixing conduit, when said cooling system is filled with cooling fluid;

said method comprising the proceses, simultaneously performed, of:

(o) operating said first pump and said second pump;

and

(p) depending upon said sensed block output temperature signal from said block output fluid temperature sensor, performing either one or the other but not both of the following two processes (q) and (r):

(q) if said sensed block output temperature signal from said block output fluid temperature sensor indicates a cooling fluid temperature at said cylinder block outlet of said block cooling jacket of less than a certain first predetermined temperature value, then simultaneously:

(q1) controlling said first control valve, by said radiator flow regulation signal from said controller, so as substantially to interrupt flow of cooling fluid through said radiator; and

(q2) controlling said second control valve, by said block flow regulation signal, so as to allow a flow of cooling fluid through said flow mixing conduit;

(r) if said sensed block output temperature signal from said block output fluid temperature sensor indicates a cooling fluid temperature at said cylinder block outlet of said block cooling jacket of greater than said first predetermined temperature value, then simultaneously:

(r1) controlling said first control valve, by said radiator flow regulation signal from said controller, so as to allow cooling fluid to flow through said radiator; and

(r2) controlling said second control valve, by said block flow regulation signal, so as to allow a controlled flow of cooling fluid through said flow mixing conduit;

(s) whereby, during the warming up process of said internal combustion engine, before the cooling fluid which passes out through said cylinder block outlet of said block cooling jacket has attained said first predetermined temperature, the cooling systems for said cylinder head and for said cylinder block are substantially communicated, and no substantial cooling is provided for either by said radiator, so that the heat which is supplied to the cooling fluid within the head cooling jacket is communicated to the cooling fluid within the block cooling jacket, and both the cylinder head and the cylinder block are quickly warmed up together; but, after said cooling fluid which passes out through said cylinder block outlet of said block cooling jacket has attained said first predetermined temperature, then according to process (r1) substantial cooling is provided for the cooling fluid in said head cooling jacket, while according to process (r2) the amount of cooling provided for the cooling fluid in said block cooling jacket is regulated; whereby, after said internal combustion engine has been warmed up, said cylinder block may be kept substantially warmer than said cylinder head.

4,369,739

STRUCTURE OF A CYLINDER ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

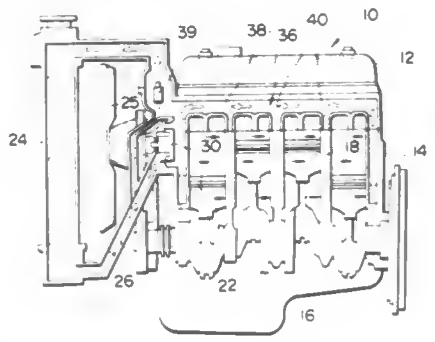
Yukio Umemura, Yokosuka; Isao Yoshida, Fujisawa; Yoshio Taguchi, Yokohama, and Yoshio Iwasa, Nagareyama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 6, 1980, Ser. No. 147,336

Claims priority, application Japan, May 7, 1979, 54-60389[U]; Jun. 26, 1979, 54-87164[U]

Int. Cl.³ F01P *3/02*

U.S. Cl. 123—41.74 **17 Claims**



1. A cylinder assembly for an internal combustion engine comprising:

a cylinder block having a plurality of partitions arranged in parallel relationship with respect to one another and defining therebetween a plurality of combustion chambers arranged in-line, said cylinder block defining a coolant chamber for circulating an engine coolant therethrough;

a cylinder head mounted on said cylinder block and defining therein a coolant return passage for recirculating the engine coolant to a radiator for radiating the heat of the coolant;

a plurality of vertical passages defined in said cylinder block for communication between said coolant chamber and said return passage, said vertical passages being located at opposite ends of said partitions;

projecting portions provided on the internal periphery of certain associated ones of said vertical passages and protruding laterally toward said associated vertical passages, each of said projecting portions being located adjacent the upper end of said associated vertical passages and having an upper plane surface below said upper end, which plane surface is angled downwardly with respect to the horizontal and projects into the vertical passage; and

a plurality of communication passages defined in respective ones of said partitions for communication between vertical passages respectively located on opposite ends of said partitions, each said communication passage being respectively tilted so that the longitudinal axis thereof intersects said plane surface of said projecting portion at a right angle and the vertical dimension thereof extends at least over the upper half of one of said combustion chambers.

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4,369,740

VALVE-ACTUATING LEVER

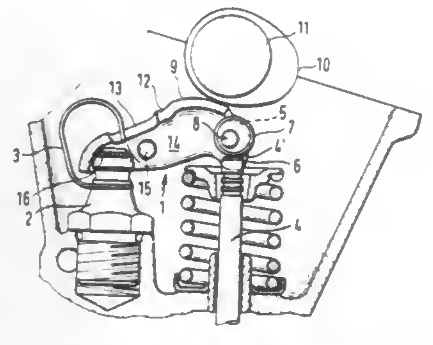
Jiri Seidl, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 856,582, Dec. 1, 1977, abandoned. This application Feb. 21, 1980, Ser. No. 123,470

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654528

Int. Cl.³ F01L *1/20*

U.S. Cl. 123—90.45 **10 Claims**



1. A valve actuating lever for internal combustion engines comprising lateral guide surface means on opposed sides of a valve abutment surface means of said lever, said valve abutment surface means being provided on a valve clearance adjusting means which is positioned between said lateral guide surface means and is fixedly clamped on opposed sides by said lateral guide surface means, a portion of said lateral guide surface means extending beyond said valve abutment surface means for guiding the lever along an abutting valve so as to secure the position of the lever during operation, wherein said valve clearance adjusting means is constructed as an eccentric element which is fixedly clamped on opposed sides by said lateral guide surface means, and in which the lateral guide surface means are components of flanges of a sheet metal stamping having an essentially U-shaped cross section and provided with a bearing plate constructed as an essentially closed ball socket with the flanges adjoining the ball socket on the side thereof toward said valve clearance adjusting means converging locally into mutual contact and being connected thereat with each other by a welded connection.

4,369,741

DEVICE FOR AUTOMATICALLY CONTROLLING THE CLOSURE OF THE DECOMPRESSION VALVE OF AN INTERNAL COMBUSTION ENGINE

Marc Perrin, Genlis-Pluvault, France, assignor to Cycles Peugeot, Valentigney, France

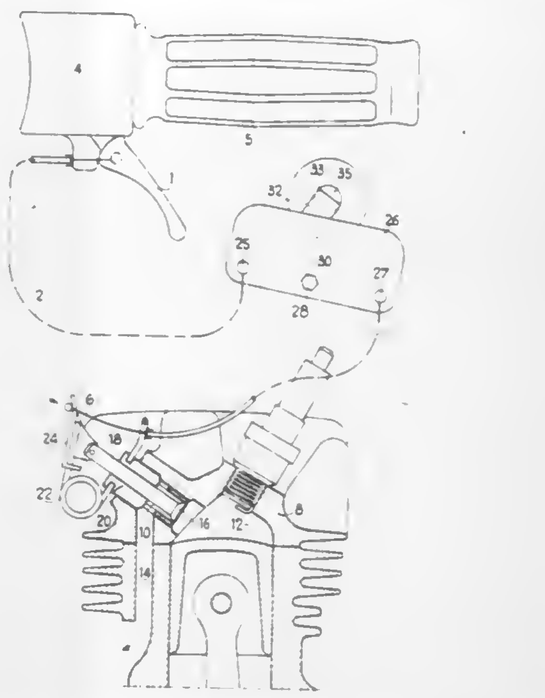
Filed Dec. 3, 1980, Ser. No. 212,307

Claims priority, application France, Dec. 14, 1979, 79 30752

Int. Cl.³ F01L *13/08*

U.S. Cl. 123—182 **7 Claims**

1. In a device for automatically ceasing the decompression of an internal combustion engine and comprising a decompression valve for the engine, which valve has a closing position and an opening position, a return spring combined with the valve for urging the valve to said closing position, manual actuating means movable between a closed valve position and an open valve position for shifting the valve to said opening position thereof in opposition to the effect of the spring, connecting means connecting the actuating means to the valve; the improvement comprising delay means for delaying the return of the valve to said closing position of the valve by the effect of said return spring when said actuating means is moved to said closed valve position, said delay means comprising a control member connected to the connecting means and movable by the connecting means substantially in a plane between a first position in which the valve is in the said opening position and a second position in which the valve is in said closing position, said spring being operative to bias the control member toward said second position, a finger member mounted on the control member to move transversely of said plane, a shaft for rotation by said engine when cranking the engine and defining a helical groove leading to an outer extremity of the shaft, the shaft being so positioned relative to the control member that the control member, in moving in a direction from said first position to said second position under the action of said spring, is operative to move the finger member toward and into lateral engagement with said helical groove so that the movement of the control member to said second position to close the valve is blocked by said shaft and delayed until the finger member has travelled longitudinally along the shaft in the helical groove as the shaft rotates upon cranking the engine and has reached the outer extremity of the shaft, whereupon the finger member suddenly ceases to be blocked by said shaft and is free to move laterally beyond the shaft and allows the control member to move to said second position and suddenly close the valve.



4,369,742 /

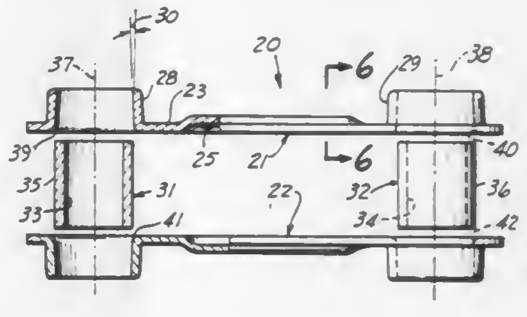
CONNECTING ROD FOR INTERNAL COMBUSTION ENGINE

Robert G. Everts, Mesa, Ariz., assignor to Piston Powered Products a division of RW Technologies, Inc., Tempe, Ariz.

Filed Jan. 24, 1977, Ser. No. 761,762

Int. Cl.³ F02B *75/32;* **G05G** *1/00*

U.S. Cl. 123—193 P **7 Claims**



1. A connecting rod for an internal combustion engine comprising: a first and a second rod part, each of said rod parts having a central web, a pair of spaced-apart journal pads, a journal sleeve opening from each said pad, and a pair of bearing inserts including a central bearing passage having an axis and an outside wall, said outside wall being so proportioned as to make an interference fit in a respective journal sleeve of both of the rod parts, whereby the two parts are brought against each other into contiguity while embracing and holding the two bearing inserts with their axes parallel to form an assembled connecting rod, said rod parts being joined together

only through the bearing inserts, and being held to said inserts only by the interference fit they make with the inserts in final assembly.

4,369,743

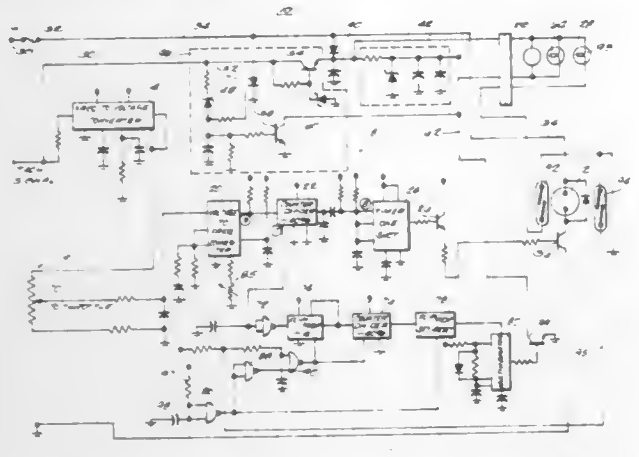
ELECTRONIC LUBRICANT METERING SYSTEM

James L. Holt; John M. Mahoney, both of Bristol, Wis., and Kenneth M. McLeod, Lake Villa, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 22, 1981, Ser. No. 304,666

Int. Cl.^{3} F02B *33/04;* **F01M** *1/00*

U.S. Cl. 123—196 S **12 Claims**



1. An electronic lubricant metering system for an engine comprising first means for producing a first electrical signal representative of engine RPM, second means for producing a second electrical signal representative of the amount of fuel being delivered to the engine, lubricant supply means for supplying a variable amount of lubricant into the fuel delivered to the engine, and electrical control means responsive to said first and second electrical signals for providing a control output which renders said lubricant supply means operative to vary the lubricant/fuel ratio of the lubricant and fuel mixture delivered to the engine.

4,369,744

LOW-NOISE LEVEL RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

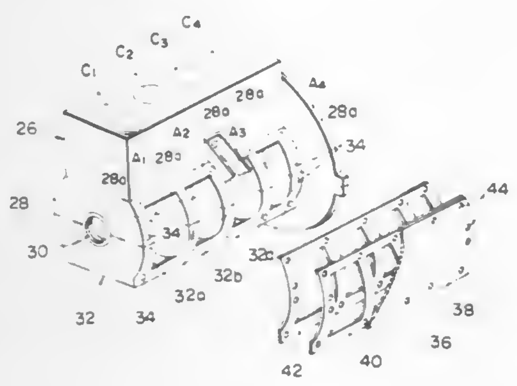
Takao Kubozuka, and Hirofumi Takei, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 30, 1980, Ser. No. 173,837

Claims priority, application Japan, Aug. 2, 1979, 54-98873

Int. Cl.^{3} F02B *77/00*

U.S. Cl. 123—198 E **13 Claims**



1. A reciprocating piston internal combustion engine comprising:
- a cylinder block having engine cylinders formed therein;
- a crankshaft housing mounting on said cylinder block for positioning a crankshaft therein, said housing including an upper section with downwardly extending partition walls and a lower section with upwardly extending partition walls integrally connected to a common bottom wall, said sections being coupled whereby said downwardly extending partition walls are mated with corresponding upwardly extending partition walls thereby forming open chambers separated by said mated downwardly and upwardly extending walls, each of said mated walls being formed for supporting a journal of said crankshaft; and
- a sound-insulating panel attached to said crankshaft housing in a manner to sealingly enclose openings of all of said open chambers thereby permitting said chambers to serve as lubricant reservoirs.

4,369,745

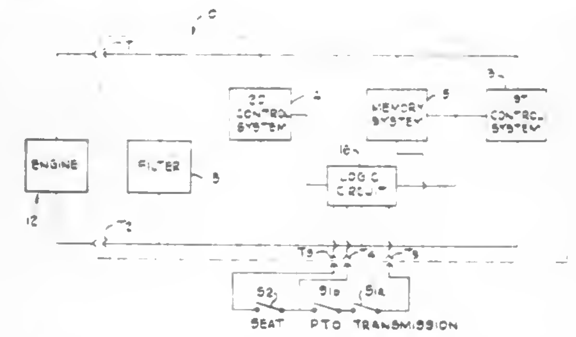
SAFETY INTERLOCK FOR MACHINE AND ENGINE WITH MAGNETO IGNITION

William A. Howard, Troy Township, Geauga County, Ohio, assignor to Delta Systems, Inc., Twinsburg, Ohio

Division of Ser. No. 969,871, Dec. 15, 1978, Pat. No. 4,294,327. This application Apr. 9, 1981, Ser. No. 252,368

Int. Cl.^{3} F02B *77/00*

U.S. Cl. 123—198 DC **4 Claims**



1. A safety interlock for controlling the starting and running of an internal combustion engine that has a magneto ignition system with a primary winding that can be shorted to prevent ignition, said interlock comprising: a first switch means for electrical connection across a primary winding of an ignition system, normally nonconductive and capable of being rendered conductive by an electrical signal; a second switching means for electrical connection across the primary winding, normally nonconductive and capable of being rendered conductive by an electrical signal; a first control circuit for said first switching means, including first safety switch means for actuation in response to the condition of apparatus driven by said engine, said first safety switch means having a first condition that allows the first switching means to become conductive upon engine starting and a second condition that prevents it from becoming conductive, and circuit means responsive to running of the engine to prevent the first switching means from becoming conductive while the engine is running; a second control circuit including said first safety switch means and a second safety switch means, said first safety switch means in its second condition preventing the second switching means from becoming conductive, and said second safety switch means having a first condition that prevents the second switching means from becoming conductive and a second condition that allows the second switching means to become conductive if the first safety switch means is in its first condition.

4,369,746

CATALYTIC COMBUSTION ENGINES

Robert H. Thring, Steyning, England, assignor to Ricardo Consulting Engineers Limited, Sussex, England

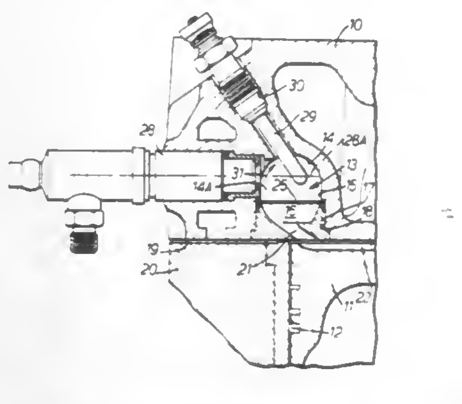
Filed Sep. 5, 1980, Ser. No. 184,373

Claims priority, application United Kingdom, Aug. 23, 1979, 7929332; Sep. 5, 1979, 7930836

Int. Cl.^{3} F02B *19/08*

U.S. Cl. 123—261 **16 Claims**

1. A liquid-fuelled reciprocating-piston I.C. engine with catalytic ignition and combustion, which comprises at least one cylinder and a cylinder head, a precombustion chamber associated with said cylinder and formed in the cylinder head, a combustion space in the cylinder above the piston, a restricted transfer passage connecting the precombustion chamber with said combustion space and positioned such that at least a part of the total air charge in the combustion space is forced through the transfer passage under pressure to enter the precombustion chamber tangentially during each compression stroke of the piston in such a manner that the charge in the precombustion chamber is caused to swirl around the interior of the chamber, and further comprising injection means for injecting liquid fuel into the precombustion chamber shortly before top-dead-centre in each compression stroke, and a catalytic element in the precombustion chamber by which combustion of the air/fuel mixture is initiated and promoted in the precombustion chamber, said catalytic element comprising a screen having a multiplicity of openings or passageways extending through its thickness through which gas can readily flow from one side to the other of the screen, the screen extending across the precombustion chamber to divide it into first and second separate volumes, said injection means being located to inject a fuel spray into said first volume at a point spaced from the screen and along a centre line whose projection does not intersect the screen, and said transfer passage leading into said second volume, the transfer passage joining the precombustion chamber at a region spaced from the catalytic element.



4,369,747

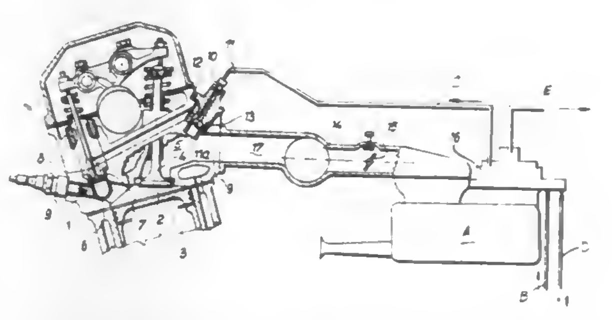
METHOD OF AND APPARATUS FOR PREPARATION OF A COMBUSTION MIXTURE FOR ENGINES WITH DIVIDED COMBUSTION SPACE

Stanislav Jahoda, Horni Pocernice, Czechoslovakia, assignor to Ustav pro vyzkum motorovych vozidel, Prague, Czechoslovakia

Filed Feb. 28, 1980, Ser. No. 125,514

Int. Cl.^{3} F02B *17/00;* **F01L** *3/22*

U.S. Cl. 123—278 **12 Claims**



1. In an apparatus for preparing combustible mixtures with different air-fuel mixing ratios for an internal combustion engine having a main combustion chamber with a main suction channel and a subsidiary combustion chamber with a subsidiary suction channel, the improvement which comprises a suction valve provided in each of the main and the subsidiary suction channels, the main suction channel forming part of the suction tract of the engine, a fuel nozzle generating a fuel jet terminating into the suction tract of the engine, a stub nipple encompassing the outlet of said fuel nozzle while remaining open into the suction tract of the engine, a sucking-off chamber provided around said stub nipple, openings formed in said stub nipple near the outlet of the fuel injection nozzle connecting the internal space of the stub nipple with the sucking-off chamber, the subsidiary suction channel connecting this sucking-off chamber with the subsidiary combustion chamber, means for igniting the combustible mixture in the subsidiary chamber, and a flashover channel connecting the subsidiary combustion chamber with the main combustion chamber.

4,369,748

OPTICAL ENGINE KNOCK SENSING SYSTEM

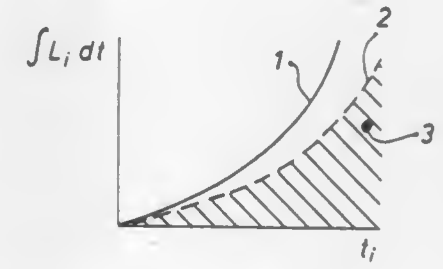
Leo Steinke, Hepach; Ernst Linder, Mühlacker; Helmut Maurer, Vaihingen; Klaus Müller, Tamm, and Franz Rieger, Aalen-Wasseralfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,856

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023013

Int. Cl.^{3} F02P *5/04;* **F02B** *3/00;* **G01K** *21/26*

U.S. Cl. 123—425 **15 Claims**



1. Optical knock sensor system having
- an optical receiver-transducer (**10, 11, 12**) exposed to and receiving light occurring upon combustion of a fuel-air mixture in the cylinder of an internal combustion (IC) engine, and furnishing an electrical output signal (L_i) representative of sensed light;
- means (**13–17**) sensing contamination of the receiver due to deposits on the receiver in the course of operation of the IC engine and providing a contamination output signal;
- and means (**18, 19; 30, 32, 33**) controlling operation of the engine to cause the engine to operate under controlled knocking condition to thereby produce shock and oscillation waves in the combustion chamber and remove contaminants from the receiver.

4,369,749

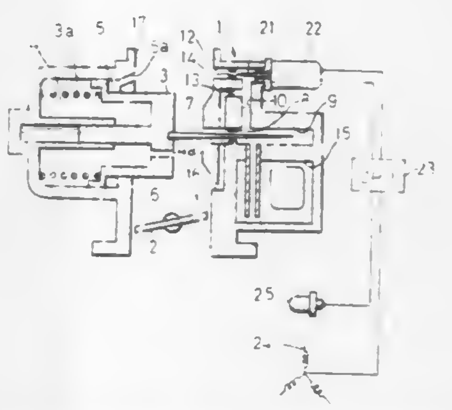
VARIABLE VENTURI CARBURETOR

Fumio Sugi, Handa, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Japan

Filed Jan. 27, 1981, Ser. No. 228,898

Int. Cl.^{3} F02M *7/00*

U.S. Cl. 123—439 **5 Claims**



1. A structure in a variable venturi carburetor of an internal combustion engine for preventing fuel vapor bubbles to pass to a main fuel jet comprising: a venturi portion, a float chamber, a main fuel passage communicating with the venturi portion

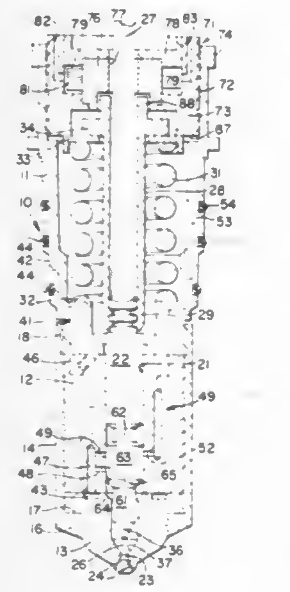
and with the float chamber, the main fuel jet provided in the main fuel passage and a movable metering needle, a free end of said metering needle being adapted to control the size of the main fuel jet and a base portion of said metering needle being mounted to a suction piston adapted to transversely move with respect to the venturi portion in response to the condition of load on the internal combustion engine, an improvement including provision of a bypass detouring upwardly from a portion of the main fuel passage upstream of the main fuel jet for discharging the vapor of fuel, said bypass communicating with a negative pressure passage having an opening in a lower portion of said venturi portion and said bypass communicating also with an air passage having an opening in the vicinity of an air horn inlet.

4,369,750
FUEL INJECTOR FOR INTERNAL COMBUSTION ENGINE

George Muntean; Harry L. Wilson, and Gary L. Gant, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 19, 1979, Ser. No. 105,150
Int. Cl.^{3} F02M *59/42*

U.S. Cl. 123—505 **12 Claims**



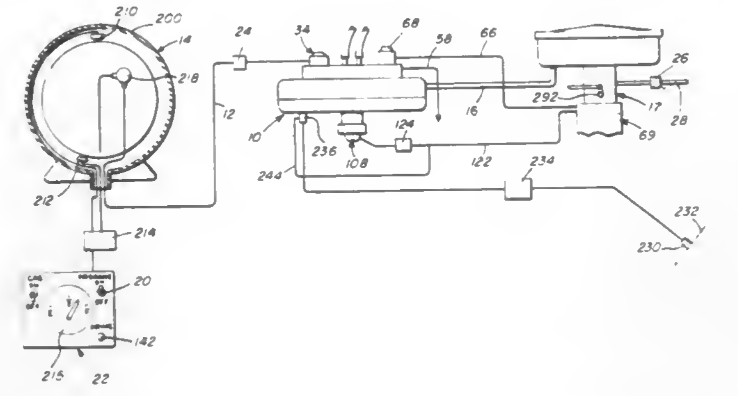
1. Apparatus for a fuel injector that includes an injector body having a plunger bore formed therein, a supply passage and a return passage formed in said body adjacent said bore, a metering orifice connecting said bore with said supply passage, and first and second return flow passages connecting the supply passage and the return passage with the bore, said return flow passages being adjacent each other but spaced from said orifice, said injector body having a forward end and spray holes connected to said bore adjacent said forward end, said apparatus comprising a generally cylindrical plunger adapted to reciprocate in said bore adjacent said orifice, said flow passages and said spray holes, said plunger having a reduced diameter end portion adjacent said forward end of said body, a cylindrical land formed on said plunger adjacent said reduced diameter end portion, a feed groove formed in said land, said feed groove extending to one edge of the land and opening to said reduced diameter end portion, said groove being adapted to connect with said orifice, and an annular return groove formed on said plunger adjacent said land and at a location which is displaced from said reduced diameter end portion and said feed groove, said return groove being disconnected from said feed groove and being adapted to connect with said first and second return flow passages in all modes of operation.

4,369,751
LIQUEFIED PROPANE CARBURETOR MODIFICATION SYSTEM

William H. Batchelor, Lantana, Fla., and Douglas R. Batchelor, Buchanan, Mich., assignors to Ayres Technologies, Inc., West Palm Beach, Fla.

Filed Aug. 13, 1980, Ser. No. 177,790
Int. Cl.^{3} F02B *43/00*

U.S. Cl. 123—527 **12 Claims**



1. In an internal combustion engine having an engine block, at least one combustion chamber, an intake manifold for channeling fuel to said combustion chamber and a carburetor mounted on said intake manifold, the improvement comprising a storage tank for storing liquefied gaseous fuel; a regulator and vaporizer means for vaporizing said liquefied gaseous fuel and regulating the flow of said liquefied gaseous fuel, said vaporizer and regulator means including a first chamber for receiving said liquefied gaseous fuel from said tank, said first chamber having a first outlet port containing a gaseous fuel flow regulator, said first outlet port being connected to said intake manifold, and a second chamber containing a second outlet port, said second chamber being divided into upper and lower portions by a diaphragm, valve means actuated by said diaphragm for selectively communicating said second chamber with said first chamber; and mixer means connected to said carburetor, said mixer means having an inlet port connected to said second outlet port for receiving gaseous fuel therefrom and mixing said gaseous fuel with combustion air, said mixer means defining a venturi structure including large cross sectional area inlet and outlet ends and a smaller cross sectional area midportion intermediate said large cross sectional area ends and further defining a gas receiving chamber disposed substantially entirely about said venturi passage and with which said inlet port is communicated, said smaller cross sectional area midportion of said venturi structure including at least a substantially continuously peripheral slot formed therein opening outwardly from the outer periphery of said smaller cross sectional area midportion into the immediately surrounding portions of said gas receiving chamber and communicating the latter with the outer periphery of the smaller cross sectional area venturi midportion, said large cross-sectional area outlet end being communicated with said intake manifold and said large cross sectional area inlet end being adapted to receive filtered induction air.

4,369,752
EXHAUST GAS PURIFICATION CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

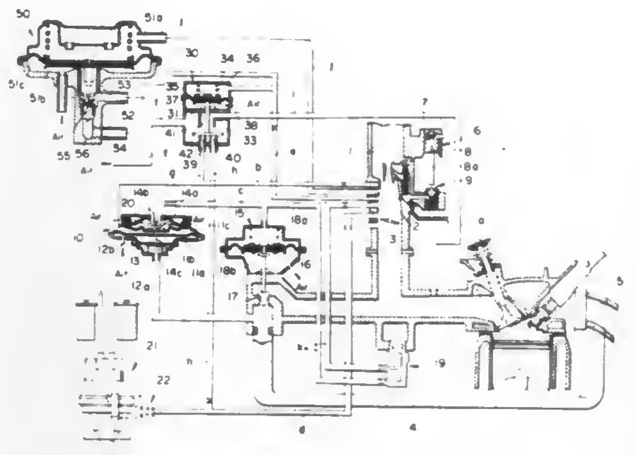
Kosuke Ito, Yokohama; Hiroshi Iida, Tokyo; Masanori Harada, and Masato Hatakenaka, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 24, 1980, Ser. No. 190,282
Claims priority, application Japan, Sep. 27, 1979, 54-125143
Int. Cl.^{3} F02M *25/06*

U.S. Cl. 123—568 **4 Claims**

1. An exhaust gas purification control apparatus for an internal combustion engine comprising:

(a) an air-fuel mixture control responsive to a first vacuum signal;
(b) an exhaust gas recirculation control responsive to a second vacuum signal;
(c) an ignition timing control responsive to a third vacuum signal;



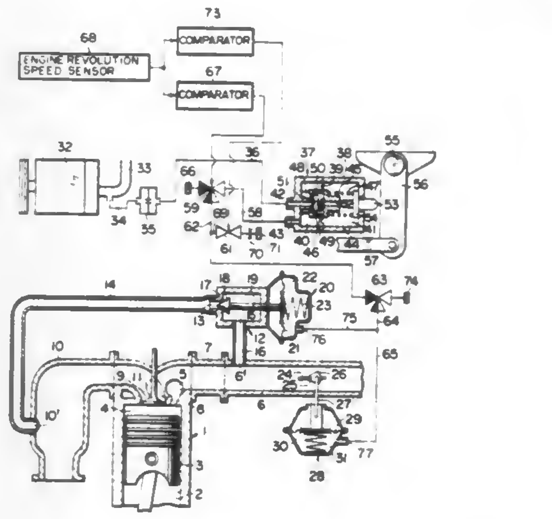
(d) a vacuum signal modifier for controlling at least two of said first, second, and third vacuum signals in response to a pressure signal applied thereto; and
(e) a pressure control device for controlling said pressure signal applied to said vacuum signal modifier.

4,369,753
PRESSURE MEDIATED DIESEL ENGINE EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Toshihisa Sugiyama, Gotenba, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1980, Ser. No. 215,848
Claims priority, application Japan, Jul. 25, 1980, 55-102030
Int. Cl.^{3} F02M *25/06*

U.S. Cl. 123—569 **16 Claims**



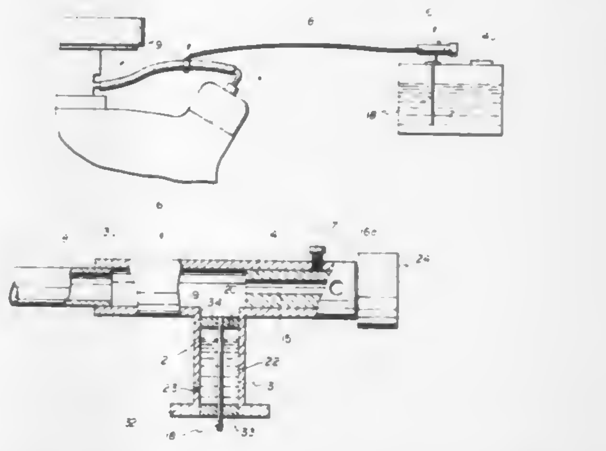
1. For a diesel internal combustion engine comprising:
(a) an air intake system;
(b) an exhaust system;
(c) an exhaust gas recirculation conduit, a first end of which is connected to said exhaust system and a second end of which is connected to an intermediate part of said air intake system, for recirculating exhaust gases from said exhaust system to said air intake system; and
(d) a movable member which moves according to the amount of diesel fuel being supplied to said diesel internal combustion engine;
an exhaust gas recirculation control system, comprising:
(e) an exhaust gas recirculation control valve, comprising a first diaphragm chamber, provided in said exhaust gas recirculation conduit so as to regulate the flow of exhaust gas through said exhaust gas recirculation conduit, whose resistance to flow of exhaust gas varies according to the value of a controlling fluid pressure supplied to said first diaphragm chamber;
(f) a throttle valve fitted to said intake system upstream of said second end of said exhaust gas recirculation conduit;
(g) a fluid pressure control valve, which regulates a fluid pressure supply and produces said controlling fluid pressure, according to the amount of displacement of said movable member;
(h) a fluid pressure actuated diaphragm device, comprising a second diaphragm chamber which is supplied with said controlling fluid pressure from said fluid pressure control valve, which moves said throttle valve according to the value of said controlling fluid pressure;
whereby the amount of exhaust gas recirculation provided by said exhaust gas recirculation control valve is varied according to the amount of diesel fuel being supplied to said diesel internal combustion engine; and,
by suitably tailoring the characteristics of said fluid pressure control valve with regard to the output controlling fluid pressure produced for a given amount of displacement of said movable member, the performance of exhaust gas recirculation provided by said exhaust gas recirculation control valve with respect to the amount of diesel fuel being provided to said diesel internal combustion engine may be suitably tailored; and
whereby no great driving load need be put upon said movable member, such as would be imposed, if said movable member were directly mechanically coupled to a valve element of said exhaust gas recirculation control valve and said intake system throttle valve is moved so as to throttle said intake system more or less and thereby so as to produce more or less intake system vacuum in the neighborhood of said second end of said exhaust gas recirculation conduit, whereby exhaust gas recirculation through said exhaust gas recirculation conduit is desirably more or less promoted.

4,369,754
VACUUM RESPONSIVE INJECTION SYSTEM FOR ENGINES

Bob Lofman, P.O. Box 128, Grass Valley, Calif. 95945

Filed Nov. 4, 1980, Ser. No. 203,854
Int. Cl.^{3} F02M *12/22*

U.S. Cl. 123—573 **9 Claims**



1. A vacuum responsive injection system for engines comprising, in combination:
a vacuum conduit extending from a carburetor to a crankcase ventilation valve,
injection means in the vacuum conduit connected to a metering means through a tube,
said metering means operatively attached to a liquid containing reservoir whereby air and liquid are injected into the carburetor as an aerated liquid through the vacuum conduit after premixing with unburned oil-carbon crankcase

vapors in the vacuum conduit wherein said metering means comprises:
a horizontal chamber communicating with a vertical chamber which overlies said reservoir,
a pipe supported by said vertical chamber and extending from said horizontal chamber into liquid in said reservoir, said pipe isolated from an open area defined by said vertical chamber,
and an air bleed means in said horizontal chamber whereby liquid drawn up to said horizontal chamber by said pipe is mixed with air and carried to the carburetor.

4,369,755
AIR CONTROL DEVICE

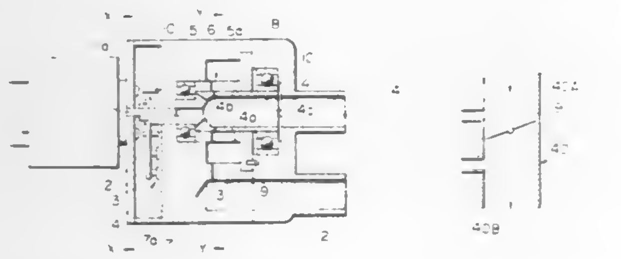
Masaaki Saito, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 13, 1980, Ser. No. 178,238

Claims priority, application Japan, Aug. 23, 1979, 54-116165[U]

Int. Cl.^{3} F02M *7/24*

U.S. Cl. 123—588 **12 Claims**



1. An air control device for regulating the air flow, comprising:
an induction passage;
a throttle valve placed in the induction passage;
an air passage bypassing the throttle valve so that the air flow through the bypassing air passage can increase during engine warm-up;
a main body having a portion of said air bypassing passage extending therethrough, one end of said air bypassing passage being connected to the induction passage on the upstream side of the throttle valve and the other end of said air bypassing passage being connected to the induction passage on the downstream side of the throttle valve;
a shutter mechanism contained within said main body for rotatably regulating the air flow through said air bypassing passage, said shutter mechanism being provided with a fixed cylindrical means and a rotatable cylindrical means having communicating axial and transverse holes so as to define the effective area of the air flow; and
a mechanism for rotatably actuating said shutter mechanism to regulate the effective area of one of said holes.

4,369,756
PLASMA JET IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Mitsuhiko Ezoe, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

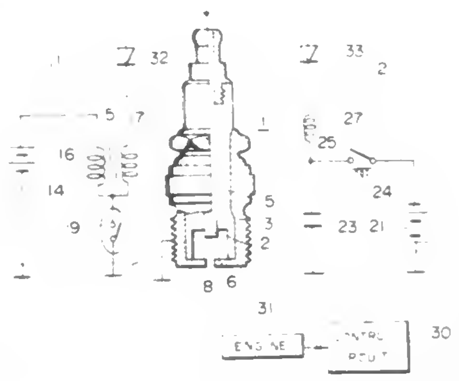
Filed Jan. 7, 1981, Ser. No. 223,086

Claims priority, application Japan, Jan. 11, 1980, 55-1258; Feb. 22, 1980, 55-21170[U]

Int. Cl.^{3} F02P *1/00, 7/02, 19/02, 3/04*

U.S. Cl. 123—620 **15 Claims**

1. A plasma jet ignition system for an internal combustion engine, said system comprising:
a plasma jet spark plug having positive and negative electrodes forming a spark gap therebetween, and an insulating body surrounding said spark gap to form a discharge cavity with a spout orifice to eject a plasma gas produced in said discharge cavity,
a first ignition energy source connected for supplying electric energy to said plug to perform a spark ignition,
a second ignition energy source connected for supplying electric energy to said plug to perform a plasma jet ignition in addition to the spark ignition,



an energy restriction circuit means for detecting an engine cranking period and for restricting the energy supply from said second ignition energy source to said plug during the engine cranking period to reduce energy consumption during cranking.

4,369,757
PLASMA JET IGNITION SYSTEM

Makoto Anzai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 25, 1981, Ser. No. 238,092

Claims priority, application Japan, Feb. 29, 1980, 55-24968

Int. Cl.^{3} F02P *3/08*

U.S. Cl. 123—620 **5 Claims**

1. A plasma jet ignition system comprising:
a plurality of spark plugs;
means for generating an ignition timing signal;
a high tension electric power source;
a device connected to said high tension electric power source and said plurality of spark plugs for supplying a spark ignition current to said spark plugs selectively in accordance with said ignition timing signal;
a low tension electric power source;
a first diode;
a plurality of second diodes corresponding in number to said plurality of spark plugs;
a plasma energy storing capacitor having one terminal connected to said low tension electric power source and its other terminal connected to ground via said first diode and to said plurality of spark plugs via said plurality of second diodes, respectively; and
switching means connected to said one terminal of said capacitor for grounding said one terminal in synchronism with said ignition timing signal so as to discharge electric energy stored in said capacitor to supply a plasma ignition current to that one of said plurality of spark plugs which is supplied with said spark ignition current in accordance with said ignition timing signal.

4,369,758
PLASMA IGNITION SYSTEM

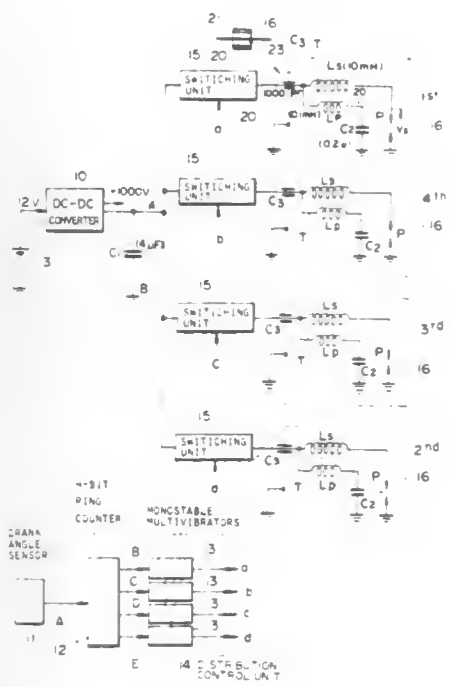
Hiroshi Endo, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 17, 1981, Ser. No. 303,024

Claims priority, application Japan, Sep. 18, 1980, 55-128596

Int. Cl.^{3} F02P *1/00*

U.S. Cl. 123—620 **16 Claims**



1. A plasma ignition system for an internal combustion engine which comprises:
(a) a plurality of plasma spark plugs, one terminal of each being grounded;
(b) a DC—DC converter for boosting a DC supply voltage to a high tension;
(c) an ignition energy condenser for storing electric ignition energy, said ignition energy condenser being connected to the output of said DC—DC converter;
(d) a plurality of switching units each for applying the ignition energy charged in said ignition energy condenser to the respective plasma spark plug with an appropriate ignition timing, said switching units being connected to said ignition energy condenser;
(e) a plurality of boosting transformers each for boosting the voltage across said ignition energy condenser to a still higher voltage, the common terminal of the respective primary and secondary coils being connected to said respective switching units, the other terminal of the respective secondary coil being connected to the terminal of said respective plasma spark plug other than the grounded terminal; and
(f) a plurality of auxiliary condensers each for connecting the other terminal of the primary coil of said respective boosting transformer to the ground, said auxiliary condensers forming an oscillation circuit together with the primary coil of said boosting transformer,
whereby when said switching unit is turned on in order to discharge a current from said ignition energy condenser to said auxiliary condenser through the primary coil, a high tension is generated at the secondary coil of said boosting transformer so as to generate a spark between the electrodes of said plasma spark plug and subsequently a large current is passed through the electrodes of said plasma spark plug by the remaining plasma ignition energy stored in said ignition energy condenser so as to produce a plasma therebetween for completing the plasma ignition.

4,369,759
RECOILLESS AIR WEAPON

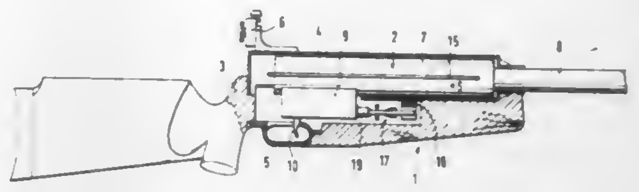
Friedrich Gerstenberger, Dürnau, and Ludwig Jaedicke, Ulm, both of Fed. Rep. of Germany, assignors to Anschutz GmbH, Ulm, Fed. Rep. of Germany

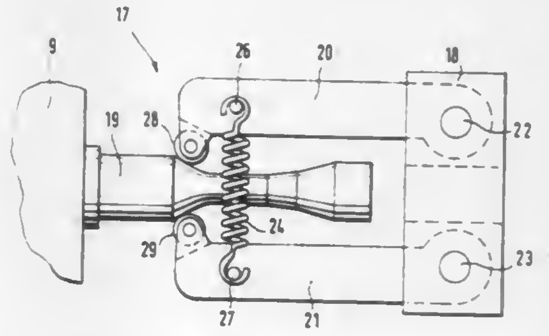
Filed Sep. 9, 1980, Ser. No. 185,554

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936883

Int. Cl.^{2} F41b *11/00;* **F41f** *19/00, 19/06*

U.S. Cl. 124—68 **6 Claims**





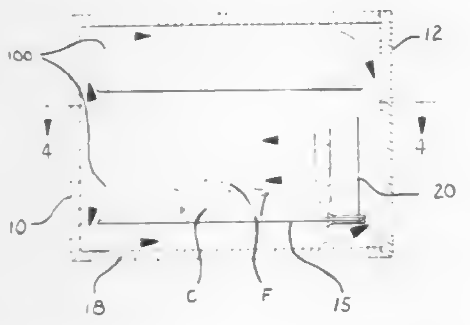
1. In a sporting air gun in the nature of a recoilless pressurized-air weapon, said weapon including a gunstock with a barrel and firing mechanism mounted thereon, said weapon further having a recoilable system which is translatably mounted so as to slide forward and backward on the gunstock of the weapon in a direction which is generally longitudinal, and which recoilable system compensates by opposed motion the impulse from the firing of the weapon, said system minimally comprising a breech casing to which the barrel, the firing mechanism, and added masses are attachable to increase the weight of the system, and said system having a center of mass lying off the line of action of the impulse resulting from the firing, whereby a torsional impulse is superposed on said firing-resultant impulse;
the improvement comprising at least one torsional impulse generator positioned functionally with the weapon, which generator forms an autonomous functioning unit with other parts of the weapon, the torsional impulse resulting from said generator being simultaneous with and directed opposite to the torsional impulse which is induced by the recoilable system in the firing phase of operation, and said torsional impulse from the generator acting substantially in the same direction as said torsional impulse from the recoilable system;
wherein the torsional impulse generator is a device which produces a force which acts oppositely, respectively, on the recoilable system and the gunstock, the line of action of which force is relatively far from the center of mass of the system but close to the center of mass of the gunstock;
wherein the device is a driven cam transmission operating according to the principle of an inclined plane; and
wherein the cam transmission is a longitudinally profiled control-surface rod, the profile of said rod being in the form of surface segments of different slope, whereby at least one cam follower lever in the form of a dog follows the different levels of the profile segments when the system and gunstock are in relative motion, and the drive of the cam transmission comprises at least one spring which presses the at least one dog against the control-surface rod in the region of the surface segments, which segments are sloped with respect to the longitudinal direction, the control-surface rod being affixed to one of the recoilable

system and the gunstock, and the the dogs are affixed to the other of the gunstock and recoilable system.

4,369,760
PORTABLE OVEN AIR CIRCULATOR

Jorgen A. Jorgensen, Bloomington, and Donald W. Nygren, Minneapolis, both of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

Filed Sep. 22, 1980, Ser. No. 189,661
Int. Cl.³ D24C *15/32;* A21B *1/00*
U.S. Cl. 126—21 A **3 Claims**



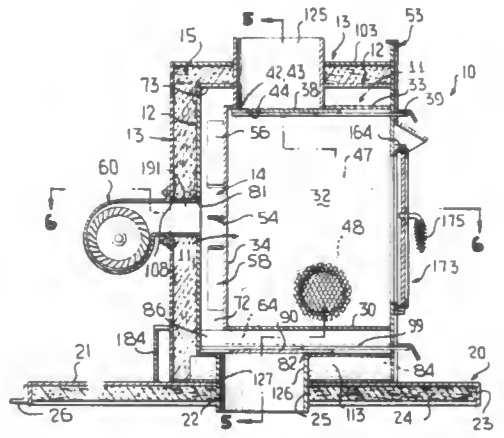
1. A compact portable air circulator for use in a cooking oven to increase the rate and uniformity of cooking and baking which comprises:
- (a) a fan blade of heat resistant material,
- (b) a metal housing,
- (c) a gear reduction train within the housing connected to the fan blade,
- (d) a spring motor within the housing connected to the gear reduction train to drive the fan, and
- (e) a large flat horizontal oven rack clamp for positive engagement with a wire oven rack and which clamp also serves as a base for the air circulator so that it might stand upon a horizontal surface in said oven.

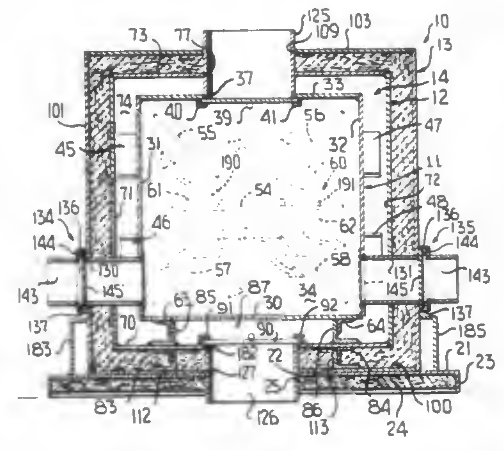
4,369,761
WOOD BURNING STOVE

Clarence S. Burnette, No. 20 Woodwinds, Montaque Rd., Greenville, S.C. 29609

Filed Jun. 9, 1980, Ser. No. 157,683
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—63 **5 Claims**

4. A solid fuel burning stove comprising first and second means for defining an innermost combustion chamber in generally spaced relationship to an outer hot-air circulating chamber, said chambers having adjacent spaced rear and bottom walls, an opening in said rear wall of outer hot-air circulating chamber through which air is adapted to be introduced into the space between said chambers, an opening in said bottom wall of said outer hot-air circulating chamber from which hot-air is conducted for heating purposes, damper means for adjustably regulating the flow of hot-air outwardly of said outer hot-air circulating chamber opening, means defining a hot-air passage between said bottom walls for directing hot-air between and along said bottom walls toward said outer hot-air circulating chamber opening, said hot-air passage means are a pair of generally parallel spaced walls between which is positioned said hot-air circulating chamber opening, and said combustion chamber bottom wall is supported upon upper edges of said parallel walls.

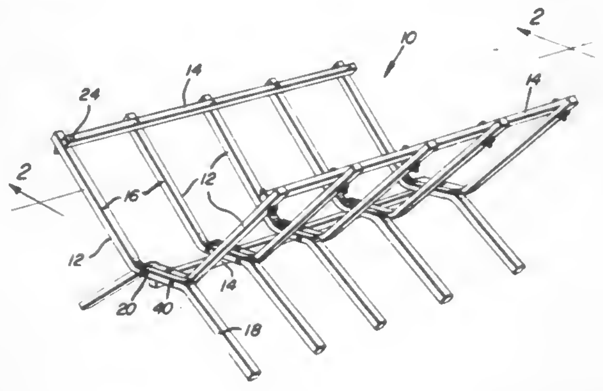




4,369,762
SOLID FUEL SUPPORTING GRATE FOR FIREPLACE

Tony Ziebert, 1513 W. Washington St., Stayton, Oreg. 97383

Filed Mar. 18, 1981, Ser. No. 245,211
Int. Cl.³ F23H *13/00*
U.S. Cl. 126—164 **10 Claims**

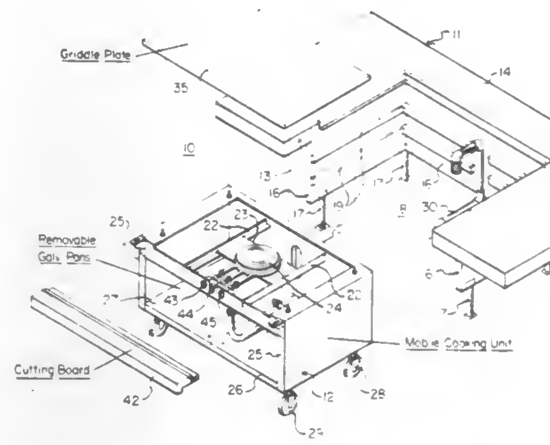


1. A fireplace grate for solid fuel, such grate including a plurality of pairs of crossed and front-to-rear reversed elongated support members each including generally parallel opposite end portions interconnected by an angulated mid-portion, said support members of each pair of support members being oppositely inclined with their mid-portions generally horizontally disposed and secured together in side-by-side horizontally aligned relation, said pairs of support members being laterally aligned in horizontally spaced relation, and elongated horizontal connecting members extending between and connecting corresponding portions of said pairs of support members.

4,369,763
COOKING TABLE

James E. Sullivan, 100 Westport Dr., Pittsburgh, Pa. 15238

Filed Aug. 29, 1980, Ser. No. 182,790
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—276 **4 Claims**



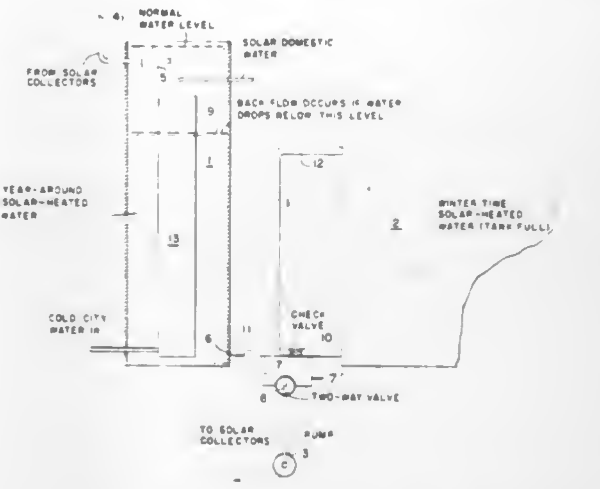
1. In a cooking table of the type comprising a stationary portion with a flat top and supporting means therefor, at which persons may be seated, and a mobile unit portion on castors having cooking means at the top, which portion is movable into relation with the stationary portion, the improvement wherein the stationary portion has a table top in the form of a U, the supporting means comprise sidewalls depending from the table top around the inside of the U, the stationary portion carries a trough attached to said sidewalls extending inwardly into the inside portion of said U on all three sides thereof, said table top overhangs all of said sidewalls outwardly from the U so that persons may be seated for dining around the outside of the U on all three sides thereof, the top of said mobile portion corresponds in dimensions to those of the interior of said U, the cooking means comprise a griddle plate and means for heating same, said mobile portion is movable wholly into said interior so that the griddle plate thereof adjoins flush with the table top of the stationary portion and overhangs said trough whereby drippings from the portion of the griddle plate overhanging said trough fall into the trough, said griddle plate having open grooves on the underside thereof spaced from and parallel to the edges thereof and disposed above said trough when said mobile portion is disposed in said interior of the U whereby drippings from said edges of the griddle plate are prevented from running on the underside of the griddle plate beyond said grooves, and said mobile portion has three sidewalls of insulating material depending from its top which adjoin the sidewalls respectively of the stationary portion when the mobile portion is moved into said interior of the U of said stationary portion.

4,369,764
SOLAR HEAT STORAGE SYSTEM

Harry E. Thomason, and Harry J. L. Thomason, Jr., both of 609 Cedar Ave., Fort Washington, Md. 20022

Filed Oct. 29, 1980, Ser. No. 201,748
Int. Cl.³ F24H *7/00;* F17D *1/00*
U.S. Cl. 126—400 **17 Claims**

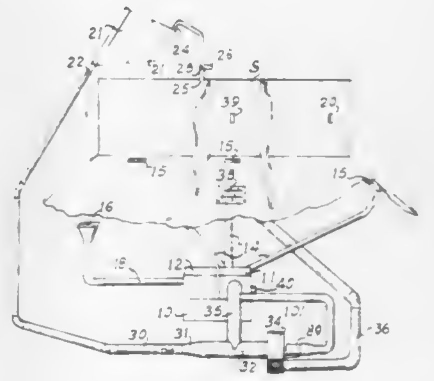
1. A liquid solar-heat storage tank system comprising a first tank and a second tank, means inter-connecting said tanks comprising liquid conduits including a first branch line connected adjacent to the bottoms of said tanks, a check valve in said first branch line closable to prevent flow from said first tank to said second tank and openable to permit flow from said second tank to said first tank, and a second branch line connected adjacent to the bottom of said first tank and the top of said second tank to permit liquid to flow from the bottom portion of said first tank to the top portion of said second tank when the level of liquid in said first tank is higher than the level of liquid in said second tank and higher than the highest point of said second branch line.



4,369,765
SUPPLEMENTAL HEATING SYSTEM USING SOLAR RADIATION

Grady L. McDaniel, 207 Valley Rd., Lawrenceville, Ga. 30245

Filed Jun. 11, 1980, Ser. No. 177,252
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—427 **8 Claims**



1. A supplemental heating system, for use with a conventional heating system including a furnace, a plenum carried by said furnace for receiving air heated by said furnace, supply ducts in communication with said plenum for distributing said air to a space to be heated, and a furnace thermostat in said space for causing said furnace to operate when said space is below a predetermined temperature, said supplemental heating system including a blower having a low pressure side and a high pressure side, a first duct in communication with said low pressure side, a branch duct in communication with said plenum and said first duct, means connecting said high pressure side of said blower to said space to be heated, supplemental heating means for supplying heat to said first duct, timing means for determining periods of possible operation of said supplemental heating system, and thermostatic means for disabling said supplemental heating means when the temperature of said plenum is above a predetermined temperature, the arrangement being such that, during a period of possible operation of said supplemental heating system said furnace will operate in accordance with said furnace thermostat and said supplemental heating system will warm said space so long as sufficient heat is available through said supplemental heating system, said blower of said supplemental heating system removing heated air from said plenum and said supply ducts for distribution through said supplemental heating system.

4,369,766

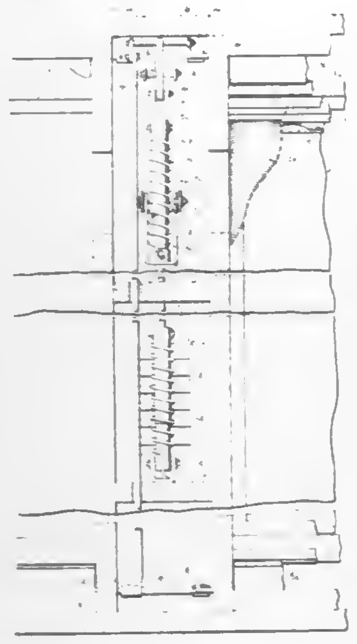
SOLAR HEATING AND SHADING WINDOW HAVING AUTOMATIC TEMPERATURE-RESPONSIVE DAMPER SYSTEM

John L. Coley, 1147 Nance Dr., Madison, Ala. 35758

Filed Jan. 21, 1980, Ser. No. 113,955

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—429 **13 Claims**



1. A window having a solar plenum and having outside and inside air passages adapted for communication with the solar plenum, and thermally sensitive means operable to close the solar plenum to create a dead air space and to place said plenum in communication with the outside or the inside air passages responsive to temperature differentials in the outside or inside air and in said solar plenum, and said thermally sensitive means having communication with the outside or inside air and with the solar plenum, and said thermally sensitive means comprising a pair of dampers forming movable closures for the solar plenum, and actuating linage means adjacent to the window and being drivingly connected to said dampers, and said linkage means including a pair of independent actuators sensitive to temperature changes and being arranged in two separate chambers, one of said actuators being arranged in one of said chambers adjacent to and separated from the solar plenum, said one chamber having aperture means in communications with the outside or inside air, and the other of said actuators arranged in the solar plenum.

4,369,767

ENDOSCOPE SYSTEM

Yoshio Shishido, Soka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,925

Claims priority, application Japan, May 25, 1979, 54-64671; May 25, 1979, 54-64672; May 25, 1979, 54-64674; May 25, 1979, 54-64675

Int. Cl.^{3} A61B *1/04;* **G03B** *37/00*

U.S. Cl. 128—6 **7 Claims**

1. An endoscope system for use with a camera unit, comprising:

an endoscope including an insertion section to be inserted into a body cavity, an ocular section coupled with said insertion section, and a light guide and a first image guide extending through said insertion section, one end of said first image guide being located at said ocular section;

a light source unit for supplying flash light to said light guide of said endoscope;

means for splitting light transmitted through said first image guide into two light paths;

viewing means for viewing a region of interest of the body cavity through said first image guide and said light splitting means, said viewing means being disposed on one light path of said light splitting means;

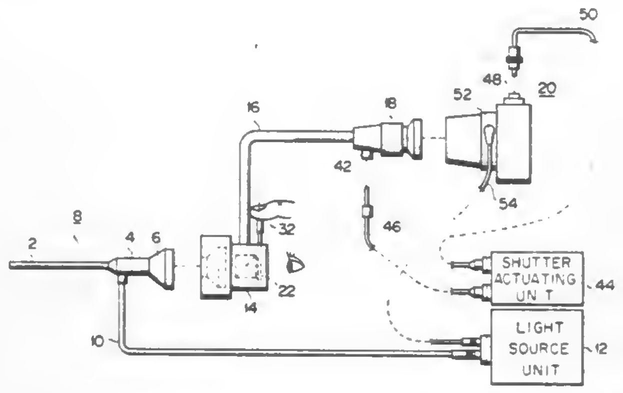
an additional image guide disposed on the other light path of said light splitting means, whereby an image of the region of interest is transmitted through said first and additional image guides and said light splitting means;

a housing for receiving said light splitting means and holding said viewing means and said additional image guide, said housing being attached to said ocular section;

light shutting means which is selectively operable for shutting or intercepting the light from said light splitting means toward said viewing means, said light shutting means being located in said one light path between said light splitting means and said viewing means;

camera mounting means for mounting said camera unit, said camera mounting means being coupled with said additional image guide; and

camera unit actuating means responsive to operation of said light shutting means to a light intercepting position for releasing the shutter of said camera unit after the light is shut off or intercepted by said light shutting means, and for thereby causing flash light to be supplied from said light source unit.



4,369,768

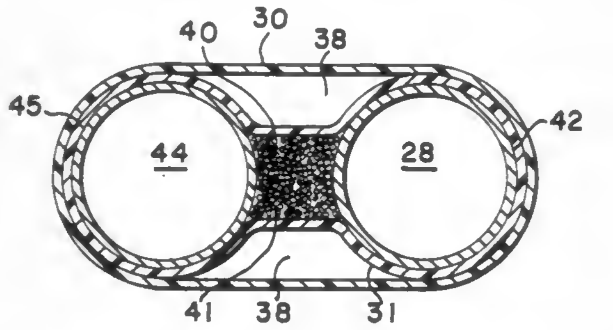
ARTHROSCOPE

Marko Vukovic, 2052 Lincoln Park West, Chicago, Ill. 60614

Filed Jul. 30, 1980, Ser. No. 173,952

Int. Cl.^{3} A61B *1/06*

U.S. Cl. 128—6 **2 Claims**



1. An arthroscope for use in diagnostic and surgical procedures involving an injured area, such as the knee and surrounding tissue, comprising:

a body portion;

a probe portion;

a viewing portion secured to generally opposite sides of said body portion, said arthroscope configured to provide a line-of-sight from said viewing portion to said probe portion provided through said body portion, said probe portion including a tubular instrument conduit for carrying a selected surgical instrument for operative procedures in the injured area, and a tubular viewing conduit of substantially the same diameter through which the injured area proximate to the probe tip may be viewed; said instrument conduit and said viewing conduit secured parallel to one another, said conduits secured to each other along their length and separated by a hollow joining member to form a substantially dumbbell-shaped cross-section;

a removable sheath configured to surround said probe along its length, said sheath being made of a compliant material and configured slightly undersized with respect to the transverse dimensions of said probe, so that said sheath when affixed over said probe conforms to the exterior of said instrument and viewing conduits in a fluid-tight manner, but leaving a pair of clear channels between said sheath and said joining member;

means for sealably connecting the instrument-insertion end of said instrument conduit to a source of irrigating liquid, so that with said sheath removed and no instrument in said instrument conduit, said instrument conduit may serve as an alternate irrigation channel for purely diagnostic observation;

clear passage valve means disposed in communication with said instrument conduit with the passage axis of said valve means aligned with the center axis of said instrument conduit, so that with said valve in the open position an inserted instrument can pass the length of said instrument conduit unobstructed by said valve means, and so that with said instrument removed, actuation of said valve means alternatively to an open or closed condition controls the flow of irrigation liquid when said instrument channel is serving as said alternate irrigation channel;

second valve means for connecting said sheath to a source of irrigation fluid to control the supply of said irrigating fluid to the area under inspection through said pair of clear channels; and,

illumination means in said probe for illuminating the area to be inspected, said illumination means including a plurality of fiber optic strands disposed within said hollow joining member so as to convey light from a source thereof to the tip of said probe.

4,369,769

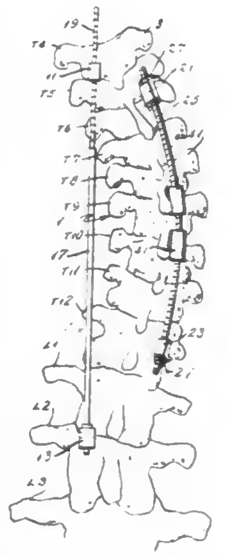
SPINAL FIXATION DEVICE AND METHOD

Charles C. Edwards, 3907 Greenway, Baltimore, Md. 21218

Filed Jun. 13, 1980, Ser. No. 159,396

Int. Cl.^{3} A61F *5/01*

U.S. Cl. 128—69 **17 Claims**



1. A surgically implanted spinal fixation support system comprising at least one metal rod, a plurality of anchoring devices for securing said metal rod to a patient's spine, and at least one sleeve member fitting around the rod, disposed between the anchoring devices, the sleeve members not associated with any anchoring devices for providing an adjustable area of pressure application to the spine, the sleeve comprising a biologically compatible non-metal material and having a longitudinal bore therethrough, the bore being of a substantially equal diameter throughout its length, the bore being approximately the outside diameter of said rod and for the purpose of fitting the sleeve around the rod and an outside diameter which is small enough in size so as to enable the rod to be surgically fixed with the sleeves to the spinal column of a patient and the thickness of said sleeve being large enough to make bone contact with the spine. to hold the spine in a normal or anatomic position.

4,369,770

SURGICAL STRUT FOR TREATMENT OF THE BACK-BONE

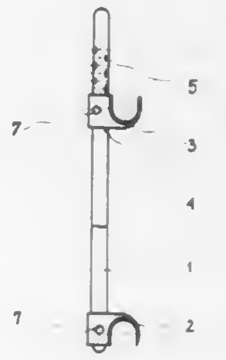
Kazimierz Bacal, Gora; Lech B. Wierusz, Swiebodzin, and Janusz Miszczyk, Zielona Gora, all of Poland, assignors to Wyzsza Szkola Inzynierska Im. J. Gagarina, Zielona Gora, Poland

Filed Jul. 22, 1981, Ser. No. 285,698

Claims priority, application Poland, Jul. 30, 1980, 226000

Int. Cl.^{3} A61F *5/01*

U.S. Cl. 128—69 **3 Claims**



1. A surgical strut for treatment of the back-bone, consisting of a rod having a round cross-section, and of hooks mounted thereon, characterized by that at one end of the rod (1) it is provided with a number of through holes (5) perpendicular to the rod axis, aimed at mounting a thrust pin (4), whereby the axes of neighbouring holes form an angle of 90°, and one of the hooks (3) is from the side of the front face provided in the wall of the round hole with four recesses disposed on the periphery of the hole every 90°, constituting the seats for the thrust pin (4).

4,369,771

PENILE ERECTILE SYSTEM

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Sep. 24, 1981, Ser. No. 305,048

Int. Cl.^{3} A61F *5/00*

U.S. Cl. 128—79 **2 Claims**

1. A penile implant comprising an elongated unitary body having a tip portion at one end, an anchoring stem portion at the other end; an intermediate portion having an inner chamber and a radially disposed outer chamber, said inner chamber being non-distensible so that when pressurized and filled with fluid it becomes rigid; a passage providing communication between said inner and outer chambers; pump means within the body for transferring fluid to the inner chamber to pressurize it and make it rigid; and a pressure control valve for controlling the pressure in said inner chamber, said pressure control valve comprising:

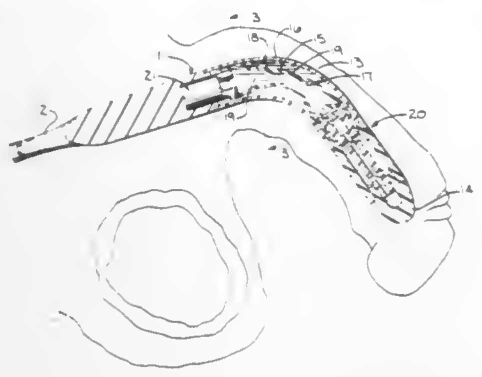
(a) a valve jacket having an inlet and an outlet, said inlet communicating with the inner chamber, and the outlet communicating with the outer chamber;

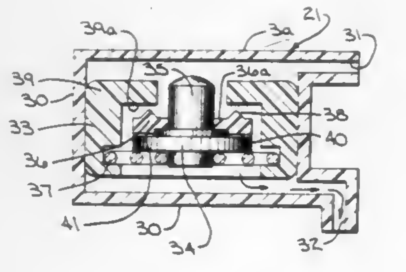
(b) a valve housing positioned in said jacket, said housing having an open top and bottom and an inwardly directed shoulder partially closing said top;

(c) a poppet mounted in said housing between the inlet and the outlet; said poppet having a base with an upwardly extending stem;

(d) a seal member positioned on top of said poppet, said member having a sealing edge which extends circumferentially about said stem;

(e) means exerting a force upon said poppet urging it toward the open top of the housing so that the sealing edge will be in sealing contact with the underside of the shoulder closing said valve, said valve being openable by exerting manual pressure on the stem to reduce the pressure in the inner chamber of the penile implant and automatically openable when the pressure in the inner chamber exceeds the force exerted on said poppet.





4,369,772
METHOD FOR STRENGTHENING A FRACTURED BONE

Gary J. Miller, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.
Filed Apr. 28, 1980, Ser. No. 144,052
Int. Cl.^{3} A61F *5/04*

U.S. Cl. 128—92 C **6 Claims**

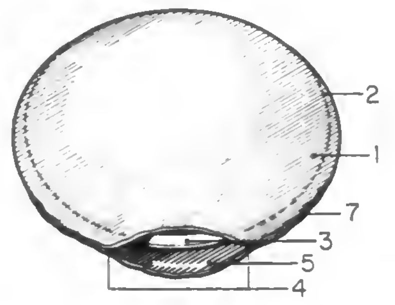
1. Method for strengthening a bone which comprises the steps of:

- a. opening the body to gain access to one end of said bone;
- b. drilling a passageway along the axis of the medullary canal of said bone;
- c. inserting into said passageway a substantially elongated inflexible open-ended, hollow, bone-reinforcing, tubular member having an outside diameter less than the diameter of said passageway;
- d. injecting into one end of said tubular member after the inserting step c sufficient hardenable semisolid mixture of methyl methacrylate and poly (methyl methacrylate) under superatmospheric pressure to embed said tubular member in said bone by passage of said mixture from the hollow of said tubular member to fill the remaining portions of said passageway, and to fill any cavity in said bone intersected by said passageway with said hollow remaining filled with said mixture;
- e. allowing sufficient time for said mixture to harden in and around said tubular member; and
- f. closing said body.

4,369,773
CONTRACEPTIVE SPONGE - DIAPHRAGM BILAYER

Milos Chvapil, 5655 N. Mina Vista, Tucson, Ariz. 85718
Filed Nov. 5, 1980, Ser. No. 204,294
Int. Cl.^{3} A61F *5/46*

U.S. Cl. 128—127 **2 Claims**



1. Formation of a contraceptive sponge bilayer product consisting of:

- (a) two layers of sponges having the shape of a circular disc, the diameter of about 5 to 11 cm and of the thickness of about 0.15 to 0.3 cm
- (b) the said sponges, laminated on one side with a thin plastic membrane attached to the sponge surface by an adhesive
- (c) connecting the two laminated sponges together at the circumference of the discs to form a pocket having the plastic membrane inside, the sponge layer outside and leaving an opening into the pocket about 3 to 4 cm wide
- (d) incorporating into the sponge an effective spermicide dissolved in a buffered solution of pH 3 to 5
- (e) the said solution containing 5 to 20 volume percent glycerin or similar plasticizers and
- (f) inserting into the pocket of the laminated sponge bilayer a silastic ring

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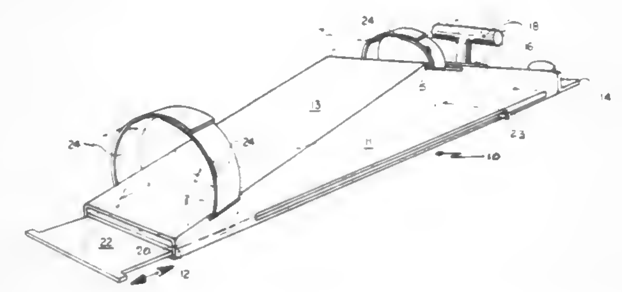
4,369,774
ARTERIAL ARM BOARD

Richard F. Robbins, Salt Lake City, Utah, assignor to Frederick F. Auerbach, Salt Lake City, Utah, a part interest
Filed Mar. 16, 1981, Ser. No. 243,784
Int. Cl.^{3} A61F *13/00*

U.S. Cl. 128—133 **8 Claims**



1. An arm board for use in connection with piercing a human radial artery at the underside of the wrist comprising a first inclined ramp, a second inclined ramp and a hand grip mounted on said second ramp so that it can be gripped by a hand of a patient, said first and second ramp being joined together at their upper ends to form a fulcrum, said first ramp being of length sufficient to support substantially the full length of a forearm between elbow and wrist and said second ramp being of length to provide support to the back of a hand below the wrist, said first and second ramps defining at said fulcrum an angle such that when a patient's forearm and hand are supported on said ramps and the hand grip is grasped the wrist is thereby hyperflexed to present the radial artery for penetration.

4,369,775
MULTI-PURPOSE ANATOMICAL SUPPORT WRAP

Paul B. Gamm, Cincinnati, Ohio, assignor to Jung Products, Inc., Cincinnati, Ohio
Filed Mar. 6, 1981, Ser. No. 241,081
Int. Cl.^{3} A61F *13/06*

U.S. Cl. 128—166 **14 Claims**

1. An anatomical support wrap comprising

an elongated strap like body portion having first and second ends, said body portion being made of a longitudinally stretchable material, said body portion having a longitudinal central zone and two longitudinal edge zones, and said central zone being adapted to exert a greater degree of tension than said edge zones when said wrap is stretched during use, and

first and second strap like loop portions affixed to said body portion, each of said loop portions comprising a strap like member having first and second ends, said first and second ends of each of said first loop portion being attached to said first end of said body portion, and said first and second ends of said second loop portion being attached to said second end of said body portion.

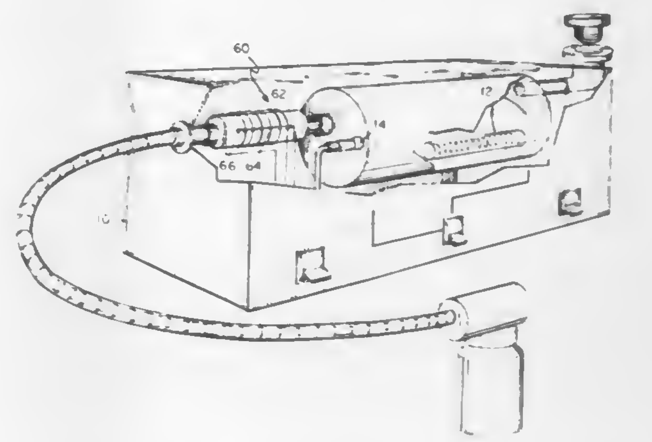
4,369,776
DERMATOLOGICAL IONIZING VAPORIZER

Wallace A. Roberts, 88 N. Main St., Bellingham, Mass. 02019
Continuation-in-part of Ser. No. 29,004, Apr. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 757,039, Jan. 5, 1977, abandoned. This application Feb. 19, 1981, Ser. No. 235,855
Int. Cl.^{3} A61N *1/44*

U.S. Cl. 128—200.14 **1 Claim**

1. A dermatological ionizing vaporizer comprising:

- a. a fluid container;
- b. an electric heating coil, to vaporize the fluid within said container;
- c. delivery means to direct the vaporized fluid to the exterior of said vaporizing unit;
- d. entry means for the delivery therethrough of fluid into said fluid container;
- e. disabling means to stop operation of said heating coil when the fluid in said fluid container reaches a predetermined low level, including:
  - a power source having a voltage output that decreases when put under load;
  - a thermistor, positioned within a lower level of said fluid container in parallel with the power source, said thermistor being sensitive and responsive to surrounding medium temperature such that increases in temperature decrease resistance therein so as to cause voltage from the power source to decrease when temperature of the thermistor increases;
  - a first transistor switch, the input of which is in parallel with the thermistor and the power source so that the input receives a temperature indicative signal that decreases with increasing temperature, such transistor normally being in a conductive state unless the temperature of the thermistor exceeds a predetermined threshold;
  - a first relay having a coil in the output circuit of the first transistor switch, and contacts that are closed when the first transistor switch is in a conductive state, such contacts being opened when the first transistor switch is in a cut-off state, said first transistor switch thereby opening the contacts of the first relay when temperature of the thermistor exceeds the predetermined threshold;
  - a triac, the output of which is in series with the heating coil, and the input of which is connected so as to receive power only when the first relay's contacts are closed, such triac thereby powering the heating coil only when the first transistor switch is in a conductive state and thus only when temperature of the thermistor has not exceeded the predetermined threshold;
- f. means, for warning of low water level, including
  - a second transistor switch having an input connected to the output of the first transistor switch;
  - a second relay the coil of which is connected to the output of the second transistor switch, such coil being energized when the temperature of the thermistor has exceeded the predetermined threshold and the second transistor switch is in a conductive state; and
  - an electric lamp connected in series with contacts of the second relay, so that the lamp is powered when temperature of the thermistor has exceeded the predetermined threshold;
- g. means for ionizing said vaporized fluid when it is traveling through said delivery means including:
  - an ionizing electrode coil member; and
  - circuitry for stepping up voltage to said ionizing electrode coil member including a silicon-rectifier controlled capacitive discharge circuit; and
- h. means for timing operation of the unit including:
  - a counter-display system, having an output voltage indicative of whether a pre-set interval of time has expired;
  - a third transistor switch, the input of which is connected to the output of the counter-display system;
  - a third relay, having a coil in the output circuit of the third transistor switch, and capable of being actuated upon conductance of a predetermined current through the third transistor switch's output, and having normally open contacts in series with the contacts of the first relay and the heating coil, so that the heating coil is powered only during the interval timed by the counter display system.



4,369,777

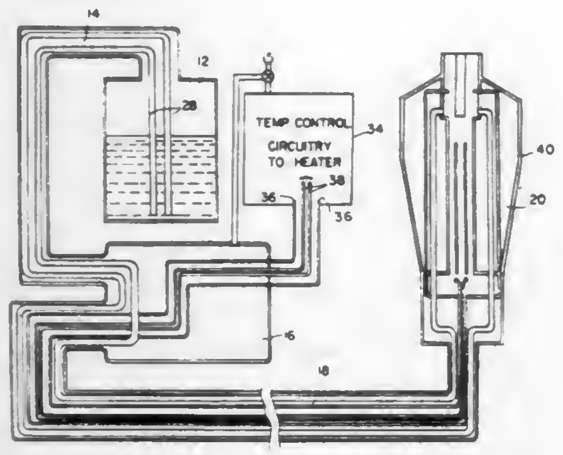
APPARATUS FOR TREATMENT OF THE COMMON COLD AND ALLERGIC RHINITIS

Andre Lwoff, Paris, France; Aaron Yerushalmi, Rehovot, Israel; Irun R. Cohen, Rehovot, Israel; Gideon B. Moshe, Rishon Le Zion, Israel; and Jack Pennell, Sutton Coldfield, England, assignors to Yeda Research & Dev., Co., Ltd., Rehovot, Israel

Filed May 8, 1981, Ser. No. 261,981

Int. Cl.^{3} A61M *16/00*

U.S. Cl. 128—200.14 **13 Claims**



1. Apparatus for delivering a stream of heated humidified air to the nasal mucosa for treatment of the common cold or of allergic rhinitis, the apparatus comprising:
a container adapted to contain water;
means for producing a supply of air under pressure;
pressurizing means for applying at least a part of said supply of air under pressure to said container for causing a pressurized flow of water to issue therefrom;
a remote outlet member comprising
inlet means for receiving at least a portion of said supply of air under pressure and said pressurized flow of water from said pressurizing means and said producing means;
outlet means;
a conduit connecting said inlet means, said pressurizing means and said producing means;
means for heating at least a portion of said supply of air; and
means for supplying said pressurized flow of water to said supply of air after said air is heated for providing a humidified heated stream of air;
said outlet member being adapted for positioning with respect to a user such that said outlet means is in a non-contacting adjacent position with respect to the nasal mucosa of a user for directing said humidified heated stream of air toward said nasal mucosa.

4,369,778

METHOD AND APPARATUS FOR A PORTABLE RESPIRATOR

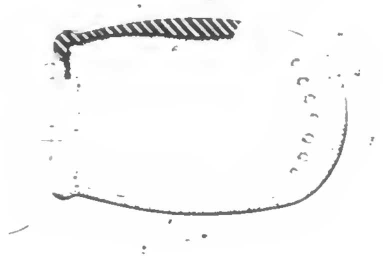
Amos Norris, Box 638, and Edwin J. Dorius, 103 W. Juniper La., both of Gillette, Wyo. 82716

Filed Apr. 8, 1981, Ser. No. 252,234

Int. Cl.^{3} A61M *16/00*

U.S. Cl. 128—205.13 **6 Claims**

1. A portable respirator comprising in combination:
a container having an enlarged opening adapted to fit over the mouth area of a person requiring resuscitation,
a plurality of unrestricted fenestrations closely placed together and disposed on an end of said container remote from said enlarged opening,
said fenestrations grouped in such a manner that the palm area of a rescuer's hand can cover all fenestrations, and a resilient deformable body portion extending from said end to said opening whereby when said fenestrations are closed by occlusion with the palm, the fingers can deform said body portion to provide an air pulse to the person.



4,369,779

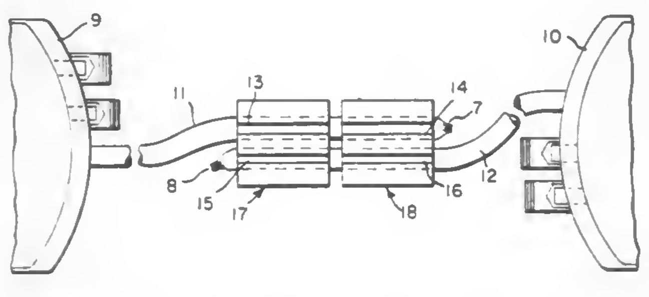
STERILE DOCKING PROCESS, APPARATUS AND SYSTEM

Dudley W. C. Spencer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 236,855, Feb. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 167,716, Jul. 11, 1980, abandoned. This application Jun. 4, 1981, Ser. No. 267,291

Int. Cl.^{3} A61M *5/00;* **B29C** *27/00*

U.S. Cl. 128—213 A **24 Claims**



1. A process of joining first and second thermoplastic tubes together transversely of the axis of each tube comprising urging a hot cutting means through each tube and simultaneously forming a continuous molten seal between a heated cutting surface and a transverse section of each said tube thereby maintaining a seal between the interior and exterior of said tubes aligning said tubes with each other and, joining the respective molten ends of said tubes together to form a joint between said tubes, both while maintaining said seal.

8. An apparatus for forming a sterile connection comprising a cutting means, means adapted to heat said cutting means, a pair of mounting blocks adapted to receive and hold two tubes to be joined, means to provide movement between said blocks and said cutting means to a position such that the cutting means is between said blocks and traversing where the blocks are adapted to receive tubes, means adapted to realign said blocks to a position where two different tube ends are aligned with and facing each other and means to separate said blocks and said cutting means while urging said blocks together.

4,369,780

BLOCKING CONDITION DETECTION DEVICE IN A MEDICAL FLUID INJECTION SYSTEM

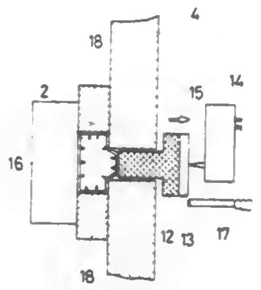
Eiichi Sakai, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1980, Ser. No. 180,388

Claims priority, application Japan, Aug. 24, 1979, 54-108489

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—214 E **7 Claims**



1. A medical fluid injection system comprising:
a flexible conduit;
supply means for supplying a pressurized medical fluid through said flexible conduit; and
a blocking condition detection means for detecting an abnormal blocking condition in said flexible conduit, said blocking condition detection means including
support means provided with an opening for supporting said flexible conduit, said flexible conduit being conformed by said support means into a substantial rectangular configuration juxtapositioned to said opening,
rod means slidably disposed through said opening; and
detection means for detecting a shift in movement of said rod means;
one end of said rod means being in contact with said flexible conduit at the location of said rectangular configuration and the other end of said rod means being in contact with said detection means such that, upon the detection of a blocking condition within said conduit manifested by an abnormal pressure within said conduit, said flexible tubing expands at the location of said rectangular configuration into said opening so as to depress and shift said rod means to make contact with said detection means, said rectangular configuration increasing the sensitivity of said detection means.

4,369,781

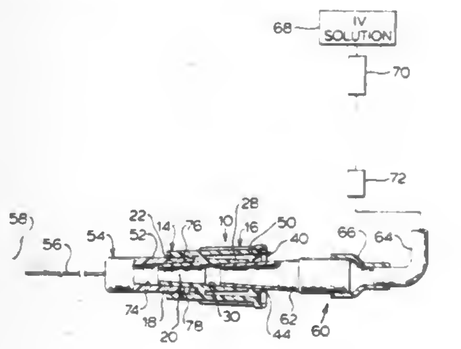
LUER CONNECTOR

Richard W. Gilson, Dellwood, Mo., and Edward F. Windischman, Waterbury, Conn., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Feb. 11, 1981, Ser. No. 233,540

Int. Cl.^{3} A61M *5/00;* **F16L** *25/00, 35/00*

U.S. Cl. 128—214 R **9 Claims**



1. A medical fluid coupler for connecting a first device having a female Luer lock connector to a second device having a male Luer slip connector comprising a body having a bore and including a male Luer lock connector at one end of said body for connecting the female Luer lock connector of the first device in fluid tight locking connection with said body and said bore, and another connector at the opposite end of said body including a female Luer slip connector having a Luer tapered bore in fluid communication with said first named bore for receiving the male Luer slip connector of the second device in fluid tight connection therewith and with said bore, said body having an outer wall surrounding said female Luer slip connector in radial spaced relation therewith, and retaining means connected adjacent said opposite end of said body for frictionally engaging and locking the male Luer slip connector of the second device against movement thereof away from said female Luer slip connector, said female Luer slip connector being flexible to permit limited angular movement thereof from its normal longitudinal axis when the male Luer slip connector is inserted therein.

4,369,782

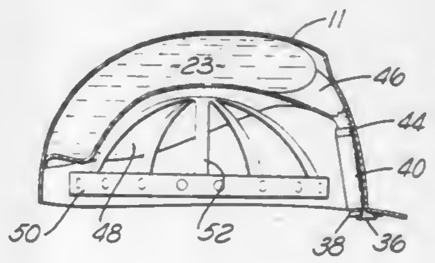
EYEWASHING APPARATUS

Terrill McGee, 525 South Ardmore, #208, Los Angeles, Calif. 90020

Filed May 15, 1981, Ser. No. 263,831

Int. Cl.^{3} A61M *7/00*

U.S. Cl. 128—249 **9 Claims**



1. Apparatus for washing the eyes comprising:
a. a helmet;
b. said helmet including a region for storing a volume of eyewashing liquid; and
c. means for directing said eyewashing liquid from said region toward the eyes of a wearer.

4,369,783

DEVICE FOR THE PROPHYLACTIC OR THERAPEUTIC TREATMENT OF CATTLE

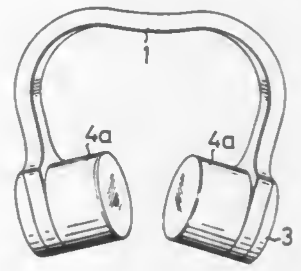
Dietrich Hiller, Wiesbaden; Peter Klatt, Kelkheim, and Bernhard Reul, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,218

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910629; Jun. 29, 1979, 2926283

Int. Cl.^{3} A61M *37/00*

U.S. Cl. 128—260 **13 Claims**



1. A nose-clip for the prophylactic or therapeutic treatment of cattle, which comprises a bow portion the ends of which terminate in flattened surfaces provided with means for receiving active ingredients in the form of depot bodies, said bow portion being symmetrically shaped to lie in a first plane, each

end of the bow portion and said receiving means being inclined towards each other to form an inclination angle α with respect to the symmetrical axis of said bow portion and turned in the same direction from said first plane to form a torsion angle β with respect to a plane normal to said first plane thereby insuring that the surfaces of any depot bodies mounted thereon are inclined towards each other and turned to face each other for positioning in the nasal vestibules of cattle.

4,369,784

METHOD FOR MAKING SUPPOSITORIES BY COMPRESSION AND PRODUCT OF SAME

Alain de Bumar., Düdingen; Aldo Riva, Berne, and Heinz Sucker, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 27,427, Apr. 5, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,747

Claims priority, application Switzerland, Sep. 29, 1978, 10194/78

Int. Cl.^{3} A61J *3/08;* **B29B** *3/00;* **B29C** *11/00*

U.S. Cl. 128—271 **13 Claims**

1. A compression process for the production of a suppository comprising forming a granulate mixture of a conventional suppository base and a pharmacologically active agent, said mixture being free from added binder, and compressing said mixture while maintaining said mixture at a temperature not greater than 10° C.

7. The process according to claim **1** wherein the suppository base and the pharmacologically active agent and first granulated together before being compressed.

4,369,785

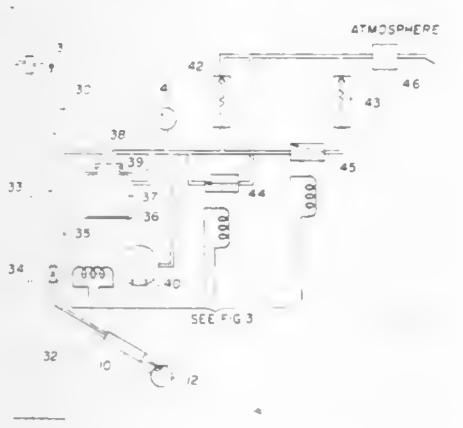
SURGICAL FLUID FLOW SYSTEM

Paul G. Rehkopf, Murrysville, and Ronald Zdrojkowski, Pittsburgh, both of Pa., assignors to Contemporary Ocu-Flo, Inc., Hollywood, Fla.

Filed Feb. 21, 1980, Ser. No. 123,487

Int. Cl.^{3} A61M *1/00*

U.S. Cl. 128—276 **10 Claims**



1. A fluid flow system adapted to be used with an ophthalmic instrument having an influent flow channel and an effluent flow channel comprising:

an influent flow subsystem including a fluid reservoir, means for adjusting the differential pressure between said fluid reservoir and said influent flow channel, and means for controlling the flow of fluid from said fluid reservoir to said influent flow channel;

an effluent flow subsystem including means for applying a vacuum at said effluent flow channel, means for controlling the vacuum pressure at said effluent flow channel, and container means for collecting the effluent flow from said effluent flow channel, comprising a bottle having a cap thereon and a liner inserted therein, said liner being sealingly connected between said bottle and said cap, the interior of said liner and container being flow connected to said effluent flow channel of said instrument, and whereby the interior and exterior of said liner are flow connected to said vacuum means,

said fluid flow system further comprising means for selecting a first mode of operation comprising influent flow to said instrument, or a second mode of operation comprising influent flow to and effluent flow from said instrument, and means for purging air from between said fluid reservoir and said influent flow channel and for purging air from between said effluent flow channel and said effluent flow container means prior to using said instrument during surgery.

4,369,786

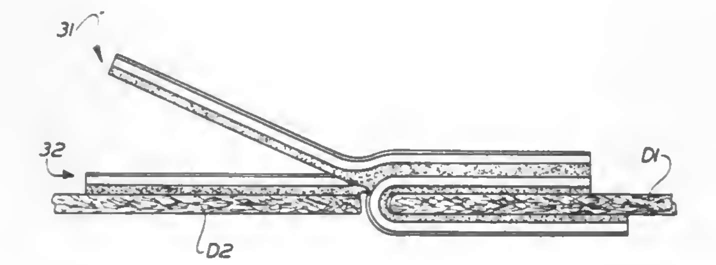
REFASTENABLE ADHESIVE CLOSURE FOR DISPOSABLE DIAPERS OR BRIEFS

Ezra D. Miller, Painesville, Ohio, assignor to Avery International Corporation, Pasadena, Calif.

Filed Jan. 26, 1981, Ser. No. 228,307

Int. Cl.^{3} A41B *13/02*

U.S. Cl. 604—390 **2 Claims**



1. A refastenable tab of Y-configuration for diapers and the like formed of diaper tab stock comprising a web construction made up of initially flat but flexible substrate material and suitable to be formed in long passes along the machine direction of a coating and laminating line and to be rolled up for storage and shipment, and unrolled for use by diaper manufacturers, and fabricatable for storage and shipment completely by web coating and web-to-web laminating operations and without the necessity for folding or machine direction slitting operations, and suitable for high speed dispensing or automatic equipment, said tab including a first substrate extending, transversely to machine direction, along first and second length portions and bearing first substrate adhesive on its underside at both said first and second length portions, a second substrate extending along said first and second length portions and bearing second substrate adhesive on its underside at both said first and second length portions, release means for said first substrate adhesive located on said second substrate and below the first substrate adhesive at said second length portion, said first length portion being substantially free of said release means whereby said first substrate remains permanently associated with said second substrate throughout said first length portion up unto the border thereof that is adjacent said second length portion, said tab having two lateral sides formed by spaced transverse cuts across the machine direction of said tab stock, said tab also having an intermediate cut within the tab body, said intermediate cut extending generally intermediate said two lateral sides, and generally parallel thereto, said intermediate cut extending at least through said second length portion of said first substrate to define two side-by-side half-tab parts of said second length portions of said first substrate, each of a width to grip independently in a Y-configuration grip and each having its own part of said release means with said intermediate cut dividing said release means from itself to enable independent sequential deployment of said half-tab parts to sequentially form a first Y-configuration joint and a second Y-configuration joint.

4,369,787

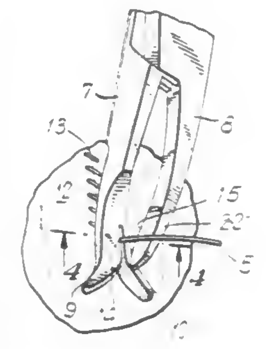
METHOD OF CUTTING A SUTURE

Jeffrey I. Lasner, Purchase, and Francisco H. Aleixo, Tarrytown, both of N.Y., assignors to Laschal Instruments Corp., North Tarrytown, N.Y.

Division of Ser. No. 945,809, Sep. 26, 1978, Pat. No. 4,271,838, which is a continuation-in-part of Ser. No. 893,582, Apr. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,388, Jan. 26, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,063

Int. Cl.^{3} A61B *17/32;* **A61F** *17/32*

U.S. Cl. 128—318 **2 Claims**



1. A method of cutting a suture at least partly disposed in tissue and bearing a knot formed in the suture, comprising the steps of:

introducing the suture into the slot of an elongated suture cutter having a slotted member of a predetermined depth and a cutting blade relatively moveable with respect to the slotted member and substantially perpendicular to the elongation of the suture cutter, said introduction of the suture into the slot being performed by moving the suture cutter longitudinally parallel to its elongation so that the suture is thereby introduced into the slot which extends along the direction of elongation of the suture cutter;

moving the suture cutter along the suture within the slot until the member contacts the knot; and

moving the cutting blade across the slot and substantially perpendicular to the elongation of the suture cutter so as to cut the suture and automatically leave on the suture and adjacent the knot a stub substantially equal in length to the depth of the slotted member.

4,369,788

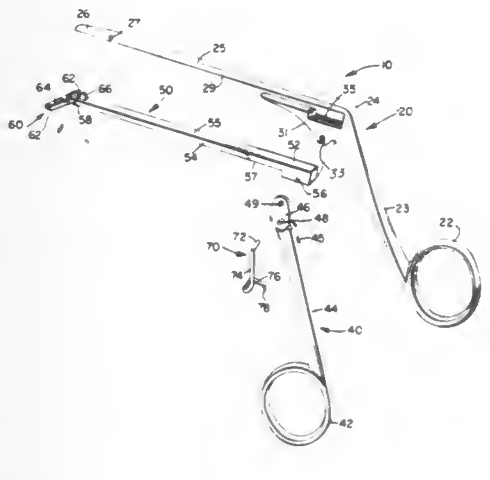
REVERSED FORCEPS FOR MICRODISC SURGERY

Harold J. Goald, 4600 King St., Suite 5L, Alexandria, Va. 22302

Continuation of Ser. No. 117,203, Jan. 31, 1980, abandoned. This application Jul. 2, 1981, Ser. No. 279,836

Int. Cl.^{3} A61B *17/28*

U.S. Cl. 128—321 **7 Claims**



1. A reversed grip microdisc forceps comprising:

a rigid member formed overall in the general shape of an obtuse angle with a shoulder portion at the angle, a handle and finger grip portion as one leg of the angle, hereinafter termed the rear leg and an arm portion as the forward leg of the angle said arm portion having a slide surface thereon on the side face thereof included within the obtuse angle and a fixed jaw at the forward end of said arm portion;

a handle and finger grip member positioned within the obtuse angle pivotally secured to the shoulder portion of said rigid member opposing the handle and finger grip rear leg;

a slidable arm positioned within the obtuse angle locked at the butt end thereof to said handle and finger grip member adjacent said aforementioned arm portion in an upper fixed arm, lower slidable arm relationship whereby pivoting said handle and finger grip member toward the handle and finger grip portion of said rigid member causes the slidable arm to move, said slidable arm having a first slide surface thereon along the top thereof matched to the aforementioned slide surface on the arm portion of said rigid member, said slidable arm having at least one second slide surface on the bottom thereof at the butt end thereof matched to the hereinafter defined slide surface on the shoulder portion of said rigid member;

said shoulder portion being bifurcated into upper and lower legs with the upper leg thereon being the arm portion of said rigid member, the lower leg thereon having thereon a slide surface matched to the said second slide surface on said slidable arm, the upper and lower legs on said shoulder portion providing therebetween above and below a slide slot into which the butt end of the slidable arm fits and wherein the slidable arm slides; and,

a pivotable jaw member hingedly attached to said slidable arm at the front end thereof opposite the fixed jaw within the obtuse angle therefrom, opening and closing to said fixed jaw as said slidable arm is caused to slide by pivoting movement of said handle and grip member.

4,369,789

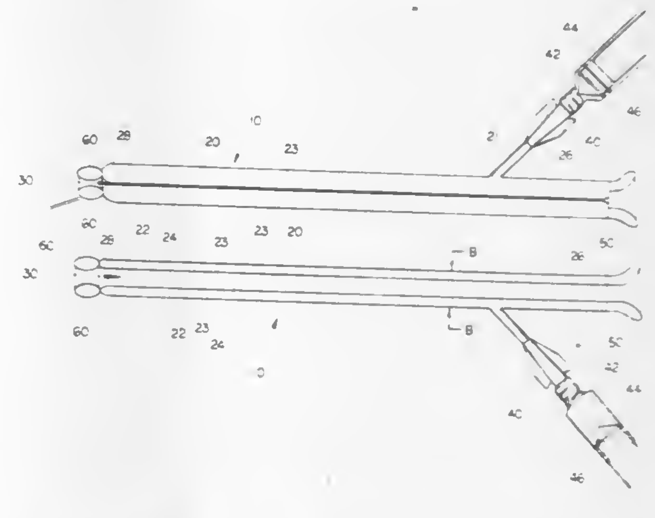
INFLATABLE GASTRIC FEEDING TUBE

Eric G. LeVeen, 3-3 Woodlake Rd., Albany, N.Y. 12203; Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147, and Jeannette L. Rubricius, 321 Confederate Cir., Charleston, S.C. 29407

Filed Dec. 10, 1980, Ser. No. 215,049

Int. Cl.^{3} A61M *25/00*

U.S. Cl. 604—96 **8 Claims**



1. An oral-nasal gastric tubing apparatus comprising a flexible, cylindrical double walled tubing being of sufficient length for insertion through the nasal cavity of a patient and into the stomach of said patient, said double walled tubing being formed by inner and outer flexible concentric cylindrical walls, said inner wall of said tubing being expandible, said outer wall of said tubing being substantially non-expandible, said walls defining an inflation space therebetween, said inner wall surrounding and defining a throughgoing lumen, said walls being

sealed together at proximal and distal ends of said tubing with said lumen being open at said proximal and distal ends; valve means connected to said outer wall adjacent said proximal end and providing means for communicating with said inflation space, said valve means being adapted to receive inflation means, said distal end of said tubing being provided with weighted means to ease insertion of the tubing into a patient, said proximal end being provided with a funnel-shaped feed member allowing materials to be easily deposited within said lumen.

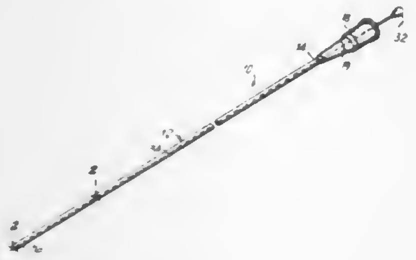
4,369,790
CATHETER

John M. McCarthy, 192 Main St., Port Washington, N.Y. 11050

Filed Mar. 5, 1981, Ser. No. 241,001

Int. Cl.^{3} A61M *25/00*

U.S. Cl. 604—280 **11 Claims**



1. A catheter comprising:
an elongated tubular member having a closed distal end and an open proximal end;
exactly two longitudinally extending slits in said tubular member adjacent the distal end thereof, one of said slits having a length greater than that of the other of said slits;
flexible means secured to the distal end and extending inside the tubular member towards the proximal end thereof for retracting said distal end with respect to said proximal end; and
actuator means secured to the free end of said flexible means for actuating said flexible means to retract said distal end with respect to said proximal end.

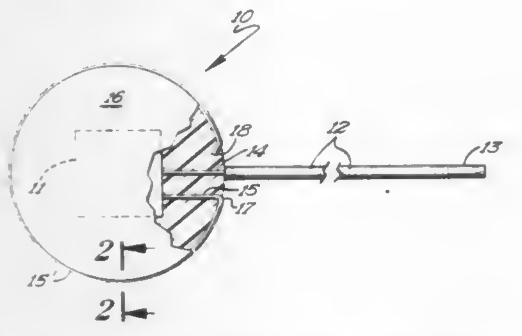
4,369,791
BODY IMPLANTABLE ELECTRODE

Harry G. Friedman, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 80,539, Oct. 1, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,865

Int. Cl.^{3} A61N *1/04*

U.S. Cl. 128—419 P **10 Claims**



1. A body implantable stimulator which comprises:
stimulation impulse developing means;
generally disc-shaped means of an electrically insulating material housing said impulse developing means;
impulse delivering means incuding active electrode means carried by a lead extending from said housing; and,
annular indifferent electrode means carried at the periphery of said housing means, said indifferent electrode means being partially imbedded in said insulating material and having an exposed electrode-forming surface that is regular and large in relation to said active electrode.

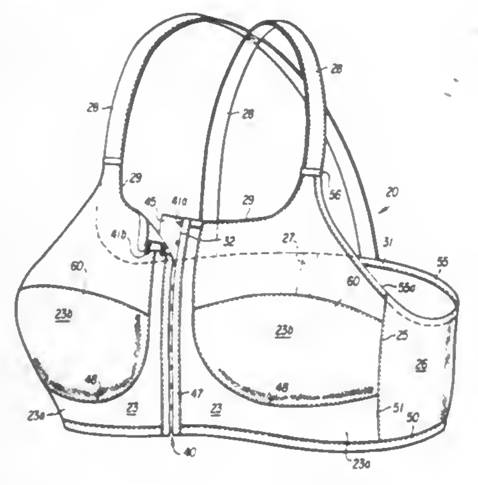
4,369,792
BRASSIERE FOR SUPPORTING PROSTHESIS

Margaret Y. Miller, 4603 Westridge Pl., Temple Hills, Md. 20031

Filed Nov. 10, 1981, Ser. No. 319,370

Int. Cl.^{3} A41C *3/10*

U.S. Cl. 128—479 **9 Claims**



1. A brassier for supporting a prosthesis on a woman after she has had breast surgery; the brassier comprising in combination:
a pair of front panels each having a bottom seam, a top seam and a free edge with a seam thereon forming the top and bottom seams wherein the top seam is spaced from the bottom seam by a distance sufficiently great for the front panel to overlie surgical scars high on the chest of the woman wearing the brassiere by extending substantially straight across the woman's chest substantially above the natural cleavage line;
back panel means, contiguous with the front panels, for connecting the front panels together and for extending under the arms and around the back of the woman wearing the brassiere; said back panel means being continuous and having a top and bottom seam, the top seam converging steeply toward the bottom seam whereby the back panel means is cut low with respect to the woman's arms to avoid any surgical incisions under the woman's arms;
cup means in each front panel for supporting either one of the woman's breasts or a prosthesis;
pocket means behind at least one of the cup means for containing a prosthesis, said pocket means being positioned substantially lower than the point at which the top seam joins the free edge of the front panel wherein the front panel is cut to fit with the top seam relatively high on the woman's chest relative to the pocket to cover any surgical scars on the woman's chest,
fastening means disposed adjacent to the free edges of the front panels for connecting the edges together whereby the brassiere fastens in the front, and
a flesh-toned, cotton cover for the prosthesis, the cover having a convex front surface and a pair of overlapping back flaps providing a closure through which the prosthesis is easily inserted and removed, the cover being used when wearing the prosthesis to prevent contact between the prosthesis and the woman's skin.

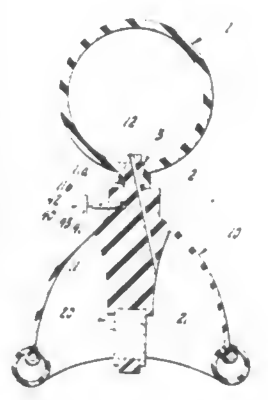
4,369,793
MEDICAL INSTRUMENTATION ELECTRODE APPARATUS

Peter J. Staver, 1624 Detroit St., Lincoln Park, Mich. 48146, and Clinton Meyering, 15721 Richmond Ave., Southgate, Mich. 48195

Filed Aug. 18, 1980, Ser. No. 179,480

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—643 **10 Claims**



1. A medical instrumentation electrode apparatus, comprising:
a substantially rigid and hollow vacuum bell having a lower open end;
said vacuum bell having a core portion extending downwardly within said vacuum bell toward the open end of said bell, said core portion and said bell constituting a single piece member;
first means for creating a partial vacuum in said vacuum bell;
said core portion having an upper end protruding from said bell for selective interconnection with said first means;
an air communication passage extending between said vacuum bell and said first means through said core portion, said passage extending from said upper protruding end of said core portion to a side surface of said core portion disposed within said bell and being in operative communication with said first means;
said passage being formed within said single piece member;
a contact member including an elongated holder member having an opening defined in the lower end thereof, said holder member being fabricated of substantially electrically-conductive material;
an electrically-conductive sponge member disposed at least partially within said opening of said holder member;
said core portion having an opening defined in the lower end thereof selectively slidably receiving and holding said holder member in a manner such that said sponge member is disposed proximal to a lower open end of said vacuum bell with said holder member being held in said core portion opening;
second means for selectively operably connecting said core portion to an external medical instrument such that said sponge member is electrically connected to said external medical instrument via said holder member and said core portion of said bell;
said core portion being electrically conductive;
a substantially hollow resilient ring member secured to and being co-extensive with the periphery of said lower open end of said vacuum bell; and
said ring member, when disposed in contact with an area of human skin, being substantially collapsible upon evacuation of said vacuum bell so as to bring said sponge member into contact with an area of skin.

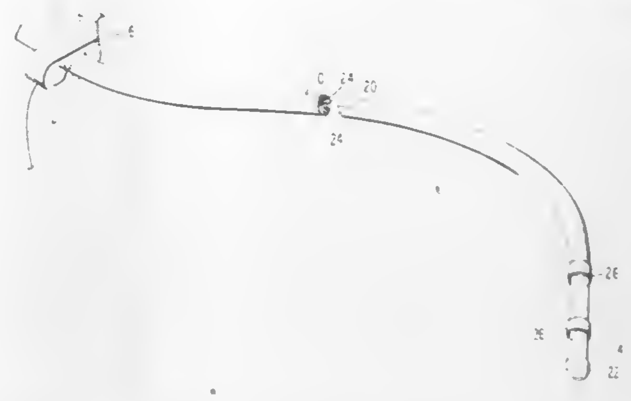
4,369,794
PROBE WITH ELECTROCARDIOGRAPHIC MONITORING

Alan G. Furler, Glens Falls, N.Y., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 30, 1980, Ser. No. 202,119

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—671 **10 Claims**



1. A disposable probe for monitoring internal conditions of a patient and a reusable connector for use with said probe, comprising:
(a) a tubular member having a central lumen and having a proximal portion and a distal portion, said distal portion being adapted to be inserted internally of the patient, and including means for electrically monitoring an internal condition of the patient;
(b) said tubular member including a plurality of circumferentially spaced conductive pathways in the wall thereof extending between said proximal portion and said monitoring means for conducting electrical signals;
(c) a connector mountable on said proximal portion in a position extending transversely of said tubular member;
(d) said connector including a plurality of spaced members each electrically engaging a corresponding one of said conductive pathways and including conductors connected to said members and extending externally of said connector for attachment to suitable monitoring apparatus for conveying said signals to the apparatus;
(e) said connector including relatively movable first and second sections positively holding said connector in clamping engagement with said tubular member and holding said engaging members in electrical contact with said conductive pathways;
(f) said connector including means for limiting clamping movement of said sections to prevent constriction of said lumen by said connector.

4,369,795
IMPLANTABLE MICROTHERMOCOUPLE MEMBER

James I. Bicher, 2623 Worchester, West Bloomfield, Mich. 48033, and Stanley Frinak, 13711 Victoria, Oak Park, Mich. 48237

Filed Jun. 17, 1980, Ser. No. 160,218

Int. Cl.^{3} A61B *10/00*

U.S. Cl. 128—736 **10 Claims**

1. A microthermocouple member which comprises two wires of dissimilar metals joined together into a thermocouple junction, said wires having diameters of no more than 75 microns; an elongated, thin support thread member; said wires and junction being carried by said elongated, thin support thread member, said member being thin enough to be capable of insertion into living tissue without serious disruption of the local circulation, or causing overheating of the tissue in a microwave field, said support thread member extending beyond said junction and wires to permit grasping of said extending support thread member in a forward-slanted slot of a front-

pointed stylet, and means permitting one end of the wires to be connected to recording instrumentation means, said thermocouple junction being carried at an intermediate position on said support thread member.

4,369,796

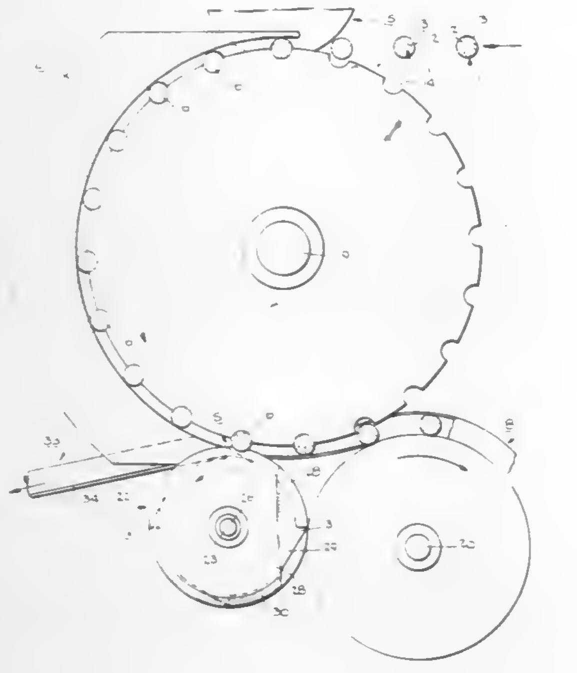
METHOD AND APPARATUS FOR FORMING AN AIR DILUTION FILTER

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 826,136, Aug. 19, 1977, Pat. No. 4,232,574. This application Mar. 14, 1980, Ser. No. 130,570

Int. Cl.^{3} A24C *5/00, 5/56, 5/60*

U.S. Cl. 131—95 4 Claims



1. In an apparatus for providing an aeration zone in a filter plug having a layer of impervious plug wrap paper circumferentially about a body of entrainment-type fibrous filter material, the combination comprising
   a rotatable filter plug alignment drum having a plurality of peripherally disposed grooves for sequentially receiving and aligning a plurality of filter plugs,
   a storage drum for sequentially receiving the filter plugs from said alignment drum, and
   means adjacent said drums for stripping a peripheral section of plug wrap paper to form at least one peripheral air pervious zone in each filter plug for permitting air to flow through said plug wrap paper directly into said filter body.

4,369,797

FEED MECHANISM FOR TOBACCO CUTTING MACHINES

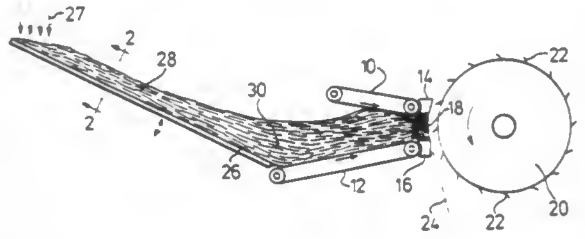
Warren A. Brackmann, Cooksville, and Stanislav M. Snaidr, Mississauga, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Filed Dec. 10, 1980, Ser. No. 215,006

Claims priority, application United Kingdom, Dec. 12, 1979, 7942887

Int. Cl.^{3} A24B *7/04, 7/14*

U.S. Cl. 131—109 AB 11 Claims



1. A method of supplying tobacco in threshed tobacco lamina or whole leaf form to a cutting station wherein the tobacco is forwarded horizontally and is comminuted at the rate at which it enters the station, which comprises:
   forming a relatively thin layer of tobacco on a conveying surface in which the tobacco is oriented substantially planarly of the layer and is substantially evenly distributed across the width thereof,
   subjecting said thin layer to vibration whereby the tobacco in said layer densifies without the use of any force other than gravity,
   conveying said thin layer towards said cutting station,
   interleaving said tobacco in said thin layer with longitudinally-adjacent tobacco without altering the orientation of the leaves in the said thin layer to form a relatively thick layer of interwoven compacted tobacco in which the tobacco is oriented planarly of the relatively-thick layer and containing the quantity of tobacco desired to be fed to said cutting station,
and
   feeding said relatively thick layer to said cutting station without substantially altering the orientation of the tobacco in said layer.

4,369,798

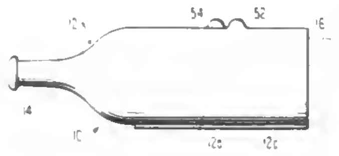
COMBINATION CIGARETTE HOLDER AND CIGARETTE SMOKE CATCHER

Allen C. Jackson, 230 Wroxeter Rd., Rugby Hall, Arnold, Md. 21012

Filed Aug. 4, 1981, Ser. No. 289,856

Int. Cl.^{3} A24D *3/00, 3/04*

U.S. Cl. 131—330 5 Claims



1. An improved cigarette holder for holding a cigarette or the like during smoking, said holder comprising:
   a holder body, a hollow mouthpiece for said body, a pair of airflow passages within said body in communication respectively at one end, to said hollow mouthpiece, said passages opening at their other ends to the exterior of said body remote from said mouthpiece, one of said passages adapted to closely hold the unlighted end of a cigarette whose lighted end projects outwardly of said body and the other of said passages bearing a smoke catcher filter and wherein said body includes first valve means for selectively allowing air flow through the cigarette in said one passage to the smoker via the mouthpiece during inhaling and second valve means in said second passage for selectively allowing flow outwardly of the body through said second passage bearing said smoke catcher filter during exhaling.

4,369,799

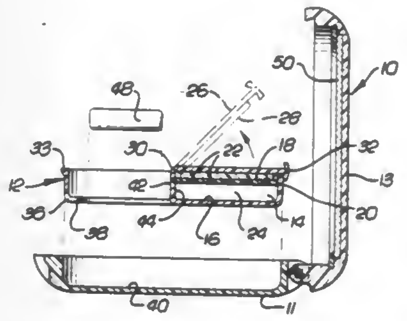
COSMETIC POWDER DISPENSING DEVICE

Jo Napoleon, 432 S. Curson Ave., #1-D, Los Angeles, Calif. 90036

Filed May 11, 1981, Ser. No. 262,308

Int. Cl.^{2} A45D *33/00*

U.S. Cl. 132—83 R 21 Claims



1. An iron oxide based makeup powder dispensing device comprising:
   chamber means for confining a fine pigmented powder in a generally thin areally volumetric region;
   cover means for preventing escape of the makeup powder from the chamber means, the cover means adjacent said chamber means in facing relationship thereto, and for sparingly allowing passage of the powder therethrough; and
   plate means for providing a makeup adhering surface and comprising a substantially nonporous makeup adhering surface, the plate means movable from a first position whereby the adhering surface is in facing relationship to the cover means for sparingly receiving the pigmented powder, the plate means movable remote from the first position to allow the makeup to be removed from the adhering surface and applied to a wearer.

4,369,800

COIN HANDLING APPARATUS HAVING A SIGNAL OPERATED BLOCKER

Kenkichi Watanabe; Katusuke Furuya, and Toyoki Kimoto, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

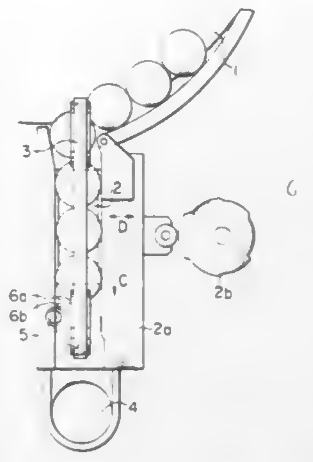
Filed Apr. 10, 1981, Ser. No. 252,783

Claims priority, application Japan, Apr. 15, 1980, 55-49442

Int. Cl.^{3} G07D *9/04*

U.S. Cl. 133—8 R 8 Claims

1. A coin handling apparatus including: selecting means for selecting a predetermined kind of coins from the remaining coins; a guide passage disposed adjacent to said selecting means for guiding the selected coins therethrough; conveyor means for conveying said selected coins on said guide passage; and handling means disposed downstream of said guide passage for handling the coins having been conveyed thereto,
   wherein the improvement comprises: blocking means disposed in said guide passage for normally opening said guide passage and for closing the same thereby to block the succeeding coins; passage control means for controlling the opening and closing operations of said blocking means; detecting means for detecting the coin, which is to pass therethrough in said guide passage, thereby to generate outputs; stop signal generating means for generating a stop signal to stop said coin; coin stop control means for generating a controlled stop signal in accordance with both the outputs of said detecting means and the stop signal of said stop signal generating means; and drive means for driving said passage control means in accordance with the controlled stop signal of said coin stop control means thereby to effect the closing operation of said blocking means, whereby said coin is prevented from jamming between said conveyor means and said blocking means when said blocking means is driven to stop supply of any more coins to said handling means.



4,369,801

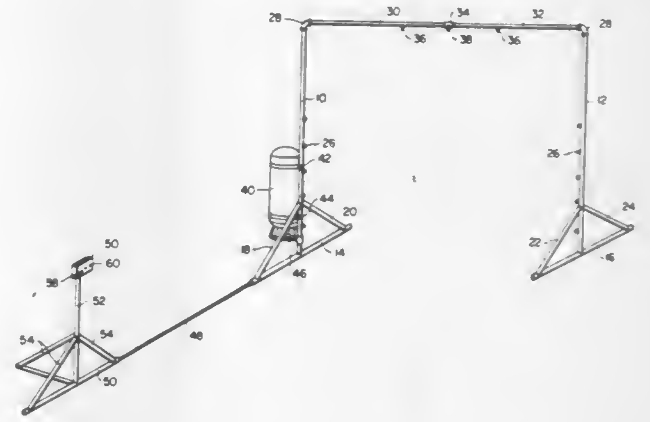
APPARATUS FOR WASHING AN ARTICLE

Jack D. Jones, Lima, Ohio, and Russell K. Glover, Tequesta, Fla., assignors to Aircraft Dynamics Corporation, Elida, Ohio

Filed May 18, 1981, Ser. No. 264,863

Int. Cl.^{3} B60S *3/04*

U.S. Cl. 134—58 R 7 Claims



1. Apparatus for washing an article comprising:
a framework through which the article can pass;
a plurality of spray nozzles mounted on said framework and directed so as to spray liquid on to the article passing therethrough;
a tank for holding liquid;
a conduit for supplying liquid from said tank to said nozzles;
valve means for controlling the flow of fluid along said conduit from said tank to said nozzles;
a timer for opening said valve means at the beginning of a predetermined interval, thereby allowing said liquid to pass from said tank to said nozzles, and for closing said valve means at the end of said predetermined interval;
means for acutating said timer, thereby beginning said interval; and
means for pressurizing said liquid in said tank and thereby ensuring that at least a predetermined amount of liquid flows from said tank to said nozzles during said interval.

4,369,802
WIRE GALVANIZER COOLER

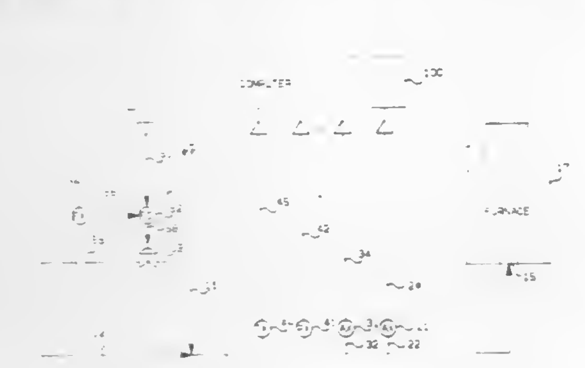
Clifford K. F. Chou, Antioch, and Paul McCarthy, Concord, both of Calif., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Jul. 8, 1981, Ser. No. 281,443
Int. Cl.³ B05C *3/04*
U.S. Cl. 134—122 R **1 Claim**

1. Apparatus for cooling continuous lengths of parallel, laterally spaced wires moving along substantially coplanar pass lines comprising:

(a) a substantially enclosed chamber defined by rectangularly disposed bottom and side walls and a removable top wall;
(b) a plurality of longitudinally spaced, resilient plates formed of rubber-like material extending alternately from said chamber top and bottom walls and disposed transversely of said side walls in overlapping relation to said wire pass lines;
(c) recesses in the edges of said plates for guiding said wires along said pass lines;
(d) the opposite ends of said chamber being defined by substantially vertically opposed baffle plates providing spaces at the interfaces thereof for the discharge of cooling liquid from said chamber; and
(e) cooling liquid supply means communicating with said chamber intermediate the ends thereof for supplying cooling liquid under pressure to, and substantially filling said chamber for immersing said wires.

4,369,803
CONTROL OF FUEL GAS BLENDING

Danny L. Furr, Broken Arrow, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 28, 1981, Ser. No. 229,037
Int. Cl.³ E03B *1/00;* **F17D** *1/00*
U.S. Cl. 137—6 **6 Claims**

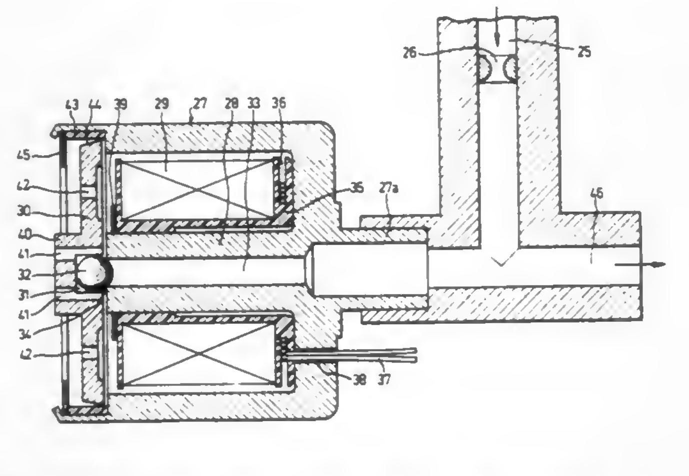


4. A method for controlling the mixing of a first fuel gas stream with a second fuel gas stream to form a mixed fuel gas stream, wherein said first fuel gas stream has a higher BTU content than said second fuel gas stream, said method comprising the steps of:

establishing a first signal representative of the actual BTU content of said mixed fuel gas stream;
establishing a second signal representative of the desired BTU content of said mixed fuel gas stream;
comparing said first signal and said second signal and establishing a third signal responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the flow rate of said first fuel gas stream required to maintain the actual BTU content of said mixed fuel gas stream substantially equal to the desired BTU content for said mixed fuel gas stream;
establishing a fourth signal representative of the actual dew point temperature for said mixed fuel gas stream;
establishing a fifth signal representative of the actual temperature of said mixed fuel gas stream;
establishing a sixth signal representative of a desired difference between said fourth signal and said fifth signal;
subtracting said sixth signal from said fifth signal to establish a seventh signal;
comparing said fourth signal and said seventh signal and establishing an eighth signal responsive to the difference between said fourth signal and said seventh signal, wherein said eighth signal is scaled so as to be representative of the flow rate of said first fuel gas stream required to maintain the desired difference between said fourth signal and said fifth signal;
establishing a ninth signal representative of the lower of said third and eighth signals; and
manipulating the flow rate of said first fuel gas stream in response to said ninth signal.

4,369,804
ELECTROHYDRAULIC TRANSLATION APPARATUS, IN PARTICULAR PERMITTING CONTROL OF A PRESSURE IN AN AUTOMATIC TRANSMISSION

Jean M. Bouvet, Boulogne-Billancourt, and Philippe Quemerais, Thurins, both of France, assignors to Regie Nationale Des Usines Renault, Boulogne-Billancourt, France
PCT No. PCT/FR80/00006, § 371 Date Sep. 18, 1980, § 102(e) Date Sep. 15, 1980, PCT Pub. No. WO80/01502, PCT Pub. Date Jul. 24, 1980
PCT Filed Jan. 17, 1980, Ser. No. 209,230
Claims priority, application France, Jan. 18, 1979, 79 01267
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **22 Claims**

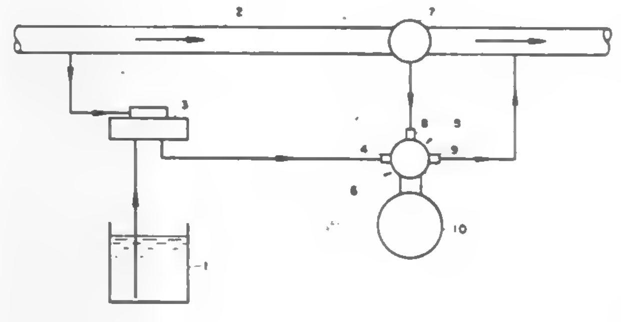


15. An electrohydraulic transducer, comprising,

a body of magnetic material having a core provided with a fluid passage extending therethrough to an outlet opening which is located at one end of the core,
an electromagnetic coil means mounted on said core,
a substantially flat movable magnetic element mounted at said one end of the core,
a nonmagnetic closure member mounted between said movable magnetic element and said outlet opening,
means for energizing said electomagnetic coil means with a unidirectional pulsed electric current which is operable to vibrate said movable magnetic element,
said movable magnetic element, when vibrated, biasing the closure member to counteract the hydraulic force of fluid from the fluid passage, and controlling the pressure within said fluid passage by controlling the rate of fluid flow through the outlet opening.

4,369,805
LIQUID METERING INJECTOR ASSEMBLY

Chanany Tavor, Kibbutz Amiad, Israel, assignor to Amiad Mutzarei Yiul, Korazim, Israel
Continuation of Ser. No. 67,232, Aug. 16, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 225,033
Claims priority, application Israel, Nov. 15, 1978, 55953
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—101.31 **11 Claims**

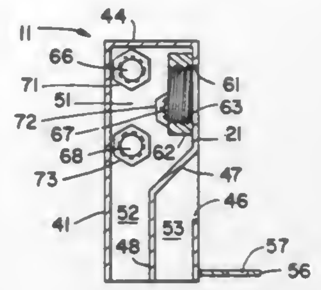


8. A liquid metering injector assembly for injecting selectively variable metered quantities of a fertilizing liquid into metered quantities of water comprising:

a metering cylinder,
a metering piston displaceable in said metering cylinder,
first and second metering ports each formed on opposite sides of said metering cylinder,
means for varying the stroke length of said metering piston to thereby vary the metered amounts displaced by said metering piston,
a hydraulically operated valve unit having a valve inlet,
means for coupling said valve inlet means to a pressurized source of said fertilizer liquid,
a hydraulic pressure pulse source operated to provide hydraulic pressure pulses as a function of the passage of a fixed amount of water to thereby meter fixed amounts of flowing water, said hydraulic pressure pulses acting upon said valve to actuate said valve unit,
a valve outlet on said valve unit for coupling said valve to a pipe carrying said flowing water,
first and second valve communication ports on said valve unit respectively communicating with said first and second metering ports,
said valve unit comprising a displaceable spool valve,
said spool valve being displaced by said hydraulic pressure pulses between a first position wherein said inlet is in communication with said first metering port and said outlet is in communication with said second metering port and a second position wherein the inlet is in communication with the second metering port and the outlet is in communication with the first metering port,
means for displacing said spool valve between said first and second positions responsive to the receipt of said hydraulic pressure pulses, and
means for maintaining said spool valve in the last displaced position until the receipt of a further one of said hydraulic pressure pulses whereby said valve has two stable outlet positions, one connecting the inlet to the first communication port and the outlet to the second communication port and a second stable position wherein said inlet is connected to the second communication port and the outlet is connected to the first communication port for successively filling the cylinder on one side of said piston with fertilizer while forcing the fertilizer on the other side of said piston into said pipe carrying the water, responsive to the pressure pulses.

4,369,806
VACUUM BREAKER AND MIXING CHAMBER

Tore H. Noren, 3200 Lakeville Hwy., Petaluma, Calif. 94952
Filed Mar. 17, 1981, Ser. No. 244,603
Int. Cl.³ F16K *24/00*
U.S. Cl. 137—216 **4 Claims**

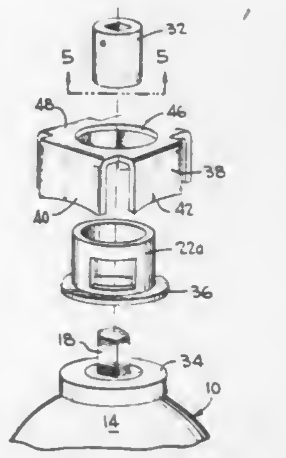


1. A combined mixing chamber and a vacuum breaker comprising

a housing having an open bottom with a water inlet in a front face thereof and at least one opening for insertion of a chemical in a wall thereof,
an inclined floor in said housing extending inwardly and downwardly from the front face of said housing beneath said openings to a substantially vertical wall dividing said housing laterally thereacross above the open bottom, and
said front face of said housing having an aperture therethrough beneath said floor to define an air passage between front and bottom of said housing.

4,369,807
PROTECTIVE FIRE HYDRANT GUARD

John P. Camp, 8717 Hopewell Dr., El Paso, Tex. 79925
Filed Aug. 1, 1980, Ser. No. 174,401
Int. Cl.³ F16K *35/06;* **E03B** *9/06, 9/14*
U.S. Cl. 137—296 **2 Claims**

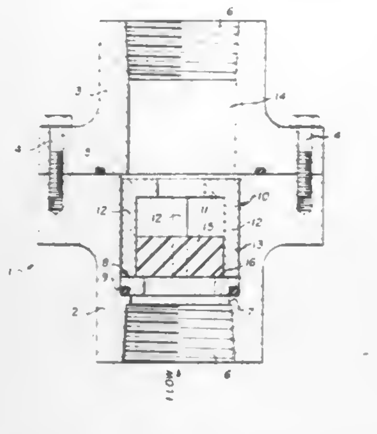


1. In combination with a fire hydrant having a stand pipe on which a bonnet is mounted and having a valve operating stem extending rotatably through the bonnet and terminating in a nut end above the bonnet, a protective arrangement for the nut end comprising a collar arrangement fixedly welded on the bonnet and surrounding the nut end and extending well above the nut end so that an ordinary wrench cannot engage the nut end with said collar arrangement having openings so that debris cannot collect around the nut end and a weather guard surrounding the nut end above the bonnet and said collar arrangement includes a flanged adapter welded to the bonnet around the weather guard, said collar being disposed within the adapter and extending upwardly therefrom and having an annular flange cooperating with the flange on the adapter whereby axial withdrawal of the collar is prevented while permitting free rotation of the collar without activating the hydrant.

4,369,808

DISC-TYPE CHECK VALVE

Emanuel F. Hagman, Box 594, Drayton Valley, Alberta, Canada
Filed Jan. 22, 1981, Ser. No. 227,365
Int. Cl.^{3} F16K *15/02*
U.S. Cl. 137—515.5 **1 Claim**

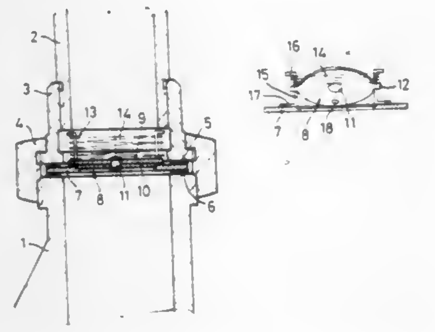


1. A check valve comprising:
a valve body having separate inlet and outlet segments forming a longitudinal bore extending therethrough, said segments being bolted together and having O-ring seal means sealing their contacting surfaces;
a discrete removable annular seat member positioned in the bore and supported by the inlet segment and providing a flat annular upper surface for functioning as a valve seat;
O-ring seal means, positioned between the seat member and inlet segment, for preventing leakage between them;
a resilient plastic disc adapted to seat on the seat member to stop flow through the bore; and
removable guide means, positioned in the bore on the seat member and containing the disc, for guiding the disc when it moves off the valve seat and enabling flow to move past said disc when it is unseated, said guide means consisting of an end wall and depending spaced legs which stand on the seat member, said end wall forming at least one central aperture and peripheral flow passages, whereby liquid may flow between the legs and through said aperture and flow passages when the disc is unseated.

4,369,809

BACK-PRESSURE VALVE FOR HEATING INSTALLATIONS

Karl Euerle, Bruckstrasse 73, D-7463 Rosenfeld 5, Fed. Rep. of Germany
Division of Ser. No. 36,904, May 7, 1979, Pat. No. 4,273,155. This application Mar. 11, 1981, Ser. No. 242,768
Claims priority, application Fed. Rep. of Germany, May 9, 1978, 7813921[U]
Int. Cl.^{3} F16K *15/02*
U.S. Cl. 137—543.19 **4 Claims**

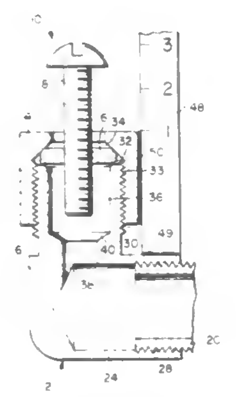


1. An improved back-pressure valve assembly for insertion in connectable joints of pipe lines, comprising an annular support element having a central aperture, and a seat area surrounding said central aperture, diametrically opposed pairs of guide members affixed to said annular support element and including outer support ends, a pair of juxtaposed upper and lower disc members arranged to cooperate with said central aperture, to close and open said central aperture at least one of said disc members arranged to register in said seat area to close said central aperture and wherein at least one of said disc members includes oppositely extending ears positioned relative to said guide members to glide between said pairs of guide members, a spring means which encircles said guide members between said outer support ends on said pairs of guide members and said ears on said at least one disc member, said spring means applying a force on said ears on said at least one disc member to force said at least one disc member in a normally closed position.

4,369,810

RADIATOR VENT VALVE

Lewis A. Eckenrode, 284 Philadelphia Ave., Chambersburg, Pa. 17201
Filed Oct. 10, 1980, Ser. No. 196,126
Int. Cl.^{3} F16K *37/00*
U.S. Cl. 137—556 **5 Claims**

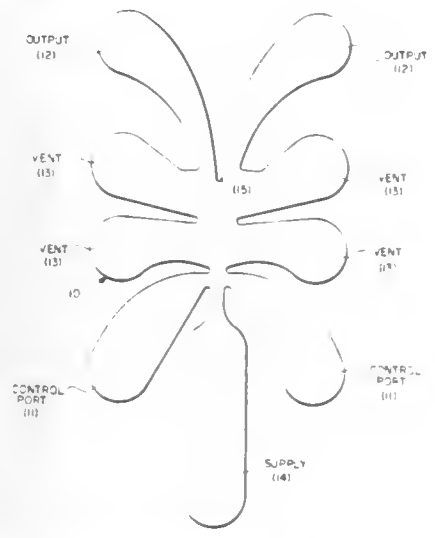


1. A vent valve for use with a radiator comprising:
a conduit adapted to be placed in fluid communication with a radiator, said conduit having a first portion, a second portion extending transversely therefrom and a hollow interior extending through said portions of said conduit;
said hollow interior of said second portion of said conduit having a wide section of a first diameter, a narrow section of a second diameter less than said first diameter, and a tapered section disposed between said wide and narrow sections and having a diameter tapering between said first and second diameters, said narrow section being disposed below said wide section;
said second portion having a threaded exterior and an upper edge;
a cap having a threaded interior surface mating with the threaded exterior of said second portion and an upper interior surface with a hole formed therethrough, said cap being threaded down into said second portion;
a nut supported on said upper edge within and beneath said cap and secured thereto by contact with said upper interior surface of said cap;
a bolt having a head facing outward and a body extending inward through said hole, threaded into said nut and extending into the hollow interior of said second portion of said conduit said bolt having a length sufficient for its body to reach into said narrow section when said bolt is screwed downwardly through said nut; and
at least one opening formed through said nut to provide a vent passage from said hollow interior of said conduit.

4,369,811

NULL BALANCING FOR FLUIDIC SENSORS AND AMPLIFIERS

Francis M. Manion, Rockville, and Charles E. Paras, Suitland, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 20, 1978, Ser. No. 953,292
Int. Cl.^{3} F15C *1/14*
U.S. Cl. 137—819 **5 Claims**



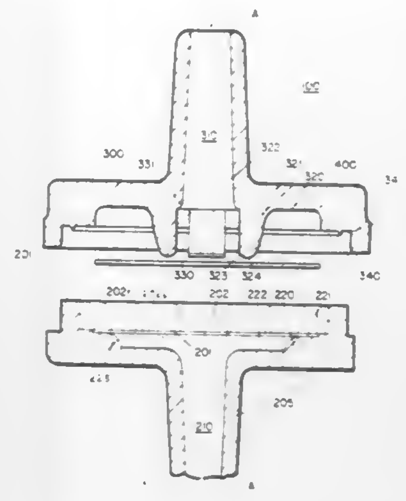
1. A fluidic transducer comprising:
an input end and an output end disposed on an axis extending through said transducer;
at least two output signal channels at said output end symetrically disposed on opposite sides of said axis;
a first input signal control channel means disposed on one side of said axis;
a second input signal control channel means disposed on an opposite side of said axis;
source means for directing a jet stream of fluid substantially along said axis from said input end of said transducer to said output end thereof, said jet stream being offset by a predetermined distance from said axis at said output end when no input signals are applied to said control channels;
first regulating means for supplying fluid at a selected flow rate to said control channel means to substantially reduce the amount of offset of said jet stream from said axis; and
second regulating means for individually supplying fluid at selected flow rates to each one of said input signal control channel means to substantially remove the amount of offset not removed by said first means.

4,369,812

CONTROL OF FLUID FLOW USING PRECISELY POSITIONED DISC

Joseph R. Paradis, Holden, and Edward W. Kaleskas, Jefferson, both of Mass., assignors to Nypro Inc., Clinton, Mass.
Filed Feb. 18, 1981, Ser. No. 235,668
Int. Cl.^{3} F16K *15/14*
U.S. Cl. 137—843 **12 Claims**

1. A flow control device comprising
a housing;
a flow channel in said housing extending to a control channel which is coaxial therewith;
a valve seat in said control channel surrounding a further flow channel extending from said control channel; and
a flexible disc positioned on said valve seat of said control channel,
said control channel having an inside wall surface extending from said valve seat and interrupted by a plurality of peripheral relief channels; and
means for prebiasing said flexible disc comprising a set of prongs for engaging the central portion of said disc within the opening of said valve seat and being separated by passageways which extend to said flow channel;
the diameter of the interrupted inside wall surface being less than the diameter of said disc;

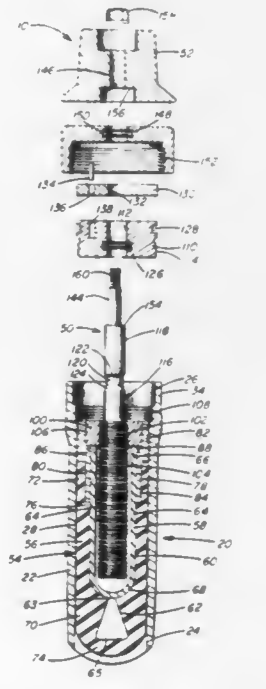


thereby to assure precise positioning of said disc on said valve seat.

4,369,813

PIPE STOPPER METHOD AND APPARATUS

John H. Thomas, Pittsburgh, Pa., assignor to Kerotest Manufacturing Corp., Pittsburgh, Pa.
Filed Jan. 26, 1981, Ser. No. 228,579
Int. Cl.^{3} F16L *55/10, 55/12*
U.S. Cl. 138—94 **20 Claims**



1. Pipe stopper apparatus comprising,
a fitting having a tubular body portion adapted to be secured to a pipeline in surrounding relation with a cut-out portion of the pipeline, said tubular body portion having a longitudinal passageway and a lower open end portion,
a plug assembly positioned in said passageway,
said plug assembly including an expandable portion and an insert portion,
said expandable portion including a body portion surrounding a chamber formed in said expandable portion,
said chamber including an enlarged portion and a reduced portion with a constricted opening connecting said enlarged portion and said reduced portion,
said insert portion being normally retained in said chamber enlarged portion for movement through said constricted opening, said constricted opening being shaped to provide resistance to movement of said insert portion therethrough so that said body portion expands upon move-

ment of said insert portion from said chamber enlarged portion into said constricted opening and said chamber reduced portion,

a plug assembly guide positioned in said passageway between said expandable portion and said insert portion for longitudinal movement in said passageway,

guide means for guiding said plug assembly guide for longitudinal, nonrotational movement in said passageway,

a stem positioned for rotation in said passageway,

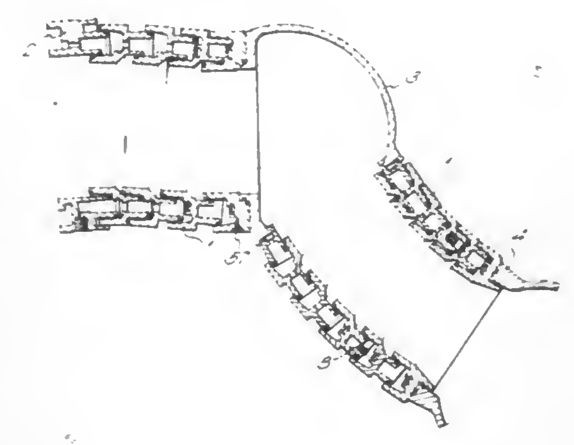
said plug assembly guide being connected to said stem for longitudinal movement relative to said stem,

operator means for rotating said stem to nonrotatably, longitudinally move said plug assembly guide in said passageway relative to said expandable portion,

said plug assembly guide being movable in said passageway to a first position to advance said plug assembly through said lower open end portion and the cut-out portion to a position in the pipeline for expansion of said expandable portion,

and

said plug assembly guide being operable upon continued rotation of said operator means to move from said first position to a second position in said passageway to force said insert portion into said constricted opening and said chamber reduced portion and exert an outward force upon said expandable portion body portion to expand said body portion into sealing arrangement with the interior of the pipeline to block flow in the pipeline.



4,369,814

FLEXIBLE TUBULAR JOINT

Kenneth M. Humphrey, Fleet, England, assignor to Underwater and Marine Equipment Limited, Farnborough, England

Filed Jan. 28, 1981, Ser. No. 229,071

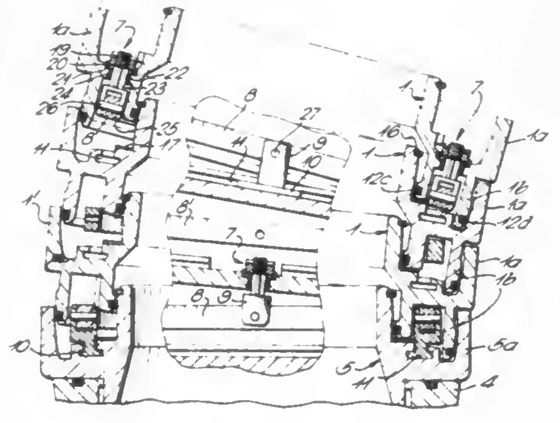
Claims priority, application United Kingdom, Nov. 27, 1980, 8038023

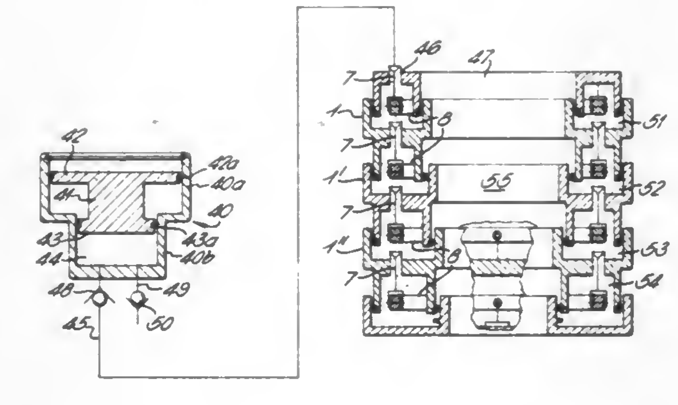
Int. Cl.³ F16L *11/18*

U.S. Cl. 138—120 **28 Claims**

1. In a joint of the type comprising a plurality of annular connecting members, one of said members having an annular piston portion, an adjacent one of said members having an annular cylinder portion, said annular piston portion being coupled to said annular cylinder portion whereby adjacent one of said connecting members are connected in series, said annular piston portion and said annular cylinder portion of said adjacent connecting members defining a chamber, substantially incompressible fluid in said chamber, and at least one valve in each of said connecting members forming means for providing communication of said fluid between adjacent chambers; the improvement wherein a gimbal mounting is provided for each valve in a respective one of said connecting members, said gimbal mounting being slidably anchored in an adjacent one of said connecting members.

27. A flexible tubular joint comprising annular end members, a plurality of annular connecting members, said annular connecting members being connected in series with one another and said series connection being connected to said annular end members, each of said connecting members having an annular piston portion and an annular cylinder portion, said annular piston portion of a preceding one of said annular connecting members being coupled to said annular cylinder portion of an adjacent one of said annular connecting members whereby said annular connecting members are connected in series, each of said cylinder portions having first inner and outer annular walls, inside surfaces of said first inner and outer annular walls being spherically curved, said first inner and outer annular walls also terminating in respective circular rims, each of said piston portions having corresponding second inner and outer annular walls, said second inner and outer annular walls terminating in respective circular rims, said second inner and outer annular walls also being provided with means for making slidable and sealing contact with said inside surfaces of said first inner and outer annular walls of said cylinder portion, said circular rims of said first inner and outer annular walls of said cylinder portion being axially stepped or staggered with respect to one another, said circular rims of said second inner and outer annular walls of said piston portion also being axially stepped or staggered with respect to one another, said axial stepping or staggering of said circular rims of said first inner and outer annular walls being opposite to said axial stepping or staggering of said circular rims of said second inner and outer annular walls whereby assembly of said connecting members in series is facilitated with regard to the spherical curvature of said inside surfaces of said first inner and outer walls of said cylinder portion and with regard to the required tolerances of said sliding and sealing contact.





4,369,815

DEVICE FOR COUPLING A HEDDLE FRAME TO VERTICALLY RECIPROCATING DRIVE BARS

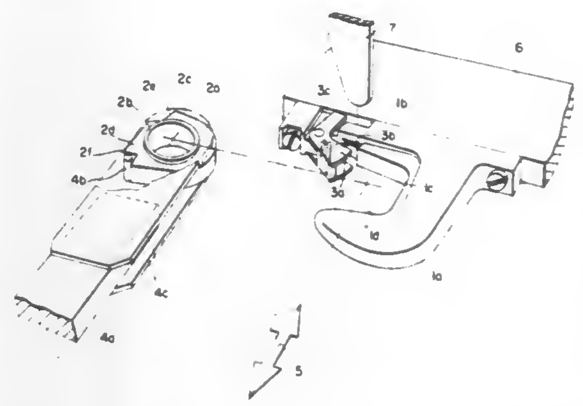
Fritz Gehring, Lindau-Bodolz; Florian Windischbauer, Haslach, and Horst Häussler, Lindau, all of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 179,165

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933699

Int. Cl.³ D03C *13/00, 9/06*

U.S. Cl. 139—57 **3 Claims**



1. In a suspension device for the heddle frame motion at heddle frames with a first coupling part designed as a hook with a mouth tapering in a wedge-like manner, and with a second rotatably supported coupling part designed as a mating piece with corresponding wedge-surfaces and spanned by the mouth of the hook,

the improvement comprising a pivotal, spring-loaded locking pawl adapted to be overridden by a wedge-like surface of the rotatable mating piece mounting to the hook-shaped coupling part, and a curved recess provided as a latching means for the locking pawl at the widened end of the wedge-like surface of the mating piece, different positions being assumed in the locked position by the center of rotation of the locking pawl and the center of curvature of the recess, whereby when pivoting the locking pawl, bracing takes place between the locking pawl and the mating piece.

4,369,816

FANCY, HIGH-STRENGTH FABRIC

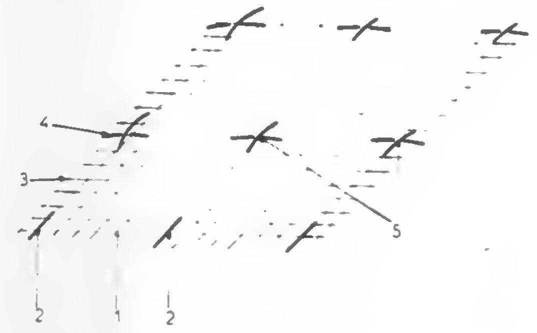
Pierre Payen, 53, rue Chaziere, 69004 Lyon, France

Filed Sep. 30, 1981, Ser. No. 307,097

Claims priority, application France, Oct. 2, 1980, 80 21384

Int. Cl.³ D03D *15/00*

U.S. Cl. 139—426 R **6 Claims**



1. In a fancy woven fabric, applicable in particular as a coating substrate, of the kind comprising in warp and in weft an alternation of threads of different nature, effects being obtained at the crossing point of at least one warp thread with at least one filling thread, the improvement consisting in that:

(a) wrap type warp and filling threads form the effects, said wrap threads being of the same nature and each comprising a core and a covering thread and having a stable circular cross section, and said effect forming threads are kept apart from one another by warp threads and filling threads of a different nature from the effect forming threads, which threads of a different nature form the fabric ground; and

(b) the effects are obtained by floats in warp and filling on the front face of the fabric and are raised.

4,369,817

WEFT PICKING DEVICE OF AIR JET TYPE WEAVING LOOM

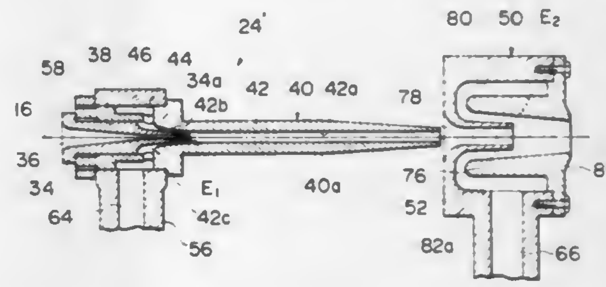
Yukio Mizuno, Kodaira, Japan, assignor to Nissan Motor Company Limited, Japan

Filed Dec. 27, 1978, Ser. No. 973,586

Claims priority, application Japan, Jan. 6, 1978, 53-263

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **9 Claims**



1. A weft picking device for an air jet type weaving loom, comprising a weft inserting nozzle for inserting a weft yarn through the shed of warp yarns,

said weft inserting nozzle including,

a weft introduction pipe member disposed in said nozzle and having an opening through which the weft yarn is introduced into said nozzle, the opening of said pipe member being coaxial with said nozzle;

means defining a first air passage through which high pressure air is ejected along the axis of said nozzle to pull the weft yarn toward the shed of the warp yarns, the first air passage defining means including a first pipe member whose axis is aligned with the axis of said weft introduction pipe member, said first pipe member having an elongate opening which communicates with a high pressure air source to eject the high pressure air therethrough, the tip portion of said introduction pipe member being located in the elongate opening of said first pipe member;

means defining a second air passage through which low pressure air is ejected along the axis of said nozzle to carry the weft yarn through the shed of the warp yarns in cooperation with the high pressure air, the low pressure air being lower in pressure than the high pressure air, at least a part of said second air passage being disposed circumferentially around a length of said first air passage; and

means for setting the low pressure air ejected through said second air passage larger in amount than the high pressure air ejected through said first air passage.

4,369,818

WEFT YARN FEEDER

Tadahiro Yoshida, Fujisawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 15, 1980, Ser. No. 197,227

Claims priority, application Japan, Oct. 16, 1979, 54-143113[U]

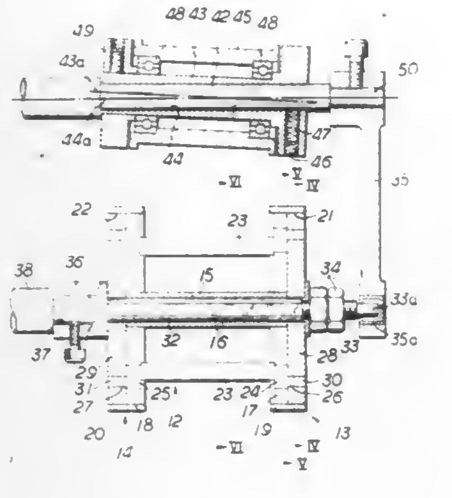
Int. Cl.³ D03D *47/36*

U.S. Cl. 139—452 **3 Claims**

1. A yarn feeder comprising:

(a) a support;

(b) a fixed shaft supported at only one end thereof by said support;
(c) a sleeve angularly adjustably mounted in a selected fixed position on said fixed shaft, said sleeve having a longitudinal bore through which said fixed shaft extends, the axis of said longitudinal bore being inclined to the axis of said sleeve;

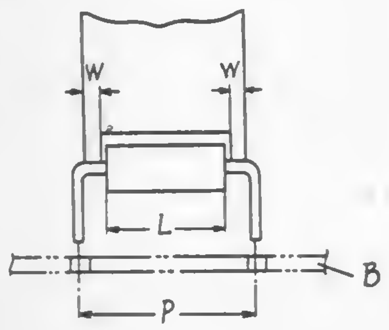


(d) a roller rotatably mounted on said sleeve concentrically thereof;
(e) a rotatable shaft disposed parallel to said fixed shaft;
(f) a spool mounted on said rotatable shaft for rotation therewith; and
(g) a bracket connecting said fixed shaft and said rotatable shaft at their free ends.

4,369,819

LEAD WIRE FORMING APPARATUS FOR ELECTRIC PARTS

Hiromi Kinoshita; Yoshinobu Maeda, both of Katano, and Tadashi Tanno, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
PCT No. PCT/JP79/00314, § 371 Date Aug. 18, 1980, § 102(e) Date Aug. 18, 1980, PCT Pub. No. WO80/01330, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 12, 1979, Ser. No. 202,443
Claims priority, application Japan, Dec. 20, 1978, 53-159758
Int. Cl.^{3} B21F *1/00*
U.S. Cl. 140—105 1 Claim



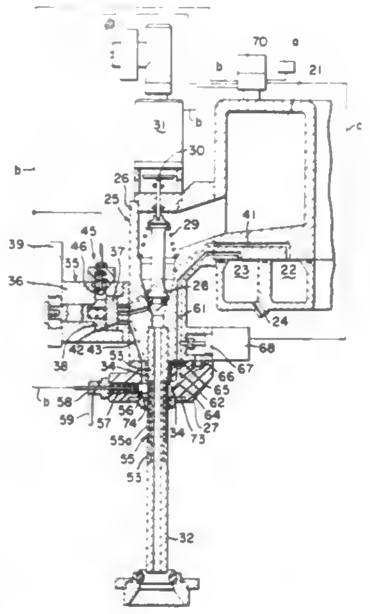
1. A lead wire forming apparatus for electric parts having a body member and coaxial lead wires extending from opposite ends of the body member, the apparatus being for bending each lead wire in the same direction perpendicularly to the axis of the body member, said apparatus comprising:

a pair of spaced opposed holding members for holding said body member by relative movement toward the body member in directions perpendicular to the lead wires, and a pair of spaced parallel forming guides each having a guiding groove in the edge thereof opposed to the other forming guide and having a size for receiving a corresponding lead wire therein, said forming guides being spaced from each other a distance only slightly larger than the length of the body member of the electric part, said forming guides and holding members being relatively movable in the direction of the parallel forming guides for causing the lead wires to be engaged in the guiding grooves for bending the lead wires on both ends of the body member in the same direction at points immediately adjacent the ends of the body member, one of said holding members being movable between a first position in which it is engaged by the body member of an electric part to block movement of the body member during bending of the lead wires and a second position transversely of the forming guides in which it is out of engagement with the body member for freeing the body member for movement, a first spring biasing said one holding member toward said first position, said pair of spaced parallel forming guides being movable toward said first position from a location on the opposite side of the body member from said one of said holding members, the space between said forming guides being open on the end moving toward the holding members and the other of said holding members being movable toward said first position from said location on the opposite side of said body member, a piston movable toward said first position from said location on the opposite side of said body member, and a second spring between said piston and said other holding member which is compressed for transmitting the force of said piston to said other holding member, whereby when said one of said holding members is moved to said second position after a bending operation, said spring urges the electric part with the bent lead wires along and out from between said forming guides.

4,369,820

FILLING ELEMENT FOR COUNTERPRESSURE FILLING MACHINES

Egon Ahlers, Neu-Bamberg, and Alfred Rentel, Bad Kreuznach, both of Fed. Rep. of Germany, assignors to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany
Filed Mar. 4, 1981, Ser. No. 240,262
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008386
Int. Cl.^{3} B65B *31/00, 3/26*
U.S. Cl. 141—39 12 Claims



1. A filling element, for single- and multi-chamber counterpressure filling machines, for introducing liquid into a container, said filling element comprising:

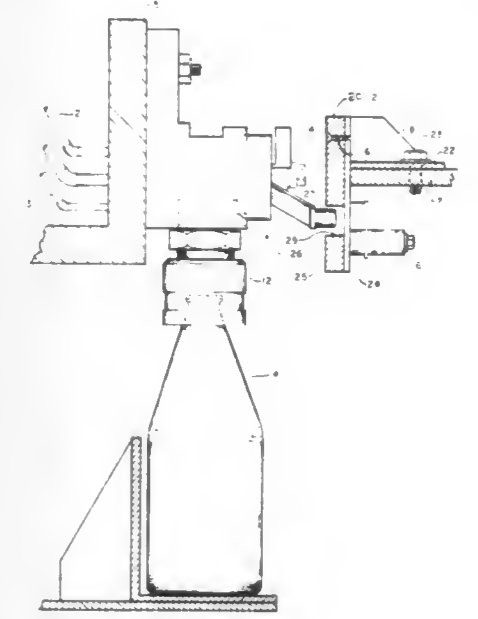
a filling element body having a container-sealing region at a first end thereof;
a filling tube held in said filling element body for introducing liquid into a container pressed into engagement at said container-sealing region, said filling tube extending

through said container-sealing region into said filling element body, and being surrounded by an annular pressurized gas chamber provided in said filling element body and having an annular gap-like outlet arranged in the region of said container-sealing region, and a cross section which is substantially greater toward the interior thereof than is that of said annular gap-like outlet, said annular pressurized gas chamber being delimited laterally by essentially cylindrical surfaces;
a pressurized gas system, including a pressurized gas valve arrangement controlled by devices installed on said filling machine, and conduits, for introducing and discharging pressurized gas, which open into said pressurized gas chamber, said conduits including at least one pressurized gas outlet conduit opening into the lower end region of said pressurized gas chamber, and at least one pressurized gas inlet conduit which opens into said pressurized gas chamber no lower than the plane of the opening of said at least one pressurized gas outlet conduit, said at least one pressurized gas inlet conduit opening essentially tangentially relative to said cylindrical delimiting surfaces;
a liquid flow valve arranged in said filling element body and operatively associated with said filling tube, said liquid flow valve being controlled at least for closing; and
a control element associated with said filling tube and responding at a predetermined filling level of said liquid in the container for terminating inflow of said liquid thereto.

4,369,821

CAM ACTUATED FILLER VALVE

Robert C. Carter, Denver, Colo., assignor to Adolph Coors Company, Golden, Colo.
Filed Mar. 30, 1981, Ser. No. 248,726
Int. Cl.^{3} B65B *3/04;* B67C *3/28*
U.S. Cl. 141—147 5 Claims



1. A rotary filling machine comprising:
a rotatable circular frame,
at least one rotary valve having at least one inlet and at least one outlet mounted on the outer periphery of said frame;
valve actuation members mounted on said rotary valve including rotatable means for rotating said valve actuation member comprising:
a cam follower projecting radially outwardly from said rotary valve which when moved a predetermined amount during the rotation of said rotatable circular frame is capable of actuating said valve;
means for supplying and venting fluids, including gases, which communicate with said valve mounted on said frame;
means for conveying containers to be filled into registry with the outlet of at least one of said valves, while said frame is rotating;
means for support adjacent to the perimeter of said circular frame; and
means for camming supported on said support means said camming means including a smooth curved surface defined as:

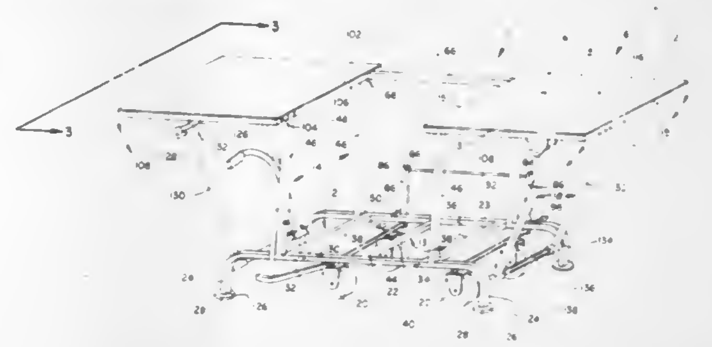
$$y = H\left(\frac{x}{L} - \frac{1}{2}\pi\,\frac{\text{Sin } 360^\circ\, x}{L}\right)$$

where H is the total change in vertical height of the smooth curve; L is the length of the smooth curve, x is the horizontal distance along the length of the curve from a preselected reference and the resultant y is a vertical distance on the curve from the same reference, whereby, when said cam follower is positioned to engage said stationary camming means during the rotation of said rotatable circular frame at least one function of said valve is actuated in a predetermined sequence depending on the position and location of said camming member.

4,369,822

COMBINATION TOOL CHEST DOLLY AND LEAVED WORKBENCH

Robert C. Rice, 6137 Lincoln Hwy., E., Fort Wayne, Ind. 46802
Filed Nov. 17, 1980, Ser. No. 207,395
Int. Cl.^{3} B25H *1/00*
U.S. Cl. 144—286 R 21 Claims

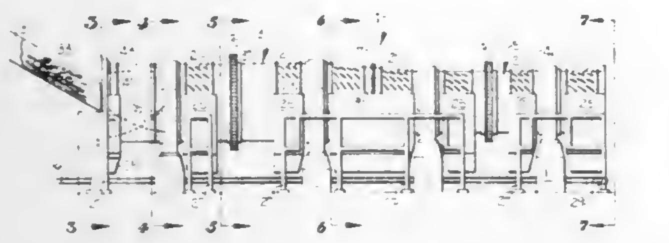


1. A combination tool chest dolly and leaved workbench comprising
a frame having generally parallel and spaced apart first and second side members joined by a plurality of cross members, and
a plurality of support legs generally perpendicularly depending from said side members,
a plurality of casters movably mounted to said frame,
said casters being movable between a first position thereof wherein said frame is supported by said legs and a second position thereof wherein said frame is supported by said casters,
a plurality of generally vertically disposed, generally parallel and spaced apart stanchions having upper and lower ends, said stanchions being secured to said frame adjacent to said first and second side members at said lower ends thereof,
at least one work surface leaf swingably mounted between said upper ends of a pair of said stanchions,
said leaf being movable between a first position thereof wherein said leaf lies in a generally vertical plane and to a second position thereof wherein said leaf lies in a generally horizontal plane,
at least one leaf prop having a frame end and a leaf end, said frame end thereof pivotally mounted to said frame, said prop being movable between a first position thereof wherein said leaf end adjoins said pair of stanchions and a

second position thereof wherein said leaf end braces said leaf in said second position thereof.

4,369,823
BARKING DRUM AND METHOD

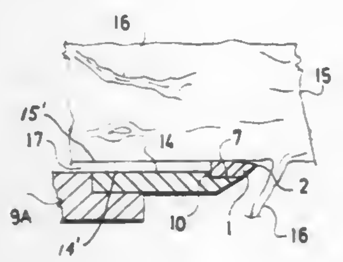
Sten-Ake Gustafsson, Edsvalla, Sweden, assignor to Aktiebolaget Karkstads Mekaniska Werkstad, Karlstad, Sweden
Filed Mar. 11, 1981, Ser. No. 242,672
Claims priority, application Sweden, Mar. 17, 1980, 8002052
Int. Cl.^{3} B27L *1/00*
U.S. Cl. **144—340** **10 Claims**



1. A barking drum particularly adapted for the removal of limbs and bark from wood, such as trimmings or trees removed in thinning, said barking drum comprising a rotatable drum which is open at opposite ends, said drum including a pretreatment section, a first plurality of log lifters carried by the interior of the pretreatment section and adapted for engaging the wood received in the pretreatment section, a tapering transition section arranged for receiving the wood from said pretreatment section, a plurality of log lifters of lesser number than in said pretreatment section carried by the interior of said transition section, a final treatment section arranged for receiving the wood from said transition section and a plurality of log lifters greater in number than in said transition section carried by the interior of said final treatment section.

4,369,824
CUTTING TOOL FOR TREE DELIMBING DEVICE

Mirko Dressler, Krtiny; Vojtech Formanek, Jedovnice; Vaclav Michl, Krtiny, and Miroslav Stejskal, Adamov-Josefov, all of Czechoslovakia, assignors to Vyzkumny ustav lesniho hospodarstvi a myslivosti, Jiloviste-Strnady, Czechoslovakia
Filed Sep. 22, 1980, Ser. No. 189,342
Claims priority, application Czechoslovakia, Sep. 24, 1979, 6430-79
Int. Cl.^{3} B27L *1/00*
U.S. Cl. **144—343** **5 Claims**

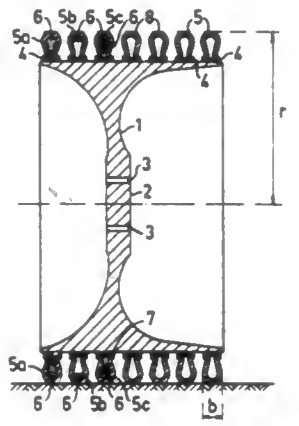


1. A cutting tool for a tree delimbing device, having means for moving the treetrunk to be delimbed in a transport direction comprising in combination,

a frame;
a knife holder operatively mounted on said frame;
a knife bed secured to said knife holder and having a back surface and a shoulder;
a knife mounted in said shoulder of said knife bed and having a back surface, a back cutting edge surface, and a front cutting edge surface, said back and front cutting edge surfaces forming a cutting edge therebetween in said transport direction, said back surface of said knife forming a negative angle with the back cutting edge surface, the back surface of said knife being disposed above the back surface of said knife bed.

4,369,825
MULTIPLE WHEEL TIRE WITH REDUCED NOISE

Nils-Ake Nilsson, Erikslundsvägen 348, Täby, Sweden (S-183 44)
PCT No. PCT/SE79/00150, § 371 Date Mar. 7, 1980, § 102(e) Date Mar. 7, 1980, PCT Pub. No. WO80/00235, PCT Pub. Date Feb. 21, 1980
PCT Filed Jul. 10, 1979, Ser. No. 190,765
Claims priority, application Sweden, Jul. 10, 1978, 7807693
Int. Cl.^{3} B60E *5/00, 7/00*
U.S. Cl. **152—157** **6 Claims**



1. A vehicle wheel having low rolling noise comprising:

a rim located about an axis of said wheel;
a plurality of tires mounted on said rim, each of said tires having an inner cavity and being axially separated from each other;
each of said tires having an outer-diameter/sectional-width ratio (2r/b) of greater than 8 wherein 2r is the outer diameter of said tire and b is the cross-sectional width in the axial direction of each individual tire; and,
each of said cavities being filled with a filler material having a hardness of less than 35° Shore A (DIN 53 505).

6. A method of reducing rolling noise on a vehicle including the steps of:

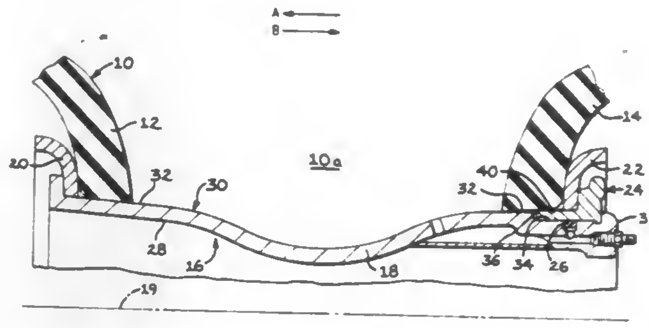
providing said vehicle with wheels each having a plurality of tires mounted on a wheel rim member thereon and each tire having a cavity therein;
structuring each of said tires so that the outer-diameter/sectional-width ratio (2r/b) is greater than 8 wherein 2r is the outer diameter of each said tire and b is the cross-sectional width thereof in the axial direction; and
filling each of said cavities with a filler material having a hardness of less than 35° Shore A (DIN 53 505).

4,369,826
MULTI-PIECE WHEEL STRUCTURE

Vergil P. Hendrickson, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US81/00091, § 371 Date Jan. 23, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. WO82/02518, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 23, 1981, Ser. No. 275,083
Int. Cl.^{3} B60B *25/08, 25/18*
U.S. Cl. **152—410** **5 Claims**

1. A wheel structure (**16**) for a tire (**10**) comprising:

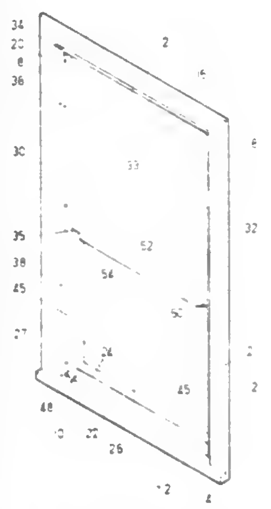
an annular rim base (**18**) disposed about a longitudinal axis (**19**) and having an inner periphery (**28**) and an outer periphery (**30**), said outer periphery (**30**) including a tire mounting surface (**32**) and a locking surface (**34**), said locking surface (**34**) bounding a locking indentation (**36**) and being disposed radially nearer said longitudinal axis (**19**) than said mounting surface (**32**), said rim base (**18**) having an annular groove (**53**) which intersects said locking surface (**34**);
an annular restraining flange (**22**) disposed about said rim base (**18**);
a locking ring (**24**) which is receivable in said locking indentation (**36**) and is engageable with said locking surface (**34**) and said restraining flange (**22**) to prevent axial movement of said restraining flange (**22**) in a first direction (B);



means (**44,46**) for providing fluid communication between the atmosphere and a tire's interior (**10*a***) when a tire (**10**) is mounted on said tire mounting surface (**32**);
means (**52**) for fluidly connecting said groove (**53**) and said fluid communication means (**44,46**); and
means (**26**) for obstructing fluid communication through said groove (**53**) when said locking ring (**24**) is in engagement with said locking surface (**34**).

4,369,827
WINDOW SHADE SEALING SYSTEM

Alan A. Anderson, 6701 Seybold Rd., Madison, Wis. 53719
Filed Apr. 17, 1981, Ser. No. 255,165
Int. Cl.^{3} E06B *7/16*
U.S. Cl. **160—41** **23 Claims**

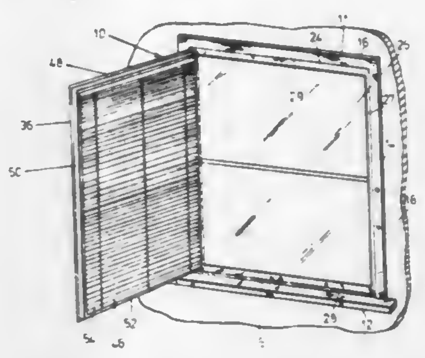


1. A window covering sealing structure adapted to seal a rollable window covering having a flexible covering member with side edges to a window frame which includes inwardly facing opposite side mounting surfaces, comprising:

(a) a pair of strips each having two faces and a longitudinal axis and formed of flexible, resilient sheet material sufficiently flexible that each strip can be folded back on itself into a folded configuration having a longitudinally extending fold portion such that parts of a face are substantially opposed to other parts of the face and the face is concealed from view;
(b) means for holding together opposed portions of the concealed face to retain each strip in the folded configuration with a resilient, longitudinally extending fold portion; and
(c) means for fastening the strips to the opposite side mounting surfaces at points on each strip remote from the fold portion with the fold portion of each strip adjacent to the mounting surface being deformed to partly conform to that surface so that the side edges of the covering will extend between the folded strips and the mounting surface and be held therebetween with a selected amount of force.

4,369,828
SUPPLEMENTAL WINDOW AND BLIND UNIT

Michael J. Tatro, Wausau, Wis., assignor to Wausau Metals Corporation, Wausau, Wis.
Filed May 26, 1981, Ser. No. 266,815
Int. Cl.^{3} A47H *1/00;* **E06B** *3/32*
U.S. Cl. **160—107** **12 Claims**



1. A supplemental insulating window and blind unit (**10**) adapted to be installed in a previously installed conventional window unit (**13, 15**) having a conventional fixed frame (**11**) with surfaces defining a window opening (**24**), and an original sash (**27**) and original window pane (**26**) closing the window opening (**24**), the supplemental window and blind unit (**10**) comprising:

(a) a supplemental peripheral frame (**28**) for closing the window opening (**24**) independent from the original sash (**27**), the supplemental window frame (**28**) having surfaces defining a framed supplemental window opening (**29**);
(b) means for fixedly and continuously attaching the supplemental peripheral frame (**28**) in air-tight sealing relation to surfaces of the conventional fixed frame (**11**) extending around the periphery of the window opening (**24**) and interiorly spaced from the original window pane (**26**);
(c) a sash (**36**) attached to the supplemental frame (**28**) in hinged relation and having open and closed positions;
(d) a supplemental window pane (**34**) mounted in the sash (**36**) whereby the sash (**36**) and supplemental window pane (**34**) close the framed supplemental window opening (**29**) when the sash (**36**) is in its closed position to create an insulating air space between the original window pane (**26**) and the supplemental window pane (**34**); and
(e) a window blind (**46**) attached to a selected part of one of the sash (**36**) and the supplemental peripheral frame (**28**) so that the window blind (**46**) will be supported between the supplemental window pane (**34**) and the original window pane (**26**) when the sash (**36**) is in its closed position.

4,369,829
WINDOW UNIT FOR STORM WINDOWS

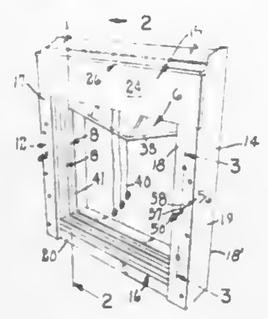
John J. Casiday, 501 Third St., White Bear Lake, Minn. 55110
Filed Jun. 23, 1980, Ser. No. 161,860
Int. Cl.^{3} E06B *9/08*
U.S. Cl. **160—120** **15 Claims**

1. A window unit for providing storm windows for use in conjunction with a transparent window panel having a predetermined area, wherein the unit comprises:

(a) a window casing;
(b) a plurality of substantially rectangular sealing frames carried in the window casing and superimposed on top of one another, wherein each of the sealing frames comprises spaced top and bottom frame members joined together by spaced left and right side frame members to define an open interior bounded by the frame members, wherein the

frame members are sufficiently spaced apart such that the open interior is at least approximately the same size as the area of the window panel, wherein the sealing frames are configured so that the corresponding frame members thereof are disposed in a mating face-to-face relationship, and wherein at least one of the sealing frames is movable in the window casing from a first position in which the sealing frames are spaced apart by a gap to a second position in which the sealing frames are pressed together;

(c) an air impervious plastic sheet carried in the window casing, wherein the plastic sheet is movable from an operative position in which the plastic sheet opposes and is substantially parallel to the window panel such that the plastic sheet defines the storm window and an inoperative position in which the plastic sheet is removed from its operative position, wherein the plastic sheet in its operative position is interposed into the gap between the sealing frames when the sealing frames are in their first position with the plastic sheet being sufficiently large to cover the open interior of the sealing frames, whereby the sealing frames in their second position will seal the plastic sheet against air passage around the plastic sheet by the engagement of the corresponding frame members on the sealing frames with one another with the plastic sheet being trapped therebetween, wherein the plastic sheet is flexible and is carried on a spring roller located in the window casing, wherein the operative position of the plastic sheet is a position in which the sheet is unrolled from the spring roller and placed in the opposed relationship to the window panel, and wherein the inoperative position of the plastic sheet is a position in which the sheet is wound up on the spring roller, and wherein a lower edge of the plastic sheet is V-shaped to more easily pass between the sealing frames when the sealing frames are in their first position; and



(d) resilient sealing means attached to each of said sealing frames and extending continuously about said top, bottom, left, and right frame members of said frames to engage said plastic sheet when said sheet is in its operative position and when said at least one of the sealing frames is in its second position;

(e) wherein the window ca

4,369,830
SEALING JOINTS IN MOULDS

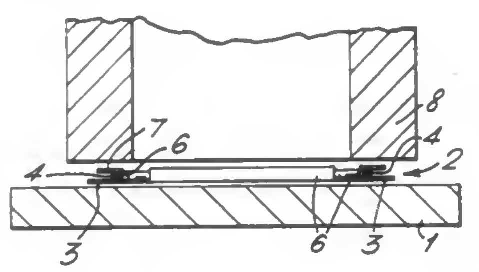
Marcel Generali, Chilly-Mazarin, France, assignor to Foseco International Limited, Birmingham, England

Filed Feb. 11, 1981, Ser. No. 233,375

Int. Cl.^{3} B22D *7/08*

U.S. Cl. 164—137 **5 Claims**

1. A method of sealing a joint between component parts of a metal mould for metal casting, utilizing an elongated sealing element which comprises a deformable sealant within a deformable tubular container, and a compressible sheet material cover, comprising the steps of: applying, in the area where the seal is desired between the parts of the metal mould, the elongated sealing element; and disposing the compressible sheet material cover so that it separates the sealing element from each of the surfaces to be sealed together.



4,369,831
PROTECTOR FOR MOLTEN METAL CASTING STREAM

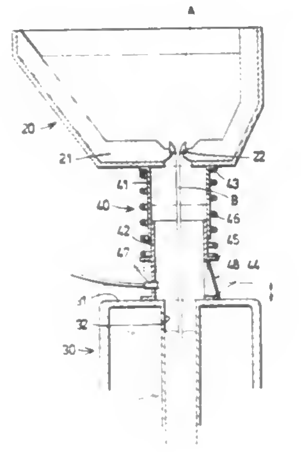
Kyozo Hayashi, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 804,170, Jun. 6, 1977, abandoned. This application Nov. 30, 1979, Ser. No. 99,029

Claims priority, application Japan, Jun. 10, 1976, 51-76274

Int. Cl.^{3} B22D *11/10*

U.S. Cl. 164—415 **2 Claims**



1. In an apparatus for continuously casting a metal strand, said apparatus including a tundish having a bottom wall with a fixedly positioned and immovable gate therein, a vertically vibrating casting mold positioned beneath said tundish, said mold having an upper wall and a mold hole extending through said upper wall into said mold, and a protective device positioned between said gate of said tundish and said mold hole for protecting a flow of molten metal therebetween, the improvement wherein said protective device is a pipe assembly comprising:

a hollow first pipe having first and second ends, said first end having therearound a first flange, said first pipe being positioned with said first flange surrounding said gate of said tundish and being in direct contact with but unattached to said bottom wall of said tundish;

a hollow second pipe having first and second ends, said first end of said second pipe being telescopically fitted into said second end of said first pipe, said second end of said second pipe having therearound a second flange, said second pipe being positioned with said second flange surrounding said mold hole and being in direct contact with but unattached to said upper wall of said mold;

urging means, contacting said first flange and a portion of said second pipe, for urging said first and second pipes telescopically away from each other and for forcing said first and second flanges into direct contact with said bottom wall of said tundish and said upper wall of said mold, respectively, and for thereby forming an air-tight seal between said pipe assembly and said tundish and said mold, and for removably and unattachably holding said pipe assembly between said tundish and said mold;

said entire pipe assembly being free of connection or attachment of any type to either said tundish or said mold; and

said second pipe having an inner cross-sectional area, throughout the entire length thereof, substantially equal to the cross-sectional area of said mold hole.

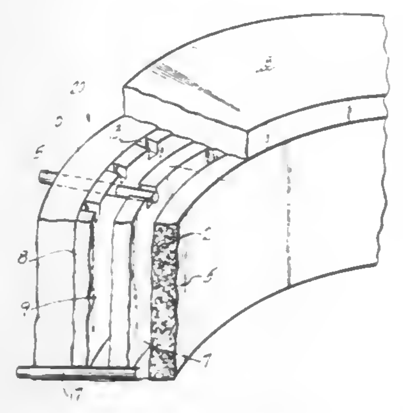
4,369,832
CONTINUOUS LUBRICATION CASTING MOLDS

Michael J. Pryor, Woodbridge, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 84,768, Oct. 15, 1979. This application Apr. 1, 1981, Ser. No. 249,761

Int. Cl.^{3} B22D *11/07*

U.S. Cl. 164—472 **7 Claims**



1. A process for continuously casting molten metals or alloys comprising:

providing a continuous lubrication casting mold, said casting mold including a permeable casting mold section defining an inner casting surface, an outer lubricant receiving surface extending over substantially the entire length of said casting mold section, a molten metal or alloy inlet end, and an outlet end, said casting mold section comprising a porous body having a continuous open pore fraction associated therewith for establishing a set of passages for a lubricant, said open pore fraction varying along the length of said casting mold so that said open pore fraction is greater at said inlet end than at said outlet end;

passing said molten metal or alloy through said casting mold section; and

supplying said lubricant to said outer surface so that said lubricant passes through said first passages in said variable open pore fraction porous body and transfers onto said inner surface in a non-uniform manner along substantially the entire length thereof.

4,369,833
TUBE SUPPORTS

Stephen F. Pasternak, Park Ridge, Ill., assignor to Peerless of America, Inc., Chicago, Ill.

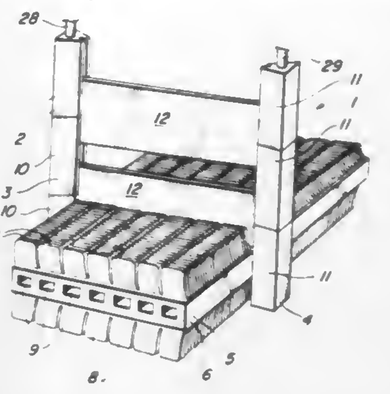
Filed Dec. 31, 1979, Ser. No. 108,813

Int. Cl.^{2} F28F *9/00*

U.S. Cl. 165—67 **.10 Claims**

1. A support for supporting a plurality of elongated tubes, having fins projecting from the upper and lower faces thereof, in parallel stacked relation to each other, said support comprising

- a. a plurality of supporting members
- b. each of said supporting members comprising
  - (1) two oppositely disposed side members, and
  - (2) an elongated crossbar extending longitudinally between said side members,
- c. said supporting members being disposed in stacked relation to each other with said side members on respective sides of said supporting members resting one on top of the other in aligned relation to each other in position to support said crossbars in spaced uniplanar relation to each other, in position to receive respective ones of such tubes on the upper edge portions of respective ones of said crossbars, and
- d. means for holding said supporting members in said stacked relation to each other.



4,369,834
PROCESS FOR RECUPERATION OF HEAT FROM A GASEOUS CURRENT

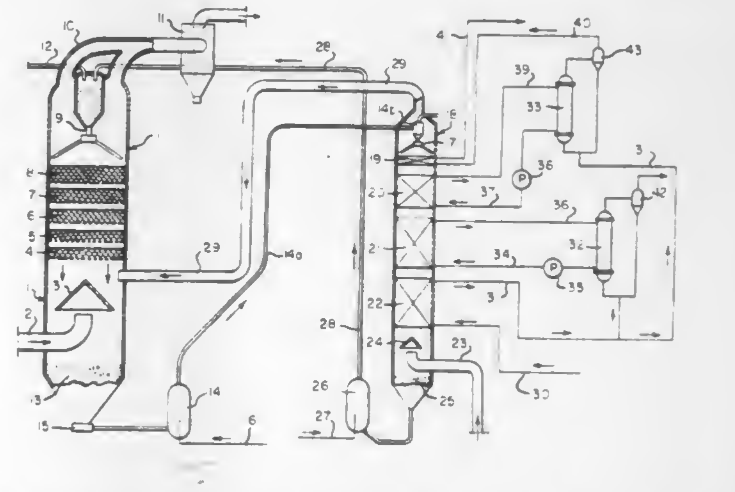
Georges Meunier, Boulogne, and Jean-Francois Martin, La Celle Saint-Cloud, both of France, assignors to Tunzini-Nessi Enterprises d'Equipements, Paris, France

Filed Mar. 26, 1980, Ser. No. 133,989

Claims priority, application France, Mar. 27, 1979, 79 07605

Int. Cl.^{3} F28D *19/02*

U.S. Cl. 165—104.16 **12 Claims**

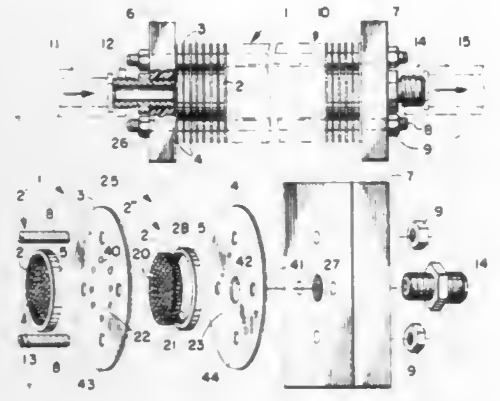


1. Process for recovering heat from a first hot gas current comprising the steps of introducing said first hot gas current into a first column having at least one stage made up of a stack of packing elements placed on a support grill, introducing cold separated solid particles into the top of said first column and allowing the particles to fall by gravity through said first column counter to said first gas current whereby the particles are heated, distributing the heated separated particles into the top of a second column and allowing the particles to fall by gravity through said second column, introducing a second gas current cooler than said heated particles into said second column counter to the direction of fall of said particles through said second column whereby said second gas current recovers heat from said particles, and introducing a heat carrying fluid which circulates in pipes in said second column and over which said second gas current flows whereby heat is transferred from said second gas current to said fluid.

4,369,835
THERMAL ENERGY TRANSFER APPARATUS AND METHOD

Paul R. Goudy, Jr., 2415 Stratford Ct., Shorewood, Wis. 53211, assignor to Bruce J. Landis, Sunrise, Fla.; Kenneth J. Landis, University Heights, Ohio and Paul R. Goudy, Jr., Shorewood, Wis., a part interest

Filed May 8, 1980, Ser. No. 148,002
Int. Cl.^{3} F28D *7/10*
U.S. Cl. 165—154 35 Claims

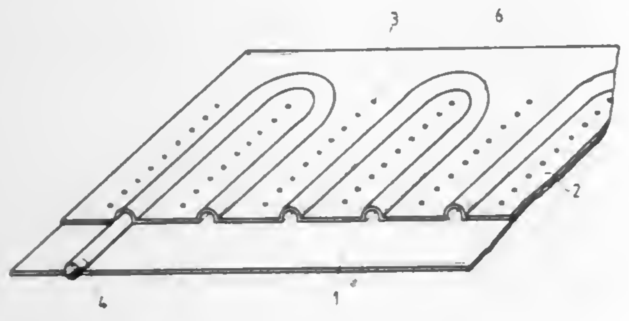


1. A thermal energy transfer apparatus, comprising fluid flow means for conducting the flow of fluid therethrough, including dispersing means for dispersing the fluid flowing through said fluid flow means, and thermal energy transfer means for transferring thermal energy with respect to said dispersing means for transfer between the latter and such fluid flowing therethrough, said dispersing means comprising a mesh-like material having substantial thermal energy conductive properties, said thermal energy transfer means comprising plural plate-like means having first surface area portions engaged with said dispersing means for thermal energy conduction therewith, said fluid flow means including openings in said plate-like means through which fluid may flow, and further comprising holder means for holding said dispersing means and thermal energy transfer means to provide a fluid-tight flow path therethrough, and said fluid flow means further comprising a fluid inlet and a fluid outlet for said fluid-tight flow path.

4,369,836
HEAT EXCHANGE ASSEMBLY

Ingo Bleckmann, Ignaz-Rieder-Kai 11, A-5020 Salzburg, Austria

Filed May 14, 1980, Ser. No. 149,691
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919848
Int. Cl.^{3} F28F *1/32*
U.S. Cl. 165—171 20 Claims

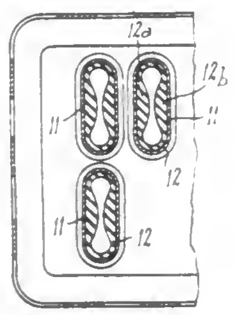


1. A heat exchange assembly comprising a metal carrier member, a pipe means carried by the metal carrier member for carrying a heat exchange medium, and metallic means for securing the pipe means to the carrier member, wherein at least one of the carrier member and the securing means has openings therethrough, the edge portion of each said opening being of a jagged configuration and projecting from the adjacent surface of the surrounding material, the edge portion of each said opening being pressed into the other of said carrier member and the securing means of the assembly and the material of said other of said carrier member and the securing means engaging into the openings thereby to form an anchoring means substantially of rivet head-like configuration.

4,369,837
TUBE FOR TUBE-PLATE HEAT EXCHANGERS

Jean-Pierre Moranne, Saint-Leu-La-Foret, France, assignor to Societe Anonyme des Usines Chausson, Hauts de Seine, France

Filed Feb. 4, 1981, Ser. No. 231,176
Claims priority, application France, Feb. 8, 1980, 80 02825
Int. Cl.^{3} F28F *9/06*
U.S. Cl. 165—175 6 Claims

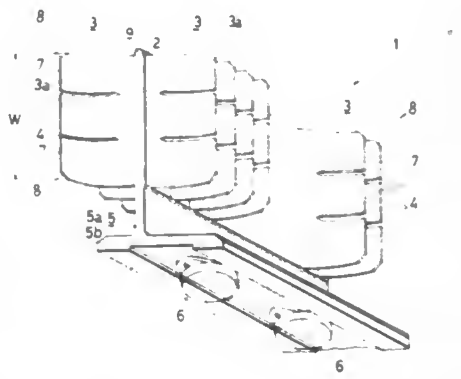


1. A tube for tube-plate heat exchanger, said tube having two ends with a cross section of an oblong shape having substantially flat larger sides and rounded smaller sides, the two ends being shaped so that the larger sides are formed with concavities making that in cross section, said two ends have a figure 8 shape over a portion of height corresponding at least to height of insertion of the tube in a tube plate, wherein each tube is inserted into a deformable gasket having, along larger sides of the tube, convergent overthicknesses, said gasket being maintained into a tube passage or a flange of an oblong shape.

4,369,838
DEVICE FOR RELEASING HEAT

Yoshihiko Asanuma, and Yoshihumi Shimajiri, both of Tochigi, Japan, assignors to Aluminum Kabushiki Kaisha Showa, Osaka, Japan

Filed May 27, 1980, Ser. No. 153,582
Int. Cl.^{3} F28F *7/00;* H01L *23/36*
U.S. Cl. 165—185 3 Claims

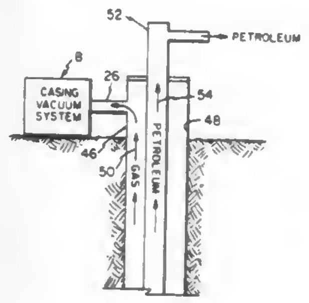


1. A heat releasing device comprising a radiating base plate integrally formed with: a multiplicity of tongue-like raised fins spaced apart from each other by a distance of 4–10 mm and having a height of 15–50 mm, on at least one side of the base plate by skiving, each of the skived fins being divided at least at its forward end into a plurality of portions by at least one slit to form divided portions each having a width of 8–25 mm on each fin; and a mount for attaching heat emitting elements which is provided with a horizontal portion, extending at a right angle from the lower edge of the radiating base plate, heat emitting elements being intimately attached to said horizontal portion; wherein the radiating base plate is formed from an extruded blank and the skived fins are formed by cutting a fin forming portion having a plurality of projections provided with a lengthwise groove interposed therebetween, on at least one side of the blank.

4,369,839
CASING VACUUM SYSTEM

Ronnie D. Freeman, and Elton R. Payne, both of Trent, Tex., assignors to F & P Production Co., Inc., Trent, Tex.

Filed Aug. 17, 1981, Ser. No. 293,257
Int. Cl.^{3} E21B *43/00*
U.S. Cl. 166—53 7 Claims



1. An apparatus for applying a vacuum to the space within the casing of an oil well in order to improve the recovery of petroleum from the well, comprising:

(a) vacuum pump means having a suction inlet and a pressure outlet;

(b) a water accumulator means connected to the suction inlet of the vacuum pump means for preventing water and/or water vapor from entering the suction inlet of the vacuum pump means;

(c) a condensate accumulator means connected to the pressure oulet of the vacuum pump means for collecting gas which the vacuum means draws from the space within the casing of the oil well, condensing a portion of the gas into liquid hydrocarbons and collecting the liquid hydrocarbons;

and

an automatic pressure control means for maintaining the gas pressure in the casing of an oil well within a predetermined range by stopping the vacuum when the pressure is near the lower limit of the predetermined range and reapplying the vacuum when the pressure is near the upper limit of the predetermined range.

4,369,840
ANCHOR AND ANCHOR POSITIONER ASSEMBLY

David D. Szarka, and Eugene E. Baker, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

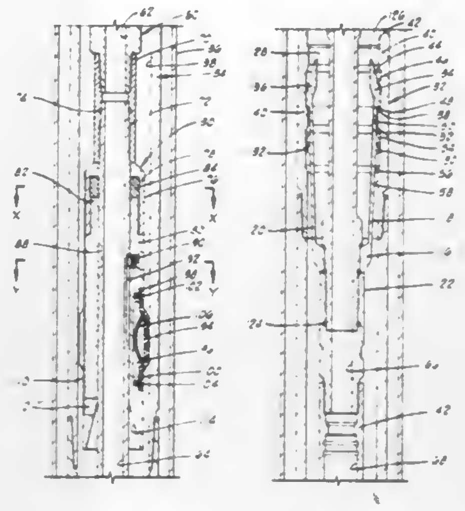
Filed Dec. 27, 1979, Ser. No. 107,753
Int. Cl.^{3} E21B *23/00*
U.S. Cl. 166—214 20 Claims

1. Apparatus for positioning and anchoring a tool string in at least one location in a well bore having conduit means disposed therein, comprising:

anchor means having at least one shoulder means thereon fixed to said conduit means at said at least one location in said well bore;

anchor positioner means attached to said tool string, said anchor positioner means including engagement means comprising at least one spring arm selectively changeable between a release mode and a retract mode, said spring arm being adapted in said release mode to engage said anchor shoulder means when placed adjacent thereto, and to disengage said anchor shoulder means in said retract mode; and

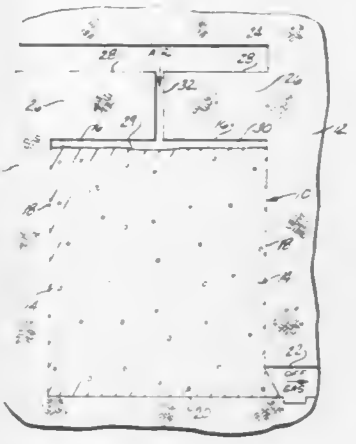
retraction means to effect said release and retract modes of said at least one spring arm of said engagement means, said retraction means having an inclined face thereon, and being axially slidable on said anchor positioner means responsive to movement of said tool string, said retraction means effecting said retract mode of said at least one spring arm by axial movement toward said at least one spring arm and radially inwardly biasing contact of said inclined face therewith, and effecting said release mode by axial movement away from said at least one spring arm and substantial release therefrom.



4,369,841
METHOD FOR IGNITING AN IN SITU OIL SHALE RETORT

Chang Y. Cha, Golden, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Dec. 29, 1980, Ser. No. 220,850
Int. Cl.^{3} E21B *43/24*
U.S. Cl. 166—251 60 Claims



9. A method for igniting an in situ oil shale retort in a subterranean formation containing oil shale, the retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

(a) establishing a primary combustion zone in the fragmented permeable mass of formation particles;

(b) establishing a secondary combustion zone in the fragmented permeable mass of formation particles upstream from the primary combustion zone for spreading the primary combustion zone laterally;

(c) withdrawing off gas from the fragmented permeable mass;

(d) monitoring the off gas for the concentration of methane; and

(e) extinguishing the secondary combustion zone when the concentration of methane in the off gas reaches a selected value.

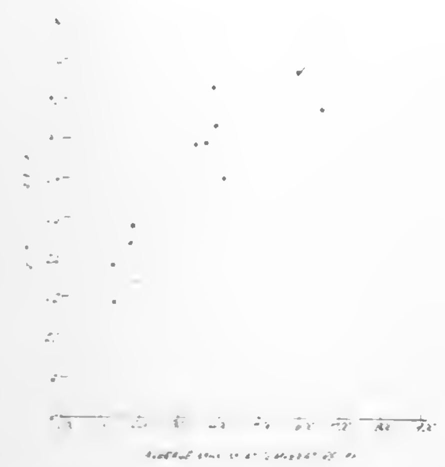
4,369,842
ANALYZING OIL SHALE RETORT OFF-GAS FOR CARBON DIOXIDE TO DETERMINE THE COMBUSTION ZONE TEMPERATURE

Chang Y. Cha, Golden, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Feb. 9, 1981, Ser. No. 232,575

Int. Cl.³ E21B *43/243;* G01N *31/12*

U.S. Cl. 166—251 **15 Claims**



1. A method for determining the temperature of a processing zone in a fragmented permeable mass of formation particles in an in situ oil shale retort in a subterranean formation, the subterranean formation comprising kerogen and inorganic carbonates, the method comprising the steps of:

(a) forming an in situ oil shale retort containing a fragmented permeable mass of formation particles comprising kerogen and inorganic carbonates in the subterranean formation;

(b) advancing a processing zone through the fragmented permeable mass of formation particles for producing liquid and gaseous products from the kerogen, at least a portion of such inorganic carbonates being decomposed in the processing zone, forming inorganic oxides and gaseous carbon dioxide;

(c) withdrawing off-gas, including carbon dioxide from carbonate decomposition, from the retort on the advancing side of the processing zone, the carbon dioxide content of the withdrawn off-gas being a function of the temperature of the processing zone;

(d) determining the carbon dioxide content of the withdrawn off-gas; and

(e) correlating the carbon dioxide content of the withdrawn off-gas with the temperature of the processing zone.

4,369,843
WELL COMPLETION AND WORK OVER METHOD

Thomas C. Mondshine, Houston, Tex., assignor to Texas Brine Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 735,168, Oct. 26, 1976, abandoned. This application Feb. 3, 1978, Ser. No. 874,770

The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—292 **5 Claims**

1. In a well completion and workover method wherein a subterranean formation in a well is contacted with a treating fluid, the steps comprising:

a. pumping the treating fluid in the well and contacting the formation with said treating fluid wherein said treating fluid comprises:

(1) a saturated aqueous saline solution with at least one water soluble salt which is substantially insoluble in the saturated saline solution;

(2) said saturated aqueous saline solution being formed from, and said water soluble salt being selected from one or more of the group consisting of potassium chloride, sodium chloride, calcium chloride, sodium sulfate, sodium carbonate, sodium bicarbonate, calcium bromide and potassium carbonate; and

(3) said treating fluid also including a minor amount of a fluid loss additive to inhibit loss of fluid into the formation and a suspension additive to prevent settling of the water soluble salt particles;

b. controlling the pressure in the well during the workover and completion by maintaining the quantity of said water soluble salt weighing particles present in the saturated aqueous saline solution in the range of approximately 10 pounds per barrel to about 900 pounds per barrel of saturated aqueous saline solution;

c. forming a bridge and seal on the formation to bridge and seal off the formation by maintaining said water soluble salt which is substantially insoluble in the saturated saline solution in a particle size range of about 5 microns to about 800 microns with greater than about 5% of the particles being coarser than 44 microns; and

d. dissolving the water soluble salt bridging and weighting particles off the formation to remove the bridge and seal from the formation for flow of hydrocarbons therefrom into the well.

4,369,844
METHOD USING LOST CIRCULATION MATERIAL FOR SEALING PERMEABLE FORMATIONS

Elmer E. Clear, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 77,215, Sep. 20, 1979, Pat. No. 4,289,632. This application Jun. 29, 1981, Ser. No. 278,127

Int. Cl.³ C09K *7/02, 7/06;* E21B *33/138*

U.S. Cl. 166—294 **18 Claims**

1. A method for sealing permeable formations, said method comprising:

preparing a lost circulation material slurry comprising a fluid selected from the group consisting of fresh water, salt water and oil and a solid comprising, based on the total weight of said solid, from about 2 to about 30 weight percent finely divided paper effective as a suspending agent and from about 70 to about 98 weight percent diatomaceous earth;

spotting a slug of the thus-prepared slurry adjacent a permeable formation in a well bore;

defluidizing the thus spotted slurry to deposit a formation seal adjacent said permeable formation; and

circulating a drilling mud to form a mud sheath on said formation seal.

4,369,845
OIL WELL BLOW-OUT CONTROL

George S. Henson, Grange-over-Sands, and Joe Brooks, Emsworth, both of England, assignors to Mobell Blowout Services Limited, Dyce, England

Filed Jul. 24, 1980, Ser. No. 171,843

Claims priority, application United Kingdom, Jul. 26, 1979, 7926138; Mar. 3, 1980, 8007108

Int. Cl.³ E21B *29/08, 29/12, 33/037, 33/076*

U.S. Cl. 166—298 **29 Claims**

1. A device for bringing an implement to bear on an inner tubular of a multi-tubular well for a blow-out control operation, said device comprising:

a support attachable to an outer tubular of a well;

an implement holder connected to said support and having a bore therethrough having first and second ends, and a valve for opening and closing communication through said bore, said implement holder being sealingly engagable with an inner tubular of a well at a peripheral edge of the first end and to detachably sealingly receive an implement at a peripheral edge of the second end;

a back-up unit connected to the support and sealingly engageable with the inner tubular at a position diametrically opposite to said implement holder;

a support connection for connecting said implement holder and said back-up unit to said support; and

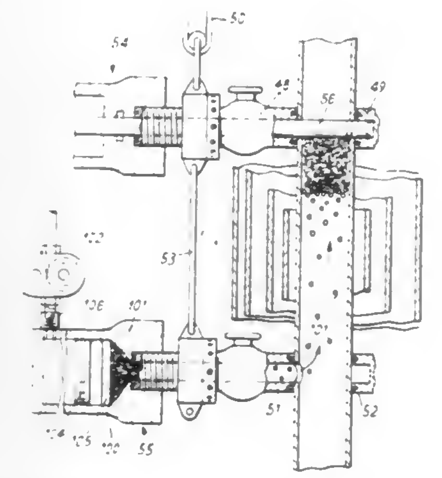
a clamping means for engaging said implement holder and said back-up unit with the inner tubular.

27. A method of boring and blocking an inner tubular of a multi-tubular well during a blow-out control operation comprising the steps of:

(1) cutting a pair of opposite windows in diametrically opposite peripheral parts of an outermost tubular of the well;

(2) attaching a support to the outermost tubular;

(3) connecting an implement holder and a back-up unit to the support;



(4) inserting the implement holder and back-up respectively through the opposite windows;

(5) sealingly engaging a peripheral edge of a first end of a bore through the implement holder with the inner tubular;

(6) clamping the implement holder and back-up unit to the inner tubular;

(7) detachably sealingly connecting a boring mechanism to a peripheral edge of a second end of the bore;

(8) advancing a spindle which is sealingly engaged within the boring mechanism through the bore; and

(9) boring a hole in the inner tubular with a tool bit attached to the spindle.

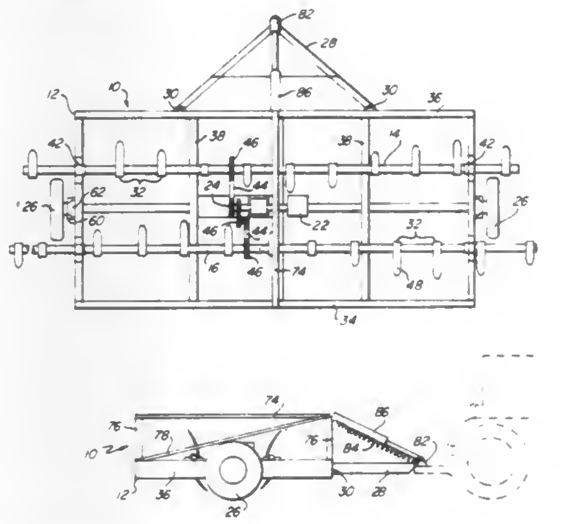
4,369,846
TILLING MACHINE FOR SANDY SOIL

Harry D. Lockhart, 2965 S. Acoma St., Englewood, Colo. 80110

Filed Jul. 20, 1981, Ser. No. 285,065

Int. Cl.³ A01B *33/02*

U.S. Cl. 172—60 **11 Claims**



1. A tilling machine adapted for use with sandy soil, comprising:

(a) a frame carrying at least two parallel transverse rotatable digger shafts, each shaft carrying a plurality of broad-faced sand diggers, said diggers being laterally spaced apart by a distance greater than the face of a digger such that an untilled ridge remains between furrows created by the passage of all diggers on said shafts;

(b) a pair of wheels connected to said frame on a single transverse axis parallel to and intermediate said two digger shafts, each wheel having associated therewith a mounting means for variably adjusting the vertical height of the wheel with respect to the frame;

(c) hitch means for connecting the frame to a source of locomotion;

(d) tilting connection means between said hitch means and frame for allowing the frame to be tilted on the axis of said pair of wheels;

(e) a longitudinal tilt arm connected to said frame for application of tilting forces;

(f) length adjustable tie-down means connected to said tilt arm and fastenable to, in use, an object outside said frame for biasing the tilt arm to a preferred position of tilt; and

(g) digger shaft rotating means.

4,369,847
BLADE ASSEMBLY

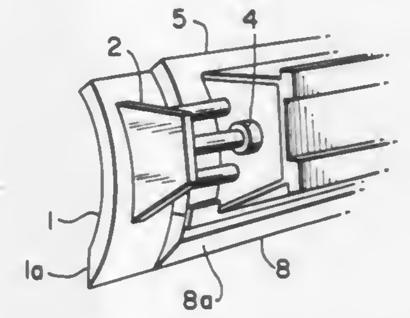
Wataru Mizunuma, Sagamihara, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,926

Claims priority, application Japan, Jan. 30, 1980, 55-9815[U]

Int. Cl.³ E02F *3/76*

U.S. Cl. 172—815 **1 Claim**



1. A blade assembly for use on grader or construction vehicles, said blade assembly comprising:

a main blade adapted to be mounted on a vehicle;

at least one auxiliary blade mounted on the end of said main blade; and

means for varying the total blade width of the assembly by sliding said auxiliary blade laterally with respect to said main blade along respective complementary sliding surfaces of said main and auxiliary blades;

said main and auxiliary blades having respective lower edge portions defined by respective tapered surfaces forming respective lower knife edges, said edge portions being positioned in back-to-back relation, said respective tapered surfaces converging downwardly and being inclined upwardly in opposite directions away from said complementary sliding surfaces, and said respective knife edges being aligned in the same straight line;

said main and auxiliary blades-and said respective complementary surfaces thereof being curved about a common axis extending generally parallel said same straight line.

4,369,848
CONTROL SYSTEM FOR A ROCK DRILL

Pekka Salmi, and Aimo Helin, both of Tampere, Finland, assignors to Oy Tampella Ab, Finland

Filed May 7, 1979, Ser. No. 36,550

Claims priority, application Finland, May 11, 1978, 781485

Int. Cl.³ E21C *5/16*

U.S. Cl. 173—8 **2 Claims**

1. A control system for operating a hydraulic drilling machine, the drilling machine includes a body, a drill steel recip-

rocatingly and rotatably supported by the body and having a shank at its rear end inside the body, a striking apparatus with a striking piston adapted to strike against the shank, a rotation motor with gear means adapted to rotate the drill steel in either direction, a feed motor operating a feed device to cause forward and return movements of the drilling machine, and a shank cylinder with a shank piston therein adapted to retract the drill steel with the shank in a striking contact with the striking piston when a pressure medium is supplied to the shank cylinder, the control system comprising:

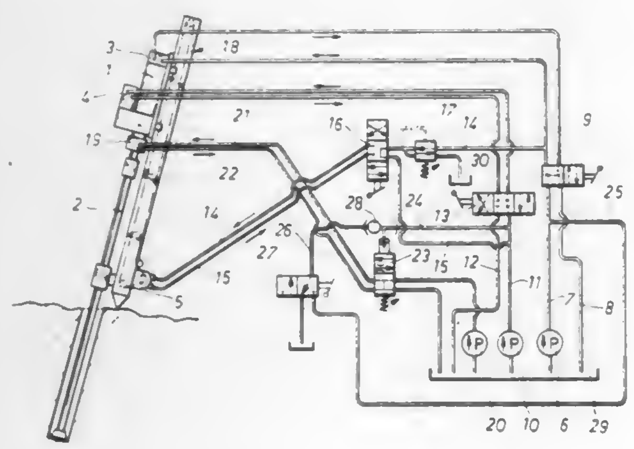
first means for supplying a pressure medium coupled through a first pair of supply and return lines to the striking apparatus,

second means for supplying a pressure medium coupled through a second pair of supply and return lines to the rotation motor,

wherein said first means for supplying a pressure medium has a higher pressure than does said second means for supplying a pressure medium,

manually operable valve means in said second pair of supply and return lines, said valve means being a directional valve adapted to reverse the direction of flow of the medium thereby to cause the rotation motor to rotate the drill steel in either direction,

a third pair of supply and return lines for the feed motor, a supply line of said third pair is connected to a supply line of said first pair and a return line of said third pair is connected to a supply line of said second pair so as to normally operate the feed motor with a pressure differential therebetween,



third means for supplying a pressure medium coupled through a fourth pair of supply and return lines to the shank cylinder,

first pressure controlled valve means associated with said supply line of said third pair of supply and return lines, said first pressure controlled valve means being adapted to sense a predetermined increased pressure in said supply line of said second pair of supply and return lines, said pressure being increased due to increased rotation resistance encountered by the drill steel, and to change from one flow condition to another disconnecting said supply line of said third pair of supply and return lines from said supply line of said first pair and connecting said supply line of said third pair of supply and return lines to a tank, thereby reversing the direction of flow of pressure medium in the feed motor causing that motor to reverse the feed direction,

second pressure controlled valve means associated with said fourth pair of supply and return lines for the shank cylinder with a pressure control line of said second valve connected to said rotation supply line of said second pair of supply and return lines, said second pressure controlled valve means being adapted to change from a closed to an open condition at a predetermined rotational pressure in said control pressure line thereby allowing pressure medium to enter the shank cylinder through a supply line of said fourth pair and choking a return line of said fourth pair in order to cause pressure to rise in front of the shank piston thereby to cause the retracting operation of the shank piston to take place,

the predetermined rotational pressure selected to actuate said second pressure controlled valve means substantially corresponding to the predetermined increased pressure sensed to change the feed direction,

said first and second pressure controlled valve means returning to said initial flow conditions once the second pressure has dropped below said selected value.

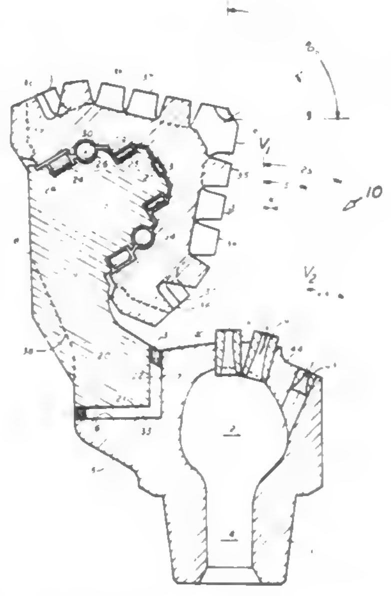
4,369,849
LARGE DIAMETER OIL WELL DRILLING BIT

John D. Parrish, Houston, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

Filed Jun. 5, 1980, Ser. No. 156,883

Int. Cl.^{3} E21B *10/18, 10/20*

U.S. Cl. 175—340 **7 Claims**



1. An oil well tricone rolling cutter drilling bit for drilling top hole and large diameter boreholes, said bit comprising:

an integrally formed cast metal body member having a pin end, a central bore passage, and three equispaced platform arms formed thereon;

said platform arms each having a plurality of alignment surface means comprising two different planes for a lug assembly in abutting relationship while permitting vertical, horizontal, and skew adjustment during assembly and adapted to support a lug assembly of a size selected from at least two different sizes;

a lug assembly of a size selected from at least two different sizes welded to each of said platform arms and having a lug member with a leg section at its attachment end and a bearing journal extending radially inwardly at its opposite end; said journal being adapted to support a cutter of a size selected from at least two different sizes; said lug assembly further having a frustoconical cutter of a size selected from at least two different sizes rotatably mounted on said bearing journal by bearing means, and

said body member and said lug member forming one of at least two differently sized drilling bits of significantly different diameters.

4,369,850
HIGH PRESSURE FLUID JET CUTTING AND DRILLING APPARATUS

Clark R. Barker, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Jul. 28, 1980, Ser. No. 173,264

Int. Cl.^{3} E21B *10/60*

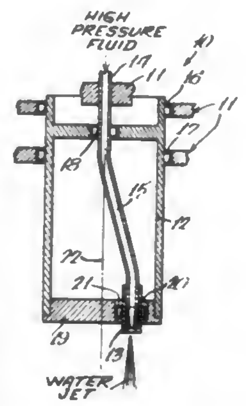
U.S. Cl. 175—393 **9 Claims**

1. A high pressure fluid jet drilling and cutting system

adapted to be connected to a source of high pressure fluid, and comprising:

a fluid jet nozzle for ejecting a high velocity fluid jet stream;

a non-rotating fluid supply conduit interconnecting said nozzle with said source of high pressure fluid; and



eccentric drive means including a rotatable cylindrical shell surrounding said conduit attached to said nozzle and operable to move said nozzle in a general circular path without rotating said nozzle with respect to said supply conduit.

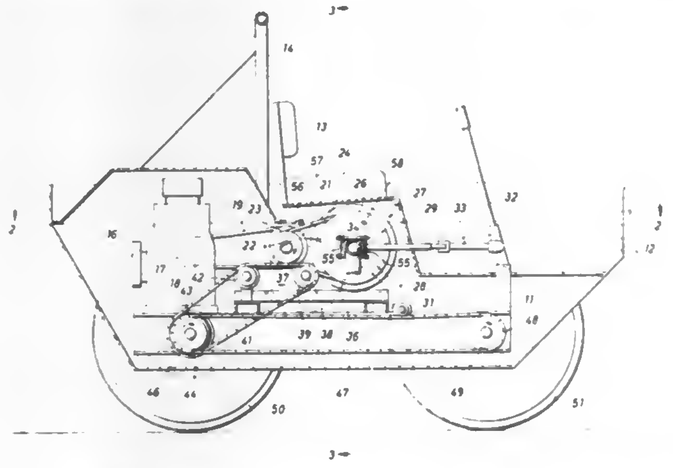
4,369,851
TRANSMISSION SYSTEM

Joseph D. LaBorde, 1165 N. Main, Vidor, Tex. 77662

Filed Oct. 23, 1980, Ser. No. 200,253

Int. Cl.^{3} B62D *11/02*

U.S. Cl. 180—6.66 **7 Claims**



1. A vehicle in which driving power is applied separately to opposite sides of the vehicle including:

a frame;

an engine mounted on said frame;

left and right traction means on opposite sides of said frame;

a rotatable drive means operatively connected to said engine and rotated thereby, said drive means having a power transmission system mounted thereon for rotation therewith;

a left rotatable driven means operatively connected to said left traction means;

a right rotatable driven means operatively connected to said right traction means;

a left control means having first and second transmission means arranged for power connection with said transmission system of said drive means and operatively connected to said left driven means for rotating said left driven means in respective opposite directions, said left control means being mounted for movement with respect to said frame between a first position operatively connecting said first transmission means and disconnecting said second transmission means with said transmission system of said drive means and a second position connecting said second transmission means and disconnecting said first transmision means with said transmission system of said drive means;

a right control means having first and second transmission means arranged for power connection with said transmission system of said drive means and operatively connected to said right driven means for rotating said right driven means in respective opposite directions, said right control means being mounted for movement independently of said left control means and with respect to said frame between a first position operatively connecting said first transmission means and disconnecting said second transmission means with said transmission system of said drive means and a second position connecting said second transmission means and disconnecting said first transmission means with said transmission system of said drive means.

4,369,852
POWER STEERING APPARATUS FOR VEHICLES

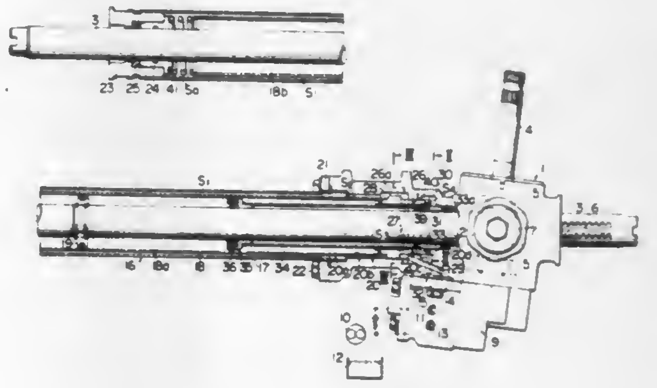
Masao Nishikawa, Ooizumigakuen; Yoshihiko Toshimitsu, Asaka; Akira Iwasaki, Oomiya, and Katsuhiko Fujimoto, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,911

Claims priority, application Japan, Jan. 30, 1980, 55-9814

Int. Cl.^{3} B62D *5/010;* **F15B** *15/002*

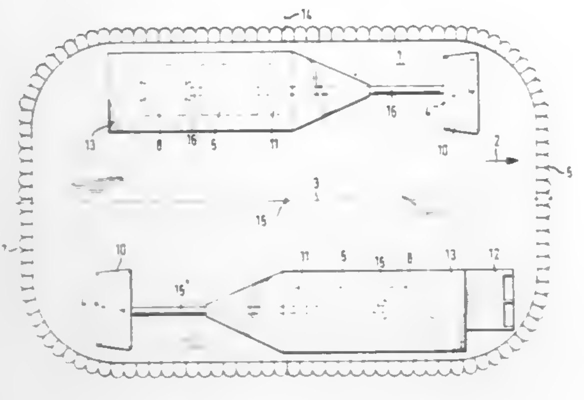
U.S. Cl. 180—148 **10 Claims**



1. Power steering apparatus for a vehicle comprising a steering gear casing, a rack rod operatively connected to a steering wheel and slidably supported in said steering gear casing, a power cylinder connected for hydraulically driving said rack rod, control valve means connected to said steering gear casing for controlling the operation of said power cylinder, said control valve means having two output ports respectively and selectively connected to a fluid pressure source and a fluid return line to said source, said power cylinder comprising an outer cylinder fixed at an inner end portion thereof to said steering gear casing, an inner cylinder disposed inside said outer cylinder and secured at an inner end portion thereof to said steering gear casing, and a piston fixedly mounted on said rack rod and dividing the interior of said inner cylinder into a first fluid chamber close to said steering gear casing and a second fluid chamber remote from said casing, means including a coil spring supporting said inner cylinder in a floating state at its outer end on said outer cylinder, said coil spring having windings forming spaces of constant width therebetween, said second fluid chamber and the interior of said outer cylinder being in communication with each other via said spaces of constant width in said coil spring, and passage means for providing communication between said output ports of said control valve means and said first fluid chamber and the interior of said outer cylinder separately, said passage means being provided in said steering gear casing.

4,369,853
AIR-CUSHION VEHICLE

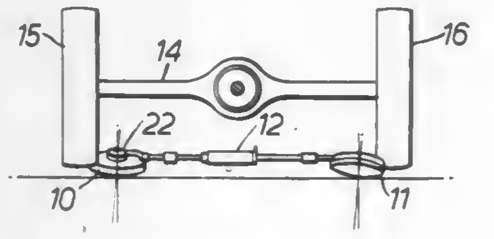
Pentti Heijola, Espoo, and Fredrik Burmeister, Helsinki, both of Finland, assignors to Oy Wartsila Ab, Helsinki, Finland
Filed Dec. 8, 1980, Ser. No. 213,833
Claims priority, application Finland, Dec. 14, 1979, 793935
Int. Cl.^{3} B60V *1/14*
U.S. Cl. 180—117 **7 Claims**

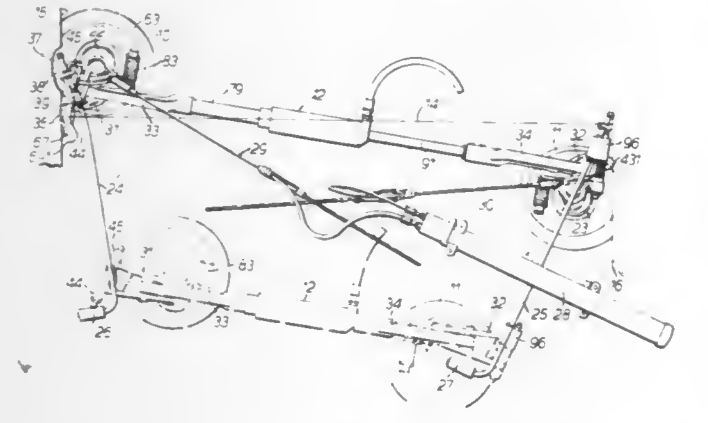


1. An air-cushion vehicle comprising a hull, two air propulsion units located at a considerable distance from each other and one or several drive engines for said propulsion units, one of said propulsion units being located at the front end of said vehicle at one side of its longitudinal axis, the other of said propulsion units being located at the rear end of said vehicle at the opposite side of said axis.

4,369,854
PARKING DEVICES FOR VEHICLES

Archibald J. Butterworth, 7 Frimley Grove Gardens, Frimley, Camberley, Surrey, England
Continuation-in-part of Ser. No. 57,232, Jul. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 910,049, May 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 783,598, Apr. 1, 1977, abandoned. This application Feb. 19, 1981, Ser. No. 236,080
Claims priority, application United Kingdom, Oct. 2, 1975, 40232/75
Int. Cl.^{3} B60K *25/08*
U.S. Cl. 180—201 **39 Claims**

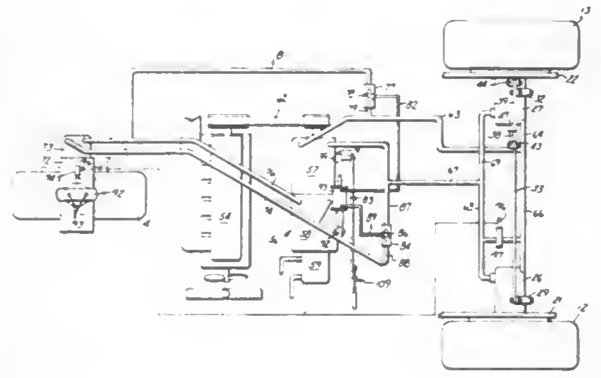




1. A parking device for a motor vehicle, comprising a pair of parking rollers rotatably mounted in respective roller mounting members which are connected to respective ends of an extensible power means and which are arranged to be transported along respective rails on extension or retraction of the power means, each rail being adapted to extend from a mounting on the sprung part of the vehicle under the floor of the vehicle downwardly and outwardly to a location adjacent to a respective one of a pair of road wheels of the vehicle, so that extension of the power means will cause the assembly of parking rollers, roller mounting members and power means to move bodily from a retracted position clear of the road and adjacent to the upper ends of the rails to an operative position adjacent to the said pair of road wheels, in which operative position the parking rollers will take the weight of the adjacent end of the vehicle and enable it to be moved sideways.

4,369,855
FLUID DRIVE SYSTEM

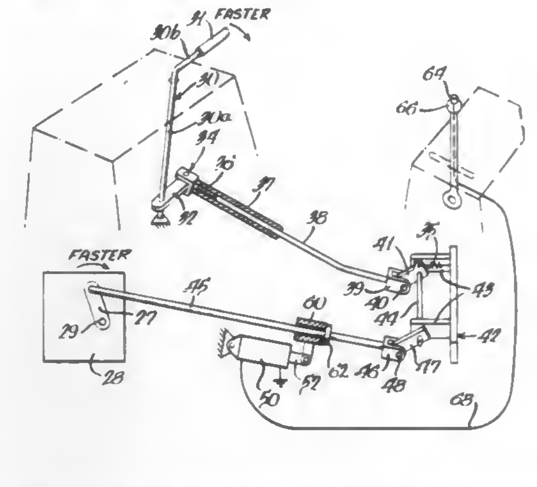
Floyd E. Buschbom, Long Lake, Minn., and Marion Hutchison, Waterloo, Iowa, assignors to Veda, Inc., Long Lake, Minn.
Filed Jul. 15, 1980, Ser. No. 169,191
Int. Cl.^{3} B60K *17/10;* **F15B** *18/00*
U.S. Cl. 180—212 **27 Claims**



1. A land vehicle comprising: a frame, first wheel means and second wheel means connected to the frame to support the frame on the ground, first drive means operably connected to the first wheel means to rotate said first wheel means, said first drive means having fluid operated first motor means, second drive means operably connected to the second wheel means, said second drive means having fluid operated second motor means, first pump means for supplying fluid under pressure to a first fluid circuit connected to the first motor means, second pump means for supplying fluid under pressure to a second fluid circuit connected to the second motor means, means for concurrently operating the first and second pump means whereby said first and second pump means supplies fluid under pressure to the first and second fluid circuits thereby operating said first and second motors to drive the first and second wheel means, said first and second pump means each having control means operable to vary the rate of flow of fluid discharged by the first and second pump means, means connected to the control means of the first and second pump means, and said means connected to the control means of the first and second pump means includes means operable in response to a difference in the pressure of the fluid in the first and second fluid circuits to actuate the control means of second pump means to alter the rate of flow of fluid discharged by the second pump means to substantially balance the pressure of the fluid in the first and second fluid circuits thereby maintaining the torque and speed input to the first and second drive wheel means substantially constant.

4,369,856
BACKHOE CONTROL WITH HAND THROTTLE AND ELECTRIC THROTTLE CONTROL

Barry C. Nudd, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Sep. 29, 1980, Ser. No. 191,751
Int. Cl.^{3} B60K *26/00*
U.S. Cl. 180—321 **9 Claims**



1. In a backhoe on a vehicle having an engine and a frame, said backhoe having a tower pivoted about a fixed pivot axis by a hydraulic control system powered by said engine, the improvement comprising means for adjusting the speed of said engine to control the flow of fluid in said hydraulic control system, comprising:

axially extending plunger means having one end operatively connected to said engine, said plunger means being movable along its axis for controlling the speed of said engine,

stop means positioned on said plunger means,

lever means having one end operatively connected to the other end of said plunger means, and an opposite end engageable by the vehicle operator, said lever means being movable between a first position in which said plunger means is in a first position said engine speed is relatively slow, and a second position in which said plunger means is in a second position and said engine speed is relatively fast, and being positionable at intermediate positions therebetween,

engagement means positioned adjacent to said plunger means and movable in the direction of the axis of said plunger means, said engagement means being adapted to abut said stop means and move said stop means and said plunger means along the axis of said plunger means,

piston means supported by said vehicle frame and having one end operatively connected to said engagement means, said piston means being movable between a retracted position and an extended position, said piston means comprising an electric solenoid that is secured to said vehicle frame, said solenoid having a piston rod that is operatively connected to said engagement means and is movable between a retracted position and an extended position,

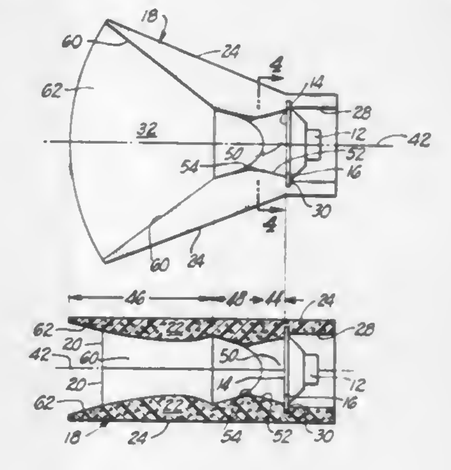
means for activating said piston means to move said piston means from said retracted position to said extended position, and for deactivating said piston means,

spring means having one end secured to said vehicle frame and an opposite end operatively connected to the other end of said plunger means, such that movement of said plunger means towards said second position increases the tension in said spring means, and the tension in said spring means causes said spring means to move said plunger means toward said first position when said piston means is deactivated,

whereby an operator can move said lever means to an intermediate position between said first position and said second position which moves said plunger means to an intermediate position corresponding to an intermediate engine speed, and said operator can increase the speed of said engine to a speed greater than said intermediate speed by activating said piston means which moves said engagement means into engagement with said stop means and moves said plunger means towards said second position, whereupon said operator can decrease the speed of said engine to said intermediate speed by deactivating said piston means, and said operator can further decrease the speed of said engine by moving said lever means from said intermediate position towards said first position.

4,369,857
LOUDSPEAKER AND HORN COMBINATION

Spencer Frazer, and Steven P. Solbelman, both of Los Angeles, Calif., assignors to The Kind Horn Company, Los Angeles, Calif.
Filed Jan. 22, 1981, Ser. No. 227,394
Int. Cl.^{3} G10K *13/00*
U.S. Cl. 181—159 **8 Claims**



1. A horn loudspeaker system including a speaker having a diaphragm and a horn provided with an internal horn cavity, said cavity having an entrance and an exit, said horn being located so that said diaphragm is positioned so as to extend across said entrance to said cavity and so that said horn cavity extends outwardly away from said diaphragm in which the improvement comprises:

said horn cavity having a centrally located axis which is perpendicular to the center of said diaphragm and being bilaterally symmetrical about a plane passing through said axis,

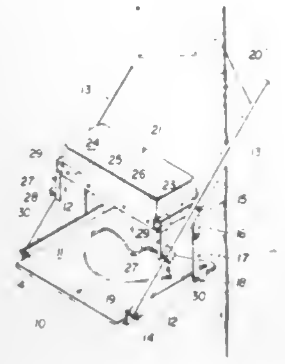
said horn cavity including a sound chamber region, a transitional region, and a flare region located so that said sound chamber region extends from said entrance toward the interior of said cavity and so that said flare region extends from within the interior of said cavity to said exit, said sound chamber and flare regions being separated by said transitional region,

said sound chamber region including a throat extending transverse to said axis intermediate the ends thereof which is of lesser cross-sectional area than any other part of said sound chamber region and being defined by at least one wall having a continuous, smooth curvature extending between the ends of said sound chamber region,

said flare region being defined by two substantially flat walls located at an angle with respect to one another and two curved walls extending between said flat walls, said walls of said flare region diverging outwardly away from said sound chamber region, said curved walls of said flare region having a gradually increasing curvature in accordance with the distance from said sound chamber region, said transitional region being shaped so as to provide a substantially smooth transition between the adjacent ends of said sound chamber region and said flare region.

4,369,858
HUNTER'S TREE STAND AND SEAT

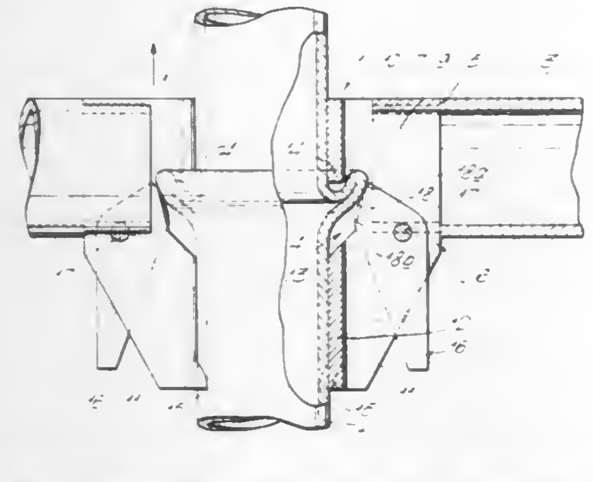
Alvin A. Babb, 106 Walnut St., Smyrna, Tenn. 37167
Filed Feb. 17, 1981, Ser. No. 234,488
Int. Cl.³ A01M *31/02;* **A45F** *3/26;* **A47C** *9/10*
U.S. Cl. 182—134 **5 Claims**



1. In a hunter's tree climbing platform having a platform body portion which is level during use and a folding support frame including inclined side frame members carrying aligned pivot elements, the improvement which comprises a drop seat which is level during use and which can drop by gravity to a vertical position to facilitate climbing, opposite sides of the drop seat being pivotally connected to said pivot elements and being supported thereby near the rear of the seat, and a pair of readily removable adapter legs supporting the seat near its front in said level use position, the adapter legs each having a top channel engaging element embracing a side member of the seat and each having a bottom channel engaging element embracing said inclined side frame members, the bottom channel engaging elements having their axes inclined and parallel to the axes of the side frame members and convergent with the axes of the top channel engaging elements, whereby the adapter legs are self-locking in their positions of use.

4,369,859
SCAFFOLDING SYSTEM

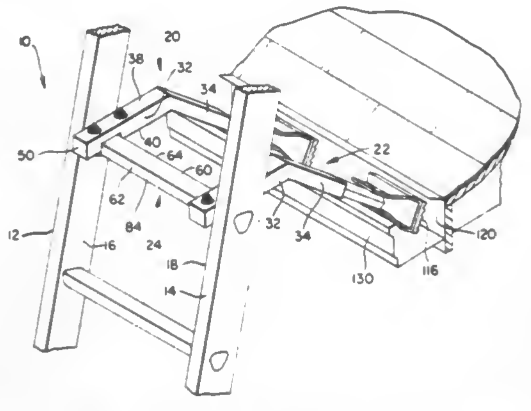
Marinus A. L. Smits, Henley-on-Klip, South Africa, assignor to SGB Group Limited, Surrey, England
Filed Jan. 15, 1981, Ser. No. 225,385
Claims priority, application South Africa, Jan. 15, 1980, 80/0225
Int. Cl.³ E04G *7/30*
U.S. Cl. 182—179 **10 Claims**



1. A scaffolding system, said system including a first scaffold member, and a second scaffold member substantially perpendicular thereto, said second member being connected to the first member by means of a joint; said joint comprising an annular protruding formation on said first member, said protruding formation being substantially uniform around the periphery of said first member, a housing mounted on one end of the second member, a lever pivotally mounted on the housing, the lever defining a cam face, means on the housing to engage the said annular protruding formation with the said second member in any selected radial orientation to the first member and with the lever in a position such that the said cam face can be brought into locking engagement with the annular protruding formation to lock the members together.

4,369,860
LADDER WITH BRACKET ATTACHMENTS

Tim E. Beane, 1008 Lima St., Wapakoneta, Ohio 45895
Filed Dec. 3, 1980, Ser. No. 212,379
Int. Cl.³ E06C *7/48*
U.S. Cl. 182—214 **9 Claims**



1. A ladder with bracket attachments comprising:

a pair of brackets for attachment to the rung of a ladder each having a horizontal leg and a depending leg;

each horizontal leg having top and bottom walls and side walls;

cut-out means on said bottom and said side walls defining slot means which seat on the rung of a ladder;

means cooperating with said slot means and said rung for securing each of said pair of brackets to said rung;

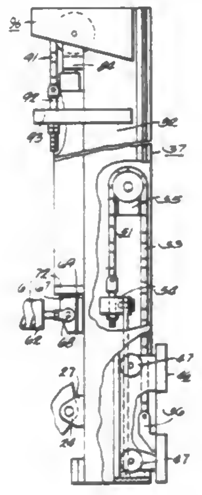
each depending leg having an open end with threaded means therein;

an extensible member threadedly received within said threaded means of each depending leg; and

foot means secured to each extensible member for engagement against the inside wall of a gutter.

4,369,861
MULTIPLE SECTION MAST WITH A PAIR OF LIFT JACKS BEHIND THE PRIMARY SECTION UPRIGHTS

David W. Rietman, Highland, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Nov. 10, 1980, Ser. No. 205,745
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 E **1 Claim**



1. A lift truck having a mast pivotally connected near its

lower end to the truck chassis for tilting movement about a horizontal tilt axis and means for tilting said mast about said tilt axis, characterized by,

primary, secondary and tertiary sections each with two laterally spaced uprights, said primary section being pivotally connected at its lower end to said truck chassis, said secondary section being mounted on said primary section for vertical reciprocating movement thereon, said tertiary section being mounted on said secondary section for vertical reciprocating movement thereon,

a load carriage supported on said tertiary section for raising and lowering movement relative thereto,

said means for tilting said mast including a pair of linear hydraulic tilt jacks having first corresponding end pivotally connected to said chassis and second corresponding ends pivotally connected, respectively, to said uprights of said primary section a substantial distance above said tilt axis,

a first horizontal cross tie having its opposite ends secured to said secondary section uprights near their upper ends,

a pair of three-element lift jacks having corresponding lower ends of their outer stationary elements supported on the rear of said uprights, respectively, of said primary section above said pivot connections between said tilt jacks and said primary section uprights, the corresponding upper ends of inner elements of said three-element jacks being connected in lifting relation to said first cross tie, an intermediate element and said inner element of each three-element jack being extended from its outer stationary element when said jack is expanded,

a second horizontal cross tie having its opposite ends secured to said primary section uprights near the elevation of the top of said outer elements of said lift jacks said second cross tie passing to the rear of said three-element lift jacks without connection thereto,

a third horizontal cross tie having its opposite ends secured to the upper ends of said uprights of said primary section, said third cross tie being above said first cross tie when said mast is in its lowered condition, said third cross tie being disposed rearwardly a sufficient distance to permit said intermediate and inner elements of said three-element jacks and said first cross tie to move upwardly without interference with said third cross tie when said three-element jacks are expanded causing said tertiary section to move upwardly relative to said secondary section and said secondary section to move upwardly relative to said primary section thereby achieving full vertical extension of said mast,

a pair of pulleys rotatably mounted on horizontal axes on said first cross tie,

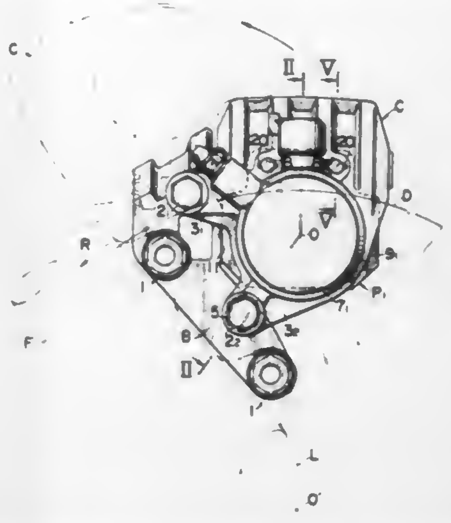
a pair of flexible members having first corresponding ends connected to said second cross tie, intermediate portions operatively engaging said pulleys, respectively, and second corresponding ends connected to said tertiary section, and

a linear hydraulic jack mounted on said tertiary section having an extensible element operatively connected to said carriage and constituting the sole means for raising and lowering said carriage between opposite vertical ends of said tertiary section.

4,369,862
DISC BRAKE ASSEMBLY FOR VEHICLE USE

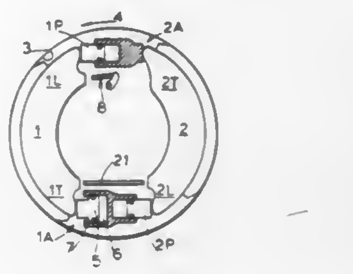
Masayuki Seki, Tateshina, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Kagano, Japan
Filed Feb. 17, 1981, Ser. No. 234,758
Claims priority, application Japan, Feb. 18, 1980, 55-18666; Feb. 18, 1980, 55-19298[U]; Feb. 18, 1980, 55-19300[U]; May 1, 1980, 55-60146[U]
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.45 **12 Claims**

1. A disc brake assembly for use in a vehicle having a fixed part, said assembly comprising a brake disc, having an axis of rotation, a piston adjacent to the brake disc, a bracket fixed to the fixed part of the vehicle in the piston adjacent to the brake disc, a first and a second brake pad arranged on opposite sides of the brake disc, a brake caliper having a first and a second limb formed to straddle the brake pads and including in the first limb pressure means for exerting pressure on the back of the first brake pad, first and second slide pins on the bracket to connect the brake caliper therewith while allowing the brake caliper to slide in a direction parallel to the axis of rotation of the brake disc, the bracket being arranged wholly on the forward side of the brake caliper with respect to the direction of rotation of the brake disc, the first and second slide pins being substantially aligned with each other radially of the brake disc, and hanger pin means, the first and second brake pads being hung on the brake caliper by said hanger pin means so as to be held in abutting engagement with a torque-bearing surface formed on the bracket only along the forward side edges of the respective brake pads with respect to the direction of rotation of the brake disc.



4,369,863
INTERNAL SHOE DRUM BRAKES FOR VEHICLES

Glyn P. R. Farr, Leek Wooton, and Colin S. Matthews, Dormansland, both of England, assignors to Lucas Industries Limited, Birmingham, England
Filed Aug. 29, 1980, Ser. No. 182,502
Claims priority, application United Kingdom, Aug. 31, 1979, 7930349; Oct. 25, 1979, 7937000
Int. Cl.³ F16D *65/24*
U.S. Cl. 188—106 A **7 Claims**



1. An internal shoe-drum brake for a vehicle comprising first and second arcuate shoes carrying friction linings for engagement with a rotatable drum, each of said shoes having a first end and a second end, an hydraulic actuation system for applying said shoes to said drum for normal service braking, and a mechanical actuation system operable independently of said hydraulic actuation system for applying said shoes to said drum for parking or emergency braking, said first ends of said shoes constituting leading ends for one direction of drum rotation and trailing ends for the other direction of drum rotation, and said second ends of said shoes constituting trailing ends for said one direction of drum rotation and leading ends for said other direction of drum rotation, wherein said hydrau-

lic actuation system comprises a first hydraulic actuator which acts on said leading end of said first shoe and a second hydraulic actuator which acts on said leading end of said second shoe whereby, for said normal service braking, said brake acts as a brake of the two-leading shoe type, and said mechanical actuation system acts on the leading end of only one of said shoes, and means are incorporated for transmitting thrust from the trailing end of the said one shoe to the leading end of the other of said shoes whereby, for said parking or emergency braking, said brake acts as a brake of the duo-servo type, said first hydraulic actuator comprising a first piston disposed at said leading end of said first shoe, said second hydraulic actuator comprises a second piston disposed at said leading end of said second shoe, means for supplying hydraulic fluid under pressure to said first and second pistons to apply said shoes to said drum, and first and second abutments against which said trailing ends of said shoes are adapted to rest, one of said abutments being fixed with respect to the respective one of said shoes, and the other of said abutments including an auxiliary hydraulic piston, a fixed stop with which said auxiliary piston is engageable, and means for subjecting said auxiliary piston to said hydraulic fluid under pressure to urge said auxiliary piston against said fixed stop at least when said hydraulic fluid under pressure is supplied to said first and second pistons in opposition to the reaction from the trailing end of one of said shoes which is in engagement with said auxiliary piston, the area of said auxiliary piston being chosen such that said auxiliary piston is held against said stop to counter said reaction from said trailing end of said one of said shoes, said means for transmitting thrust comprising a floating mechanical strut operating between said shoes to transmit said reaction from said trailing end of the said one of said shoes to said leading end of the other of said shoes when no hydraulic pressure is applied to said auxiliary piston.

4,369,864
SHOCK ABSORBER INCLUDING THERMOSTATICALLY CONTROLLED FLUID FLOW PASSAGE

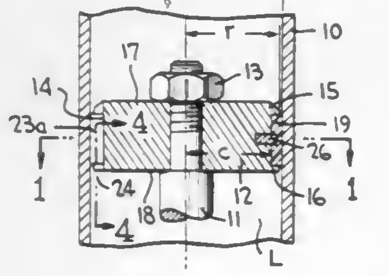
Christian B. de Carbon, 64, Boulevard Maurice-Barres, 92 Neuilly-sur-Seine, France

Continuation of Ser. No. 35,544, May 3, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 214,529

Claims priority, application France, May 5, 1978, 78 13303

Int. Cl.^{3} F16F *9/52*

U.S. Cl. 188—277 **11 Claims**



1. A hydraulic shock absorber, comprising a cylindrical casing having an inner diameter enclosing a working chamber containing a hydraulic fluid, and a piston adapted to reciprocate in said working chamber, said piston including a piston rod and a cylindrical piston head connected to said rod, the hydraulic fluid being adapted to pass between opposite sides of said piston head during the reciprocation, a non-metallic ring surrounding the peripheral wall of said piston head, said ring comprising a material selected from the group consisting of a flourine-based resin, an acetal resin or a polyamide, said piston head being devoid of any permanent flow passages within the area delimited by said peripheral wall, said head comprising a material having a first coefficient of expansion, and said ring material having a coefficient of expansion higher than said first coefficient of expansion, circular flanges at said opposite sides of said piston head extending radially outwardly of said peripheral wall and having outer diameters slightly less than said inner diameter, said ring being discontinuous by having at least one pair of opposed free ends having parallel related walls extending in the direction of the longitudinal axis of said casing and being spaced a predetermined distance apart, said ring throughout its entire length extending radially outwardly of said flanges, said ring having an outer diameter which is slightly less than said inner diameter of said casing for solely insuring smooth reciprocating movement of said piston without defining any annular passage through which the fluid may pass between said opposite sides of said piston, at least one permanent open passage being located outwardly of said peripheral wall of said piston head through which fluid solely passes in permanent flow relation between said opposite ends of said piston to thereby control the dampening effect during reciprocation of said piston, said passage being delimited by said parallel walls, said outer diameters of said flanges, and said inner wall of said casing, and the space between said parallel walls varying with change in temperature of said ring to thereby solely change the size of said passage and to control the dampening effect.

4,369,865
LOCK-UP CONTROL SYSTEM FOR A TORQUE CONVERTER

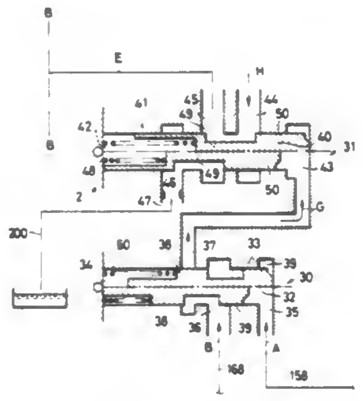
Yoshio Sunohara, and Kunio Ohtsuka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 23, 1979, Ser. No. 23,471

Claims priority, application Japan, Apr. 4, 1978, 53/38851

Int. Cl.^{3} F16H *47/00*

U.S. Cl. 192—3.31 **7 Claims**



1. In an automatic transmission for a vehicle, the automatic transmission having at least two forward gear ratios and including a torque converter with a lock-up mechanism including a lock-up chamber, a source of a first pressurized fluid, a passageway communicable with the source of the first pressurized fluid to be pressurized when a predetermined one of the two forward gear ratios is established, a source of a second pressurized fluid indicative of the vehicle speed, and a fluid reservoir;

a hydraulic control system for the torque converter comprising:

a first valve means communicating with the passageway and with the source of the second pressurized fluid;

a second valve means communicating with the lock-up chamber and having a first inlet port;

said first valve means being operable for establishing fluid communication between said first inlet port of said second valve means and one of

the passageway or

the source of the second pressurized fluid when a pressure in the other one of

the passageway or

the source of the second pressurized fluid is higher than a predetermined value;

said second valve means being operable for connecting the lock-up chamber to said fluid reservoir when said fluid communication is established and the pressure in said first inlet port of said second valve means is higher than a predetermined value;

whereby when the predetermined one of the two forward gear ratios is established and the vehicle speed is higher than a predetermined speed, the lock-up torque converter locks-up.

4,369,866
VEHICLE TRANSMISSION SYSTEM

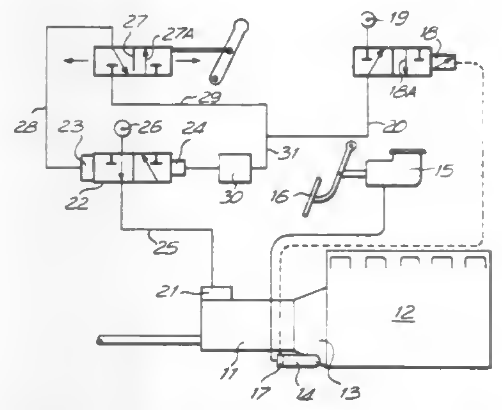
Simon V. R. Bateson, Stoke-on-Trent, and Andrew Gerrard, Chorley, both of England, assignors to British Leyland UK Limited, London, England

Continuation of Ser. No. 3,394, Jan. 12, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,940

Claims priority, application United Kingdom, Jan. 12, 1978, 1189/78

Int. Cl.^{3} B60K *41/22*

U.S. Cl. 192—3.57 **7 Claims**



1. A vehicle transmission comprising a clutch, a gear box having first and second ranges of gear ratios, first valve means connected to a source of compressed gas, said first valve means being actuable to a position to allow the passage of gas from said source, actuating means for moving said valve to said gas passage position in response to depressing said clutch, pressure actuated means for changing the range of gear ratios to one of said ratios in response to pressurization thereof, and for permitting changing to the other of said ratios in the absence of pressurization thereof, second valve means connected between a source of compressed gas and said pressure actuated means, said second valve means being actuable to a first position in which said source is connected to and continuously communicates with said pressure actuated means to change to and maintain said one gear ratio, and to a second position in which said source is disconnected from said pressure actuated means, actuator means responsive to the passage of gas from the first valve means for actuating said second valve to its first and second positions, and preselector control means for preselecting the range of gear ratios and comprising means for selecting the position to which said second valve is moved in response to passage of gas from said first valve means when said clutch is depressed.

4,369,867
AUTOMATIC TRANSMISSION PARKING BRAKE MECHANISM

George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 11, 1980, Ser. No. 186,048

Int. Cl.^{3} B60T *1/02;* B60K *41/26*

U.S. Cl. 192—4 A **3 Claims**

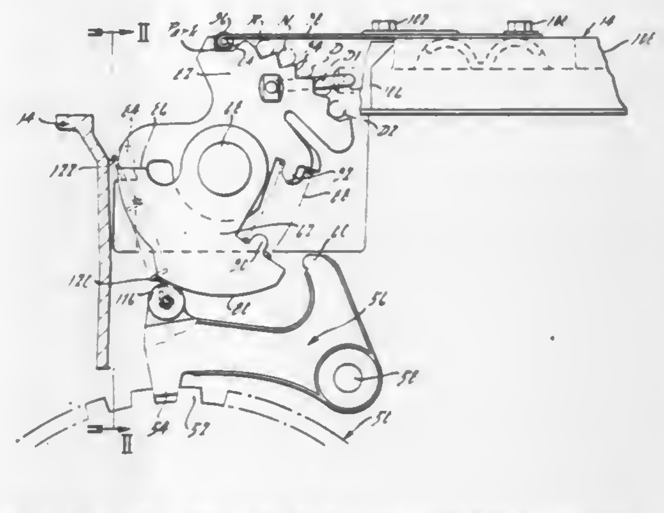
1. A transmission parking brake for anchoring a transmission power output shaft to a relatively stationary transmission housing comprising:

a parking gear carried by and rotatable with said power output shaft, said parking gear having external teeth;

a parking pawl lever mounted on said housing for oscillation about a first axis, said pawl lever having a pawl adapted to engage said teeth when said pawl lever is oscillated in one direction, means for moving said pawl lever in the opposite direction, said pawl lever having a cam follower thereon;

a detent plate mounted on a second axis spaced from said first axis;

a cam plate mounted on said second axis adjacent said detent plate, a support shaft for supporting said detent plate and said cam plate for oscillation about said second axis, said detent plate and said cam plate having engageable parts that are engaged, one with respect to the other;



a cam surface on said cam plate adapted to engage a follower portion of said pawl lever;

spring means engageable with said detent plate and said cam plate to urge them into mutual engagement;

means for adjusting said detent plate and said cam plate in said one direction whereby said cam surface forces said pawl into locking engagement with said gear; and

said means for moving said pawl lever in said opposite direction comprising a tail portion on said pawl lever, said cam plate being adapted to engage said tail portion when said cam plate is moved out of the gear locking position, said cam plate and said tail portion being located generally in a common plane of movement.

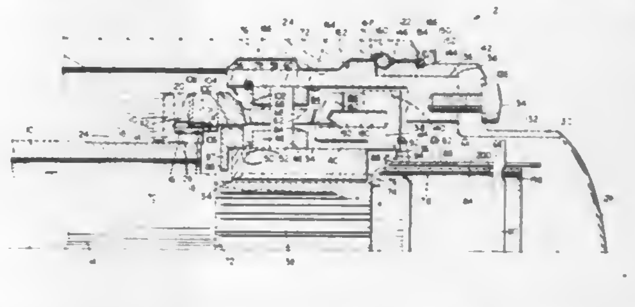
4,369,868
AUTOMATIC CLUTCH FOR FOUR-WHEEL DRIVE VEHICLES

Arthur M. Fleitas, Loveland, Colo., assignor to Dualmatic Manufacturing Company, Longmont, Colo.

Filed Aug. 25, 1980, Ser. No. 180,699

Int. Cl.^{3} F16D *13/04*

U.S. Cl. 192—36 **10 Claims**



1. A selective drive clutch for automatically connecting a driven element to a drive element for conjoint coaxial rotation and for automatically disconnecting same when said drive element is not being driven, comprising: a first interlocking member mountable upon the driven member for rotational movement therewith; a second interlocking member mountable upon the drive element for rotational movement therewith

and for axial movement relative thereto between retracted and extended positions; means carried by opposed end portions of said first and second interlocking members effective upon extension of the latter to interengage and effect a driving connection therebetween; first biasing means operatively associated with said second interlocking member normally biasing same into retracted position; and actuating means responsive to limited relative rotational movement between said drive and driven elements for effecting an axial shift of said second interlocking member between its extended and retracted positions, said means including a pair of tooth-carrying elements mounted in axially-spaced face-to-face relation, said elements each having arcuately-curved rows of teeth arranged in opposed relation, the first of said pair of tooth-carrying elements being movable both axially and rotarially with said second interlocking member on the end thereof remote from said first interlocking member, the second of said pair of tooth-carrying elements being mounted for independent rotation relative to said first tooth-carrying member in coaxial relation thereto, one of said curved rows of teeth defining a track encircling the axis of rotation in perpendicular relation thereto, the other of said curved rows of teeth defining at least one concave cam surface having stops at the remote ends thereof and a pair of oppositely-inclined ramps arranged in end-to-end relation therebetween; said actuating means also including a cam follower subassembly located between said first and second tooth-carrying elements, said subassembly having a toothed roller operatively interconnecting the teeth of each cam surface with the teeth of the track opposite thereto so as to define a driving connection therebetween, and roller support means frictionally associated with at least one of said first and second interlocking members for rotational movement therewith when interlocked; and said actuating means further including braking means having a fixed friction surface engaging said second tooth-carrying element operative to yieldably retard rotation thereof, said actuating means being operative in reponse to relative rotation of said drive element in either direction relative to said driven element to overcome the bias exerted upon the second interlocking element by said first biasing means and cause said toothed roller to ascend one of the ramps thereby extending said second interlocking element into interlocked driving engagement with said first interlocking member while said second tooth-carrying element is being held against rotation by the braking means thereof, said actuating means also being operative upon continued rotation of said interlocked first and second interlocking members in the same direction to drive said toothed roller against the stop at the end of said ascended ramp thus preventing further relative rotational movement between said first and second tooth-carrying elements and causing the latter to overcome the frictional contact between it and the braking means thereby causing it to slip relative thereto, said actuating means being further operative in cooperation with said biasing means in response to reversal of said drive element with the first and second interlocking elements interlocked to cause said toothed roller to descend said ascended ramp and ascend the other thus momentarily retracting said second interlocking member before again extending and reconnecting same to said first interlocking member for continued driving engagement in said reverse direction, and said actuating means being still further operative in cooperation with said biasing means in response to deactivation of said drive element into a free-wheeling condition and rotation of said driven element relative thereto in a direction opposite to that in which said drive element was last driven while said braking means remains effective to prevent rotation of said second tooth-carrying means to rotate said interlocked first and second interlocking elements as a unit relative to said cam follower subassembly so as to cause the toothed roller thereof to descend the ramp it has ascended thereby allowing said biasing means to bias said second interlocking member into retracted position and releasing the driving connection between it and said first interlocking member.

4,369,869

SAFETY DEVICE FOR MECHANICAL OR HYDRAULIC PRESSES

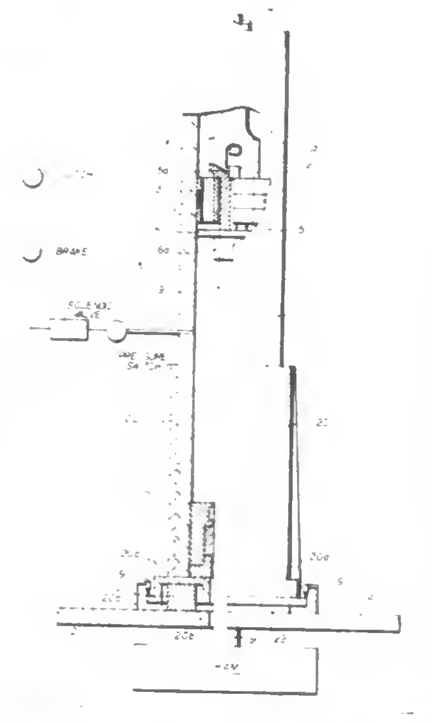
Anna M. Sannipoli, Gubbio; Lordana Nibi, Fabriano, and Giorgio Saldi, Gubbio, all of Italy, assignors to Sicurpress Antinfortunistica & C., Gubbio, Italy

Filed Sep. 17, 1980, Ser. No. 188,105

Claims priority, application Italy, Oct. 17, 1979, 631 A/79

Int. Cl.³ F16P *3/18;* F16D *67/02;* F16F *9/34*

U.S. Cl. 192—131 R **6 Claims**



1. A safety device for a ram for preventing unwanted travel of the ram in a press or the like which includes:

the ram,

a rod (9) operatively connected thereto and a dual hand control requiring two hands to energize and displace the ram and the rod;

the improvement comprising:

a piston fixed to the rod intermediately thereby defining upper (11) and lower (9) rod portions,

the ram connected to the lower rod portion,

a cylinder within which said piston is moveable,

fluid in said cylinder,

passage holes in said piston to allow migration of fluid when said piston moves with the rod,

a plunger disc (6) slidably supported on said lower rod having studs (5) extending through and depending from said piston by enlarged heads (5*a*) on a top portion of said studs resting on a top piston face,

said plunger disc having a bearing surface adapted to occlude said piston passage holes and means to keep said bearing surface of said plunger disc away from said piston and operated by and when the dual hand control is activated to allow fluid to pass through said piston and therefore said piston to move.

4,369,870

AUTOMATIC GRAIN DISTRIBUTOR

Edmund P. Taylor, Greencastle, Ind., assignor to Bryant-Poff, Inc., Coatesville, Ind.

Filed Sep. 11, 1980, Ser. No. 186,350

Int. Cl.³ B65G *11/12*

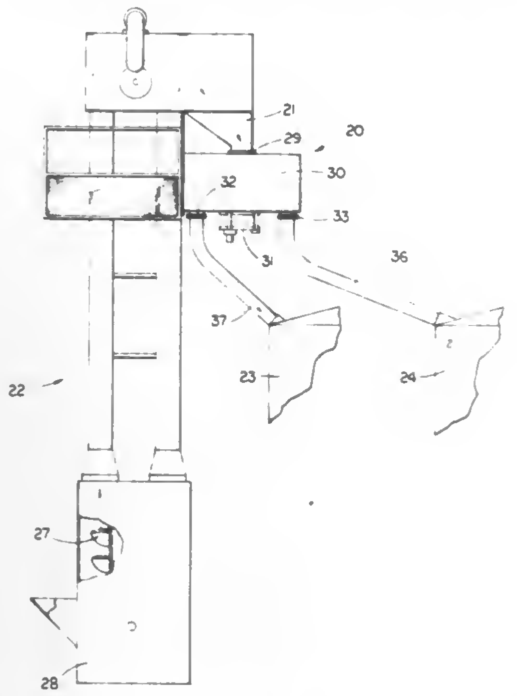
U.S. Cl. 193—23 **12 Claims**

1. An automatic distributor suitably arranged for interfacing between a material source location and a plurality of remote delivery locations, said automatic distributor comprising:

a distributor housing including a material inlet and a bottom plate, the bottom plate including a plurality of delivery apertures suitably arranged for connection to remote delivery locations;

an inner spout disposed within said distributor housing and coupled at one end to said material inlet, the opposite end being selectively positionable into flow communication with one of said delivery apertures; and

means for moving said inner spout from a position of direct flow communication with one of said plurality of delivery apertures to a position of direct flow communication with a different one of said plurality of delivery apertures, said moving means including an eccentric plate suitably arranged to initiate movement of said inner spout from one delivery aperture to said different delivery aperture.



4,369,871

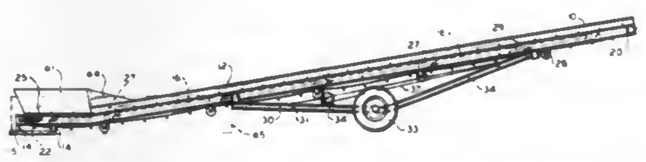
ELEVATOR CONVEYOR FOR TOMATOES OR THE LIKE

Harold B. Patten, 4631 Bay's Rd., Rising Sun, Ohio 43457, and Samuel H. Patten, 10721 McCutchionville Pike, Wayne, Ohio 43466

Continuation of Ser. No. 46,093, Jun. 6, 1979, abandoned. This application Jan. 21, 1981, Ser. No. 226,909

Int. Cl.³ B65G *41/00*

U.S. Cl. 198—320 **3 Claims**



1. Elevator conveyor for tomatoes and the like comprising:

a. an upwardly inclined main frame having an upper end and a lower end, said main frame including two spaced apart parallel beams connected by a series of spaced apart transverse braces, a plurality of inwardly-extending block means connected to said beams, a series of first rollers rotatably secured to said beams, one of said first rollers being disposed between adjacent ends of said block means, and a series of second rollers secured to an underside of said main frame,

b. a dog leg lower end frame portion integral with said lower end of said main frame and disposed substantially parallel to the supporting surface,

c. an endless rubber covered chain conveyor operating throughout said dog leg and main frame, an upper flight of said conveyor chain being carried by said block means and said first rollers and a lower flight of said conveyor chain being carried by said second rollers, said chain conveyor including spaced apart transversely extending cross pieces and upstanding pusher paddles,

d. a subframe connected to the underside of said main frame having articulated arms and a wheel support axle,

e. sheave and cable means connected to said articulated arms to cause upon operation variation in vertical positioning of the upper end of said main frame, and

f. a reel means for operating said cable means.

4,369,872

APPARATUS FOR THE MANUFACTURE AND/OR HANDLING OF WORKPIECES

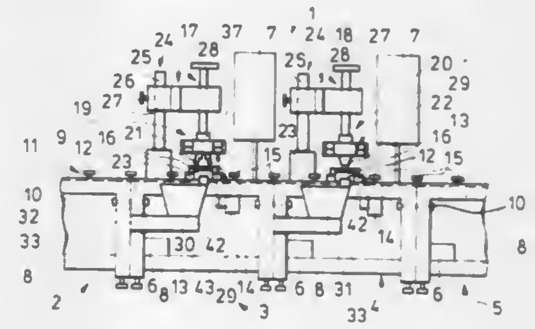
Walter Sticht, Wankhamerstrasse 8/48, Attnang-Puchheim, Austria (A-4800)

Filed Sep. 12, 1980, Ser. No. 186,655

Claims priority, application Austria, Oct. 31, 1979, 7023/79

Int. Cl.³ B65G *47/04*

U.S. Cl. 198—339 **26 Claims**



1. An apparatus for the manufacture or the handling of workpieces, which comprises

(a) a succession of work stations,

(b) conveyor means interconnecting the work stations and arranged for transporting respective ones of the workpieces from, to and between the work stations,

(c) elongated guide means for the conveyor means,

(d) a mechanism associated with each one of the work stations for handling a respective one of the workpieces, the mechanism including

(1) a fixed support,

(2) three rectilinear guide tracks extending perpendicularly to each other, a first one of the guide tracks extending in a plane perpendicular to the plane defined by the elongated guide means and being affixed to the fixed support, and two additional guide tracks extending in a plane parallel to the plane defined by the elongated guide means, one of the additional guide tracks extending parallel to the elongated guide means and the other one of the additional guide tracks extending perpendicularly thereto,

(3) a holder slidably mounted on the first guide track and one of the additional guide tracks being affixed to the holder,

(4) a carrier element slidably mounted on the additional guide track affixed to the holder and another one of the additional guide tracks being affixed to the carrier element,

(5) a gripping element slidably mounted on the additional guide track affixed to the carrier element and capable of gripping the respective workpiece, and

(6) drive means associated with the guide tracks for moving the respective workpiece gripped by the gripping element along respective ones of the guide tracks, and

(e) a control for operating the drive means in dependence on each other.

4,369,873

APPARATUS FOR LATERALLY DEFLECTING ARTICLES

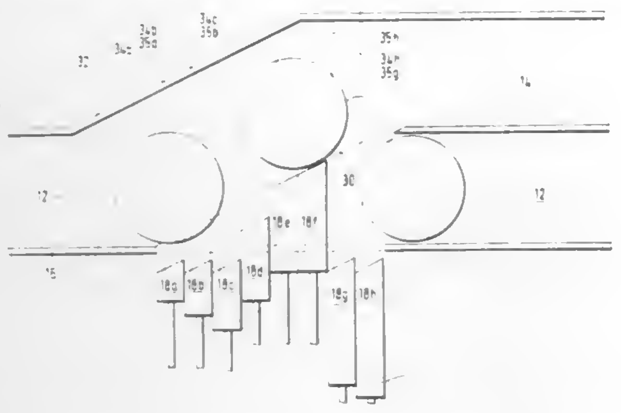
Bernhard Heuft, Im Sonnenwinkel 14, 5475 Burgbrohl, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,261

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801387

Int. Cl.^{3} B65G *37/00, 47/10, 47/26*

U.S. Cl. 198—/367 **8 Claims**



1. An apparatus for laterally deflecting specific articles selected with respect to one criterion from a first conveyor means to a second conveyor means for the deflected articles, said apparatus comprising:

(a) deflecting segments each having an oblique working face, said segments being

(i) stationary in the direction of advance of said articles to be deflected;

(ii) extensible and retractable in such a manner that the working faces of individual segments are flush with the working faces of the preceding segments and together form a deflecting surface leading from said first conveyor means to said second conveyor means; and

(iii) the width of each segment being less than about one-half of the sum of the dimension of the articles in the direction of advance and their distances from each other;

(b) operating means which operate on the individual segments to extend and retract them;

(c) detecting means which generate control signals each time an article passes the same; and

(d) delay means which delay the control signals in response to the velocity of said conveyor means, the distance between said detecting means and each of said individual deflecting segments, and the reaction time and the extending and retracting time of said segments, whereby at any given point in time only those segments are extended or will be extended which at this point in time or immediately thereafter are necessary for deflecting an article, and whereby said segments do not move at the time an article which is to be deflected is contacting said segments.

4,369,874

DEVICE FOR DISENTANGLING ENTANGLED COMPONENTS

Hans Kettner, cFranzburger Strasse 14a, 3007 Gehrden, and Odo Hütter, Mendelssohnstrasse 50, 3000 Hannover, both of Fed. Rep. of Germany

PCT No. PCT/DE79/00056, § 371 Date Feb. 13, 1980, § 102(e) Date Feb. 12, 1980, PCT Pub. No. WO80/00074, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 13, 1979, Ser. No. 191,340

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2826245; Nov. 28, 1978, 2851811

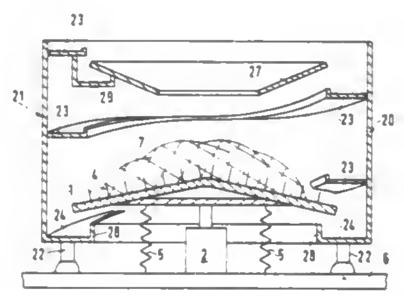
Int. Cl.^{3} B65G *47/14, 47/24*

U.S. Cl. 198—396 **10 Claims**

1. A device for disentangling components from a cluster of entangled components including a disentangling plate, and vibrator means coupled to drive said plate and formed to impart reciprocal movement to said plate, wherein the improvement in said device comprises:

said plate being an imperforate, continuous plate formed for support of a bottom side of said cluster of components directly in contact with said plate during reciprocal movement thereof;

a plurality of pins extending vertically from an upwardly facing side of said plate for support of said cluster of entangled components against movement in a horizontally extending direction, said pins being relatively spaced apart at a distance permitting support of said bottom side of said cluster directly on said plate and permitting movement of disentangled components in a horizontally extending direction along said plate;



guideway means formed for guided vertical reciprocation of said plate;

said vibrator means being formed for vertical reciprocal movement of said plate to produce alternate vertical lifting and impacting of said cluster against said plate; and

said vibrator means being further formed to enable controlled change of the amplitude and frequency of said vertical reciprocal movement to change the rate and magnitude of lifting and impacting of said cluster against said plate.

4,369,875

APPARATUS FOR ISOLATION AND SUPPLY OF OBJECTS, IN PARTICULAR SWEETS, TO A PACKING MACHINE

Heinz Schmitz, Hurth-Efferen, Fed. Rep. of Germany, assignor to Firma Rose Verpackungsmaschinen-Fabrik Theegarten GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,276

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932431

Int. Cl.^{3} B65G *47/26, 47/31*

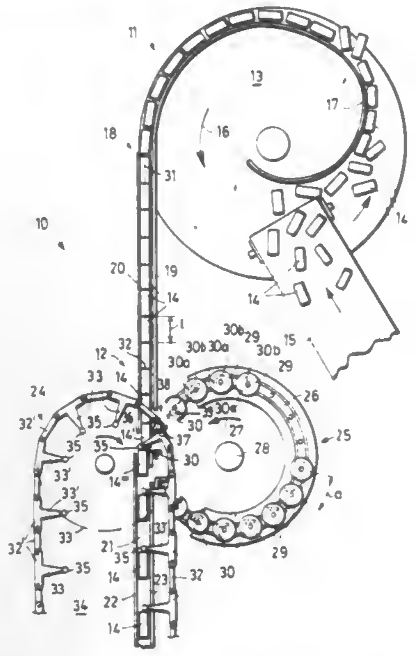
U.S. Cl. 198—456 **9 Claims**

1. An apparatus for feeding and isolating generally rectangular objects moving at a relatively high speed, said apparatus comprising;

first conveyor means for advancing said objects in side by side relation at a predetermined first velocity along a first path;

an endless flexible element located above said first conveyor means and moving at a second predetermined velocity greater than said first velocity along a second path, said path having at least an arcuate portion crossing over said first path, and a continuous generally straight portion exiting said arcuate portion and generally parallel to said first path, said flexible element including means laterally offset from said flexible element and projecting radially inwardly from said element when said element moves along said arcuate portion, said means including downwardly extending dog members having a component of velocity parallel to said first path which increases as said dog members approach said straight portion and is approximately equal to said first velocity at a predetermined location along said arcuate position, said first and second generally straight paths being spaced and generally parallel and situated in the same horizontal plane, and

means at said predetermined location for laterally shifting said objects one at a time from said first straight path to said second straight path, exposing a portion of the trailing surface of said shifted objects to said dog members.



4,369,876

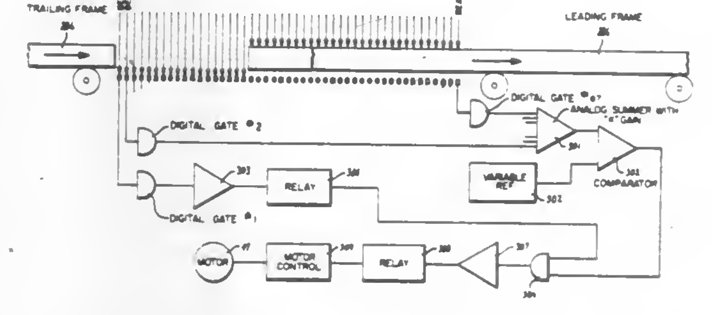
MULTI-LAYER COATING APPARATUS, SYSTEM AND METHOD

Edward A. Small; Richard H. Edwards; Eugene A. Eufusia; Robert M. Clary, and Nils H. Bergfelt, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 848,935, Nov. 7, 1977, which is a division of Ser. No. 756,482. Jan. 3, 1977, abandoned, which is a division of Ser. No. 574,300, May 5, 1975, Pat. No. 4,015,558, which is a continuation of Ser. No. 311,783, Dec. 4, 1972, abandoned, which is a continuation of Ser. No. 8,813, Feb. 5, 1970, abandoned. This application Nov. 13, 1980, Ser. No. 206,369

Int. Cl.^{3} B65G *47/26*

U.S. Cl. 198—460 **4 Claims**



1. In a conveyor system for controlling the spacing between fragile articles being conveyed, a framework, first, second and third conveyors mounted end to end on said framework for advancing articles along a path, said first conveyor having means for causing it to operate at one rate of travel, said second conveyor having means for causing it to operate at said one rate of travel and at a second rate of travel, said third conveyor having means for causing the same to operate at said second rate of travel, and electronic means associated with the second conveyor means for sensing the spacing between the trailing edge of a preceding article and the leading edge of a following article and connected to the second conveyor for causing the second conveyor to operate at said first rate of speed until the following article approaches said preceding article to provide a predetermined spacing between the following and preceding articles to prevent them from bumping into each other and thereafter causing the second conveyor to travel at said second rate of speed said electronic means including means for adjusting said predetermined spacing in accordance with the type of article being conveyed.

4,369,877

STOCKPILE RECLAIMING APPARATUS

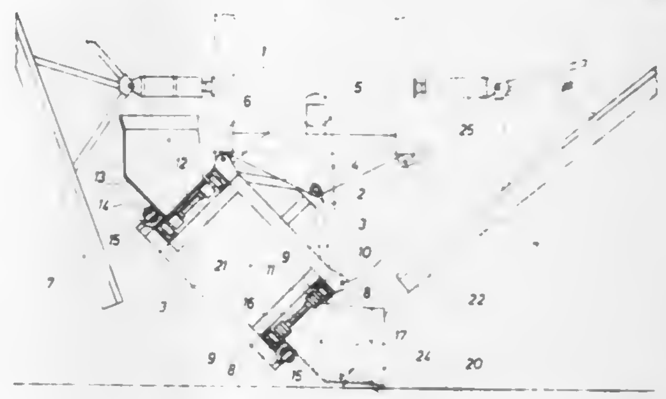
Helmut Heuer, Bad Oeynhausen, Wilhelm Schäpsmeier, Porta Westfalica; Hans D. Fohlmeister, Bad Oeynhausen, all of Fed. Rep. of Germany, assignors to Weserhütte Aktiengesellschaft, Bad Oeynhausen, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,577

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907966

Int. Cl.^{3} B65G *65/06*

U.S. Cl. 198—509 **6 Claims**



1. A stockpile reclaiming apparatus for discharging bulk material from a stockpile having a predetermined bed; said apparatus comprising

a bridge extending over the width of the stockpile for displacement longitudinally of the stockpile;

a support framework mounted on and under said bridge; and

a discharging means mounted on said framework, said means including an endless traction means journalled in said framework in parallel to an end face of the stockpile and a plurality of discharge elements fastened to said endless traction means for movement in an endless path parallel to and laterally across the width of the end face of the stockpile to pick up material directly therefrom and to discharge the material at the base of the stockpile, each said discharge element including a rear wall, a bottom and a pivotal side wall, each said side wall abutting a bottom of a following discharge element wherein in a longitudinal run of said traction means, said side wall of one discharging element forms a second side wall of an adjacent discharging element, said endless path being disposed in a plane inclined to the bed of the stockpile, said plane defining an acute angle with the plane of the bed with an apex of said angle directed toward the end face of the stockpile.

4,369,878

CONVEYOR BELT TRACKING

Eugenio Millevoi, Fort Lee, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

Filed Nov. 4, 1980, Ser. No. 203,894

Int. Cl.^{3} B65G *39/16*

U.S. Cl. 198—807 **3 Claims**

1. Conveyor belt tracking apparatus comprising

a horizontal conveyor belt and means to drive it in a longitudinal direction along a desired straight path,

said belt having left and right edges,

a drive motor disposed beneath said conveyor belt and having left and right universal joints,

a generally horizontal first threaded shaft secured to said right universal joint and a generally horizontal second threaded shaft secured to said left universal joint,

a first pivot block having one, lower, end coupled to said first threaded shaft and adapted to move back and forth along said first threaded shaft,

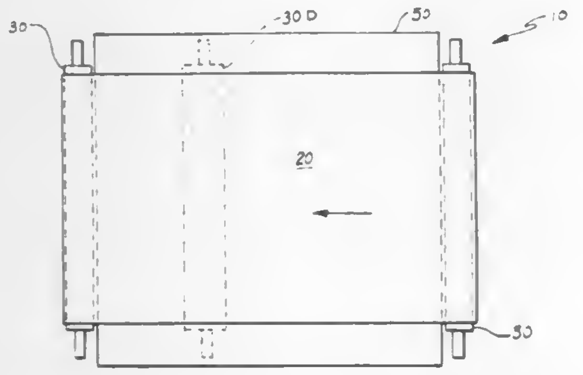
a second pivot block having one, lower, end coupled to said second threaded shaft and adapted to move back and forth along said second threaded shaft,

a first guide roller horizontally disposed beneath the conveyor belt adjacent to the right edge of the conveyor belt,

said first pivot block having its other, upper, end secured to said first guide roller, the coupling being such that movement of the lower end of the pivot block causes pivoting of the upper end of the pivot block and of the first roller secured thereto,

a second guide roller horizontally disposed beneath the conveyor belt adjacent to the left edge of the conveyor belt,

said second pivot block having its other, upper, end secured to said second guide roller, the coupling being such that movement of the lower end of the pivot block causes pivoting of the upper end of the pivot block and of the second roller secured thereto,



a right switch disposed adjacent to the right edge of said conveyor belt and adapted to be contacted by said conveyor belt if said conveyor belt moves to the right as it proceeds in said direction, and

a left switch disposed adjacent to the left edge of said conveyor belt and adapted to be operated by said conveyor belt if said conveyor belt moves to the left as it proceeds in said direction,

said right and left switches being connected to said motor and adapted, when closed by said belt, to rotate said first and second threaded shafts in such directions as to cause said first and second pivot blocks to move along their shafts and pivot said first and second rollers in such a direction that one roller contacts the belt and applies a force which moves it back to its normal desired path of travel.

4,369,879

MAGNETIC DISK STORAGE CASE

Robert A. Egly, 1630 Marguerite Dr., Corona del Mar, Calif. 92625, and Patrick Sullivan, Tustin, Calif., assignors to Robert A. Egly, Corona del Mar, Calif.

Filed Jan. 21, 1981, Ser. No. 226,621

Int. Cl.^{3} B65D *85/57, 1/24*

U.S. Cl. 206—45.18 **25 Claims**

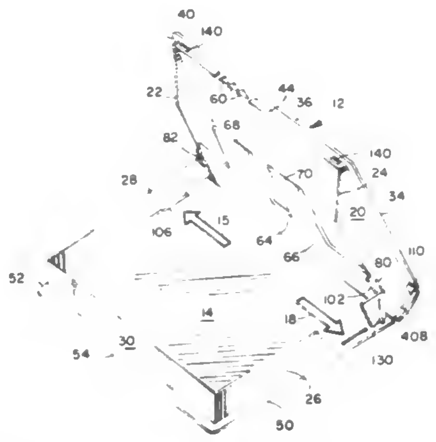
1. A container for magnetic storage material such as disks, magnetic cards and the like comprising:

a clamshell-like opening and closing container having a bottom portion which generally provides a base and a receptacle for a top portion of said clamshell container which has been hinged thereto and which has a ledge within said top portion of said container for receipt of magnetic memory storage members between the ledge and the inner surface of said container;

means for resiliently hinging said bottom and top member formed from a continuous hinge member between said top and bottom member;

means for holding said top member open in a resting mode on said bottom member for exposure and access of magnetic storage members resting on said ledge between said top member and said ledge comprising a protuberance which can engage the bottom portion with respect to said top member;

resilient side walls at least partially surrounding said bottom portion into which said top portion is received of sufficient resilience to allow said protuberance to override its engagement by flexing laterally to permit such disengagement; and,



lateral walls on either side of said top portion in proximate relationship to said ledge for capturing magnetic memory members between said lateral walls, said ledge and said inner surface of said top member.

4,369,880

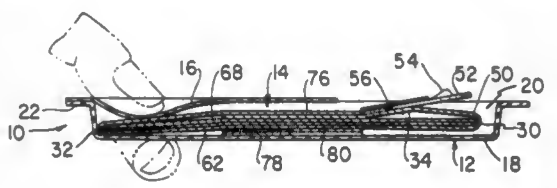
POP-UP ARMED SUTURE

Robert W. Giggey, Port Washington; Bernard T. Serletic, Manhasset, both of N.Y., and Charles R. Ashley, Clinton, N.J., assignors to Howmedica, Inc., New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,094

Int. Cl.^{3} A61B *17/04;* **B65D** *85/24*

U.S. Cl. 206—63.3 **42 Claims**



1. A container for dispensing at least one suture secured to one end of a needle, comprising:

a. first panel means for retaining a portion of the needle, said first panel means capable of flexing about a first predetermined axis such that the remaining portion of the needle is exposed free of said first panel means upon flexing of said first panel means about said first predetermined axis;

b. second panel means for retaining a major portion of the suture, said second panel means being connected to said first panel means and configured such that the suture can be withdrawn therefrom upon removal of the needle from said first panel means; and

c. third panel means connected to said second panel means and coupled to said first panel means, said third panel means capable of being displaced so as to effect flexing of said first panel means about said first predetermined axis, so as to expose said remaining portion of the needle free of said first panel means.

4,369,881

COIL PACKAGE WITH HUB FORMING MEANS CONTAINED THEREIN

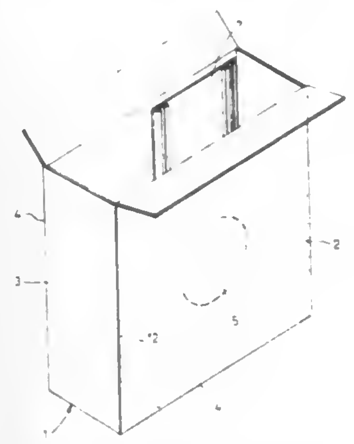
Neville J. Ditchfield, 19 Gleneagles Close, Vicars Cross, Cheshire, England

Filed Nov. 16, 1981, Ser. No. 321,812

Claims priority, application United Kingdom, Nov. 14, 1980, 8036601

Int. Cl.^{3} B65D *85/04;* **B65H** *55/02*

U.S. Cl. 206—225 **15 Claims**



1. A coil package comprising a closed carton which is formed from at least one folded blank of cardboard or plastics material and which has a pair of oppositely disposed major side walls whose boundary edges lie in substantially parallel planes, each of which major side walls has an area of weakness in axial alignment with an area of weakness in the other major side wall; a coil of wire housed in the closed carton; and, removably housed in the closed carton, separately formed means for forming a substantially rigid hollow hub, the arrangement being such that, when it is desired to convert the closed carton into a reel to facilitate withdrawal of wire from the package, the areas of weakness are removed from the major side walls to form apertures therein, the separately formed hub-forming means is extracted from the package, and the hub-forming means is assembled to form a substantially rigid hollow hub extending between and secured to parts of the major side walls. bounding the apertures in the major side walls.

4,369,882

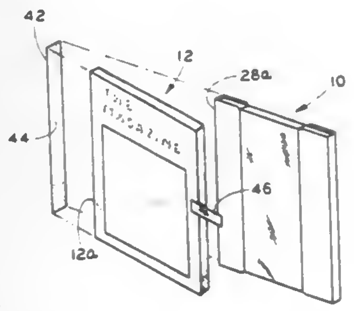
CONTAINER FOR PRODUCT SAMPLES

Allen Schluger, New York, N.Y., assignor to Modular Magazine Sampling Systems, Inc., New York, N.Y.

Filed Jun. 19, 1981, Ser. No. 275,372

Int. Cl.^{3} B65D *77/00, 77/26, 85/00*

U.S. Cl. 206—232 **5 Claims**



1. A flexuring container for fragile product samples comprised of a paperboard blank delineated into a similarly sized rectangularly shaped back panel and a pair of opposite side panels, a pair of spacing panels each of an elongated rectangular shape and of a selected width interconnecting each said side panel along an edge of said back panel, a body of plastic foam construction material with selected portions removed to form product sample-receiving compartments having an operative position adhesively secured to said back panel, said height of said plastic body being of the same extent as the width of said spacing panels and said shape and size thereof being of the same extent as said back panel, a clear plastic sheet disposed in covering relation over said plastic body to serve as a closure for said compartments therein, and a strip formed into a closed loop disposed in encircling relation over the operative positions of said side panels closed upon said plastic body, said closed loop having an operative position oriented transversely and centrally of said closed side panels, whereby limited slippage is permitted in said side panels under said closed loop which continues to maintain said side panels closed upon said plastic body while allowing corresponding limited flexuring in said container to the extent of said slippage.

4,369,883

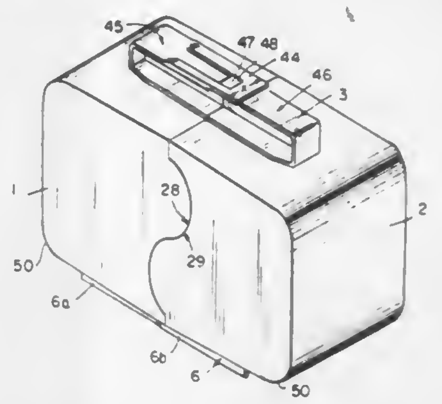
TAPE CASSETTE STORAGE AND CARRYING CASE

David M. Stravitz, 16 Park Ave., (Suite 14A), New York, N.Y. 10016

Filed Apr. 27, 1981, Ser. No. 258,007

Int. Cl.^{3} B65D *85/67*

U.S. Cl. 206—387 **10 Claims**



1. A tape cassette storage and carrying case, comprising:

first and second substantially hollow shell members (1,2) each having an open end and a bottom opposite said open end, said shell members being pivotally connected together and being relatively movable between a closed position wherein said open ends face each other, and an open position wherein sides of said shells are adjacent each other;

support means (21,22) mounted at the inner, bottom ends of said shell members and defining a plurality of stepped support levels for cassettes inserted in the shells from the open ends of said shells, the support levels for each cassette being different and being stepwise graduated in an ascending manner from the front toward the back of the shell members, the stepped support levels of the shell members (1, 2) ascending in opposite directions; and

means for maintaining said shells in said closed position to enclose cassettes stored therein.

4,369,884

INK RIBBON CARTRIDGE PACK

James R. Daughters, 244 Morris Ranch Rd., Danville, Calif. 94526

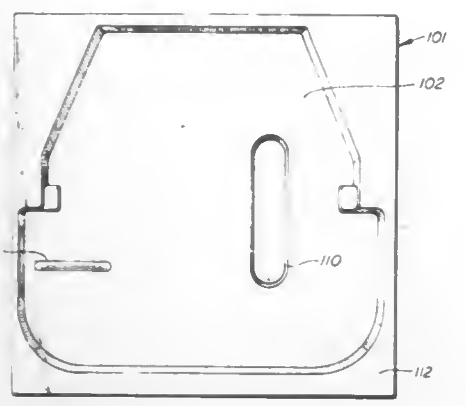
Continuation-in-part of Ser. No. 80,880, Oct. 1, 1979, Pat. No. 4,307,969. This application Jul. 20, 1981, Ser. No. 284,430

Int. Cl.^{3} B65D *85/67, 1/40;* **B41J** *35/28*

U.S. Cl. 206—389 **8 Claims**

1. A protective pack for packing a plurality of ribbon cartridges inside a carton, each of said cartridges including a body, a ribbon pancake mounted within the body, said body having a viewport extending radially adjacent the ribbon pancake to allow observation thereof, the protective pack comprising a shell defining a cavity having a shape substantially conforming to that of the cartridge and a shoulder projecting

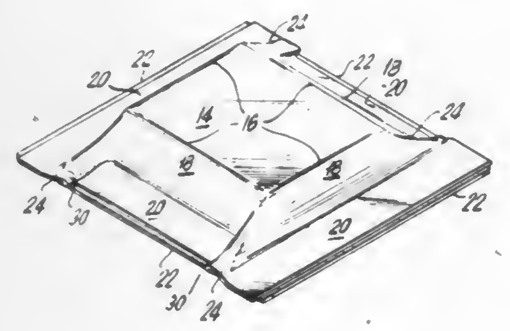
from the shell into the cavity, the shoulder having dimensions and being located so that it will project through the viewport and engage the ribbon pancake when the cartridge is placed in the pack.



4,369,885

SEALED PACKAGES FOR SPREADABLE PRODUCTS

Sanford Redmond, 1385 York Ave., New York, N.Y. 10021
Division of Ser. No. 180,062, Aug. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 80,141, Sep. 28, 1979, abandoned. This application Jan. 7, 1981, Ser. No. 222,979
Int. Cl.³ B65D *65/32, 65/02, 85/74*
U.S. Cl. 206—484 **19 Claims**



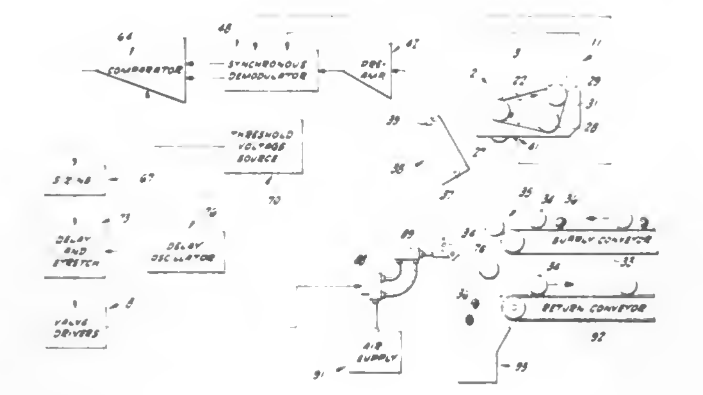
1. A sealed package for storing, shipping and handling an individual service portion of a spreadable product and for supporting said spreadable product for use after opening said package, comprising:

(a) a substantially flat, relatively stiff, base member;
(b) a spreadable product removably adhered to and supported by the top surface of said base member;
(c) margins on said base member surrounding said spreadable product;
(d) a relatively thin, flexible cover member having
  (i) a center portion spaced from said base member and covering said spreadable product,
  (ii) downwardly extending side walls about the periphery of said center portion, and
  (iii) outwardly extending margin portions at the ends of said downwardly extending side walls and surrounding said center portion;
(e) means for removably sealably adhering said outwardly extending margin portions of said cover member to said margins on said base member to sealingly enclose said spreadable product therebetween for said storing, shipping and handling thereof; and
(f) opening means permitting a portion of said cover member to be grasped for peeling said cover member from both said base member and said spreadable product so that said spreadable product remains adhered to and supported by said base member for use upon removal of said cover member.

4,369,886

REFLECTANCE RATIO SORTING APPARATUS

Marvin M. Lane, and Eric W. D. Garnett, both of Woodland, Calif., assignors to Ag-Electron, Inc., West Sacramento, Calif.
Continuation of Ser. No. 82,961, Oct. 9, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,583
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—564 **20 Claims**



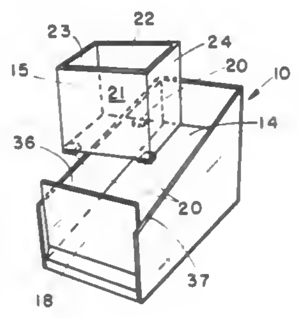
1. An apparatus for sorting two materials, each material exhibiting an amplitude peak in reflected light wave energy at a different characteristic frequency, comprising:

a. illumination means for exposing a planar area defining a sampling zone to a sampling cycle, said sampling cycle including alternating pulses of light wave energy at two distinct frequencies, each of said pulses corresponding in frequency, respectively, to the characteristic frequency of amplitude peak in reflected light energy for each of the materials;
b. means for moving the materials through the sampling zone;
c. a single detector directed at the sampling zone and adapted to produce an electrical signal commensurate in amplitude to the intensity of light reflected from the materials moving through the sampling zone;
d. comparator means for producing a reject signal if the amplitude of a first electrical signal corresponding to the first of said pulses and the amplitude of a second electrical signal corresponding to the second of said pulses, bear a predetermined relationship; and,
e. means for physically separating one of the materials from the other material in response to the reject signal.

4,369,887

MERCHANDIZING RACK

Merton D. Emery, Grand Haven, Mich., assignor to Harbor Industries, Inc., Grand Haven, Mich.
Filed Oct. 11, 1979, Ser. No. 83,802
Int. Cl.³ A47F *3/14*
U.S. Cl. 211—49 D **34 Claims**



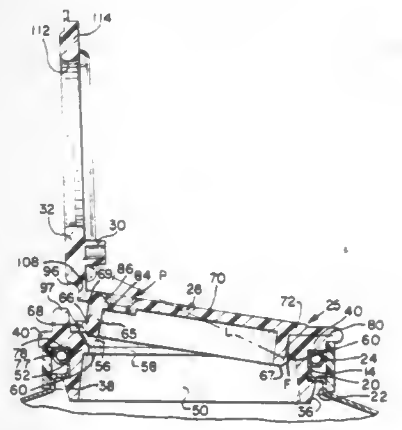
1. A merchandising rack for displaying and dispensing a plurality of generally planar upright product packages comprising:

a forwardly inclined ramp adapted for receiving a first linear array of the product, said ramp comprising a hard planar surface;
a product carrying container slidably engaging said ramp, said container being adapted for receiving a second linear array of the product and backing up the first linear array of the product to gravity bias the first linear array of the product forward for viewing and dispensing of the product, said container being provided with an array of anti-friction means comprising an array of Teflon pads; and
stop means disposed at the front of said ramp for engaging the first linear array of the product and said container when the first linear array of the product is exhausted.

4,369,888

CLOSURE FOR CONTAINER

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed Mar. 11, 1981, Ser. No. 242,756
Int. Cl.³ B65D *39/04*
U.S. Cl. 215—237 **10 Claims**



1. A flexible plastic closure for a container comprising a neck sleeve adapted to fit into an opening in a container, said neck sleeve having a bore providing a pour aperture, plug locking means on said neck sleeve extending radially into the bore, a plug insertable into said pour aperture for closing the container, said plug having locking means for interlocking engagement with said plug locking means on said neck sleeve upon full insertion of said plug into said neck sleeve, said locking means on said neck sleeve including means for guiding said plug in canted relation into said bore with a portion of said locking means on said plug entering into engagement with said plug locking means on said neck sleeve for operation as a fulcrum at one side of said plug whereby upon the application of an inwardly directed force on said plug at a point diametrically opposite said fulcrum said plug serves as a lever against said neck sleeve and swings about said fulcrum to facilitate full insertion of said plug into said bore and thereupon interlock both of said interlocking means with each other.

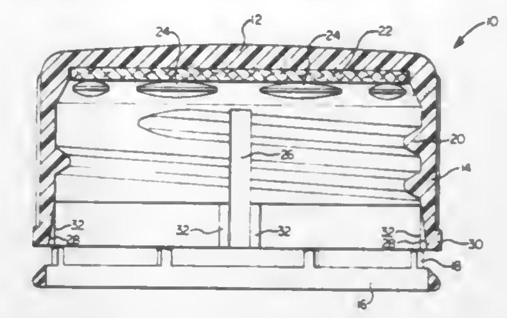
4,369,889

TAMPERPROOF CLOSURE

Efrem M. Ostrowsky, Highland Park, Ill., assignor to Ethyl Products Company, Richmond, Va.
Filed Jun. 8, 1981, Ser. No. 271,775
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—246 **7 Claims**

1. A thermoplastic closure for fitment into a container, said closure having:

(a) a top wall;
(b) an annular sidewall, downwardly depending from said top wall;
(c) a closure thread about the inside surface of said sidewall;
(d) sealing means above said closure thread for achievement of a gas-tight seal with said container;
(e) gas venting means for venting gas from said container to the atmosphere subsequent to loss of said gas-tight seal when said closure is loosened from its fitment to said container;
(f) heat-shrinkable tamper-indicating means attached to the lowermost end of said closure sidewall; and

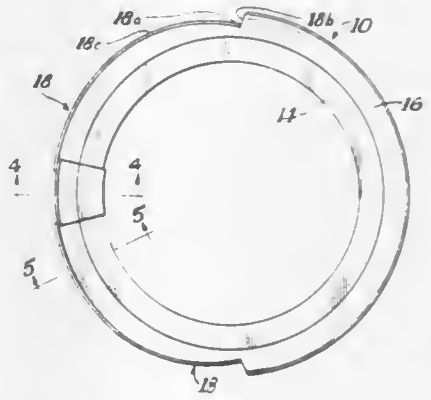


(g) heat sink means adjacent the lowermost end of said sidewall, said heat sink means being an annular bead extending outwardly from the outer lowermost surface of said sidewall.

4,369,890

PAINT CAN COLLAR

Gordon C. Bennett, 500 Isle of Capri, Fort Lauderdale, Fla. 33301
Filed Sep. 24, 1980, Ser. No. 190,345
Int. Cl.³ B65D *25/00, 25/48*
U.S. Cl. 220—85 R **3 Claims**



1. In a paint can collar of a type mountable on paint cans at their openings for preventing the dripping of paint and the filling of paint-can lid grooves, and of a type comprising a substantially annularly-shaped variable diameter body, said annularly-shaped body having a lower-lip portion with a greater diameter than said paint-can openings for being compressed and inserted into said openings and then expanding outwardly into engagement with inner walls of paint cans and an intermediate lip for extending over said paint-can lid grooves when said paint can collar is mounted on said paint cans, said annularly-shaped body being split at one place about its circumference to define two ends and adjacent end portions, said annularly-shaped body being constructed of resilient material which, when said annularly-shaped body is compressed, biases said annularly-shaped body to expand, with said end portions moving relative to one another and said lower-lip portion being urged outwardly into engagement with paint can walls, the improvement wherein:

said body has an upper lip portion outwardly projecting from said intermediate portion beyond the outer diameters of the paint cans, said upper lip portion defining a pair of radially-directed indentations for being placed into alignment with paint-can handles when they are placed in upright positions for lifting paint cans on which the collar is mounted, both of said indentations each having a substantially abrupt abutment corner at the intersection of an abutting edge and a gradually-tapering edge of the upper lip, the respective abutting edges extending substantially radially from said intermediate portion and being lateral to and defining substantially straight, diametrically opposed, ends of a first arcuate portion of said upper lip portion, the respective gradually-tapering edges each extending from a second arcuate portion opposite said first arcuate portion, said second arcuate portion tapering gradually radially inwardly from a location distal from each of said abutting edges and ending at respective abrupt abutment corners, said gradually tapering edges allowing a handle to be easily moved into each of said indentations, while said abutting edges inhibit further movement of said handle beyond said indentations.

2. In a paint can collar of a type mountable on paint cans at their openings for preventing the dripping of paint and the filling of paint-can lid grooves, and of a type comprising a substantially annularly-shaped variable diameter body, said annularly-shaped body having a lower-lip with a greater diameter than said paint can openings for being compressed and inserted into said openings and then expanding outwardly into engagement with inner walls of the paint cans and an intermediate lip for extending over said paint-can lid grooves when said paint can collar is mounted on said paint cans, said annularly-shaped body being split at one place about its circumference to define two ends and adjacent end portions, said annular body being constructed of resilient material which, when said end portions are overlapped to reduce the diameter of said annularly-shaped body, biases said annularly-shaped body to expand with said end portions sliding relative to one another and said lower-lip being urged outwardly into engagement with paint can walls, the improvement wherein:

the main portion of said lower lip and said intermediate portion being configured to form a circular shape, but a first end portion of said lower lip on one side of said slit being radially inwardly, offset from a second end portion of said lower lip on the other side of said slit so that as the two lower-lip end portions slide along one another when overlapped, the first offset end portion allows the second end portion to be in lateral circular registration with the remainder of said lower lip except for the offset lower lip end portion and wherein a first intermediate lip end portion, corresponding to said first end portion of said lower lip, is upwardly offset from a second end portion of said intermediate lip on the other side of said slit so that as the two intermediate-lip end portions slide along one another when overlapped, circular registration of said intermediate lip except for the offset intermediate-lip end portion is allowed.

4,369,891
STRUCTURE OF A BREATHER PIPE FOR GASOLINE TANKS

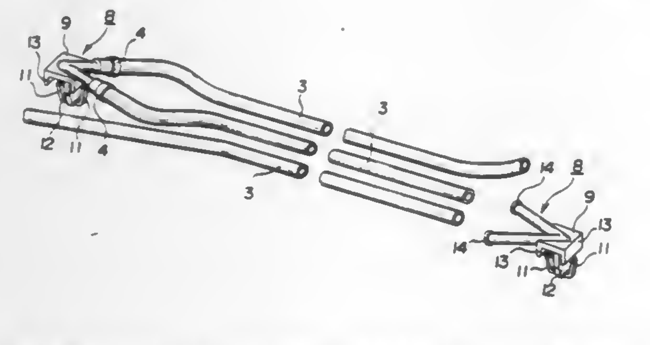
Nobuya Shinozaki, Mooka, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Yokohama, Japan

Filed Apr. 30, 1981, Ser. No. 259,057

Claims priority, application Japan, Aug. 30, 1980, 55-123216[U]

Int. Cl.³ B65D *90/28*

U.S. Cl. 220—85 VR **3 Claims**



1. In a structure of a breather pipe for a gasoline tank comprising connecting members constituting bending portions of said breather pipe and synthetic resin pipes constituting straight portions of said breather pipe which are successively connected to each other to be held in a zigzagged state and disposed above said gasoline tank, the improved structure characterized by said connecting members each molded of a synthetic resin and each comprising a base, a pair of internally communicating connecting arms disposed on the upper surface of said base for being inserted into said synthetic resin pipes, and a zigzag arrangement keeping leg extended downwardly from the lower surface of said base and provided with a pair of projecting pawls upwardly projecting outwardly from the lower end of said leg and having stepped portions formed on the leading ends thereof for coming into fast engagement with the edge of a hole bored in advance in a given panel.

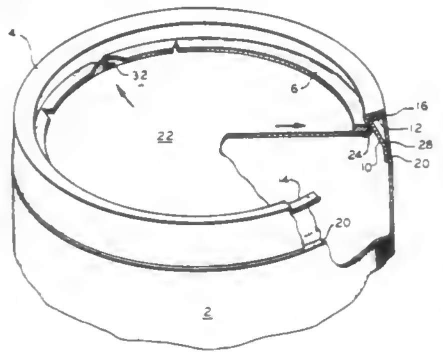
4,369,892
CONTAINER WITH EXPANSION TYPE LOCKING CLOSURE

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 2, 1977, Ser. No. 792,757

Int. Cl.³ B65D *45/32*

U.S. Cl. 220—320 **6 Claims**



1. In combination, (1) a container made of flexible, resilient material having a circular top opening, a finish portion extending upwardly and inwardly from the body of the container in the form of the frustum of a cone which terminates at the top in an integral, outwardly extending, annular flange having a top surface upwardly and forming a circular container lip, and wherein the confluence of said frustum and said lip defines said opening (2) a lid made of flexible, resilient material having a central circular closing portion conforming generally to said circular top opening but smaller in diameter than said opening and an elevated, inverted generally U-shaped circular rim having (i) an interior surface opposing said upwardly facing surface of said circular container lip and conforming in shape to said surface of said circular lip but being slightly wider (ii) an outer annular peripheral skirt having an outer wall and an inner wall (iii) an inner annular skirt having an outer wall and an inner wall, wherein the bottom periphery of the inner wall of said outer skirt is slightly larger in diameter than the diameter of the outwardly facing outer periphery of said circular lip and (3) an expanding pressure ring which is circular when in operative, extended position and is below the plane of said circular top opening, said pressure ring when in operative position pressing radially outwardly against the bottom portion of said outer wall of the inner annular skirt of said lid, thus (a) extending the diameter of the bottom portion of said inner skirt, so that the outer diameter of the lid in the plane of the ring is larger than the diameter of the top of said frustum, and thus locking the lid and (b) pulling said outer skirt into firm contact with the outwardly facing outer periphery of said circular lip, and pulling said opposing interior surface into contact with the upwardly facing surface, of said lip, thereby forming a seal with said container finish.

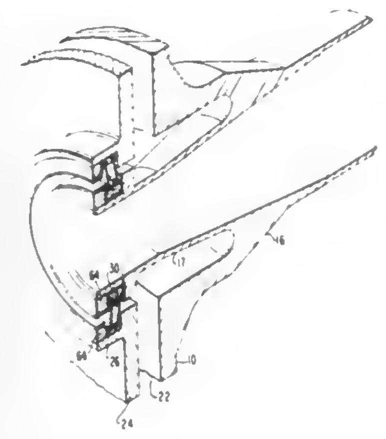
4,369,893
SEALING ARRANGEMENT WITH ANNULAR FLEXIBLE DISC

William E. Pennell, Greensburg, and Charles A. Honigsberg, Monroeville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 19, 1981, Ser. No. 235,371

Int. Cl.³ F16J *15/06*

U.S. Cl. 220—378 **5 Claims**



1. An arrangement for creating a fluid seal between a first component having a portion through which a fluid flows, and a second component radially surrounding said first component and said portion so as to form an annulus between said components, comprising:

a generally channel-shaped inner annular receptacle, affixed about an exterior portion of said first component and said portion, having a central axis, an outwardly facing open front section, and being positioned in a first radial plane;

a generally channel-shaped outer annular receptacle, affixed about an interior portion of said second component and said portion, having a central axis coincident with said central axis of said inner receptacle, an inwardly facing open front section, and being positioned in a second radial plane, said first and second radial planes being displaced from one another along said axes; and

an annular-shaped flexible disc having a body, an inner edge disposed within and contacting said inner receptacle, and an outer edge disposed within and contacting said outer receptacle, whereby said disc is maintained in a generally conical configuration.

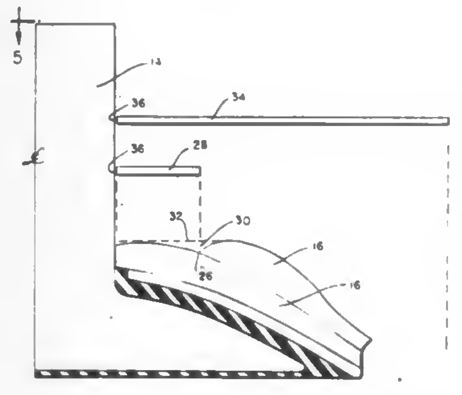
4,369,894
FILAMENT WOUND VESSELS

Richard L. Grover, and William D. Humphrey, both of Lincoln, Nebr., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 29, 1980, Ser. No. 220,972

Int. Cl.³ B65D *25/34, 90/02, 90/06*

U.S. Cl. 220—414 **15 Claims**



1. In a filament wound pressure vessel which has a spherical portion including a polar opening, a plurality of layers of filaments comprising part of the thickness of the vessel and wound about said polar opening, and each layer comprising a sequence of polar winding patterns wound with incrementally increasing wind angles away from said polar opening creating voids at the junctures of adjacent winding patterns near the polar opening and thus between sequential layers at said junctures; a plurality of annular fill doilies installed in an annular region about said polar opening, each doiley to fill a respective one of said voids, the doilies being sized relative to the respective voids such that the outer circumference of each doiley is located generally at the juncture of adjacent winding patterns at the respective void.

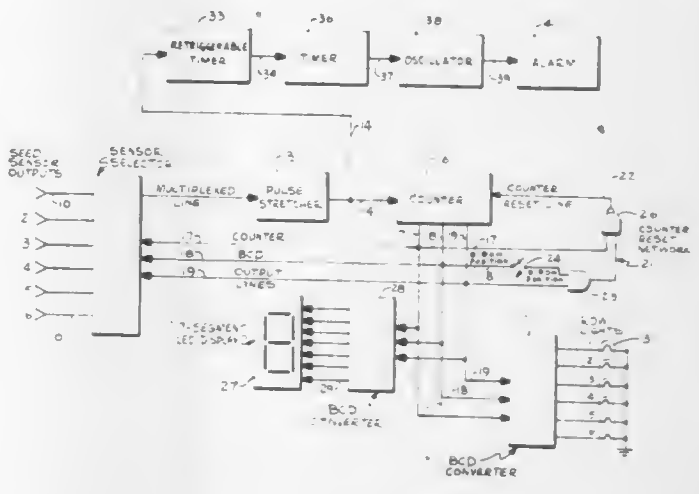
4,369,895
SEED PLANTER MONITOR

John J. McCarty, Peoria, and Kerry L. Meyer, Bloomington, both of Ill., assignors to Field Electronics Inc., Bloomington, Ill.

Filed Apr. 4, 1980, Ser. No. 137,302

Int. Cl.³ A01C *7/18*

U.S. Cl. 221—3 **9 Claims**



1. A monitor for a seed planter operable to periodically dispense seeds in each of a plurality of rows, comprising:

seed sensing means for each row operable to provide an electrical signal at an output as each seed is dispensed;

seed sensor selector means in circuit with the seed sensing means outputs and being operable to provide, at a selector output, selector signals corresponding to the electrical signals supplied by a selected one of the seed sensing means;

advancing means in circuit with the selector output and operatively triggered by each said selector signal to control the seed sensor selector means for sequential selection of the seed sensing means outputs;

detecting means in circuit with the selector output for providing an alarm signal in the absence of a signal from a selected seed sensing means output during a predetermined time period; and

alarm means actuated in response to the alarm signal.

4,369,896
HELICAL VENDING MACHINE WITH PIVOT PANEL ADJUSTMENT

William C. Boettcher, Foley, Mo., assignor to D.O.V.E. Equipment Corporation, Winfield, Mo.

Continuation-in-part of Ser. No. 35,421, May 2, 1979, Pat. No. 4,258,860, and a continuation-in-part of Ser. No. 139,991, Apr. 14, 1980, Pat. No. 4,312,460. This application Mar. 27, 1981, Ser. No. 248,559

Int. Cl.³ C07F *11/36*

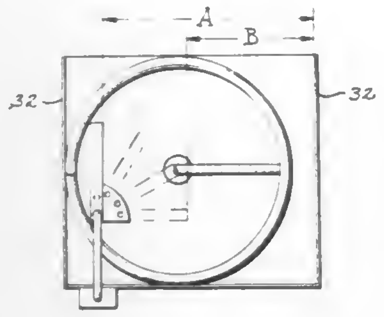
U.S. Cl. 221—75 **10 Claims**

1. A vending machine item discharge unit comprising:

(a) a tray means having a sidewall, a second sidewall, rear and bottom walls,

(b) helical means having a plurality of convolutions along its length to retain articles to be dispensed in the convolutions,

(c) drive means connected to the helical means to rotate said helical means in predetermined increments upon activation by a customer, and

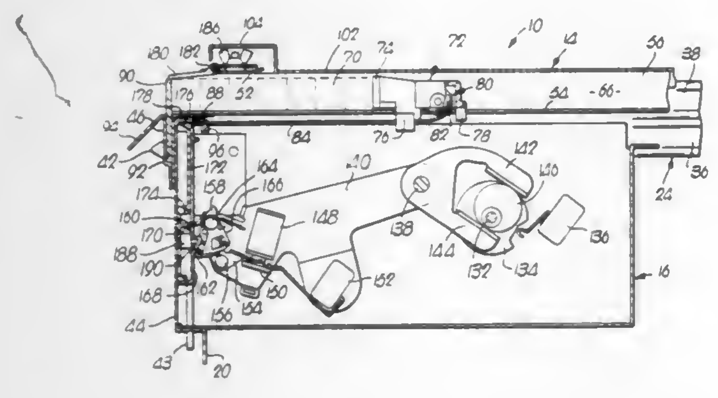


(d) adjustable panel means positioned within the helical means toward one side thereof and movable between vertical and horizontal to vary the size of the article compartment defined between the panel and the second side wall of said tray.

4,369,897
PRODUCT STORING AND DISPENSING APPARATUS

Elmer B. Offutt, Independence; Edward Babich, Kansas City, both of Mo., and William G. Gillett, Kansas City, Kans., assignors to Fawn Engineering Corp., Des Moines, Iowa

Filed Oct. 23, 1980, Ser. No. 199,747
Int. Cl.³ B65H *1/12*
U.S. Cl. 221—227 **14 Claims**



1. In product storing and dispensing apparatus especially adapted for use in handling relatively rigid, elongate products, such as generally cylindrical rolls of mints, generally parallelepipedal packages of gum, or the like, and especially suited for employment in vending machines of types having a cabinet provided with an internal chamber, internal structure for supporting a number of typically drawer-like, product storage and dispensing assemblies in typically closely spaced, vertically overlying relationship to each other within said chamber, and a normally closed, frontal door typically including a transparent area to permit viewing by customers of products carried by said assemblies and adapted to be opened to provide service personnel with access to the front of said chamber:

base means adapted to be carried by said supporting structure and to remain within said chamber during both normal operation of said machine and the loading into the latter of products to be stored therein for dispensing therefrom, said base means including a stop means;

product carrying means for providing an elongate generally horizontally extending, open-top compartment having an end wall, side walls and means for providing bottom support surface zones for receiving from above and shiftably supporting therein elongate products of a corresponding type with their longitudinal dimension disposed substantially transversely to the longitudinal dimension of said compartment;

means for shiftably mounting said product carrying means upon said base means, with the longitudinal dimension of said compartment extending generally parallel to the front-to-rear dimension of said chamber, said end wall being disposed at the front extremity of said compartment, and said product carrying means being movable when said door is opened between a rearward, operating position entirely within said chamber and a forward, loading position extending out the front of said chamber;

means on said product carrying means for engaging and yieldably urging a rearmost product within said compartment forwardly to maintain all products within said compartment in side-by-side, successively interengaging relationship with the forwardmost product in engagement with said end wall when said product carrying means is in said operating position thereof, said urging means including a product pusher element, and spring means operably coupled with said element for yieldably biasing the latter in a forward direction along said compartment, a part of said element being automatically engagable with said stop means for blocking forward movement of said element relative to said base means and shifting the position of said element rearwardly with respect to said compartment whenever said product carrying means is moved away from its operative position toward its loading position, and whereby the forward urging force of said element is automatically removed from any products remaining within said compartment before said cover means may be moved to its open position, said element being automatically retained in a retracted position to facilitate the loading of products whenever said product carrying means is moved to its loading position, and the forward biasing force of said element is automatically restored to all products within said compartment upon returning said product carrying means to its operating position after restoring said cover means to its closed position;

cover means;

means for shiftably mounting said cover means upon said product carrying means for movement between an open position for exposing the open top of said compartment when said product carrying means is in its loading position and a closed position adjacently overlying all products disposed rearwardly of said forwardmost product within said compartment for preventing said rearward products from shingling or rising above the top of said compartment when they are subjected to the force of said urging means;

ejector means;

means for shiftably mounting said ejector means upon said base means for movement between a standby position clear of said product carrier means and the path of said movement of the latter and an ejecting position for engaging and lifting said forwardmost product out of said compartment to dispense the same from said product carrier means when the latter is in its operating position; and

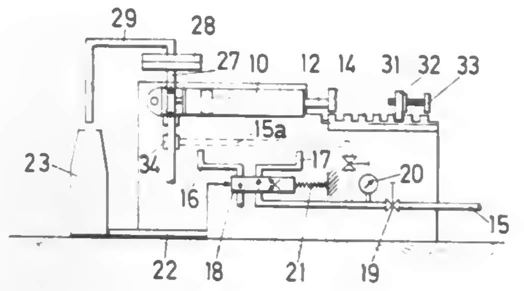
selectively operable means operably coupled with said ejector means for moving the latter from said standby position to said ejecting position and back to said standby position thereof when said product carrying means is in its operating position.

4,369,898
FILLING MACHINE

Ake Andersson, Slätvarsgatan 23, Västra Frölunda, Sweden (42179)

Filed Mar. 8, 1978, Ser. No. 884,566
Claims priority, application Sweden, Mar. 9, 1977, 77026318
Int. Cl.³ G01N *15/08;* B01D *35/00*
U.S. Cl. 222—4 **6 Claims**

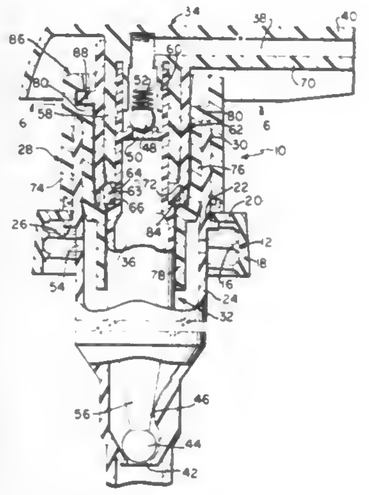
1. A filling machine to handle liquid products comprising at least one quantitation pump, at least one piston servo motor directly connected to the pump for driving the same, and means adapted to determine the stroke of said piston servo motor, a first non-return valve fitted at said at least one pump permitting a liquid product to be drawn into the pump through a supply conduit from a common source of supply, and a second non-return valve permitting said drawn-in product to be expelled from said at least one pump through an outlet conduit to an individual container, a filter mounted in said outlet conduit, and valve means in said supply conduit and connected to a gas supply means, adapted, at will, to interrupt the connection between said source of supply and said pump, and to permit a pressurized gas to be supplied to said filter from said gas supply means for testing purposes.



4,369,899
DOWN-LOCKING PUMP

Wallace F. Magers, Leawood, Kans., and Donald D. Foster, Kingsville, Mo., assignors to Realex Corporation, Kansas City, Mo.

Filed Nov. 18, 1980, Ser. No. 207,892
Int. Cl.³ B65D *47/34*
U.S. Cl. 222—153 **7 Claims**



1. In a down-locking pump, the improvement comprising:

a tubular body having an inlet at one open end thereof and an annular collar at the opposite, open end thereof;

a valve operably associated with said inlet for opening and closing the same;

a tubular plunger telescopically and rotatively received by said collar for movement in opposite axial directions within the body through pumping strokes,

said plunger being operable, when fully depressed, to maintain said valve in a position sealably closing said inlet;

seal structure including cooperating portions on said collar and said plunger respectively and operable, when said plunger is fully depressed, to seal the interface between the collar and the plunger,

said cooperating portions of the seal structure, the collar, and the plunger all being constructed from the same material;

a plurality of generally radially outwardly projecting locking lugs carried by said plunger adjacent the normally outer end thereof;

a plurality of notches in said collar adapted to selectively receive said lugs of the plunger when the latter is in said fully depressed position;

a plurality of shoulders interspersed between said notches and disposed to restrictively overlie said lugs and prevent extension of the plunger when the lugs have been received in said notches and the plunger rotated relative to the collar,

said shoulders being provided with normally downwardly facing inclined surfaces disposed to bear against the normally upper extremities of said lugs with progressively increasing force as the plunger is rotated in one direction with the lugs disposed beneath the shoulders whereby to establish proper forcible interengagement between the portions of said seal structure and to properly maintain said inlet valve closed; and

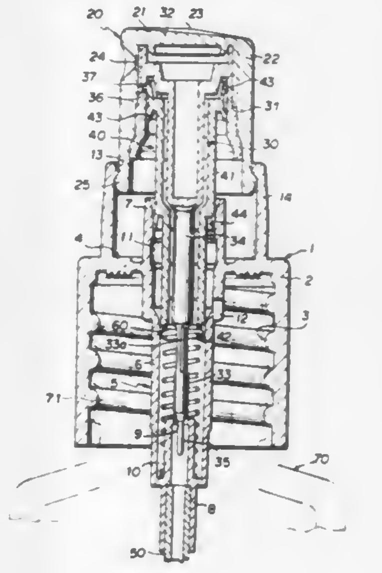
limit means on said collar normally below said shoulders presenting a normally upwardly facing surface in spaced opposition to said downwardly facing surfaces of the shoulders for cooperating with the latter in traping said lugs against movement in either axial direction once the lugs have been locked beneath said shoulders to thereby absorb shock loading which would otherwise be transmitted to said seal portions,

the minimum spacing between said opposed traping surfaces of the collar being substantially the same as the thickness of said lugs in the axial direction.

4,369,900
MANUAL ACCUMULATOR TYPE ATOMIZER

Tadao Saito; Takao Kishi, and Yoshiyuki Kakuta, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 320,005, Nov. 10, 1981, abandoned, which is a continuation of Ser. No. 146,394, May 5, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,499
Claims priority, application Japan, May 16, 1979, 54-66089[U]; Jun. 28, 1979, 54-88980[U]
Int. Cl.³ B65D *47/34*
U.S. Cl. 222—321 **6 Claims**



1. A liquid spraying device, comprising:

a container for holding liquids, having a neck portion;

an atomizer body having a peripheral portion for engaging the neck portion of said container, having a radially inwardly extending flange-like upper wall connected to said peripheral portion and a main cylindrical portion extending vertically from said upper wall, said main cylindrical portion having a lower, small-diameter hollow cylindrical portion and an upper, large-diameter cylindrical guide portion, said guide portion having an annular recess on its inner surface, a hole being perforated at the junction between said small-diameter lower cylindrical portion and said guide portion;

an atomizer head slidably held by said atomizer body, having an upper wall and a peripheral wall;

a large-diameter hollow cylindrical member, having an upper portion and a sidewall with an exhaust hole in the sidewall, held within the peripheral wall of said atomizer head;

an engaging member integral with the upper portion of said large-diameter cylindrical member having a downwardly extending rod portion and rod-like valve body which is slidably located in the small-diameter cylindrical portion of said atomizer body;

a piston member having a tubular portion which is slidably engaged on the rod portion of said engaging member having a skirt-like small-diameter piston at the lower end of said piston member surrounded by the small-diameter cylindrical portion of said atomizer body and a skirt-like large-diameter upper piston surrounded by said large-diameter cylindrical member, said exhaust hole being openable upon relative movement between said piston member and said large-diameter cylindrical member;

a suction tube engaged with the lowermost portion of said small-diameter cylindrical portion of said atomizer body for intake of liquid from said container;

spring means for upwardly urging said atomizer head, said piston member and said engaging member;

said atomizer body having a suction valve hole at the inside bottom of said small-diameter cylindrical portion of said atomizer body, said exhaust hole being in communication with a nozzle outlet formed in said atomizer head, a liquid passage being defined between the outer surface of said engaging member and the inner surface of said piston member, said valve body having a longitudinal slot formed at its upper portion for allowing communication between the small-diameter lower portion of said atomizer body and said suction tube when said valve body reaches a lowermost position.

4,369,901

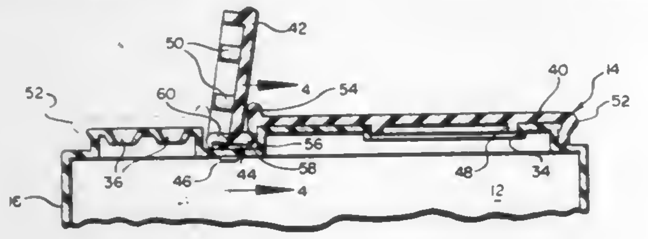
SNAP-UP COVER FOR SPICE DISPENSER

Walter E. Hidding, Rte. 2, Wood Rock Rd., Barrington Hills, Ill. 60010

Filed Mar. 5, 1981, Ser. No. 240,893

Int. Cl.^{3} A47G ***19/24***

U.S. Cl. 222—480 **5 Claims**



1. In a closure to be assembled with a dispenser for dry powdered spice products, the dispenser including a hollow body having a spooning platform and a sifting platform at the top end, the respective platforms being spaced apart to define a parallel walled valley, the floor of which is perforated with stud-receiving apertures, the closure including a spooning cap arranged for snap-fit engagement with said spooning platform and further including a sifting cap arranged for snap-fit engagement with said sifting platform, said closure still further including a strap hingedly interconnecting said caps and fittably engaging the floor of said valley, studs depending from said strap entering said apertures for securely fastening said closure to said dispenser, the improvement comprising: a first snap-fit protuberance extending from the edge of said spooning cap adjacent the valley wall thereof; means defining a niche in the valley wall of said spooning cap; a second snap-fit protuberance extending from the edge of said sifting cap adjacent the valley wall thereof and aligned with said spooning cap niche; and means defining a niche in the valley wall of said sifting cap aligned with said first snap-fit protuberance, whereby one or the other of said caps may be selectively raised and locked into dispenser opening condition with the protuberance thereof snap-fit into the niche in the opposite valley wall.

4,369,902

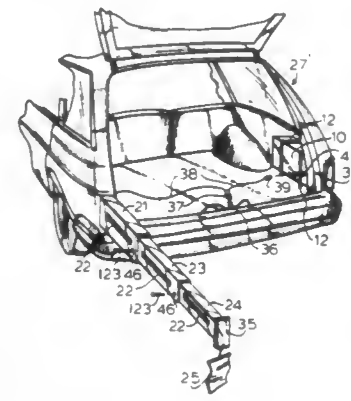
RETRACTABLE LOAD CARRIER FOR VEHICLES

Steve Lampeas, 117 Aldershot La., Manhasset, N.Y. 11030

Filed Feb. 6, 1981, Ser. No. 232,276

Int. Cl.^{3} B60R ***11/00***

U.S. Cl. 224—42.42 **13 Claims**



1. A retractable, self-supporting load carrier for cantilever support of loads from the rear of a vehicle having a trunk and a pair of taillight openings, comprising:

a pair of spaced-apart, elongated telescoping, independently-operable channel supports disposed in the direction of travel of the vehicle, each support having a plurality of elongated, hollow, rigid channels telescopically received and nesting one within the other, said channel support being mountable within the trunk of said vehicle such that they are in alignment with one of said openings through which said channels may extend;

a lamp coupled to the innermost channel adjacent to an outwardly-directed end thereof; and

bracket means coupled to the outside channel of each telescoping support for securing said support to said vehicle within the trunk thereof.

4,369,903

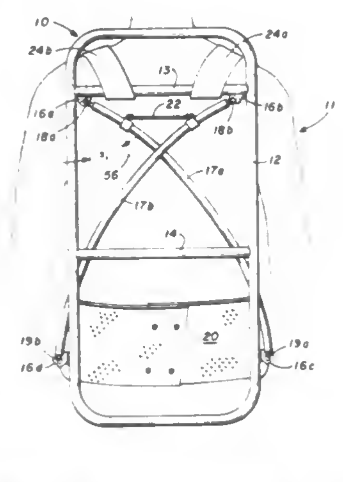
BACKPACK FRAME

Donald F. Wilkes, 2816 Charleston NE., Albuquerque, N. Mex. 87110

Filed Jul. 16, 1981, Ser. No. 283,853

Int. Cl.^{3} A45F ***3/10***

U.S. Cl. 224—213 **19 Claims**



1. A pack frame for supporting a load on the back of a human wearer, said pack frame comprising:

a frame structure;

a belt-like support means adapted to fit about the hips of the wearer,

crossed-linkage means for flexibly connecting the upper portion of said frame structure to said belt-like support means,

strap means attached at one end to said upper portion of said frame structure and adapted to pass over the shoulders of said human wearer; and

means to attach the other end of said strap means to said belt-like support means.

4,369,904

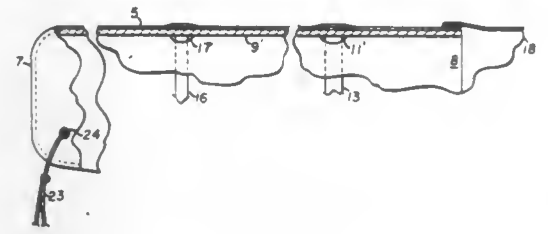
SCABBARD FOR FIREARMS

George L. Christensen, 626 N., 1st West, Tremonton, Utah 84337

Continuation-in-part of Ser. No. 32,518, Apr. 23, 1979, abandoned. This application May 18, 1981, Ser. No. 264,645

Int. Cl.^{3} F41C ***27/00***

U.S. Cl. 224—250 **10 Claims**



1. A scabbard for firearms, comprising:

a flattened, elongated tube having two substantially flat sides and having a closed end and an open end, and having a second opening at one edge of the tube intermediate the ends;

an elongated, spine-like stiffener permanently fastened to the inside of the tube at said edge thereof, approximately coextensive with the length of the tube and wide enough to space the two flat sides apart sufficiently to provide open space within the tube said stiffener having a loop at one end thereof extending outwardly through said second opening, a third in said one edge of said tube and large enough to provide an opening on each side of said tube so as to straddle said stiffener; and

a pair of straps passing around the tube with one through said third opening and the other through said loop for fastening the scabbard to other equipment.

4,369,905

METHOD AND APPARATUS FOR GUIDING A CORRUGATED FIBREBOARD WEB

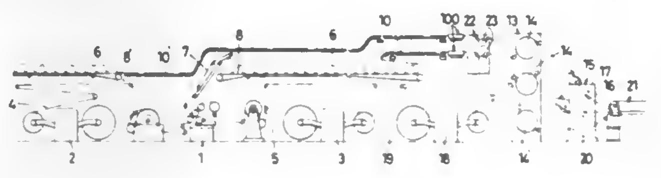
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,154

Claims priority, application Japan, Dec. 5, 1979, 54-160189

Int. Cl.^{3} B65H ***25/26, 25/32***

U.S. Cl. 226—17 **10 Claims**



1. A web guide systm for guiding a corrugated fibreboard web on a corrugating machine to prevent it from running out of true, said system comprising:

a pair of web guides movably mounted at the sides of said corrugating machine for movement transversely of the path of the web through said machine for guiding the edges of the running web,

a sensing means disposed upstream of said web guides and having at least one pair of sensors movable transversely for detecting and following the edges of the running web, and

a guide moving means responsive to the signal from said sensing means for moving said web guides transversely so that the distance between said web guides will be substantially equal to the width of the running web.

4,369,906

WEB FEEDING MACHINES

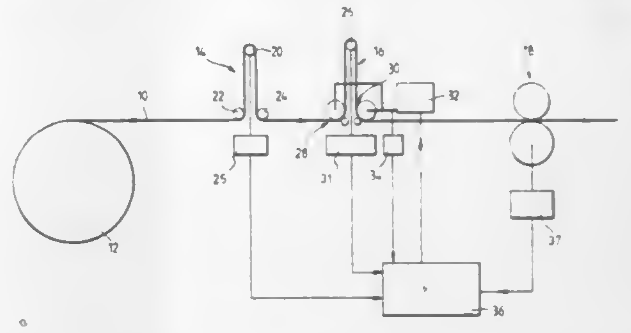
Jeffrey Isherwood, Enfield, England, assignor to Crosfield Electronics Limited, London, England

Filed Jun. 12, 1981, Ser. No. 273,151

Claims priority, application United Kingdom, Jun. 19, 1980, 8020092

Int. Cl.^{3} B65H ***17/18, 23/18***

U.S. Cl. 226—42 **4 Claims**



1. A web feeding machine for controlling the feed of a web of material comprising:

a first pair of rollers bearing against one another to form a first nip;

a second pair of rollers bearing against one another to form a second nip, said second nip being located downstream from said first nip;

means to cause the ratio of the linear speed of said web through said second nip to the linear speed of said web through said first nip to be a constant and to have a value greater than one;

variable speed drive means for driving said nip rollers;

first tension monitoring means for monitoring the tension T_1 in said web upstream from said first nip;

second tension monitoring means for monitoring the tension T_2 between said first and said second nip; and,

control means to control said variable speed drive of said first and said second pairs of rollers whereby their angular velocity ω satisfies the expression:

$$\frac{\omega A(T_2 - T_1)}{B\,T_2 - T_1} = C$$

where A, B and C are constants.

4,369,907

PUNCHING AND RIVETING MACHINE

Richard Muhr, Attendorn, and Karl Schink, Attendorn-Dünschede, both of Fed. Rep. of Germany, assignors to Muhr und Bender, Attendorn, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,670

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940661

Int. Cl.^{3} B21J ***15/10***

U.S. Cl. 227—54 **13 Claims**

1. A puncher-riveter comprising:

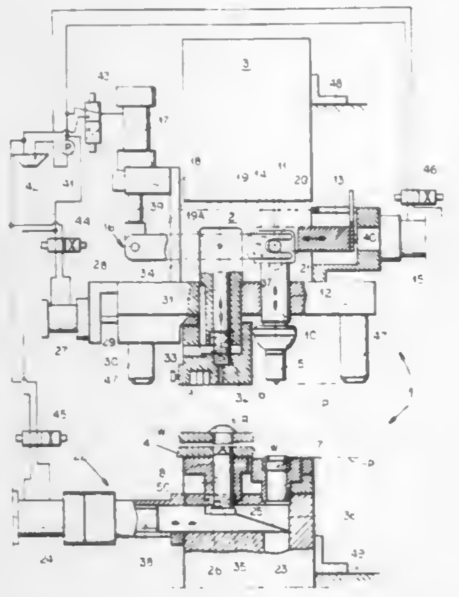
a fixed lower part having an upper surface;

a vertically displceable upper part above said lower part and having a lower surface;

hydraulic means for vertically displacing said upper part toward and away from said lower part;

a punch having a lower punch end vertically displaceable on said upper part between an upper rest position with said lower end above said lower surface and a lower working position with said lower end below said lower surface, said punch having an upper end formed as a punch head and a shaft interconnecting said head and lower end, said shaft being slidably guided in said upper part, said upper part having an abutment surface relatively closely juxtaposed with said head in said upper position of said punch and relatively far from said head in said lower position of said punch;

a slider displaceable when said punch is in said lower position between a blocking position between said head and said abutment surface for preventing upward displacement of said punch into said upper position and a position out of the way of said punch for permitting upward displacement of same into said upper position;



a die on said lower part in vertical alignment with said punch, said lower punch end being engageable in said die with said punch in said lower working position on displacement of said upper part down toward said lower part;

a rivet anvil on said lower surface of said upper part adjacent said punch; and

a rivet-setting tool having an upper tool end and vertically displaceable on said lower part below said rivet anvil between an upper working position with said upper end above said upper surface and a lower rest position with said upper tool end below said upper surface.

4,369,908

STITCHERS

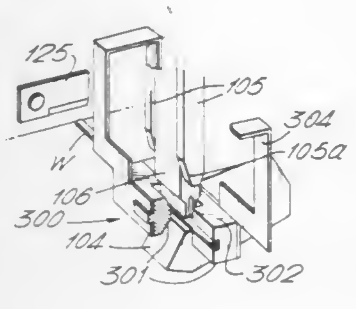
Raymond A. Harvey, Hertfordshire, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,185

Claims priority, application United Kingdom, Jan. 30, 1979, 7903129

Int. Cl.³ B27F *7/21, 7/23*

U.S. Cl. 227—90 **5 Claims**



1. A wire stitcher apparatus having an anvil, a driver and a staple former wherein a piece of wire is cut from a supply of wire and driven through a set of sheets to bind the sheets together, the improvement including guide means for the wire for guiding the same into position relative to the driver and former, said guide means including at least one guide member arranged in the path of the former and being resiliently mounted so as to be displaced by the former during forming, means for resiliently biasing the anvil with the wire positioned thereon during the cutting of the wire and the forming of a staple and to displace the anvil during the driving motion of the driver through a set of sheets, and means formed on the driver and the anvil for positively gripping the wire during cutting and forming and wherein said guide means includes two guide members movable toward and away form each other.

4,369,909

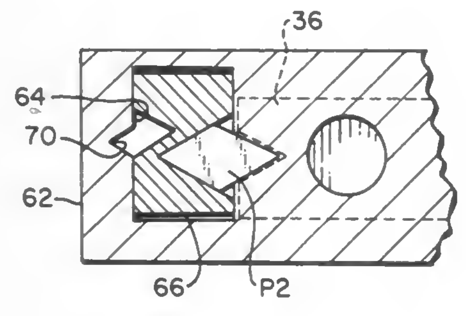
GLAZIER'S POINT DRIVER

Eugene W. Grzeika, 170 Park St., Bristol, Conn. 06010

Division of Ser. No. 924,447, Jul. 13, 1978, Pat. No. 4,342,414. This application Jun. 13, 1979, Ser. No. 48,000

Int. Cl.³ B25C *5/00*

U.S. Cl. 227—109 **12 Claims**



1. In a glazier's point driver having a frame defining a magazine for the points, a point driving plate supported by the frame, trigger means for operating said point driving plate, and means biasing a stack of points in said magazine toward one end of the magazine wherein the endmost point is in position to be driven by the plate, the improvement to said magazine comprising elongated insert means for said magazine and defining a first guide surface for engaging a stack of points of one particular size and shape, said insert means defining a second guide surface for engaging a stack of points of a second and different size and shape, said insert means mounted in said frame to cooperate with said magazine when oriented in a first and a second position alternatively, said stack biasing means and said point driving plate adapted to operate as aforesaid with said insert means in both said alternative positions.

4,369,910

METHOD OF CONNECTING ARMATURE COIL OF ROTARY MACHINE

Isao Hamano, and Kiyoshi Yabunaka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00086, § 371 Date Oct. 14, 1980, § 102(e) Date Oct. 14, 1980, PCT Pub. No. WO80/02480, PCT Pub. Date Nov. 13, 1980

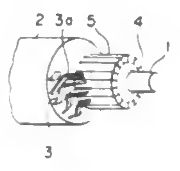
PCT Filed Apr. 24, 1980, Ser. No. 198,007

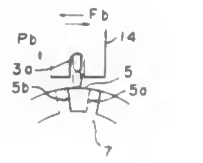
Claims priority, application Japan, Apr. 27, 1979, 54-53921

Int. Cl.³ B23K *20/10*

U.S. Cl. 228—110 **2 Claims**

1. In a method of connecting an armature coil of a rotary machine to a segment by applying ultrasonic vibration to the armature coil, said rotary machine comprising the armature and a commutator fitted in the circumference of the shaft and formed by molding with a molded substrate a plurality of the segments to be in one piece, an improvement which comprises applying ultrasonic vibration for welding to the armature coil in the direction substantially perpendicular to the axial direction of the shaft to perform the welding whereby a component of vibrating force in the axial direction of the shaft is smaller than the force necessary to overcome the bonding strength of the molded substrate to the segment.





4,369,911

METHOD OF MAKING A GAS-TIGHT CONNECTION BETWEEN A CORRUGATED HIGH QUALITY TUBE AND A HIGH QUALITY STEEL SLEEVE

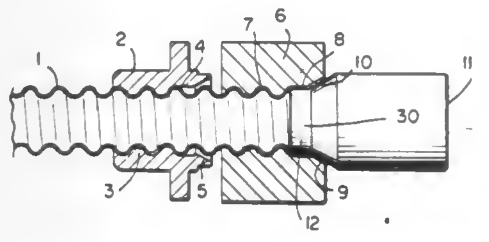
Guenther Blumenberg, Hanover-Doehren, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshuette AG, Hanover, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 164,920

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001666

Int. Cl.³ B23K *9/02, 5/02*

U.S. Cl. 228—173 F **6 Claims**



1. A method of making a gas-tight connection between an open end portion of a thin walled corrugated, high quality metallic tube and a metallic sleeve whose interior surface includes helical threads that correspond to the helical corrugations on the outer surface of the metallic tube, comprising the steps of:

screwing the sleeve onto the tube to a position and orientation such that a flanged interior surface of the sleeve, flanged radially at an angle of 15-45 degrees, faces, but is longitudinally separated from, the open end portion of the tube to which the sleeve is to be bonded;

decorrugating and expanding the open end portion of the tube;

flanging the decorrugated and expanded open end portion of the tube at an angle of 15-45 degrees in a manner so as to be parallel to the flanged interior surface of the sleeve;

screwing the sleeve on the tube toward the open end portion of the metallic tube until the parallel flanged interior surface of the sleeve and the outer surface of the tube at its flanged open end portion engage each other in an area of circumferential contact; and

fusion welding the tube onto the sleeve in the area of circumferential contact, by welding along the circumference of the interior surface of the flanged end portion of the tube opposite the area of circumferential contact.

4,369,912

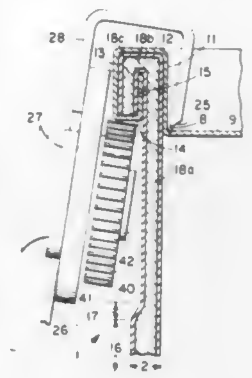
COMPOSITE CAN WITH COMPRESSED END TO PROVIDE EASY OPENING

Harold D. Abner, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 17, 1981, Ser. No. 274,346

Int. Cl.³ B65D *3/10, 5/00, 13/00*

U.S. Cl. 229—5.6 **6 Claims**



1. A composite can comprising a hollow laminated body including at least one layer of fibrous paper material and having at least one seamed metal end closure closing an end of said body and specifically designed to facilitate opening thereof with a can opener of the type having a cutter element and a toothed driving wheel, said end portion of said hollow laminated body adjacent said seamed metal end closure being compressed to an outside diameter smaller than that of the uncompressed portions of said hollow laminated body, said compressed end portion of said body adjacent said seamed metal end closure being of sufficient overall length to substantially eliminate interference between said toothed driving wheel and said laminated body, whereby shredding of the outermost surface of said hollow laminated body by said toothed driving wheel during opening is substantially eliminated.

4,369,913

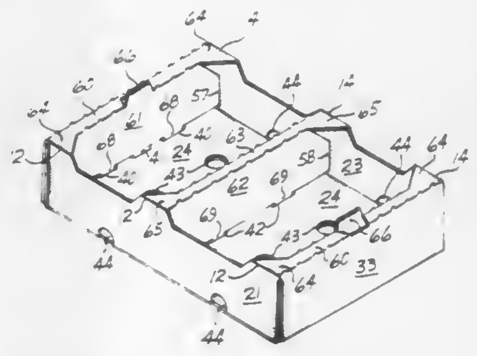
TRAY

Herbert D. Muise, Orange, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 31, 1981, Ser. No. 297,792

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—30 **8 Claims**



1. A tray comprising

a double-ply base panel formed from first and second base panels which are coextensive,

a side panel extending upwardly from each of said first and second base panels,

an upper section extending between said side panels and being parallel to said base panel,

a double-ply end panel extending upwardly from each end of said double-ply base panel,

each of said double-ply end panels being formed from first and second end panels, said first end panels being hingedly attached to said first base panel and said second end panels being hingedly attached to said second base panel, said first and second end panels being coextensive,

means holding said end panels in said upright position.

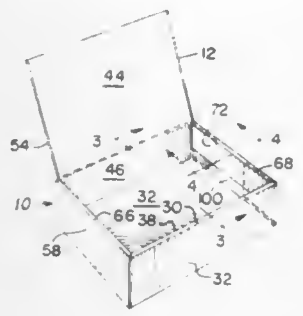
4,369,914
BOX TYPE CARTON WITH HINGED LID

Joseph Langston, Jr., Jacksonville, Fla., and Robert J. Murray, Norcross, Ga., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Jun. 4, 1981, Ser. No. 270,594

Int. Cl.³ B65D *5/64, 5/56*

U.S. Cl. 229—33 **6 Claims**



1. A box in the form of a tray with a hinged lid which is adapted for the packaging of cigars or similar articles, said box being formed from a single cut and scored blank of relatively light weight paperboard, said box having a body portion comprising a rectangular bottom wall, front and back sidewalls and end walls which are upstanding from the peripheral edges of the bottom wall, and a planar lid hinged along one edge thereof to the top edge of the back wall, the front, back and end walls having outer and inner panels, the inner panels on the front and end walls each being folded downwardly from a top edge of the wall which top edge has substantial width and said inner panels being secured on the inside of said upstanding walls, the front and back wall forming outer panels having hinged corner connecting panels secured between the inner and outer panels of the end walls, and a reinforcing panel insert of substantial thickness secured between the inner and outer panels of said front and end walls, said hinged lid comprises an outer and inner panel of substantially the same size, and reinforcing panels hinged to the opposite end edges of one of said outer and inner panels and adhesively secured between said outer and inner panels so as to form a substantially rigid reinforced, planar lid structure.

4,369,915
METHOD AND APPARATUS FOR REGULATING THE DIFFERENTIAL RPM OF TWO ROTATING PARTS

Hans-Joachim Oberg, Roesrath; Wolf-Diethard Gruenberg, and Guenther Posse, both of Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,382

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005658

Int. Cl.³ B04B *9/02*

U.S. Cl. 494—8 **9 Claims**

1. A method for regulating the differential rpm of a centrifuge drum and an internally disposed worm conveyor in a worm centrifuge, said drum and said conveyor rotating at different speeds comprising the steps of:

measuring the individual speeds of said drum and conveyor;

supplying electronic signals corresponding to the measured speeds of said drum and said conveyor to a microprocessor;

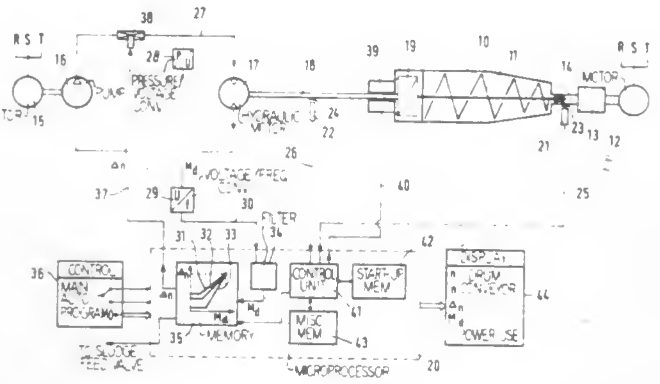
generating a pulse train for each of said drum and said conveyor having pulses corresponding to one rotation of said drum and said conveyor;

sampling said pulse train at a frequency greater than the rotational frequency of said drum and said conveyor;

counting the number of samplings between two or more pulses received in said microprocessor;

calculating a quotient corresponding to said number of samplings for each pulse train;

calculating a differential rpm between said drum and said conveyor from the quotients for said pulse trains;



comparing said calculated differential rpm to an optimum rpm value; and

supplying a signal to a means for changing the rotational speed of said worm conveyor if said calculated differential rpm deviates from said optimum rpm.

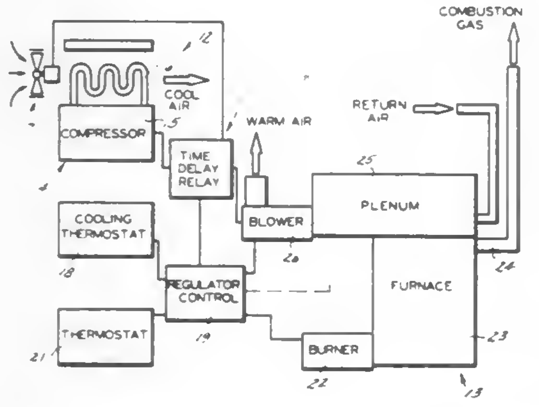
4,369,916
ENERGY SAVING OVERRIDE BLOWER CONTROL FOR FORCED AIR SYSTEMS

Dean M. Abbey, 1312 Wood, Lansing, Mich. 48912

Filed Nov. 3, 1980, Ser. No. 202,886

Int. Cl.³ F24N *19/10*

U.S. Cl. 236—11 **2 Claims**



1. An overide control element wired for connection to regular thermal controls to heating and air conditioning blowers comprising:

a control box;

a chassis in said control box;

a time delay relay support socket secured to said chassis;

a time delay relay on said time delay relay support socket;

an override relay socket separate from said time delay relay support socket;

at least one override relay on override relay socket;

wiring integrating said time delay relay with said override relay; and

leads for operable connection of said relays to said regular thermal control and to blowers served thereby whereby said blowers are activated upon energization of said regular controls and are continued for a selected interval beyond de-energization of said regular controls.

4,369,917
CENTRAL HEATING SYSTEM

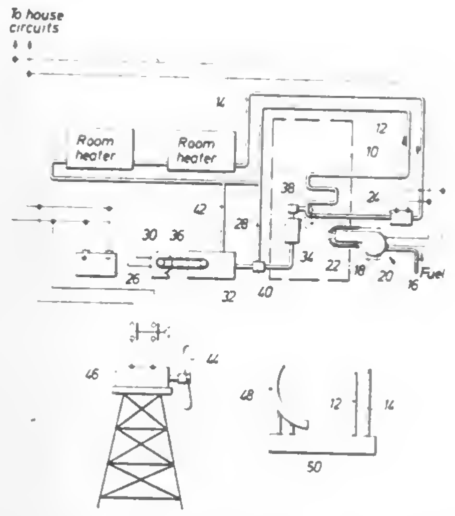
Carl T. Schnell, P.O. Box 374, Motala, Sweden (S-591 24)

Filed Feb. 5, 1980, Ser. No. 118,728

Claims priority, application Sweden, Feb. 9, 1979, 7901146

Int. Cl.³ F24D *1/04;* **F01K** *13/02*

U.S. Cl. 237—12.1 **5 Claims**



1. A central building heating system having boiler means using a liquid as a heat carrying medium for conveying heat from said boiler to said building, burner means for heating said liquid, steam generating means and room heating means and said boiler being interconnected by conduits for said heat carrying medium, said steam generator means being located to be heated by a flame of the burner means, liquid level control means for supplying the medium to the steam generating means and said conduits extending from said boiler to the room heating means, relief valve means for returning steam from said steam generating means to said room heating means when steam pressure exceeds a predetermined value, electrical apparatus initially requiring electrical power before said system can be started, said burner means including an electrically operated pump which must be initially operated for supplying fuel, electrically operated fan means which must be initially operated for supplying combustions air, electrically operated ignition electrodes which must be initially operated to ignite said fuel, the system also including an electrically operated pump means for circulating the heat carrying medium through said conduits after said heating system is in operation, a chargeable electric battery for providing the initial power required for said initial operations, electric generator means for charging said battery and operating said electrical apparatus, steam engine means connected to said steam generator via said relief valve means and driven by steam from said steam generating means after said heating system is in operation, means directly responsive to the rotational movement of the steam engine means after said heating system is in operation for driving the electric generator means, which is dimensioned to give charging electric energy which exceeds the total electric energy required to drive the electric current consuming apparatus, whereby said apparatus is operated and said battery is recharged by said electric generating means.

4,369,918
HEAT RETRIEVER APPARATUS

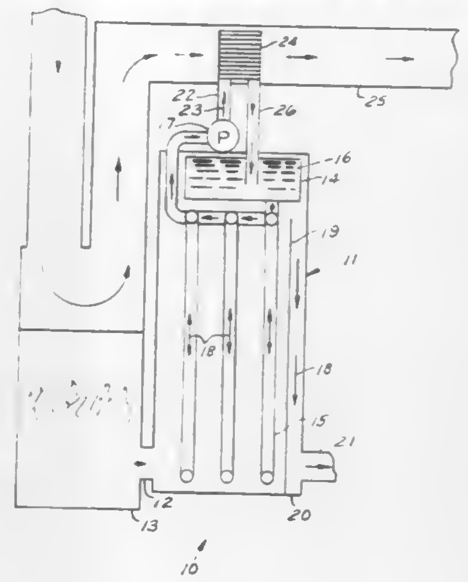
Paul E. David, 10433 Sharp Rd., Swartz Creek, Mich. 48473, and Leland M. Hyde, 15622 El Paso Dr., Fenton, Mich. 48430

Filed May 28, 1980, Ser. No. 152,435

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—55 **1 Claim**

1. A heat retriever apparatus, comprising, in combination, an upward housing along a chimney pipe through which smoke and hot exhaust gases travel from the furnace to the chimney of a house, the hot air heating system of said furnace including a hot air duct from a hot air heating chamber above a fire box of said furnace which has a fluid circulating system to heat the air inside said duct further, comprising interconnected pipes inside a compartment of said housing carrying a fluid, heated inside said interconnected pipes by said hot exhaust gases, an outlet of said interconnected pipes extending out the upper end of said housing and being connected through a pump of a heat dissipating radiator inside said hot air duct for said heated fluid, heating said radiator, an outlet of said radiator extending back into said housing and being connected to a closed reservoir



that is connected to the inlet of said interconnected pipes for recirculating again; said housing having an inlet and an outlet near the lower end thereof for connection to said chimney pipe, vertical baffle positioned between the interconnected tubes and the housing wall containing the exhaust gas outlet where said baffle extends from the bottom of the housing vertically upward substantially above the housing exhaust gas outlet to form a downward exhaust gas passage to the housing wall exhaust gas outlet.

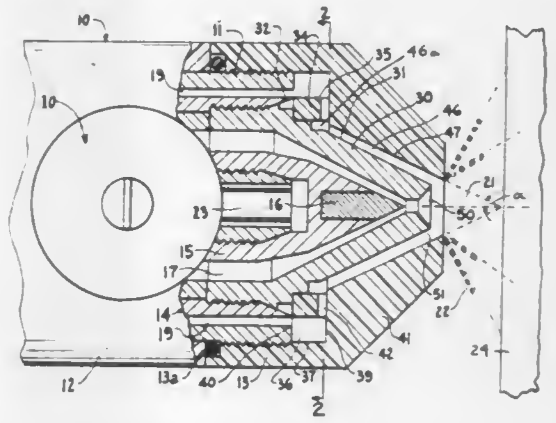
4,369,919
PLASMA TORCH FOR PROCESSING METALS IN THE AIR AND UNDER WATER

Marin G. Beloev; Ivan V. Vangelov; Dimo T. Garlanov, all of Sofia; Nikolay Y. Nikov, Varna; Ivan S. Savov, and Vladimir P. Hlebarov, both of Sofia, all of Bulgaria, assignors to Npk za Kontrolno Zavarachni Raboti, Sofia, Bulgaria

Filed Oct. 31, 1980, Ser. No. 202,728

Int. Cl.³ B05B *15/00;* **B23K** *9/16*

U.S. Cl. 239—79 **3 Claims**



1. A plasma torch having a body with a front end and a rear end, a nozzle on the front end of the body, the nozzle having a plasma stream discharge opening therein, an anode and a cathode disposed in spaced relationship within the body rearwardly of the nozzle, a gas conducting channel extending between the anode and the cathode and forwardly out of the plasma stream discharge opening in the nozzle, the nozzle having an annular water-discharging opening therein sur-

rounding the plasma discharge opening, so as to surround the plasma stream discharge from the nozzle with a plasma shielding compact water stream, a water-conducting channel in the body leading to the water discharging opening therein, and means interposed in the water-discharging passage to impart a whirling motion to the water stream surrounding the plasma stream discharged from the nozzle.

4,369,920

ARRANGEMENT TO COOL THE THRUST NOZZLE FOR A ROCKET ENGINE

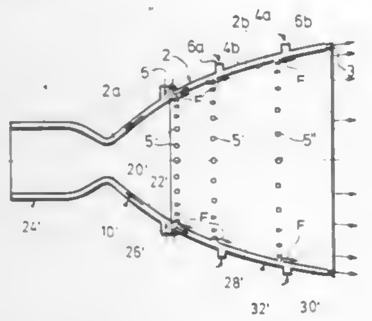
Günther Schmidt, Taufkirchen, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,843

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949522

Int. Cl.^{3} F02K *11/00*

U.S. Cl. 239—127.3 **8 Claims**



1. A rocket engine, comprising a housing having a combustion chamber portion, a thrust nozzle having one end connected to said combustion chamber portion and having a front nozzle section adjacent said combustion chamber with a narrow throat portion and a front divergent wall part diverging outwardly from said narrow throat portion and including a rear nozzle section with a rear divergent wall part connected to the rear end of said front divergent wall part and terminating at its rear end in a thrust discharge, cooling fluid channel flow means associated with said combustion chamber in said front nozzle section for supplying a coolant thereto for the cooling thereof, said rear nozzle section including walls defining a coolant channel extending along the length of said rear nozzle section, at least one inlet connected into said cooling channel for supplying a coolant to said cooling channel and a plurality of outlets connecting from said cooling channel to the interior of said rear thrust nozzle section including longitudinally spaced outlets arranged along the length of said rear thrust nozzle section and providing a fluid film flow to the interior wall of said rear thrust nozzle section.

4,369,921

HOSE-END SPRAYER

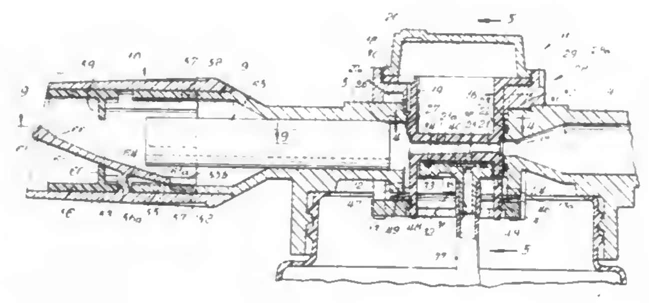
John L. Beiswenger, Salem; Howard R. Moon, Ft. Atkinson, both of Wis.; Frank A. Smiesko, McHenry, and Dhananjay Chaphalkar, Lindenhurst, both of Ill., assignors to Acme Burgess, Inc., Grayslake, Ill.

Filed Dec. 12, 1980, Ser. No. 215,833

Int. Cl.^{3} B05B *7/28*

U.S. Cl. 239—317 **9 Claims**

1. In a hose-end sprayer comprising a chemical concentrate jar and a top closure therefor having an axial vertical bore therein and horizontal inlet and outlet snouts opening at diametrically opposite surfaces of said bore, a flow control assembly mounted atop and within said bore in said closure, said assembly comprising a rotary valve and a metering valve arranged axially within said bore for mutually independent rotary manipulation, said metering valve having a knurled welled ring resting atop said closure with a pair of diametrically spaced bracket arms depending into said bore at the surface thereof, said rotary valve having a knobbed top resting within the well of said ring and a flat-bottomed cylindrical valve plug depending from said knobbed top through said ring and into said bore, said plug having a diametric inlet- and outlet-ended passageway therethrough at the level of said snouts adapted to connect the same, a horizontal upwardly open metering flow channel labyrinth affixed to the ends of said bracket arms facing the flat bottom of said cylindrical valve body, said labyrinth having an opening at the inlet end of the flow channel thereof and means connecting said opening with the space at the bottom of said jar, said flat bottom of said valve plug having an opening therein communicating with said diametric passageway and so eccentrically arranged as to selectively align and connect with predetermined points between the inlet and terminal ends of said metering flow channel upon relative rotational movement of said labyrinth and said valve plug to incorporate corresponding degrees of resistance to the flow of liquid from said jar to said passageway, the portion of said passageway in said plug downstream from said opening in the bottom of said plug diverging whereby to create suction at said opening to draw concentrate from said jar when water is flowing through said passageway.



4,369,922

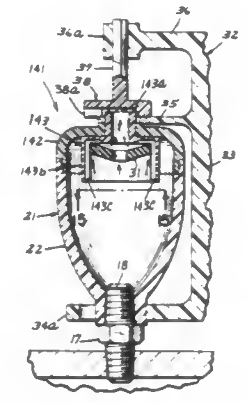
SPRINKLER HEAD FOR A CENTER PIVOT IRRIGATION SYSTEM

Merle A. Vikre, 32 Windward Way, New Port Richey, Fla. 33552

Continuation of Ser. No. 173,993, Jul. 31, 1980, abandoned, which is a division of Ser. No. 971,038, Dec. 19, 1978, Pat. No. 4,231,523, which is a continuation of Ser. No. 765,266, Feb. 3, 1977, abandoned. This application Feb. 9, 1982, Ser. No. 347,302

Int. Cl.^{3} B05B *1/32*

U.S. Cl. 239—454 **20 Claims**



1. A sprinkler head for use in a center pivot irrigation system, comprising:

(a) housing means adapted for connection to a source of water, the housing means defining an internal chamber with a water inlet and outlet, the outlet being constructed to issue a jet of water therefrom;

(b) volume control means associated with the housing means for controlling the jet of water issuing from said outlet so that its volume output is substantially constant;

(c) the housing means further comprising a wall member projecting internally into the chamber from the outlet in encircling relation thereto and in general alignment therewith, the wall member defining a free open end through which water is received from the inlet, the wall member at its free end having an internal transverse dimension larger than the transverse dimension of said inlet and outlet, and said wall member being spaced from the internal wall of the internal chamber to define a dead ended annular space therewith in which air may be caught to act as a shock absorbing cushion of incoming water;

(d) spray deflector means for intercepting the jet of water and deflecting it into a predetermined spray pattern;

(e) the spray deflector means being supported for movement relative to said outlet between a first position protectively covering the outlet and a second position spaced from the outlet to create said spray pattern;

(f) the spray deflector means being movable from the first position to and maintained in the second position by said jet of water, and returnable to the first position in the absence of said jet of water.

4,369,923

SELF-REGULATING NOZZLE FOR A LIQUID SUPPLY LINE

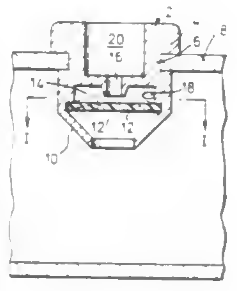
Dan Bron, 36 Palmach St., Haifa, Israel

Filed Aug. 13, 1980, Ser. No. 178,117

Claims priority, application Israel, Sep. 4, 1979, 58176

Int. Cl.^{3} B05B *15/00*

U.S. Cl. 239—542 **8 Claims**



1. A self-regulating nozzle for a liquid supply line, comprising a nozzle body attachable to said line, a cylindrical vortex chamber within said body, a vortex producing inlet means extending tangentially through the wall of said body through which the liquid in said line enters said vortex chamber, one end wall of said cylindrical chamber being constituted by one surface of a stretchable diaphragm and the opposite end wall of said chamber being provided with a central aperture leading to the consumer, the other surface of said diaphragm being exposed to line pressure, wherein the vortex produced within said chamber by flow of liquid through said tangential inlet means results in the creation of a low pressure zone on said one surface of the diaphragm and the effective cross-section of said central aperture is controlled by the stretching of said stretchable diaphragm.

4,369,924

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Teru Morishita, Shizuoka; Matsuyoshi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 30, 1980, Ser. No. 173,608

Claims priority, application Japan, Apr. 4, 1980, 55-43452

Int. Cl.^{3} B05B *5/04*

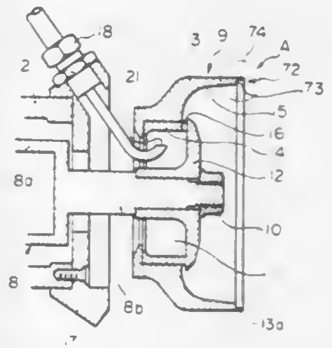
U.S. Cl. 239—703 **15 Claims**

1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

a metallic rotary shaft having a longitudinal axis, said metallic rotary shaft being rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto said front end of said rotary shaft and having an outer wall which is substantially cylindrical so as to have a substantially constant radius over a predetermined axial length, said predetermined axial length extending axially forward in a direction parallel with said longitudinal axis to a point thereon corresponding to a forwardmost axial extension of said cup shaped metallic spray head, a cup shaped inner wall having a first inner wall portion axially arranged within said predetermined axial length, said first inner wall portion forming a radially expanding inner wall which smoothly and continuously radially approaches said substantially cylindrical outer wall at a first approach rate with respect to forward axial translation, a second inner wall portion which is axially contiguous with said first inner wall portion and within said predetermined axial length, said second inner wall portion forming a discontinuous portion which radially approaches said substantially cylindrical outer wall at a second approach rate which substantially exceeds said first approach rate with respect to forward axial translation so as to produce an annular step extending radially outward, and a third inner wall portion which is axially contiguous with said second inner wall portion and within said predetermined axial length, said third inner wall portion forming an annular tip wall projecting axially forward from an outer periphery of said annular step in said second inner wall portion and extending to said forwardmost axial extension of said cup shaped metallic spray head;



feed means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

non-contact type radial bearing means arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state;

non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting state;

terminal means for receiving a negative high voltage and being connected to said housing; and

electrode means arranged in said housing for electrically connecting said terminal means to said spray head.

4,369,925

ROTARY TYPE ELECTROSTATIC SPRAY PAINTING DEVICE

Teru Morishita, Shizuoka; Matuyoshi Sugiyama, Susono, and Toshikazu Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 10, 1980, Ser. No. 195,850

Claims priority, application Japan, May 21, 1980, 55-66364

Int. Cl.^{3} B05B *5/04;* **F16C** *7/04, 17/10*

U.S. Cl. 239—703 **21 Claims**

1. A rotary type electrostatic spray painting device comprising:

a metallic housing;

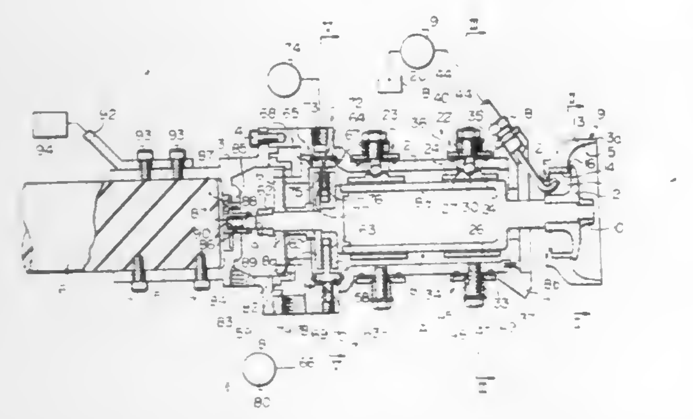
a metallic rotary shaft rotatably arranged in said housing and having a front end and a rear end;

a cup shaped metallic spray head fixed onto the front end of said rotary shaft and having a cup shaped inner wall;

feeding means for feeding a paint onto said cup shaped inner wall;

drive means cooperating with said rotary shaft for rotating said rotary shaft;

a pair of radial air bearings arranged in said housing and cooperating with said rotary shaft for radially supporting said rotary shaft under a non-contacting state, each of said radial air bearing comprising a bearing frame connected to said housing, a plurality of pads, each having an inner face which extends along a circumferential outer wall of said rotary shaft and spaced from the circumferential outer wall of said rotary shaft by a slight distance, and a plurality of support pins, each being connected to said bearing frame and pivotally supporting said corresponding pad;



electrically connecting means always electrically connecting said pads to said housing;

non-contact type thrust bearing means arranged in said housing and cooperating with said rotary shaft for axially supporting said rotary shaft under a non-contacting state;

a generator generating a negative high voltage and having an output connected to said housing, and;

electrode means arranged in said housing and electrically connecting said output to said spray head.

4,369,926

METHOD AND APPARATUS FOR GRINDING GRANULAR MATERIALS

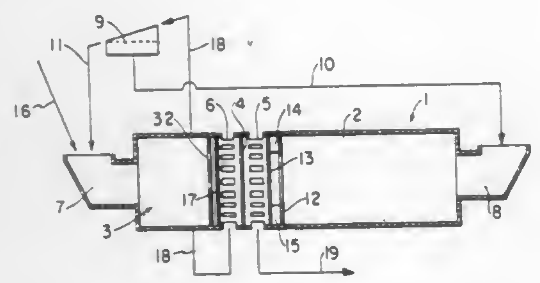
Ole S. Rasmussen, and Peter Lund, both of Copenhagen, Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 28, 1979, Ser. No. 107,846

Claims priority, application United Kingdom, Dec. 29, 1978, 50281/78

Int. Cl.³ B02C *17/06*

U.S. Cl. 241—18 **29 Claims**



1. A method of dry grinding granular material in a grinding tube mill having a final and at least one preceding grinding compartment containing grinding bodies, comprising directing the material to the tube mill, grinding the material in the preceding compartment, discharging the preground material from the preceding compartment through openings in the mill, dividing the preground material into fine and coarse fractions by a separation process, returning the coarse fraction to the preceding compartment, directing the fine fraction to the final compartment for grinding therein, discharging the ground material from the final compartment together with any grinding bodies carried therewith, separating the grinding bodies from the material discharged from the final compartment in the tube mill proper, and returning the grinding bodies to the final compartment.

4,369,927

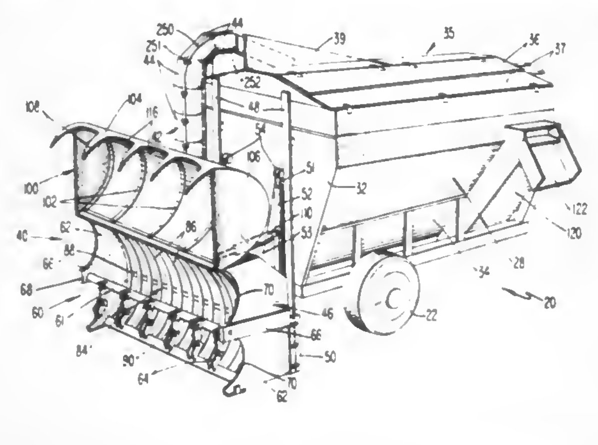
SELF-LOADING FEED MIXER AND TRANSPORT APPARATUS WITH IMPROVED GRINDING AND LOADING MECHANISM

Antonie G. Rozeboom, R.R. No. 1, Doon, Iowa 51235

Filed Jun. 20, 1980, Ser. No. 161,307

Int. Cl.³ B02C *13/26*

U.S. Cl. 241—73 **24 Claims**



1. A feed transport apparatus adapted to be transported on the ground and positioned adjacent to a stack of feed material, said feed transport apparatus having a feed compartment adapted to receive a load of feed material and a loader mechanism for grinding and loading the stack of feed material into the compartment, said loader mechanism comprising:

an open-faced loader housing mounted outside of said feed compartment;

feed pulverizing means mounted within said open-faced loader housing and exposed via said open-faced housing for engagement with the stack of feed material;

a screen mounted within said housing and cooperable with said pulverizing means for grinding the feed material therebetween;

means for conveying the ground feed material from said housing into said feed compartment;

grappling means pivotally mounted on top of said open-faced loader housing and adapted to pivot downward for urging the feed material from the stack into said housing and engagement with said pulverizing means;

means for pivoting said grappling means downward relative to said housing into the stack of feed material to draw the feed material into said housing; and

said loader housing being vertically adjustable in position relative to said feed compartment to permit said loader mechanism to operate on the stack of feed material at different levels.

4,369,928

APPARATUS FOR FORMING A LONG LEADING END IN A WIRE WHEN WINDING SAID WIRE ON A REEL

Asko S. Riekkinen, Kirkkonummi, and Allan F. Rönneberg, Helsinki, both of Finland, assignors to Oy Nokia AB, Helsinki, Finland

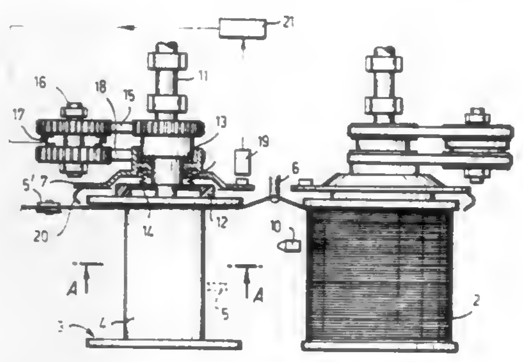
Filed Nov. 12, 1980, Ser. No. 206,262

Claims priority, application Finland, Nov. 12, 1979, 793539

Int. Cl.³ B65H *54/02*

U.S. Cl. 242—25 A **3 Claims**

1. In an apparatus for forming a long leading end to a wire when winding the wire on reels including a reel mounted on a reel shaft, means for rotating the reel shaft, a shifting flange for shifting the wire from another reel to said reel, said flange being mounted for rotation concentrically with said reel and adjacent to a flange of the reel, a gripper element on said shifting flange for gripping the wire and means for causing the rotational speed of the shifting flange to lag behind the rotational speed of the reel to create the leading end, the improvement comprising a friction clutch for transmitting rotary motion from the reel shaft to the shifting flange but that permits the flange to slide relative to the shaft, an auxiliary shaft mounted apart from and parallel to the reel shaft, first gear means connecting said reel shaft with said auxiliary shaft and second gear means connecting said auxiliary shaft with said shifting flange, the gear ratio of said second gear means being slightly larger than the gear ratio of said first gear means and coupling means for selectively connecting and disconnecting the first gear means with the second gear means whereby the shifting flange rotates at the same speed as the reel when the coupling means are disconnected and at a speed slower than the reel when the coupling means is connected.



4,369,929

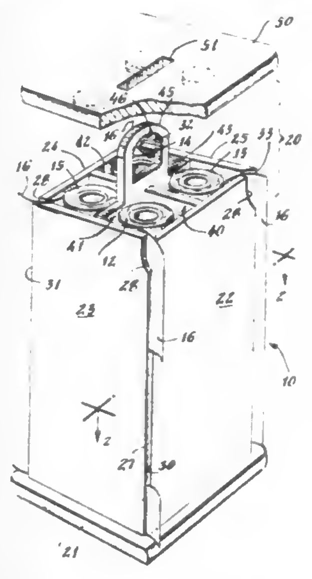
DISPENSER FOR ROLLED SHEET GOODS

Pierre W. Cayer, 33 Bungay Ter., Seymour, Conn. 06483

Filed Dec. 19, 1980, Ser. No. 218,046

Int. Cl.³ B65H *19/04*

U.S. Cl. 242—55.42 **18 Claims**



6. A dispenser for rolled sheet goods comprising:

(A) a housing having a plurality of sidewalls arrayed in a polygonal shape and adapted to receive a number of rolls of sheet goods equal to the number of sidewalls of the housing, the housing defining one vertical slot for each roll of sheet goods received and enclosed therein through which the rolls of sheet goods may be respectively withdrawn; and

(B) stop means at the top of the housing for engaging the upper ends of the rolls of sheet goods upon application of pressure to said stop means, thereby preventing the sheet goods from unrolling when the stop means are engaged,

whereby the desired amount of sheet goods from a selected one of the rolls of sheet goods may be withdrawn through its respective slot and pressure may be applied to the stop means to prevent additional sheet goods from being withdrawn through the slot as the sheet goods are held in tension and torn off at the edge of the slot.

4,369,930

FISHING REEL

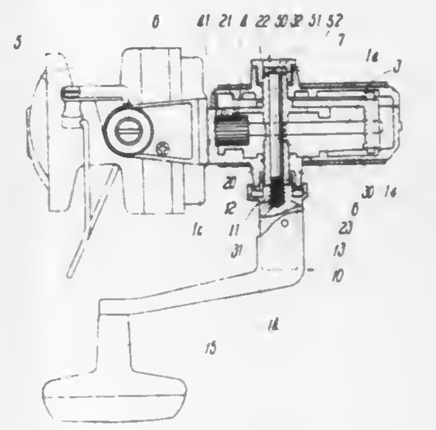
Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 333,179

Claims priority, application Japan, Dec. 28, 1980, 55-188814[U]

Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.1 J **2 Claims**



1. A fishing reel comprising:

a reel body having a pair of opposite side walls and a front wall, cylindrical bosses at said side walls, and a shaft bore at said front wall;

a rotary frame supported freely rotatably to said reel body and having a pinion;

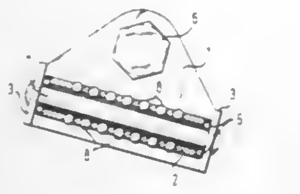
a spool supported freely slidably to said reel body; and,

a drive mechanism for rotating said rotary frame and comprising: a handle, a tubular main shaft, and a screw shaft, said handle comprising a shaft portion having a threaded bore and an engaging bore, a lever portion, and a grip, said tubular main shaft being supported rotatably to said cylindrical bosses and supporting at an intermediate portion a master gear engageable with said pinion and having at both axial ends engaging portions which are not-round at their respective outer peripheries, each said engaging portion being capable of engaging with said engaging bore at said handle in relation of being not rotatable relative to said handle, said screw shaft being supported to said tubular main shaft and having at the outer periphery of one axial end a screw thread screwable with said threaded bore at said handle and at the other axial end a head having an outer periphery which is not-round the same as the outer peripheries of said engaging portions at said tubular main shaft, said screw shaft screwing with said threaded bore at said handle, thereby coupling said handle with said tubular main shaft, said drive mechanism further comprising a cap having a not-round inner surface engageable with one of said engaging portions at said tubular main shaft and with the head of said screw shaft, so that the not-round inner periphery of said cap engages with said one engaging portion and head to thereby couple said screw shaft with said tubular main shaft in relation of being not-rotatable relative thereto and integral with said handle.

4,369,931

REDIRECTING DEVICE FOR SAFETY BELTS

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany
Filed Aug. 7, 1978, Ser. No. 931,448
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2736115
Int. Cl.³ A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107 **5 Claims**

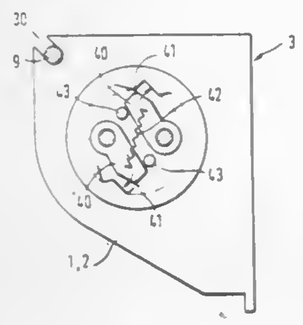


1. A redirecting device for a safety belt in which one end of the safety belt is rolled up on an automatic winder in an end region and the other end of the safety belt has a fitting for connecting the belt to a lock, a redirecting member supported in the redirecting device, over which member the belt passing in contact with the redirecting member is led in the redirection region, the redirecting member comprising in the contact zone of the belt a rotatable member having a wall as the outer surface around which the belt is partially looped, with the rotatable member of width greater than the width of the belt to extend beyond the belt on both sides, and roll elements supporting the rotatable member to permit the rotatable member to rotate freely, and wherein additional roll elements are disposed in the central region of the rotatable member which project beyond the wall of the rotatable member on both sides of the wall.

4,369,932

AUTOMATIC WIND-UP ROLLER FOR A SAFETY BELT

Helmut Seifert, Schwäbisch Gmünd; Wolf-Dieter Hönl, Mutlangen; Johannes Schmid, Schwäbisch Gmünd-Hussenhofen, and Bernhard Frei, Waldstetten, all of Fed. Rep. of Germany, assignors to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany
Division of Ser. No. 48,184, Jun. 13, 1979, Pat. No. 4,277,036. This application Mar. 10, 1981, Ser. No. 242,397
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826286
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **4 Claims**

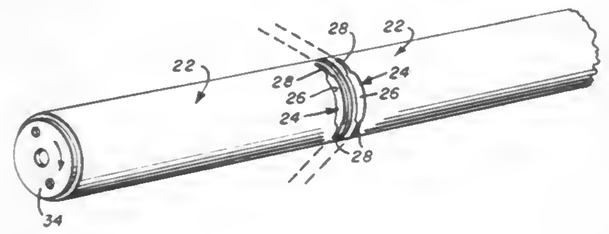


1. Automatic wind-up roller for a safety belt of a vehicle with means to block a belt shaft on which the safety belt is wound in case of danger, having a housing, a belt shaft rotatably supported in the housing, a safety belt rolled around the belt shaft, a release mechanism which is activated when a predetermined acceleration or deceleration of the vehicle is exceeded, a single control element arranged on the axis of said belt shaft at one end of the belt shaft to normally rotate with the belt shaft, activated by the release mechanism, at least two locking pawls at each end of the belt shaft, connecting means for simultaneously activating all said locking pawls at both ends of the belt shaft by said single control element, locking tooth means at each end of the belt shaft for engagement with the locking pawls, said locking pawls when activated simultaneously interacting with said locking tooth means to block said belt shaft, and means for mounting said two locking pawls on each side of the belt shaft which are operable simultaneously by the control element for movement radially away from the belt shaft axis in opposite directions into the locking position.

4,369,933

YARN TUBE WITH PICKUP GROOVE ACCOMMODATING LEFT HAND AND RIGHT HAND PICKUP

William E. Bedenbaugh, Robesonia, Pa., assignor to Sonoco Products Company, Hartsville, S.C.
Filed Jan. 13, 1981, Ser. No. 224,689
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—125.1 **7 Claims**

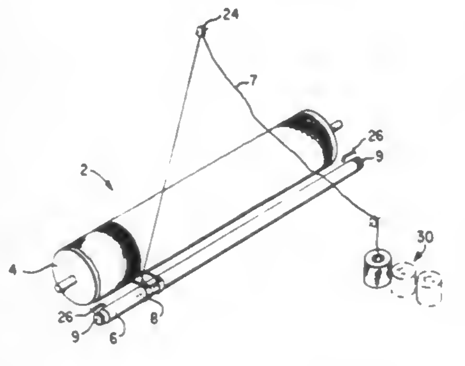


1. A yarn tube specifically adapted for rotation in opposed directions and yarn pickup in each opposed direction of rotation; said tube being elongated and having an outer yarn receiving surface, a pickup groove in said tube transverse to the length thereof and through said outer surface for receiving and gripping yarn as the tube is rotated, said groove extending continuously about at least a substantial portion of the circumference of the tube, said groove including an elongated wide center section defining a yarn drop-in area capable of receiving a length of yarn, said center section being of a substantially constant width throughout the length thereof and of a substantially greater length than width, said center section terminating in opposite ends, and a pair of elongated gripping sections extending respectively from the opposite ends of said center section to engage and grip yarn upon a relative movement of the yarn from the center section to one or the other of the gripping sections depending upon the direction of rotation of the tube, said groove being of a generally constant depth throughout substantially the entire length thereof.

4,369,934

HELICAL FILAMENT WINDING APPARATUS

Henry J. Spies, P.O. Box 384, Station "B", London, Ontarior, Canada (N6A 4W1)
Filed Feb. 3, 1981, Ser. No. 231,584
Int. Cl.³ B65H *54/28, 57/28*
U.S. Cl. 242—157.1 **12 Claims**

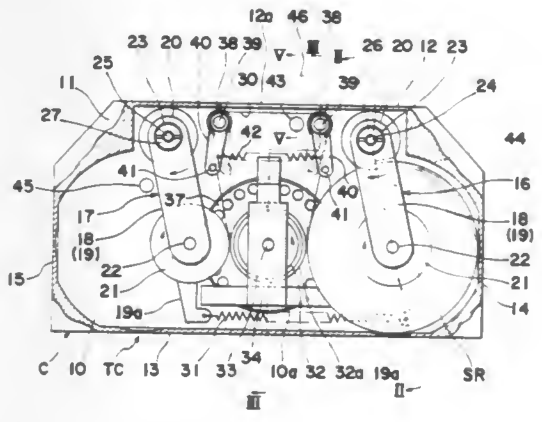


1. A filament guide for use in helical filament winding operations wherein a filament is drawn by a driven form on which the filament is to be wound, comprising a traction roller having a rotational axis about which, in operation, the filament to be wound is drawn to rotate the roller, the angular contact of the filament with the exterior surface of the traction roller, during operation, being less than 2π radians; filament contact means contacting the filament to provide axial displacement of an input path of the filament to the traction roller from an output path of the filament from the traction roller by a predetermined amount, whereby the helix angle of wrap of the filament on the form is defined by a force applied in a direction parallel to the rotational axis of the roller by the filament leaving the roller; and means to reverse the direction of the axial displacement of the input and output paths of the filament when the filament contact means reaches predetermined limits, thereby defining the limits of movement of the filament contact means and as well the limits of filament winding on the form.

4,369,935

TAPE CASSETTE AND TAPE TRANSPORT MECHANISM

Takeshi Yamanaka, Otsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Dec. 18, 1980, Ser. No. 217,609
Claims priority, application Japan, Dec. 21, 1979, 54-167008; Dec. 21, 1979, 54-167009
Int. Cl.³ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—192 **5 Claims**



1. A tape cassette construction which comprises, in combination:

means defining a support wall of a tape cassette having an operating zone on one side of the support wall;

first and second spaced carriages supported in said operating zone by the support wall for pivotal movement;

hubs rotatably carried by said first and second carriages and wrapped with magnetic recording tape to form rolls of tape carried by the first and second carriages, respectively, each of said hubs being positioned on the corresponding carriage at a point spaced from the point of pivot of the corresponding carriage;

a drive wheel rotatably supported in the operating zone by the support wall and including a coupling means coaxial therewith, said coupling means being adapted to receive a rotational force necessary to rotate the drive wheel;

a biasing means for biasing the first and second carriages in a direction towards each other with said rolls on the hubs held in contact with said drive wheel from opposite directions;

a friction element for each of the first and second carriages operatively mounted to impart a resistance to movement of the corresponding carriage in a direction counter to the direction of pivotal movement of the corresponding carriage;

said friction element comprising a ring-shaped friction piece sandwiched between the corresponding carriage and the support wall and encircling the axis of pivot of the corresponding carriage;

at least one pair of guide poles supported in the operating zone by the support wall for guiding a portion of the magnetic recording tape between the rolls along a predetermined path;

a tensioning device positioned in the operating zone for absorbing any possible slackening of the magnetic recording tape;

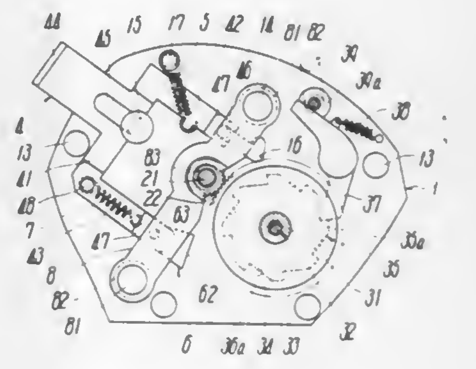
said tensioning device comprising a pair of pivotable levers, each lever being rotatably mounted on the corresponding guide pole at right angles thereto and having a tensioning pin carried thereby at the other end thereof, said tensioning pin extending from a corresponding pivotable lever in a direction generally perpendicular to the corresponding pivotable lever and towards the support wall, and

a biasing element for biasing said pivotable levers in a direction towards each other.

4,369,936

FISHING REEL CLUTCH CONTROL MECHANISM

Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Apr. 1, 1981, Ser. No. 250,035
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—220 **3 Claims**



1. A fishing reel comprising:

a stationary member;

a handle rotatably supported to said stationary member;

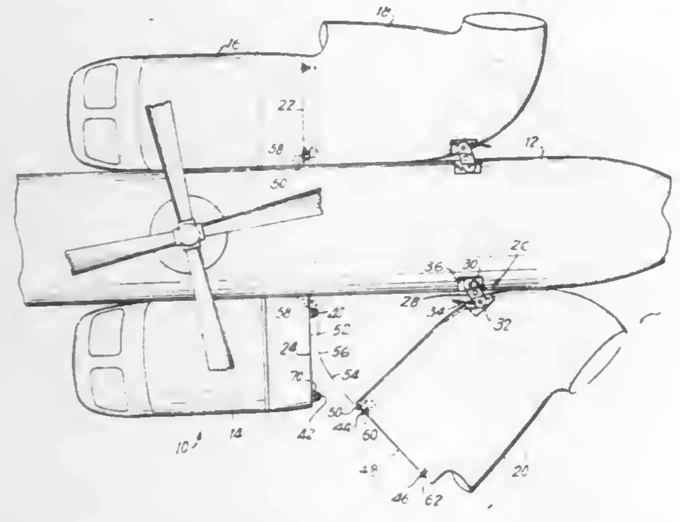
a spool having a spool shaft which is rotatably supported to said stationary member;

a transmitting mechanism for transmitting a rotating driving force from said handle to said spool shaft and including a clutch means for selectively interrupting a transmission path in said transmitting mechanism;

a clutch control mechanism for operating said clutch means and comprising: a clutch lever for on-off controlling said clutch means, a pawl swingably supported to a forward end of said clutch lever, means for mounting said clutch lever to said stationary member so as to permit said clutch lever to move forwardly, backwardly and swingably during on-off control of said clutch means, a retaining mechanism for retaining said clutch lever at a forward movement end position thereof, a first spring for biasing said clutch lever in a backward movement direction thereof and in a first swinging direction which permits said clutch lever, when moved forwardly, to swing and be retained by said retaining mechanism at said forward movement end position, and a rotatable return plate having a plurality of protuberances thereon which rotate with said return plate in response to a rotating movement of said transmitting mechanism, said protuberances, when said clutch lever is retained by said retaining mechanism, engaging with said pawl at said clutch lever to swing said clutch lever in a second swinging direction opposite to said first swinging direction to release retainment of said clutch lever by said retaining mechanism, said pawl having a base pivoted to said clutch lever and at its distal end an engaging portion for engaging with a said protuberance, said retaining mechanism including a guide means which allows said clutch lever, when in proximity to the end of its forward movement, to swing under action of said first spring in said first swinging direction to move said engaging portion of said pawl in a direction of approaching an axis of rotation of said return plate, said clutch lever supporting a second spring for biasing said pawl to a neutral swinging position, whereby if said engaging portion of said pawl engages with a said protuberance as it approaches said axis of rotation during swinging of said clutch lever in said first direction, said pawl rotates against the biasing of said second spring to permit said clutch lever to continue to swing and to be retained by retaining mechanism.

4,369,937
HINGING AND LATCHING APPARATUS

Clarence E. LeBell, Peabody, Mass., and Samuel R. Barr, Sr., deceased, late of Swampscott, Mass. (by Samuel R. Barr, Jr., administrator), assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 18, 1981, Ser. No. 264,268
Int. Cl.³ B64D *29/06*
U.S. Cl. 244—53 R **12 Claims**

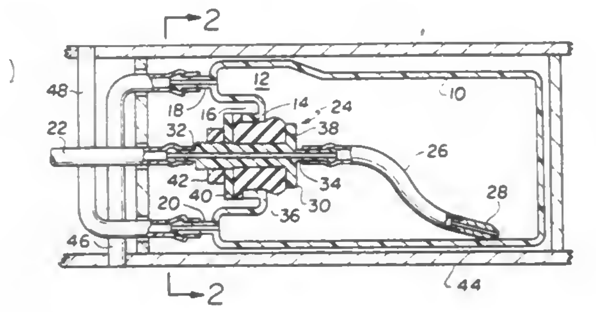


1. Apparatus for mounting an infrared suppressor to an aircraft and for mating a first end of said infrared suppressor to a second end of an engine comprising:
  hinge means for attaching said infrared suppressor to said aircraft;
  said hinge means including means for supporting and permitting said infrared suppressor to be rotated on an axis away from said second end whereby said second end is made accessible;
  said hinge means further including means permitting said first end to be rotated into alignment with said second end and further permitting generally linear translation of said infrared suppressor into mating engagement of said first end with said second end; and
  means for maintaining a predetermined minimum spacing of said first end from said second end during rotation of said infrared suppressor into alignment.

4,369,938
FUEL TANK FOR MODEL AIRCRAFT

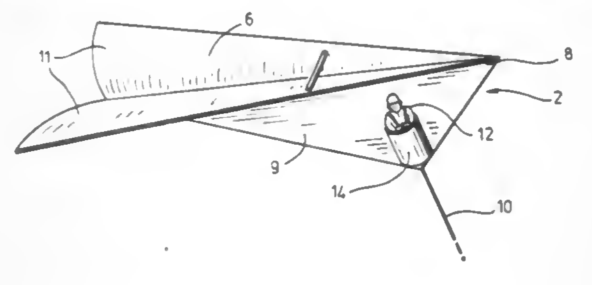
Robert W. Kress, 27 Mill Rd., Lloyd Harbor, N.Y. 11743
Filed Nov. 7, 1979, Ser. No. 92,222
Int. Cl.³ B64D *37/06*
U.S. Cl. 244—135 R **4 Claims**

1. A fuel tank for model aircraft, said tank comprising a hollow body having a top wall, a bottom wall, side walls, and first and second end walls, said fuel tank further comprising:
  an aperture for receiving a fuel feed line fitting in the first end wall substantially centrally located between the top and bottom walls, said fuel feed aperture having a substantially horizontal axis parallel to the longitudinal axis of said tank and normal to the planes of said end walls,
  a first vent aperture located in the first end wall near the top wall, and a second vent aperture located in the first end wall near the bottom wall, said vent apertures having a substantially horizontal axis parallel to the longitudinal axis of said tank and normal to the planes of said end walls,
  said first end wall of said hollow body of said tank having at least one protruding portion extending from side to side transversely of the longitudinal axis of said tank, said protruding portion forming an extension of the interior of said tank such that the fuel capacity thereof is increased thereby, said fuel line aperture being located rearwardly of said protruding portion.



4,369,939
ARTICLE DROPPING KITE

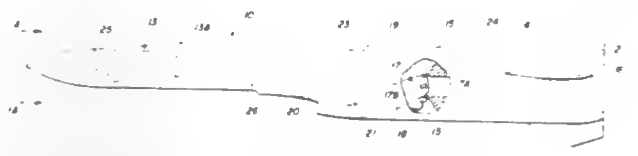
Lloyd C. Elson, 47 Hillyard St., Hamilton, Ontario, Canada (L7L 6B3)
Filed Mar. 9, 1981, Ser. No. 241,822
Int. Cl.³ B64C *31/06;* **A63H** *27/08*
U.S. Cl. 244—155 R **4 Claims**



1. An article dropping kite comprising:
a kite body;
a kite string connected to the kite body for extension therefrom in a longitudinal flight direction to a kite operator on the ground while the kite is in flight in a flight attitude;
at least one releasable article adapted for releasable carriage by the kite while in the air;
holding means mounted on the kite body for frictionally releasably holding each article on the kite body in any normal flight attitude of the kite, said holding means permitting release of the article only in a direction that is upward against gravity and is at least approximately aligned with the said longitudinal flight direction of the kite string;
whereby a jerk of sufficient releasable speed and force along the longitudinal direction of the kite string during flight of the kite with a releasable article held thereon releasably overcomes the frictional holding of the article by the holding means under the effect of the inertia of the article for release of the article from the holding means and its subsequent dropping under gravity to the ground.

4,369,940
AIRBREATHING PROPULSION SYSTEM FOR SUPERSONIC VEHICLES

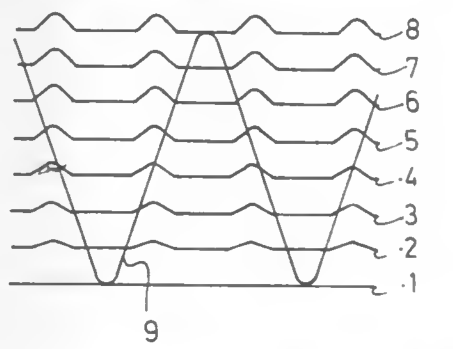
Patrick J. Kelly, St. Charles, and Gerald T. Arcangeli, St. Louis County, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Dec. 17, 1979, Ser. No. 104,289
Int. Cl.³ F42B *15/02*
U.S. Cl. 244—3.21 **8 Claims**



1. In an airbreathing propulsion system for a supersonic vehicle, the improvement which comprises: a body having an air receiving duct formed with a fixed cross-sectional area inlet opening from a side of said body and said duct having a converging throat spaced from said inlet opening and having a lesser cross-sectional area than said inlet opening; a propulsion powerplant communicating with said duct downstream from said converging throat to utilize the air flowing therethrough; and means carried by said body for maneuvering the body into a position for starting said duct, said maneuvering means including a vehicle body guidance means and body flight attitude control means, said guidance means being operative on said control means for positioning said fixed cross-sectional area inlet relative to the airstream flow over said body such that its area presented to the airstream flow is reduced for starting said inlet to supply air for the airbreathing propulsion system.

4,369,941
REINFORCING STRIP

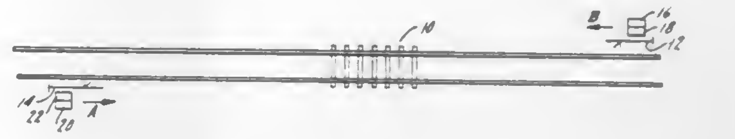
Marc Nijs, Moorslede, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
Filed Oct. 6, 1980, Ser. No. 194,129
Claims priority, application United Kingdom, Oct. 9, 1979, 7935038
Int. Cl.³ B21F *27/00*
U.S. Cl. 245—2 **4 Claims**



1. A reinforcing strip of wire mesh comprising a plurality of substantially parallel longitudinally extending warp wires, said plurality of warp wires comprising a plurality of incurved portions which provide the strip with a longitudinal low modulus extensibility which increases gradually along the breadth of the strip, adjacent warp wires being connected with transverse wire portions running obliquely from one warp wire to the adjacent one, and welded to these wire portions in the crossing points of said warp wires with said wire portions.

4,369,942
SIGNAL CONTROL SYSTEM

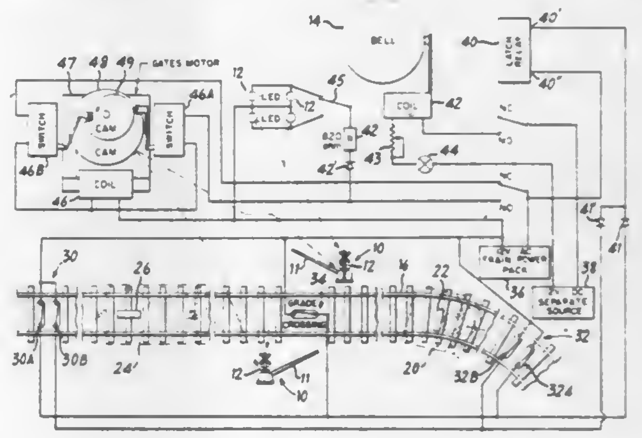
H. James Wilson, La Grange, Ky., assignor to Safetran Systems Corporation, Louisville, Ky.
Filed Mar. 19, 1979, Ser. No. 21,695
Int. Cl.³ B61L *21/00*
U.S. Cl. 246—34 CT **7 Claims**



1. A railroad signaling system including an A transmitter and A receiver for sending and receiving signal messages in one direction and a B transmitter and B receiver for sensing and receiving signal messages in the opposite direction,
  said A transmitter and B receiver being located at one end of a signal block and said B transmitter and A receiver being located at the other end,
  said A transmitter including means for providing an A type DC message, said B transmitter including means for providing a B type DC message, said A receiver being responsive to only an A type message and said B receiver being responsive to only a B type message, both said A and B type messages including address portions having different pulse characteristics providing directional information,
  each of said A and B type receivers including means for inhibiting said B and A type transmitters, respectively, whereby only one transmitter operates at a time.

4,369,943
MODEL TRAIN CROSSING GATE

Said Hussein, 2814 Kennedy Blvd., Jersey City, N.J. 07306
Filed Dec. 29, 1980, Ser. No. 220,417
Int. Cl.³ B61L *1/08, 29/22*
U.S. Cl. 246—127 **18 Claims**

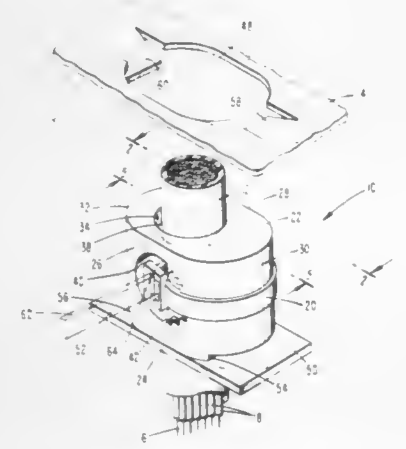


1. A model railroad having a train with a locomotive and at least one car traveling along tracks provided with a grade crossing, comprising:
  a grade crossing magnetically-operated relay positioned beneath the tracks at the grade crossing and having a particular orientation;
  two pairs of adjacent approach magnetically-operated relays positioned beneath the tracks at locations remote from the grade crossing, one pair of approach relays being located on one side of the grade crossing and the other being located on the other side of the grade crossing along the longitudinal extent of the tracks, the orientation of the approach relays being orthogonal to that of the crossing relay;
  first and second magnets positioned on the train, the first magnet being located in the locomotive and being ori-

ented to operate the approach relays and the second magnet being located in a last car of the train and being oriented to operate the crossing relay; and
a control circuit for operating the crossing gate so as to lower it whenever the first magnet moves over a pair of approach relays while traveling toward the grade crossing, and raises the gate whenever (i) the second magnet moves over the crossing relay or (ii) the first magnet moves over a pair of approach relays while traveling away from the grade crossing.

4,369,944
UNIVERSAL STRAND CLAMP AND STRAND CLAMP ASSEMBLY

Floyd E. Hobart, Jr., Ironia, N.J., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Jul. 30, 1980, Ser. No. 173,794
Int. Cl.^{3} F16L *5/00*
U.S. Cl. 248—56 **14 Claims**

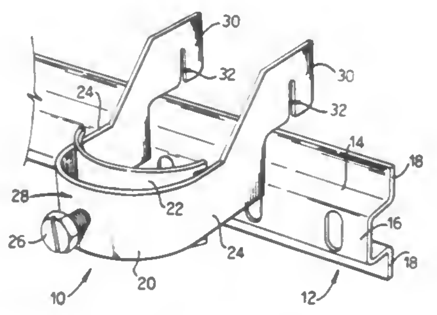


1. A universal clamp member comprising:
a base;
a body portion extending perpendicular from the base;
the body portion and the base having a longitudinally extending passageway formed therethrough for receiving a strand, the body portion also having first and second opposite sidewalls with respective first and second aligned openings extending into the longitudinal passageway, for receiving a strand tie member, the body portion is formed with an inner wall which is offset with respect to the longitudinal passageway for receiving a portion of the strand depressed therein by the strand tie member; and
means adjacent one end of the body portion for securing the clamp member to an associated device.

4,369,945
CABLE CLAMPS

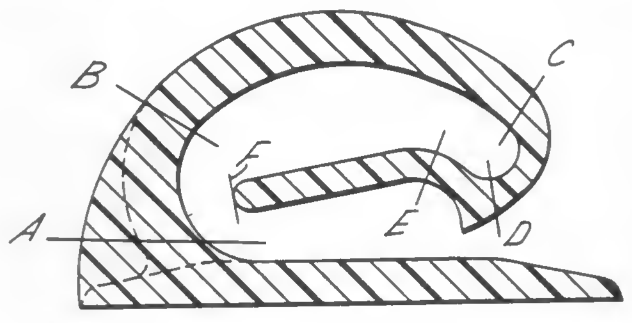
Dominico Mantoan, 5 van der Next Ave., Norkem Park, Kempton Park, Transvaal Province, South Africa, and Mario Morassi, 33020 Ravascletto, Udine, Italy
Filed Oct. 2, 1980, Ser. No. 193,040
Claims priority, application South Africa, Oct. 4, 1979, 79/5294
Int. Cl.^{3} F16L *3/08*
U.S. Cl. 248—73 **7 Claims**

1. In combination with an elongated cross-rung of a cable ladder in which the cross-rung has a forwardly protruding portion and a longitudinally extending flange, a cable clamp for clamping a flexible cable to said cross-rung comprising: a U-shaped bracket having a base and two arms extending rearwardly of said base, each arm having a shoulder for positioning adjacent said forwardly protruding portion and an offset free end portion provided with hook-like formations positioned and shaped to engage said flange; and a saddle element adjustably mounted on the bracket between said arms and positioned to engage a cable interposed between said arms and extending transversely of said cross-rung, whereby adjustment of said saddle element toward the forwardly protruding portion clamps the cable between the saddle element and the forwardly protruding portion, engages the hook-like formations with said flange, and positions the shoulder of each arm adjacent the forwardly protruding portion.



4,369,946
CABLE CLIPS

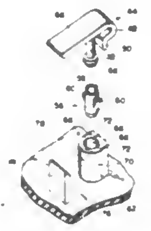
John P. Palmer, Reading, and Patrick J. McCann, Crowthorne, both of England, assignors to ITW Limited, Windsor, England
Filed Jul. 14, 1980, Ser. No. 168,900
Claims priority, application United Kingdom, Jul. 14, 1979, 7924595
Int. Cl.^{3} F16L *3/08*
U.S. Cl. 248—74 A **5 Claims**



1. A one-piece plastic cable clip comprising a planar base, a resilient arm and a resilient finger, said arm having a first portion extending generally away from the base, a second portion curving and extending in a direction substantially parallel to the base, and a third portion extending from the second portion generally towards the base, said first and second portions being more resistant to bending then said third portion about an axis parallel to the base and transverse to the arm, said arm progressively becoming less resistant to bending along the first and second portions towards said third portion, said resilient finger extending away from said third portion and between said second portion and said base, said third portion being adapted to permit said finger to engage said second portion and cooperate therewith when the clip is used to position a larger size of cable, a portion of the finger proximate to the third portion including a tooth protruding generally towards said base, said tooth being substantially thicker than the third portion and the finger and being substantially inflexible, said finger including a portion which is less resistant to bending than said first and second portions wherein said tooth is disposed between the less resistant to bending finger and third portion, said base including a sloping edge surface forming a lead-in, said sloping edge of said planar base cooperating with the resiliency of said arm and said finger to facilitate insertion of a cable into the clip whereby a cable is securely retained in the clip by the cooperation of the resilient finger and arm, the substantially rigid tooth, and the base.

4,369,947
WIRE HARNESS FIXING ASSEMBLY

Fumiyoshi Kuwano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Nov. 7, 1980, Ser. No. 204,805
Claims priority, application Japan, Nov. 8, 1979, 54-154193[U]
Int. Cl.^{3} F16L *3/08*
U.S. Cl. 248—74 A **14 Claims**

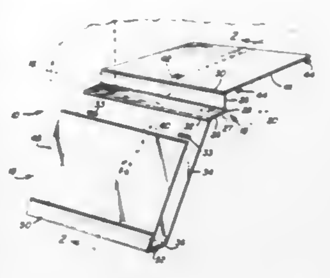


1. A device for retaining an elongated object against a substantially flat support or workpiece, comprising:
a first post member projecting upwardly from said support or workpiece and having an axially extending inner bore;
a second post member projecting from said support or workpiece and spaced apart from said first post member to define a space therebetween for receiving therein the elongated object;
a retaining member separate from the first and second post members and having an elongated strip portion being longitudinally positionable to extend between said first and second post members above the space to retain the elongated object within said space immediately adjacent the support, said retaining member further including a pin portion projecting from said strip portion and being insertable into said bore; and
clip means for retaining said pin portion within said bore;
said first post member including an outer shape having a substantially flat wall portion with a pair of rounded edges, and a cylindrical wall portion;
said retaining member further including a resilient bent portion extendedly provided at one end of said strip portion and a lug portion extending from one end of said bent portion in substantially the same direction as said pin portion, said lug portion being engageable with the flat wall portion to prevent the strip portion from rotating about the pin portion to maintain the strip portion in a first operative position extending longitudinally between said first and second post members to retain the object in said space, said resilient bent portion being flexible to allow said lug portion to move around one of the rounded edges, enabling said strip portion to move into a second operative position whereby said elongated object can be removed or positioned within said space.

4,369,948
DISAPPEARING BOOK HOLDER

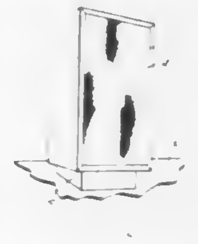
Leonard Krauss, and Halina Krauss, both of 4204 Melisa Ct., Carmichael, Calif. 95608
Filed May 7, 1980, Ser. No. 147,377
Int. Cl.^{3} A47B *63/06, 77/10*
U.S. Cl. 248—441 A **3 Claims**

1. A book holder able to support a book in a substantially vertical orientation comprising means to attach said book holder to a support surface, book support means pivotally mounted on said attachment means for supporting said book in said substantially vertical orientation positioned below and forward of said surface, means to lock said book support means in at least one of a plurality of inclined positions below and forward of said surface, said book support means including a book back support and a book shelf attached to a lower end of said back support and said means to lock said book support means including an adjustable support arm pivotally mounted on said attachment means and able to engage one of a plurality of extensions placed on the surface of said back support, said attachment means being capable of securing the book holder underneath said support surface, said book support means being pivotal about said attachment means to a horizontal position adjacent and below said surface, said attachment means further including a retaining means to lock said book support means in said horizontal position, said book support means being pivotal about said attachment means by a double hinge plate attachment which supports said book support means in said substantially vertical orientation and which is able to be folded underneath and adjacent said support surface when said book support means is in said horizontal position.



4,369,949
LOUDSPEAKER PEDESTAL

David E. Zopf, Lansing, Mich., assignor to CBS Industries, Lansing, Mich.
Filed May 27, 1980, Ser. No. 153,189
Int. Cl.^{3} F16M *13/00*
U.S. Cl. 248—632 **5 Claims**



1. A speaker support for elevating, inclining and vibration isolating a loudspeaker in relation to a floor surface comprising:
a roughly box-shaped, rigid hollow base structure for elevating a loudspeaker placed thereupon, said base structure having a top surface and downwardly extending sides terminating in bottom edges;
a continuous layer of self-skinning, semi-rigid urethane foam molded over and encasing said box-shaped rigid base structure for vibration isolating a loudspeaker;
a floor-engaging surface disposed on said support;
a speaker-engaging surface disposed on said support above said floor-engaging surface, said speaker-engaging surface being inclined downwardly from front-to-back with respect to said floor-engaging surface for inclining a loudspeaker;
a speaker-engaging stop disposed at the back of said speaker-engaging surface, said stop extending above said speaker-engaging surface to prevent a loudspeaker from sliding therefrom; and
said foam layer extending continuously over the entire top surface of said base structure, downwardly over the exterior of the sides of said base structure, inwardly over the bottom edges of said base structure and over said stop, said floor-engaging surface being formed by said foam layer overlying the bottom edges of said base structure, said speaker-engaging surface being substantially imperforate and formed by said foam layer overlying the entire top surface of said base structure and atop said base structure, whereby vibration from a speaker disposed on said support, or from a surface upon which the support is positioned is effectively dampened by a foam layer engaging both the speaker and the floor surface upon which it rests while extending continuously therebetween.

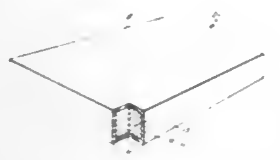
4,369,950
TURNTABLE SUPPORT

David E. Zopf, Lansing, Mich., assignor to Complete Business Services Corp., Lansing, Mich.

Filed May 27, 1980, Ser. No. 153,453

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—632 **4 Claims**



1. A turntable support for vibration isolating, elevating and leveling a turntable in relation to a resting surface comprising:
- a roughly rectangular rigid base structure for elevating a turntable, said base having a top surface, sides and bottom edges;
- a continuous layer of self-skinning, semi-rigid urethane foam molded onto and fully encapsulating said rectangular base structure for vibration isolating a turntable;
- a turntable engaging surface disposed on said support;
- a plurality of resting surface engaging feet, said feet each including means for selectively adjusting the length of said feet for leveling a turntable; and
- said foam layer extending continuously over the entire top surface of said base structure, downwardly over the exterior of the sides of said base structure, inwardly over the bottom edges of said base structure and between said base structure and said feet, said turntable engaging surface being formed by said foam layer, said turntable engaging surface being substantially imperforate and formed by said foam overlying the entire top surface of said base structure, whereby vibration from a turntable or from a surface upon which the turntable support is positioned is effectively dampened by a foam layer engaging both the turntable and the feet of the turntable support while extending continuous therebetween.

4,369,951
SQUEEZED TUBE VALVE

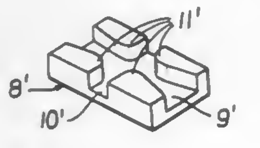
Hermann Marsoner, Graz, and Erich Kleinhappl, Kumberg, both of Austria, assignors to Hans List, Graz, Austria

Filed Aug. 5, 1981, Ser. No. 290,213

Claims priority, application Austria, Aug. 11, 1980, 4119/80

Int. Cl.³ F16L *55/14*

U.S. Cl. 251—7 **3 Claims**



1. A squeezed tube valve comprising, an electromagnetically actuated clamping bolt and a valve block, said valve block having a longitudinally extending groove of essentially U-shaped cross-section for the reception of a flexible tube therein along said groove, said valve block also having a transversely extending groove of approximately the same depth as said longitudinal groove for the reception upon actuation of said clamping bolt which lies transverse to said longitudinal groove, said longitudinally extending groove and said transversely extending groove each being defined by a bottom portion and two side walls, said grooves intersecting and presenting edges which are rounded off, the location of intersection of said grooves defining a squeeze zone, said edges bounding said squeeze zone and being defined by the intersection of said side walls of the respective longitudinally extending and transversely extending grooves, said edges having radii corresponding at least approximately with the tube radius, and said clamping bolt being actuated for shutting off the tube by squeezing in such a manner that the shutting force exerted by the bolt on the tube rises from zero according to an asymptotic rise function over the duration of the shutting action, whereby the tube during the shutting process is permitted to yield in said squeeze zone by expanding on opposite sides into both said grooves thus avoiding undue strain on the tube at said zone.

4,369,952
MANUALLY DRIVEN WINCH

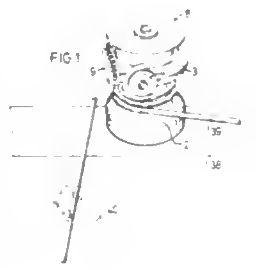
Lennart Kurling, Berglärkan 81, 421 69 Västra Frölunda, Sweden

Filed Feb. 10, 1981, Ser. No. 233,205

Claims priority, application Sweden, Feb. 11, 1980, 8001056

Int. Cl.³ B66D *1/22, 1/30, 1/78*

U.S. Cl. 254—353 **10 Claims**



1. Manually driven winch, comprising a frame and a winch drum carried by the frame and rotatable in one direction, characterized by a support means arranged coaxial to the winch drum and provided with a pulley, means mounting said support means for rotation relative to the frame between first and second end positions which are angularly spaced apart, an additional drum arranged coaxial to the winch drum, a ratchet latch drivingly interconnecting the support means or the additional drum with the winch drum to drive the winch drum as the support means is rotated from the first to the second end position by a pulling movement of the outgoing portion of a line which is pulled around the winch drum over the pulley and around the additional drum in a direction opposite the direction of the line around the winch drum, and means to return the support means to the first end position after turning the support member from the first to the second end position.

4,369,953
FENCE CONSTRUCTIONS AND IN FENCE ELEMENTS THEREFOR

Waldemar H. Greiner, 11 Harrisford St., Unit 55, Hamilton, Canada (L8K 6L7), and Denis P. Muscat-Tyler, 5134 Mulberry Dr., Burlington, Canada (L7L 3P4)

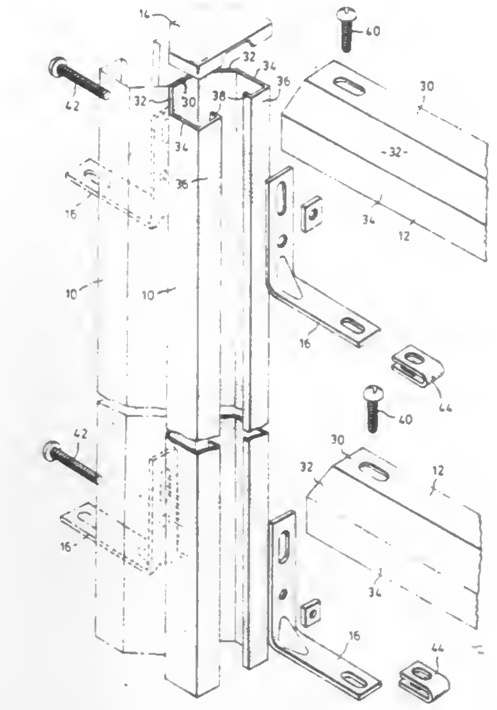
Filed Feb. 27, 1981, Ser. No. 238,897

Claims priority, application Canada, Dec. 3, 1980, 366083

Int. Cl.³ E04H *17/16;* E04N *17/14*

U.S. Cl. 256—24 **31 Claims**

1. A post/rail element for a fence construction comprising an elongated hollow member of part-octagonal transverse cross-section having:
- an elongated base wall, two elongated intermediate walls, two elongated side walls parallel to one another, two elongated flange walls coplanar with one another, and two elongated spaced returned walls parallel with one another;
- respective longitudinal edges of the two intermediate walls having respective parallel junctions with the two longitudinal edges of the base wall;
- two respective longitudinal edges of the two parallel side walls having respective parallel junctions with the other two edges of the intermediate walls;
- two respective longitudinal edges of the two coplanar flange walls having respective parallel junctions with the other two edges of the side walls, and



- two respective longitudinal edges of the two parallel returned walls having respective parallel junctions with the other two edges of the flange walls.

4,369,954
REGENERATIVE AIR PREHEATER WITH IMPROVED INSULATION BETWEEN COMBUSTION CHAMBER AND CHECKER SHAFT

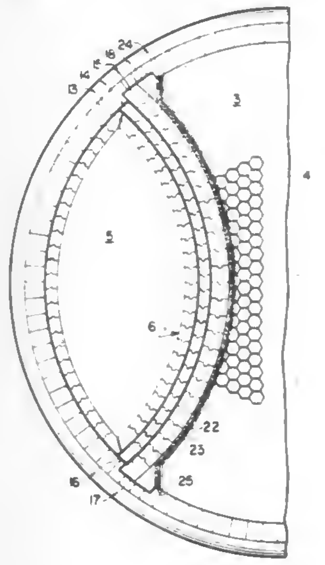
Helmut Palz, Wiesbaden, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 15, 1980, Ser. No. 169,198

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929718

Int. Cl.³ C21B *9/02*

U.S. Cl. 266—139 **10 Claims**



1. In a regenerative air preheater of the type including a masonry casing having therein a combustion chamber and a checker shaft set with checker bricks, and a separating wall between said combustion chamber and said checker shaft, the improvement of insulation means between said combustion chamber and said checker shaft, wherein said insulation means comprises:
- a space between said separating wall and said checker bricks;
- insulating material comprising fireproof fiber material positioned within said space; and
- said insulating material being structurally free of said separating wall.

4,369,955
CUPOLA FURNACE SYSTEM

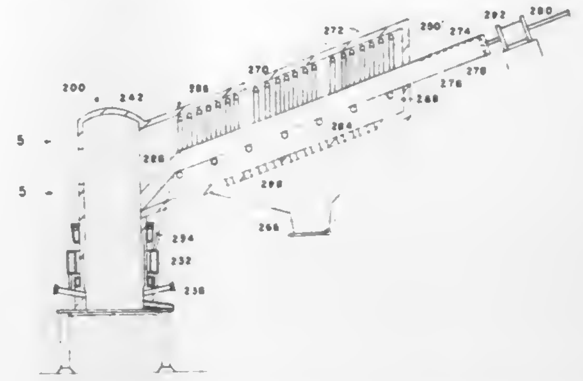
Ki D. Park, 1424-3 3Ku Sankyuk Dong, Buk-Ku, Taegu, Rep. of Korea

Filed Nov. 10, 1980, Ser. No. 205,306

Claims priority, application Rep. of Korea, Jun. 25, 1980, 80-2495

Int. Cl.³ F27B *1/22*

U.S. Cl. 266—139 **5 Claims**



1. In a system having: upright cupola cylindrical shell structure defining a melting chamber for melting pig iron by direct contact in a charge with burning fuel, means for charging pig iron and coke and flux into the melting chamber, means for charging compressed air into the burning fuel inwardly through the lower portion of the melting chamber, and an upright stack having connection for carrying away hot gases from said burning, the improvement comprising in combination: means for preheating said compressed air, pig iron, coke and flux to be charged into the melting chamber, including: a preheating furnace laterally connecting the upright cylindrical shell structure and upright stack, means for directing said hot gases through the preheating furnace, respective portions of the means for charging compressed air and of the means for charging pig iron, coke and flux passing through the preheating furnace for preheating said compressed air, pig iron, coke and flux, the means for directing comprising a cover closing the upper end of said cylindrical shell structure, the cover having a lower face in the form of a concave reflector coaxial with said cylindrical shell structure for concentrating heat reflected therefrom onto said charge in the melting chamber, the preheating furnace having overhead, bottom and sides rising in incline from an angle of the lower end at the cylindrical shell to a closed upper end proximate said stack, whereby said hot gases take a change in direction, and the preheating furnace venting to the stack on a said side of the preheating furnace and proximate said upper end.

4,369,956
SELF-CENTERING FIXTURE

Orvil R. Aronson, 620 N. Riverside, St. Clair, Mich. 48079

Filed Nov. 17, 1980, Ser. No. 207,286

Int. Cl.³ B23Q *3/08*

U.S. Cl. 269—34 **2 Claims**

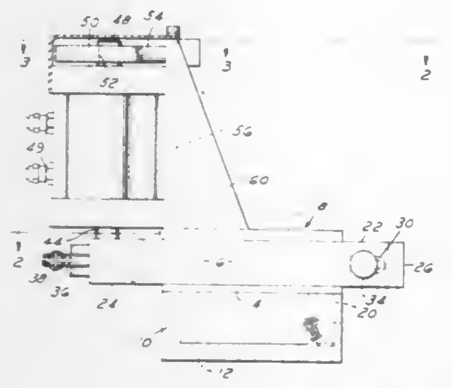
1. A self-centering fixture comprising, in combination:
- a base;
- a pair of levers disposed substantially parallel to each other and pivoted to said base, each lever providing two arms of unequal length;
- a jaw mounted on the shorter arm of each lever with the jaws facing each other between the levers to cooperatively clamp an article therebetween;
- a rotary motor mounted on an upstanding portion of the base and having a rotary shaft extending beyond opposite ends of the motor and perpendicular to the plane of movement of the levers with one end of the shaft extending between the ends of the longer arms of the pair of levers and the other end of the shaft disposed remote from the levers but adjacent an upstanding portion of the base;
- a rotary cam on said one end of the shaft to bear against the

ends of the longer arms of the pair of levers and having a pair of diammetrically opposite high lobes and a pair of diammetrically opposite low lobes angularly displaced from the high lobes;

spring means for urging the arms against the lobes of the cam;

a rotary stop member mounted on said other end of the shaft and having a pair of stop faces angularly spaced apart similar to the angular displacement of the high and low lobes;

a stop pin mounted on the base adjacent the rotary stop member for engaging said stop faces to limit rotation of the shaft for stopping the same when the high and low lobes confront the levers;



said cam when rotated to bring the high lobes toward the levers causing the jaws to clamp an article therebetween and when rotated to bring the low lobe toward the levers causing an unclamping thereof;

each jaw having a key and each end of the shorter arm having a key way to receive the key; and

a dowel pin extending between each jaw and the end of its respective arm disposed perpendicular to the direction of the key and key way, and a threaded fastener for each jaw extending substantially parallel to the dowel pin and engaging the jaw and respective end of the arm to retain the same against unintended separation.

4,369,957

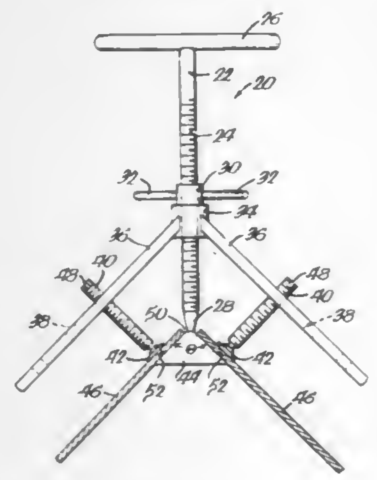
DEVICE FOR CLAMPING AND ALIGNING PLATES TO BE JOINED IN SELECTED ANGULAR RELATIONSHIP

Stanley B. Williams, 2088 E. Empire, Lot 151, Benton Harbor, Mich. 49022

Filed Aug. 3, 1981, Ser. No. 289,765

Int. Cl.³ B23Q *1/00*

U.S. Cl. 269—41 **7 Claims**



1. A device for clamping a pair of plates in closely spaced edge to edge and angularly aligned but not coplanar relationship so that the plates may be joined along their edges by welding or the like, comprising first clamp means engageable with inner surfaces of the plates to opposite sides of an inside corner defined when adjacent edges of the plates are in closely spaced relationship; second clamp means engageable with outer surfaces of the plates generally opposite from the first clamp means when the plates are in the closely spaced relationship; and means for moving said first and second clamp means toward and away from each other to grip the plates therebetween, to hold the plates in position for joining along their adjacent edges and to release the plates for removal of the device therefrom, said first and second clamp means being configured to move the plates to and to hold the plates in a selected angular relationship when the same are moved together and grip the plates, wherein said first clamp means is relatively thin for insertion and removal thereof into and from the inside corner of the plates through the space between adjacent edges of the plates when the plane of said first clamp means extends along the length of the space, and for engagement of the plate inner surfaces to opposite sides of the inside corner when the plane thereof extends generally perpendicular to the length of the space, said first clamp means being triangular shaped, having two side edges and engaging the plates along said side edges, the included angle between said two side edges determining the angular relationship of the plates when clamped, and wherein said second clamp means is movable against said plates in directions generally perpendicular to respective ones of said first clamp means side edges.

4,369,958

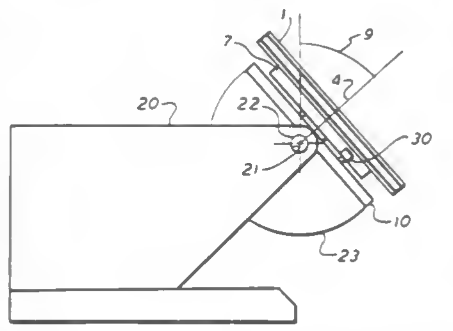
ROTATING TABLE POSITIONING DEVICE WITH MINIMUM BACKLASH

Robert A. Maynard, Holland, N.Y., assignor to Airco, Inc., Montvale, N.J.

Filed Nov. 17, 1980, Ser. No. 207,572

Int. Cl.³ B23Q *3/18*

U.S. Cl. 269—61 **10 Claims**



1. A positioning device for rotating an eccentrically mounted load comprising:

(a) a frame;
(b) a table supported by the frame and mounted for rotation about an axis;
(c) a bullgear fixed to the table for rotating the table;
(d) first and second pinions engaging the bullgear;
(e) a first gear set coupled to the first pinion and comprising a first worm and first gear wherein the first gear is capable of driving the first worm and the first worm is capable of driving the first gear;
(f) a second gear set coupled to the second pinion and comprising a second worm and second gear wherein the second gear is capable of driving the second worm and the second worm is capable of driving the second gear;
(g) a coupling shaft;
(h) an adjustable coupling; wherein the first gear set, the coupling shaft, the adjustable coupling and the second gear set are coupled so that the coupling shaft is under torsion which drives the first and second pinions so as to tend to rotate the bullgear in opposite directions;
(i) a third gear set comprising a self-locking third worm and third gear wherein the third gear is coupled to the coupling shaft;
(j) a motor for selectively rotating the third worm and thereby rotating the table.

4,369,959

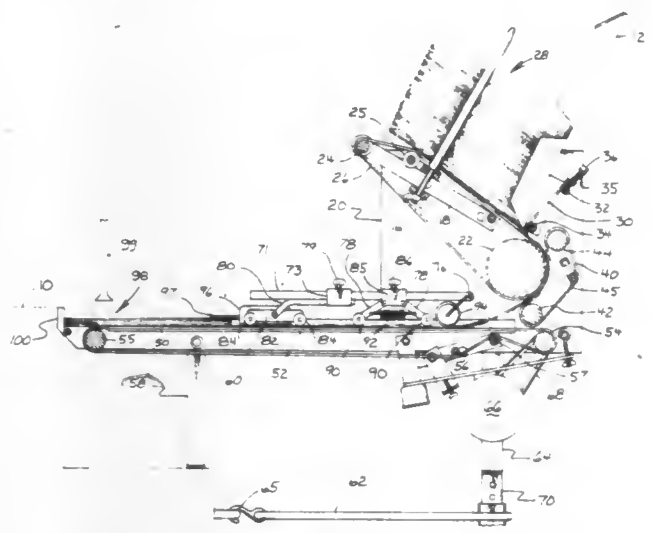
SHEET FEED MACHINE

William M. Hornbuckle, 7080 Stonington Dr., NE., Atlanta, Ga. 30328

Continuation of Ser. No. 93,305, Nov. 10, 1979, abandoned, which is a continuation of Ser. No. 891,018, Mar. 28, 1978, abandoned. This application May 26, 1981, Ser. No. 267,008

Int. Cl.³ B65H *1/30, 1/04, 3/04*

U.S. Cl. 271—3.1 **15 Claims**



1. An improved sheet material processing apparatus for feeding successive sheets of said sheet material to a printer of the type having a suction arm over a printer elevator of said printer, said suction arm removing successive top sheets from a stack of sheets therebelow, said apparatus comprising, in combination:

(a) a portable self contained frame supporting structure including an upstanding stanchion member with its lower end adapted to be supported on the floor which supports said printer, a frame having an input end and an output end, said frame being mounted to the upper end of said stanchion member by its input end, said frame protruding in cantilever fashion from said stanchion member, said stanchion member supporting said frame at a height such that the output end will protrude into a position vertically between said elevator and said suction arm and said input end is vertically outwardly of said printer when said stanchion member is positioned on the floor adjacent to the end of said printer;
(b) a sheet material input station spaced from said output end and mounted on said input end of said frame, with said input station detailed to permit sheet material being processed to be successively added to one portion of said input station while being simultaneously removed from another portion of said input station;
(c) a sheet material output station mounted on said output end of said frame, with said output station detailed to permit sheet material being processed to produce a stack of sheets such sheet material at said output station and below said suction arm and also to permit successive sheets of said sheet material to be progressively fed to the bottom of the stack of sheets of sheet material and for permitting said suction arm to successively remove the topmost sheet from said stack of sheet material at said output station while sheets of said sheet material are being simultaneously added to the bottom of said stack in said output station;
(d) sheet material transfer means supported on said frame and operable for effecting a transfer of sheets of said sheet material from said other portion of said input station to said output station for progressively replenishing said stack;
(e) control means on said frame structure operable for sensing a predetermined accumulation of sheets of said sheet material in said output station and operable for initiating operation of said transfer means when the sheet accumulation in said stack drops below a predetermined amount and stopping operation of said transfer means in response to the accumulation of a predetermined amount; and
(f) means for removeably securing said apparatus to the end of said printer in a position in which said output station is disposed below said suction arm and over said printer elevator.

4,369,960

DEVICE FOR SEPARATING BANK NOTES

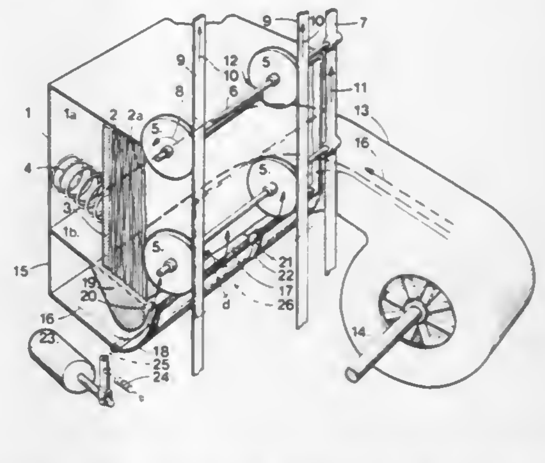
Marcel Brisebarre, Thoiry, France, assignor to ATS Advanced Technics & Systems, S.A., Lausanne, Switzerland

Filed Oct. 20, 1980, Ser. No. 198,797

Claims priority, application Switzerland, Nov. 1, 1979, 9821/79

Int. Cl.³ B65H *3/14*

U.S. Cl. 271—5 **12 Claims**



1. A device for separating bank notes from a pile having an outermost note defining a plane comprising at least one air jet disposed adjoining one edge of said outermost note and in spaced relationship to the side of said plane away from said pile and directing the air emanating therefrom in a diverging direction in relation to the plane of said outermost note to produce a reduced pressure, in a first phase, on the front face of the last said note which removes an edge portion thereof until this edge enters said jet, whereby said jet may act, in a second phase, by pressure on the opposite face of the note to detach it from the pile and simultaneously to hold the following note applied against said pile.

4,369,961

APPARATUS FOR WITHDRAWING FLAT CARTON BLANKS FROM A STACK THEREOF

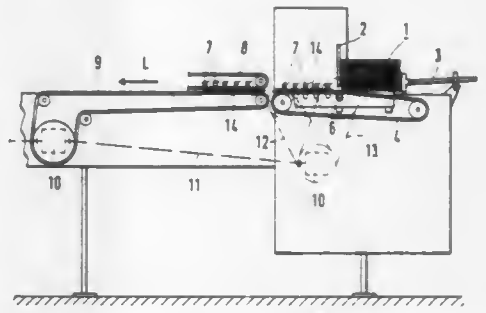
Helmut Gopel, Dusseldorf, and Hartmut Klapp, Kaarst, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 205,046

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946426

Int. Cl.³ B65H *3/04*

U.S. Cl. 271—10 **12 Claims**

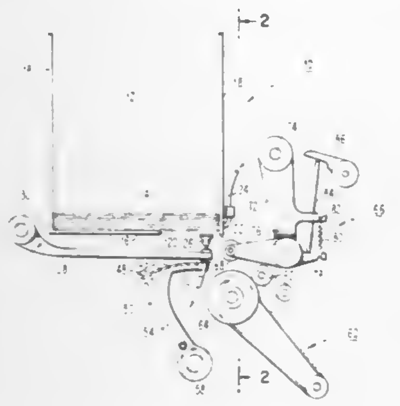


1. In an apparatus for the withdrawal of flat carton blanks made of paperboard, boxboard or corrugated board from a stack and having guide means on which the stack is disposed,

retaining means immediately downstream of the stack, a takeoff conveyor with at least one conveyor belt disposed beneath the stack of blanks for the controlled withdrawal of the lowermost blank and a conveyor disposed directly downstream of the takeoff conveyor and driven in synchronism therewith for the onward transportation of the individually withdrawn blanks, the improvement wherein the guide means supports the lowermost blank in a given plane, the takeoff conveyor has means mounting a run of the at least one belt under the stack to dispose same downwardly at an acute angle relative to the given plane with the uppermost portion starting at the leading edge of the lowermost blank in the vicinity of the retaining means and means disposed below said at least one conveyor belt for periodically lifting a portion thereof disposed below said retaining means to effect engagement of the belt with only the lowermost blank and only upon the lifting of the belt.

4,369,962
APPARATUS FOR FEEDING SHEETS

Murray Spiro, 35-7 Fairfieldway, Commack, N.Y. 11725
Filed Feb. 17, 1981, Ser. No. 234,691
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—11 **5 Claims**



1. An apparatus for feeding a single sheet from the bottom of a stack of sheets comprising:
- a magazine to receive a stack of sheets having a bottom support and upstanding walls, the bottom support being provided with an opening therein through which the lowermost sheet can be removed, wherein the opening is along one edge of the stack of sheets;
- at least one suction nozzle below the magazine opening which retracts downward when engaging the sheet;
- a means for blowing compressed air along a portion of the edge and bottom of the stack of sheets to separate the edge of the lowermost sheets from the stack prior to contact with the suction nozzle;
- at least one curved vacuum surface below the magazine and the suction nozzle;
- a first pivot arm attached to the suction nozzle;
- a second pivot arm attached to the vacuum surface;
- a sheet receiving and feeding means adjacent and below the magazine for receiving and feeding the sheet to a station for performing subsequent operations thereon;
- a first activation means for pivoting the first pivot arm to (i) raise the suction nozzle to engage the bottom surface of the lowermost sheet and subsequently (ii) lowering the suction nozzle to engage the bottom surface of the sheet with the vacuum surface;
- a second activation means for pivoting the second pivot arm to (i) move the vacuum surface towards the receiving and feeding means for receipt of the sheet, and (ii) return the vacuum surface to the position below the suction nozzle and magazine;
- a first vacuum means for applying vacuum to the suction nozzle;
- a second vacuum means for applying vacuum to the vacuum surface;

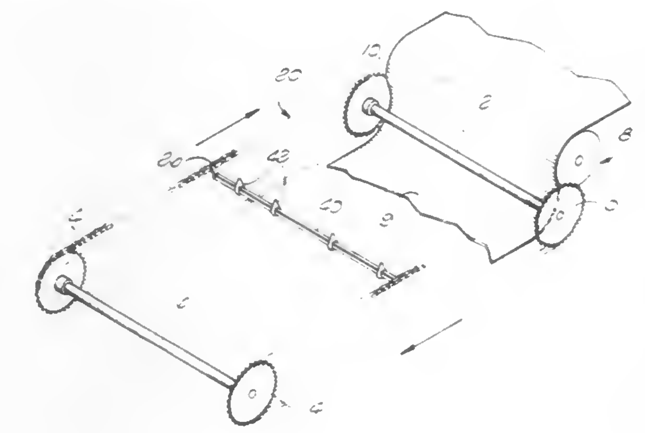
wherein the suction nozzle comprises:
- a hollow elongated member having an open upper end and a closed lower end, the member being mounted near the end of the first pivot arm;
- a piston member slidably and sealingly mounted within the chamber of the member;
- a spring retaining means below the piston member for retaining the piston member at the upper end of the chamber;
- a sucker attached to the piston member, the center of which is in fluid communication with the chamber below the piston member; and

wherein the first vacuum means applies vacuum to the chamber below the piston member;

whereby when the sheet engages the sucker a vacuum forms in the chamber below the piston member causing the sucker to retract downward.

4,369,963
CLIP-ON STAR WHEEL SUBSTITUTE

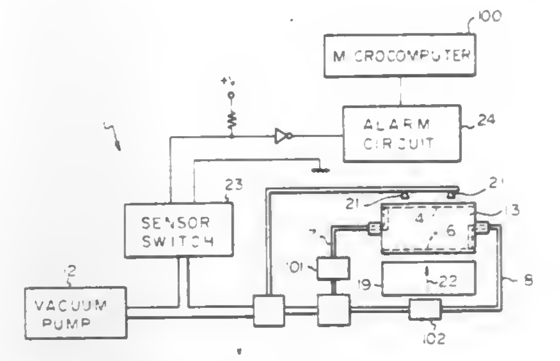
H. William Jamieson, Jr., Encino, Calif., assignor to Offset Engineering Co., Inc., Encino, Calif.
Filed Dec. 17, 1979, Ser. No. 104,500
Int. Cl.³ B65G *29/00*
U.S. Cl. 271—204 **5 Claims**



1. In the chain delivery of a printing apparatus having a pair of continuous chains, upon which chains are mounted a plurality of paper gripping members, and wherein the continuous chains include a plurality of pairs of links each pivotally connected by a pintle, the improvement in the means for engaging the paper as it passes into the chain delivery, which engaging occurs between the paper gripping members and prevents wrinkling of the paper, comprising:
- a pair of opposing clips, each detachably mountable on one of the links of each of the chains, and including a support;
- a bar, having a longitudinal axis, with hollow portions at each end defined by a plurality of inner surfaces, said bar being fixedly engaged by said support, each support having a plurality of outer surfaces corresponding to the plurality of inner surfaces of the hollow bar portion, and fixedly engaging the outer surfaces of the support, thereby preventing rotation of said bar about its longitudinal axis; and
- at least one paper contacting member longitudinally adjustably mounted on said bar, said member having an eccentric shape and a bearing surface at the apex of the eccentric shape, and said member being rotatably adjustable about said longitudinal axis, and having an internal opening in the eccentric containing a plurality of teeth coming into contact with the plurality of sides of said bar which define a plurality of corners, said teeth fixedly engaging at least one of the corners and holding the eccentric at a predetermined the operation of the chain delivery.

4,369,964
SHEET FEED APPARATUS FOR PRINTER OR THE LIKE

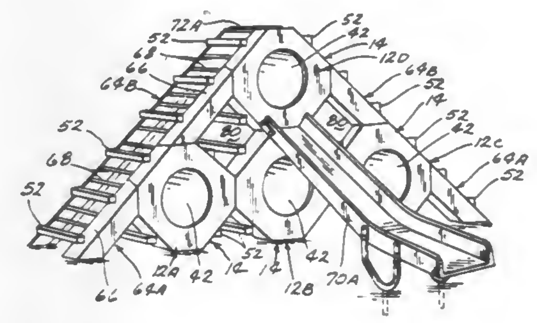
Koichiro Jinnai, and Michio Umezawa, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 23, 1980, Ser. No. 219,757
Claims priority, application Japan, Dec. 31, 1979, 54-171094; Dec. 31, 1979, 54-171095
Int. Cl.³ B65H *7/06, 7/20*
U.S. Cl. 271—260 **4 Claims**



1. A sheet feed apparatus including a drum formed with openings, a vacuum source communicating with the openings so that a sheet is suckingly adhered to the drum by vacuum at the openings, means for feeding the sheet to the drum and means for feeding the sheet away from the drum, characterized by comprising:
- sensor means for sensing when a level of vacuum at the source drops below a predetermined value and producing an output signal in response thereto;
- valve means disposed between the vacuum source and the openings;
- means responsive to the sensor means for, when the output signal is produced during feeding of the sheet to the drum, deenergizing the apparatus; and when the output signal is produced during feeding of the sheet away from the drum, resetting the apparatus to an initial condition with the valve means closed; and
- an alarm which is energized by the output signal.

4,369,965
PLAYGROUND CLIMBER AND SLIDE

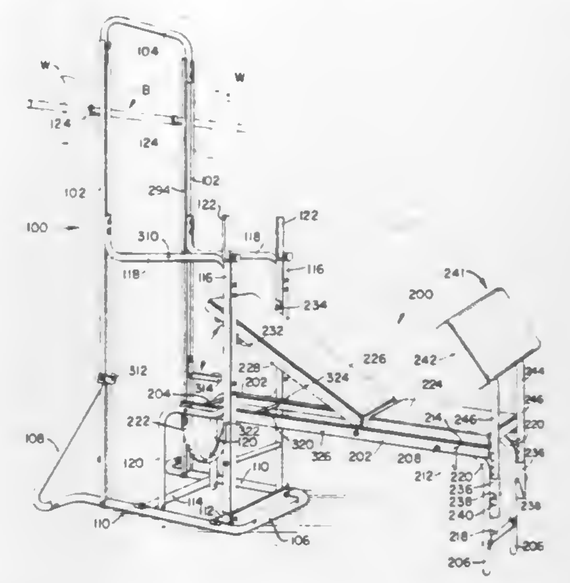
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Oct. 9, 1980, Ser. No. 195,671
Int. Cl.³ A63B *9/00*
U.S. Cl. 272—56.5 R **33 Claims**



1. An end piece for a playground climber, said end piece being adapted to be vertically disposed and having a center axial horizontal opening and a radially extending flange terminating in a rim having eight flat end-to-end surfaces including two oppositely disposed vertical surfaces, two oppositely disposed horizontal surfaces and two pairs of oppositely disposed diagonal surfaces, said vertical and horizontal surfaces being parallel to said horizontal axial opening and said diagonal surfaces being flared outwardly thereto to present a step mounting edge.

4,369,966
FOLDING EXERCISING APPARATUS

Ira J. Silberman, and Calvin E. James, Sr., both of Opelika, Ala., assignors to Diversified Products Corporation, Opelika, Ala. Continuation-in-part of Ser. No. 12,487, Feb. 15, 1979, Pat. No. 4,316,609. This application Mar. 7, 1980, Ser. No. 128,084
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—62 **7 Claims**

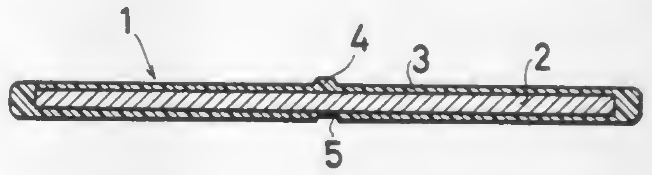


1. A free-standing exercising apparatus comprising:
- a floor-supported chinning bar assembly having upstanding frame means; and
- an exercising bench having an elongated bench frame and a seat supported on said bench frame, said bench frame being pivotally attached near one of its ends to said frame means for pivotal movement between a laterally extended use position for supporting a user on said seat and an upright, compact storage position juxtaposed with said frame means,

said frame means comprising:
- a bottom floor-engaging base portion adapted to stably support the apparatus without additional support above said base portion;
- two upright barbell support posts flanking said bench near its pivoted end, each of said barbell support posts terminating at its upper end in a barbell rest cradle; and
- an overhead chinning bar rigidly supported near the upper portion of said frame means.

4,369,967
TRAINING AID FOR DRILLING MUSCLES

Akira Kimura, 1-25, Takenotsuka 3-chome, Adachi-ku, Tokyo, Japan
Filed Apr. 1, 1981, Ser. No. 249,596
Claims priority, application Japan, Dec. 29, 1980, 55-190040[U]
Int. Cl.³ A63B *21/18*
U.S. Cl. 272—119 **1 Claim**

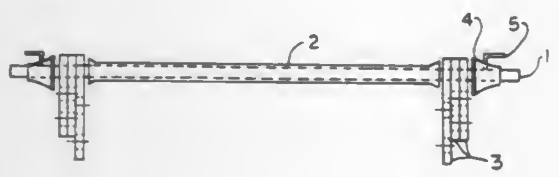


1. A training aid for drilling muscles of a user comprising:
- a flexible plate made of lead; and
- a cover member made of soft and resilient material such as rubber and synthetic resin and completely surrounding the plate;
- at least one projection formed integrally with the cover member on one main surface of the training aid and at least

one recess formed in the cover member on the other main surface of the training aid whereby a plurality of training aids are piled one over another and the training aid is mounted around a user's part such as wrist, ankle, arm, leg and neck merely be bending the lead plate.

4,369,968
LIFTING BAR ASSEMBLY

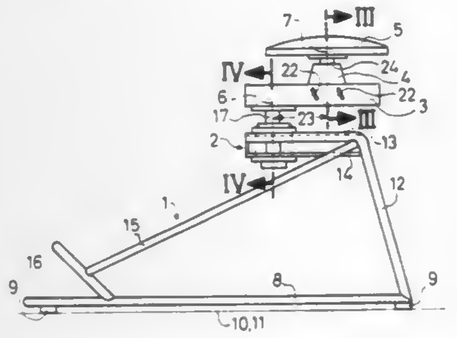
Paul J. Price, 1420 Junior Dr., Pittsburgh, Pa. 15227
Filed Feb. 5, 1981, Ser. No. 231,933
The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.
Int. Cl.³ A63B *13/00*
U.S. Cl. 272—123 **3 Claims**



1. A lifting bar assembly comprising an elongated solid cylindrical rod, a tube telescopically slid over said rod over an intermediate portion of its length, a plurality of weight discs abutting each end of said tube, each disc having a central hole and at least one hole adjacent the periphery of said disc, both said holes being sized to receive said rod, said rod extending through each of the holes adjacent the periphery of said discs so that most of the area of said discs extends downwardly of said rod therefore will enable the assembly to be lifted to a greater height without bumping against a low ceiling, and a collar slidably mounted on each end portion of said rod and having means for rigidly fastening it to said rod.

4,369,969
BODY EXERCISING DEVICE

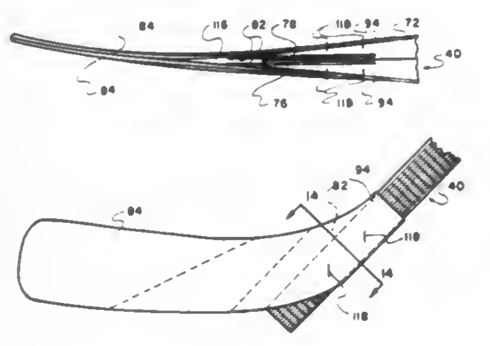
Willy Straub, Nellingen, Fed. Rep. of Germany, assignor to Georg Kirchner, Markgroeningen, Fed. Rep. of Germany
Filed Mar. 13, 1981, Ser. No. 243,343
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011208
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—144 **22 Claims**



1. A body exercising device, comprising a support; a bracket element arranged on said support rotatable about a first axis; and a user supporting element arranged on said bracket element eccentrically rotatable about a second axis, said user supporting element being plate-shaped and formed as a seat for a user, and said bracket element and user supporting element being arranged so that said first and second axes extend in a substantially vertical direction and are spaced from one another by a predetermined ajustable distance, and said user supporting element being movable relative to said bracket element between a first position in which said second axis of said user supporting element is parallel to said first axis of said bracket element and a second position in which said second axis of said user supporting element is spaced from and inclined relative to said first axis of said bracket element; means for adjusting the distance between said axes of said bracket element and said user supporting element; and means for adjusting an angle between the axis of said user supporting element and the axis of said bracket element.

4,369,970
HOCKEY STICK AND METHOD OF MANUFACTURING THE SAME

Reijo K. Salminen, 1842 Academy Rd., Bellingham, Wash. 98225
Filed Jul. 10, 1979, Ser. No. 56,421
Int. Cl.³ A63B *59/12*
U.S. Cl. 273—67 A **39 Claims**



1. A method of making a hockey stick, said method comprising:

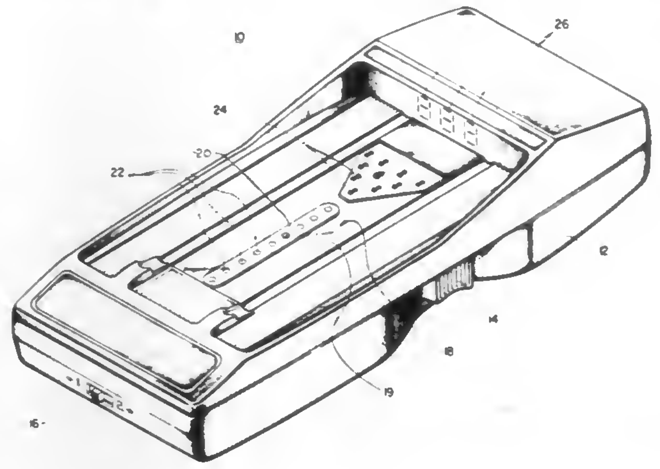
a. forming a shaft with an end taper, said shaft having a longitudinal axis, a bladewise axis, and a transverse axis perpendicular to the longitudinal axis and the bladewise axis, said shaft having a core portion and two side surface portions positioned generally parallel to the bladewise axis and the longitudinal axis, said shaft having an upper end portion and a lower end portion, said taper being formed at said lower end portion in a manner that said side surface portions converge downwardly and inwardly along said lower end portion to a location proximate a lower end of said shaft,
b. providing two blade blanks, said blanks each having a front toe portion and a rear portion, joining the toe portions to one another and attaching the rear portions to the shaft in a manner that the blade blanks diverge rearwardly from one another to provide an interior blade space therebetween, and
c. filling said interior blade space at least partially with a hardenable filler material to form a finished hockey stick.

19. A hockey stick comprising:

(a) an elongate shaft having a longitudinal axis, a bladewise axis, and a transverse axis perpendicular to the longitudinal axis and the bladewise axis, said shaft having a core portion and two side surface portions positioned generally parallel to the bladewise axis and to the longitudinal axis, said two side surface portions being load bearing portions to resist bending of the shaft about the bladewise axis,
(b) said shaft having an upper end portion and a lower end portion, said lower end portion tapering downwardly and inwardly toward said bladewise axis, with the side surface portions extending downwardly and inwardly along the lower end portion of the shaft,
(c) a blade having a front toe portion and a rear heel portion joining to said shaft, said blade comprising two blade surface portions joining to one another at said toe portion and diverging rearwardly from one another to join to said lower shaft lower end portion, and
(d) said blade having a hardened filler material occupying a space between the two blade surface portions, said filler material having a cross sectional dimension occupying a substantial portion of the thickness of said blade.

4,369,971
ELECTRONIC BOWLING GAME

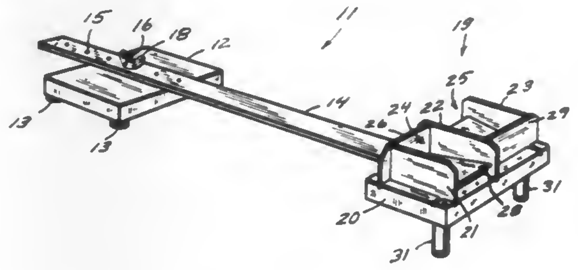
Richard S. Chang, Rolling Hills Est., and Richard S. Levine, Huntington Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1981, Ser. No. 223,185
Int. Cl.³ A63F *7/06*
U.S. Cl. 273—85 G **7 Claims**



1. An electronic game comprising means for providing indicia of a target representing bowling pins; means for providing indicia of a path of a bowling ball from an initial point toward the target, including means for providing a series of viewable points in the form of a series of lights mounted upon a platform in a line between the initial point and the target; means for moving the indicia of the path from a straight line between the initial point and the target while the path is being described, including mechanical means for moving the platform from side to side in a direction generally perpendicular to the path; and means for upending pins which lie in the path, and in which the platform comprises a strip, and the means for moving the platform includes a pair of arms rotatably mounted to the platform at a first set of points and able to rotate at a second set of points spaced apart the same distance as the first set of points.

4,369,972
CARD DEALER WHEEL ASSEMBLY WITH ADJUSTABLE ARM

Richard A. Parker, 2221 Coolridge Rd., Holt, Mich. 48842
Filed Feb. 20, 1981, Ser. No. 236,323
Int. Cl.³ A63F *1/10*
U.S. Cl. 273—148 A **2 Claims**



1. In a card dealer wheel assembly for use on card tables comprising:

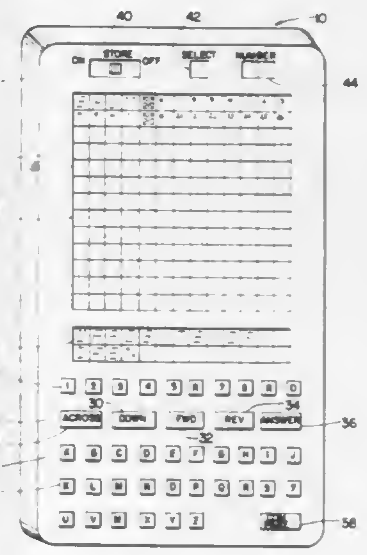
an elongate rotatable adjustable extension arm, said extension arm provided with a plurality of spaced-apart adjustment holes therethrough extending longitudinally therealong from one end thereof;

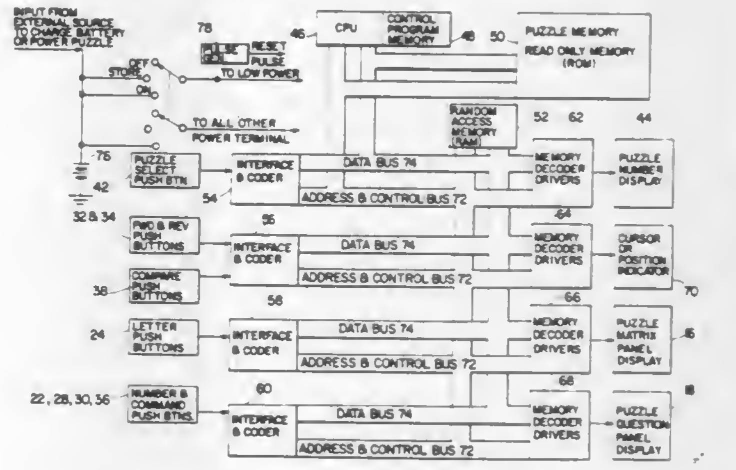
a card holder and dispensing assembly fixedly mounted at one end of said extension arm opposite said adjustment holes, said card holder and dispensing assembly defining first and second card holder compartments therein, said first card holder compartment being open at one end thereof opposite said central support base member, said first card holder compartment provided with a bottom wall being upwardly inclined toward said open end of said first card holder compartment, said second card holder compartment being open at one end thereof toward said central support base member, said second card holder compartment provided with a bottom wall being upwardly inclined toward said open end of said second card holder compartment; and

a central support base member, said central support base member adapted for rotatable supporting engagement of said extension arm through selected of said adjustment holes so as to selectively vary the operative radial length of said extension arm.

4,369,973
ELECTRONIC CROSSWORD PUZZLE

Joseph R. D'Aurora, and David F. Specht, both of 5936 Stumph Rd., Apt. 319, Parma, Ohio 44130
Filed Nov. 21, 1980, Ser. No. 208,941
Int. Cl.³ A63F *9/06*
U.S. Cl. 273—153 R **1 Claim**





1. An electronic crossword puzzle apparatus comprising:

a central processing unit;

first memory means operatively coupled to said central processing unit for storing a crossword puzzle format;

puzzle display means operatively coupled to said central processing unit for displaying in matrix from said crossword puzzle format, certain individual locations in said format each being assigned a code designation;

addressing means operatively coupled to said central processing unit for addressing a particular word space to be solved in said crossword puzzle format, said addressing means including means to enter a code designation representing an individual matrix location and means to enter down or across commands into said central processing unit to define said word space to be solved;

position indication means operatively coupled to said central processing unit responsive to said addressing means for indicating on said puzzle display means a particular location addressed by said addressing means;

question display means operatively coupled to said central processing unit for automatically displaying a question associated with said addressed word space to be solved;

answer entering means operatively coupled to said central processing unit for entering an answer from a player in response to a question, a player's answer being displayed on said puzzle display means, said puzzle display means being adapted to display a players answer for each addressed word space being solved;

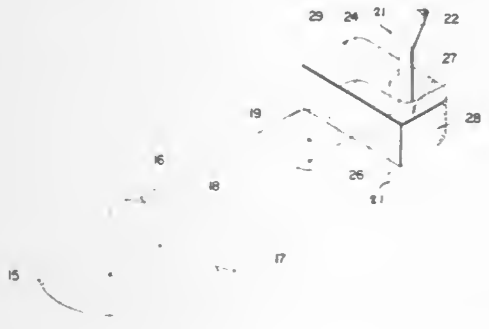
second memory means operatively coupled to said central processing unit for storing the player's answer for each word space location of said crossword puzzle format;

comparing means operatively coupled to said central processing unit for comparing the answers stored in said second memory means with correct answers for said crossword puzzle; and

error indication means operatively coupled to said puzzle display means for indicating the correctness of answers provided by a player;

said answer entering means permitting a player to write over a part of or an entire answer for a word space location which said error indication means indicated an incorrect answer.

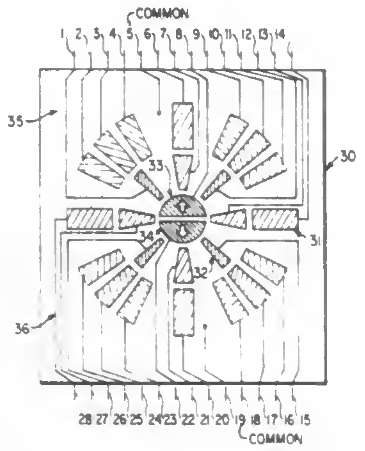
4,369,974
GOLF CLUB FOR PUTTING
Joseph Komperda, 11118 Woodview Blvd., Parma Heights, Ohio 44130
Filed Apr. 24, 1981, Ser. No. 257,459
Int. Cl.^{3} A63B *53/04, 69/36*
U.S. Cl. 273—164 **2 Claims**

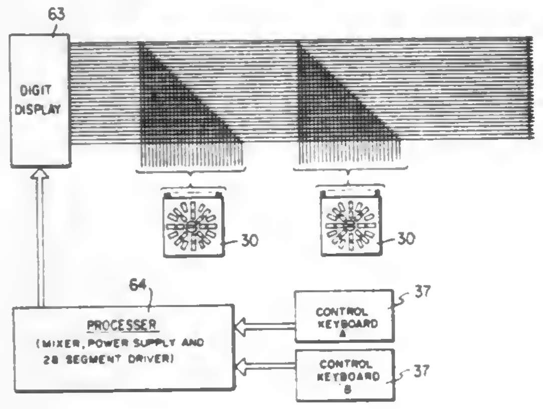


1. A golf club putter comprising a putter head and an upwardly extending shaft secured to the putter head, comprising:

said putter head being a translucent solid parallelogram shaped block having vertically disposed outer surfaces consisting of a front putting surface, a parallel rearward surface, and two intervening side surfaces disposed between said forward and said rearward surfaces, said outer surfaces being opacified surfaces adapted to provide visible alignment means for squaring alignment of said putter head with said cup wherein said opacified surfaces are not visible from a viewing point on a viewing line perpendicular to said putter head and intersecting the centroid of said putter head.

4,369,975
DISPLAY TILE FOR ELECTRONIC CHESS GAME
Andrew Tarc, 590 Raglan St., P.O. Box 448, Palmerston, Ontario, Canada (N0G 2P0)
Filed Apr. 30, 1980, Ser. No. 145,366
Claims priority, application Canada, Jan. 28, 1980, 344533
Int. Cl.^{3} A63F *3/02*
U.S. Cl. 273—237 **3 Claims**





1. An electronic board game comprising:

A. a plurality of display tiles arranged in a chessboard pattern, each of said tiles being a square of translucent material having means for enabling simulated movement of game symbols across said board during game play;

B. a plurality of separate display segment means positioned under said square of translucent material, said display segment means being liquid crystal display elements and being arranged in a generally radial pattern of discontinuous liquid crystal display elements disposed in a concentric circular array of ring configurations, each successive inner ring being comprised of fewer display elements than the preceding ring;

C. said means for enabling a simulated movement including means for selectively enabling individual display of a selected one of many sub-patterns, said selected enabling means including a keyboard having individual keys for selectively including one of at least six different game symbols, the color of said game symbols, the direction of allowed game playing movements and the playing position;

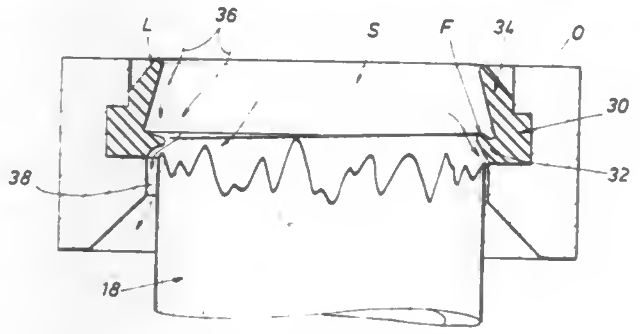
D. said means for simulated movement further including display control means comprising a matrix of wires extending from said liquid crystal display elements to the keys of said keyboard, operation of each of said keys energizing a corresponding combination of wires in said matrix to cause the associated segment to be displayed in said sub-patterns; and

E. microprocessor means having memory means interposed between said keyboard and said matrix of wires for storing in memory the movement and position of the game symbols.

4,369,976
CARD GAME WITH TRUMP SUITS AND TRUMP WORDS
Robert E. Chunn, 1084 Dayton, #301, Aurora, Colo. 80010
Filed May 15, 1981, Ser. No. 264,141
Int. Cl.^{3} A63F *1/00*
U.S. Cl. 273—303 **5 Claims**

1. In a card game of the type having a deck of fifty-two playing cards, suit-determining means displayed on each card dividing the deck thereof into four suits of thirteen cards each, said suit-determining means defining a unique category containing at least thirteen species, and card-ranking means common to all four suits for determining the rank of a card within a suit displayed on the face thereof, the improvement which comprises: unique indicia displayed by each card for distinguishing same from all other cards in the deck, said indicia comprising a specie within one of the suit-determining categories, letter designators on each card defining the card-ranking means, and a word or words made up of said letter designators displayed on said card uniquely associated with each specie, one of said words being selectable as a trump word, the order of the letters in the selected trump word cooperating with said letter designators in accordance with a predetermined scoring system to provide a measure of the trick-taking potential of a group of such cards in a hand dealt one of the players.

4,369,977
SEAL FOR AN OVERSHOT AND A METHOD OF DOING SAME
Thomas R. Bishop, and Archie W. Peil, both of Houston, Tex., assignors to Bowen Tools, Inc., Houston, Tex.
Filed Dec. 1, 1980, Ser. No. 211,522
Int. Cl.^{3} F16J *15/32*
U.S. Cl. 277—1 **10 Claims**



8. A method of sealing an overshot about a tubular member to prevent fluid migration therebetween during overshot operations, comprising the steps of:

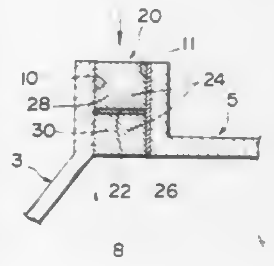
mounting an annular seal ring body within the overshot, with the seal ring body having first and second sealing lips extending radially inwardly onto the bore of the overshot from the seal ring body;

placing the overshot over the tubular member;

positioning the overshot onto the tubular member to permit the first sealing lip to engage the tubular member to sealably reduce fluid flow therebetween; and,

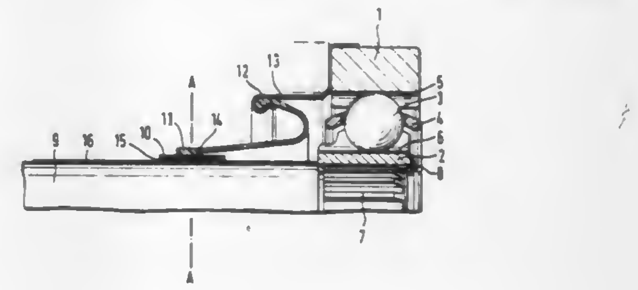
lowering the overshot onto the tubular member to permit a continuous, annular primary conical sealing surface of the second sealing lip to engage the tubular member for establishing a fluid-tight relation between the second sealing lip and the tubular member for preventing fluid flow therebetween.

4,369,978
GASKET FOR AIR CONDITIONERS
Takeaki Watanabe, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 17, 1980, Ser. No. 187,922
Claims priority, application Japan, Sep. 19, 1979, 54-128491[U]
Int. Cl.^{3} B32B *3/22, 5/18;* F16J *15/10*
U.S. Cl. 277—12 **12 Claims**



1. In an air conditioner including at least two separate air conditioning units, a gasket interposed between the sealing surfaces of said units, said gasket comprising a first section of a non-porous material oriented transverse to said sealing surfaces and a second section of a porous foam material bonded to said first section in a manner to form a unitary, laminated construction.

4,369,979
SEALING BOOT ARRANGEMENT FOR A UNIVERSAL JOINT
Werner Krude, Siegburg-Kaldauen; Karl-Heinz Müller, Wissen, and Helmut Riemscheid, Lohmar, all of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany
Filed Jun. 4, 1982, Ser. No. 384,993
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123573
Int. Cl.^{3} F16J *15/52*
U.S. Cl. 277—212 FB **10 Claims**



1. Sealing arrangement for covering and sealing the open space in a constant velocity universal joint, said universal joint comprising a driving part, a driven part circumferentially encircling said driving part, means for transmitting torque between said driving and driven parts, and drive shaft connected and extending axially from said driving part, a sealing boot assembly enclosing the open space of said universal joint and extending in the axial direction of said driving and driven parts, said sealing boot assembly includes an annular cap member attached to and extending axially from said driven part, a

sealing boot having first and second ends, said first end fastened to said cap member, and a sleeve member connected to said second end, said sleeve member arranged coaxially surrounding said drive shaft and axially displaceable relative to said drive shaft, wherein the improvement comprises that said drive shaft has a coating thereon at least in the range of axial displacement of said sleeve member.

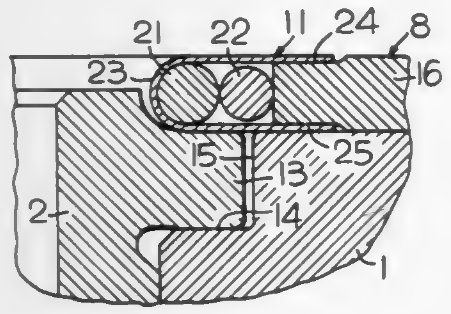
4,369,980
FIRE RING FOR CYLINDER HEAD GASKET

Robert R. Backlin, Crete, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 7, 1981, Ser. No. 309,235

Int. Cl.^{3} F16J *15/12*

U.S. Cl. 277—235 B **10 Claims**



1. An internal combustion engine having a cylinder head gasket comprising, a cylinder block defining at least one bore, a cylinder sleeve received in said bore, a cylinder head, a cylinder head gasket compressively positioned between said cylinder head and said block and sleeve to form a seal, said gasket including a body defining a cylinder opening, a fire ring received in said opening including a radially inner sealing hoop compressively deformed to form a seal between said cylinder head and said cylinder sleeve, a radially outer and reinforcing hoop disposed between said sealing hoop and the body of said gasket pressing radially inward against said inner sealing hoop, a metal wrap enclosing said hoops and fastened to the body of said gasket and compressively sealed with said cylinder head and cylinder block to thereby provide a sealing gasket assembly.

4,369,981
FUEL TANK FITTING STRUCTURE

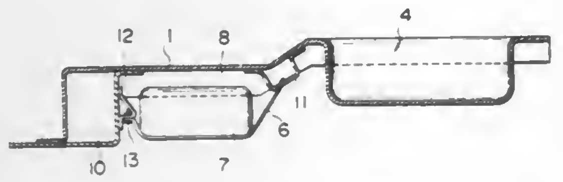
Akio Chiba, and Jun Funahashi, both of Yokohama, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,208

Claims priority, application Japan, Mar. 7, 1980, 55-28114

Int. Cl.^{3} B60K *15/08;* **B60R** *21/10*

U.S. Cl. 280—5 A **8 Claims**



1. A structure for fitting a fuel tank in an automotive vehicle, comprising:
- a rear floor panel fixed at a rear portion of the automotive vehicle;
- a rear seat cross member fixed to the under side of the rear floor panel across the automotive vehicle;
- a seat belt anchor fixing cross member fixed to the under side of the rear floor panel across the automotive vehicle; and
- supporting means suspended between the rear seat cross member and the seat belt anchor fixing cross member for supporting the fuel tank in position between the rear seat cross member and the seat belt anchor fixing cross member.

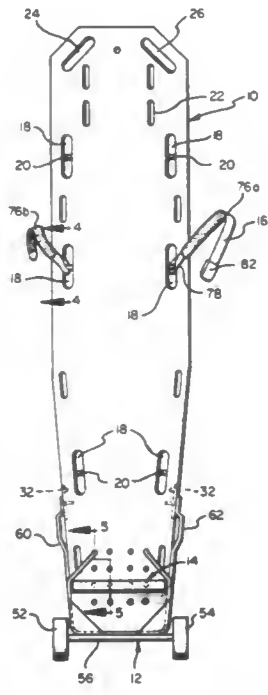
4,369,982
SPINE BOARD

James R. Hein, 500 Gordon; Wayne T. Herr, Sr., 359 Madison; John J. Niemiec, 1360 Memorial, and Philip Dombrowski, 1273 Price, all of Calumet City, Ill.

Filed Dec. 15, 1980, Ser. No. 216,384

Int. Cl.^{3} B62B *1/06*

U.S. Cl. 280—47.13 R **2 Claims**



1. A spine board comprising, in combination: an elongated generally rectangular-shaped board having a top end and a bottom end, one side of said board comprising a front side and the other side thereof comprising a back side, at least one retaining strap, a plurality of pairs of elongated slots disposed diametrically opposite one another adjacent the side edges of said board along the length thereof for receiving a retaining strap, a pin in each of said elongated slots in said board extending transversely across said slots, said retaining strap being of a two piece construction and comprising a pair of straps having on one end thereof a hook lockingly engageable with the respective ones of said pins in said elongated slots, a buckle on the opposite end of one of said pair of strays for receiving and lockingly adjustably retaining the opposite end of the other one of said pair of straps, and a plurality of pin receiving apertures in said board adjacent the bottom end thereof positioned to receiving therein the respective arms and support pins of a foot support assembly to removably positionally affix said foot support assembly to said board; a foot support assembly comprising a generally rectangular foot support, a pair of arms having one end thereof affixed to said foot support and extending angularly laterally upwardly therefrom, the opposite ends of said pair of arms being formed to extend through said pin receiving apertures in said board and to lockingly engage with the back side of said board, said pair of arms affixed to said foot support, further comprising a horizontally extending portion of a length to extend from the front side of said board to the back side thereof, said horizontally extending portion terminating with a vertically extending portion which engages with the back side of said board, and a pair of support pins having one end thereof affixed to said foot support and positioned to permit the opposite ends of said pins to seat within said pin receiving apertures when said foot support is abutted against the front side of said board and said arms are lockingly engaged within said pin receiving apertures; a pin receiving aperture in each of the opposite side edges of said board in diametrically opposed relationship; and a wheel assembly removably affixed to said board, said wheel assembly comprising a generally U-shaped member having a horizontally extending portion and a pair of spaced apart arms for receiving therebetween the bottom end of said board, a pin affixed to the ends of each of said arms proportioned and positioned to be received within the respective ones of said pin receiving apertures in the opposite side edges of said board to removably affix said wheel assembly to said board, and a pair of wheels rotatably supported in spaced apart relationship by said U-shaped member to permit said board to be transported by rolling it on said wheels.

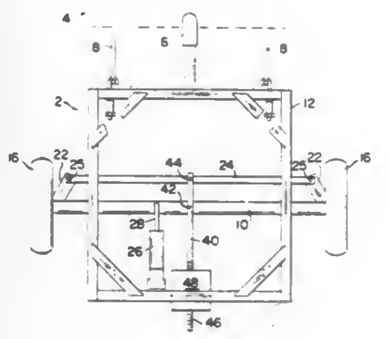
4,369,983
TRAILER WITH MASS RESTRAINT

Leonard T. Charek, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 27, 1980, Ser. No. 200,877

Int. Cl.^{3} B62D *9/00*

U.S. Cl. 280—81 A **9 Claims**



1. In a trailer, the improvement comprising
- a transverse axle,
- wheels mounted on members pivoted at each end of said axle about an inclined axis;
- a connecting rod connecting said members to turn said wheels in unison, and
- a mass, the lateral acceleration of which applies a first steering moment about said inclined axis to balance a second opposed moment applied about said axis by the ground reactive force on said wheels.

4,369,984
PASSENGER VEHICLE SUCH AS A BUS HAVING A LATERALLY EXTENDING STAIR ASSEMBLY

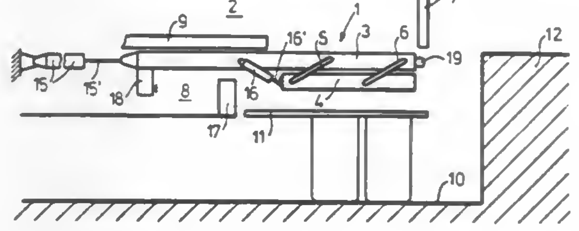
Hans Hagen, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,421

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946531

Int. Cl.^{3} B60R *3/02;* **B62D** *25/22*

U.S. Cl. 280—166 **17 Claims**



1. A stair assembly for a vehicle having a lateral access opening, said stair assembly comprising a horizontal first stair member, a horizontal second stair member disposed at a level below the first stair member, means suspending said second stair member from said first stair member for movement relative thereto downwardly and laterally outwards to an extended position and upwardly and laterally inwards to a retracted position, said second member being beneath said first member in said retracted position, and means for moving said first stair member horizontally linearly between a retracted position in the access opening and an extended position projecting from the access opening and for moving said second stair member between said extended and retracted positions thereof such that in the extended positions of both stair members a step is formed between said stair members outside said access opening and in the extended position of said first stair member with the second stair member retracted, the first stair member can bridge a gap between the access opening and an adjoining platform spaced therefrom.

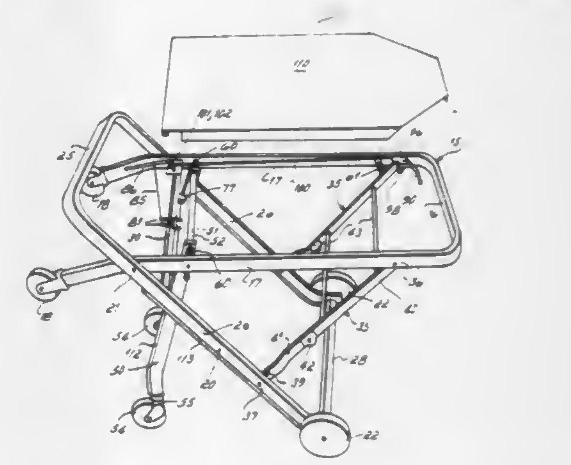
4,369,985
ONE MAN CART FOR ARTICLES

Elroy E. Bourgraf, Cincinnati; Robert E. Dunn, Washington Court House, and Ronald D. Vance, Wilmington, all of Ohio, assignors to Burt Weil, Cincinnati, Ohio

Filed Dec. 24, 1980, Ser. No. 220,161

Int. Cl.^{3} B62B *1/00*

U.S. Cl. 280—641 **8 Claims**



1. A cart foldable between an erect and a folded position comprising:
- a horizontal main frame,
- auxiliary wheels mounted at the forward end of said main frame,
- a pair of downwardly and rearwardly inclined rear legs pivoted at their upper ends to said main frame,
- a pair of forward legs pivoted at their upper ends to the front portion of said main frame and depending generally vertically from said main frame,
- a releasable brace between said main frame and said rear legs to maintain them in an erect position,
- means releasably locking said front legs in an erect position,
- means at the forward end of the cart for releasing said front legs to permit them to swing rearwardly, and
- means at the rear end of the cart to release said braces for the rear legs and said front legs to permit said cart to be changed to a folded position.

4,369,986
FOLDING STROLLER FOR TRANSPORTING CHILDREN

Alicia B. de la Fé, Pi y Margall 63, Las Palmas de Gran Canaria, Spain

Filed Jun. 13, 1980, Ser. No. 159,074

Claims priority, application Spain, Jun. 20, 1979, 244.041

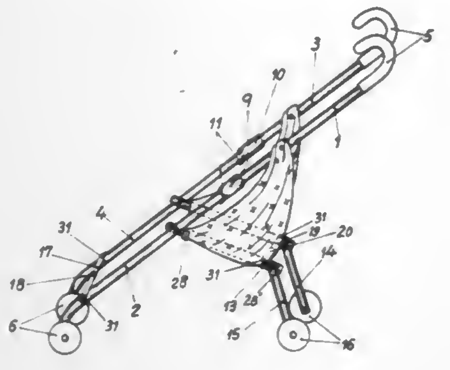
Int. Cl.^{3} B62B *11/00*

U.S. Cl. 280—644 **3 Claims**

1. A folding stroller for transporting children, comprising:
- two side rods providing support for a seat, each of said side rods having a lower portion provided with a wheel and a separate upper portion provided with a steering handle;
- metal plates connecting said lower and upper portions of each of said side rods, two said plates being pivotally

connected tangentially to each of said portions proximate the ends of said portions opposite said wheel and said steering handle, such that the articulated ends of said portions remain separated;

a movable sleeve positioned over each pair of said plates on said side rods so as to maintain said upper and lower portions in rigid axial alignment, said sleeves being retractable from said plates by sliding onto said upper portions;



a stop connected to each of said lower portions proximate said metal plates so as to maintain said sleeves in position about said plates; and

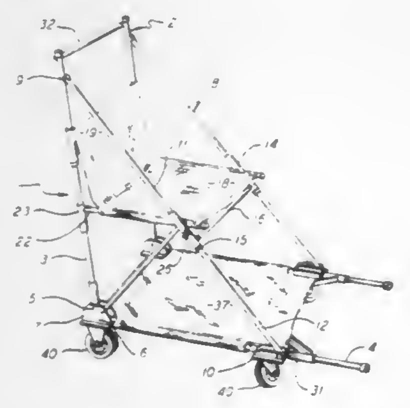
a first cross rod rotatably connecting said lower portions of said side rods, said first cross rod being divided into two pivotally articulated sections, whereby the stroller can be folded and unfolded by articulation of said first cross rod and said side rods and movement of said sleeves.

4,369,987

FOLDING WHEELED CHAIR/LUGGAGE CARRIER

Nancy B. Witherell, R.F.D. #1, Box 54A, Center Harbor, N.H. 03226

Filed Mar. 16, 1981, Ser. No. 244,285
Int. Cl.^{3} B62B *7/08*
U.S. Cl. 280—644 4 Claims



1. A folding wheeled chair/luggage carrier having a frame structure comprising a pair of generally triangular side frames, each carrying two support wheels and each comprising pivotally connected, elongated base and back support members, an elongated strut which is pivotally connected at its ends adjacent to the free ends of said support members, each said strut being in the form of a pair of pivotally connected upper and lower strut members which can be maintained in an extended, aligned condition and releasable locking means for maintaining a desired angular relationship between said base and back support members, and lateral bracing means connecting said side frames whereby the latter are movable between an extended, use position in which they maintain the side frames in spaced parallel relationship with the four wheels at substantially the four lower corners of the frame structure, and a retracted, stowage position, wherein the improvement comprises

(a) a pair of elongated strut bracing members each pivotally connected to the releasable locking means and to adjacent the pivotal connection of the base and back support members,

(b) a pair of elongated seat frame members each pivotally connected to the frame structure, for pivotal movement between a stowage position and a use position,

(c) seat and back support panels of foldable material extending between and fixed respectively to said seat frame members and said back support members,

(d) releasable catch means for selectively retaining said seat frame members in their use position, and

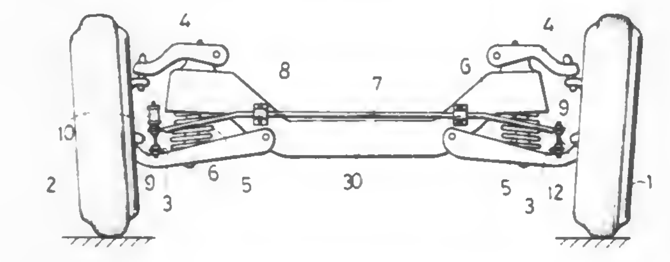
(e) said releasable locking means comprising a pair of sleeves slidably mounted one on each said upper strut member and stop means rigidly mounted on each said lower strut member beneath the pivotal connection whereby, in the use position of said seat members, said sleeves are held down by the occupant against their respective stop means so as to closely embrace the pivot connections between their respective strut members and positively retain said strut members in their extended, aligned condition, said bracing members being pivotally mounted to respective ones of said sleeves.

4,369,988

STABILIZER FITTING APPARATUS

Tatsuya Takagi, 6-10, Araebisu-machi, Nishinomiya, Hyogo-ken, Japan

Filed Oct. 22, 1980, Ser. No. 199,527
Claims priority, application Japan, Nov. 22, 1979, 54-150644
Int. Cl.^{3} B60G *19/00*
U.S. Cl. 280—689 5 Claims



1. A stabilizer assembly comprising:

(a) a torsion bar having a straight central portion and bent end portions, said central portion being adapted to be twistably mounted on the frame of a vehicle;

(b) a reciprocal device disposed at least at one end of said torsion bar;

(c) said reciprocal device comprising first and second members which are movable relative to each other, said first member being secured to the end of said torsion bar and said second member being adapted to be secured to a swing arm of a suspension system of a vehicle; and

(d) said reciprocal device being normally positioned in a neutral position and movable under a resisting force and a limited stroke, said resisting force gradually increasing according to the displacement from said neutral position but said resisting force being substantially zero as said recirpocal device is returned to said neutral position.

4,369,989

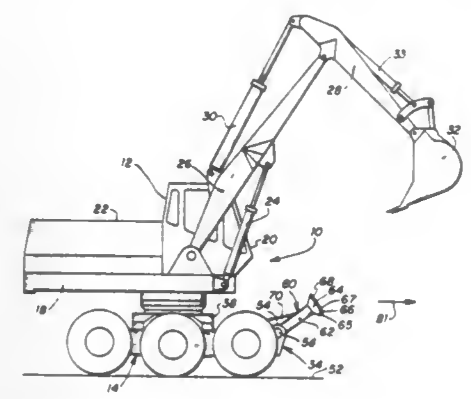
STABILIZING JACK FOR SKID STEER VEHICLE

Harry S. Mankey, Dallas, Tex., assignor to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Filed Aug. 1, 1980, Ser. No. 174,642
Int. Cl.^{3} B60S *9/02*
U.S. Cl. 280—763 7 Claims

7. An improved vehicle of the type having at least three sets of wheel members to support the vehicle on a surface, the middle set of wheel members extending below a plane lying tangent to the bottom of the endmost sets of wheel members, the improvement which comprises:

a jack pivotally mounted on said vehicle adjacent a first set of endmost wheel members and responsive to movement of the vehicle in a predetermined direction under the action of at least some of the wheel members for pivotal movement overcenter to a support position so that the vehicle is supported on the surface by said jack, the middle set of wheel members and the endmost set of wheel members opposite said first set of endmost wheel members



and is thereby prevented from rocking endwise about said middle set of wheel members;

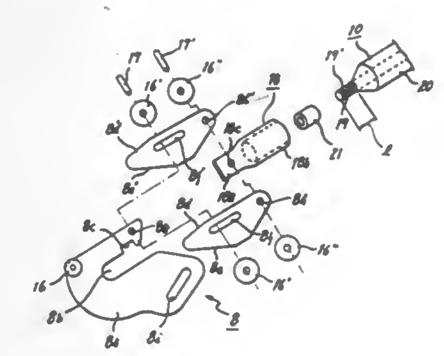
said jack being responsive to movement of the vehicle in the opposite direction under the action of at least some of the wheel members for pivotal movement overcenter out of the support position so that the vehicle is once again supported solely by the wheel members.

4,369,990

COUPLING ASSEMBLY FOR CONNECTING A SLIDER TO A DRIVE WIRE IN A PASSIVE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 249,998
Claims priority, application Japan, Apr. 1, 1980, 55-042410[U]
Int. Cl.^{3} B60R *21/10*
U.S. Cl. 280—804 1 Claim



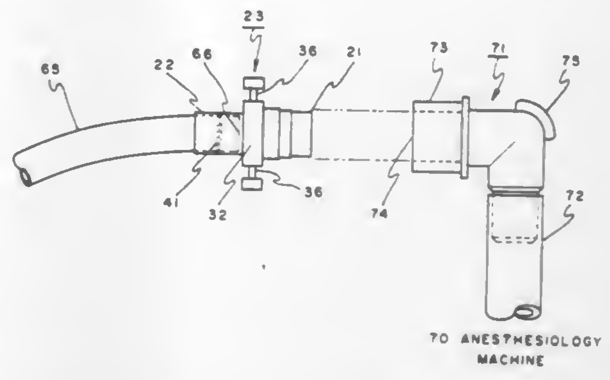
1. In a passive vehicle occupant restraint belt system that includes a guide rail affixed to the vehicle body, a slider receiving a portion of a restraint belt and movable along the guide rail to transfer the belt portion between restraint and release locations, and a drive wire driven by drive means and coupled to the slider, the portion of the drive wire that moves along the rail having a core and a covering of a polymeric material, a coupling assembly comprising an uncovered segment of the core adjacent the end of the drive wire, a pressed-on coupling ring affixed to the uncovered segment of the drive wire and a coupling sleeve connected to the slider received over the coupling ring and over a portion of the drive wire covering adjacent the uncovered segment, the sleeve being pressed onto the coupling ring and said covering portion, whereby concentrated bending stresses in the core adjacent the coupling ring are eliminated due to support of the core adjacent the coupling ring by said covering portion within the sleeve.

4,369,991

CONNECTOR FOR ENDOTRACHEAL TUBES AND CATHETERS

Gerald S. Linder, 16693 Charmel La., Pacific Palisades, Calif. 90272

Filed Oct. 4, 1979, Ser. No. 81,694
Int. Cl.^{3} F16L *35/00*
U.S. Cl. 285—38 15 Claims



1. An improved connector for inter-coupling between the output breathing circuit connection of an anesthesiology machine and the smooth outer wall surface of the open proximal end of a cylindrical, resilient endotracheal tube, comprising in combination:

(a) a hollow cylindrical body of relatively rigid, nonperforated material having an open input end adapted for coupling to the breathing circuit connection of an anesthesiology machine, said hollow cylindrical body further having an open output end adapted for sliding over the smooth outer wall surface of the proximal end portion of a cylindrical endotracheal tube, the inner diameter of the open output end of said hollow cylindrical body being slightly larger than the outer diameter of the cylindrical, resilient endotracheal tube for which the connector is designed to be used; and

(b) a single annular internal ridge formed integrally within said hollow cylindrical body near the output end, said annular ridge projecting radially inward from the inner wall surface of said hollow cylindrical body, the tip of said annular internal ridge being adapted for physically engaging the smooth outer wall surface of and forming a depression into and continuously around the smooth outer wall surface of the proximal end portion of the endotracheal tube upon the insertion of the proximal end portion into the open output end of said hollow cylindrical body, said annular internal ridge thereby providing an air-tight seal between the smooth outer wall surface of the endotracheal tube and the inner wall surface of said hollow cylindrical body by the engagement of the tip of said annular ridge with the smooth outer wall surface of said resilient endotracheal tube, said annular ridge further maintaining physical separation between the inner cylindrical wall surface of the open end of said hollow body and the smooth outer cylindrical wall surface of the endotracheal tube adjacent each side of said annular ridge to minimize contact between the cylindrical wall surfaces, said connector being rotatable with respect to the endotracheal tube about the axis of said hollow, cylindrical body in a swivel-like manner while maintaining said air-tight seal.

4,369,992

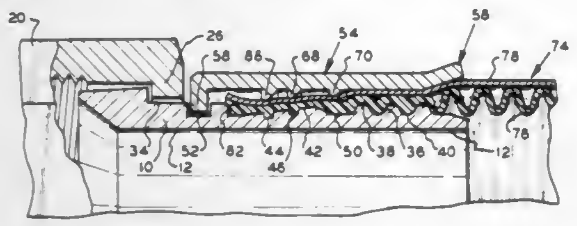
CONVOLUTED HOSE FITTING

Paul J. E. Fournier, and Guenter O. Kunz, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Nov. 24, 1980, Ser. No. 209,997
Int. Cl.^{3} F16L *33/20*
U.S. Cl. 285—256 3 Claims

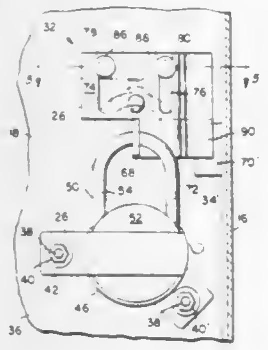
1. A hose fitting for hose having a convoluted inner tube of synthetic plastic material comprising, in combination, a tubular nipple having a bore, an outer connection end, a hose receiving

outer surface and an inner hose receiving end, connection means defined on said nipple connection end, a helical projection defined upon said nipple outer surface adjacent said inner end having a pitch substantially corresponding to the pitch of the convolutions of the hose inner tube to be received upon said outer surface, an annular socket circumscribing said nipple outer surface having an inner surface, a plurality of axially spaced locking annular serrations defined on said socket inner surface for engaging and compressing a hose mounted upon said nipple outer surface, said serrations each including a conical surface defined thereon on the side of the serrations disposed toward said nipple inner end and converging in a direction away from said nipple inner end whereby said conical surfaces aid in the insertion of hose upon said nipple and within said socket, said nipple outer surface in radial alignment with said locking serrations increasing in diameter in the axial direction from said outer end toward said inner end defining a reverse angle ramp to resist separation of a hose mounted on said nipple outer surface under tension forces, annular grooves defined in said nipple outer surface in radial alignment with at least two of said annular serrations, said grooves each including a radial side defining the groove side nearest said nipple inner end, and an annular secondary serration defined on said socket inner surface intermediate said reverse angle ramp and said helical projection to compress hose located on said nipple outer surface intermediate said locking serrations.



4,369,993
DOOR LOCKING DEVICE FOR USE WITH INTERCHANGEABLE PADLOCKS

Luis A. Rodriguez, 2629 11th St., St. Petersburg, Fla. 33704
Filed Oct. 17, 1980, Ser. No. 198,168
Int. Cl.^{3} E05B *63/02, 65/06;* **E05C** *1/04, 13/02*
U.S. Cl. 292—148 **15 Claims**

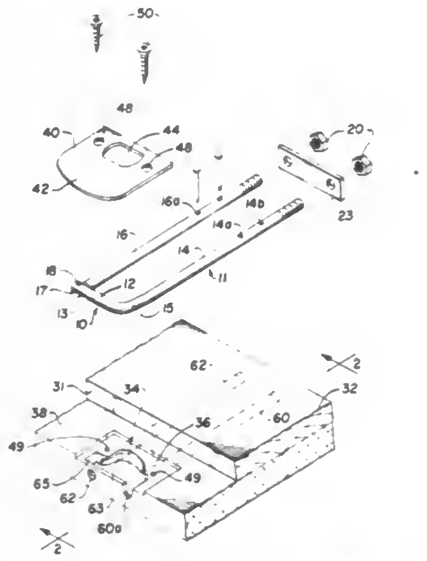


1. A locking device for a door and jamb, for use with a padlock having a body, a shackle slidable in the body between locked and unlocked positions, and an actuator on one face of the body for unlocking the shackle, the device comprising:
- means for removably attaching the padlock to the interior surface of the door with a portion of the actuator face of the padlockexposed through an aperture in the door;
- a handle slidably carried by the door and accessible from the exterior thereof;
- means for connecting said handle to the shackle of the padlock whereby the motion of said handle can move the shackle between its locked position and its unlocked position; and
- a strike plate connected to the jamb and cooperating with the shackle of the padlock to prevent the opening of the door when the shackle is locked to the body of the padlock.

15. A locking device for use with a combination padlock for locking a door of a locker comprising;
- a bracket removably attached to the interior surface of the door of the locker, said bracket having a lower curved portion to cradle the circumferential surface of the body of the padlock and a rear plate to hold the body of the padlock to the interior surface of the door with the dial portion of the padlock exposed through an aperture in the door, the aperture being less than the total diameter of the body of the padlock;
- a latch for sliding vertical motion with respect to the interior surface of the door, said latch plate including a tab extending inward therefrom and having an aperture for receiving the shackle of the padlock;
- means for supporting said latch plate on the interior surface of the door for vertical movement;
- a handle extending outward from said latch plate through a vertical slot in the door; and
- a strike plate attached to an interior side surface of the locker and having a locking section extending laterally inward behind the interior surface of the door, said locking section cooperating with the shackle and said latch plate to lock the door of the locker.

4,369,994
STRIKE PLATE SUPPORT

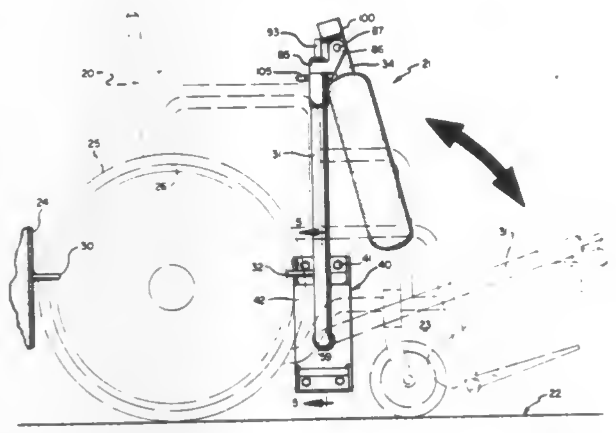
Steve P. Vorves, 6250 Lyons Rd., Garland, Tex. 75043
Filed Aug. 11, 1980, Ser. No. 176,669
Int. Cl.^{3} E05C *21/02*
U.S. Cl. 292—340 **5 Claims**



1. Apparatus for securing a strike plate having a deflected tang portion extending outwardly from the plane of the body portion of the plate to a door jamb comprising: a generally L-shaped connector member having a pair of generally perpendicularly extending legs, a first of said legs being arranged to engage the tang on the strike plate when positioned parallel to the plane of the body of the strike plate, a portion of the second leg being deflected to extend away from the plane of the body of the strike plate to position the second leg in a plane spaced from the plane of the first leg; a rod; means securing said rod to the outer extremity of the first leg such that the rod and the second leg on said connector member lie in a common plane; and anchor means on said rod and on said second leg for attachment to a door jamb.

4,369,995
WHEELCHAIR AND OCCUPANT RESTRAINING APPARATUS

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach & Car Equipment Corporation, Elk Grove Village, Ill.
Filed Aug. 28, 1980, Ser. No. 182,218
Int. Cl.^{3} B60N *1/02;* **B60P** *3/06, 7/08*
U.S. Cl. 296—65 A **21 Claims**

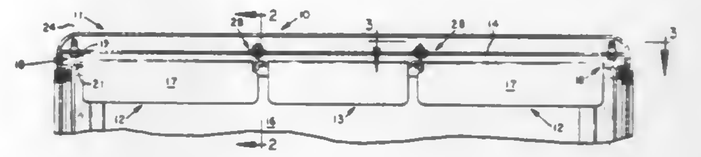


1. In a vehicle having a wall and a member at a location spaced from said wall, an apparatus for restraining a wheelchair and its occupant, said apparatus comprising:
- a first U-shaped element;
- means for mounting said first U-shaped element on said member;
- said first U-shaped element comprising means for receiving the periphery of a wheelchair wheel;
- an elongated post located alongside said vehicle wall;
- means mounting said post on said wall for pivotal movement between a depressed position, in which said post extends alongside a bottom of said wall, and an upright position;
- a second U-shaped element attached to said post and located in opposed facing relation to said first U-shaped element when said post is in its upright position;
- said second U-shaped element comprising means for receiving the periphery of a wheelchair wheel at a location thereon substantially diametrically opposite to the location thereon substantially received in said first U-shaped element;
- said first and second U-shaped elements comprising means cooperating to hold said wheelchair wheel in compression.

3. An apparatus for restraining a wheelchair and its occupant in a vehicle having a wall, said apparatus comprising:
- an elongated post located alongside said vehicle wall;
- means mounting said post on said wall for pivotal movement about an axis, between a depressed position, in which said post extends alongside a bottom of said wall, and an upright position;
- a restraining arm;
- means mounting said restraining arm on said post for pivotal movement about a first axis between a retracted position in which said arm extends alongside said post and an extended position in which said arm extends outwardly from said post along said vehicle wall;
- and means mounting said restraining arm for pivotal movement about a second axis transverse to said first axis, and between said extended position and a restraining position in which said arm extends transversely from said wall across the chest of an occupant in said wheelchair.

4,369,996
SUN VISOR SYSTEM FOR TRUCKS

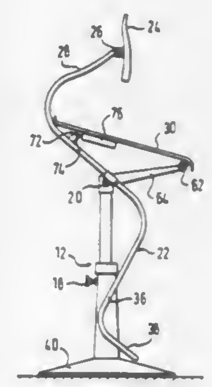
David W. Fluck, San Jose, Calif., assignor to PACCAR Inc., Bellevue, Wash.
Continuation-in-part of Ser. No. 241,658, Mar. 9, 1981, abandoned. This application Nov. 19, 1981, Ser. No. 322,890
Int. Cl.^{3} B60J *3/02*
U.S. Cl. 296—97 K **6 Claims**



1. A sun visor system for the windshield of a vehicle, comprising:
- left and right pivotal, swingable visor assemblies, each having an outer end with a swivel base secured to the vehicle body near the side of the windshield and providing swinging movement about a generally vertical axis, between a normal forward position and a side window position, each swivel base supporting a rod extending into the edge of a visor for permitting pivotal movement of the visor on the rod, and each of the visor assemblies having a generally horizontal projection at its inner, free end; and
- a center visor assembly having a forwardly and rearwardly pivotal visor and a pair of special mounting brackets, one at each end, secured to the vehicle body between the left and right visors so as to provide a generally continuous curtain of visors across the top of the windshield, each special mounting bracket including clip means for receiving and cradling the projection at the inner end of the adjacent side visor when that side visor is in a normal forward position.

4,369,997
CHAIR

Simon Desanta, Gütersloh, Fed. Rep. of Germany, assignor to Kusch & Co., Sitzmohelwerke KG, Hallenberg, Fed. Rep. of Germany
PCT No. PCT/DE80/00010, § 371 Date Sep. 29, 1980, § 102(e) Date Sep. 29, 1980, PCT Pub. No. WO80/01534, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 29, 1980, Ser. No. 209,404
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903251; Feb. 3, 1979, 2904148
Int. Cl.^{3} A47C *1/034*
U.S. Cl. 297—68 **15 Claims**

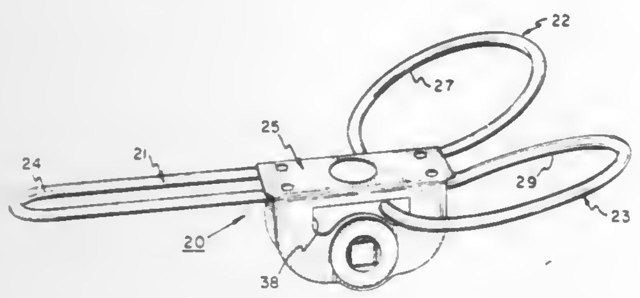


1. An adjustable chair with an elevated seat having a backrest, seat and footrest which are adjustable from a first position in which the seat is generally horizontal, the backrest is to the rear of at least a major portion of the seat and the footrest extends forward of the front edge of the seat to a second position in which the backrest is forward of said first position, the

seat is tilted forward and the footrest is to the rear of the forward edge of the seat, said chair comprising:
- (a) an upstanding support pedestal having a generally horizontal pivot shaft at its upper end;
- (b) a generally S-shaped yoke having its central portion pivotally secured to said pivot shaft with an upper portion pivotally supporting said backrest for movement about a substantially horizontal pivot point and a lower portion extending downwardly and forwardly to form said footrest;
- (c) said seat being secured to at least one of said central portion of said yoke and said pedestal so that upon movement of the yoke to pivot the footrest backward and the backrest forward, said seat will tilt forward so as to partially support a person in the standing position in front of the chair.

4,369,998
TWIN TORSIONAL BICYCLE SEAT UNDERCARRIAGE

Robert Blase, 1009 Round Hill Rd., Fairfield, Conn. 06430
Filed Sep. 2, 1980, Ser. No. 183,302
Int. Cl.^{3} B62J *1/00*
U.S. Cl. 297—195 **17 Claims**

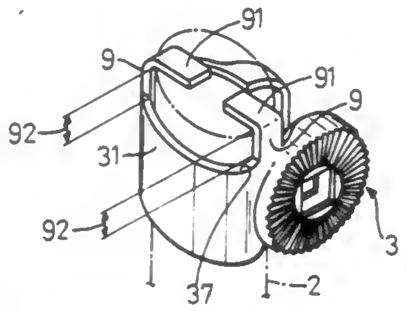


1. A bicycle seat-supporting undercarriage comprising
- A. a bracket member adapted for cooperative interengagement with bolt means for mounting to a bicycle seat post, and
- B. a wire member formed into two independent loop systems extending rearwardly and laterally from said bracket member, each of said loop systems comprising
  - (a) a secured portion mounted to the bracket member, and
  - (b) a laterally extending loop portion
    - (1) extending from the secured portion in a substantially continuous curve, and
    - (2) having its terminating end retainingly engaged with said bracket member;
- C. said bracket member having
  - (a) a central body portion and
  - (b) two depending side portions extending therefrom, each incorporating
    - (1) loop receiving means for retainingly supporting the terminating ends of the loop portions while allowing loop deflection and free movement of the terminating ends, and
    - (2) securement arms for peripherally embracing and supportingly retaining the secured portion of each loop system,

whereby each of said independent loop systems is resiliently, torsionally flexible, thereby achieving a bicycle seat undercarriage which provides comfortable support and repeated resilient deflection in response to a rider's side-to-side movements.

4,369,999
SADDLE FOR BICYCLE

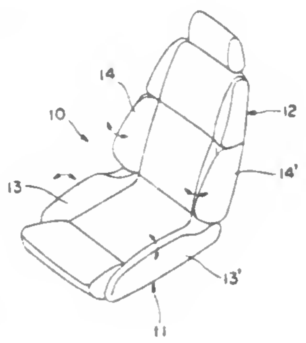
Tetsuo Kashima, Osaka, Japan, assignor to Kashima Saddle Mfg. Co., Ltd., Osaka, Japan
Continuation of Ser. No. 926,028, Jul. 19, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,901
Claims priority, application Japan, Apr. 18, 1978, 53-51502
Int. Cl.^{3} B62J *1/00*
U.S. Cl. 297—195 **7 Claims**



1. A saddle support for securing a saddle to the top of a seat pillar having first and second opposed clip washers for engagement with a loop clip, the loop clip comprising a clip band fittable around a seat pillar of a uniform diameter and having an upper end profile, a stopper formed on and extending from an upper portion of the clip band, first and second holding portions extending from opposite ends of the clip band and opposed to each other, each of the holding portions having a curved portion in the form of a circular arc and fittable around the seat pillar on its inner side and a bearing surface on its outer side for engagement with one of the clip washers to hold the saddle in a selected position, the stopper comprising a plurality of tabs each directed inwardly of the clip band and extending toward each other and spaced above the clip band over the upper end profile of the seat pillar, each tab projecting substantially to the center of the seat pillar, the stopper positionable over the upper end of the seat pillar to cover a substantial portion thereof such that downward slippage of the loop clip relative the seat pillar is thereby prevented.

4,370,000
SEAT FOR MOTOR VEHICLES

Kenichi Kazaoka, Nagoya, and Takemi Hattori, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan
Filed Aug. 14, 1980, Ser. No. 178,027
Claims priority, application Japan, Aug. 22, 1979, 54-106832
Int. Cl.^{3} A47C *3/00*
U.S. Cl. 297—284 **11 Claims**

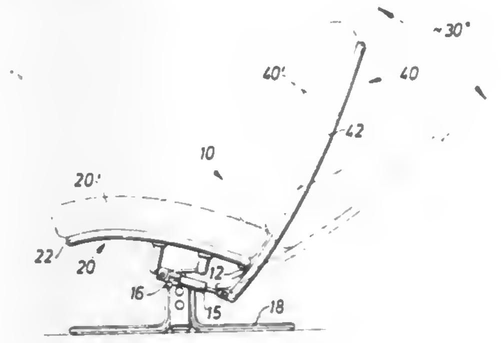


1. A seat with lateral edges capable of selective adjustment without the use of any exterior levers or knobs comprising:
- means for pivotably mounting the first lateral edge on the frame of the seat,
- means for pivotably mounting the second lateral edge on the frame of the seat opposite said first lateral edge,
- an operational lever pivotably connected to said frame for

engaging said first lateral edge and limiting the outward movement of said first lateral edge,
- linkage means, interconnecting said second lateral edge and said operational lever, for causing said operational lever to pivot inwardly and outwardly in concert with said second lateral edge,
- releasable lock means for locking the linkage means in selected fixed positions to thereby fix the second lateral edge and operational lever and thus limit the outward pivoting of said first lateral edge, and
- means for releasing said releasable lock means when the first lateral edge is pivoted inwardly away from said operational lever,
- whereby the inward rotation of said first lateral edge will enable the user of the seat to adjust the position of the lateral edges as desired.

4,370,001
BASIC FRAME FOR AN ADJUSTABLE DAMPER-ACTUATED CHAIR

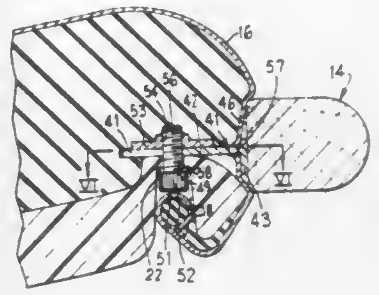
Stellan Örnberg, Klintvägen 3, 552 59 Jönköping, Sweden
Filed Sep. 22, 1980, Ser. No. 189,408
Claims priority, application Sweden, Jul. 1, 1980, 8004875
Int. Cl.^{3} A47C *1/02*
U.S. Cl. 297—355 **6 Claims**



1. A chair structure having an adjustable back which can be locked in different positions, comprising:
- a framework comprising frames of substantially rigid tubing, namely a seat frame and a back support frame;
- a frame holder fixed to and underlying the seat frame for supporting the framework as a whole on a base structure, such that the framework is swivelable on the base structure about a vertical axis in the middle plane of the framework; and
- the improvement comprised in that said seat frame and back frame are each a simple, closed, essentially rectangular loop of said tubing, said loops being of essentially the same width, the seat loop being shorter and almost square, the back loop being substantially longer, hinge means uniting the seat loop along its back segment with the back loop, said hinge means extending transversely across the back loop at a distance (x) from the bottom segment thereof, so that the bottom portion of the back loop which is between its said bottom segment and said hinge means forms a lever for limiting motion of said back loop in relation to the seat loop, the frame holder fixed to the seat loop comprising a downwardly convex transverse arch structure fixed at its opposite ends to the two side segments of the seat loop, said bottom portion of the back loop extending in underneath the seat loop such that the bottom segment of the back loop is spaced forward of as well as below the rear segment of said seat loop and opposes said downwardly convex arch structure, and a gas damper lockable in optional positions, said gas damper being spaced entirely below the rear portion of the seat loop and extending approximately parallel to the plane thereof in connected relation from said bottom segment of the back loop to the downward arched portion of the frame holder.

4,370,002
ATTACHMENT FOR CHAIR ARM

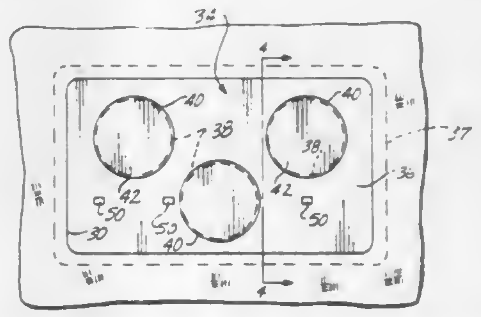
Earl H. Koepke, Burr Oak Township, St. Joseph County, Mich., assignor to Kimball International, Inc., Jasper, Ind.
Filed Jun. 12, 1980, Ser. No. 158,746
Int. Cl.^{3} A47C *27/00*
U.S. Cl. 297—452 **5 Claims**



1. A connection for securing an appendage to an article of furniture, said connection comprising:
- body supporting frame means including a continuous channel extending about and having a width dimension crosswise of the longitudinal extent of said channel and adjacent the outer part of said channel that is at least equal to or greater than the width of said channel adjacent the bottom thereof;
- upholstery covering at least a portion of said body supporting frame means, an edge portion of said upholstery being received in said channel and securing means received in said channel for effecting a securement of said upholstery in said channel to said body supporting frame means;
- bracket means defining a bottom wall in said channel, said bottom wall having further means defining a hole therethrough in which is received an elongated first fastener member having a head thereon and at one end thereof, said head lying in said channel, the other end of said first fastener member having releasable coupling means thereon releasably coupled to a second fastener member;
- bracket means defining an opening in said upholstery; and
- a bracket member secured to said appendage and having an extension member thereon extending through said opening in said upholstery and between said first and second fastener members, said first and second fastener members effecting a clamping of said extension member between said second fastener member and said body supporting frame means, said securing means effecting a covering of said head of said first fastener member so that it is not exposed when said article of furniture is fully covered.

4,370,003
TEMPORARY GAS SEAL FOR GAS LEVEL DRIFT OF AN IN SITU OIL SHALE RETORT

Rudolph Kvapil, Golden, and Thomas E. Ricketts, Grand Junction, both of Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Oct. 31, 1980, Ser. No. 202,467
Int. Cl.^{3} E21C *41/10*
U.S. Cl. 299—2 **26 Claims**



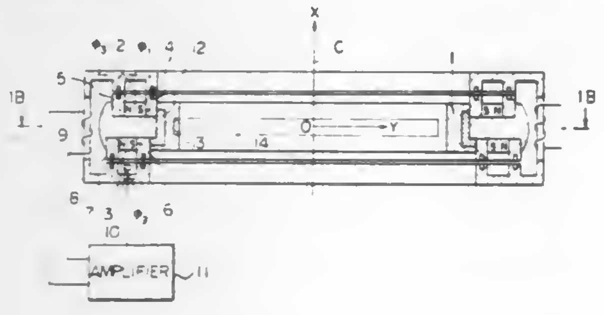
1. An off gas seal for a gas collection drift communicating with and extending away from an in situ oil shale retort con-

taining a fragmented permeable mass of formation particles containing oil shale in a subterranean formation containing oil shale, the off gas seal comprising:
- a rigid gas isolation barrier sealed at its periphery to the walls of the gas collection drift;
- at least one gas flow passage extending through the rigid gas isolation barrier;
- a flexible membrane for closing such gas flow passage for inhibiting passage of off gas through the gas flow passage and past the gas isolation barrier from a side of the gas isolation barrier adjacent the fragmented mass to a side of the barrier opposite the fragmented mass;
- fastening means sealing the flexible membrane to the gas isolation barrier for supporting the membrane on the barrier for closing such gas flow passage; and
- means for unsealing such flexible membrane from the gas isolation barrier for removing the support of the flexible membrane on the barrier for opening such gas flow passage for permitting passage of off gas through the open gas flow passage to a portion of the gas collection drift on the side of the gas isolation barrier opposite the fragmented mass.

4,370,004
MAGNETICALLY SUSPENDED TYPE MOMENTUM RING ASSEMBLY

Hiroshi Morikawa, Tokyo; Toshiharu Kumazawa, Fujisawa, and Hiroshi Takagi, Kamakura, all of Japan, assignors to Mitsubishi Precision Co., Ltd., Kanagawa and Mitsubishi Electric Corporation, Tokyo, both of, Japan

Filed Oct. 6, 1980, Ser. No. 194,617
Claims priority, application Japan, Apr. 28, 1979, 54/52044
Int. Cl.³ F16C *39/00*
U.S. Cl. 308—10 8 Claims

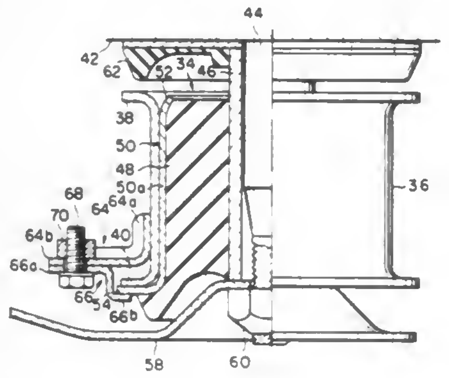


1. A magnetically suspended type momentum ring assembly comprising:
- a rotatable momentum ring having a rotating axis in the center of said ring, and an annular solid portion thereof whereto an effective mass of said momentum ring is concentrated;
- a fixed member provided for enclosing therein said rotatable momentum ring;
- a non-contact magnetic bearing means for generating a force for suspendingly supporting said rotatable momentum ring in a radial and an axial direction within said fixed member, said magnetic bearing means being arranged in a peripheral portion of said momentum ring assembly;
- said non-contact magnetic bearing means comprising a first magnetic suspension means including permanent magnet means generating first and second magnetic attractions which are axially opposite to one another and act between said momentum ring and said fixed member, and a second magnetic suspension means including electro-magnet means generating a third axial magnetic attraction varying in response to a change in electric current applied to said electro-magnet means, said first and second magnetic attractions contributing to suspension of said momentum ring in said radial direction, and a combination of said first through third magnetic attractions contributing to the suspension of said momentum ring in said axial direction;
- means for controlling the electric current applied to said electro-magnet means in response to changes in direction and magnitude of an external force acting on the momentum ring in the axial direction; and
- a drive means for rotating said momentum ring about said rotating axis, said drive means being provided in said peripheral portion of said momentum ring assembly.

4,370,005
DEVICE FOR PREVENTING TUBULAR BUSHING ASSEMBLY FROM SLIPPING OUT

Hiroshi Sarai; Eiichi Hamada, and Norihiro Ueda, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Oct. 23, 1980, Ser. No. 200,023
Claims priority, application Japan, Jul. 23, 1980, 55-103152[U]
Int. Cl.³ F16C *11/04*
U.S. Cl. 384—154 9 Claims



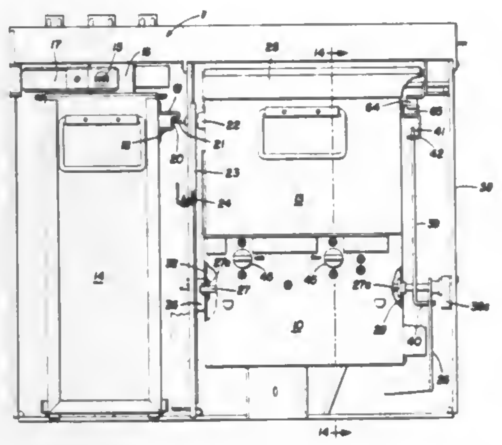
1. In a device for preventing a tubular bushing assembly being used as a vibration isolator from slipping out of a hole provided in a bushing attaching portion, wherein a pair of said tubular bushing assemblies are fitted into a pair of pivot coupling between a vehicle body and a suspension member in a suspension system for a vehicle and each tubular bushing assembly includes an inner sleeve for receiving therein a pivot extending from said vehicle body, a tubular resilient member receiving therein said inner sleeve and attached thereto, and an outer sleeve receiving therein said resilient member and attached thereto, said tubular bushing assembly being fitted into the hole provided in the bushing attaching portion, the improvements comprising:
- a flange portion provided at one end of said outer sleeve and extending radially outward of said hole provided in said bushing attaching portion along the opening edge of said hole,
- a support portion provided in said bushing attaching portion, said support portion extending radially outward of said bushing attaching portion over one end thereof;
- a holder member joined to said support portion at one end thereof and the other end thereof extending inwardly of said outer sleeve along the bottom surface of said flange portion so as to hold said flange portion between the circumferential edge of said hole and the other end of the holder member; and
- a means for connecting said holder member to said support portion removably.

4,370,006
BANKING MEDIA SECURITY MECHANISM FOR AUTOMATIC BANKING MACHINES

Harry T. Graef, Dover; Scott A. Mercer, Hanoverton; Jeffrey A. Hill, North Canton, all of Ohio, and Spiro Leontas, Hesperia, Calif., assignors to Diebold Incorporated, Canton, Ohio

Filed Oct. 3, 1980, Ser. No. 193,847
Int. Cl.³ E05B *65/04*
U.S. Cl. 312—215 9 Claims

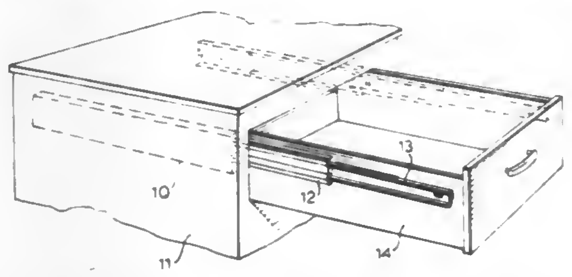
1. An ATM having multiple, diverse-function, sealed, tamper-indicating containers removably located therein including a depository container, a divert container and at least one note container; each container having a door mounted thereon movable between positions opening or closing an access opening formed in such container; a lock on each container locking the container door closed when in locked mode outside of and as loaded into the ATM; a lock actuator mounted on the ATM for each container lock operative to engage and actuate to unlocked mode the lock of its respective container when the latter is loaded into the ATM and to hold such container loaded in the ATM; each such lock actuator acting as a control preventing either such lock actuator or an adjacent container from being loaded into the ATM when its lock is not in unlocked mode; and interlock means operatively connecting said containers one to another and to the ATM when said containers are loaded in the ATM in ATM operative status; whereby such lock actuators acting as controls to be actuated in a sequence of steps without omitting any step during assembly or disassembly, thereby rendering the ATM impervious to misloading and maintaining container integrity at all times.



4,370,007
SLIDING DRAWER SUSPENSION

Jack P. Fler, Kitchener, Canada, assignor to Jacmorr Manufacturing Limited, Kitchener, Canada

Division of Ser. No. 10,419, Feb. 8, 1979, Pat. No. 4,272,139, which is a continuation-in-part of Ser. No. 941,585, Sep. 12, 1978, abandoned. This application Feb. 4, 1981, Ser. No. 231,496
Int. Cl.³ A47B *88/00;* **F16C** *29/00*
U.S. Cl. 312—334 15 Claims

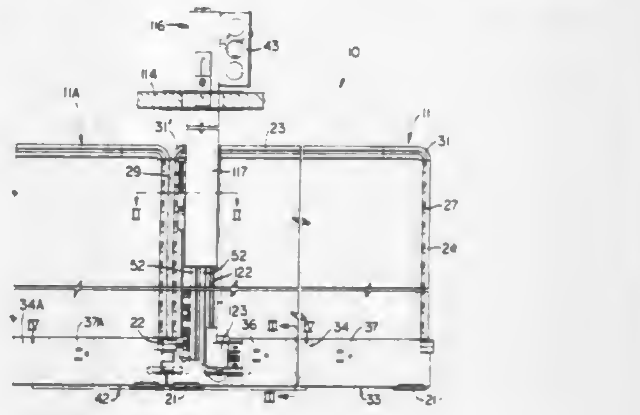


1. A three-part sliding drawer suspension comprising outer, intermediate and inner channel-section rails each having channel sides and a channel bottom, outer and inner ball bearings each having a channel-section ball bearing cage having channel sides and a channel bottom between the outer and intermediate rails and between the intermediate and inner rails respectively; extension of the intermediate rail relative to the outer rail being limited by engagement of the end surfaces of the outer cage between a stop on the rear of the intermediate rail and a stop on the front of the outer rail, and retraction of the intermediate rail relative to the outer rail being limited by engagement of its rear stop with a stop on the rear of the outer rail; extension of the inner rail relative to the intermediate rail being limited by engagement of the end surfaces of the inner cage between a stop on the rear of the inner rail and a stop on the front of the intermediate rail, and retraction of the inner rail relative to the intermediate rail being limited by engagement of a stop on the front of the inner rail with the front stop on the intermediate rail; the cages being normally positioned so that the end surfaces of each cage are spaced at equal distances from the stop surfaces which they engage; abutment members on the outer rail and on the intermediate rail arranged for a small clearance between them and the rear and front ends of the outer bearing cage when in the normal position with the intermediate rail retracted relative to the outer rail, and for engaging an end of the outer cage when displaced forwardly or rearwardly from its normal position and for shifting the outer cage to its normal position on closing movement of the suspension; and an abutment member on the inner rail arranged for a small clearance between it and the front end of the inner bearing cage when in its normal position with the inner rail retracted relative to the intermediate rail, for engaging the front end of the inner cage when displaced forwardly from its normal position and for shifting the inner cage to its normal position on closing movement of the suspension; said abutment members on the outer and inner rails comprising tabs struck from the channel sides of the outer and inner rails for engaging the channel sides of the outer and inner cages, respectively, and the abutment member on the intermediate rail comprising a tab struck from the channel bottom of the intermediate rail for engaging the channel bottom of the outer cage.

4,370,008
WALL PANEL WITH PREWIRED POWER SYSTEM

Richard G. Haworth, Holland; Charles J. Saylor, Zeeland, and Harold R. Wilson, Holland, all of Mich., assignors to Haworth Mfg., Inc., Holland, Mich.

Continuation of Ser. No. 918,278, Jun. 22, 1978, abandoned, which is a continuation of Ser. No. 737,420, Nov. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,506, Sep. 22, 1975, Pat. No. 4,060,294. This application Apr. 23, 1980, Ser. No. 142,911
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—4 30 Claims



1. In a substantially free-standing interior wall system for dividing a large office area into smaller working areas, said wall system including a plurality of portable prefabricated upright panels, at least some of said panels being horizontally connected together in series so that the vertical end edges of said panels are positioned in close proximity to one another, and hinge means connected between the adjacent vertical end edges of adjacent panels for horizontally hingedly connecting said adjacent panels together to permit them to be horizontally angularly adjusted with respect to one another, the improvement comprising electrical power means formed as an integral part of said wall system for transmitting electrical energy to and between a group of said series-connected panels, said power means including:
- first and second electrical terminal means fixedly mounted on each said panel of said group approximately adjacent the opposite end edges thereof in the vicinity of the lower corners of said panel, said electrical terminal means being

disposed substantially between a pair of substantially parallel vertical planes as defined by the opposite side surfaces of the respective panel;

raceway means fixedly connected to each said panel of said plurality and extending horizontally across said panel adjacent the lower edge thereof, said first and second terminal means being positioned adjacent the opposite ends of said raceway means, said raceway means extending across and having a width which approximately corresponds to the width of said panel, said raceway means including wall means defining a substantially closed interior passageway which extends horizontally of said panel between said first and second electrical terminal means for permitting communication cables or the like to pass therethrough:

cable means extending horizontally across each said panel, the opposite ends of said cable means being fixedly connected to said first and second electrical terminal means for permitting transmission of electrical energy therebetween;

each said terminal means having a pair of multiconductor connection means integrally associated therewith, the pair of connection means on said first terminal means being identical to the pair of connection means on said second terminal means, each said connection means defining one-half of a separable electrical connection, said pair of connection means as associated with each said terminal means being sidewardly spaced apart in the widthwise dimension of the panel but spaced laterally inwardly from the exterior sidewalls of said raceway means, whereby one connection means of said pair is positioned more closely adjacent one of the side surfaces of the panel and the other connection means of said pair is positioned more closely adjacent the other side surface of the panel;

flexible electrical connector means extending between and connected to the opposed pair of electrical terminal means as provided on first and second said panels which are disposed adjacent and horizontally series-connected for transmitting electrical energy between said first and second panels, said flexible electrical connector means including a pair of housing parts each having connecting means associated therewith and joined together by a center portion which permits said pair of housing parts to be horizontally angularly displaced relative to one another so as to accommodate the horizontal angular relationship between the series-connected first and second panels, each said connecting means being incompatible and not engageable with a conventional two- or three-conductor plug or socket, said flexible electrical connector means also including electrical conductor means extending through said center portion for electrically joining said pair of connecting means together, each of said connecting means defining one-half of said separable electrical connection and being slidably engageable with one of said connection means as associated with each electrical terminal means of said opposed pair, and said housing parts being disposed so as to not extend laterally outwardly of said raceway means when said connecting means and said connection means are joined together;

said flexible connector means being disposed substantially between or flush with parallel vertical planes as defined by the opposed sides of said first and second panels, one of said connecting means being slidably engaged with the connection means disposed adjacent said one side of said wall system and as associated with the electrical terminal means mounted on said first panel in close proximity to said second panel, the other said connecting means being slidably engageable with the connection means as disposed more closely adjacent said one side of said wall system and as associated with the electrical terminal means of said second panel as disposed in close proximity to said first panel, whereby said first and second panels are electrically joined together;

said flexible electrical connector means being electrically connectible between said opposed pair of terminal means by being alternatively releasably joined to either (1) the opposed pair of connection means as disposed more closely adjacent said one side of said wall system, or (2) the other opposed pair of connection means as disposed more closely adjacent the other side of said wall system, but not to both at the same time, whereby said flexible electrical connector means can be electrically connected between the opposed pair of electrical terminal means by being positioned adjacent either side of said wall system but not on both sides at the same time so as to permit any desired alignment or angularity between the series-connected panels;

one said electrical terminal means as associated with each panel also including a further connection means associated therewith for defining one-half of a plug-in type separable electrical connection, said further connection means being positioned in close proximity to and approximately between said pair of first-mentioned connection means, and elongated electrical cable means projecting vertically downwardly through an interior passageway in one of said panels and terminating at its lower end in another connection means defining one-half of said last-mentioned electrical connection, said another connection means being slidably engageable with said further connection means.

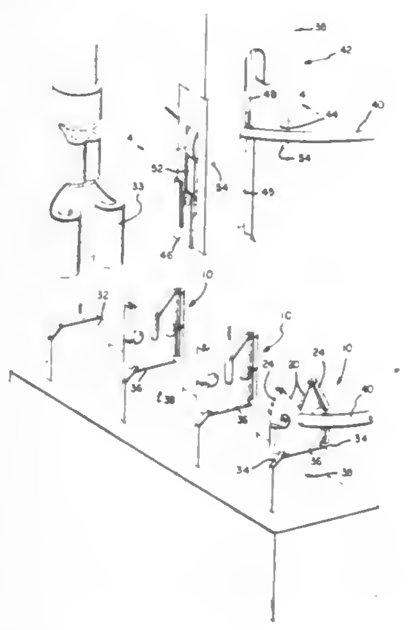
4,370,009
SLOTTED PLATE TERMINAL RENEWABLE AS SPADE TERMINAL

Frank P. Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1980, Ser. No. 172,046

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—31 R **6 Claims**



1. A one piece stamped and formed electrical contact terminal having wire contacting means for establishing electrical contact with an insulated wire comprising:

a plate having a wire receiving end, a base portion, and opposed side edges,

said plate having a wire receiving slot extending inwardly from said wire receiving end toward said base portion, said slot having opposed walls spaced to make contact with the conductive core of an inserted wire, said slot having opposed lead-in ramps extending inwardly from said wire receiving end and converging toward said walls, said ramps defining a wire entry, said slot terminating at a bottom remote from said wire receiving end,

said plate having an indentation in at least one of said side edges opposite said slot and slightly offset from the bottom thereof toward said wire receiving end defining a pivot section between said indentation and said slot, said indentation being configured as a linear slit extending laterally of said side edge to a circular aperture between said side edge and said pivot section, whereby,

said insulated wire may be moved laterally of its axis, through said wire entry and between said walls, displacing the insulation on the wire, until said wire reaches the bottom of the slot, said linear slit preventing distention of the wire receiving slot during wire insertion, whereupon a lateral force brought to bear against said side edge having said indentation therein will cause the section of said plate between said wire receiving end and said pivot section to deflect laterally about said pivot section and retain the wire in the bottom of the slot, said circular aperture preventing tensile fracture of said pivot section during lateral deflection of the section of plate between the wire receiving end and the pivot section.

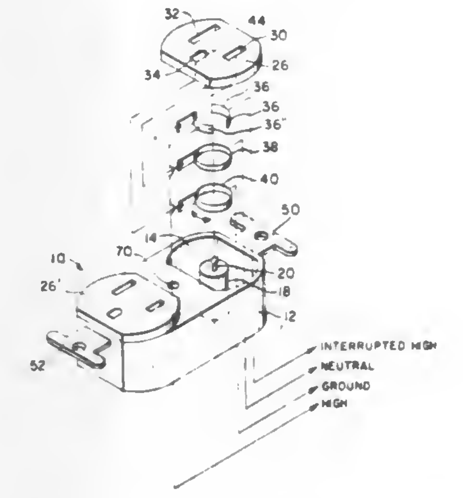
4,370,010
QUICK CHANGE MULTIPLE FUNCTION OUTLET

Robert L. Ordmandy, 43-26 159th St., Flushing, N.Y. 11358

Filed Nov. 3, 1980, Ser. No. 203,647

Int. Cl.³ H01R *39/00*

U.S. Cl. 339—31 R **6 Claims**



1. A multiple function outlet comprising, in combination, a casing having a receptacle well formed therein; a receptacle for fitting over and closing off said receptacle well, said receptacle and said receptacle well having similarly shaped configurations for mating engagement therebetween; said casing having means for pivotally connecting said receptacle in said receptacle well; and electrical contact means for electrical contact with said receptacle for alternately and optionally connecting said receptacle to a constant power source or to an intermittent power source, wherein said electrical contact means comprises a first circular contact ring; a second circular contact ring mounted adjacent to said first electrical contact ring; and a third electrical contact ring mounted adjacent to second electrical contact ring, wherein said receptacle comprises a first opening for insertion therethrough of a first wiper contact for contact with said first electrical contact ring; a second opening for insertion therethrough of a second wiper contact for contact with said second circular electrical contact ring, and a third opening for insertion therethrough of a third wiper contact for contact with said third circular electrical contact ring, whereby, when said receptacle is rotated, said third wiper contact is displaced so as to change the power source from a constant one to an intermittent one, wherein said third circular contact ring comprises a first semi-circular portion for connection to a constant power source and a second semi-circular portion for connection to an intermittent power source, whereby rotation of said third wiper contact from said first portion to said second portion changes the mode of operation from constant to intermittent.

4,370,011
CONTACT DRIVE ASSEMBLY FOR USE WITH ELECTRONIC PART TEST EQUIPMENT

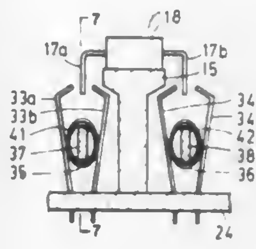
Kenpei Suzuki; Shinichi Koya, and Hiroshi Sato, all of Gyoda, Japan, assignors to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,589

Claims priority, application Japan, Nov. 12, 1979, 54-146287

Int. Cl.³ H01R *13/629*

U.S. Cl. 339—74 R **9 Claims**



1. A contact drive assembly for use with electronic part test equipment for testing an electronic part having at least one terminal pin, comprising:

holding means for holding the electronic part under test at a test position;

a stationary part;

at least one movable contact piece formed of a resilient conductive material and disposed with a top end thereof positioned opposite the terminal pin of the electronic part and fixed at the other end to the stationary part;

a flexible tube supported by the stationary part in close proximity to said at least one movable contact piece;

an elastic sealing tube within said flexible tube;

a compressed air source; and

compressed air control means, operatively connected between said elastic sealing tube and said compressed air source, for supplying compressed air from said compressed air source into said elastic sealing tube or discharging the compressed air from said elastic sealing tube, the compressed ai: being supplied into the sealing tube to perform sealing for the compressed air, so that when the compressed air is supplied into said elastic sealing tube, said flexible tube presses against said at least one movable contact piece to resiliently bias said at least one movable contact piece to engage with or disengage from the terminal pin, the amount of biasing of said at least one movable contact piece during the supply of the compressed air being determined by the inflation of said flexible tube.

4,370,012
ELECTRICAL CONNECTOR FOR CIRCUIT BOARD OR SUBSTRATE

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1980, Ser. No. 208,734

Int. Cl.³ H01R *13/629*

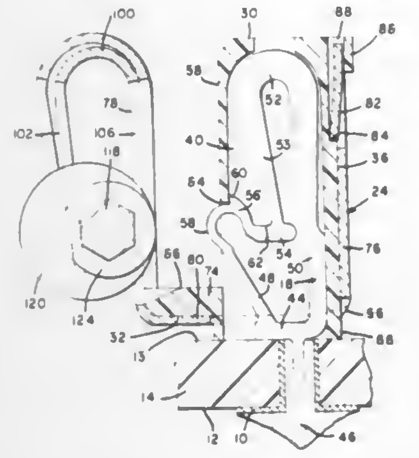
U.S. Cl. 339—75 MP **8 Claims**

1. A circuit board or substrate edge connector of the type comprising housing means which is intended to receive edge portions of a circuit board and which contains contact terminals which engage, and establish contact with, terminal pads on one surface of said circuit board, said connector being characterized in that:

said housing means has a board engaging surface against which said circuit board is positioned when said edge portions of said circuit board are inserted into said housing means, said contact terminals having contact portions which normally extend beyond said board engaging surface and which are deflected towards said surface when said connector is assembled to said board;

said housing means having a board retaining portion which extends beside, and is spaced from, said board engaging surface, whereby a board receiving trough is formed between said board engaging surface and said board retaining portion,

board clamping means in said board retaining portion for clamping a circuit board having edge portions thereof disposed in said trough against said board engaging surface, said board clamping means comprising a cam shaft in said board retaining portion, said cam shaft extending parallel to said board engaging surface and having eccentric cam means thereon which engage the surface of said circuit board which is the reverse surface from said one surface upon rotation of said cam shaft, said cam shaft being movable towards and away from said board engaging surface whereby,



upon insertion of said edge portions of said circuit board into said trough and engagement of said board clamping means with said circuit board, said circuit board is clamped against said board engaging surface and said contact portions of said contact terminals are engaged with said terminal pads, said connector being usable with circuit boards of widely varying thickness by virtue of the fact that said board clamping means is movable towards and away from said board engaging surface.

4,370,013
CONNECTOR DEVICE FOR ELECTRIC CIRCUIT

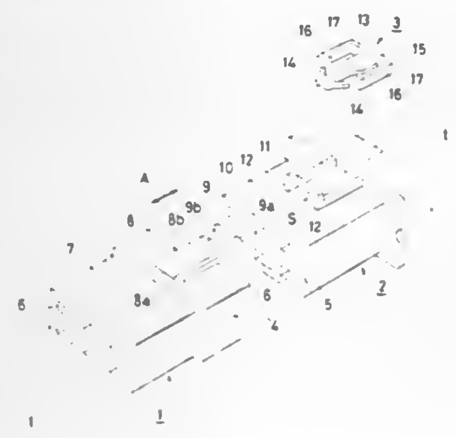
Mitsugi Niitsu, Niiza; Shuichi Yamazaki, Kami-Fukuoka, and Shigeru Kimura, Kamakura, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Nifco, Inc., Yokohama, both of, Japan

Filed Sep. 2, 1980, Ser. No. 183,063

Claims priority, application Japan, Sep. 5, 1979, 54/121728[U]

Int. Cl.³ H01R ***13/631***

U.S. Cl. 339—82 12 Claims



1. A connector device for electric circuits comprising a pair of female and male connector housings of insulating material, one of said connector housings being provided with a resilient tongue piece possessing a check claw at the leading free end thereof and the other connector housing being provided with a crosspiece adapted to be engaged with said check claw, whereby the union of the pair of connector housings and the consequent electrical connection of a pair of opposed conducting terminals incorporated one each within the connector housings are attained by bringing the connector housings into mutual contact, causing the check claw at the leading end of said resilient tongue piece to slide into a vacant space under said crosspiece and thereafter enabling the check claw to come into fast engagement with the crosspiece by virtue of the resiliency of said resilient tongue piece, which connector device further comprises a lock means provided with an insertion piece having an entering end adapted to be inserted into said vacant space below the resilient tongue piece after the connector housings have been fastened to each other and a check means adjacent said entering end adapted to engage stop means on one of said housings to bring said insertion piece into inseparable engagement with at least one of the connector housings.

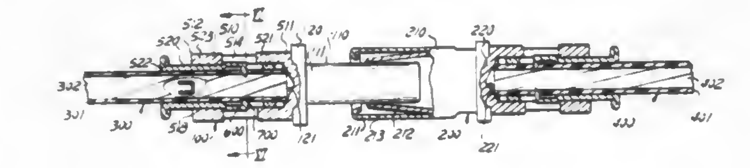
4,370,014
INSULATED WIRE TERMINATION DEVICE

Normand C. Bourdon, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 7, 1980, Ser. No. 205,204

Int. Cl.³ H01R ***11/20***

U.S. Cl. 339—97 R 18 Claims



1. An insulation piercing contact for making good electrical and mechanical engagement with an associated insulated conductor wire, comprising:

a pair of conductive sleeves, said sleeves being telescopically interfittable with one another and slidably disposed for axial movement between first and second positions which define electrically unconnected and electrically interconnected positions respectively with the wire; and a deflectable cantilever arm extending outwardly from the inner of said telescoped sleeves, said cantilever arm having a pointed end to pierce through the insulation of the wire inserted with said inner sleeve, the outer of said telescoped sleeves having an opening for passing said cantilever arm outwardly to detain the two sleeves together in said first position and a cam disposed to urge against the cantilever arm and deflect the arm downwardly onto the wire and the pointed end into the wire when the second sleeve slides between the two axial positions.

4,370,015
COAXIAL TAP CONNECTOR

Harold G. Hutter, Brookfield, and Leonard J. Francis, Waterbury, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 6, 1981, Ser. No. 222,846

Int. Cl.³ H01R ***13/40***

U.S. Cl. 339—97 P 3 Claims

1. An electrical connector for use with a coaxial cable of the type having a central conductor encircled by a dielectric support structure and an outer conductor comprising:

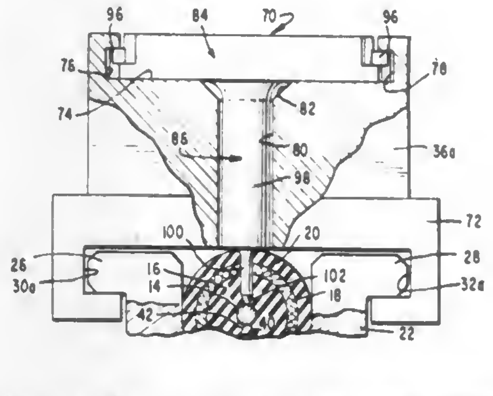
a body assembly having a generally U-shaped alignment cavity configured for snugly receiving said coaxial cable;

an elongate contact having a generally conically shaped cable piercing head and extending into said U-shaped alignment cavity from the base thereof, said cable piercing head being adapted for piercing an intact portion of said coaxial cable received in said cavity and engaging said central conductor for making electrical connection therewith, the base of said cable piercing head being larger than the adjacent portion of said elongate contact for engaging said dielectric support structure and inhibiting separation of said cable piercing head and said central conductor;

first and second contact elements each adapted for piercing an intact portion of said coaxial cable received in said cavity and penetrating said outer conductor for making electrical connection therewith, said first and second contact elements extending into said U-shaped alignment cavity from the base thereof and being spaced on either side of said elongate contact;

cover means configured for securement to said body assembly and adapted for compressing said received coaxial cable within said U-shaped alignment cavity;

plunger means adapted for piercing said coaxial cable and engaging said central conductor directly opposite said cable piercing head to further preclude movement of said central conductor away from said cable piercing head, and wherein said cover means includes means for securing said plunger means in abutment with said central conductor;



said plunger means including a head portion and a shank portion and said cover means including a bore extending therethrough for receiving said shank portion therein, said bore being aligned with said elongate contact, when said cover means are secured to said body assembly, to effect abutment of said shank portion against said central conductor; and

said cover means including a recessed portion for receiving said head portion, said recessed portion having a pair of opposed slide tracks and said head portion being rotatable in said recessed portion to engage said slide tracks over at least a portion of its rotation to secure said plunger means in said cover means.

4,370,016
ELECTRICAL COUPLING DEVICES

Derek Hayes, Home Farm Cottage, St. Michael, Bungay, Suffolk NR35 INF, England

PCT No. PCT/GB79/00213, § 371 Date Aug. 20, 1980, § 102(e) Date Aug. 15, 1980, PCT Pub. No. WO80/01339, PCT Pub. Date Jun. 26, 1980

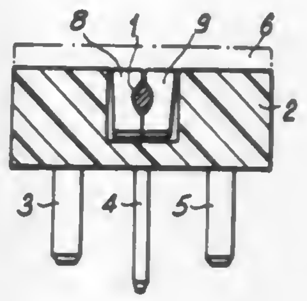
PCT Filed Dec. 18, 1979, Ser. No. 199,509

Claims priority, application United Kingdom, Dec. 20, 1978, 49215/78

Int. Cl.³ H01R ***13/58***

U.S. Cl. 339—103 M 13 Claims

1. In an electrical coupling device comprising a housing, means within the housing for effecting electrical connection to one or more conductors of an electrical cable which enters the housing in use of the device and a cable grip for clamping the cable relative to the housing, the improvement according to which the cable grip comprises a pair of cooperating jaws adapted to receive the cable therebetween and camming means having a pair of opposed walls forming a receptacle of substantially rectangular cross-section in the housing into which receptacle the pair of jaws with the cable therebetween can be pressed, said receptacle providing a longitudinal path for the cable between said jaws, said opposed walls being arranged to exert pressure on a pair of opposed surfaces of the pair of jaws to force the jaws towards one another with sufficient force to grip the cable and anchor it against longitudinal displacement in the jaws when the jaws are pressed into the receptacle by pressure in a direction substantially perpendicular to the path of the cable through the jaws and to retain said jaws within the receptacle upon release of said pressure, and said housing comprising means to limit movement of the jaws in the direction of said path when a tensile force is applied longitudinally to the gripped cable in a direction tending to pull the cable out of the coupling device.



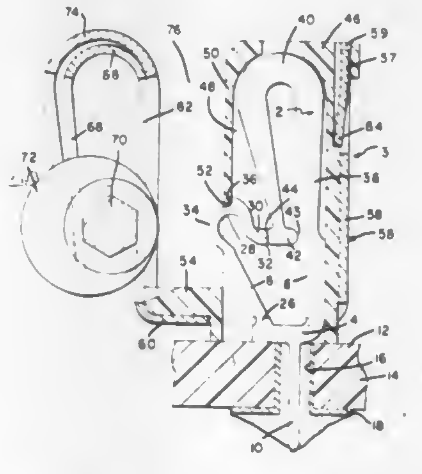
4,370,017
COMPLANATE CONTACT TERMINAL

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1980, Ser. No. 208,724

Int. Cl.³ H01R ***13/02***

U.S. Cl. 339—176 MP 10 Claims



1. An electrical contact terminal of the type having a contact portion for engaging a terminal pad on a circuit board or the like, and spring means for maintaining said contact portion against said terminal pad, said terminal being characterized in that:

said terminal has a yoke portion, a contact arm, and a spring arm, said contact arm and said spring arm extending from said yoke portion and being side-by-side,

said contact arm having an electrical contact portion and a contact arm bearing portion, said electrical contact portion and contact arm bearing portion being spaced from said yoke portion and facing in opposite lateral directions, said contact arm bearing portion being directed towards said spring arm,

said spring arm having a spring arm bearing portion spaced from said yoke portion and directed towards, and in alignment with, said contact arm bearing portion,

said contact arm comprising a cantilever beam having a free end portion, said electrical contact portion and said contact arm bearing portion being proximate to said free end portion, an extension on said free end portion of said contact arm extending towards said spring arm, said contact arm bearing portion being on the end of said extension,

said terminal being complanate and having been manufactured from flat stock metal by removing portions of the stock metal, said arms and said yoke portion having extensive parallel side surfaces and narrow edge surfaces extending between said side surfaces, said bearing portions and said electrical contact portion being on said edge surfaces whereby,

upon application of a contact force against said contact portion of said contact arm when said terminal pad is moved against said contact portion, said contact arm is moved towards said spring arm, and said spring arm is flexed and develops contact force for maintaining said contact portion against said terminal pad.

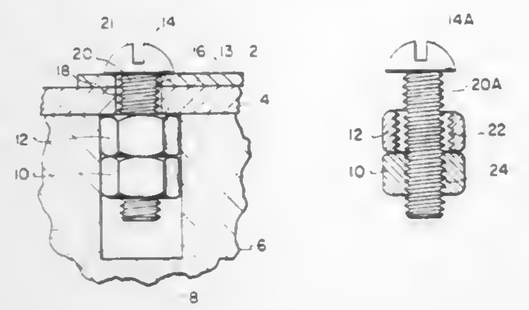
4,370,018
UNIVERSAL TERMINAL BLOCK CONNECTOR

Charles E. Lane, III, Meadowbrook, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 13, 1980, Ser. No. 206,612

Int. Cl.³ H01R *9/10*

U.S. Cl. 339—263 R **10 Claims**



1. A terminal block connector comprising:
- a first nut having a first thread diameter,
- a second nut having a second thread diameter larger than said first thread diameter,
- a support block and
- a recess in said block rotationally capturing said first nut and said second nut therein in a mutually coaxial relationship with each other and with said recess, said first nut being freely axially separable from said second nut within said recess, and with said second nut being positioned at an entrance to said recess and said first nut being located subsequent to said second nut in said recess with respect to the entrance to said recess.

4,370,019
OPTICAL SCANNING DEVICE WITH TEMPERATURE CONTROL MEANS

Takayuki Shirasaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

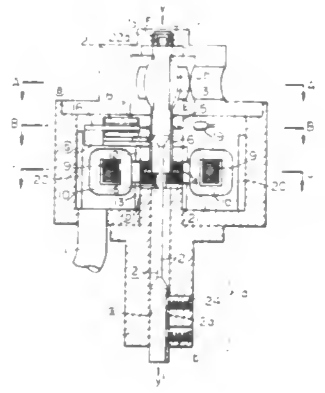
Filed Dec. 18, 1979, Ser. No. 104,845

Claims priority, application Japan, Dec. 23, 1978, 53-163272; Dec. 23, 1978, 53-163273; Dec. 23, 1978, 53-163274; Aug. 28, 1979, 54-109458

Int. Cl.³ G02B *27/17;* **H02K** *33/00;* **H02D** *5/06*

U.S. Cl. 350—6.6 **16 Claims**

1. An optical scanning device, comprising:
- a mirror for light scanning;
- a motor including an armature and a stator;
- a torsion member, said mirror being mounted with said torsion member and said armature being mounted on said torsion member to be rotated by said motor, said torsion member being adapted for generating a restituting force against the driving force of said motor to limit the rotating angle of said armature and thereby, said mirror;
- temperature detecting means disposed opposite said torsion member for detecting the temperature around said torsion member; and



- temperature control means disposed opposite said torsion member for controlling the atmosphere around said torsion member in response to the detection output of said detecting means.

4,370,020
TRANSPORTABLE FIBRE OPTIC APPARATUS FOR USE IN A SECURITY SYSTEM

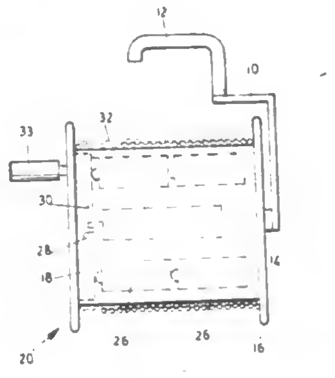
James W. Davey, 40 Grenville Ave., Savoy Estates, Johannesburg, Transvaal, South Africa

Filed Jun. 25, 1980, Ser. No. 162,837

Claims priority, application South Africa, Jul. 10, 1979, 79/3456

Int. Cl.³ G02B *5/14;* **G08B** *13/18*

U.S. Cl. 350—96.10 **5 Claims**



1. A transportable unit for use in a security system, the unit comprising an axle and a handle for supporting the axle, a reel, rotatably mounted on the axle, on which a length of optic fibre is coiled and from which the optic fibre can be drawn as required, a transmitter for transmitting an optical signal along the length of optic fibre, and detecting means connectable to the optic fibre to detect said optical signal.

4,370,021
COUPLING ELEMENT FOR AN OPTICAL TRANSMISSION FIBER

Giok D. Khoe; Robert G. Gossink, and Cornelis M. G. Jochem, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

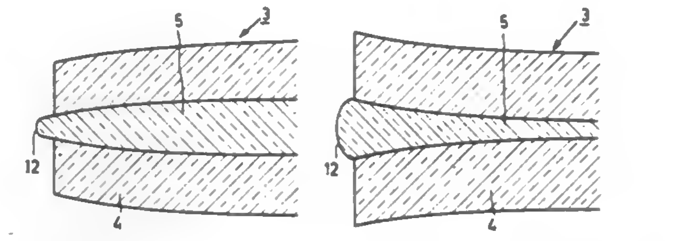
Division of Ser. No. 913,293, Jun. 7, 1978. This application Jun. 13, 1980, Ser. No. 159,274

Claims priority, application Netherlands, Jun. 10, 1977, 7706379

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.18 **3 Claims**

1. A coupling element, for coupling a radiation source to a monomode optical transmission fiber having a core and a cladding, comprising a semi-ellipsoidal lens formed as a unitary mass with the fiber core on an end of the fiber, said fiber core having a viscosity of 10^7 to $10^{8.5}$ poises and said fiber cladding having a viscosity of 10^{10} to 10^{11} poises at a temperature at which the lens is formed.



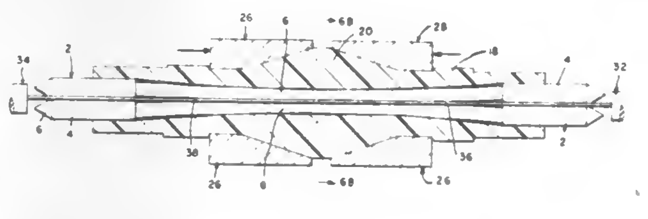
4,370,022
BICONICAL OPTICAL WAVEGUIDE SPLICE

Tore R. Johnson, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 1, 1980, Ser. No. 174,319

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.21 **13 Claims**



1. A fiber optic connector for connecting ends of optical waveguide members, comprising:
- tubular body means having an axial profiled passageway means extending therethrough and an external profile including peripheral step means;
- rod means disposed in said axial profiled passageway means, said rod means including larger diametered ends and smaller diametered intermediate segments, said larger diametered ends being in engagement and located within end sections of said passageway means, said smaller diametered intermediate segments extending along said axial profiled passageway means and normally spaced from each other, said rod means providing interstitial passageway means therealong and along which the optical waveguide members are positioned with their ends adjacent each other;
- crimping collar means disposed on said external profile for movement relative to said tubular body means thereby applying radial compression forces to said tubular body means causing inward radial deflection of said smaller diametered intermediate segments onto the optical waveguide members.

4,370,023
LONGITUDINAL WATER-TIGHT LIGHT WAVEGUIDE CABLE AND THE METHOD OF MANUFACTURE

Gerhard Lange, and Helmut Saller, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

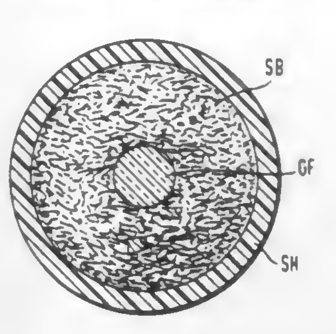
Filed Oct. 30, 1980, Ser. No. 202,348

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2946027

Int. Cl.³ G02B *5/14, 5/16*

U.S. Cl. 350—96.23 **31 Claims**

1. In a light waveguide cable having at least one fiber-shaped light waveguide being arranged in an interior of a protective sheath and the remaining inside space of the sheath being filled with a gel-like substance, the improvement being said gel-like substance being a mixture of an oil, an organic thickener and a thixotropic agent, said thickener comprising polymers selected from a group consisting of halogenated hydrocarbon polymers, halogen-free hydrocarbon polymers and mixtures of halogenated and halogen-free hydrocarbon polymers.



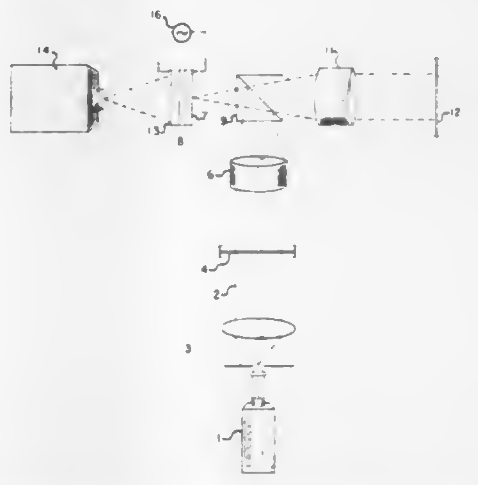
4,370,024
DYNAMIC BINARY FOURIER FILTERED IMAGING SYSTEM

Harry L. Task, Montgomery County, Ohio; John F. Courtright, Windcrest, Tex., and Casimer K. Salys, Centerville, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1980, Ser. No. 147,417

Int. Cl.³ G02B *5/18*

U.S. Cl. 350—162.12 **1 Claim**



1. An apparatus for selectively and dynamically filtering the spatial frequencies in a pattern, comprising:
- a means for generating a collimated beam of coherent light;
- a means for creating a diffraction pattern in said beam;
- a Fourier transform lens system in the path of said patterned beam;
- a dynamic means for spatially and temporally varying the reflective characteristics of a surface at the focal plane of said Fourier transform lens system, said dynamic means having a continuously reflective area at the point corresponding to zero spatial frequency; and
- a means for redirecting the light, reflected off the surface of said dynamic means, onto an image plane.

4,370,025

MULTICOLOR OPTICAL FILTER WITH A UNITED INTERFERENCE FILTER AND DYE FILTER AND PROCESS FOR MAKING THE SAME

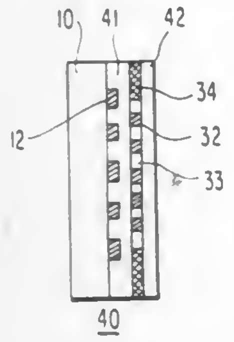
Masamichi Sato; Kenji Matsumoto, both of Asaka, and Kazuhisa Seki, Omiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Fuji Photo Optical Co., Ltd., Saitama, both of, Japan

Filed Dec. 24, 1980, Ser. No. 219,655

Claims priority, application Japan, Dec. 27, 1979, 54-173836

Int. Cl.^{3} G02B *5/22, 5/28;* **G03C** *5/00;* **H01J** *29/02*

U.S. Cl. 350—166 **5 Claims**



1. A multicolor optical filter comprising
an interference filter composed of a transparent substrate having thereon regularly arranged interference layers with desired optical characteristics and
a dye filter composed of a transparent substrate having a binder layer containing therein regularly arranged dye or dyes having different optical characteristics from those of said interference filter,
said interference filter being united with said dye filter in such a manner that the filter surface of the former faces the filter surface of the latter.

4,370,026

ILLUMINATING DEVICE FOR PROVIDING AN ILLUMINATION BEAM WITH ADJUSTABLE DISTRIBUTION OF INTENSITY AND A PATTERN-TRANSFER SYSTEM COMPRISING SUCH A DEVICE

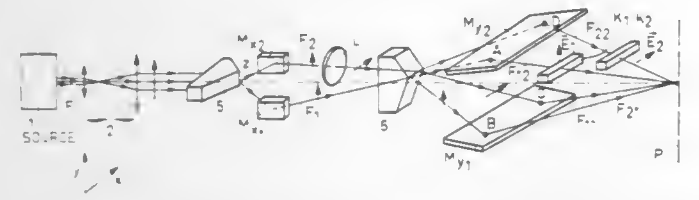
Georges Dubroeucq; Michel Lacombat, and Michele Brevignon, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 8, 1980, Ser. No. 184,817

Claims priority, application France, Sep. 10, 1979, 79 22587

Int. Cl.^{3} G02B *27/10;* **G03B** *27/72*

U.S. Cl. 350—163 **2 Claims**



1. An illuminating device intended to supply a coherent illumination beam having an adjustable spatial distribution of intensity, from a source providing an initial beam having a gaussian distribution of intensity comprising means for separating the initial beam into four parts each forming a beam, along two radial directions perpendicular to each other, means for recombining the four parts resulting in a predetermined plane in partial superimposition of the four beams and means for averaging the interferences beween the four parts so that the mean intensity in the predetermined plane is equal to the sum of the mean intensities of the four parts wherein the separating means comprises a first biprism centered on the path of the initial beam and separating it along a first radial direction into two half-beams symmetrical with respect to the axis of the initial beam, and a second biprism centered on the path of the two half-beams and separating them respectively in a second radial direction perpendicular to the first one, into first and second parts symmetrical with respect to the first half-beam and into third and four parts symmetrical with respect to the second half-beam,
wherein said recombining means comprises first and second mirrors reflecting respectively the two half-beams in two directions symmetrical with respect to the axis of the initial beam and converging towards the second biprism, and third and fourth mirrors reflecting respectively the two former parts and the two latter parts in four directions symmetrical with respect to the axis and converging towards the predetermined plane, and
wherein, with the initial beam polarized linearly, the averaging means comprise at least one birefringent blade situated in the path of one of the half-beams so that these two-half beams have polarization directions perpendicular to each other, and at least two electrooptical phase-shifting situated respectively in the paths of one of the two former parts and of one of the two latter parts and introducing between the two former parts on the one hand and between the two latter parts on the other hand predetermined phase shifts variable in time, whose mean values, for times which are short with respect to the illumination duration, are zero.

4,370,027

ANTI-REFLECTION FILM WITH AN ION-PENETRATION PREVENTION LAYER

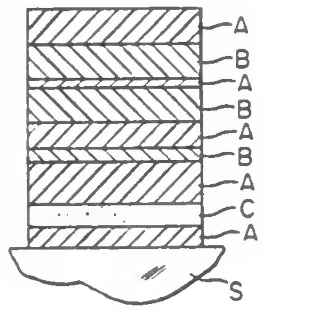
Masatoshi Sato, and Yosuke Takahashi, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 869,240, Jan. 13, 1978, abandoned. This application Jan. 9, 1981, Ser. No. 223,791

Claims priority, application Japan, Jan. 20, 1977, 52-4496

Int. Cl.^{3} G02B *1/10*

U.S. Cl. 350—164 **7 Claims**



1. An anti-reflection film on a glass substrate containing Na^+ or Pb^{++} ions, comprising:
a low refractive index substance layer disposed on said glass substrate;
a high packing density layer formed of a substance of which a packing density is so high as to prevent penetration of said ions, said high packing density layer being disposed on said low refractive index substance layer; and
plural pairs of layers A and B superimposed on said high packing density layer in the order of ABAB from the high packing density layer, where A is a low refractive index substance layer; and B is a high refractive index substance layer.

4,370,028

METHOD OF PRODUCING LIQUID CRYSTAL DISPLAY DEVICES WITH ALIGNMENT LAYER FORMED FROM ORGANIC TIN COMPOUND OF THE TYPE R_nSnX_{4-n}

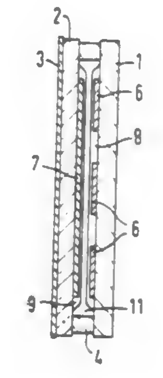
Joerg Bernhardt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 220,075

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1980, 3001125

Int. Cl.^{3} G02F *1/133*

U.S. Cl. 350—341 **13 Claims**



1. In a method of producing a liquid crystal display device comprised of two carrier plates which enclose a liquid crystal layer therebetween and each plate is provided with an electrically conductive coating (electrode) on a respective surface thereof facing one another and provided with an orientation layer thereabove, the improvement comprising wherein:
said orientation layer is generated from an organic tin compound of the type:

R_nSnX_{4-n}

wherein R is an organic radical, X is a reactive residual radical and n is an integer ranging from 1 to 3.

4,370,029

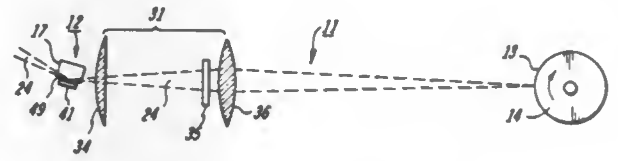
DIELECTRIC INTERFACE FOR PROXIMITY COUPLED ELECTRO-OPTIC DEVICES

Robert A. Sprague, Saratoga; William D. Turner, San Marino, and David H. Hartke, Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 187,919

Int. Cl.^{3} G02F *1/01*

U.S. Cl. 350—355 **10 Claims**



1. In an electro-optic device including
an electro-optic element,
a plurality of electrodes intimately coupled to said electro-optic element, and
means coupled to said electrodes for applying voltages thereto, whereby electric fields are created within said electro-optic element;
the improvement comprising
a substrate, at least one of said electrodes being supported by said substrate,
means engaged with said electro-optic element and with said substrate for maintaining said substrate supported electrodes within a small gap distance of said electro-optic element, thereby proximity coupling said substrate supported electrodes to said electro-optic element, and
a dielectric disposed within said gap, said dielectric substantially filling said gap and having a relative dielectric constant which is substantially greater than 1, whereby said dielectric enhances said proximity coupling.

4,370,030

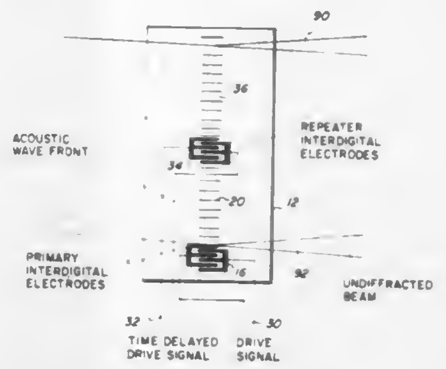
EXTENDED RESOLUTION LIGHT DEFLECTOR USING SURFACE ACOUSTIC WAVES

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 27, 1980, Ser. No. 153,380

Int. Cl.^{3} G02F *1/11*

U.S. Cl. 350—358 **11 Claims**


90
36
ACOUSTIC WAVE FRONT
REPEATER INTERDIGITAL ELECTRODES
34
20
12
PRIMARY INTERDIGITAL ELECTRODES
16
92
UNDIFFRACTED BEAM
32
30
TIME DELAYED DRIVE SIGNAL
DRIVE SIGNAL

1. In an acousto-optic device comprising a piezo-electric substrate (12) having relatively flat sides, a first set of interdigital electrodes (60) on one side of the substrate (12), said electrodes introducing on the surface of said substrate acoustic waves (62) in response to a predetermined electrical deflector signal (80, 82) applied to said interdigital electrodes, an illuminating light beam (10) introduced into said substrate (12) through a side adjacent to the side with said interdigital electrodes (60), said beam directed at said side at an angle such that the light beam suffers total internal reflection near grazing incidence off the active surface where the acoustic waves (62) are generated, in a plane perpendicular to the direction of travel of the acoustic waves, the output beam being reflected from the active surface containing the acoustic waves and leaving said substrate through the remaining portion of said substrate in a zero order undiffracted direction (92) and a first order diffracted direction (90), wherein the improvement is characterized by:
a second set of interdigital electrodes (72) on the same side of said substrate as said first set of interdigital electrodes (60) and in the path of said acoustic waves introduced on the surface of said substrate by said first set (60) of interdigital electrodes, said second set of interdigital electrodes being positioned in said path of said acoustic waves so as to introduce new acoustic waves of the same frequency and in phase with and thereby amplifying the acoustic waves (62) introduced by said first set of interdigital electrodes.

4,370,031

ZOOM OBJECTIVE OF SMALL SIZE

Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,721

Claims priority, application Japan, Jul. 24, 1979, 54-94088

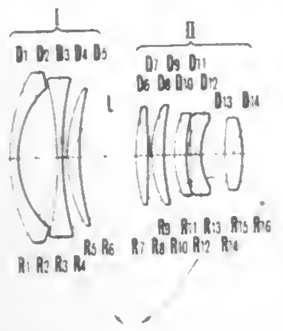
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.^{3} G02B *15/16*

U.S. Cl. 350—426 **7 Claims**

1. A zoom objective of small size including:
a divergent lens group consisting of a negative meniscus lens having a front surface convex toward the front, a negative lens and a positive lens having a front surface of strong curvature convex toward the front, and axially movable for zooming, and
a convergent lens group including three positive lenses and

a negative lens followed by a positive lens, positioned on the image side of said divergent lens group and axially



movable for zooming independently of said divergent lens group, said zoom objective fulfilling the following requirements:

$$1.08 \leqq \frac{|Fl|}{Ft} < 1.255 \tag{1}$$

$$0.08 < \frac{Et}{Ft} < 0.195 \tag{2}$$

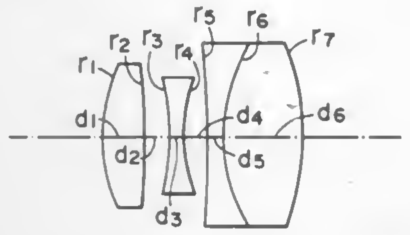
(3) $\nu 3 < 35$
(4) $32 <$ (At least either one of $\nu 1$ and $\nu 2$) < 45.5

$$1.64 < \frac{N4 + N5}{2} < 1.76 \tag{5}$$

Where Fl is the focal length of the divergent lens group; Ft is the longest focal length of the entire system; Et is the interval between the principal points of the divergent and the convergent lens groups when in the telephoto end; $\nu 1$, $\nu 2$ and $\nu 3$ are the Abbe numbers of the three lenses in the divergent group; and N4and N5 are the refractive indices of the first two lenses counting from the front in the convergent lens group respectively.

4,370,032
PROJECTION LENS

Masamichi Tateoka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1980, Ser. No. 199,660
Claims priority, application Japan, Oct. 29, 1979, 54-140043
Int. Cl.³ G02B *9/14*
U.S. Cl. 350—476 **8 Claims**



1. A projection lens comprising three groups of four components, said three groups comprising a first group from the front consisting of a biconvex single lens, a second group consisting of a biconcave single lens and a third group consisting of a positive lens comprising a negative lens and a positive lens cemented together, said projection lens satisfying the following conditions:

f = 1, F = 1:4, Angle of view = 42°, $\beta = -0.0893$			
$r_1 = 0.392$	$d_1 = 0.0919$	$n_1 = 1.69401$	$\nu_1 = 54.8$
$r_2 -6.9124$	$d_2 = 0.0592$		
$r_3 = -0.7147$	$d_3 = 0.0254$	$n_2 = 1.61686$	$\nu_2 = 37.0$
$r_4 = 0.3442$	$d_4 = 0.063$		

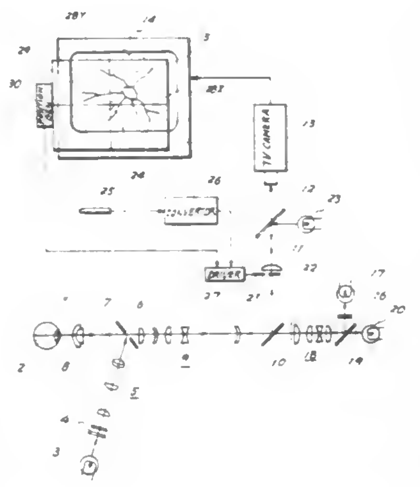
-continued

f = 1, F = 1:4, Angle of view = 42°, $\beta = -0.0893$			
$r_5 = -6.4695$	$d_5 = 0.0404$	$n_3 = 1.70443$	$\nu_3 = 30.1$
$r_6 = 0.3656$	$d_6 = 0.1675$	$n_4 = 1.81077$	$\nu_4 = 40.9$
$r_7 = -0.6089$			

where f is the focal length, F is the F-number, β is the magnification of the projection lens, r_1 through r_7 represent the curvature radii of the successive lens surfaces, d_1 through d_6 represent the thicknesses of the respective lenses and the intervals between adjacent lenses, n_1 through n_4 represent the refractive indices of the respective lenses for E-line, and ν_1 through ν_4 represent the abbe's numbers of the respective lenses.

4,370,033
EYEBALL EXAMINING DEVICE

Kazutaka Kani, Motoryamanakamachi; Kuniomi Abe; Masahiko Konagaya, both of Kobe, and Noboru Ono, Nishinomiya, all of Japan, assignors to Konan Camera Research Institute, Hyogo, Japan
Filed Oct. 15, 1979, Ser. No. 84,816
Int. Cl.³ A61B *3/14, 3/10;* G03B *29/00*
U.S. Cl. 351—206 **6 Claims**



1. An eyeball examining device, comprising a television pick-up camera, a main optical system including an image plane for focusing an eye ground image on said plane and on said television camera, an infrared ray source, means for directing infrared rays from said source to the eye ground and a television monitor for displaying the image picked up by said television camera, said device further comprising an optical infrared filter pattern located in the eye ground image plane of said main optical system, means for moving said pattern in said image plane and a light source for illuminating said optical pattern and imaging it on said eye ground for display on said television monitor.

4,370,034
OPHTHALMOLOGICAL INSTRUMENT OF CONTINUOUSLY VARIABLE MAGNIFICATION

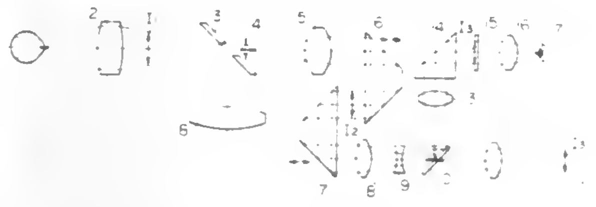
Masao Nohda, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Jul. 15, 1980, Ser. No. 169,104
Claims priority, application Japan, Jul. 20, 1979, 54-92331
Int. Cl.³ A61B *3/14;* G03B *29/00*
U.S. Cl. 351—206 **6 Claims**

1. An ophthalmological apparatus capable of changing the magnification of an image to be observed and maintaining an eye point unchanged when the magnification is changed, comprising:

(a) an image forming means for forming a first image to be observed;

(b) a diopter correcting means for keeping the position of said first image constant irrespective of the diopter of the eye to be examined;

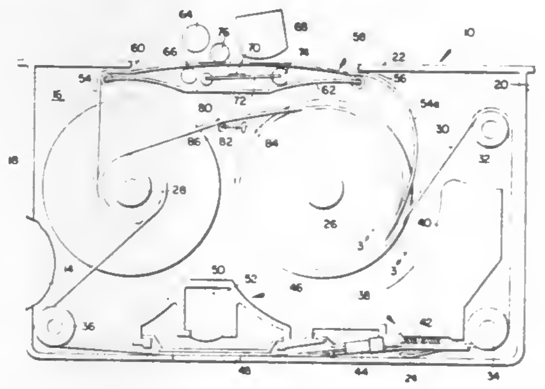
(c) a magnification changing optical system for forming a second image from said first image and changing the size of said second image, said magnification changing means having movable lens groups which are movable relative to each other in the direction of optical axis; and



(d) an optical path length correcting means for correcting an optical path length between the anterior and the posterior focal points of said magnification changing optical system, said optical path length correcting means including reflecting member movable along the optical axis of said magnification changing optical system in association with the movement of said movable lens groups to reflect the light beam from said first image to said magnification changing optical system.

4,370,035
DUAL WEB SOUND MOVIE CASSETTE WITH EMULSION STRIPPING WEB

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
PCT No. PCT/US79/00761, § 371 Date May 21, 1980, § 102(e) Date May 21, 1980, PCT Pub. No. WO80/00752, PCT Pub. Date Apr. 17, 1980
Continuation-in-part of Ser. No. 947,769, Oct. 2, 1978, Pat. No. 4,170,407. This PCT application Sep. 24, 1979, Ser. No. 278,908
The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.
Int. Cl.³ G03B *23/02*
U.S. Cl. 352—78 R **4 Claims**

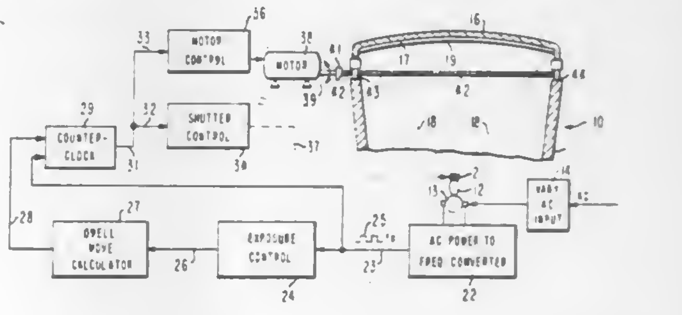


1. In a photographic film cassette (**10**) having a film strip (**30**) coupled at opposite ends to cassette-contained supply and takeup spools (**26, 28**) upon which the film strip (**30**) may be alternately wound and unwound for movement between the spools in a first path through a photographic station, the film strip (**30**) including an emulsion surface, the cassette (**10**) including a processing station (**38**) operative after film exposure to deposit a thin layer (**30*p***) of processing fluid on the emulsion surface of the film strip, the film strip having a carrier base (**86**) to support a plurality of layers including a light sensitive emulsion acted upon by the processing fluid and positive image forming layers located between the carrier base and the light sensitive emulsion, the cassette (**10**) further including an audio tape (**54**) coupled at one end to at least one of said spools (**26, 28**) for interwinding thereon with the film strip (**30**) and extending along a second path through an audio station, the improvement comprising:

a stripping and separating web (**80**) of thin flexible material having one end coupled to said one spool for interwinding thereon with the film strip (**30**) and the audio tape (**54**) in an interleaved manner interposed between the audio tape (**54**) and said emulsion surface of said one side of the film strip (**30**), the stripping and separating web (**80**) being movable from the one spool in a third path separate from the first and second paths so that during rewinding and processing of the film strip (**30**) in convolutions on the supply spool (**26**), said stripping web (**80**) overlies the inner layers of the film strip (**30**) now wetted with processing fluid and upon subsequent unwinding of both the film strip (**30**) and said stripping web (**80**) and corresponding travel in their separate paths, diverging separation of said stripping web (**80**) from the film strip (**30**) causes at least a portion of the light sensitive emulsion to be retained by adhesion on said stripping web (**80**).

4,370,036
SYSTEM AND METHOD FOR INTERMITTENTLY MOVING A PICTURE TUBE PANEL ON A LIGHTHOUSE

William R. Kelly, and Ernesto J. Alvero, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.
Filed May 28, 1981, Ser. No. 267,991
Int. Cl.³ G03B *41/00*
U.S. Cl. 354—1 **11 Claims**

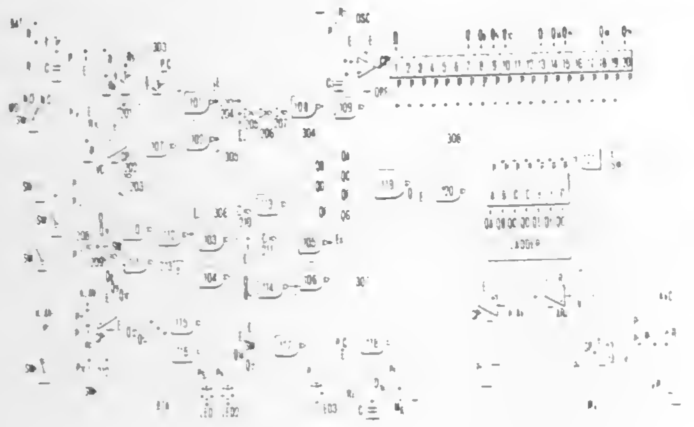


1. In a lighthouse used for exposing an actinic energy sensitive coating present on the inside surface of a picture tube panel with energy from an actinic energy source, an improved system for effecting intermittent relative motion between said panel and said energy source comprising:

- support means for supporting said picture tube panel for relative movement between said panel and said energy source;
- motor means for actuating said support means to effect relative motion between said panel and said energy source;
- means for providing a control signal having a frequency related to the intensity of said actinic source;
- control means for intermittently moving and stopping said relative motion for predetermined numbers of motion and dwell intervals during the exposure of said coating to said actinic energy, said control means including means for providing a signal representative of the total distance of said relative motion; and a dwell-move calculator for receiving said control signal and providing said motion and dwell intervals.

4,370,037
DIGITAL CONTROL CAMERA

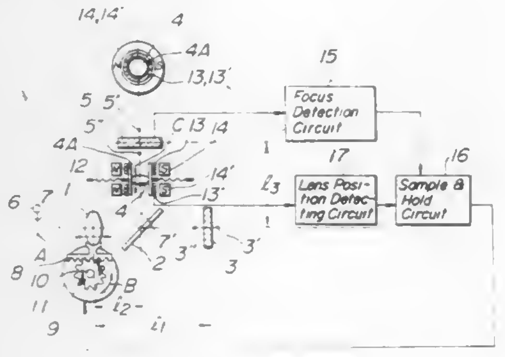
Masanori Uchidoi, Yokohama; Tomonori Iwashita, Fuchu; Tetsuya Taguchi, Kawasaki; Yukio Iura, Yokosuka; Toshikazu Ichiyanagi, Tokyo, and Hiroshi Aizawa, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 733,794, Oct. 19, 1976, Pat. No. 4,265,521. This application Mar. 16, 1979, Ser. No. 21,188
Claims priority, application Japan, Oct. 21, 1975, 50-126559
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ G03B *9/08*
U.S. Cl. 354—23 D **15 Claims**



10. A camera, comprising:
(a) a light measuring circuit for producing an electrical signal corresponding to the brightness of an object;
(b) a memory circuit for memorizing an electrical signal corresponding to the electrical signal of the light measuring circuit;
(c) a shutter mechanism;
(d) a photographic control circuit having an exposure control circuit for controlling an exposure factor on the basis of the electrical signal memorized in the memory circuit and for producing a closing signal for closing the shutter mechanism at an end of a film exposure, said photographic control circuit including means for producing a reset signal to reset the electrical signal memorized in the memory circuit when the shutter mechanism is operated.

4,370,038
AUTOMATIC FOCUSSING SYSTEM

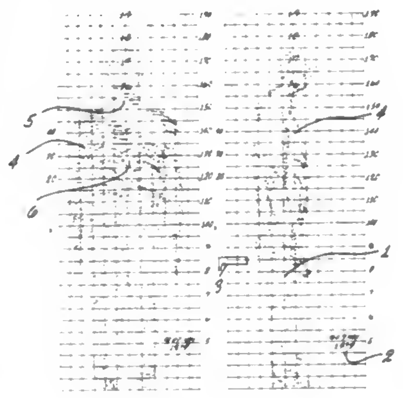
Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Dec. 2, 1981, Ser. No. 326,592
Claims priority, application Japan, Dec. 2, 1980, 55-169828
Int. Cl.³ G03B *3/10;* **H04N** *5/26;* **G01J** *1/44*
U.S. Cl. 354—25 **11 Claims**



1. A system for automatically driving an objective lens provided in a still camera, a television camera and the like into a desired focus position so as to form a focussed image of an object onto a predetermined focal plane comprising:
an auxiliary lens for receiving at least a part of a light flux transmitted through said objective lens and arranged movably along an optical axis;
a photo detector arranged to receive an image formed by said auxiliary lens to produce an electric signal;
means for vibrating repeatedly said auxiliary lens along the optical axis about a reference position which is conjugated with said predetermined focal plane;
means for detecting a position of said auxiliary lens to produce a lens position signal representing a deviation of the auxiliary lens with respect to the reference position;
means for receiving said electric signal from the photo detector to derive timings at which the best focussed condition is obtained during the vibration of the auxiliary lens to produce a sampling signal at said timings;
means for receiving said lens position signal and sampling signal to sample and hold the lens position signal by the sampling signal to produce a driving signal; and
means for receiving the driving signal to move the objective lens into said desired focal position.

4,370,039
METHOD AND APPARATUS FOR PHOTOGRAPHICALLY MEASURING AN OBJECT

Ulrich M. Landwehr, Buersche Strasse 4, 4520 Melle 1, Fed. Rep. of Germany
Filed Nov. 19, 1980, Ser. No. 208,237
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948010; Jun. 2, 1980, 3020901
Int. Cl.³ G03B *15/00, 29/00*
U.S. Cl. 354—77 **13 Claims**

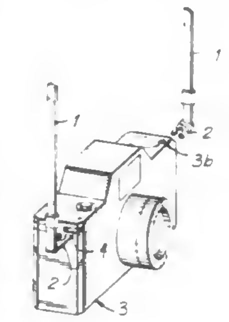


7. An apparatus of the characteristics described, comprising:
a photographic camera directed toward a particular field of view;
a stage means in the field of view;
a vertical partition centrally disposed on the stage means and having a front edge;
a plate hinged to said edge and carrying a grid pattern on both sides of the plate provided for covering one half or the other half of the stage means; and
projection means for projecting a line pattern into the other half or the one half of the stage means not covered by the plate.

4,370,040
REMOVABLE LINK FOR A CARRYING STRAP

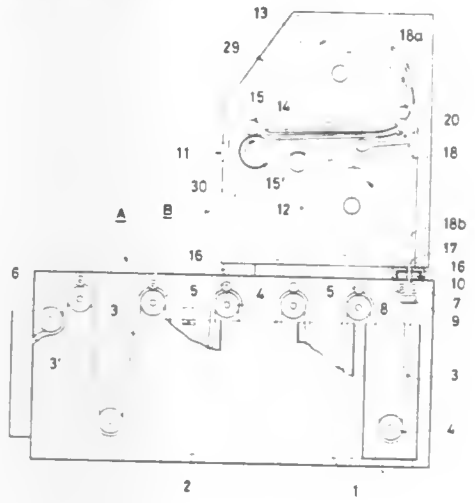
Karl-Heinz Lange, Bunde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG, Bunde, Fed. Rep. of Germany
Filed Sep. 11, 1981, Ser. No. 301,338
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034123
Int. Cl.³ G03B *17/02*
U.S. Cl. 354—288 **12 Claims**

1. An assembly for mounting a member to the wall of a camera body, comprising
a substantially planar link having a forward linking end and a rear mounting end for receiving the member, the link formed with a passage therethrough which extends into an opening slit in the linking end, the width of the opening slit being less than the largest dimension of the passage, and
a locking pin displacable in a direction transverse to the link, the locking pin being a stepped pin having a first dimension smaller than the width of the opening slit of the link and a second larger dimension greater than the width of the opening slit and smaller than the largest dimension of the passage,
the pin mounted within the camera wall and the outer surface of the camera wall formed with a cooperating slot for receiving the link, the pin adapted to be positioned through the passage in the link.



4,370,041
COMBINATION PHOTOGRAPHING AND DEVELOPING APPARATUS

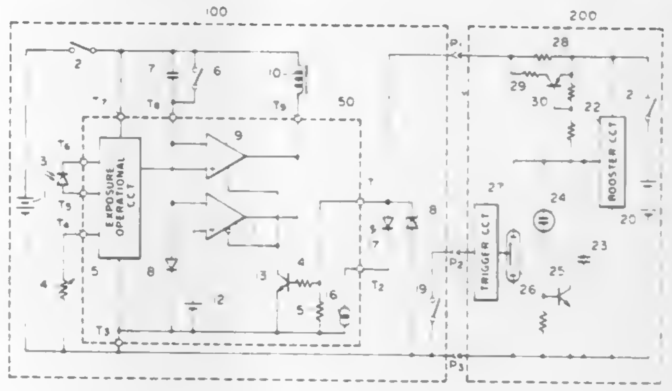
Tsutomu Katsuyama, Yokohama, Japan, assignor to Mochizuki Shoten, Limited, Yokohama, Japan
Filed Oct. 19, 1981, Ser. No. 312,714
Int. Cl.³ G03B *17/50*
U.S. Cl. 354—92 **9 Claims**



1. In a combination photographing and developing apparatus operated by mounting in the photographing section thereof a roll of film wound on a payoff reel, advancing the film from the payoff reel along a guide route by a film feed means, effecting photography by exposing the film to given data, cutting the film with a cutter behind the end of the exposed portion thereof, forwarding the exposed portion of the film, with the cut end in the lead, through the outlet of the photographing section to the inlet of the developing section, and leading the film along a developing route passing through developing, fixing, and washing liquid tanks and a drying means in the developing section thereby effecting the development and drying of the film, the improvement wherein the photographing section thereof comprises in combination a storage reel disposed before said guide route and adapted to be selectively advanced in the forward or rearward direction, means for rotating said storage reel in the forward direction synchronously with the photographing operation, said forward rotation of the storage reel enabling the exposed portion of the film to be rewound on the storage reel, a vertical guide route formed between said storage reel and the outlet for the exposed portion of the film, said guide route having the leading end thereof join said vertical guide route halfway along the length thereof, a cutter disposed between the position for film exposure and the leading end of said guide route and adapted to cut the film behind the exposed portion thereof, and means for advancing the exposed portion of the film, with the cut tail end thereof in the lead, through said vertical guide route toward the outlet.

4,370,042
READY-TO-FLASH CONDITION INDICATING DEVICE FOR A CAMERA

Yuji Ohkubo, Ohmiya, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed May 4, 1981, Ser. No. 260,382
Claims priority, application Japan, Jun. 3, 1980, 55-76891[U]
Int. Cl.³ G03B *15/05, 7/26*
U.S. Cl. 354—127 **4 Claims**



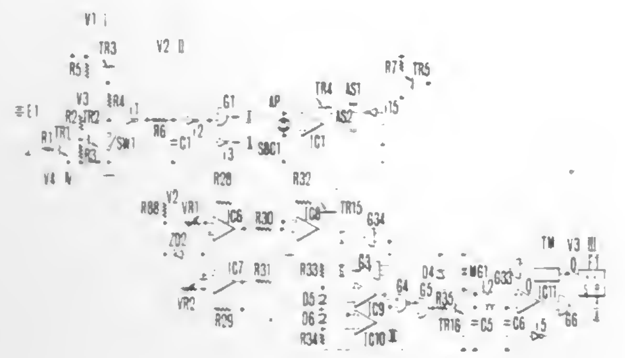
1. A device for use with an electronic flash device in a camera, comprising; a light-emitting element driven by a signal current from said electronic flash device for indicating the ready-to flash condition of said electronic flash device; a current control circuit series-connected to said light-emitting element to control a current flowing to said light-emitting element, an integrated circuit operative in response to said signal current from said electronic flash device; and a limiting circuit for detecting a voltage related to the combined voltage of said light-emitting element and said current control circuit and limiting said combined voltage to below a predetermined value when said detected voltage exceeds a predetermined value.

4,370,043
PHOTOGRAPHING OPERATION CONTROL DEVICE FOR CAMERA

Isao Harigaya, Yokohama, and Hideo Tamamura, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 4,270, Jan. 19, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,335
Claims priority, application Japan, Jan. 20, 1978, 53-5459; Jan. 20, 1978, 53-5460
Int. Cl.³ G03B *1/18, 7/00;* **B03B** *13/20;* **G03B** *17/40*
U.S. Cl. 354—173 **16 Claims**

1. A camera comprising:
(a) automatic focusing means for automatically adjusting the focus of a lens system of the camera;
(b) detecting means for detecting the focus adjusting operation by means of the automatic focusing means, and producing a signal when the focus adjusting operation is properly performed; and

(c) signal forming means for producing a signal for permitting a shutter release operation when the signal of the



detecting means is produced for more than a certain determined time.

4,370,044

ELECTRIC WIND-UP DEVICE OF A CAMERA

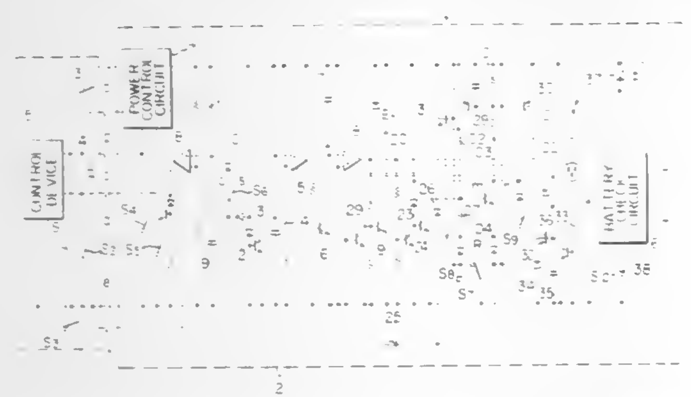
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 117,805, Feb. 1, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,821

Claims priority, application Japan, Feb. 7, 1979, 54-13004

Int. Cl.³ G03B *1/18*

U.S. Cl. 354—173 **5 Claims**



1. An electric wind-up device for a camera for winding up a film by a motor after exposure has been completed by shutter means closing an aperture, said shutter means having a shutter opening member operable for opening said aperture and a shutter closing member operable for closing said aperature for enabling a predetermined exposure time control, said device comprising:

(a) switch means responsive to said shutter closing member to operate during the time from after the operation of said shutter closing member to before the exposure is completed; and

(b) means for emitting a film advance signal for driving said motor, said emitting means including a delay circuit operable by said switch means to emit said signal when a predetermined time substantially corresponding to the time from said operation of said switch means to the completion of said exposure elapses.

4,370,045

FILM PROCESSOR

William A. Holmes, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 1, 1982, Ser. No. 353,429

Int. Cl.³ G03D *5/06*

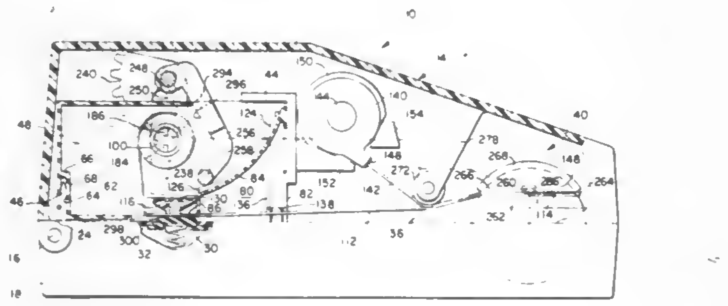
U.S. Cl. 354—304 **20 Claims**

1. Apparatus for receiving a film cassette containing a roll of exposed, self-developing type transparency film preparatory to processing the film, the roll of film being wound upon a rotatable spool with one end of the film being secured to the spool and its opposite econd end being adapted to extend to the exterior of the film cassette via a film withdrawal slot, said apparatus comprising:

a housing defining a lighttight enclosure in which photographically exposed film is adapted to be processed, said housing including a loading door providing access to the interior of said housing;

means for locating a film processing kit within said housing, the kit including a housing containing a strip of flexible sheet material wound about a rotatable drum with a first end attached to the drum and its opposite second end extending to the exterior of the kit, a rupturable container enclosing a supply of processing liquid, and a processing liquid dispenser which is adapted to apply a coating of processing liquid to one side of the sheet material as it is being withdrawn from the kit;

means for supporting the film cassette containing the exposed roll of film;



means for releasably receiving the second ends of the film and sheet material, said receiving means being adapted to be driven in a direction so as to withdraw the film and sheet material from the film cassette and the kit's housing, respectively, and orientate them in superposition;

rupturing means mounted for movement into the kit's housing and into engagement with the container of processing liquid when the kit is at said positioning means, and said loading door is closed, so as to rupture the container and thereby enable the processing liquid to flow to the processing liquid dispenser and thence onto the sheet material prior to it being superposed with the film;

means movable from a first position to a second position for opening the housing of the kit; and

manually operable means drivingly coupled to said rupturing means and said movable means in a manner which insures that said movable means opens the kit's housing prior to said rupturing means being moved into the kit's housing.

4,370,046

METHOD AND APPARATUS FOR PROCESSING EXPOSED PHOTOGRAPHIC MATERIAL WITH BATH CONSTITUENT SUPPLY OUTLET OPENINGS AT DIFFERENT LEVELS

Leo Van Bouwel, Mortsel, Belgium; Erwin Geyken, Neubiberg, Fed. Rep. of Germany; Franz Ertl, Munich, Fed. Rep. of Germany, and Adolf Fleck, Unterhaching, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,570

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028675

Int. Cl.³ G03D *3/06*

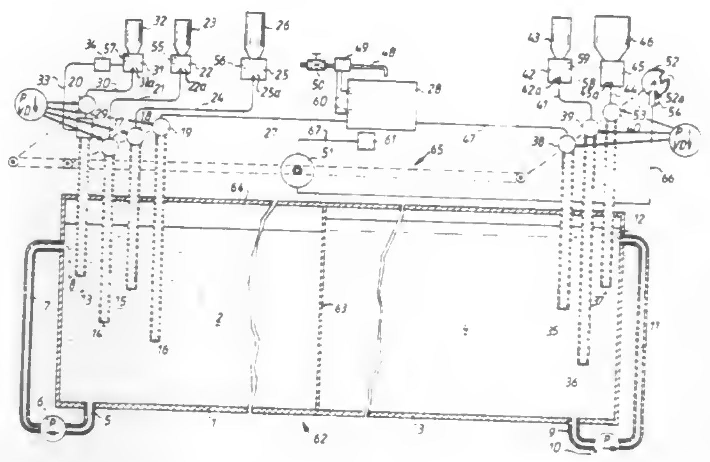
U.S. Cl. 354—324 **24 Claims**

1. Apparatus for processing material, particularly exposed photosensitive material, comprising:

(a) container means accommodating a processing bath;

(b) a plurality of sources of different constituents of said bath;

(c) supply means for supplying said constituents to said bath, said supply means including supply conduits which project into said bath and respectively communicate with said sources, said supply conduits having respective outlet openings at different levels below the surface of said bath; and



(d) a bath circulation conduit communicating with said container means, said circulation conduit having an inlet end which is located in the region of said outlet openings.

4,370,047

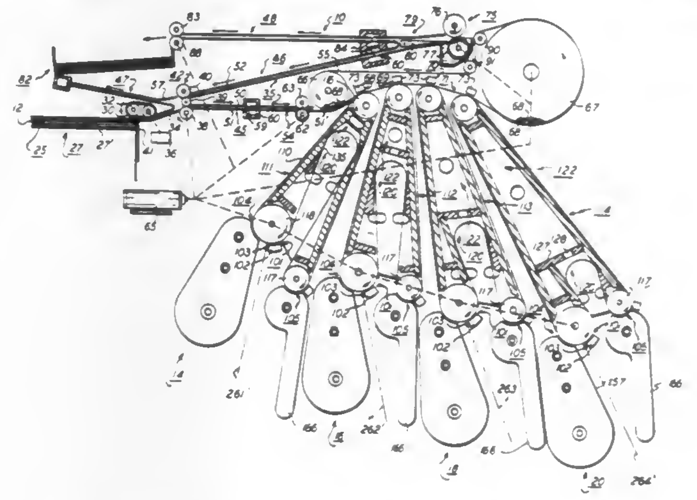
HIGH SPEED COLOR APPARATUS

David E. Damouth; George R. Mott, both of Rochester, and Klaus K. Stange, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1978, Ser. No. 892,810

Int. Cl.³ G03G *15/01*

U.S. Cl. 355—3 BE **3 Claims**



1. A high speed apparatus for reproducing copies of full color originals on copy substrate material from multiple color component images of said originals by means of controlled recording beams, each of said recording beams being associated with an individual one of said color component images, the combination comprising:

(a) means forming a path for said copy substrate material;

(b) a generally triangular photoconductive belt module associated with each of said recording beams, each of said belt modules including an endless photoconductive belt with means for supporting said belt for operative movement in an endless path,

said belt modules being positioned in closely spaced side-by-side relationship with one apex of each of said belt modules in operative disposition with said copy substrate path at minimally spaced intervals therealong,

(c) means for developing the color component images formed on said belts, said developing means including a developing device associated with each of said belts at a developing station; and

(d) means forming a transfer point along each of said belts at said one apex whereat color component images developed on said belts are successively transferred to said copy substrate material in registered superimposition to form full color copies of said originals,

(e) means for directing said recording beams onto said belts at an imaging station,

said imaging and developing stations being disposed opposite second and third apices of said belt module respectively to thereby facilitate disposition of said belt modules in close side-by-side relationship,

said belt supporting means forming a belt run for said photoconductive belt, the length of said belt in each of said belt modules being substantially the same and greater than said belt run,

said belt supporting means including a vacuum chamber interior of said belt module, said vacuum chamber opening toward said belt whereby on evacuation of said chamber, a portion of said belt is drawn into said chamber to tension said belt.

4,370,048

ELECTROSTATIC COPYING APPARATUS

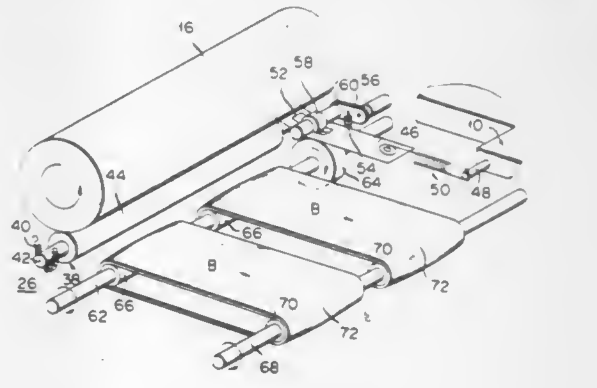
Kunihiro Shibuya, Yokohama; Koachi Uchida, Sagamihara, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

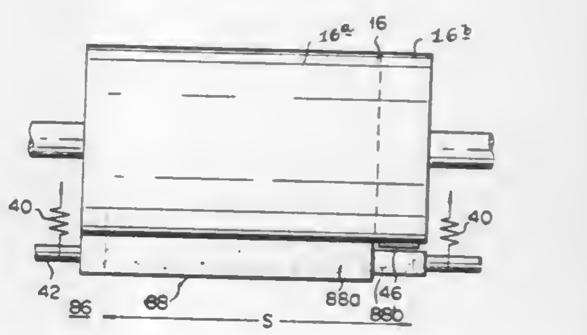
Filed Feb. 11, 1981, Ser. No. 233,433

Claims priority, application Japan, Feb. 14, 1980, 55-17088

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **3 Claims**





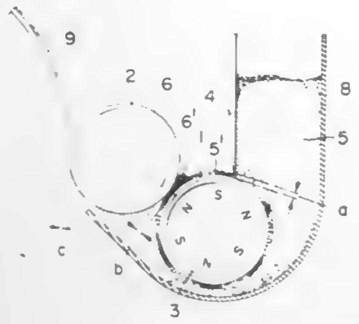
1. An apparatus for transferring a developed image to a sheet of paper comprising:

a photosensitive drum having first and second portions, said drum including a photosensitive layer which is laid on the outer periphery of at least the first drum portion;

a transfer roller including a surface portion formed of an elastic material and disposed in contact with the first and not the second drum portions, said transfer roller cooperating with the photosensitive layer to clamp the sheet of paper to transfer the developed image onto the sheet of paper; and

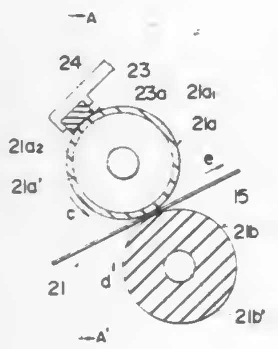
a tape provided apart from said transfer roller and in slidable contact with the outer periphery of the second drum portion for peeling the sheet of paper from the photosensitive drum after the image developed has been transferred to the sheet.

4,370,049
IMAGE DEVELOPING DEVICE
Tsukasa Kuge; Koichi Tanigawa, and Hiroyuki Adachi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 5, 1981, Ser. No. 240,837
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **15 Claims**



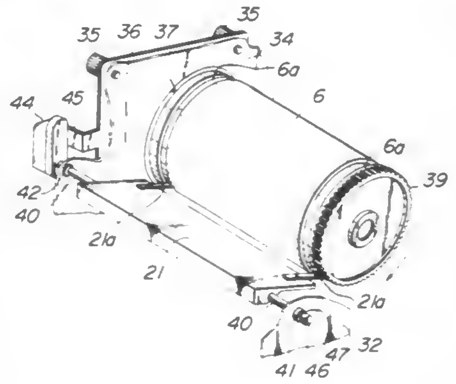
1. A developing device for developing a latent image on a latent image bearing member, comprising:
- an image-developing bearing member for supporting one-component magnetic developer thereon;
- means for displacing said image-developing bearing member for transporting a layer of said developer to a developing position;
- a developer-feeding bearing member positioned in the proximity of said image-developing bearing member;
- magnetic-field generating means positioned opposite to said image-developing bearing member across said developer-feeding bearing member;
- a magnetic pole positioned on said magnetic-field generating means in facing relationship to said image-developing bearing member for forming a magnetic brush on said developer-feeding bearing member in such a manner that said magnetic brush comes into contact with said image-developing bearing member to form a thin developer layer thereon;
- a magnet positioned inside said image-developing bearing member in facing relationship to said magnetic pole for forming magnetic brush;
- wherein the magnetic transporting force of said image-developing bearing member is selected smaller than that of the developer-feeding bearing member in the mutually facing area between said bearing members.

4,370,050
IMAGE TRANSFER TYPE COPYING APPARATUS WITH PRE-TRANSFER CLEANING OF TRANSFER PAPER
Toshio Matsui, and Masaru Komura, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 6, 1981, Ser. No. 251,609
Claims priority, application Japan, Apr. 29, 1980, 55-59498[U]
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **11 Claims**



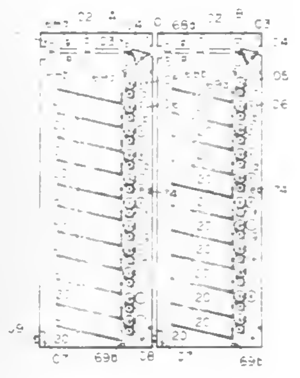
1. An image transfer type copying apparatus comprising a pair of confronting transport rollers located in the path of advance of a cut sheet of transfer paper from a paper feeding station to an image transfer station for advancing the cut sheet of transfer paper directly to the transfer station, and a member in pressing contact with the surface of at least one of the transport rollers for triboelectrically charging the surface of the roller whereby said roller cooperates in said advancing of said sheet and electrostatically removes dust particles from a surface thereof.

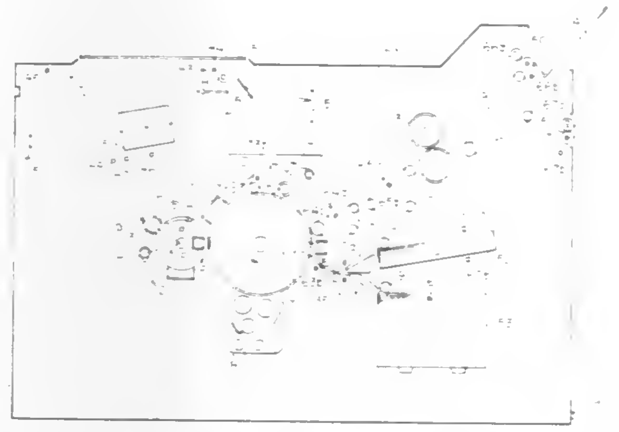
4,370,051
ACTUATING MEANS FOR SEPARATOR PAWL
Takashi Matsuyama, Hachioji, and Hideyuki Kawazu, Tokyo, both of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan
Filed Aug. 27, 1981, Ser. No. 297,012
Claims priority, application Japan, Aug. 28, 1980, 55/121110[U]
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **5 Claims**



1. An actuating apparatus for a separator pawl of an electrophotographic device having a photosensitive drum to be mounted and dismounted through an opening of a sidewall of said device, a lid detachably attached on said sidewall for closing said opening, and a separator pawl adapted to separate a recording sheet from tight contact with said photosensitive drum, said actuating apparatus comprising:
- a holder holding said separator pawl which holding means is movable between a position for holding said separator pawl at an operating position thereof in the proximity of said photosensitive drum and another position for holding said separator pawl at a retarded position thereof away from said photosensitive drum;
- a bias means urging said separator pawl toward said retarded position thereof;
- an actuating member secured to said holder; and
- a stopping member integrally secured to said lid so as to be engageable with said actuating member in such a manner that, when said lid is attached on said sidewall in position, said stopping member comes into operative engagement with said actuating member and keeps said separator pawl at said operating position thereof, whereas, when said lid is detached from said sidewall, said stopping member disengages from said actuating member and allows said bias means to move said separator pawl toward said retarded position thereof.

4,370,052
COPYING APPARATUS WITH DETACHABLE SORTER
Katsumi Murakami, Kawasaki; Katsushi Furuichi, Yokohama, and Toshio Honma, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1980, Ser. No. 138,983
Claims priority, application Japan, Apr. 19, 1980, 55-48407; Apr. 19, 1980, 55-48408
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **28 Claims**

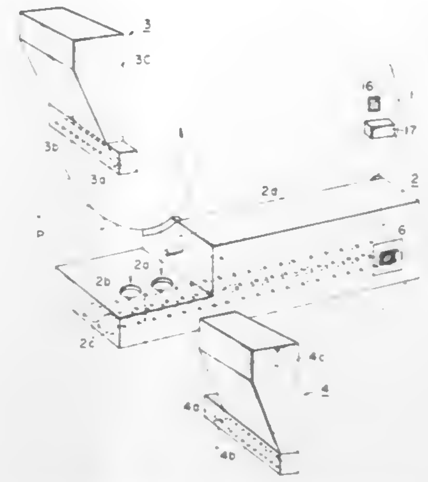




1. A copying apparatus, comprising:
- a detachable sorter having plural storage bins;
- means for detecting the number of usable bins of said sorter;
- means for generating a detection signal representative of said number of usable bins in said sorter; and
- means for controlling the operation of said apparatus in response to the detection signal from said detecting means.

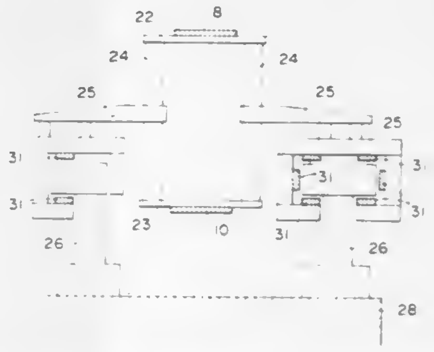
4,370,053
DEVELOPER SUPPLY DEVICE
Kazuhiro Hirayama, Yokohama, and Michio Ito, Hachiohji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 13, 1981, Ser. No. 224,802
Claims priority, application Japan, Jan. 19, 1980, 55-4992
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 D **10 Claims**

1. A developer supply device for supplying a developer consisting of toner and carrier to a developing device for developing a latent image on a latent image bearing member, said supply device comprising:
- toner supply means for supplying toner to said developing device;
- means for detecting any variation in volume of the developer within the developing device and for generating a detect signal indicative thereof;
- means for controlling the toner supply in accordance with the detection signal of said volume detecting means;
- carrier supply means for supplying carrier to said developing device;
- means for detecting the image density after development and for generating a detection signal indicative thereof; and



- means for controlling the carrier supply means in accordance with the detection signal of said density detecting means.

4,370,054
PROJECTION EXPOSURE APPARATUS
Junji Isohata, Kawasaki, and Hironori Yamamoto, Chigasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 4, 1981, Ser. No. 260,387
Claims priority, application Japan, Apr. 2, 1981, 56-50364; Apr. 7, 1981, 56-52211
Int. Cl.³ G03B *27/42*
U.S. Cl. 355—53 **6 Claims**



1. A projection exposure apparatus, comprising:
- a mask support member for supporting a mask;
- a wafer support member for supporting a wafer;
- a projection optical system for projecting the image of said mask onto a part of said wafer;
- guide means for displacing at least one of said mask and said wafer relative to said projection optical system in a plane perpendicular to the optical axis thereof, said guide means comprising first and second generally linear guide members and first and second guided members respectively engaging with said first and said second guide members; and
- compensating means provided between said first and said second guide members for compensating for non-linearity of one of said guide members.

4,370,055
DUPLICATING SYSTEM COMPRISING ELECTROPHOTOGRAPHIC COPYING APPARATUS AND OPTION DEVICE

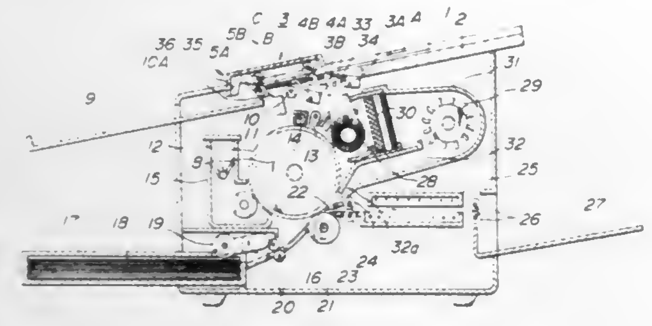
Masaji Nishikawa; Kiyoshi Miyashita, and Muneo Kasuga, all of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,741

Claims priority, application Japan, May 9, 1980, 55-61299

Int. Cl.^{3} G03B *27/70*

U.S. Cl. 355—14 SH **14 Claims**



1. A duplicating system comprising an electrophotographic copying apparatus which includes first optical scanning means for making a slit exposure, first means for feeding a first document to be copied at a first speed with respect to said first optical scanning means, photosensitive means for forming an electrostatic latent image corresponding to the image of document, means for forming a duplicated copy with the aid of said latent image, and sequence control means for controlling said various means in such a manner that said image of first document is projected onto the photosensitive means for an imaginary control start position, and an option device which includes means for detachably mounting the option device on the copying apparatus, second optical scanning means for making a slit exposure, second means for feeding a second document to be copied at a second speed with respect to said second optical scanning means and an optional optical means for projecting the image of second document onto said photosensitive means of the copying apparatus, wherein said second feeding means and second optical scanning means have a geometrical configuration similar to that of said first feeding means and first optical scanning means so that the image of the second document is projected on the photosensitive means from the same position as said imaginary control start position and the duplicating operation for the second document with the option device is commonly controlled by said sequence control means provided in the copying apparatus.

4,370,056
DEVELOPMENT SYSTEM

Dan A. Hays, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 5, 1981, Ser. No. 231,644

Int. Cl.^{3} G03G *15/09*

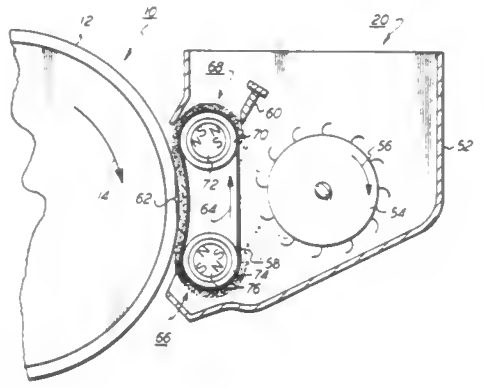
U.S. Cl. 355—3 DD **12 Claims**

1. An apparatus for developing a latent image recorded on a rigid member, including:

a flexible belt;

a pair of opposed, spaced rollers generating a magnetic field with said belt movably supported thereon, said belt having at least a portion thereof positioned closely adjacent to the rigid member defining a development zone therebetween, for transporting developer material attracted thereto by said pair of rollers into contact with the rigid member in the development zone so as to develop the latent image recorded thereon; and

means for maintaining said belt at a pre-selected tension of sufficient magnitude to compress the developer material being transported into contact with the rigid member and to space said belt therefrom.



4,370,057
METHOD OF VERIFICATION OF A SHEET ELEMENT, SUCH AS A BANKNOTE

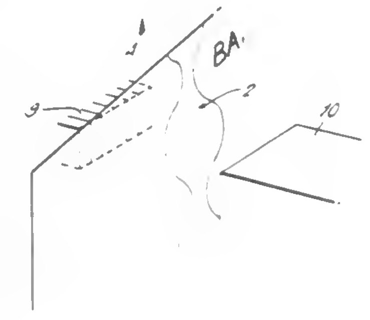
Peter D. Lee, Hertford, England, assignor to The Governor and Company of the Bank of England, London, England

Division of Ser. No. 881,502, Feb. 27, 1978, Pat. No. 4,290,630. This application May 22, 1980, Ser. No. 152,498

Claims priority, application United Kingdom, Mar. 1, 1977, 8628/77

Int. Cl.^{3} G01N *21/00;* **B42D** *15/00*

U.S. Cl. 356—71 **5 Claims**



1. A method of verification of a sheet element, such as a banknote, comprising providing the sheet element with an incorporated authenticating device comprising a film having at least one edge which is provided with a non-rectilinear portion or portions which are shaped to provide coded information relating to the sheet element, and sensing the shape and proportions of said at least one edge of said shaped non-rectilinear portion or portions of said film to generate a signal dependent upon the shape and proportions of the edge of the film so as to derive said coded information.

4,370,058
DIGITAL FOCIMETER AND METHOD

Otto Trötscher; Horst Stacklies, both of Aalen, and Meinrad Mächler, Ellwangen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

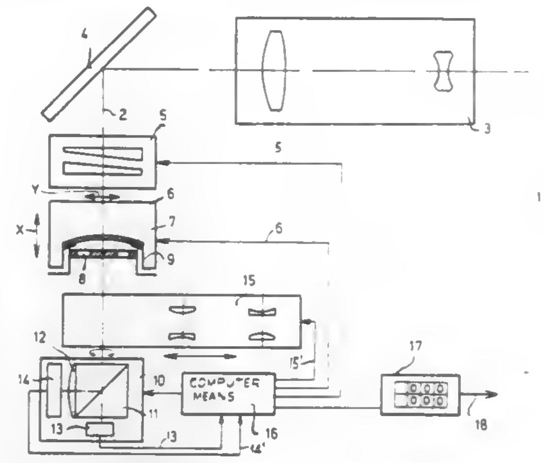
Filed Jul. 29, 1980, Ser. No. 173,377

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934263

Int. Cl.^{3} G01B *9/00*

U.S. Cl. 356—125 **13 Claims**

1. A method for automatic digital measurement of vertex dioptric powers in the principal planes of toric spectacle lenses, wherein the spectacle lens (**7**) to be measured is transilluminated by a parallel-ray bundle of monochromatic light, wherein the light bundle which passes through the spectacle lens is limited by a stop (**8**) in the immediate vicinity of the spectacle lens vertex and is directed onto at least one self-scanning diode line (**13, 14**), wherein signals produced by the diode line (**13, 14**) are used to obtain a digital measurement value, and wherein the light which passes through the spectacle lens and the stop is divided by a beam splitter (**11**) into two individual light beams such that each of the resulting two individual light beams falls onto a different one of two diode lines (**13, 14**), which diode lines together form a coordinate system.



4,370,059
METHOD AND MACHINE FOR POSITIONING AN OBJECT PHOTOELECTRICALLY USING A REGISTER MARK

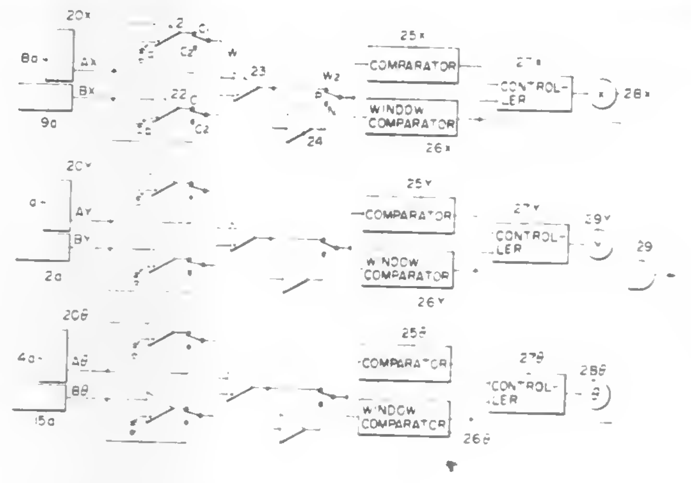
Tatsunosuke Masuda, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 21, 1979, Ser. No. 68,410

Claims priority, application Japan, Aug. 30, 1978, 53-106533

Int. Cl.^{3} G01B *11/00*

U.S. Cl. 356—400 **9 Claims**



1. A method for positioning an object which has a register mark on it, one of the object and the register mark being transculent while the other being opaque, wherein:

light is shone onto a pair of asymmetrically disposed photoelectric detectors, and then the object is moved in between the light and the detectors, and advanced in a direction, and, when the ratio between the amounts of the register mark which cover each of the detectors, which is measured by measuring the outputs of the detectors, reaches a certain predetermined value, this advancement is stopped.

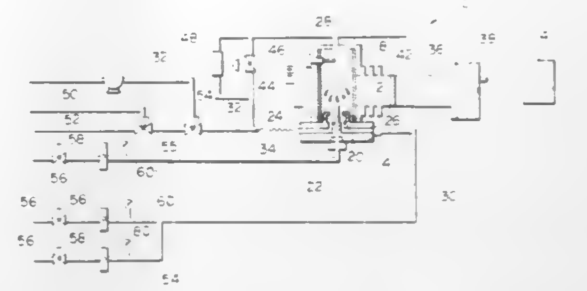
4,370,060
FLAME PHOTOMETRIC DETECTOR ANALYZER

Isao Murase; Katsutoshi Hirose, both of Yokosuka, and Shoji Yoneya, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 10, 1980, Ser. No. 215,198

Int. Cl.^{3} G01N *21/72*

U.S. Cl. 356—417 **21 Claims**



1. A flame photometric detector analyzer, comprising:

a first conduit means through which a fuel gas flows;

a fuel gas nozzle connected to said first conduit means to be supplied with the fuel gas to form a flame at the tip thereof;

a second conduit means through which a combustion supporting gas is supplied to the vicinity of the tip of said fuel gas nozzle to assist the combustion of the fuel gas discharged from said nozzle;

a third conduit means through which a sample gas having a measuring object component is supplied to the flame;

means for controlling the concentration of oxygen contained in said combustion supporting gas to be supplied to the flame within a range of 11.5 to 16%; and

a photodetector means responsive to photoemission from the measuring object component of the sample gas introduced into the flame.

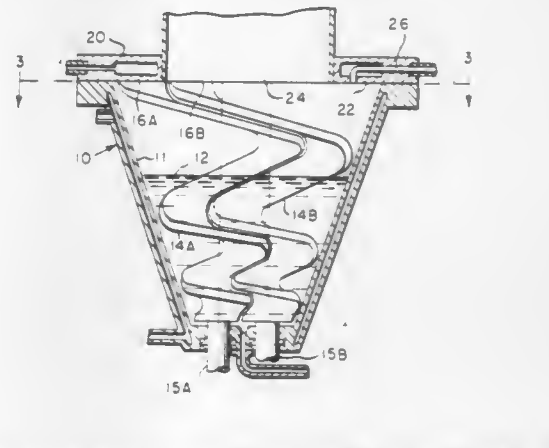
4,370,061
APPARATUS FOR FINISHING SYNTHETIC POLYMERS

Richard D. Livingston, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 13, 1981, Ser. No. 283,112

Int. Cl.^{3} B29B *1/10*

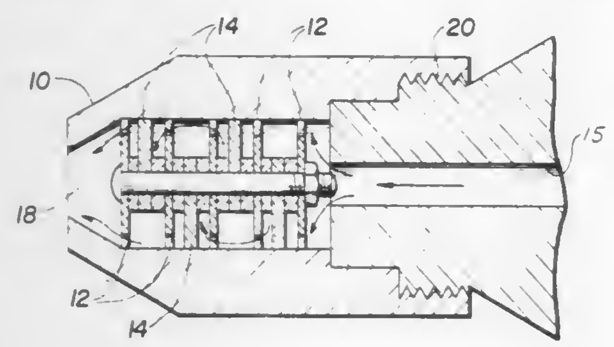
U.S. Cl. 366—85 **3 Claims**



1. In an apparatus for finishing synthetic polymers including an enclosed vessel having an interior surface throughout its length in the shape of two intersecting conical frustums with axes parallel and substantially vertical, the base of the frustums being displaced upward with respect to the apexes, two driven interengaging helical screw elements rotatably supported on shafts passing through seals in the base of the vessel, the screw elements when co-rotated conforming to the interior surface of the vessel such that the screw elements effect a complete wiping of the interior surface, and wherein the screw elements interengage uninterruptedly along their lengths such that each element effects a complete wiping of the adjacent element and

wherein the vessel has a top plate with a vent opening therethrough, said top plate having a flat inner surface and the screw elements having substantially flat upper surfaces which when co-rotated conform to said top inner surface such that the upper surface of the screw elements effect a complete cleaning of said top inner surface, the improvement comprising: said vent opening being of greater radial extent than the paths swept by the upper surfaces of the co-rotating screw elements to permit continuous overlap of the edge of the opening by the upper surface of the co-rotating screw elements.

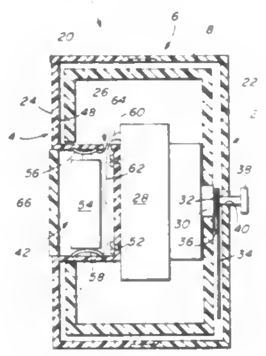
4,370,062
DISPENSING GUN FOR TWO-PART ADHESIVES
Warren E. Moody, 95 Fiesta Way, Fort Lauderdale, Fla. 33301
Filed Feb. 19, 1980, Ser. No. 122,081
Int. Cl.³ B01F *5/20*
U.S. Cl. 366—130 **2 Claims**



1. A gun-type dispensing gun for mixing two separate components of material which comprises:
- a gun body including a handle end and a nozzle end;
- two separate feed channels in said body connected at said handle end for feeding different materials to be dispensed;
- a separate control valve for controlling material flow through each of said feed channels;
- two separate discharge channels extending from said control valves to said nozzle end of said body;
- a single manually operable handle means for simultneously operating said valves to permit material flow from said separate feed channels to said separate discharge channels;
- a mixing chamber removably secured to said nozzle end of said body;
- a plurality of separate mixing baffle elements assembled within said mixing chamber, said mixing baffle elements comprise alternating perforated and clipped-edge solid washers separated by suitable spacers with all of said mixing baffle elements secured together by suitable means and the clipped-edge washers being oriented to provide a zig-zag path for the material passing through the assemblage; whereby said plurality of baffle elements are contained within said mixing chamber and removable simultaneously with said mixing chamber.

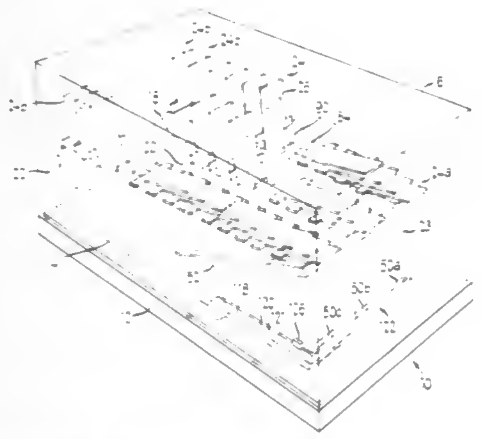
4,370,063
CLOCK WITH DUAL TIME-INDICATORS
Joseph Lee, 43 S. Russell St., Boston, Mass. 02114
Filed Jan. 19, 1981, Ser. No. 226,422
Int. Cl.³ G04B *25/00, 19/00*
U.S. Cl. 368—71 **10 Claims**

1. A clock with dual time-indicators, said clock comprising:
- (a) a casing;
- (b) a drum rotatably mounted within said casing;
- (c) a motor mounted to said casing, said motor having first and second shafts, said first shaft rotating at a rate of one revolution per a multiple of a twelve hour period and said second shaft rotating at a rate of one revolution per hour, said drum mounted coaxially to and rotating with said first shaft;
- (d) first time-indicating means at one end of said casing; and



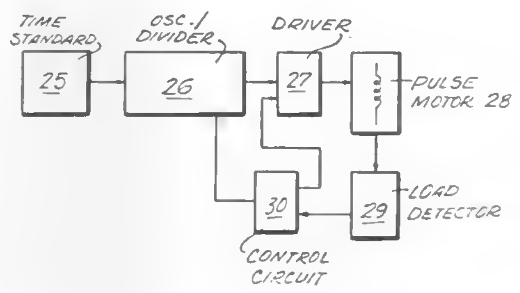
- (e) second time-indicating means at an opposite end of said casing.

4,370,064
COUNTING DEVICE WITH BALL ACTUATED ALIGNED ROTATABLE INDICATING ELEMENTS
Alan A. Hicks, Chicago; Howard J. Morrison, Deerfield; John R. Wildman, North Riverside, and Terry E. Webb, West Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Oct. 6, 1980, Ser. No. 193,934
Int. Cl.³ G04F *1/04*
U.S. Cl. 368—93 **30 Claims**



1. A counting device comprising:
- a ball;
- a housing including an inclined track for said ball;
- a plurality of indicating elements aligned with said track mounted for rotation against the next adjacent element in said line;
- actuating means operatively connected to said indicating elements for rotating said elements when said actuating means is contacted by said ball as it rolls along said track; and
- means for returning said ball to the upper end of said track.

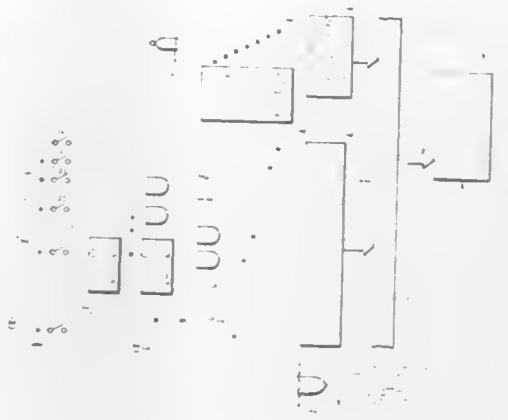
4,370,065
STEP MOTOR CONTROL MECHANISM FOR ELECTRONIC TIMEPIECE
Yoshikazu Kawamura; Minoru Hosokawa; Sakiho Okazaki, and Hiroshi Ishii, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Continuation of Ser. No. 839,867, Oct. 6, 1977, Pat. No. 4,212,156. This application Mar. 24, 1980, Ser. No. 133,046
Claims priority, application Japan, Oct. 6, 1976, 51-120146
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Int. Cl.³ G04F *5/00;* **G04C** *3/00*
U.S. Cl. 368—157 **6 Claims**



1. An electronic timepiece having a step motor and comprising a quartz crystal vibrator producing a high frequency time standard signal, divider circuit means for producing low frequency time signals in response to said high frequency time standard signal; a gear train driven by said step motor and adapted to place the step motor in one of a first normally loaded condition and second heavily loaded condition; said step motor including drive coil means; load detection means for detecting the current induced in the drive coil means and in response thereto for producing a load detection signal when said step motor is in a second loaded condition; driving and control means intermediate said divider circuit means and said step motor for receiving the low frequency signal from the divider circuit means, said driving and control means being adapted to apply a first signal having a first pulse width during a predetermined unit of time defining the period of the first drive signal to said drive coil means of said step motor in response to said low frequency signal, said driving and control means in response to said load detection signal being applied thereto, being adapted to apply to said drive coil means a second drive signal having a second pulse width of longer duration than said first pulse width of said first drive signal and of the same polarity as said first drive signal having said first pulse width, the first pulse of said second drive signal being applied during said predetermined unit of time.

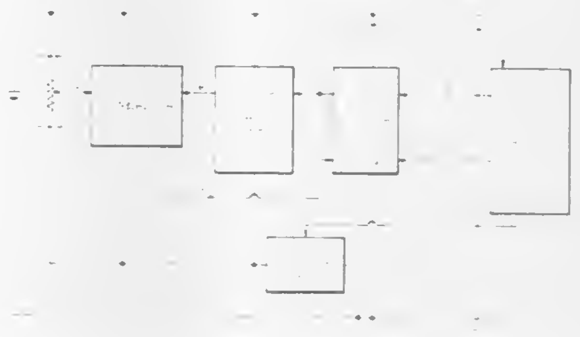
4,370,066
CORRECTION SIGNAL INPUT SYSTEM FOR ELECTRONIC TIMEPIECE
Sizuo Yamaguchi, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan
Filed Oct. 29, 1980, Ser. No. 201,848
Claims priority, application Japan, Nov. 9, 1979, 54-145088
Int. Cl.³ G04C *9/00*
U.S. Cl. 368—188 **2 Claims**

1. In an electronic timepiece having a crown and switch means coupled thereto and responsive to rotation of said crown for producing correction data comprising a train of correction pulses, a source of a unit time signal, a central processing unit coupled to receive said unit time signal with said central processing unit being normally in a state of non-activation and being periodically activated to perform time data processing in response to said unit time signal, and display means for displaying time data produced by said central processing unit, a correction signal input system for supplying said correction data from said crown-coupled switch means to said central processing unit, comprising:
- counter circuit means coupled to receive said correction pulses, to count and temporarily store said correction data;
- zero detection circuit means coupled to said counter circuit means for detecting a condition wherein the contents of said counter circuit means are other than zero, and for producing an output indicative of the occurrence of said condition; and
- transfer gate circuit means coupled between output terminals of said counter circuit means and said central processing unit;



said central processing unit being responsive to said output signal from said zero detection circuit means for being set into a state of activation and for generating a transfer enable signal when said state of activation has been attained, said transfer gate circuit means being responsive to said transfer enable signal for transferring the contents of said counter circuit means to said central processing unit to be processed thereby, said central processing unit further generating a counter reset signal after said transfer of said counter contents has been performed, said counter circuit means being responsive to said counter reset signal for being reset to a count of zero.

4,370,067
ELECTRONIC TIMEPIECE WITH GAIN/LOSS ADJUSTMENT
Ryoji Iwakura; Tatsuo Nitta, and Kazutoshi Takahashi, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 913,917, Jun. 7, 1978, abandoned. This application May 6, 1980, Ser. No. 147,006
Claims priority, application Japan, Apr. 11, 1978, 53/42383
Int. Cl.³ G04B *17/20;* **G04C** *17/00;* **G04B** *23/02*
U.S. Cl. 368—202 **10 Claims**



1. An electronic timepiece comprising:
- a timepiece circuit including means for generating clock pulses and means for controlling the operational state of the timepiece; and
- a control circuit connected to the timepiece circuit for controlling said operational state and including a counter responsive to said clock pulses to provide a digital output

signal, a digital/analog converter converting said digital output signal into an analog output signal, a potentiometer adapted to provide an analog input signal, a comparator for comparing said analog output signal and said analog input signal and producing an output signal when said analog output signal and said analog input signal coincide with one another, said control circuit being responsive to said output signal from said comparator to stop the operation thereof whereafter said digital output signal is applied to said operational controlling means as a control signal by which the operational state of said timepiece circuit is controlled and said control circuit further includes switching means for controlling the operation of each of said potentiometer, said digital/analog converter and said comparator;

wherein said control signal comprises a plurality of digital output signals, and said timepiece circuit generates a plurality of clock signals;

a pulse width modulation circuit including coincidence detection circuit for detecting a coincidence between said plurality of digital output signals and said plurality of clock signals to generate a coincidence signal; and

means for generating a pulse width modulated signal in response to said coincidence signal.

4,370,068

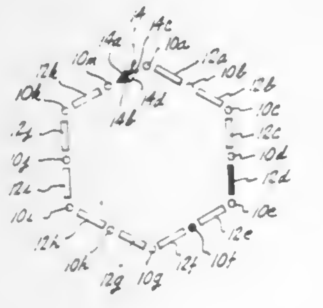
HOUR AND MINUTE DISPLAY FOR A CHRONOMETER

Jeong S. Han, 189-42 Bukahyun-Dong, Seodaimun-ku, Seoul, Rep. of Korea

Filed Aug. 15, 1980, Ser. No. 178,616

Int. Cl.^{3} G04C ***17/02***

U.S. Cl. 368—240 **12 Claims**



1. An hour and minute display for the face of a chronometer, said chronometer face including a perimeter portion and a central portion, said hour and minute display comprising:

a plurality of first display means selectively actuatable to indicate a desired hour, said first display means being arranged in spaced relation to one another along the perimeter of a first closed geometric figure, said perimeter of said first closed geometric figure lying within the perimeter portion of said chronometer face, said first display means surrounding said central portion of said chronometer face;

a plurality of second display means selectively actuatable to indicate five-minute increments past the hour, the number of second display means being one less than the number of first display means, said second display means being arranged in spaced relation to one another about the perimeter of a second closed geometric figure in cooperative relation to said first display means, said perimeter of said second closed geometric figure lying within said perimeter portion of said chronometer face and said second display means surrounding said central portion of said chronometer face; and

third display means selectively actuatable to indicate time increments of one, two, three, or four minutes, said second and third display means cooperably actuatable to indicate time increments from one to 59 minutes, said third display means being arranged along the perimeter of said second closed geometric figure, said third display means occupying substantially the same amount of space as one of said second display means, said first, second and third display means lying within the perimeter portion of said chronometer face so as to leave the central portion of said chronometer face free of any hour or minute displays.

4,370,069

ELECTRONIC ALARM TIMEPIECE

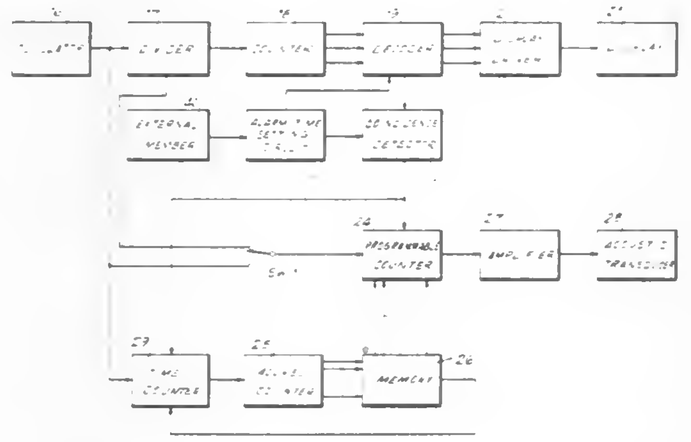
Hiroaki Nomura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 927,308, Jul. 24, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,116

Claims priority, application Japan, Jul. 22, 1977, 52-88093; Jul. 22, 1977, 52-88094

Int. Cl.^{3} G04B ***21/00;*** **G10H** ***1/02***

U.S. Cl. 368—273 **13 Claims**



1. In an electronic timepiece having oscillator means for generating a standard high frequency signal for timekeeping, a divider circuit receiving and dividing down said standard high frequency signal into lower frequency timekeeping signals, counter means for accumulating said lower frequency timekeeping signals in categories representative of time, said categories including at least hours and minutes, display means for visual presentation of timekeeping data, and means for driving said display, said counter means inputting time data signals to said means for driving, the improvement therein comprising:

a note producing circuit, said note producing circuit including a memory circuit for storing note and time duration data, at least one programmable counter means for automatically variably dividing pulses outputted by said oscillator means to produce in sequence difference notes of determined frequency in response to said data in said memory circuit;

circuit means for controlling the duration of each note, said circuit means for controlling duration including a time counter dividing down said standard signals from said oscillator means, the division ratio of said time counter being automatically variable in response to said time duration data stored in said memory;

an address counter receiving the output of said time counter and outputting a signal to said memory, said time counter output signal advancing the memory address, data for the next succesive note being input from said memory circuit to said programmable counter means;

an electro-acoustic transducer receiving the output of said note producing circuit and audibly outputting said sequence of notes to produce a special sound effect;

means to actuate said note producing circuit;

switch means for selectively connecting said first programmable counter means to said oscillator means directly or to a stage in said divider circuit, either of two frequencies being selectively inputted to said programmable counter means by operation of said switch means, said notes being produced in response to said data stored in said memory in two octave ranges.

4,370,070

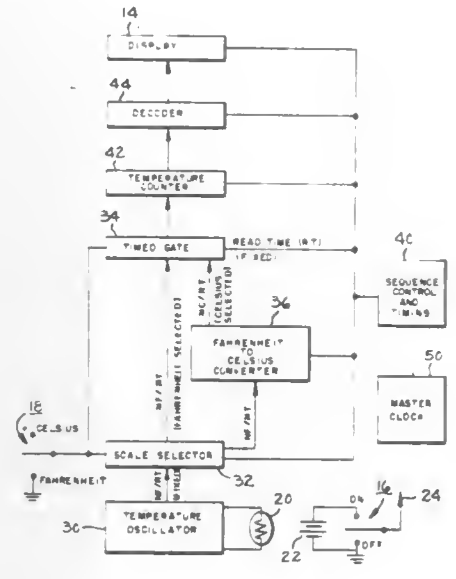
DIGITAL THERMOMETER HAVING FAHRENHEIT AND CELSIUS READOUT MODES

Marcel H. Leroux, Trumbull, Conn., assignor to General Electric Company, New York, N.Y.

Filed Feb. 13, 1981, Ser. No. 234,372

Int. Cl.^{3} G01K ***7/22***

U.S. Cl. 374—170 **5 Claims**



1. An electronic digital thermometer comprising:

temperature responsive means for producing pulses at a frequency related in a known manner to the sensed temperature,

primary counting means, control means coupled to temperature responsive means and said primary counting means for permitting the transmission of pulses produced by said temperature responsive means to said primary counting means for a fixed period of time only, said control means comprising means for permitting the transmission to said primary counting means of a selected one only of at least two predetermined portions of the pulses produced by said temperature responsive means during said fixed period of time, said selected portions of pulses being proportional to the magnitudes of the sensed temperature as expressed in the Fahrenheit and Celsius measurement scales,

the fixed period of time established by said control means and the operating frequency of said temperature responsive means relative to sensed temperature being selected such that the total number of pulses produced during said fixed period of time is a multiple N of the temperature as expressed in the Fahrenheit scale, said control means permitting the transmission of all of said pulses when the Fahrenheit scale is the selected scale and said control means further comprising conversion means operative when the selected scale is the Celsius scale to prevent the transmission to said primary counting means of the first 32 N pulses produced by said temperature responsive means during said fixed period of time and thereafter for the remainder of said fixed period of time to permit the transmission to said primary counting means of only five-ninths of the pulses produced by said temperature responsive means, whereby the total number of pulses transmitted to said primary counting means when the selected scale is the Celsius scale is the same multiple N of the temperature as expressed in the Celsius scale,

and decoding and display means coupled to said primary counting means for converting the number of pulses counted by said primary counting means during said fixed period of time into a digital display of the sensed temperature in the selected scale.

4,370,071

PRINT PACKAGE

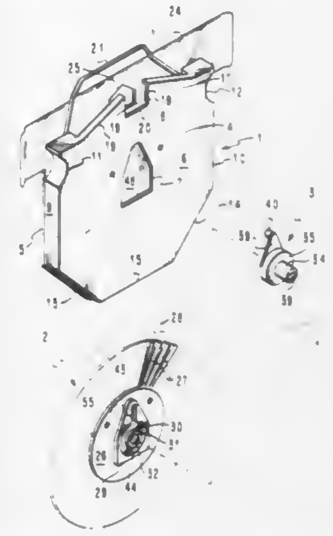
Adolph B. Habich, and Ronald E. Hunt, both of Austin, Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 968,320, Dec. 11, 1978, abandoned. This application Dec. 12, 1980, Ser. No. 215,603

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.^{3} B41J ***1/30***

U.S. Cl. 400—144.2 **39 Claims**



32. A daisy wheel printer print package comprising in combination:

(a) a daisy wheel print element rotationally positionable for printing use and non-use and including means for facilitating orientation of said element; and

(b) a cartridge for housing said print element, said cartridge including means for facilitating orientation of said element, both said orientation means of said element and said cartridge being engageable with one another and structured to permit latching of said print element in only one rotational position upon engagement thereof during printing non-use.

4,370,072

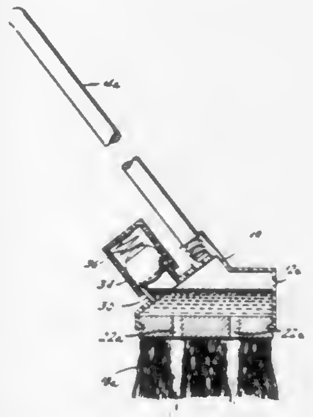
UTILITY BRUSH

Merritt L. Moffitt, Jr., 9 Weirwood Rd., Radnor, Pa. 19087

Continuation of Ser. No. 62,320, Jul. 30, 1979, abandoned. This application Apr. 10, 1981, Ser. No. 252,761

Int. Cl.^{3} A46B ***11/04;*** **B65B** ***1/06***

U.S. Cl. 401—276 **10 Claims**



1. A utility brush comprising:

a brush head;

means for cleaning extending from one side of said brush head;

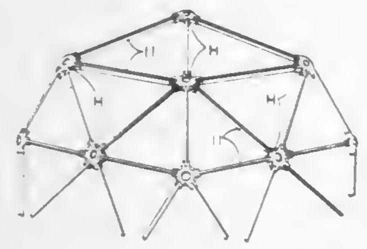
port means for communicating through said brush head from said cleaning means side to the other side thereof;

reservoir means for containing a liquid, said reservoir means

being connected to said port means at said brush head other side and having an opening in the top thereof; and
check valve means, associated with said reservoir means at said top opening, being biased to the closed position for maintaining a reduced pressure in said reservoir means when said reservoir means is subjected to emptying through said port means connection, said check valve means closing force being less than the pressure upon it created by the liquid head on said reservoir means when submerged for filling under atmospheric pressure and for venting said reservoir means when said reservoir means is subjected to filling from below through said brush head port means connection.

4,370,073
CONNECTOR HUB FOR GEODESIC DOME STRUCTURES

Dale A. Ohme, 3337 - 31st Ave. S., Minneapolis, Minn. 55406
Filed Sep. 23, 1980, Ser. No. 190,021
Int. Cl.³ F16D *1/00, 3/00;* **F16L** *41/00*
U.S. Cl. 403—172 **1 Claim**

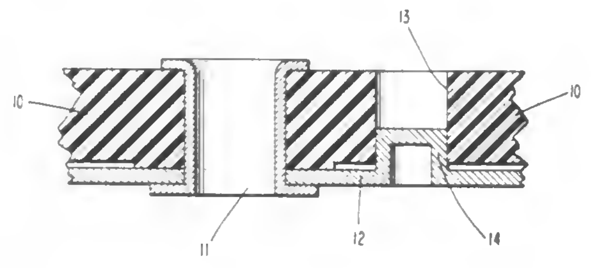


1. A connector hub for geodesic dome frame members comprising,
- a central hub element with a plurality of pairs of spaced apart flange elements, each pair defining a stringer receiving slot for receiving the end portion of a stringer frame member,
- means for connecting the stringer frame members received in said slots, to the respective pair of flange elements,
- a plurality of stiffening web elements disposed between adjacent slots and connected with adjacent flange elements to form an extremely strong and rigid connector hub unit,
- said flange elements being constructed and arranged to permit slight flexing movement under clamping pressure,
- said stiffening webs terminating at intermediate portions of the length of said flange elements so that the outer end portions of said flange elements are free to flex slightly under clamping pressure, said connecting means including,
- at least one clamping bolt extending through said pair of flange elements and through a stringer received in the slot between each pair of flanges, and
- said clamping bolt being positioned in said outer end portions of said flanges to produce said clamping action against said stringer.

4,370,074
FAN ASSEMBLY FOR VEHICLES

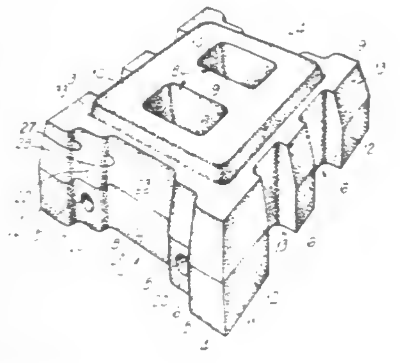
Hiroto Masai, Toyota City, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan
Filed Oct. 24, 1980, Ser. No. 200,547
Claims priority, application Japan, Oct. 26, 1979, 54-149213[U]
Int. Cl.³ B25G *3/36;* **E04G** *7/00*
U.S. Cl. 403—388 **5 Claims**

1. In a fan assembly of the type including a circular boss portion constructed of plastic and integrally formed with inwardly extending stress-distributor means, a connecting means for operatively connecting said boss portion to rotatable drive means, said connecting means including a plate spring fixedly attached to said stress-distributor means by bushing means; the improvement which comprises socket means including at least one socket formed in one of said stress-distributor means and plate spring, and protrusion means including at least one protrusion on the other of said stress-distrubutor means and plate spring and fixedly received in said socket means for the purpose of absorbing vibration.



4,370,075
REVETMENT GRIDS AND MATS

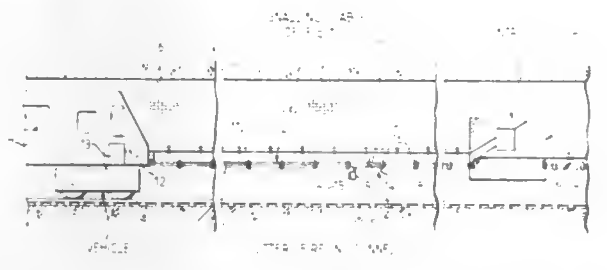
John M. Scales, Norcross, Ga., assignor to Nicolon Corporation, Atlanta, Ga.
Filed Oct. 28, 1980, Ser. No. 201,569
Int. Cl.³ F02B *3/12*
U.S. Cl. 405—20 **14 Claims**



1. A block for use as revetment, comprising a rectangular precast grid, said grid having:
- (a) two opposed longer sides, each of said longer sides having:
  - (i) a lower vertical surface;
  - (ii) an upper sloping surface which slopes inward from the longer side lower vertical surface; and
  - (iii) at least one vertical channel;
- (b) two opposed shorter sides, each of said shorter sides having:
  - (i) a lower vertical surface;
  - (ii) an upper sloping surface which slopes inward from the shorter side lower vertical surface; and
  - (iii) a vertical channel of depth approximately equivalent to the difference in length between the longer and shorter sides and width sufficient to receive projecting portions of the shorter sides of two like grids in staggered abutting relationship with said grid, said vertical channel having:
    - (x) two tiers;
    - (y) lower vertical first and second tier surfaces; and
    - (z) upper sloping first and second tier surfaces;
- (c) a horizontal lower top surface extending around the periphery of the grid;
- (d) a horizontal upper top surface raised slightly above the lower top surface; and
- (e) a plurality of through tunnels extending horizontally parallel to the longer sides.

4,370,076
TRANSPORTATION SYSTEMS AND ELECTRIC CABLES FOR USE THEREIN

Thomas Sullivan, Manchester, and James E. Braddock, Wigan, both of England, assignors to Bicc Limited, London, England
Continuation-in-part of Ser. No. 3,049, Jan. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 884,270, Mar. 7, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,433
Claims priority, application United Kingdom, Mar. 10, 1977, 10268/77
Int. Cl.³ H01B *3/10*
U.S. Cl. 405—132 **4 Claims**



1. A transportation system comprising at least one tunnel through which vehicles pass in operation and having electric cables extending longitudinally through said tunnel, characterised by the fact that at least one of said electric cables comprises a core comprising at least one polymer-insulated conductor, a bedding layer surrounding said core, an aromatic polyimide tape layer applied closely around said bedding layer, and a jacket applied closely around said tape layer, wherein
- (a) both said bedding layer and said jacket are made of a halogen-free, silane-free composition having
  - an oxygen index of at least 32 and up to about 50;
  - a tensile strength of at least 2.5 and up to 10 MN/m^2;
  - an elongation at break which is at least 200 and up to 500%;
  - a permittivity of about 5.5–6.0;
  - a power factor of about 2–4%;
  - a volume resistivity in the region of 10^{11} ohm m;

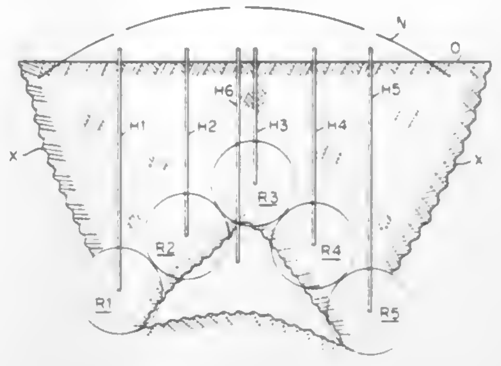
and which, if burned, produces little visible smoke and no major amount of toxic or corrosive fumes and comprising by weight
- 20–35 parts of a rubbery ethylene-vinyl acetate copolymer comprising more than 28% and up to about 45% vinyl acetate;
- optionally up to 10 parts of another halogen-free polymer;
- 52–75 parts of an alumina trihydrate with at least half its weight in particles with a diameter in the range 0.5–3.0 micrometer;
- up to 3 parts of a lubricant selected from those fatty acids and salts thereof which are compatible with the composition; and
- at least one antioxidant and at least one curing agent in effective amounts not exceeding 4 parts in all; and

said aromatic tape layer comprises at least two superposed tapes.

4,370,077
METHOD OF PRESSURIZING AND STABILIZING ROCK BY PERIODIC AND REPEATED INJECTIONS OF A SETTABLE FLUID OF FINITE GEL STRENGTH

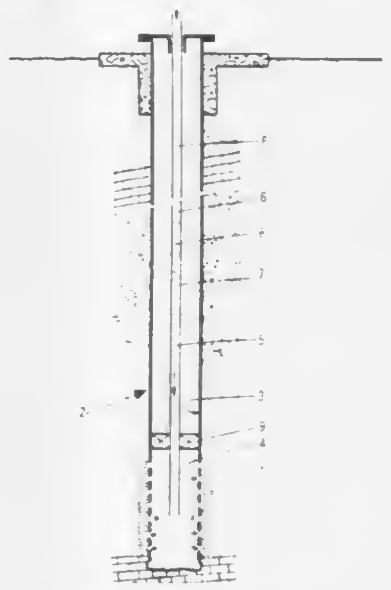
Stirling A. Colgate, 4616 Ridgeway, Los Alamos, N. Mex. 87544
Filed Aug. 4, 1980, Ser. No. 175,047
Int. Cl.³ E21D *19/00*
U.S. Cl. 405—258 **11 Claims**

1. In a method of increasing the stress in a body of consolidated material by repeatedly fracturing the material with a settable gel, the improvement wherein for a selected increase to be created in the stress in the material by each fracture a gel is selected which has a gel strength about equal to the square of the selected stress increase divided by the bulk modulus of the material and wherein the period between fractures is sufficient for the gel strength of the settable gel to increase by about an order of magnitude.



4,370,078
PROCESS FOR CONSOLIDATING GEOLOGICAL FORMATIONS

Claude Gadelle, Rueil Malmaison; Jacques Burger, Bougival, and Charles Bardon, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France
Filed Jan. 28, 1981, Ser. No. 229,221
Claims priority, application France, Jan. 28, 1980, 80 01825
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—264 **9 Claims**



1. A process for consolidating a geological formation, which comprises the steps of:
- (a) injecting into the formation a liquid organic mixture comprising a polymerizable polyethylenic hydrocarbon, and a catalyst comprising a first component which is at least one zirconium, cerium, lanthanum or lanthanide salt and a second component which is at least one vanadium, manganese, cobalt or zinc salt, said mixture being capable of reacting in situ with an oxidizing gas, at the normal temperature of the formation, to produce a solid compound which consolidates the formation; and
- (b) an amount of an oxidizing gas sufficient to produce substantially complete solidification of the polymerizable polyethylenic hydrocarbon and thereby consolidate the formation, without increasing the temperature in the formation above a preselected value and without substantial reduction in its permeability.

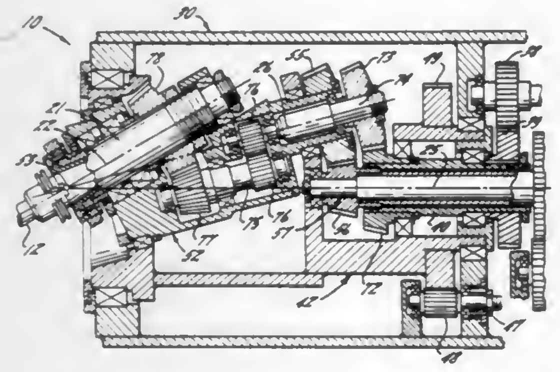
4,370,079
APPARATUS FOR ENCASING EXCAVATIONS

Cesare Pizzirani, Via dei Giardini, 13 - Bologna, Italy
Filed Sep. 29, 1980, Ser. No. 191,966
Claims priority, application Italy, Oct. 12, 1979, 3507 A/79
Int. Cl.³ E02D *17/04*
U.S. Cl. 405—272 **6 Claims**

1. An apparatus for encasing excavations, comprising a movable crane equipped with a boom, and extendible struts adapted for rigging on the job site and for handling by said crane boom, characterized in that each strut comprises a tubular main body in the shape of an inverted "T" and defining a gripping collar at the leg of said "T", a pair of elements mounted for sliding to and fro each other along the bar of said "T", the sliding movement of said elements being controlled through a nut-and-screw drive, said elements terminating at the outer ends thereof in plate-like frames for propping the excavation walls, and a driveshaft driving said nut-and-screw drive through a bevel gear pair, said driveshaft being journaled at said leg of said "T" and projecting above it with a clutch member, said crane boom being terminated at the bottom end thereof with an actuator assembly intended to overlie said leg and being provided with clamping jaws for said collar as well as a reversible motor carrying a mating clutch member for engagement with said clutch member and entraining said driveshaft.

4,370,080
TOOL HEAD HAVING NUTATING SPINDLE

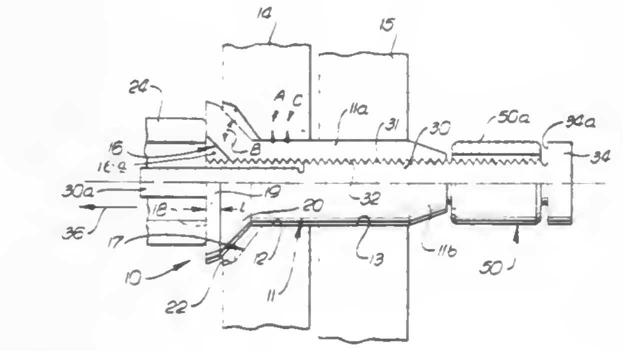
Keith F. Goode, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.
Filed Oct. 1, 1980, Ser. No. 192,687
Int. Cl.³ B23C *1/12*
U.S. Cl. 409—200 **8 Claims**



1. A machine tool head comprising a support, a power-driven shaft mounted on said support to rotate about its own axis, a first rotary slide mounted on said support to rotate relative to said support and said shaft about a first axis coinciding with the axis of said shaft, a second rotary slide supported by said first slide to rotate with said first slide about said first axis and to rotate relative to said first slide about a second axis which is inclined relative to said first axis at a predetermined acute angle substantially less than a right angle, a spindle supported by said second slide to rotate with said second slide about said second axis and to rotate relative to said second slide about a third axis which is inclined relative to said second axis at an acute angle equal to said predetermined angle, said first, second and third axes all intersecting one another at a common point, means selectively operable to turn said first slide about said first axis, means selectively operable to turn said second slide about said second axis, and means coupling said shaft to said spindle and operable to maintain a rotative drive from said shaft to said spindle to turn said spindle about said third axis both when said first slide is turned about said first axis and when said second slide is turned about said second axis.

4,370,081
BLIND FASTENER WITH WORK GRIPPING HEAD

Franklin S. Briles, 1301 Dolphin, Corona Del Mar, Calif. 92625
Continuation of Ser. No. 66,933, Aug. 16, 1979, abandoned. This application Sep. 8, 1981, Ser. No. 300,173
Int. Cl.³ F16B *13/06, 39/22*
U.S. Cl. 411—43 **3 Claims**

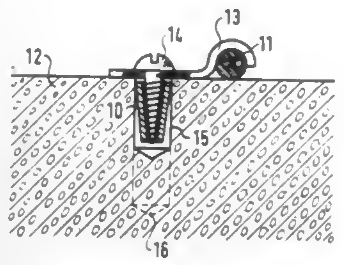


1. In a tubular fastener having an axially extending tubular shank receivable in a work bore and an annular head receivable in forcible engagement with the work material forming a counterbore, and in combination with said work, the improvement comprising

(a) the head having an annular end face, a first forwardly tapered section located forwardly of said end face to forcibly engage the work counterbore and a second forwardly tapered section located forwardly of the first section, the taper angularity of the second section substantially exceeding the taper angularity of the first section;
(b) a stem extending through the tubular shank and head and
(c) means responsive to retraction of the stem toward the head end of the fastener to expand at the opposite end of the fastener and axially retain the fastener in position with the head first section forcibly engaging the counterbore,
(d) said forcible engagement of the head first forwardly tapered section with the work counterbore acting to create radial compression exerted on the stem to prevent loosening of the stem relative to the head and shank,
(e) the head first section having sufficient forcible engagement with the counterbore as to develop friction acting to block rotation of the head in response to torque application to the stem during said stem retraction, there being interference between said first section and counterbore between 0.001 and 0.010 inches,
(f) the taper angularity of the first section being greater than 2° and less than 15°, and the axial length of the first section being within the range 0.140 inches to 0.010 inches, said selected length increasing within said length range as said selected angularity decreases within said angle range, the entirety of said axial length being radially outwardly spaced of and from a taper formed by the head and spaced outwardly of the stem.

4,370,082
FASTENING ELEMENT

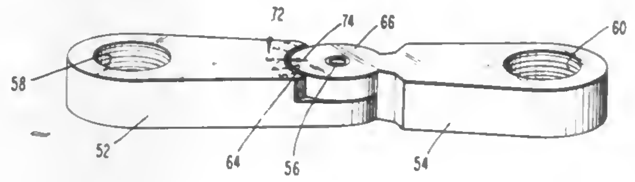
Börje E. I. Sundberg, Frejgatan 19, S-113 49 Stockholm, Sweden
Continuation of Ser. No. 82,166, Oct. 5, 1979, abandoned. This application Dec. 4, 1981, Ser. No. 327,481
Claims priority, application Sweden, Oct. 5, 1978, 7810425
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—61 **3 Claims**



1. A fastening element for use with a tapered screw, comprising a longitudinally slotted conical sleeve of an at least slightly resilient sheet metal of uniform thickness, said sleeve having smooth interior and exterior tapered surfaces of linear circular cross-section, the slot being an arcuate portion of the circular cross-section of said sleeve and being of substantially constant width throughout its length, said slot further extending throughout the axial extent of said sleeve, the taper of said surfaces being uniform throughout their axial extent, and being complemental in relation to the outside diameter of the screw, whereby upon insertion of said sleeve into a hole and the screw into said sleeve, the friction against the internal hole surface effects a holding force which exceeds the torque that the screw causes as it is being driven into said sleeve, the conicity of the tapered sleeve being in the range of 14 to 16 degrees, namely the same conicity as the average conicity of the screw.

4,370,083
MULTIPLE THREADED FASTENER ASSEMBLY

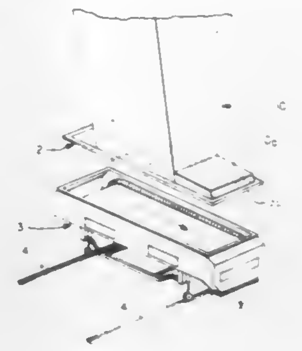
William R. Burnett, Palo Alto, and Charles T. Thompson, Cupertino, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.
Filed Aug. 7, 1980, Ser. No. 176,171
Int. Cl.³ F16B *37/00, 39/28*
U.S. Cl. 411—87 **9 Claims**



1. A multiple fastener assembly comprising two separate members, each said member having a threaded bore therein forming a nut for receiving a fastening means, hinge means interconnecting said members and providing for variable positioning of one said member with respect to the other angularly about the axis of said hinge means, to thereby adjust the relative spacing between the two said bores, and whereby said members are held by each other during the fastening operation, and said bores having their axes parallel to said axis of the hinge means.

4,370,084
POWDER UNLOADING APPARATUS

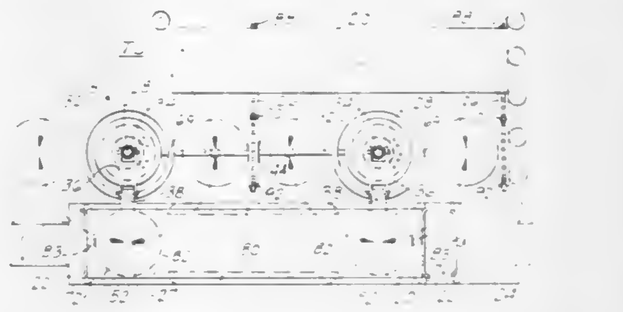
Robert F. Weaver, Stevens Point, Wis., assignor to Foremost-McKesson, Inc., San Francisco, Calif.
Filed Mar. 16, 1981, Ser. No. 244,007
Int. Cl.³ B65G *67/06*
U.S. Cl. 414—292 **4 Claims**



1. Apparatus for effecting discharge of a powder from a chamber containing the same, the chamber having a downwardly extending part at its lower end which provides a downwardly faced opening, a seal plate secured to the lower end of said part, the plate having an opening in free communication with the opening of the chamber part, said plate having a margin forming a downwardly faced sealing area, an assembly unit adapted to cooperate with the sealing plate, the unit comprising a closed housing having side and end walls surrounding an upperly faced opening and having upper margins forming an upwardly faced sealing area surrounding the opening of the housing and which is complimentary to the first named sealing area, an endless belt disposed within the housing, means for mounting the belt whereby its upper run extends in a plane parallel and contiguous to said upperly faced sealing area, pulleys within the housing adjacent the ends of the same about which the belt is looped, said belt being adapted to be driven whereby the upper run of the same traverses across the upwardly faced opening of the housing in a direction toward one discharge end of the housing, means at said discharge end of the housing forming a downwardly extending powder discharge passage, and means for elevating or lowering the assembly unit relative to said chamber, the unit when elevated having its sealing area pressed into sealing engagement with the sealing area of the seal plate.

4,370,085
ROTARY PARALLEL ARM LOADER AND SYSTEM

Leonard D. Barry, 19300 Pennington, Detroit, Mich. 48221
Filed Aug. 15, 1979, Ser. No. 66,687
Int. Cl.³ B65G *67/22*
U.S. Cl. 414—337 **20 Claims**



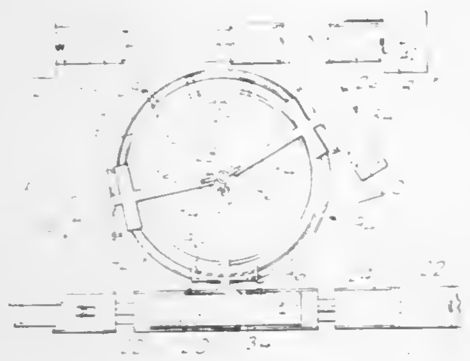
1. A loader for a load transfer system having a vehicle way, vehicle means thereon for traveling said way and having at least one berth for a load: said loader comprising a plurality of horizontally spaced pivot means each having a vertical axis equally spaced from said way, a plurality of arms each mounted to revolve on one of said pivot means, load pivot and support means having substantially vertical axes parallel to each other carried on the outer end of each of said arms at

equal distances from the axis of their respective said pivot means to be moveable with said arm to swing out centrally to substantially the centerline of said berth traveling with respect to said pivot means; a circular cam track substantially concentric about each of said pivot means and having at least one load lift slope; wheel means on each of said arms for running on its associated said cam track to support and lift the associated arm along a transfer arc of movement; means for coordinating said arms to turn substantially parallelly to one another, means for engaging said arms with the vehicle to rotate said arms to transfer a load, said arms being supported to extend over said vehicle way with said load pivot and support means being substantially centered transversely on the berth center line when fully extended over the vehicle.

4,370,086

ROTARY LOADER AND SIDE COUPLING SYSTEM

Leonard D. Barry, 19300 Pennington, Detroit, Mich. 48221
Filed Aug. 15, 1979, Ser. No. 66,688
Int. Cl.³ B65G *67/02*
U.S. Cl. 414—337 **16 Claims**

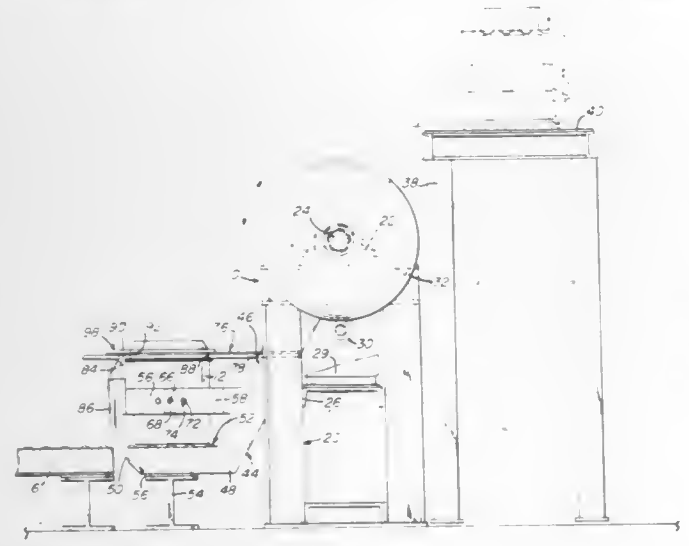


1. A rotary loader having a single vertical pivot about which the loader revolves and at least one load arm which rotates about said pivot, means for engaging said arm with a relatively moving vehicle, a turntable mounted opposite said pivot for engaging and supporting a load, and means for aligning said turntable parallel to said vehicle in register for transfer of said load to or from said vehicle when moving past said loader engaged therewith.

4,370,087

DUMPING APPARATUS FOR PARTICULATE-BEARING CONTAINER

James N. Shepard, Clayton, Calif., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Nov. 13, 1980, Ser. No. 206,581
Int. Cl.³ B65G *65/34*
U.S. Cl. 414—421 **5 Claims**



1. Dumping apparatus comprising:

a stationary base including oppositely spaced, upstanding structural members;

pivot means on said base including a transverse shaft extending between said structural members and journalled for rotation on the upper ends thereof;

a frame including spaced, parallel arms, one end of each being secured to the respective ends of said shaft, and a container-receiving platform extending between and attached to the other end of said arms;

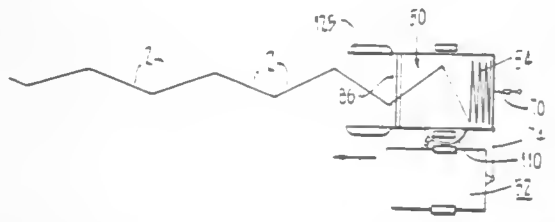
a container closure including an elongate plate pivotally secured at an end between the arms of said frame at a location intermediate the ends of said arms to dispose the free end of said plate substantially horizontally over a container supported on said platform, an opening in said plate for disposition over the top of said container when said plate is horizontally disposed thereover; and a slide plate slidably mounted on said elongate plate for selectively opening or closing said container; and

drive means for pivoting said frame between a loading position for receiving said container and a discharge position in which said container is inverted.

4,370,088

PORTABLE FENCING LOADING MEANS

Peter F. McShane, "Woodspring" Bothwell, Tasmania, 7411, Australia
Filed Nov. 3, 1980, Ser. No. 203,214
Int. Cl.³ B60P *1/52, 3/00*
U.S. Cl. 414—439 **8 Claims**



7. A trailer for loading and unloading a portable fence, which has sections which fold together, said trailer having a base for supporting the fence, a roller means adjacent said base at the rear of the trailer and means for driving said roller means at least when the fence is to be loaded, said roller means extending across the base of the trailer, at least substantially the length of the sections of the fence, to thereby assist passage of the fence onto the trailer during loading, said trailer having releasable retaining means disposed along at least one side of the trailer, the releasable retaining means being biased into a position in which it projects into the trailer so that as the fence sections are loaded onto the trailer the sections are able to push past the retaining means to be held on the trailer by the retaining means and are held from moving off the trailer by the releasable retaining means until the retaining means is released.

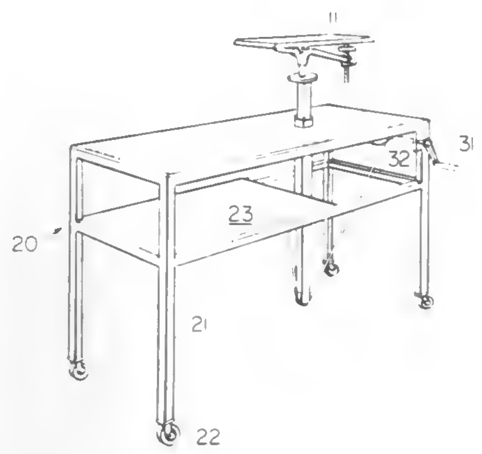
4,370,089

HOISTS

Clyde H. Hoster, 12-14 Austin St., Newstead, Queensland 4006, Australia
Filed Aug. 27, 1980, Ser. No. 181,700
Int. Cl.³ B65G *7/08*
U.S. Cl. 414—589 **9 Claims**

1. A hoist suitable for the elevation and lowering of vehicle transmissions comprising a support member, a frame, an actuating cable anchored to the frame, and control means for controlling movement of the cable, said actuating cable operably engaging the support member to cause elevating and lowering thereof, and the actuating cable being anchored to a lower plate which is pivotally attached to said frame so as to be tiltable about a horizontal axis, said lower plate having an aperture through which said support member passes, the lower

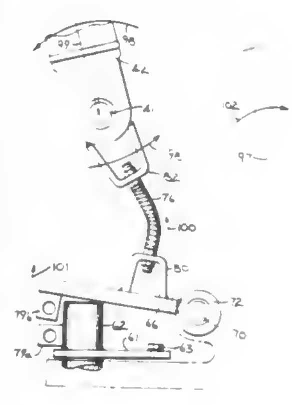
plate normally assuming a horizontal position during use but tilting about said horizontal axis to engage said frame and thereby lock the support member in position if the actuating cable is parted.



4,370,090

BOOM LOCK

John F. Shumaker, Mt. Pleasant, and Herman J. Maurer, Burlington, both of Iowa, assignors to J. I. Case Company, Racine, Wis.
Filed Jul. 7, 1980, Ser. No. 166,060
Int. Cl.³ E02F *3/32*
U.S. Cl. 414—694 **7 Claims**

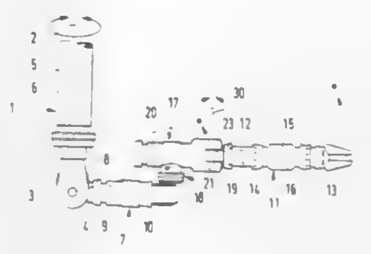


1. In an earthworking machine having a boom pivoted on a frame about a horizontal pivot axis between raised and lowered positions by a first fluid ram joining said frame and said boom; a material handling implement pivoted intermediate its ends on the other free end of said boom about a horizontal pivot axis between folded and extended positions by a second fluid ram having one of its piston rod and cylinder elements pivotally connected to said material handling implement adjacent one free end thereof and the other of its piston rod and cylinder elements pivoted on said boom adjacent said frame; and releasable lock means for locking said boom relative to said frame to prevent pivotal movement of the boom about its horizontal pivot axis, said releasable lock means comprising: a first member secured to said frame; a second member pivotally mounted relative to said boom and disposed adjacent said first member; and biasing means extending directly between and rigidly affixed to said second member and said other piston rod and cylinder elements of said second fluid ram for urging said second member to pivot away from said first member when said second fluid ram is actuated to unfold said material handling implement relative to said boom and for urging said second member to engage said first member when said implement is folded relative to said boom and said boom is pivoted to the raised position whereby said second member engages said first member to lock said boom relative to said frame.

4,370,091

REMOTE MANIPULATOR ARM

Georges Gagliardi, Clamart, France, assignor to Ateliers et Chantiers de Bretagne, Nantes, France
Filed Jul. 18, 1980, Ser. No. 170,239
Claims priority, application France, Jul. 18, 1979, 79 18646
Int. Cl.³ B25J *11/00;* **G21F** *7/06*
U.S. Cl. 414—735 **5 Claims**



1. A remote manipulator arm comprising an articulated assembly connecting a manipulator to a support, said articulated assembly being built up from a plurality of independently motorized arm components each of which comprises at least one motor and an elongate body equipped with an axially-directed fixed coupling at one end and with a moving portion at its other end, said moving portion being caused to move relative to the body under the control of said at least one motor, and being constituted, in the case of an end component, by said manipulator, and in the case of any other arm component by a moving coupling for connection to the fixed coupling of an adjacent arm component, said support being equipped with a moving coupling for connection to the fixed coupling of the first arm component of the articulated assembly; the improvement wherein at least one of said arm components further comprises at least one intermediate fixed coupling located on the side of its body between its ends and directed at 90° to the axis of the body, said intermediate fixed coupling being identical to the axially directed fixed coupling of said one arm component interchangeably useable with the fixed end coupling connection to a moving coupling of another arm component thereby providing an arm component capable of being arranged in the articulated arm assembly in at least two different configurations relative to the moving coupling to which it is connected reducing the distance between the main articulation and the load borne by the manipulator thereby giving rise to a greater lifting power and providing a three component arm with practically the same lifting power as prior two component arms.

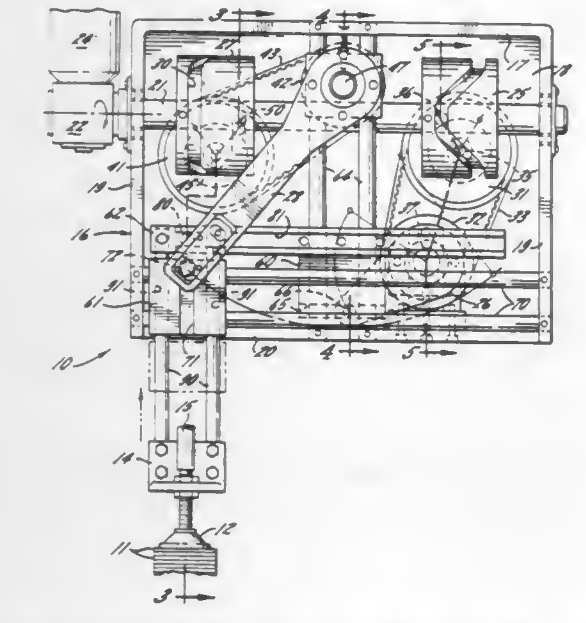
4,370,092

PARTS HANDLING MACHINE

Francis L. Healy, c/o Automatic Tool Co., P.O. Box 3146, 1233 Broadway Ct., Rockford, Ill. 61106
Filed Sep. 22, 1980, Ser. No. 189,893
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—752 **9 Claims**

6. A parts handling machine adapted to pick up, transfer and place a part, said machine comprising a support, a first carriage mounted on said support to move back and forth along a first substantially linear path, a second carriage mounted on said first carriage to move with said first carriage and to move back and forth relative to said first carriage along a second substantially linear path extending substantially perpendicular to said first path, means on said second carriage and selectively operable to pick up and release a part, power-rotated shaft means

mounted on said support, first and second cams rotatable with said shaft means, first and second pairs of wheels rotatably mounted on said support, one wheel of each pair being larger in diameter than the other wheel of the pair, means connecting the large wheel of each pair to the respective cams and operable to oscillate the large wheels in response to rotation of the cams, endless drives trained around the wheels of each pair and operable to transmit oscillation of the large wheel of each pair to the small wheel of the pair, means connected between said first carriage and the small wheel of said first pair and operable to reciprocate said first carriage back and forth along said first path in response to oscillation of such wheel, means connected between said second carriage and the small wheel of said second pair and operable to reciprocate said second carriage back and forth along said second path in response to oscillation of such wheel, said last-mentioned means comprising an arm connected to oscillate with the small wheel of the second pair, a third carriage, means connecting said arm to said third carriage and operable to reciprocate said third carriage back and forth along a path extending substantially parallel to said second path when said arm is oscillated, and means connecting said third carriage to said second carriage and operable to move said second carriage with said third carriage and to guide said second carriage for movement relative to said third carriage and along said first path.



4,370,093
SPIKE ORIENTER

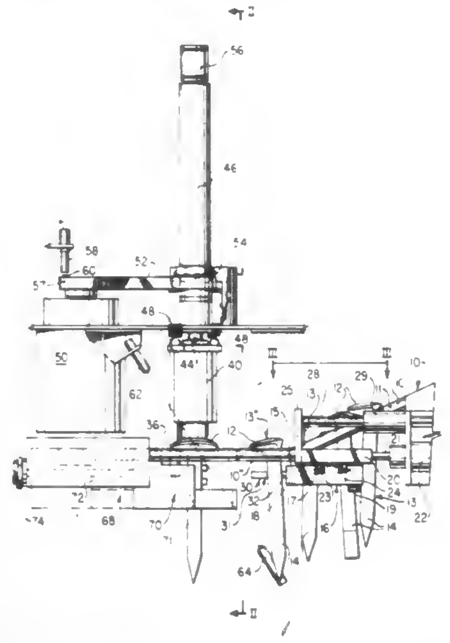
Raymond R. Lund, West Columbia, S.C., assignor to Canron Corporation, Columbia, S.C.

Filed Nov. 19, 1979, Ser. No. 95,795

Int. Cl.^{3} B65H *9/10*

U.S. Cl. 414—779 **8 Claims**

1. Apparatus for orientating a railway spike of the type having a head provided with a projecting lip so that the lip is aligned substantially in a predetermined angular position with respect to a vertical axis extending axially through the spike, the apparatus comprising holding means for holding the spike substantially vertically, drive means coupled to the holding means for rotating the spike about its vertical axis, a first sensor and a second sensor, the first sensor sensing the angular position of the lip as the spike is being rotated and the second sensor sensing every 90° rotation of the spike with respect to a reference position, the first and second sensors being coupled to the drive means to cause de-energization of the drive means when the first sensor indicates the projecting lip has reached the predetermined position and when the second sensor indicates that a 90° position has been reached.



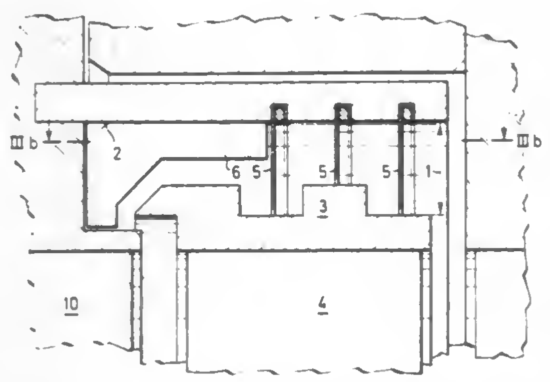
4,370,094
METHOD OF AND DEVICE FOR AVOIDING ROTOR INSTABILITY TO ENHANCE DYNAMIC POWER LIMIT OF TURBINES AND COMPRESSORS

Friedrich Ambrosch, and Rudolf Schwaebel, both of Nüremberg, Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nüremberg, Fed. Rep. of Germany

Continuation of Ser. No. 716,246, Aug. 20, 1976, abandoned, which is a division of Ser. No. 562,235, Mar. 26, 1975, abandoned. This application Nov. 2, 1978, Ser. No. 957,290

Int. Cl.^{3} F01D *5/20*

U.S. Cl. 415—172 A **4 Claims**



1. In a turbine driven by a fluid medium, wherein the turbine includes: a rotor having blades projecting therefrom, the blades being surrounded by an annular shroud; a stator surrounding but in spaced relation to the shroud to define an annular space between the stator and the shroud, and a labyrinth seal disposed in the annular space, the labyrinth seal including a plurality of axially spaced, annular plates extending radially from the stator toward the shroud, the improvement characterized by:

a plurality of baffle plates mounted on the stator positioned in spaced relation to one another in the annular space between the shroud and stator, each baffle extending both radially and axially within the space and having an inward radial extent in the annular space slightly less than the radial extent of the seal plates whereby differentials in fluid pressure around the annular space are reduced resulting in reduction of self-excited oscillations of the rotor and thereby allowing an increase in the power imparted to the blades of the turbine.

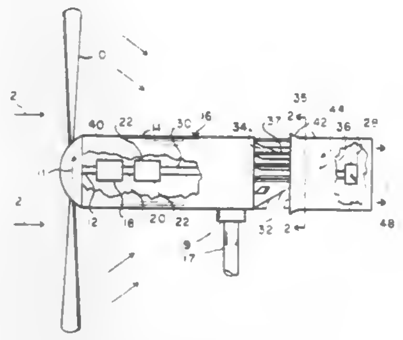
4,370,095
COMPOUND COAXIAL WINDMILL

H. Prescott Sleeper, Jr., 500 Flemington Rd., Huntsville, Ala. 35802

Filed Nov. 3, 1980, Ser. No. 203,319

Int. Cl.^{3} F03D *1/02*

U.S. Cl. 416—175 **8 Claims**



1. A compound coaxial windmill comprising:

a support;

an elongated body;

an axle rotatably supported along an elongated dimension of said body and extending to one end of said body;

mounting means for rotatably supporting said body on said support about a vertical axis, an axis perpendicular to said axle;

a propeller of a diameter significantly larger than the cross-sectional dimensions of said body, and said propeller being attached to and adapted to drive said axle;

an air inlet extending around a peripheral region of said body spaced from said propeller, and a first baffle having a generally conical outer surface concentric with said axle, over which peripheral air passes through said inlet to an inner region of said body;

an induction fan positioned concentrically with respect to said outer conical surface and adapted to draw in air over said conical surface;

a first baffle positioned between said fan and an end of said body opposite to that having said propeller, with the small diameter end of said outer conical surface of said baffle being nearest to said fan;

a second baffle, between said fan and said propeller, having an outer conical surface concentric with said axle, and having its small end adjacent to the exit end of said fan adjacent to the exit air flow end of said fan, and an air outlet extending around a peripheral region of said body between said fan and said propeller;

drive means for generally driving said induction fan at a higher rotational rate than said propeller turns;

an electrical generator coupled to said shaft; and

a plurality of vanes positioned in said air inlet, and over which vanes air would enter and then be drawn over said conical surface of said baffle by said induction fan, and said vanes being oriented with their surfaces lying generally in a plane parallel to the axis of said axle, but lying at an angle with respect to a radial line through the axis of said axle;

whereby entering air is drawn in from around the side of said body and flows inward over the conical surface of said first-named baffle, is driven rotationally in the same direction as the direction of rotation of said induction fan, is drawn through said fan and outward over said second baffle, and then flows generally along said body to said propeller.

4,370,096
MARINE PROPELLER

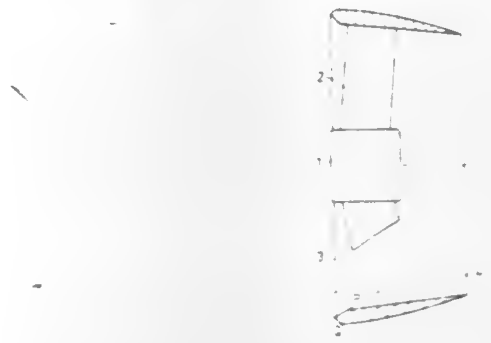
Leslie G. Church, Auckland, New Zealand, assignor to Propeller Design Limited, Manurewa, New Zealand

Filed Aug. 29, 1979, Ser. No. 70,868

Claims priority, application New Zealand, Aug. 30, 1978, 188298

Int. Cl.^{3} B63H *1/16*

U.S. Cl. 416—189 **18 Claims**



1. A marine ring propeller comprising:

a plurality of elongated propeller blades positioned around a central hub, each blade having leading and trailing edges which are straight and parallel to each other, each blade being smoothly curved concavo-convex in cross-section with the leading edges being beveled to be substantially parallel to the plane of rotation of the propeller; the cross-section of each blade being constant along the length of the blade;

a shroud shaped as an annular wall fixed to the outer ends of the blades and having an inner surface and outer surface, the inner surface being frusto-conical so as to be converging toward the downstream end of the propeller at an angle between 1° and 15° to the rotational axis; said inner surface being substantially flat from the trailing edge of the annular wall forward to a point axially forward of the point of contact with the leading edge of the propeller blade; said outer surface being essentially of smoothly curved convex shape when viewed in cross-section.

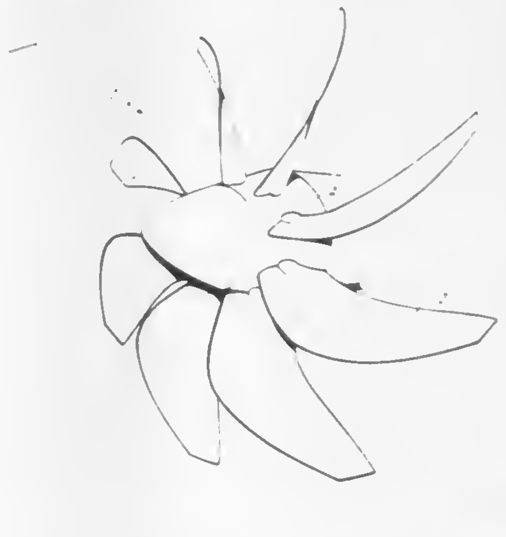
4,370,097
NOISE REDUCTION MEANS FOR PROP-FAN

Donald B. Hanson, Broad Brook, and Frederick B. Metzger, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 16, 1979, Ser. No. 58,046

Int. Cl.^{3} B64C *11/18*

U.S. Cl. 416—228 **2 Claims**



1. A prop-fan having a plurality of rotatable blades supported in a hub for pitch change movement, the airfoil section having a solidity factor of 1 or greater adjacent the root and

less than 1 adjacent the tip and operable at a speed where the Mach No. is critical or above critical and the tip speed is transonic or supersonic, said blade having a preascertained sweep distribution which for a given Mach surface for both the trailing and leading edge at a given operating condition said trailing edge is behind the trailing Mach surface and said leading edge is behind said leading Mach surface.

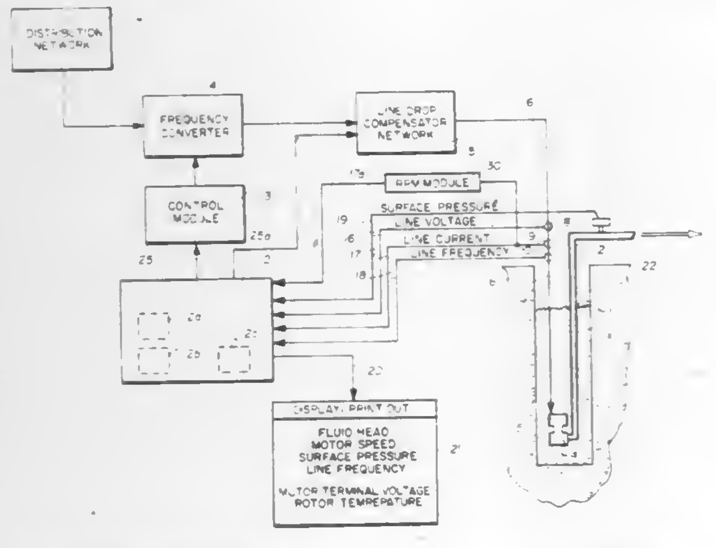
4,370,098
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING ON LINE DYNAMIC OPERATING CONDITIONS

James E. McClain; William D. Dickson, and Howard L. Scott, all of Greenville, Tex., assignors to ESCO Manufacturing Company, Greenville, Tex.

Filed Oct. 20, 1980, Ser. No. 198,353

Int. Cl.^{3} F04B *49/06*

U.S. Cl. 417—18 **15 Claims**



1. In a well pumping operation of the type including a motor driven pump submerged within, and for pumping, the well fluid within a well, a conduit in fluid communication with the pump and extending to the top of the well, and a suspended cable extending into the well for supplying electrical power to the motor driving the pump,

a system for monitoring and controlling the dynamic on line operating conditions of said well pumping operation, said system comprising:

- (a) stored program computer means having memory segments respectively containing encoded data representative of at least one of the fixed characteristics of the motor, pump, and well;
- (b) means coupled to said cable at the surface of the well for generating data signals representative of at least one characteristic of the power being supplied to the motor;
- (c) program means within said computer defining the mathematical relationship between a dynamic on line operating condition as a function of the said at least one fixed characteristic and the said at least one power characteristic; and
- (d) means under the control of said program means for generating signals continuously representative of said dynamic on line operating condition in response to the receipt by said computer means of said data signals.

4,370,099
DISCHARGE GAS TEMPERATURE CONTROL

Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 14, 1977, Ser. No. 851,052

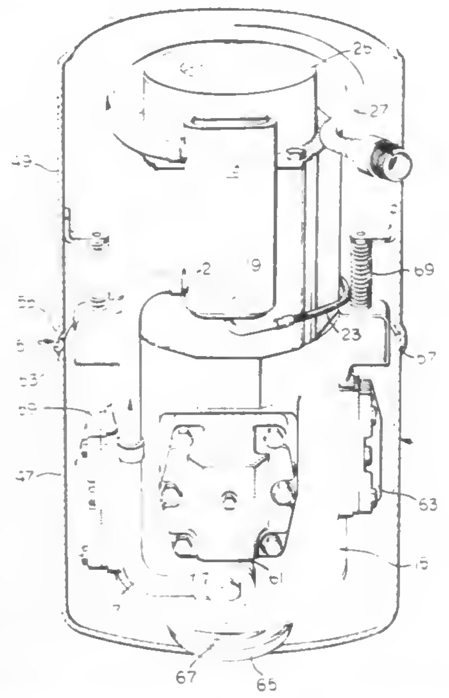
Int. Cl.^{3} F04B *49/02*

U.S. Cl. 417—32 **14 Claims**

1. In a hermetic motor-compressor unit for a refrigeration system having a compressor, an evaporator and a condenser in a series refrigerating circuit, the improvement comprising:

a compressor discharge muffler within the hermetic unit located remote from the compressor and including a pocket extending from the outer surface of the muffler inwardly;

conduit means disposed within the hermetic unit forming a part of the refrigerating circuit and coupling hot gas from the compressor to the discharge muffler in the vicinity of the muffler pocket;



a heat sensitive element supported in the discharge muffler pocket and in good heat transfer relation with the compressed gas entering the discharge muffler to provide an indication of the temperature of that compressed gas; and

circuitry coupling the heat sensitive element in controlling relation to the unit motor for disabling the motor when the temperature of the compressed gas entering the discharge muffler from the conduit means exceeds a maximum desired operating temperature.

4,370,100
REGULATING DEVICES FOR HYDROSTATIC DRIVE UNITS

Franz Forster, Muhlbach, and Harald Stein, Schaafheim, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

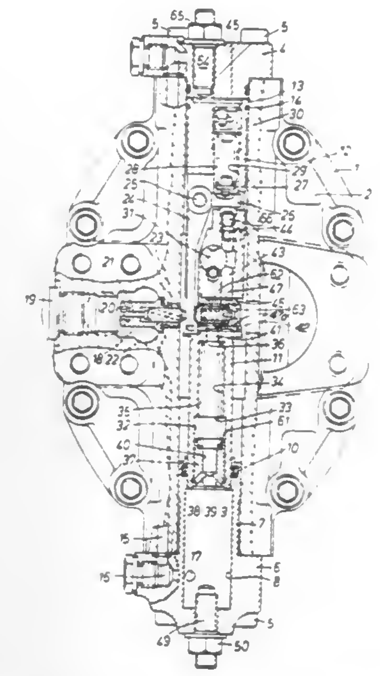
Filed Jul. 24, 1980, Ser. No. 171,895

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930139

Int. Cl.^{3} F04B *49/00*

U.S. Cl. 417—218 **8 Claims**

1. A regulating device for a hydrostatic drive unit such as a hydropiston pump with a housing having therein an adjusting piston designed as a differential piston having end faces of different areas connected with the final control element of at least one of a variable displacement motor and a variable displacement pump whereby the stroke of said pump or motor is varied and under pressure from both sides and with a control valve in said piston controlling the pressures exerted on the adjusting piston in the pressure spaces in front of the end faces the improvement comprising at least one control pressure metering piston arranged in a sliding manner in the housing and on which the working pressure of at least one of the drive unit and feed pressure of the pump is exerted, a lever which lies against said metering piston and which is connected through a flexible coupling with the adjusting piston and is supported on this latter, a spring forcing said lever against the piston and actuating the control valve, said control valve being located in the adjusting piston crosswise to its longitudinal axis, said lever being in the form of an angle lever, said spring being located in the adjusting piston and lying against the section of the angle lever extending approximately crosswise to the longitudinal axis of the adjusting piston and designed as a pressure spring, whose longitudinal axis runs parallel to that of the adjusting piston.



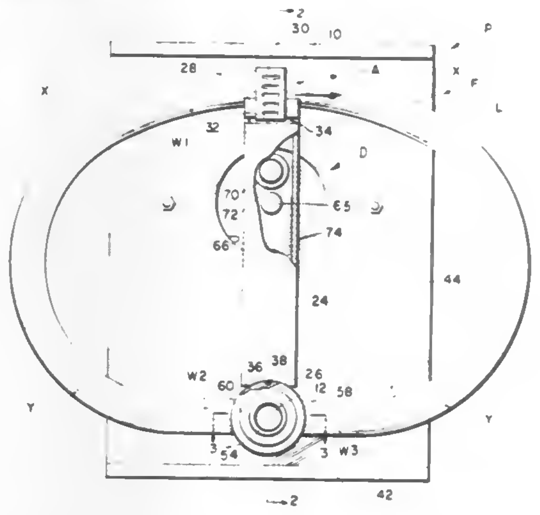
4,370,101
CONSTANT DELIVERY INERTIA PUMP

John Vander Horst, 28153 War Admiral Trail, Evergreen, Colo. 80439

Filed Aug. 18, 1980, Ser. No. 178,869

Int. Cl.^{3} F04F *7/00*

U.S. Cl. 417—241 **10 Claims**



1. In an inertia pump: means defining a fluid-containment loop having at least a portion thereof capable of being oscillated to and fro relative to the environment in the direction of fluid movement therethrough, an inlet connectable to a source of pumpable fluid connected into said fluid containment loop for delivering fluid thereto and an outlet connected to receive fluid therefrom, said inlet and outlet connections cooperating to segment said loop and divide the interior thereof into first and second alternate fluid flow paths therebetween, first flow control means located within the first fluid flow path responsive to the flow of fluid therethrough and automatically operative to inhibit reverse flow while permitting free forward flow, second flow control means located in the second fluid flow path responsive to the flow of fluid therethrough and automatically operative to inhibit reverse flow while permitting free forward flow, and means connected to said oscillatable portion of the fluid-containment loop for oscillating same relative to its surroundings in the direction of fluid movement therethrough, said first and second flow control means cooperating when said loop is thus oscillated to maintain an uninterrupted flow of fluid between said inlet and outlet, fluid flowing from said inlet to said outlet by passing completely through both of said first and second alternate flow paths on an alternating basis.

4,370,102
FLUID PUMPING DEVICE

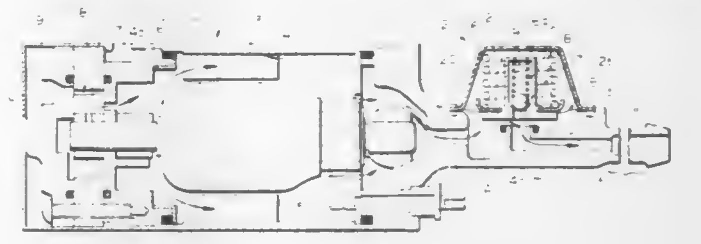
Michiaki Sasaki, Yokohama; Kiyokazu Yamamoto, and Ko Hiratsuka, both of Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited and Jidosha Denki Kogyo Kabushiki Kaisha, both of Yokohama, Japan

Filed Jan. 23, 1981, Ser. No. 227,638

Claims priority, application Japan, Jan. 31, 1980, 55-10687[U]

Int. Cl.^{3} F04B *49/02, 47/08*

U.S. Cl. 417—296 **4 Claims**



1. A device for pumping fluid, including a main fluid pump device and an auxiliary device, the main pump device having a fluid intake passage and a fluid supply passage, the auxiliary device being fixed at the side of the fluid supply passage,

the auxiliary device comprising:

a first room communicating with the fluid supply passage of the main pump device;

a second room;

a diaphragm for separating the first room from the second room in such a way that the diaphragm can be actuated in response to the change of the fluid pressure within the first room;

a valve seat formed in the first room;

a first spring;

a valve body attached to the diaphragm and biased by the first spring toward the valve seat so that the valve body can move against the biasing force of the first spring to depart from the valve seat when the fluid pressure in the first room increases although the valve body contacts normally the valve seat due to the biasing force of the first spring;

an outlet passage having one end which is opened to the first room and regulated by the valve body in cooperation with the valve seat so that the fluid flow can be modulated from the first room into the outlet passage;

a relief passage formed in the valve body to be connected at its one end to the first room and at its other end to the second room;

a relief valve for controlling the relief passage; and

a second spring for biasing the relief valve toward the relief passage so as to close the relief passage due to the biasing force of the second spring,

whereby the auxiliary device can function as a damper, cut-off valve, check valve and relief valve.

4,370,103
PISTON PUMP WITH DISCHARGE VALVE, INLET VALVE AND MISALIGNMENT COMPENSATING MEANS IN A PUMP HEAD

Dwight E. Tripp, Longview, Tex., assignor to Arrowhead Research, Houston, Tex.

Filed Apr. 28, 1980, Ser. No. 144,790

Int. Cl.^{3} F04B *21/02, 49/02*

U.S. Cl. 417—298 **29 Claims**

1. A piston pump mechanism for positive gas pressure and vacuum pumping operations, said piston pump mechanism comprising:

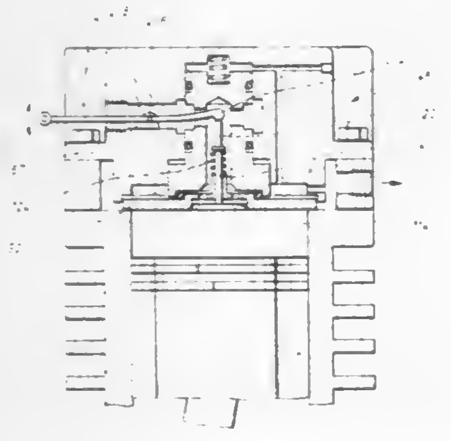
pump body means defining cylinder means therein, said pump body means defining seat means circumscribing said cylinder means and further defining discharge chamber means surrounding said seat means;

a pump head being affixed to said pump body means and cooperating therewith to define a discharge chamber surrounding said seat means and defining an inlet chamber;

piston means being movably disposed within said cylinder means;

means for imparting reciprocating movement to said piston means within said cylinder means;

discharge valve means defining sealing surface means, said sealing surface means adapted to establish sealing engagement with said seat means said discharge valve means being movable to the open position thereof by gas pressure within said cylinder to allow discharge of gas from cylinder means into said discharge chamber means and being moved to the closed position thereof by at least one of gas pressure within said discharge chamber means and mechanical urging means;



inlet valve means being defined in said discharge valve means and communicating with said cylinder means and with said inlet chamber, said inlet valve means adapted to open responsive to negative pressure within said cylinder means to allow inlet of gas into said cylinder and adapted to close responsive to positive gas pressure within said cylinder means to allow compression of gas within said cylinder;

valve control spool means being movably positioned within said pump head; and

location control means being interposed between said spool means and discharge valve means, said location control means providing lateral and pivotal control for said discharge valve and defining omnidirectional pivot means allowing pivoting of said discharge valve to accommodate seat and head misalignment.

4,370,104

SUCTION MUFFLER FOR REFRIGERATION COMPRESSOR

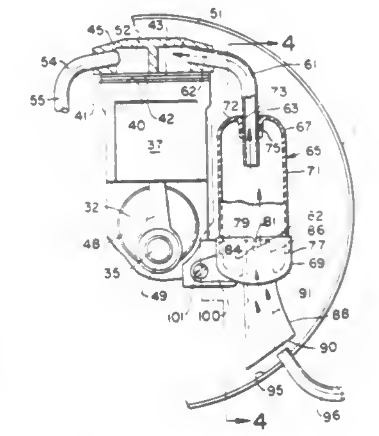
Richard T. Nelson, Worthington, and Marc G. Middleton, West Jefferson, both of Ohio, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 22, 1980, Ser. No. 171,194

Int. Cl.³ F04B *39/00*

U.S. Cl. 417—312 **6 Claims**

1. In a hermetic refrigeration compressor comprising a case having discharge and return lines secured thereto, a motor compressor unit mounted inside said case and including a cylinder housing and a cylinder head secured to said cylinder housing, said cylinder head including an inlet port and a discharge port, discharge muffler means connecting said discharge port to said discharge line, and a suction muffler connected to said inlet port, the improvement comprising said suction muffler comprising an elongated hollow shell of plastic insulating material, said shell having a sidewall and a pair of end walls defining an enclosed chamber, one of said end walls having an outlet opening from said enclosed chamber, said one end wall having a tubular projection around said outlet opening and extending into said enclosed chamber, a suction tube fixedly secured to said cylinder head and extending through said outlet opening into said enclosed chamber and contacting said tubular projection with a sliding push fit, the other of said end walls having an inlet opening into said enclosed chamber, an outwardly flaring horn around said inlet opening extending adjacent said case at said return line so that refrigerant from said return line is directed into said horn and said enclosed chamber with a minimum of turbulence.



4,370,105

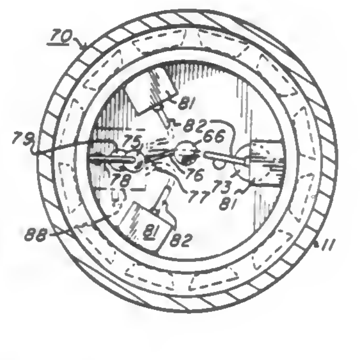
AUTOMATIC PUMP FOR DEEP WELLS

Kenard D. Brown, 3451 Terrace Knoll Ct., Reno, Nev. 89512

Division of Ser. No. 951,785, Oct. 16, 1978, which is a continuation-in-part of Ser. No. 651,512, Jan. 22, 1976, Pat. No. 4,120,612. This application Mar. 3, 1981, Ser. No. 240,164

Int. Cl.³ F04B *35/02, 17/00*

U.S. Cl. 417—360 **10 Claims**



1. A deep well pump assembly including an upwardly extending cylindrical housing having therein a liquid pump and an electric motor for driving said pump, said pump having an intake for receiving liquid from a well and an outlet for discharging liquid under pressure through said housing,

means for suspending said assembly on a wire line for insertion, lowering and positioning in a well casing,

an inflatable packer mounted about the outside of said housing above said pump intake for providing a seal between said housing and the well casing whereby said pump may be utilized for pumping liquid upwardly through the well casing,

a gas discharge outlet for said packer,

a valve for controlling said gas discharge outlet of said packer,

means for opening said valve upon tensioning of said wire line and for closing said valve upon the release of the tension on said wire line,

a cylinder of gas under pressure mounted in said housing and connected for supplying gas from said cylinder to said packer and having a cylinder gas discharge control valve, and timing means for opening said cylinder gas discharge control valve after a preselected time interval for inflating said packer after said assembly has been positioned in the well and the tension on said wire line has been released to close said packer discharge outlet valve, said packer being deflated by the opening of said packer discharge outlet valve upon subsequent tensioning of the wire line.

4,370,106

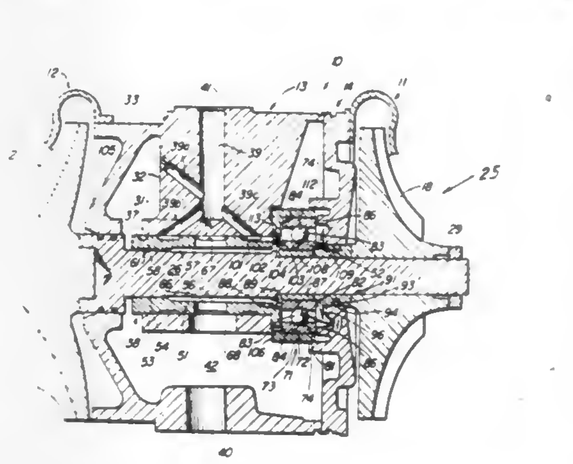
BEARING ASSEMBLY FOR HIGH SPEED SHAFT

Jerre F. Lauterbach, Columbus, Ind., assignor to Cummins Engine Company, Columbus, Ind.

Continuation-in-part of Ser. No. 18,926, Mar. 9, 1979, abandoned. This application Nov. 1, 1979, Ser. No. 90,346

Int. Cl.³ F04B *17/00, 35/00;* **F16C** *21/00*

U.S. Cl. 417—407 **21 Claims**



13. In a turbocharger for an internal combustion engine, the improvement comprising a bearing housing having a shaft bore formed therethrough, a shaft extending through said bore and having a turbine end adapted to be secured to a turbine wheel and a compressor end adapted to be secured to a compressor wheel, a bearing assembly mounted in said bore and supporting the radial and axial thrust loads of said wheels, said assembly comprising a sleeve, resilient mount means connecting said sleeve to said housing for floatingly supporting said sleeve in said housing, hydrodynamic bearing means on said sleeve adjacent said turbine end of the shaft for supporting said radial load, bearing support means on said sleeve adjacent said compressor end of the shaft, anti-friction bearing means mounted in said bearing support means and connected to said shaft, said anti-friction bearing means supporting said radial load at said compressor end, and means operatively connecting said anti-friction bearing means and said bearing housing for supporting axial thrust from said shaft in both directions.

4,370,107

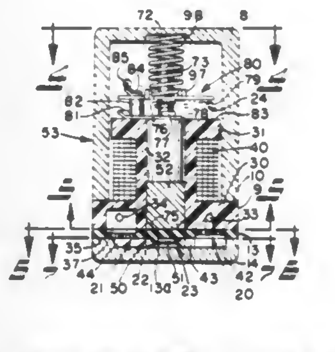
SPRING BIASED FLUID PUMP

Bruce J. Landis, 11850 NW. 31st Pl., Sunrise, Fla. 33304, and Paul R. Goudy, Jr., Milwaukee, Wis., assignors to Kenneth J. Landis, University Heights, Ohio; Bruce J. Landis, Sunrise, Fla. and Paul R. Goudy, Jr., Milwaukee, Wis.

Filed Jan. 4, 1980, Ser. No. 109,544

Int. Cl.³ F04B *43/04*

U.S. Cl. 417—413 **7 Claims**

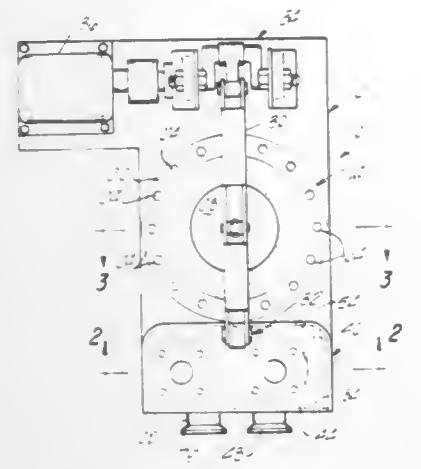


1. A fluid pump, comprising a fluid inlet and a fluid outlet; a pumping chamber; an inlet check valve means for passing fluid flow from said fluid inlet to said pumping chamber and for blocking fluid flow from said pumping chamber to said fluid inlet; an outlet check valve means for passing fluid flow from said pumping chamber to said fluid outlet and for blocking fluid flow from said fluid outlet to said pumping chamber; pumping means for drawing fluid from said fluid inlet via said inlet check valve into said pumping chamber and for pumping fluid from said pumping chamber via said outlet check valve to said fluid outlet; first and second energy storage means for providing work input to said pumping means respectively to effect such drawing and pumping of fluid; power means for intermittently supplying work for storage as potential energy in said energy storage means; said first and second energy storage means respectively comprising a first spring for supplying work to said pumping means to draw fluid into said pumping chamber and a second spring for supplying work to said pumping means to pump fluid from said pumping chamber and to store energy in said first spring; said pumping means comprising an integral flexible member, said first and second springs being positioned with respect to said flexible member to supply work to opposite sides thereof without interrupting the fluid-tight integrity of said flexible member; a first relatively rigid member having a first plate-like surface and said pumping chamber being formed in said first relatively rigid member and opening at said first surface and being bounded at said first surface by boundary portions of said first surface, a second relatively rigid member having a second plate-like surface and an internal passage in said second relatively rigid member opening at said second surface and being bounded at said second surface by boundary portions of said second surface, said flexible member being positioned between said first and second plate-like surfaces for cooperating with said boundary portions to provide a substantially fluid-tight seal therewith; work transmitting means for transmitting work between said second spring and said flexible member; said power means comprising an actuator and said work transmitting means comprising a movable member of said actuator, said actuator comprising a solenoid, said work transmitting means comprising a movable magnetically responsive core of said solenoid, said work transmitting means being engageable with but not fastened to said flexible member; and energizing means for intermittently completing an electrical circuit to provide electrical power to said power means, said means for intermittently completing comprising a carrier for undergoing repeatable movement, comprising a curved arm having a tendency to assume a natural condition when at least substantially unstressed, a resilient characteristic operative generally in a direction at least approximately perpendicular to that in which a radius of curvature of said curved arm is taken, and a pair of ends, one being relatively fixedly supportable and other being relatively movable with respect to said one end; and means for applying force to said other end in a direction at least approximately parallel to that in which such resilient characteristic is generally operative causing resilient deformation of said curved arm to cause movement of said other end with respect to said one end; said curved arm also having a tendency to reassume its natural condition when not having been stressed beyond its elastic limit by such force and such force is removed; said curved arm comprising a generally flat arm having a generally circular shape, said means for applying force comprising a radial arm integral with said curved arm, and said second spring being positioned to apply force to said radial arm tending to cause resilient deformation of said curved arm.

4,370,108
DIAPHRAGM PUMP

Joseph H. Brill, 5210 E. Deckerville Rd., Deckerville, Mich. 48427

Filed Mar. 24, 1980, Ser. No. 133,240
Int. Cl.^{3} F04B *21/02, 39/10, 15/02*
U.S. Cl. 417—430 **2 Claims**

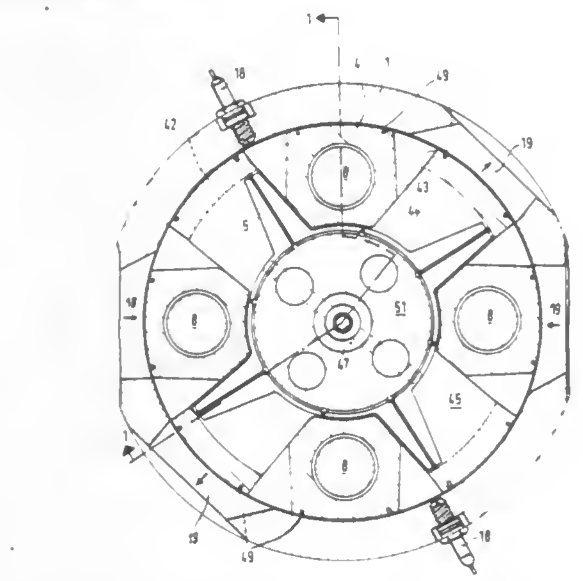


1. A pump comprising:
a pump housing including a pumping chamber section, having a top wall formed with an upper surface thereof defining in part a pumping chamber within said pumping chamber housing;
a generally circular opening formed into said upper wall;
a flexible diaphragm overlying said generally circular opening;
means mounting said diaphragm to said upper surface whereby said pumping chamber is defined in part by said flexible diaphragm;
means for causing reciprocating flexing movement of said diaphragm toward and away from said pumping chamber;
said pump further including a valve housing section adjoining said pumping chamber, said valve section including an inlet compartment located at the level of said pumping chamber including an inlet fitting for connection to the supply of liquid to be pumped thereby;
an inlet valving chamber having upper and lower walls extending parallel to said top wall of the pump housing located above said inlet compartment;
an inlet valve port passing between said inlet compartment and said inlet valving chamber;
valving means controlling communication of said inlet compartment and said inlet valve chamber including a valving disc overlying said inlet valve port;
fluid passage means establishing communication of said inlet valving chamber with said pumping chamber,
whereby inlet flow passes into said passage and thence into said pumping chamber;
an outlet compartment having upper and lower walls extending parallel to said top wall of the pump housing located alongside said inlet chamber in open communication with said pumping chamber;
an outlet valving chamber having upper and lower walls extending parallel to said top wall of the pump housing located above said outlet compartment and an outlet valve port establishing communication between said outlet compartment and said outlet valving chamber;
outlet valving means controlling communication through said outlet port, said outlet valving means including an outlet valving disc overlying said outlet valve port;
outlet means for said outlet valving chamber;
whereby inlet flow is drawn into said pumping chamber during upward movement of said diaphragm and lifting of said inlet valve disc to enable inflow into said pumping chamber and upon downward stroking of said flexible diaphragm outflow from said pumping chamber into said outlet valve chamber takes place due to lifting of said outlet valve from said outlet valve port.

4,370,109
ROTARY PISTON-INTERNAL COMBUSTION ENGINE HAVING A CENTRAL AXIS

Huschang Sabet, Eduard-Pfeiffer-Str. 67, Stuttgart, Fed. Rep. of Germany, and Dietrich Eckhardt, Aichwald, Fed. Rep. of Germany, assignors to Huschang Sabet, Stuttgart, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,065
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1980, 3006940
Int. Cl.^{3} F02B *55/14;* **F01C** *1/00*
U.S. Cl. 418—34 **7 Claims**

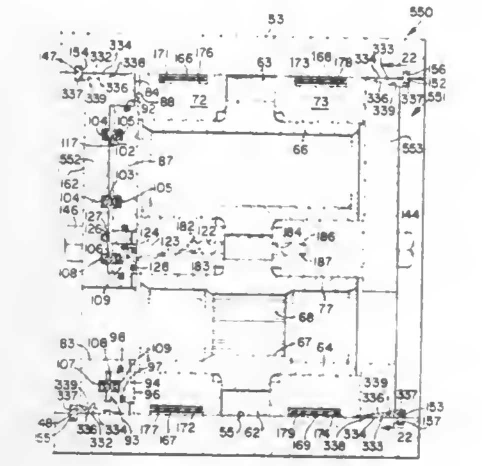


1. Rotary piston-internal combustion engine comprising a stationary engine housing having a central axis, a rotor mounted within said housing for rotation at uniform velocity about the central axis relative to said housing, a driven shaft located within said housing and connected to said rotor, said rotor comprising an open-ended cylinder coaxial with the central axis and an end face member located at and extending transversely across each of the opposite ends of said cylinder, said cylinder having inlet and outlet openings therethrough uniformly spaced about the cylindrical periphery thereof, first pistons connected to and extending radially inwardly from the inner periphery of said cylinder, said first pistons being uniformly spaced apart within said cylinder, an axially extending hub located within said cylinder coaxial with the central axis and being rotatable within said cylinder relative to said first pistons, a number of uniformly spaced second pistons corresponding to the number of said first pistons being secured to and rotating with said hub, said cylinder said end face members and said first pistons defining working chambers within said cylinder with each said second piston being positioned within a different one of said working chambers, sealing means located between the radially outer surface of said cylinder and in contact with said housing for providing a seal around said openings through said cylinder, said first pistons being sector-shaped and having generally radially extending flanks with said flanks defining axially extending sides of said working chambers, said openings in said cylinder being located within the angularly extending range of said first pistons and said openings within the angularly extending range of each said first piston being arranged symmetrically relative to the axially extending center plane of said first pistons.

4,370,110
HIGH PRESSURE GEAR PUMP OR MOTOR WITH AXIAL RETAINING MEANS IN A HOUSING CAVITY

John L. Nagely, Sidney, Ohio, assignor to Fluid Energy Systems Corporation, Sidney, Ohio

Division of Ser. No. 55,332, Jul. 6, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,286
Int. Cl.^{3} F03C *2/08;* **F04C** *2/18*
U.S. Cl. 418—132 **23 Claims**



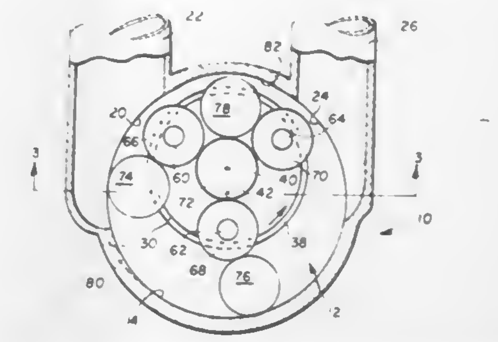
1. In a liquid displacement device including a housing having a cavity therein and an inlet and outlet communicating with said cavity, said liquid displacement device also including an internal unit assembly mounted in said cavity and removable as a unit therefrom through an end of said cavity, said internal unit assembly including a pair of meshed gears disposed between and rotatably supported by a pair of adjoining end plates, means carried by said internal unit assembly for holding said internal unit assembly in assembled relation, said gears being operable when driven to generate high and low pressure zones in said cavity adjacent to said outlet and inlet, respectively, when said internal unit assembly is mounted in said cavity and said device is in operation, and said internal unit assembly including thrust means coacting with at least one of said end plates and operable to provide a force preventing separation of said end plates from predetermined positions with respect to the side faces of said gears when said liquid displacement device is in operation, the improvement of retaining means mounted in said cavity and coacting with said thrust means so that said internal unit assembly is retained in a predetermined position in said housing cavity with the inlet and outlet in said housing in substantial alignment with said high and low pressure zones, respectively, said retaining means also being adapted to transmit to said housing a portion of the axial component of the force from said high pressure zone tending to separate said end plates from said predetermined positions when said device is in operation and the pressure in said high pressure zone exceeds a predetermined value, said improvement also including means coacting with said retaining means for transmitting to said housing another portion of the axial component of the force tending to separate said end plates from said predetermined positions.

4,370,111
ROTARY PUMP OR MOTOR WITH DRIVE ROLLERS AND FREE-FLOATING ROLLERS

Robert H. Shea, 35 Lancester St., Rochester, N.Y. 14615

Continuation-in-part of Ser. No. 89,111, Oct. 29, 1979, abandoned. This application May 6, 1981, Ser. No. 260,272
Int. Cl.^{3} F01C *1/00, 11/00;* **F03C** *2/00;* **F04C** *2/00*
U.S. Cl. 418—212 **13 Claims**

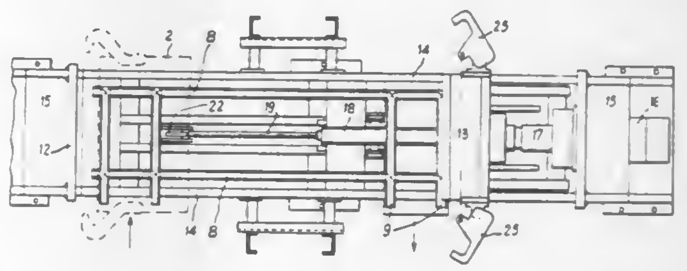
1. A pump or motor construction comprising:
a housing having walls defining a generally cylindrical chamber with an axis, the housing having an inlet opening and an outlet opening communicating with the chamber;
a plurality of drive rollers located within the chamber;
means mounting the rollers (i) for rotation about their respective axis and (ii) for conjoint movement in an annular path about a central axis that is equally spaced from the respective axes of the rollers and eccentrically located relative to the axis of the chamber, each of the rollers being spaced from the housing and from each other during movement about the central axis;
a plurality of free-floating rollers arranged within said chamber so that one of the free-floating rollers is between each two adjacent drive rollers, the free-floating rollers being engageable by the drive rollers during movement of the drive rollers about the central axis, thereby to advance the free-floating rollers through the chamber and past the inlet opening and the outlet opening, the free-floating rollers precessing about the drive rollers during movement of the drive rollers and the free-floating rollers being in contact with the wall of the chamber as they are advanced through the chamber by the drive rollers; and
a center free-floating member located between the drive rollers, the free-floating member being closely adjacent to the drive rollers to form therewith a fluid seal.



4,370,112
METHOD AND APPARATUS FOR MOLDING ARTICLES FROM AGGLOMERATED PARTICLES

Pierre Sorbier, Pernes-les-Fontaines, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

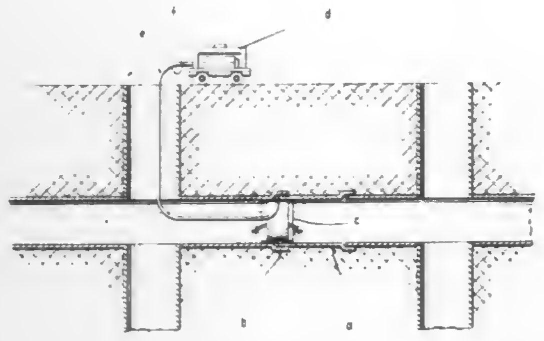
Division of Ser. No. 756,000, Jan. 3, 1977, Pat. No. 4,165,353. This application May 31, 1979, Ser. No. 44,221
Claims priority, application France, Jan. 9, 1976, 76 00525
Int. Cl.^{3} B02B *1/00*
U.S. Cl. 425—3 **14 Claims**



1. A device for molding articles from agglomerated particles comprising, a press, means for supplying pressure to the press, a cyclic circuit comprising a series of molds, said circuit having a section comprising means for forming a row of abutting molds in which the material is maintained under pressure during polymerization, by the face of one mold engaging the material in the next adjacent mold to maintain the material compressed during polymerization, attaching means on each mold for holding a mold in abutting contact with an adjacent mold, means for actuating the attaching means to attach a mold to a last mold of a row of molds, means to detach a first mold of the row of molds from the next adjacent mold, and means for temporarily compressing the last mold of a row against the row of molds.

4,370,113
APPARATUS FOR REPAIRING LEAKS IN UNDERGROUND PIPE

Yasushi Nakashin, 67-28 Isobe, Chiba-shi, Japan
Filed Jul. 9, 1981, Ser. No. 281,774
Claims priority, application Japan, Jul. 9, 1980, 55-092663
Int. Cl.^{3} B29D *23/08*
U.S. Cl. 425—13 **11 Claims**



1. A repair apparatus for repairing leaks in underground pipe or the like comprising:

a movable carriage adapted to enter and be displaced axially along said pipe;

a flexible and stretchable tubular cover sheet surrounding at least a portion of said carriage and adapted to be brought into intimate contact with the internal wall surface of said pipe to cover the leaking part thereof;

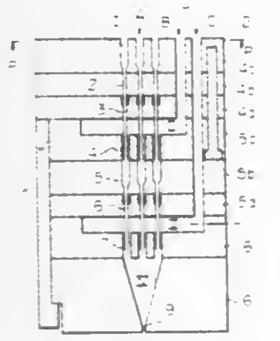
a plurality of back-up plates supported by said carriage and expandable radially for pressing said sheet against the internal wall surface of said pipe and retractable for separating said sheet from said wall;

a power-driven mechanism supported by said carriage for actuating said back-up plates; and

a conduit inside said cover sheet and adapted to deliver grout radially outwardly through the approximate axial center of said cover sheet.

4,370,114
SPINNERET ASSEMBLY FOR USE IN PRODUCTION OF MULTI-INGREDIENT MULTI-CORE COMPOSITE FILAMENTS

Miyoshi Okamoto, Takatsuki, and Miyozo Asada, Kyoto, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Sep. 7, 1979, Ser. No. 73,564
Int. Cl.^{3} D01D *3/00*
U.S. Cl. 425—131.5 **8 Claims**



1. A spinneret assembly to be fitted in a spinning pack for the production of multi-ingredient multi-core composite filaments comprised of at least three polymer phases A, B and C, which assembly comprises superposed rigid first, second, third and fourth plate members;

said first plate member partitioning off a first polymer chamber, through which a stream of the polymer A flows, from a second or third polymer chamber, through which a stream of the polymer B or C flows, respectively;

said third plate member partitioning off the third polymer chamber from one or more funnel-shaped fourth polymer chambers bored in the fourth plate member, through which combined streams of the polymers A, B and C flow, and said third plate member having bored therein a plurality of holes, the lowermost ends of which are exposed to the or each funnel-shaped fourth polymer chamber;

said fourth plate member having at the lowermost end of the or each funnel-shaped fourth polymer chamber an orifice through which a combined stream of the polymers A, B and C flows; with the proviso that

one of the following requisites (a) and (b) is satisfied:

(a) said second plate member having bored therein a plurality of holes confronting the holes of the third plate member, each pair of confronting holes being connected with each other by a pipe, said pipe extending from the hole of the second plate member toward the hole of the third plate member or from the hole of the third plate member toward the hole of the second plate member, so that a narrow circular path is formed at least around one end portion of said pipe within the hole of the third plate member or the second plate member, respectively, or within another pipe extending from the hole of the second plate member or the third plate member, respectively, and the polymer passage formed within said pipe being connected through said narrow circular path to the third polymer chamber;

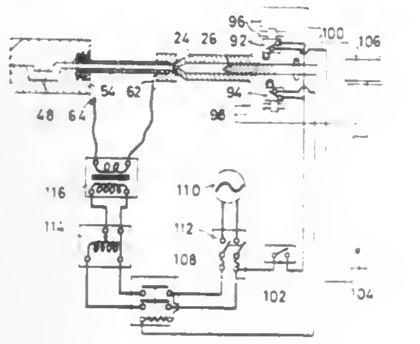
(b) said third plate member further having bored therein one or more slits through which streams of the polymer C flow from the third polymer chamber to the funnel-shaped fourth polymer chamber, the or each slit being, on the under surface of the third plate member, of a multi-arm shape having at least three radially extending arms, each of which intervenes between at least two holes of the holes bored in the third plate member,

said first, second, third and fourth plate members forming a plurality of series of linked polymer passages each series having at least one joining point at which two polymer streams join together, at least one of the polymer passages upstream of the joining point having at least one cross section that is narrower than any cross section of the polymer passage downstream of the joining point but upstream of the succeeding joining point, if any, or said at least one polymer passage upstream of the joining point having a length longer than that of the polymer passage downstream of the joining point but upstream of the succeeding joining point, if any;

said first rigid plate member having bored therein connecting holes for connecting each pair of the respective confronting holes bored in the first and second plate members and further having bored therein slits extending from a part or all of said connecting holes to the polymer chamber II, whereby the polymer passages formed within a part or all of said connecting holes are connected through said slits to the second polymer chamber so that at least two type core ingredients different in composition are formed in each multi-core composite filament; and at least said first, second and third plate members being capable of being assembled into a single unit by connecting means so that the first, second and third plate members can be fitted in or detached from the spinning pack as the single unit, and said single unit having only one or no polymer-introducing passage which opens at the side wall of the single unit and having two or more polymer-introducing passages which open at the upper face of the single unit so that mutual contamination of the polymers is prevented.

4,370,115
INJECTION MOLDING METHOD AND DEVICE

Takashi Miura, 1-14-19 Honcho, Asaka-shi, Saitamaken 351, Japan
Filed Jul. 28, 1980, Ser. No. 173,038
Int. Cl.^{3} B29F *1/08;* **B29G** *3/00*
U.S. Cl. 425—144 **7 Claims**



1. An injection molding device for thermosetting molding materials, which comprises:

an injection means, an intermittent heater, and a mold cavity;

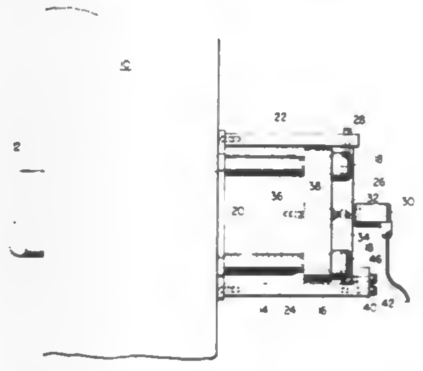
the intermittent heater having a small heat capacity and defining a passage for transmitting molding material from the injection means to the molding cavity;

the passage having a volume less than the volume of the mold cavity and being adapted to being rapidly heated when electricity is supplied to the intermittent heater and rapid cooling when the electricity is interrupted or reduced; and

the intermittent heater and injection means acting in cooperation with the mold cavity so that molding material is uniformly heated to approximately the same temperature as the molding cavity as it flows through the passage during injection and the molding material remaining in the passage between injections is cooled to avoid adverse heat effects.

4,370,116
TONNAGE INDICATOR FOR INJECTION MOLDING MACHINE

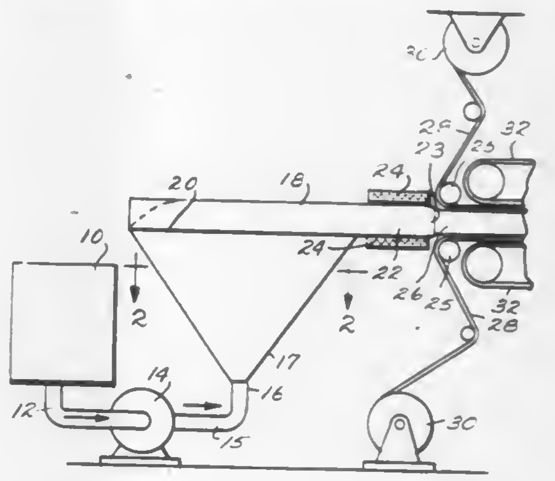
James S. Groom, Wales, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.
Filed Oct. 13, 1981, Ser. No. 310,891
Int. Cl.^{3} B29F *1/06;* **B30B** *15/14, 15/22, 15/28*
U.S. Cl. 425—171 **8 Claims**



1. In a plastic injection molding machine having first and second die platens respectively carrying complementary mold parts which are engageable to define a mold cavity, at least one tie bar mounted on the frame of the machine to extend slidably through the platens and having a threaded end portion projecting beyond the first such platen, a nut threaded on said end portion, first means exerting a force between the said first platen and said nut tending to compress the nut under an initial load, the second platen being driven reciprocably along said tie bar whereby to forcefully engage the mold parts to receive injected plastic material in their defined cavity and to separate the mold parts for removal of a plastic article formed in the cavity, and means including a sensor to detect axial movement of the threaded end of the tie bar and thereby to measure compression of said nut caused by the force load across the mold parts when engaged and as such load may be altered by the pressure of plastic material injected into the mold cavity.

4,370,117
FOAMING APPARATUS

Stuart B. Smith, Conyers, Ga., assignor to Thermoset AG, Lucerne, Switzerland
Filed Sep. 5, 1980, Ser. No. 184,617
Int. Cl.^{3} B29B *7/14*
U.S. Cl. 425—224 **5 Claims**



1. An apparatus for producing insulation material from a foamable composition wherein supply means are used to supply the composition to an expansion chamber and conveying means are used to convey the foam product from the expansion chamber, the improvement comprising said expansion chamber being in the form of a hollow cone having an apex at one end and a base at the opposite end thereof, wall means extending from said base to said apex, inlet means at said apex and outlet means adjacent said base, said outlet means including a nozzle attached to a cover with said cover closing said base of said expansion chamber, said nozzle and cover having walls that flare outwardly from one side of said expansion chamber towards the end of said nozzle located adjacent the opposite side of said expansion chamber.

4,370,118
ARRANGEMENT FOR INTRODUCING BANDEROLES OR STRIPS INTO RECEPTACLES

Jean-Marc Dronet, Falaise, France, assignor to Societe d'Application Plastique Mecanique et Electronique, Falaise, France
Filed May 19, 1981, Ser. No. 265,101
Claims priority, application France, May 19, 1980, 80 11090
Int. Cl.^{3} B29C *17/00*
U.S. Cl. 425—305.1 **8 Claims**

1. An improved arrangement for introducing banderoles into receptacles wherein the banderoles **16** are fed into guide passages **1** in which suction mandrels **2** are disposed for looping the banderoles **16**, each guide passage **1** having an inlet slit **3** through which the banderole **16** is cut and introduced by the action of a pair of feed rollers **5** and a transverse cutting knife **6**, the looped banderole **16** being thereafter transferred to a mold **7** by the mandrel **2**,

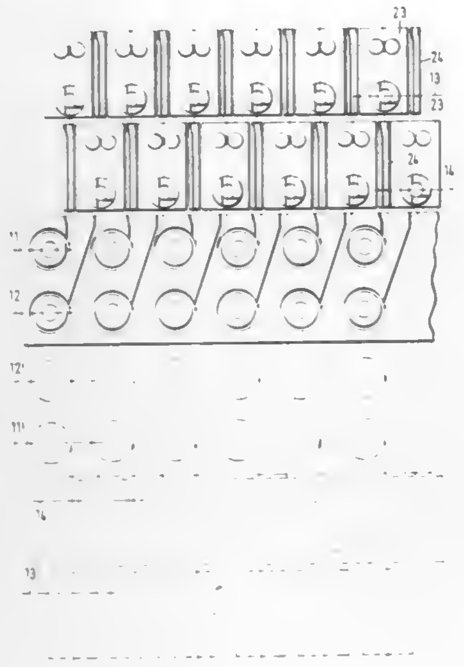
the improvement comprising,

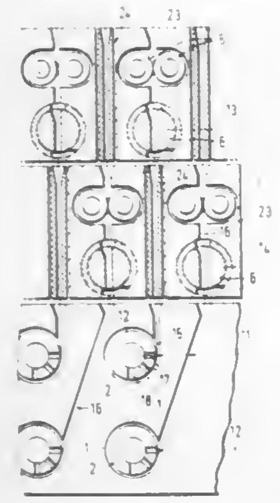
the guide passages **1** are disposed in a plurality of members which are disposed along two parallel lines **11**, **12** and are fed with cut banderoles **16** from the same side;

the knives **6** are also disposed along two parallel lines **13**, **14** in staggered relationship;

the distance between the cutting edge of a knife **6** and the inlet generatrix of a guide passage **1** is slightly less than the length of a cut banderole **16**; and

the suction mandrel **2** having two suction zones, the first zone **17** outletting into that portion of the suction mandrel **2** which confronts the front end of the banderole **16** which is introduced into the guide passage **1** at the moment the banderole **16** is cut by the knife **6**, and which is coupled to a source of vacuum during the rotating of the mandrel **2** subsequent to the actuation of the knife **6** until complete looping of the banderole, as well as during the transfer to the mold **7**, the second zone **18** outletting into that portion of the suction mandrel **2** which confronts the rear end of the cut banderole **16** at the end of looping thereof by the rotating mandrel **2**, which second zone **18** is coupled to the source of vacuum only at the end of rotation of the mandrel **2** and during transfer of the banderole **16** to the mold **7**.





4,370,119
POWDER PRESS

Takashi Watanabe, Iwatsuki, Japan, assignor to Tamagawa Kikai Kabushiki Kaisha, Tokyo, Japan

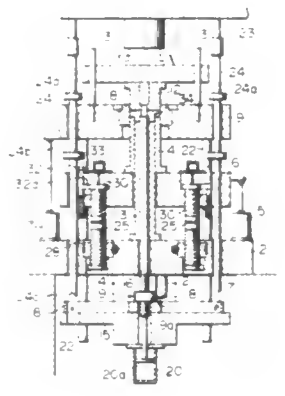
Filed Sep. 9, 1981, Ser. No. 300,972

Claims priority, application Japan, Sep. 9, 1980, 55-124798

Int. Cl.³ B30B *7/02, 11/02, 15/00*

U.S. Cl. 425—352 **6 Claims**

1. A floating die-type powder press comprising a fixed plate secured to a frame, a die plate holding a die in which powder material is to be compacted, said die plate being movable up and down, at least one intermediate plate disposed between said fixed plate and said die plate and movable up and down, an upper punch coupled to an upper ram and movable up and down therewith for pressing down the powder material in said die, at least one floating punch mounted to said intermediate plate and coacting with said upper punch to compact the powder material in said die by exerting an upward pressure thereon, stops mounted to said fixed plate so as to permit adjustment of their vertical position, rotatable stop rods threadedly engaged with said intermediate plate carrying said floating punch and adapted to make abutting engagement with said stops during the compaction of the powder material for bearing the load thereon, locking members for locking said stop rods against rotation during the compaction of the powder material, and ejector rods for disengaging said stop rods from said locking members and pressing down said die plate and said intermediate plate at the time of the ejection of the compact.



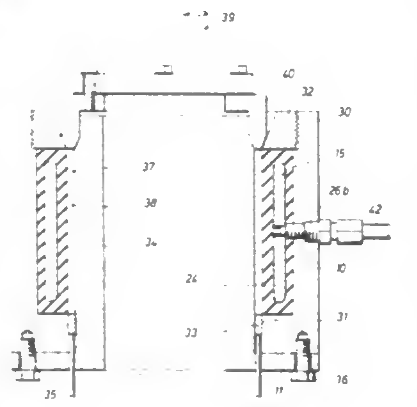
4,370,120
COMPACTING PRESS WITH EXPANDABLE BODY

Robert D. Foster, 1116 Waugh Dr. #4, Houston, Tex. 77019, and Frank G. Weeden, P.O. Box 55156, Houston, Tex. 77055

Division of Ser. No. 964,300, Nov. 28, 1978, Pat. No. 4,263,237, which is a division of Ser. No. 684,835, May 10, 1976, abandoned. This application Jan. 23, 1981, Ser. No. 227,916

Int. Cl.³ B30B *11/00*

U.S. Cl. 425—405 H **7 Claims**



1. A compacting press for particulate materials comprising:

support means including at least one support member having a support surface and a bore opening through said support surface;

an elastomeric body having generally oppositely facing body surfaces, one of said body surfaces abutting said support surface of said support member, and the other of said body surfaces facing into and at least partially defining a particulate-receiving space,

a rigid core embedded in and surrounded by said elastomeric body and having one side facing generally toward said support surface, another side facing generally toward said particulate-receiving space, and a bore opening through said other side;

conduit means communicatively interconnecting the bores of said support member and said core;

and means for confining particulate material within said particulate-receiving space;

said elastomeric body being bonded to said support surface of said support maember and to said conduit means, but being unattached to said other side of said core, whereby fluid may be injected between the unattached portion of said elastomeric body and said other side of said core via said conduit means to expand the unattached portion of said elastomeric body into said particulate-receiving space and thereby compress particulate material therein.

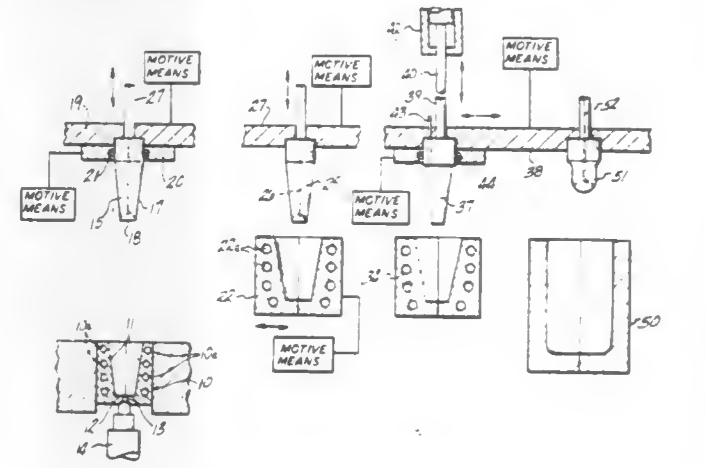
4,370,121
APPARATUS FOR FORMING HOLLOW PLASTIC OBJECTS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Division of Ser. No. 120,266, Feb. 11, 1980, which is a continuation-in-part of Ser. No. 5,960, Jan. 24, 1979, Pat. No. 4,225,304, which is a division of Ser. No. 911,359, Jun. 1, 1978, Pat. No. 4,207,134. This application Dec. 22, 1980, Ser. No. 218,502

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 **18 Claims**



1. An apparatus for forming oriented, blown objects of moldable plastic material requiring prolonged tempering cycles to obtain conditions suitable for orientation which comprises: pressure molding means for forming a parison in a closed mold cavity on a first core; a plurality of tempering molds in spaced relationship to each other and to said pressure molding means for retaining and tempering said parison in a prolonged tempering cycle prior to orientation and blowing; means for relatively moving a first of said tempering molds and said first core into alignment with each other; means for transferring said parison from said first core to said first tempering mold; means for relatively moving said first core and first tempering mold to bring said parison into alignment with means for removing the parison from said first tempering mold and transferring said parison to at least one additional tempering mold spaced from said first tempering mold for prolonged tempering prior to orientation and blowing; a blow mold in spaced relationship with at least one of said tempering molds for forming said tempered parison into an oriented, blown, hollow object; separate means for removing said tempered parison from said at least one additional tempering mold at the end of the tempering cycle prior to orientation and blowing and placing same in said blow mold; and means associated with said blow mold to form an oriented, blown, hollow object in said blow mold, whereby said tempering molds receive and release parisons seriatim and whereby the overall processing cycle is substantially unaffected by the number of tempering molds.

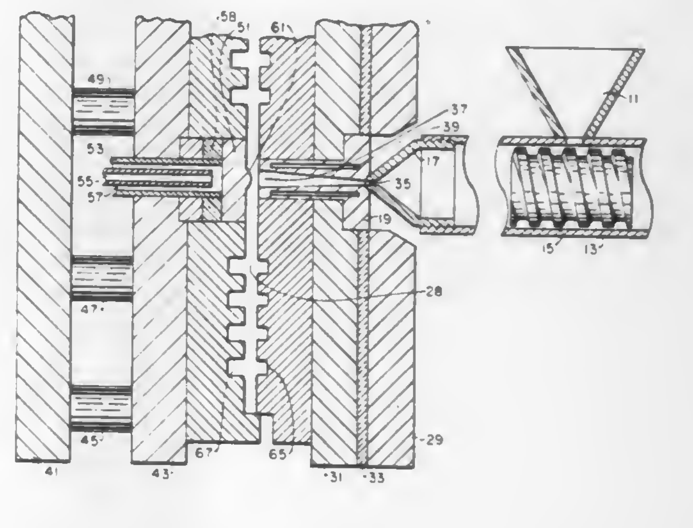
4,370,122
APPARATUS FOR RUNNERLESS INJECTION COMPRESSION MOLDING OF THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainesville, Ga., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 118,381, Feb. 5, 1980, Pat. No. 4,290,744, which is a continuation-in-part of Ser. No. 972,182, Dec. 21, 1978, abandoned, and a continuation-in-part of Ser. No. 164,412, Jun. 30, 1980, Pat. No. 4,309,379, which is a continuation-in-part of Ser. No. 972,189, Dec. 21, 1978, Pat. No. 4,238,181. This application Jun. 29, 1981, Ser. No. 278,237

Int. Cl.³ B29G *3/00;* **B29F** *1/08*

U.S. Cl. 425—543 **11 Claims**



1. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

- a stationary platen member,
- a heat plate mounted thereon, means to heat said plate,
- a plurality of mold faces mounted on said heat plate, and
- a cooled sprue bushing extending through said stationary assembly having a receiving end adapted to engage the nozzle of an injection molding machine and a discharge end positioned contiguous to said heat plate;

a movable assembly comprised of:

- a movable platen member,
- a heat plate mounted thereon, means for heating said plate, and
- a plurality of mold faces mounted on said heat plate corresponding to and positioned to be aligned with the mold faces on said stationary assembly to form a plurality of mold cavities;

means to move said movable assembly to bring said movable mold faces into close proximity and aligned with corresponding faces in said stationary assembly to form partially open mold cavities and forming a cooled manifold area between the discharge end of said sprue bushing in the stationary assembly and said movable assembly;

means for feeding a supply of plasticized thermo-setting molding material into the receiving end of said sprue bushing into said partially open mold cavities;

means for closing said partially open mold cavities to a closed stage to cure any thermosetting material enclosed within the mold cavities by pressure and heat and eliminating said manifold area; and

means for retracting said movable assembly to separate said mold faces and remove a molded article.

4,370,123

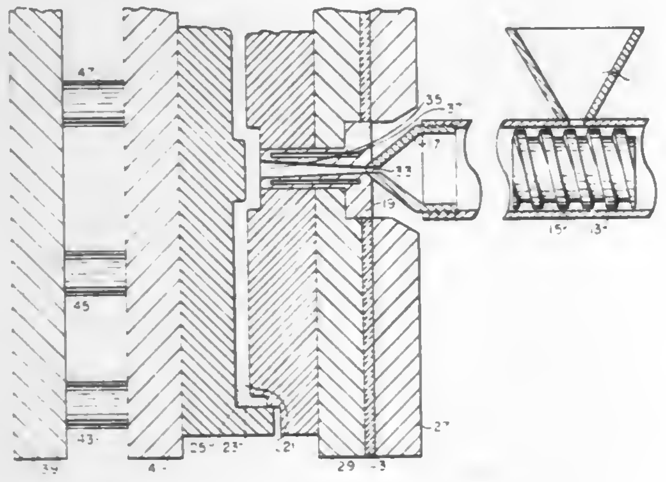
APPARATUS FOR RUNNERLESS INJECTION COMPRESSION MOLDING OF THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainesville, Ga., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 118,381, Feb. 5, 1980, Pat. No. 4,290,744, which is a continuation-in-part of Ser. No. 972,182, Dec. 21, 1978, abandoned, and Ser. No. 164,412, Jun. 30, 1980, Pat. No. 4,309,379, which is a continuation-in-part of Ser. No. 972,189, Dec. 21, 1978, Pat. No. 4,238,181. This application Jun. 29, 1981, Ser. No. 278,238

Int. Cl.^{3} B29G *3/00*

U.S. Cl. 425—543 **5 Claims**



1. An improved injection-compression molding apparatus comprising:

a stationary assembly comprised of:

a stationary platen assembly

a heat plate mounted thereon, means to heat said plate,

a mold face mounted on said heat plate, and

a cooled sprue bushing extending through said stationary assembly having a receiving end adapted to engage the nozzle of an injection molding machine and a discharge end positioned contiguous to said heat plate;

a movable assembly comprised of:

a movable platen member

a heat plate mounted thereon, means for heating said plate,

a mold face mounted on said heat plate corresponding to and positioned to be aligned with the mold face on said stationary assembly to form a mold cavity;

means to move said movable assembly to bring said movable mold face into close proximity and aligned with the corresponding face in said stationary assembly to form a partially open mold cavity and bring the discharge end of said sprue bushing in the stationary assembly into direct feed relationship with said partially open mold cavity;

means for feeding a supply of plasticized thermosetting molding material through said sprue bushing directly into said partially open mold cavity;

means for placing said partially open mold cavity in a closed stage to cure any thermosetting material enclosed within the mold cavity by pressure and heat while maintaining the discharge end of said sprue bushing in direct feed relationship with the closed mold cavity; and

means for retracting said movable assembly to separate said mold face and remove a molded article.

4,370,124

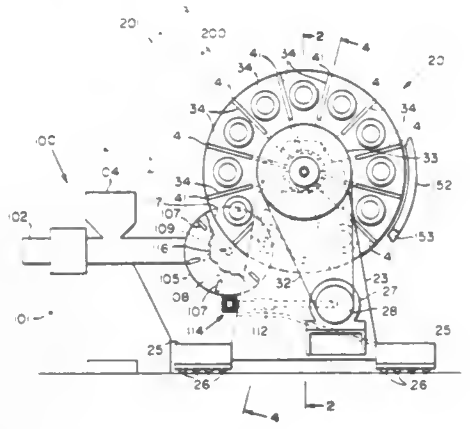
MODULAR ROTARY MOLDING MACHINE

Frederick J. Buja, 104 Shale Dr., Rochester, N.Y. 14615

Filed Jun. 17, 1981, Ser. No. 274,472

Int. Cl.^{3} B29F *1/00*

U.S. Cl. 425—556 **24 Claims**



1. A rotary molding machine, comprising

a shaft mounted for rotation about its axis,

a plurality of rigid plates secured to an surrounding said shaft at axially spaced points therealong, and lying in spaced planes extending transversely of said shaft,

a plurality of rigid panels secured to said plates to be supported by said plates around the outside of said shaft in angularly spaced planes that extend generally radially of the axis of said shaft,

a pair of cooperating mold sections mounted in the angular space between each pair of adjacent panels for rotation with said shaft

means for rotating said shaft to cause the pairs of cooperating mold sections to be rotated successively into a predetermined loading position during each revolution of said shaft,

means for moving one mold section of each pair thereof from an open to a closed position prior to arrival of said pair of sections at said loading station, and for moving said one mold section back to its open position after a predetermined interval,

means for injecting a molten molding material into a cavity formed between the confronting surfaces on a pair of said closed mold sections as they pass said loading station, and

means for ejecting a molded part from said cavity, when said one mold section of a pair thereafter moves to its open position at termination of said predetermined interval.

4,370,125

CONTROL SYSTEM FOR BLUE-FLAME OIL BURNER

Donald E. Donnelly, Edwardsville, Ill., and Francis J. Maney, Mahwah, N.J., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 1, 1980, Ser. No. 192,850

Int. Cl.^{3} F23N *50/00*

U.S. Cl. 431—66 **7 Claims**

1. In a burner control system,

a photoconductive cell;

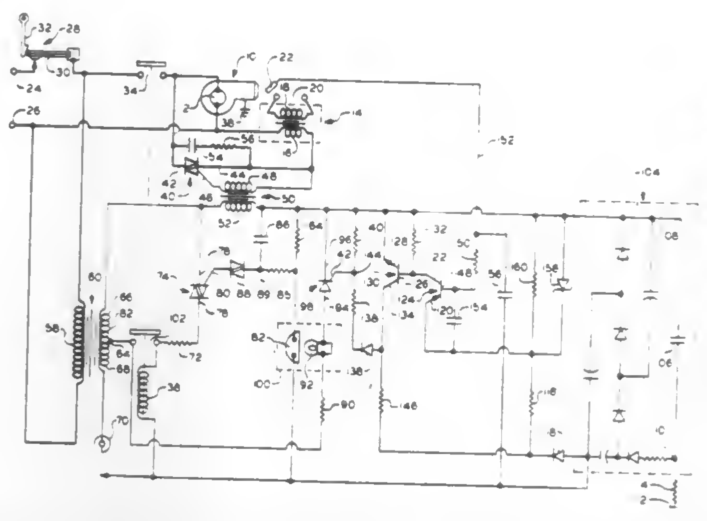
an incandescent filament lamp coupled to said cell and effective, when energized, to cause said cell to decrease in electrical resistance from a high value to a low value;

circuit means, including said cell, for controlling operation of a burner and an ignition means in response to said low resistance value and said high resistance value of said cell;

a flame probe disposed in close proximity to said burner;

a controlled solid-state switch connected in series with said lamp;

gating circuit means for said switch, including said probe, for rendering said switch non-conductive in the presence of a current flow between said probe and said burner through a burner flame thus effecting de-energizing of said lamp to effect said high resistance value of said cell, and for rendering said switch conductive in the absence of said current flow thus enabling energizing of said lamp to effect said low resistance value of said cell; and



means for reducing the rate and level of illumination of said lamp.

4,370,126

COMBUSTION CONTROL APPARATUS

Motoshi Miyanaka; Kenzi Toudo; Yoshinori Kudo, all of Yanai, and Sumio Nakagawa, Matudo, all of Japan, assignors to Hitaci, Ltd., Tokyo, Japan

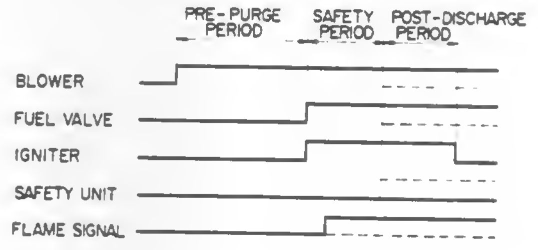
PCT No. PCT/JP79/00231, § 371 Date May 5, 1980 § 102(e) Date May 5, 1980, PCT Pub. No. WO80/00609, PCT Pub. Date Apr. 3, 1980

PCT Filed Aug. 31, 1979, Ser. No. 197,775

Claims priority, application Japan, Sep. 11, 1978, 53-110773

Int. Cl.^{3} F23N *5/00*

U.S. Cl. 431—73 **3 Claims**



1. A combustion control apparatus, including fuel supply drive means and igniter drive means for allowing a fuel supply and an ignition operation to be effected at least for a first predetermined period of time, said fuel supply being further continued, and said ignition operation being effected sequentially until termination of a second predetermined period of time subsequent to the first predetermined period of time, when ignition is attained within the first predetermined period of time, while said fuel supply and ignition operation being discontinued at termination of the first predetermined period of time, when ignition is not attained within the first predetermined period of time, said apparatus also including a first timer supplied with clock pulses for timing the first predetermined period of time and producing at the termination of the first predetermined period of time a signal indicating said discontinuation of the fuel supply and ignition operation when ignition is not attained within the first predetermined period of time, and a second timer supplied with clock pulses for timing the second predetermined period of time independently from the timing operation of said first timer, wherein said apparatus further comprises a first circuit generating a signal for cutting off a fuel valve in response to an output delivered from said second timer at the termination of the second predetermined period of time and a flame-absence signal applied through a flame signal input terminal and a second circuit for maintaining generation of said fuel valve cutting-off signal.

4,370,127

APPARATUS FOR THE PRODUCTION OF CEMENT CLINKER LOW IN ALKALI FROM ALKALI-CONTAINING RAW MATERIAL

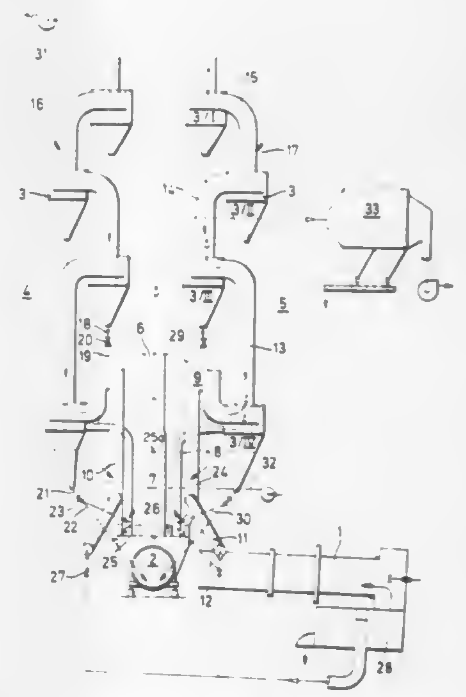
Andris Abelitis, Rösrath, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 89,626, Oct. 29, 1979, abandoned, which is a division of Ser. No. 888,757, Mar. 21, 1978, Pat. No. 4,211,573. This application Feb. 25, 1981, Ser. No. 237,973

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712239

Int. Cl.^{3} F27B *15/00, 7/02*

U.S. Cl. 432—106 **5 Claims**



1. A device for production of low alkali cement clinker from alkali-containing raw material comprising:

at least one suspension gas cyclone pre-heater having a plurality of interconnected cyclones;

a calcining device having a heating means and having a gas conduit connecting said calcining device to said preheater;

a rotary kiln post-connected in the direction of material flow through said device to said cyclone preheater,

said rotary kiln having an exhaust gas side;

a material cooler post-connected in the direction of material flow through said device to said rotary kiln,

said rotary kiln and said calcining device via conduits with said material cooler on an exhaust side of said cooler;

a separate exhaust gas conduit connecting the exhaust gas side of said rotary kiln with said cyclone preheater;

a material off-take conduit for discharging material from said pre-heater, said material off-take conduit having at least a first branch conduit connected to a lower region of said separate exhaust gas conduit and a second branch conduit connected to a material intake side of said rotary kiln;

a means in said material off-take conduit for selectively adjusting the percentages of material from said pre-heater conveyed in said first and second branches;

a bypass conduit connecting said rotary kiln with the atmosphere; and

said separate exhaust gas conduit and said gas conduit of said calcining device being connected to the same cyclone of said plurality of cyclones in said gas cyclone pre-heater for utilizing substantially all exhaust gases from said rotary kiln for preheating said material in said same cyclone and simultaneously maintaining a selected degree of calcining of said material.

4,370,128
PROTECTIVE DEVICE FOR A DISCHARGE END OF A TUBULAR ROTARY KILN

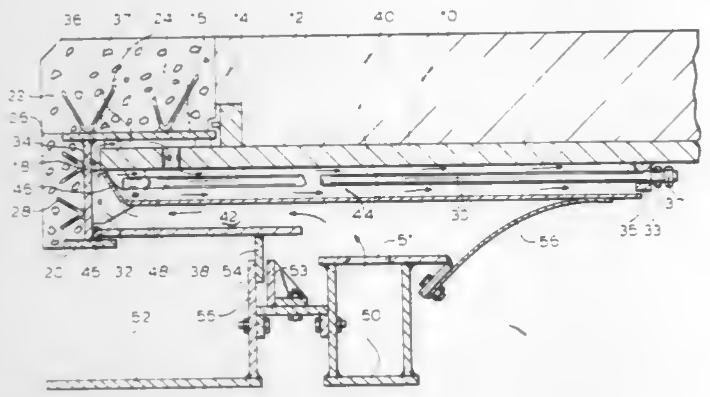
Alain Chielens, Marc-en-Baroeul; Bernard Boussekey, Lille, and Bernard Deschamps, Villeneuve d'Ascq, all of France, assignors to Fives-Cail Babcock, Paris, France

Filed Nov. 12, 1981, Ser. No. 320,555

Claims priority, application France, Nov. 21, 1980, 80 24728

Int. Cl.³ F27B *7/24, 7/38, 7/28*

U.S. Cl. 432—115 **11 Claims**



1. A protective device for a discharge end of a tubular rotary kiln including a metal shell having an internal and external surface, the metal shell terminating in the discharge end, and the protective device comprising

- (a) a flange extending radially outwardly of the rotary kiln shell and having a front face and a rear face,
- (b) a metallic ring affixed to the flange and being arranged concentric with the metal shell at the discharge end, the metallic ring and the internal surface of the metal shell defining a space therebetween,
- (c) a ring of refractory material supported by the metallic ring covering the metallic ring and the front face of the flange for protecting the internal surface of the shell at the discharge end and the front face of the flange, and
- (d) means for cooling the rear face of the flange, the cooling means including
  - (1) two sleeves concentrically surrounding the external surface of the metal shell, an inner one of the sleeves defining an annular chamber with the external shell surface and an outer one of the sleeves defining another annular chamber with the inner sleeve,
  - (2) means for circulating cooling air through the annular chambers past the rear face of the flange, and
  - (3) the space between the metallic ring and the internal surface of the metal shell communicating with the outer annular chamber through a passage defined between the rear face of the flange and the discharge end of the metal shell, and with the inner annular chamber through a port in the metal shell spaced inwardly of the discharge end.

4,370,129
TOOTH POSITIONER WITH HARDER AREAS

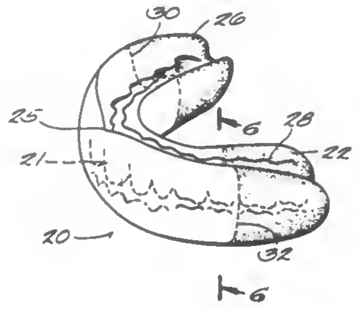
Gerald W. Huge, Racine, Wis., assignor to Professional Positioners, Inc., Racine, Wis.

Filed Jun. 18, 1981, Ser. No. 275,002

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—6 **7 Claims**

1. In tooth positioner means comprising an arch-shaped body of resilient material having an integrally formed tooth engaging proximal region and first and second integrally formed tooth engaging distal regions, said tooth positioner means being formed to fit within a patient's mouth between the upper and lower arches, such means having a generally concave surface for bearing on the buccal and labial surfaces of the teeth of at least one arch and having a convex surface adjacent to the lingual surface of the teeth, the improvement wherein at least one of said proximal and distal regions of said arch-shaped body is an anchoring region composed of harder material than another of said proximal and distal regions.



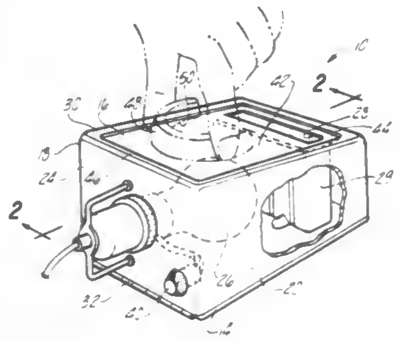
4,370,130
WAX OCCLUSAL RIM WARMER

Igor A. Berger, 25875 Greenfield, Southfield, Mich. 48075

Filed Jul. 1, 1981, Ser. No. 279,407

Int. Cl.³ A61C *13/20*

U.S. Cl. 433—32 **1 Claim**



1. Apparatus for removing material from a wax occlusal rim to establish the occlusal plane of the corresponding prosthodontic device comprising:

- a body having side walls, a base adapted to be disposed on a supporting surface, and a planar top formed of metal, the top being supported on the side walls at an acute angle relative to the base;
- a rectangular receptacle extending within the body and having an open upper end fixed to a slot formed in the top adjacent the edge thereof closest to the base;
- an electric light bulb supported within the body with its bulb in proximity to the side of the top facing the base; and
- means for energizing the light bulb to heat the planar top whereby a wax occlusal rim may be modified in form by pressing it into contact with the planar top, and wax melted from the rim will fall into said container.

4,370,131
ULTRASONIC TRANSDUCER TIPS

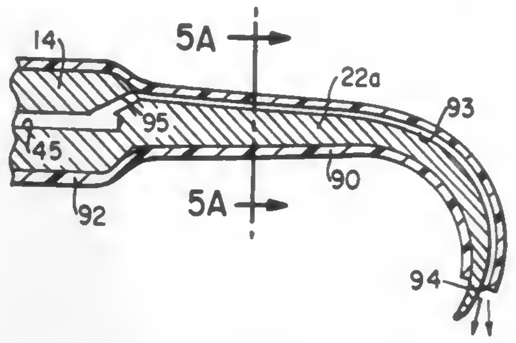
Anton Banko, Bronx, N.Y., assignor to Surgical Design, Long Island City, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,543

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—86 **2 Claims**

1. An ultrasonic transducer comprising means for converting electrical energy into vibratory energy, acoustic impedance transformer means coupled to one end of said converting means, and a work tip having one end coupled to the other end of said acoustic impedance transformer means and a free end which vibrates upon receiving the vibratory energy from said converting means through said transformer means, means for supplying fluid to said transducer, and means for delivering fluid from said supplying means to be discharged from an area of said tip, said delivering means comprising a sleeve conforming to the shape of and closely fully surrounding said tip along a substantial portion of its length, and at least one groove formed in said work tip receiving fluid from said supplying means and forming a passage between said sleeve and said tip through which the fluid is discharged, the fluid being in contact with said tip along the length of said passage.



4,370,132
ROTATABLE SOCKET FOR A DENTAL HANDPIECE

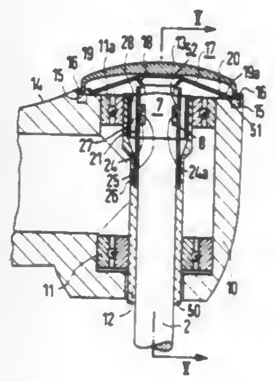
Juergen Wohlgemuth, Darmstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,863

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012152

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—128 **15 Claims**



1. In a rotatable socket for supporting a tool for rotation in a head housing of a dental hand piece, said socket including a hollow cylindrical shaft having a bore for receiving a tool from one end and having a dog for engagement with a flattened surface on a shank of the tool for transmission of torque therebetween, said socket having a catch means comprising of at least one support element extending parallel to the axis of said hollow cylindrical shaft and having a catch nose extending radially inward for engagement in an annular groove in the shank of the tool disposed in said hollow cylindrical shaft, said catch means including means biasing said catch nose radially inward, said catch means including a thumb actuated purchase disposed on the head housing for releasing each of the catch noses upon actuation to allow disengagement of the tool from said socket, the improvements comprising the hollow cylindrical shaft containing an inner recess adjacent said bore for accepting the catch means, said recess receiving each support element and providing space adjacent the catch nose to enable radial outward movement of the catch nose to a position to enable disengagement of the catch nose from the tool, each support element being disposed in said recess with a free end being adjacent the other end of the shaft and a pressure element being disposed adjacent said other end of the shaft and in alignment with and disengaged from each free end, said purchase being mounted on the housing free of contact with all rotatable parts and adjacent the pressure element for relative movement so that when actuated the purchase urges the pressure element into engagement with each free end of the support element to urge each of the catch noses radially outward to a position to release a tool in said socket.

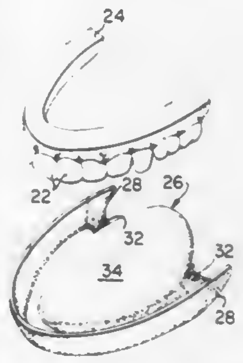
4,370,133
DENTURE MEANS AND METHOD

John A. Stempel, Chester, N.J., assignor to Cavitron Corporation, Palo Alto, Calif.

Filed May 14, 1974, Ser. No. 469,934

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—171 **8 Claims**



1. An assembly for forming a denture in the mouth of a dental patient comprising a tray having inner and outer walls made of formable material and approximating the shape of the patient's gums, a trough between said walls defining therewith a gum-receiving portion, a substantially U-shaped continuous slot formed in the bottom of said trough, said assembly further including a preformed unitary structure including prearranged individual artificial teeth and means for removably mounting said teeth in the slot of said tray, said mounting means including a preformed flange molded about the bases of said teeth to fixedly support said teeth in said preformed unitary structure, said flange extending beyond said slot onto said walls to support said teeth in said tray so that said teeth project through said slot.

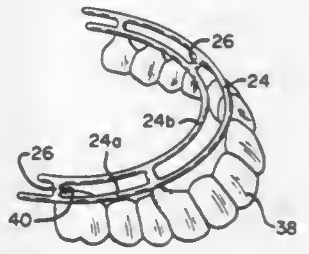
4,370,134
ONE PIECE PERMANENT SUPPORT FRAME FOR UPPER DENTURES

Harold D. Roberts, 1862 W. Broadway, Vancouver, B.C., Canada (V6J 1Y5)

Filed Dec. 3, 1980, Ser. No. 212,608

Int. Cl.³ A61C *8/00*

U.S. Cl. 433—173 **3 Claims**



1. A permanent implant denture support frame arranged for association with the upper jaw of a person, comprising

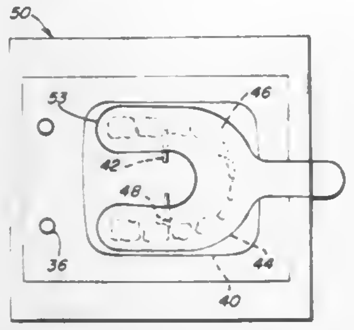
- (a) a frame portion consisting of first and second bar-like rails extending substantially in parallel relation,
- (b) said rails being spaced from each other in selected parallel relation so as to allow said first rail to fit in a groove cut along the alveolar ridge and said second rail to fit in another groove cut in the jaw bone inwardly of the mouth relative to the alveolar ridge,
- (c) cross webs securing said parallel rails together at spaced points throughout the length of said frame portion,

(d) and artificial denture means depending integrally from said frame portion,

(e) said frame being shaped similar to the contour of the upper jaw of a person so that said rails are arranged to fit in the respective grooves.

4,370,135
METHOD AND APPARATUS FOR MAKING DENTAL STUDY MODELS

James R. Powell, 855 Hoffman St., Elmira, N.Y. 14905
Filed Oct. 31, 1980, Ser. No. 203,386
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—213 **10 Claims**



1. In a method of making upper and lower dental study models adapted to be positioned in occlusion with each other by contact with a wax bite, and wherein said models are independently cast between respective impression holding trays and a common former having a base molding cavity dimensioned for minimal trimming of the base portions of the study models, the steps of: initially casting one of the study models in the common former; positioning one of the impression holding trays, corresponding to the other of the study models to be subsequently cast, over the initially cast study model in an aligned position; recording the aligned position of said one of the trays on an alignment guide; removing the initially cast study model from the common former; and then casting said other of the study models between said common former and said one of the trays while holding thereof in alignment with the recorded position on the alignment guide.

4,370,136
TREATMENT FOR PERIODONTAL DISEASES

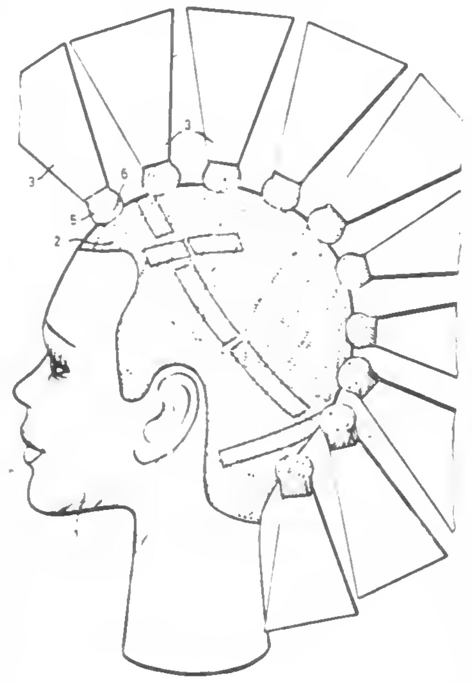
Lawrence E. Widman, 315 W. Glenside Ave., Glenside, Pa. 19038; Nasser G. Habeeb, 257 Albany Ave., Kingston, N.Y. 12401, and Raymond Z. Darakjian, 531 Summit St., Englewood Cliffs, N.J. 07632
Continuation-in-part of Ser. No. 882,941, Mar. 2, 1978, abandoned. This application May 1, 1981, Ser. No. 259,583
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—217 **5 Claims**

1. A method for treating the resorption of bone from around the root surfaces of periodontally involved natural teeth which comprises coating said surfaces with a nontoxic, biocompatible composition containing a polycarbonate resin dissolved in a nontoxic organic solvent and which is capable of supporting biological attachment of gingival cells and is impermeable to bacterial toxins.

4,370,137
COIFFURE DEMONSTRATION HEAD MODEL

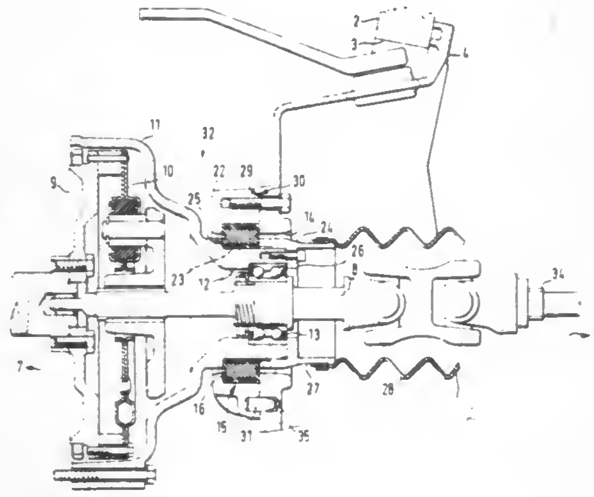
Heinrich G. Herzig, Schwetzingen, and Robert Rothfuss, Fellbach, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany
Filed Jul. 24, 1981, Ser. No. 286,548
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1980, 3032860
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—94 **14 Claims**

1. A demonstration head model for coiffures, comprising a body having a hair-indicating surface, an adhering means extending over said surface and engaged therewith, said hair-indicating surface having a middle line, said adhering means being arranged in rows of strips, two rows of said strips extending transverse of said middle line and away therefrom, at least a number of said rows extending along a lower edge of said hair-indicating surface and in a circumferential direction approximately corresponding to the circumference of the head model; and a plurality of pattern elements corresponding to hair locks to be cut and/or set, said pattern elements including pad-like projections which engage with said strips to thereby secure said pattern elements on said head model body.



4,370,138
INSTALLATION FOR SUPPORTING A BOAT ENGINE INSTALLED INBOARD AT A TRANSOM PLATE

Josef Wilka, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
Filed Jun. 30, 1978, Ser. No. 920,696
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729963
Int. Cl.³ B63H *1/14*
U.S. Cl. 440—112 **11 Claims**

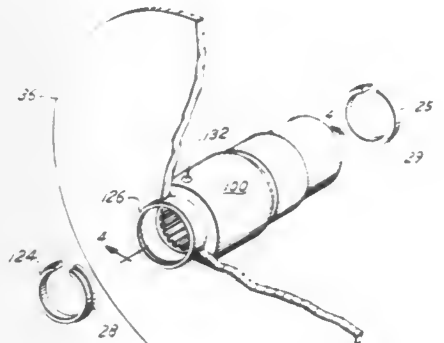


1. An installation for the support of an inboard engine at a transom plate connected with a boat transom for an outboard drive means, comprising neck means secured at the boat engine and receiving a connecting shaft between the boat engine and the drive means, said neck means being inserted into an aperture of the transom plate, and elastic means surrounding said neck means operatively connecting the latter with the aperture in the transom plate, said elastic means being retained at the

neck means by an axial clamping-in action in its inner circumferential area, characterized in that the elastic means is retained at the transom plate by an axial clamping-in action in its outer circumferential area, and in that a radially and axially yielding section free of clamping means is provided between the two clamping areas and wherein said elastic means includes in both clamping areas a pressure-resistant means limiting the deformation of the elastic means by the axial clamping-in action, the pressure-resistant means in each clamping area including a plurality of inserts which are spaced axially with respect to one another.

4,370,139
VARIABLE SPEED V-BELT SHEAVES

James D. Zigler, Columbus, Ind., assignor to Reliance Electric Company, Columbus, Ind.
Filed Oct. 15, 1979, Ser. No. 84,729
Int. Cl.³ F16H *55/56*
U.S. Cl. 474—45 **9 Claims**

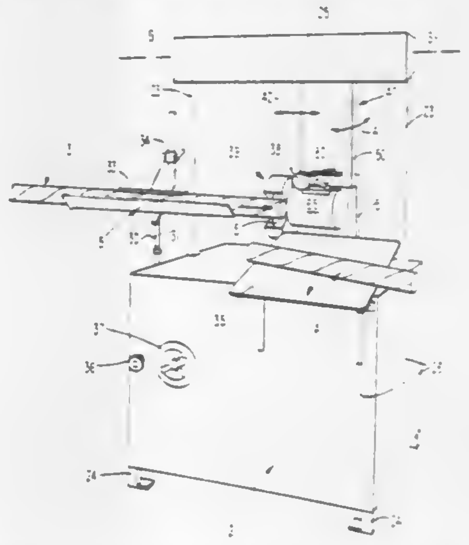


1. A variable speed V-belt sheave, comprising a rotatable shaft with an axial bore, a radial hole connected to said bore, and an annular groove in the surface of said shaft communicating with said hole, a pair of flanges, a hub with an internal wall defining a bore therethrough for one of said flanges mounted on said shaft and slidable axially thereon, complementary key-ways disposed axially in said shaft and hub, a key disposed in said key-ways for interlocking said shaft and hub against relative rotation therebetween while permitting axial movement therebetween, means defining a plurality of spaced, axially disposed lubrication grooves in the internal wall of said hub communicating with said annular groove, and means defining an annular lubrication groove in said internal wall of the hub near one end thereof interconnecting said axially disposed grooves for relieving excess lubricant in said axially disposed grooves.

4,370,140
PAPER TUBE CUT OFF SAW

Richard F. Fegley, Warrington, and Steven R. Kiss, Fort Washington, both of Pa., assignors to Paco Winders, Inc., Philadelphia, Pa.
Division of Ser. No. 24,507, Mar. 28, 1979, Pat. No. 4,258,613. This application Jan. 12, 1981, Ser. No. 224,153
Int. Cl.³ B26D *1/60*
U.S. Cl. 493—289 **3 Claims**

1. In an orbital saw for cutting paper tubes:
upright frame means;
a horizontally extending main slide shaft fixed adjacent the top of said frame means;
an upright saw blade frame including an upper part and a lower part each constructed of substantially square tubing and said parts being laterally off-set a distance substantially the same as the width of a tube;
means at the lower end of said saw blade frame for releasably maintaining a cam roller stud;
a pair of re-circulating bearing means mounted on said slide shaft and secured adjacent the top of said saw blade-frame and providing for the saw blade frame to reciprocate and to swing on the slide shaft;
guide means comprising a pair of spaced apart rods connected to said saw blade frame and extending parallel one another in a direction transverse the axis of said slide shaft;
a saw blade motor mounting plate;
bearing means connecting the saw motor mounting plate to said guide means for reciprocating motion along the guide means;
a saw blade motor mounted on said plate for movement therewith and a saw blade mounted on thc motor to be rotated thereby;
nut means mounted on said saw blade frame;



control means including first and second relatively movable elements, the first element being fixedly connected to said saw blade motor mounting plate for causing movement of same and the axis of relative motion between the elements being parallel to said rods and equidistant therefrom;
an adjusting screw mounted in said nut means for movement back and forth therein and being disposed generally coaxial with said axis of relative motion between the elements, one end of the screw being connected to said second element for moving the same;
means operative to move said first element to a cutting position wherein it is immovable with respect to the second element whereby motion of the adjusting screw causes said first element and said saw blade mounting plate to move relative to said saw blade frame, the cutting position being for use in setting and maintaining the saw blade in condition for engaging and cutting a tube and said means to move being further operative to move said first element and mounting plate to a non-cut position wherein the first element and mounting plate are immovable with respect to the blade saw frame, the non-cut position being for use in setting and maintaining the saw blade in condition whereby the blade cannot engage and cut a tube.

CHEMICAL

4,370,141

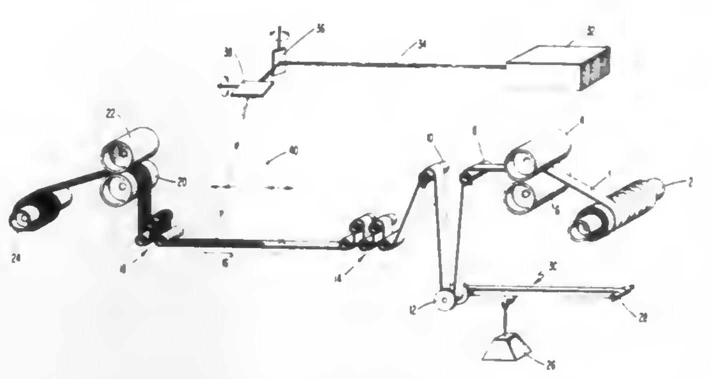
PROCESS FOR THE THERMAL STABILIZATION OF ACRYLIC FIBERS

Shu M. Lee, Madison, N.J., and Donald M. Gezovich, Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed May 18, 1981, Ser. No. 264,741

Int. Cl.^{3} C01B *31/07*

U.S. Cl. 8—115.5 **21 Claims**



1. In a process for the thermal stabilization of an acrylic fibrous material selected from the group consisting of an acrylonitrile homopolymer and an acrylonitrile copolymer containing at least 85 mole percent acrylonitrile units and up to 15 mole percent of one or more monovinyl units copolymerized therewith wherein said acrylic fibrous material is heated in an oxygen-containing atmosphere while retaining the original fibrous configuration substantially intact and said acrylic fibrous material is rendered black in appearance and non-burning when subjected to an ordinary match flame; the improvement of accomplishing at least a portion of the heating of said acrylic fibrous material by the intermittent irradiation of said acrylic fibrous material with a laser beam.

4,370,142

HAIR-DYEING COMPOSITIONS BASED ON PARA-PHENYLENEDIAMINE AND ORTHO-AMINOPHENOL

Andree Bugaut, Boulogne-Billancourt; Philippe Thouvenin, Aulnay-sous-Bois, and Jean Cotteret, Franconville, all of France, assignors to L'Oreal, Paris, France

Filed Jul. 8, 1980, Ser. No. 167,149

Claims priority, application France, Jul. 10, 1979, 79 17889

Int. Cl.^{3} A61K *7/13*

U.S. Cl. 8—407 **12 Claims**

1. A composition suitable for dyeing human hair which contains, in a cosmetically acceptable medium, paraphenylenediamine, or a cosmetically acceptable salt thereof, and orthoaminophenol, or a cosmetically acceptable salt thereof, in a molar ratio para-phenylenediamine/orthoaminophenol which is less than or equal to 2:1 in the case para-phenylenediamine is present in an amount of 1 to 2.5% by weight and which is greater than or equal to 1:1 and less than or equal to 3:1 in the case para-phenylenediamine is present in an amount of 0.2 to 1% by weight.

4. A composition according to claim 1 which additionally contains at least one direct dyestuff.

8. Process for dyeing the hair which comprises mixing a composition as defined in claim 1 with an oxidising agent which is hydrogen peroxide or urea peroxide, and applying the resulting mixture to the hair for 10 to 30 minutes.

4,370,143

PROCESS FOR TREATMENT OF POLYESTER FABRICS

Jackson Bauer, Croydon, Pa., assignor to Collins and Aikman Corp., New York, N.Y.

Filed Mar. 12, 1981, Ser. No. 243,249

Int. Cl.^{3} D06M *1/02;* **D06P** *5/22*

U.S. Cl. 8—493 **14 Claims**

1. A process for imparting improved soil-release, moisture-wicking, soil-redeposition, and anti-static properties to a polyester fabric, comprising the steps of:

immersing the polyester fabric in an alkaline bath,

adjusting the pH of the alkaline bath to a value of 5.5 or less, and

adding to said bath a polyester copolymer, said copolymer comprising an aqueous dispersion of 10–50% by weight ethylene terephthalate units, 50–90% by weight polyoxyethylene terephthalate units, wherein the average molecular weight of the polyoxyethylene units is 1000–4000, wherein the molar ratio of ethylene terephthalate to polyoxyethylene terephthalate is in the range of 2:1 to 6:1, wherein the viscosity ratio of the copolymer is between 1:10 and 1.50, and wherein the melting point of the copolymer is above 100° C. as measured by the temperature of disappearance of birefringence.

4,370,144

TWO-PHASE ORGANIC SOLVENT-WATER DYEING PROCESS FOR POLYESTER FIBERS

James K. Skelly, Wilmslow; David G. Evans, Bamford, both of England, and Carl Becker, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 955,683, Oct. 30, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 117,940

Claims priority, application United Kingdom, Nov. 10, 1977, 46793/77

Int. Cl.^{3} D06P *5/00*

U.S. Cl. 8—501 **22 Claims**

1. A process for dyeing polyester fibers comprising the steps of contacting the fibers with a two-phase system comprising (A) an organic solvent chosen from the group consisting of phenoxyethanol, phenxypropanol and benzyl alcohol and (B) water, in a weight ratio of about 1:25, said organic solvent containing a disperse dye dissolved therein, which dye is introduced into the two-phase system in the form of an aqueous, stable, highly concentrated, finely dispersed, flowable preparation having a low content of dispersing agent and a particle size of the dyestuff particles smaller than 10 microns, said preparation containing at least 10% by weight of water, at least 25% by weight of dyestuff, at most 10% by weight of an anionic dispersing agent, at most 5% by weight of a non-ionic dispersing agent and at most 35% by weight of a hydrotropic agent, at a temperature of about 100° C. and subsequently removing the organic phase from the system to fix the dye, the entire process being carried out at a temperature of about 100° C.

4,370,145

COPPER FORMAZAN COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS DYESTUFFS

Günther Schwaiger, and Ernst Hoyer, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

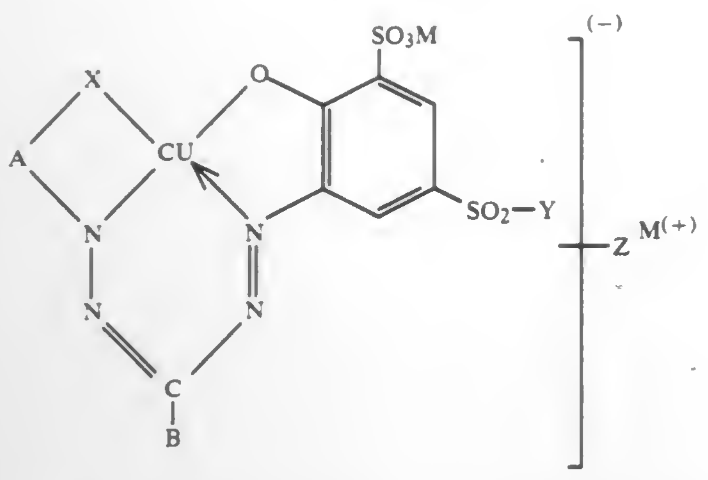
Continuation of Ser. No. 204,916, Nov. 7, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,871

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1979, 2945464; Sep. 20, 1980, 3035562

Int. Cl.^{3} C09B *62/50, 50/00*

U.S. Cl. 8—549 **4 Claims**

1. A copper formazan compound of formula (1):



(1)

in which:

Z is a water-solubilizing group and a substituent on A and B or both, being imperatively present in the formazan molecule once, twice or three-times and being bonded to an aromatic carbon atom or an aliphatic carbon atom of A or B;

A is phenylene or naphthylene unsubstituted or substituted by substituents selected from the group consisting of halogen, nitro, alkyl of from 1 to 5 C-atoms, alkoxy of from 1 to 4 C-atoms, alkylsulfonyl of from 1 to 4 C-atoms, phenylsulfonyl, sulfamoyl and N-mono- and N,N-dialkylsulfamoyl with 1 to 4 C-atoms in each alkyl, and optionally substituted by Z as indicated above; B is a straight-chain or branched-chain alkyl group of from 1 to 8 C-atoms or a straight-chain or branched-chain alkenyl group of from 2 to 8 C-atoms, these alkyl and alkenyl groups are unsubstituted or substituted by phenyl or by phenyl substituted by substituents selected from the group consisting of methyl, ethyl, methoxy, ethoxy, fluorine, chlorine, bromine and sulfamoyl, or B is phenyl or naphthyl each unsubstituted or substituted by substituents selected from the group consisting of hydroxy, nitro, halogen, alkyl of from 1 to 5 C-atoms, alkoxy of from 1 to 4 C-atoms and carbalkoxy of from 2 to 5 C-atoms, or

B is the monovalent radical of furan, thiophene, pyrrole, imidazole, indole, pyrazole, pyridine, pyrimidine, quinoline or benzimidazole, these heterocyclic radicals are unsubstituted or substituted on an aromatic carbon atom by chlorine, phenyl, methoxy, ethoxy, methyl or ethyl, and the hydrogen atoms in the NH groups of these heterocyclic rings may be replaced by methyl, ethyl or benzyl, and

B is optionally substituted by Z as indicated above, or B is a hydrogen atom;

Cu is copper,

X is oxygen or carbonyloxy of the formula —CO—O—, each bonded to A in the ortho-position relative to the nitrogen atom on A,

Y is vinyl or β-thiosulfatoethyl, and

M is hydrogen or an equivalent of a metal.

4,370,146

INFRARED ABSORPTION DETERMINATION OF SULFONATE SURFACTANTS UTILIZING DEUTERATED SULFONATES

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,056
Int. Cl.³ G01N *21/35;* E21B *47/00, 49/08*
U.S. Cl. 436—120 **2 Claims**

1. A method for determining the concentration of a brine tolerant sulfonate surfactant in a complex mixture containing, in addition to said brine tolerant sulfonate surfactant, lignosulfonates, crude oil, salts, and water and, optionally, petroleum sulfonates and alcohols, that comprises incorporating into the brine tolerant sulfonate surfactant molecule a small amount of deuterium prior to addition to the complex mixture and determining the concentration of the brine tolerant sulfonate surfactant by measuring its absorption of infrared light at about 2150 cm^{-1}.

4,370,147

FUEL FOR COMPRESSION IGNITION ENGINES

Thomas C. Kenny, Syosset, and John P. Plunkett, Smithtown, both of N.Y., assignors to Horizon Chemical, Inc., Freeport, N.Y.

Filed Oct. 1, 1979, Ser. No. 81,016
Int. Cl.³ C10L *1/18, 1/22, 1/30*
U.S. Cl. 44—68 **16 Claims**

1. A fuel for a compression ignition engine containing from about 1.0×10^{-6} to about 1.0×10^{-3} parts by weight of at least one isomer of dinitrotoluene.

4,370,148

CHLOROFLUOROFERRATE(II,III), A PROCESS FOR ITS MANUFACTURE, ITS USE AND A GRINDING WHEEL CONTAINING CHLOROFLUOROFERRATE(II,III)

Rudolf Hirschberg, and Bernd Schönfeld, both of Bad Nenndorf, Fed. Rep. of Germany, assignors to Riedel-De Haen Aktiengesellschaft, Seelze/Hanover, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,845
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026294
Int. Cl.³ C09C *1/02;* C01G *49/00*
U.S. Cl. 51—293 **8 Claims**

1. A chlorofluoroferrate(II,III) of the formula (1)

$$A_xFeCl_yF_z \qquad (1)$$

in which A is an alkali metal ion or an ammonium ion, x is a number from 1 to 10, y is a figure from 0.1 to 12.9, z is a figure from 0.1 to 12.9 and the total of $y+z$ is at least 3.

3. A grinding wheel comprising an abrasive material, a binder and, as filler, a chlorofluoroferrate (II,III) of the formula

$$A_xFeCl_yF_z$$

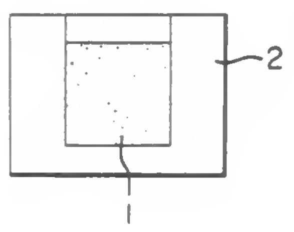
in which A is an alkali metal ion or an ammonium ion, x is a number from 1 to 10, y is a figure from 0.1 to 12.9, z is a figure from 0.1 to 12.9 and the total of $y+z$ is at least 3.

4,370,149

DIAMOND COMPACT FOR A WIRE DRAWING DIE AND A PROCESS FOR THE PRODUCTION OF THE SAME

Akio Hara, and Shuji Yazu, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jan. 23, 1981, Ser. No. 227,971
Claims priority, application Japan, Sep. 6, 1980, 55-123868
Int. Cl.³ B24D *3/02*
U.S. Cl. 51—309 **10 Claims**



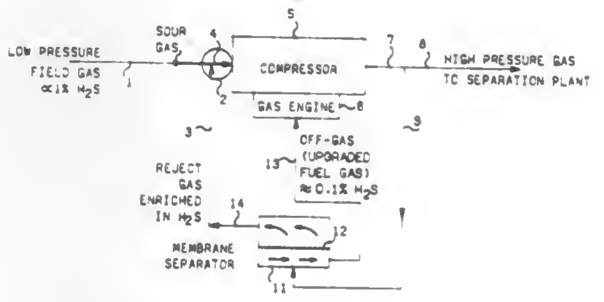
1. A diamond compact for a wire drawing die, which comprises 70 to 95% by volume of diamond powder with a particle size of at most 50 microns and the balance of a binder phase consisting of a carbide of WC or (Mo, W)C with a particle size of at most 1 micron and an iron group metal, the carbide and iron group metal in the binder phase being in such a proportion by weight that the content of the carbide is more than that corresponding to the eutectic composition.

4,370,150

ENGINE PERFORMANCE OPERATING ON FIELD GAS AS ENGINE FUEL

Roger W. Fenstermaker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 180,172, Aug. 21, 1980, abandoned. This application Aug. 11, 1981, Ser. No. 292,102
Int. Cl.³ B01D *53/32*
U.S. Cl. 55—16 **9 Claims**



1. A method of protecting a natural-gas-utilizing engine from corrosion and knock which comprises the steps of:

treating a portion of a high pressure field gas stream containing primarily methane in admixture with hydrogen sulfide and/or higher hydrocarbons with a permeable membrane, wherein said membrane is relatively more permeable to said hydrogen sulfide and said higher hydrocarbons, thereby producing a reject gas stream enriched in hydrogen sulfide and/or higher hydrocarbons, and an off-gas useful as an upgraded fuel gas stream relatively depleted in hydrogen sulfide and/or higher hydrocarbons,

reinjecting said reject gas stream to said low pressure field gas, and

operating said gas-utilizing engine on said upgraded fuel gas.

4,370,151

PROCESS AND APPARATUS FOR GASSING LIQUIDS

Peter Herbrechtsmeler, Hofheim am Taunus; Hans Schäfer, Bad Soden am Taunus, and Rudolf Steiner, Sulzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

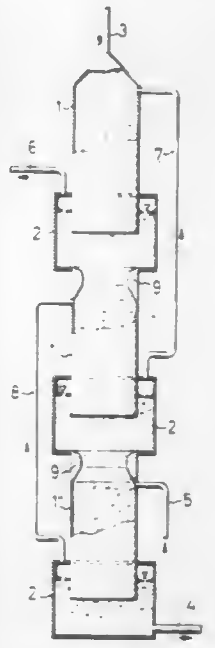
Filed Mar. 24, 1981, Ser. No. 247,133
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011613
Int. Cl.³ B01F *3/04;* B01D *19/00*
U.S. Cl. 55—38 **7 Claims**

1. A multistep process for contacting a liquid with a gas, the liquid streaming vertically downward in a gassing apparatus, said gassing apparatus comprising at least two superposed downstream parts, with the liquid passing downward through a constriction joining the lower end and the upper end of successive such superposed downstream parts, wherein the gas is fed in at the upper end of each downstream part and fresh gas is fed in exclusively at the upper end of the lowest downstream part, gas bubbles are separated at the lower end of each downstream part by reducing the velocity of the liquid flow in adequate manner between two adjacent downstream parts and at the lower end of the lowest downstream part, the separated gas bubbles are discharged to the outside and recycled to the next downstream part above, wherein the speed of the liquid stream immediately after gas bubble separation is increased vertically downward at said constriction before feeding in further gas in such manner that backmixture of bubbles between the immediately subsequent downstream parts is prevented.

3. A process for gassing a liquid which comprises passing a continuous stream of liquid vertically downward and successively through multiple stages, each stage having an upper portion of minimum cross-section, an intermediate portion of intermediate cross-section and a lower portion of maximum cross-section whereby the velocity of the stream of liquid is correspondingly reduced stepwise from a maximum to a minimum velocity as it moves successively through the upper, intermediate and lower portions of each stage and is increased again to its maximum velocity as it passes vertically downward through a constriction joining the lower portion of each stage with the upper portion of the next successive stage;

introducing a continuous stream of gas into the stream of liquid in the upper part of the intermediate portion of a lower stage;

collecting non-absorbed bubbles of gas in the lower portion of said lower stage;



reintroducing a continuous stream of gas from said non-absorbed bubbles into the stream of liquid in the upper part of the intermediate portion of the next higher stage;

collecting non-absorbed bubbles of gas in the lower portion of said next higher stage; and

adjusting the flow velocity of the stream of liquid so that it exceeds the speed of the bubbles through the stream in the upper portion of each stage, whereby said bubbles are moved downwardly with the stream of liquid within the intermediate portions of each stage, are permitted to move upwardly against the stream of liquid within the lower portions of each stage and are positively prevented from rising from each area of entry into the lower portion of the next upper stage by the maximum downward velocity of the liquid in the upper portion of the stage into which the gas is introduced.

4,370,152

GAS DRYER CARTRIDGE

Charles R. Luper, Anaheim, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 29, 1981, Ser. No. 278,777
Int. Cl.³ B01D *53/26*
U.S. Cl. 55—281 **3 Claims**

1. A dryer cartridge for removing moisture from a gas stream including, in combination:

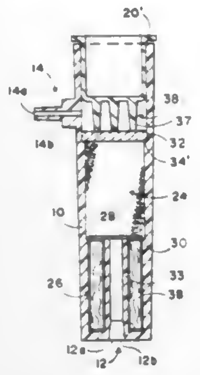
(a) a generally tubular housing having an upper end and a lower end, said housing being partitioned into an upper, gas drying chamber and a lower, liquid collecting chamber,

(b) an inlet tube extending from the lower end of the housing, through the liquid collecting chamber, to provide a path for the flow of gas from the exterior of the housing to the gas drying chamber, the space between the tube and the housing defining the liquid collecting chamber,

(c) an outlet extending from the gas drying chamber to the exterior of the housing,

(d) upper and lower retaining members for retaining a dessicant material within the gas drying chamber while permitting gas to flow therethrough,

(e) an end cap closing the upper end of the housing, said end cap serving to maintain the upper retaining member in contact with the dessicant material,



(f) a liquid retaining element in the liquid collecting chamber,

(g) the volume of the liquid collecting chamber being sufficient to contain the liquid produced as a result of the liquefaction of the dessicant material.

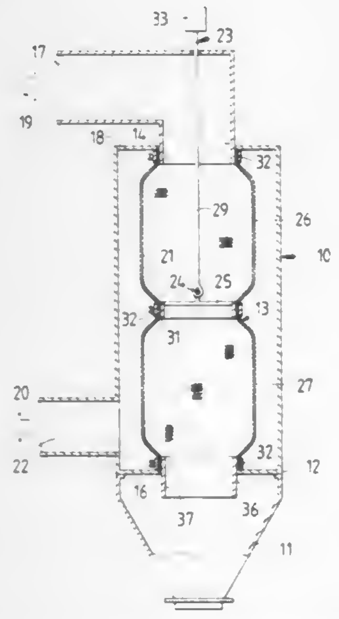
4,370,153
APPARATUS FOR CLEANING FILTER BAGS

Benjamin Russell, and Jerry W. Scott, both of Alexander City, Ala., assignors to Econ Company, Alexander City, Ala.

Filed Nov. 12, 1981, Ser. No. 320,466

Int. Cl.^{3} B01D *46/04*

U.S. Cl. 55—304 **7 Claims**



1. Apparatus for filtering entrained particulate matter from a gaseous fluid comprising:

(a) an upstanding housing having discharge means adjacent the lower end thereof for removing particulate matter,

(b) at least one upstanding porous tubular filter bag mounted within said housing with the ends of said filter bag being attached to said housing and with the length of said bag being greater than the distance between the points of attachment of said ends to said housing,

(c) means for introducing said gaseous fluid with particulate matter entrained therein into one end of said filter bag so that said particulate matter is deposited on the inner surface of said filter bag,

(d) an outlet communicating with said housing for discharging said clean gaseous fluid,

(e) a reciprocating drive means, and

(f) actuator means operatively connected to said reciprocating drive means and to said filter bag intermediate the ends thereof to impart longitudinal reciprocatory movement to the filter bag selectively in a first direction to relax the upper portion of said filter bag and extend the lower portion thereof to dislodge particulate matter therefrom and in a second direction to relax the lower portion of said filter bag and extend the upper portion thereof to dislodge particulate matter therefrom.

4,370,154
GAS DIVERSION UNIT

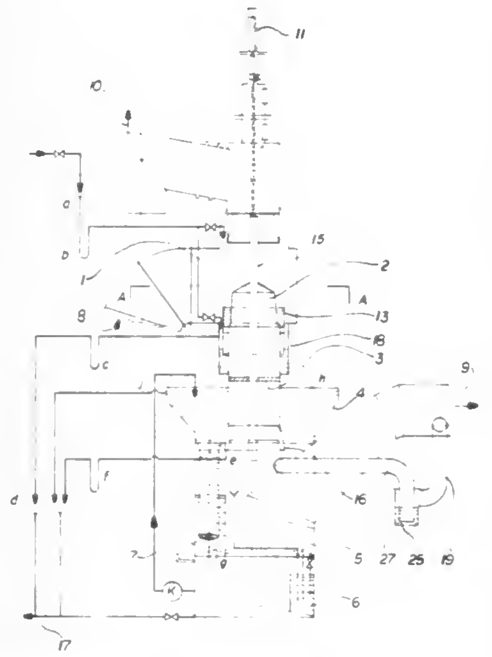
Gerald Namy, Saint-Etienne, and Jean Cordier, Dunkerque, both of France, assignors to Creusot-Loire Entreprises, Courbevoie and Usinor, Paris, both of, France

Filed May 22, 1980, Ser. No. 152,141

Claims priority, application France, Jun. 7, 1979, 79-14583

Int. Cl.^{3} B01D *46/00*

U.S. Cl. 55—309 **5 Claims**



1. A gas diversion unit comprising

(a) a vertical axis generally cylindrical housing having upper and lower outlets;

(b) a gas feed inlet horizontally connected to said housing;

(c) a bell movable between said upper and lower outlets; and

(d) steel lip-water trough gas seals formed between said bell and said housing when said bell is at its uppermost or lowermost position;

(e) waste gases being directed to a stack open to the atmosphere when said bell is at one of its extreme positions and to a processing network duct when said bell is at the other of its extreme positions; and

(f) the inlet and housing connection being in the form of a cyclone, for separating out water droplets and dust contained in the waste gases.

4,370,155
AIR CIRCULATING DEVICE

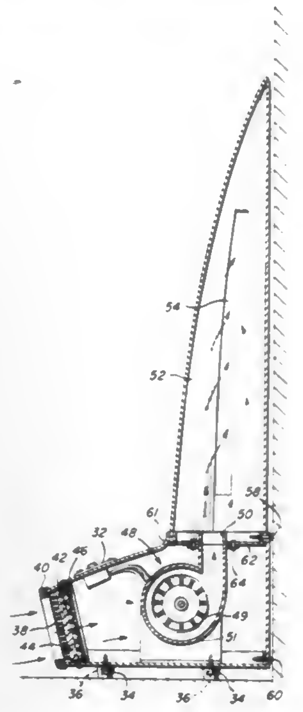
Joseph M. Armbruster, 2700 NE. 47th St., Lighthouse Point, Fla. 33064

Filed Nov. 4, 1980, Ser. No. 204,072

Int. Cl.^{3} B01D *50/00;* F24F *13/06*

U.S. Cl. 55—316 **13 Claims**

1. An air circulating device for providing circulation of air throughout substantially the total area of a room, comprising: a hollow base forming the bottom portion of said device and capable of supporting said device adjacent to the floor of a room, an air inlet means formed in said base and capable of receiving air flowing parallel and adjacent to the floor, a single blower assembly contained within said base and including an impeller enclosed within a blower housing, said blower housing including a blower outlet, a casing comprising an elongated vertical air chamber disposed over said hollow base, first and second elongated vertical air outlets placed in said casing and positioned and arranged on opposite sides of said casing so as to provide at least two divergent substantially horizontal airflow paths, said blower outlet being orientated upwardly into said air chamber and being contiguous therewith, whereby forced air is discharged from said air chamber into said at least two divergent substantially horizontal paths directly from said air outlets into a room.



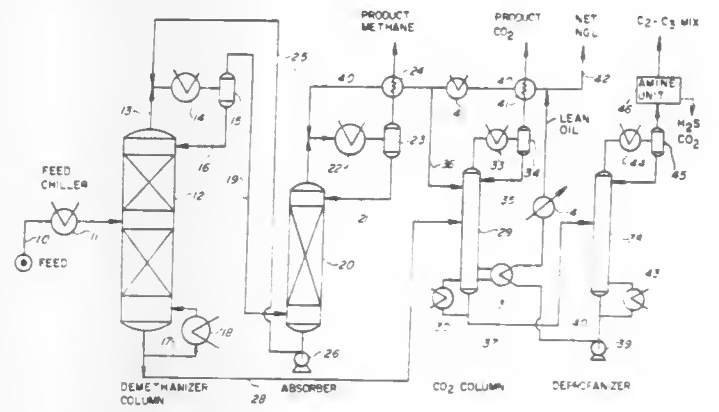
4,370,156
PROCESS FOR SEPARATING RELATIVELY PURE FRACTIONS OF METHANE AND CARBON DIOXIDE FROM GAS MIXTURES

Clifton S. Goddin, Jr., Tulsa, and Russell L. McGalliard, Broken Arrow, both of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 29, 1981, Ser. No. 268,832

Int. Cl.^{3} F25J *3/02*

U.S. Cl. 62—17 **5 Claims**



1. A cryogenic process for separating relatively pure fractions of methane and carbon dioxide from a mixture thereof containing at least about twenty mol percent (20%) carbon dioxide and at least about five mol percent (5%) methane and which also contains other components including ethane and higher hydrocarbons and hydrogen sulfide, said process comprising:

(a) Cooling said mixture to a temperature of between about zero° F. and minus 40° F. and introducing said mixture into a demethanizer distillation column maintained at a pressure of between about 450 and about 650 psia;

(b) taking an overhead distillate stream from said column comprising methane and at least about ten mol percent carbon dioxide and absorbing said carbon dioxide from said overhead stream by contacting it with a lean oil absorbent to produce sweet product methane containing less than two mol percent carbon dioxide;

(c) withdrawing a bottoms stream comprising carbon dioxide, ethane and higher hydrocarbons and hydrogen sulfide from said column and introducing said bottoms stream into a carbon dioxide separation column maintained at a pressure of between about 400 and about 500 psia;

(d) also introducing into said carbon dioxide column a stream of lean oil in sufficient amount to enhance the volatility of carbon dioxide relative to hydrogen sulfide and thereby produce a sweet high purity product carbon dioxide overhead stream;

(e) withdrawing from the bottom of said carbon dioxide column a bottoms stream comprising hydrogen sulfide, ethane and higher hydrocarbons;

(f) separating said lean oil from said bottoms stream to provide the lean oil requirements for the carbon dioxide absorption step set forth in (b) above and for introduction into said carbon dioxide column as is set forth in (d) above.

5. A cryogenic process for separating relatively pure fractions of methane and carbon dioxide from mixtures thereof which also contain other components, including ethane and higher hydrocarbons and hydrogen sulfide, said process comprising:

(a) cooling said methane carbon dioxide mixture comprising at least about twenty mol percent (20%) carbon dioxide and at least about five mol percent (5%) methane to a temperature of between about minus 10° F. and minus 40° F. and introducing the mixture at an intermediate level into a demethanizer distillation column maintained at a pressure of between about 450 and 650 psia;

(b) maintaining the top of said column at a temperature of between about minus 20° F. and minus 60° F. by refluxing of condensed vapors withdrawn from the top of said column, the bottom of said column being maintained at a temperature of between about 50° F. to 120° F. by a reboiler which provides a stripping vapor for the column;

(c) introducing the bottoms stream into a carbon dioxide column at an intermediate level, the carbon dioxide column being provided with external reflux means at its upper end and reboiler means at its lower end whereby purified carbon dioxide product is withdrawn from the top of said carbon dioxide column and a bottoms stream comprising ethane and higher hydrocarbons and hydrogen sulfide is withdrawn at the bottom;

(d) depropanizing the withdrawn bottoms stream from the carbon dioxide column by fractionation to separate hydrogen sulfide and C_3's from lean oil; and

(e) recycling the lean oil fraction to an upper region of either or both of the columns to permit operating at temperatures high enough to prevent the formation of solid carbon dioxide in the methane separation step and to increase the volatility of carbon dioxide relative to hydrogen sulfide in the case of the carbon dioxide column.

4,370,157
STABLE SIZING COMPOSITIONS USED DURING FORMING OF GLASS FIBERS AND RESULTING FIBER

Herbert W. Barch, Natrona Heights; Carl A. Melle, Gibsonia; Donald E. McWilliams, Pittsburgh, and Howard J. Hudson, Braddock, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 242,098, Mar. 9, 1981, abandoned, which is a division of Ser. No. 22,674, Mar. 22, 1979, abandoned.

This application Dec. 29, 1981, Ser. No. 335,440

Int. Cl.^{3} C03C *25/02*

U.S. Cl. 65—3.43 **4 Claims**

2. A method of forming glass fibers comprising:

forming glass fibers from molten cones of glass at the tips of orifices in a bushing by attenuation;

sizing said glass fibers with an aqueous sizing composition, comprising:

- about 5 to about 15 weight percent of a unsaturated water insoluble polyester resin;
- about 0.5 to about 1.5 weight percent of a plasticizer;
- about 0.1 to about 1.0 weight percent of a methacryloxyalkyltrialkoxy silane to promote adhesion between said glass fibers and resinous material;
- an acid base salt reaction product formed from about 0.1 to about 1.0 percent by weight of amino-containing silane coupling agent and a water solubilizable condensation, crosslinkable, ethylenically unsaturated polyester resin having free carboxyl groups in an amount of about 5 to 15 weight percent of the aqueous sizing composition, where the polyester resin having free carboxyl groups and amino silane are combined to favor the reaction between the free carboxyl groups of the polyester and the amine groups of the silane over the formation of silane dimers by combination of hydrolyzed silanes;
- about 2 to about 7 weight percent by weight of an acrylic thermoplastic polymer being of sufficient low molecular weight to impart pressure sensitive adhesive characteristics to said sizing composition; and
- an amount of water to give a sizing composition containing an amount of total solids in the range of about 18 percent to about 40 weight percent; and
- gathering said fibers into strands; and
- collecting said glass fiber strands.

4,370,158

HEAT-TREATING METHOD FOR SEMICONDUCTOR COMPONENTS

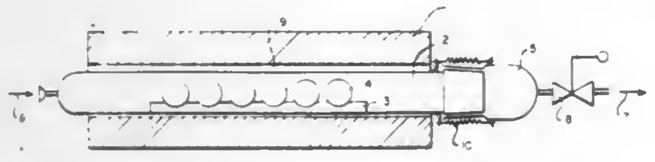
Karl A. Schülke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 77,509, Sep. 20, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,564

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843261

Int. Cl.^{3} C03B *32/00*

U.S. Cl. 65—32 **3 Claims**



1. A method of heat-treating, at temperatures above 1200° C., semiconductor components which are introduced into a quartz-glass tube, a gas stream being conducted through the quartz-glass tube, wherein there is maintained in the interior of the quartz-glass tube, at least for the length of time that the temperature of 1200° C. is exceeded, a pressure which is from 3 to 110 mm Hg higher than the pressure on the external surface of the quartz-glass tube over the heated area of the tube.

4,370,159

NUTRIENT FOR MUSHROOM GROWTH AND PROCESS FOR PRODUCING SAME

R. Barry Holtz, Los Gatos, Calif., assignor to Spawn Mate, Inc., San Jose, Calif.

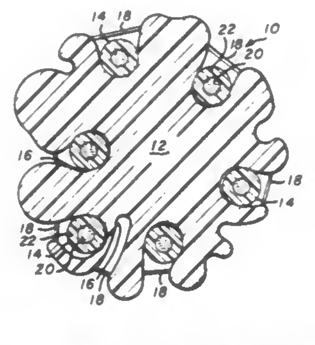
Filed Apr. 6, 1981, Ser. No. 251,108

Int. Cl.^{3} C05F *11/00*

U.S. Cl. 71—5 **9 Claims**

1. An improved nutrient for fungus growth, in particle form, comprising:

- a matrix particle of anhydrous denatured protein material; and
- a plurality of growth enhancer droplets smaller in size relative to the matrix particle and having a core of fungus growth stimulating materials microencapsulated by an activated protein outer shell, said droplets being attached to the matrix particle such that the droplets are available only to those mycelia having sufficient maturity and vitality to break down and utilize the protein of the matrix particle.



4,370,160

PROCESS FOR PREPARING SILICONE MICROPARTICLES

Maris J. Ziemelis, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 27, 1978, Ser. No. 919,588

Int. Cl.^{3} A01N *37/38;* B01J *13/02;* B05D *3/06;* C08F *30/08*

U.S. Cl. 71—117 **14 Claims**

2. A process for preparing microcapsules consisting essentially of an internal material dispersed throughout a solid organopolysiloxane, said process comprising

- (I) preparing a dispersion of discrete entities in a fluid continuous phase by dispersing or dissolving the internal material in a liquid organopolysiloxane composition, convertible by ultraviolet radiation to the solid state, and dispersing the resulting dispersion or solution in the continuous phase fluid, said fluid continuous phase being transparent to ultraviolet radiation and said liquid organopolysiloxane composition being insoluble in the fluid continuous phase and consisting essentially of
  - (a) an organopolysiloxane wherein an average of at least two of the organic radicals per molecule are silicon-bonded olefinic radicals selected from the group consisting of vinyl and butenylene and
  - (b) a hydrogen-containing organopolysiloxane, free of aliphatic unsaturation, wherein the average molecule contains at least two hydrogen radicals selected from the group consisting of silicon-bonded hydrogen and mercaptoalkyl hydrogen, at least one of (a) and (b) having an average of more than two of said olefinic radicals and said hydrogen radicals, respectively, per molecule, and
- (II) exposing the dispersion of (I) to ultraviolet radiation until the liquid organopolysiloxane composition is converted to the solid state.

4,370,161

ORE REDUCTION USING CALCIUM OXIDE DESULFURIZATION

Ethem T. Turkdogan, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 154,731, May 29, 1980. This application May 7, 1981, Ser. No. 261,397

Int. Cl.^{3} C21B *13/00, 15/00;* C01B *17/00*

U.S. Cl. 75—34 **12 Claims**

1. A process for reducing ore comprising (a) contacting a sulfur bearing hot reducing gas or carbonaceous material with a desulfurizing agent comprising a bed of solid particles comprising calcium oxide and ore to thereby produce a low-sulfur content hot reducing gas stream which reduces the ore, a reduced ore, and a calcium sulfide composition, (b) separating the reduced ore from the other products of step (a), and then (c) contacting said calcium sulfide composition with hot liquid water at a temperature and corresponding pressure sufficient to maintain steam in the system and wherein a major portion of

said calcium sulfide composition has a particle size of less than about 6 mesh to thereby convert the sulfide of said composition to calcium hydroxide and hydrogen sulfide.

4,370,162

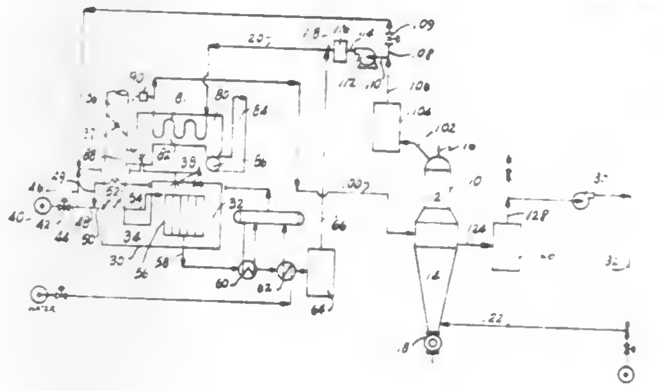
METHOD FOR THE GASEOUS REDUCTION OF IRON ORE TO SPONGE IRON

Carlos Dominguez-Ahedo, and Carlos Guzman-Bofill, both of Garza Garcia, Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Continuation-in-part of Ser. No. 191,941, Sep. 29, 1980. This application Mar. 20, 1981, Ser. No. 246,076

Int. Cl.^{3} C21B *13/02*

U.S. Cl. 75—90 R **5 Claims**



1. A method for reducing particulate metal ore to sponge metal in a vertical shaft, moving bed reactor having a reduction zone for reducing said particulate metal ore in which a hot reducing gas largely composed of carbon monoxide and hydrogen is caused to flow through said reduction zone to reduce the metal ore therein to metal, which comprises the steps of withdrawing substantially all of the reducing gas from the reactor as an effluent gas, removing water from the effluent gas, feeding a portion of said effluent gas to a first heating unit to heat said gas and feeding the remaining portion of said effluent gas to a second heating unit, recycling at least a portion of said effluent gas to said reactor to form a reducing gas loop, reforming a hydrocarbon-containing gas in a catalytic reformer at an elevated temperature to produce make-up reducing gas fed to said loop and burning a suitable fuel to produce hot combustion products for heating said gas in said reformer, said second heating unit being integrated with the reformer to enable the hot combustion products produced in said reformer to be passed in heat exchange relationship with the effluent gas fed to said second heating unit, combining the heated effluent gas from the first and second heating units and feeding said combined gas stream to said first heating unit to reheat said gas stream further prior to being recycled to the reduction zone of the reactor.

4,370,163

HYDROGEN STORAGE ALLOY AND PROCESS FOR MAKING SAME

Yoshio Moriwaki, Hirakata; Takaharu Gamou, Fujiidera; Nobuyuki Yanagihara, Hirakata; Toshio Yamashita, Katano, and Tsutomu Iwaki, Yawata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sep. 4, 1980, Ser. No. 184,173

Claims priority, application Japan, Sep. 7, 1979, 54-115507; Sep. 26, 1979, 54-124616; Feb. 15, 1980, 55-18103

Int. Cl.^{3} C22C *14/00, 38/14;* C01B *6/24*

U.S. Cl. 420—582 **9 Claims**

1. A hydrogen storage alloy of the general formula

$$Ti_{1-x}A_xFe_{y-z}B_z$$

wherein A is Hf or a mixture thereof with Zr, B is at least one member selected from the group consisting of Cr, Cu, Co, Mo, V, Ni, Nb, Mn and a mixture thereof, x is a value of from 0.01 to 0.1 when A is Hf, y is a value of from 0.85 to 1.15 when A is Hf, and z is zero or a value of from 0.01 to 0.10 when A is Hf.

4,370,164

YELLOW METAL ALLOY

William R. Harris, Edina, and Harold G. Jache, Owatonna, both of Minn., assignors to Jostens Inc., Minneapolis, Minn.

Filed Jan. 2, 1981, Ser. No. 222,152

Int. Cl.^{3} C22C *5/06*

U.S. Cl. 420—503 **8 Claims**

1. An alloy consisting essentially of 4% to 10% by weight gold, 54% to 61% by weight silver, 14% to 19% by weight copper, 4% to 7% by weight palladium, 9% to 14% by weight indium, 1% to 3% by weight zinc and 0.015% to 0.04% by weight boron.

4,370,165

LOW SILVER DENTAL AMALGAM ALLOY COMPOSITION

Robert De Luca, Pennington, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed May 21, 1981, Ser. No. 265,883

Int. Cl.^{3} C09K *3/00*

U.S. Cl. 106—35 **3 Claims**

1. A composition adapted for amalgamation with mercury to form a dental amalgam, which consists esentially of a uniform mixture of:

- (a) A first alloy composed of at least 65 weight percent silver, up to 29 weight percent tin, up to 6 weight percent copper, and up to 2 weight percent zinc; and
- (b) A second alloy composed of from 46 to 51 weight percent silver, from 4 to 6 weight percent tin, and from 45 to 48 weight percent copper,
- wherein, when said composition is mixed with from 40 to 60 weight percent memory, based on weight of said composition plus mercury, the resulting dental amalgam has the following properties:
- 1-hour compressive strength, at least 16,000 psi; 24 hour compressive strength, at least 50,000 psi; percent flow, less than 1; dimensional change, less than ±15 microns/centimeter; creep, less than 0.5 percent; and working time, from 2 to 6 minutes,
- the said components (a) and (b) being present in proportions of from 33 to 67 weight percent (a) and from 67 to 33 weight percent (b), the percentage being based on weight of (a) plus (b).

4,370,166

LOW DENSITY CEMENT SLURRY AND ITS USE

Charles A. Powers; George B. Holman, both of Tulsa, and Robert C. Smith, Inola, all of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 183,888, Sep. 4, 1980, Pat. No. 4,305,758, which is a continuation-in-part of Ser. No. 163,030, Jun. 25, 1980, abandoned, which is a division of Ser. No. 47,533, Jun. 11, 1979, Pat. No. 4,252,193, which is a continuation-in-part of Ser. No. 932,052, Aug. 8, 1978, abandoned. This application Sep. 17, 1981, Ser. No. 303,306

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—97 **20 Claims**

1. A hydraulic cement slurry which comprises as its essential components:

- hydraulic cement, about 8 to about 50 weight percent hollow glass microspheres by weight of the cement and sufficient water to form a pumpable slurry, wherein the API free water content of said slurry is no more than about 2 volume percent based only on said hydraulic cement and said microspheres, and said microspheres have ANSI/ASTM D 2840-69 average true particle densities of at least 0.2 gm/cm^3, ANSI/ASTM D 3102-72 hydrostatic collapse strengths of at least 500 psi (3447 kPa) and average particle diameters of less than about 500 microns.

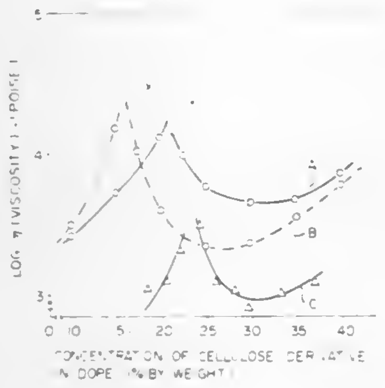
4,370,167
ASBESTOS-FREE DRYWALL JOINT COMPOUND UTILIZING SEPIOLITE CLAY AS ASBESTOS SUBSTITUTE

Patrick J. Mudd, Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.
Filed Mar. 15, 1982, Ser. No. 358,264
Int. Cl.^{3} C04B *1/00*
U.S. Cl. 106—119 **6 Claims**

1. A drywall joint compound, said compound being free of asbestos fiber and attapulgite clay, and comprising as dry solids, by weight, from about 50 to 98% of fine ground powdered fillers of about minus 325 mesh particle size and other than sepiolite clay, from about 1 to 50 percent of a binder composition for said filler, from about 0.1 to 5 percent of a thickener other than sepiolite clay, and from about 0.1 to 5 percent fine powdered sepiolite clay.

4,370,168
MESOPHASE DOPE CONTAINING CELLULOSE DERIVATIVE AND INORGANIC ACID

Kenji Kamide, Ikoma; Kunihiko Okajima, and Toshihiko Matsui, both of Takatsuki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan
Filed Sep. 19, 1980, Ser. No. 188,854
Claims priority, application Japan, Sep. 21, 1979, 54/120718; Sep. 25, 1979, 54/121960
Int. Cl.^{3} C08L *1/26*
U.S. Cl. 106—177 **10 Claims**



1. A mesophase dope comprising at least 15% by weight of at least one cellulose ether, dissolved in an aqueous solution of at least 5% by weight of at least one inorganic acid, said dope exhibiting a mesophase property even in the case where no fluid dynamic stress is applied thereto.

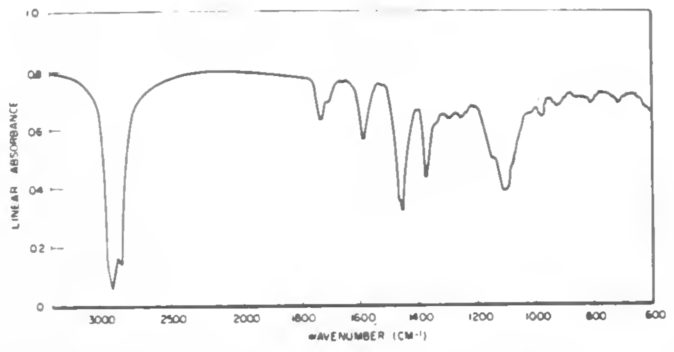
4,370,169
AQUEOUS DISPERSION OF GLASS FIBERS AND METHOD AND COMPOSITION FOR PRODUCING SAME

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 31, 1980, Ser. No. 221,741
Int. Cl.^{3} C04B *43/02;* **D21F** *11/00;* **C08L** *91/00*
U.S. Cl. 106—267 **31 Claims**

1. An aqueous sizing composition for glass fibers having filament diameters larger than around 13 microns to render glass fibers more readily dispersible in aqueous solutions, comprising:

a. about 0.1 to about 50 weight percent of a blend of alkyl sulfate quaternary of an alkyl amino fatty acid amine or amide and a liquid mineral oil-inorganic silica defoaming agent made water dispersible with a compatible surfactant where the amount of the quaternary material is in the range of about 50 to about 95 weight percent of the blend and the amount of the defoaming agent is around 5 to about 50 weight percent of the blend; and

b. water.



4,370,170
PRODUCING MINIMUM ASPHALT-CONTAINING CATIONIC EMULSIONS EMPLOYING SPECIFIC CONDUCTANCE

William J. Tolonen, and Armin C. Pitchford, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.
Filed Mar. 23, 1981, Ser. No. 246,543
Int. Cl.^{3} C08L *95/00*
U.S. Cl. 106—277 **7 Claims**

1. A method for preparing an asphalt-in-water emulsion which comprises preparing an emulsifying solution, adjusting the pH of said emulsifying solution to be in the range of about 3 to about 5, increasing the measured, specific conductance of the solution to a value that is in a range of about 900 to about 46,000 micromhos by varying the amount of ionizing salt added to the solution and then compounding the thus prepared solution with asphalt under suitable blending conditions.

4,370,171
METHOD FOR DISPERSING COMMINUTED SOLIDS

Glenn N. Robinson, Terre Haute, and Charles E. Seeney, Brazil, both of Ill., assignors to Angus Chemical Co., Northbrook, Ill.
Filed Feb. 2, 1981, Ser. No. 230,249
Int. Cl.^{3} C09C *1/36, 1/24*
U.S. Cl. 106—300 **21 Claims**

1. A method for dispersing a comminuted solid in an aqueous medium comprising the step of using as a dispersant a combination of an alkanolamine with a polymeric carboxylic acid selected from the group consisting of polyacrylic acid, polymethacrylic acid and carboxymethyl cellulose.

8. The method of claim **1** wherein the alkanolamine is present in the combination in an equivalent weight ratio of about 1:1.

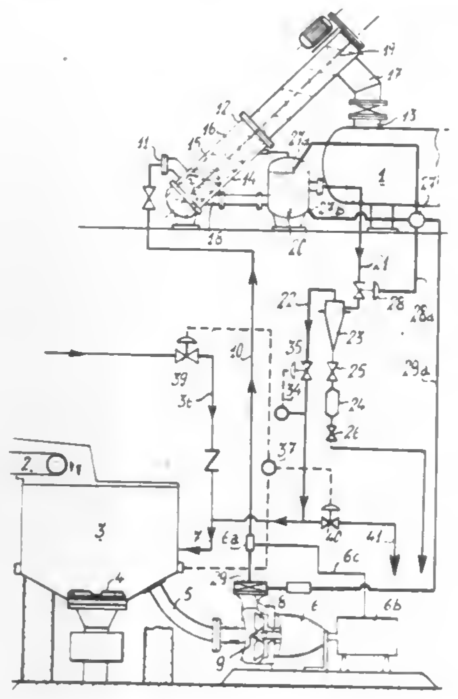
13. The method of claim **8** wherein the amount of dispersant is from 0.1 to 1.0%.

18. The slurry of claim **13** wherein the pigment is titanium dioxide.

4,370,172
CONTROLLED VORTEX PUMP FEED FOR SUPPLYING CELLULOSE-CONTAINING MATERIAL TO REACTION VESSEL

Charles Gueissaz, Neuilly-sur-Seine, France, assignor to Compagnie de Construction Mecanique Sulzer, French Societe Anonyme, Paris, France
Filed Mar. 17, 1981, Ser. No. 244,728
Int. Cl.^{3} C13K *1/02*
U.S. Cl. 127—1 **9 Claims**

3. Apparatus for feeding vegetable material into a treatment enclosure under pressure to subject the material in the enclosure to a reaction under pressure, said apparatus comprising means for shredding the material into fragments and impregnating and diluting the material with a treating liquid so as to produce a liquid-solid mixture; a vortex pump, downstream of said means for feeding the mixture through a pipe under pressure into the treatment enclosure; a variable-speed motor for driving the pump; and means including a flow meter in said pipe and controlling the speed of said variable-speed motor in dependence on the flow rate measured by said flow meter so as to maintain the rate of flow through said pipe at a constant value.



4,370,173
COMPOSITION AND METHOD FOR ACID CLEANING OF ALUMINUM SURFACES

David Y. Dollman, Doylestown, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
Continuation-in-part of Ser. No. 263,838, May 15, 1981, abandoned. This application Apr. 30, 1982, Ser. No. 373,211
Int. Cl.^{3} B08B *3/08;* **C23G** *1/12;* **C11D** *7/08*
U.S. Cl. 134—3 **16 Claims**

8. A process for cleaning an aluminum surface comprising the steps of (a) contacting said surface with an aqueous cleaning solution comprising from about 1 to about 10 grams/liter of sulfuric acid, from about 0.005 to about 0.1 grams/liter of hydrofluoric acid, and from about 0.1 to about 10 grams/liter of alkali metal 2-butoxyethoxyacetate, and (b) rinsing the aluminum surface to remove the cleaning solution.

4,370,174
METHOD FOR REMOVING ADHESIVE RESIDUES WITH AN EMULSION CLEANER

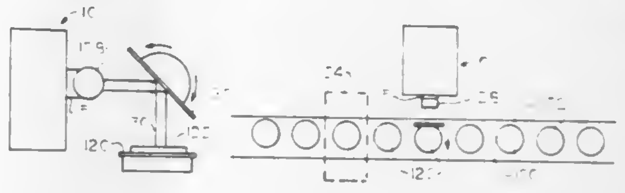
Charles H. Braithwaite, Jr., 11232 Tigrina, Whittier, Calif. 90603
Filed Aug. 31, 1981, Ser. No. 297,979
Int. Cl.^{3} B08B *3/08;* **C11D** *7/50*
U.S. Cl. 134—7 **25 Claims**

1. A method for cleaning organophilic adhesive coatings from a floor surface which comprises:

(a) applying, to the surface of a floor having used and aged residues of an adhesive selected from the class of asphaltic, polyvinyl acetate and rubber base adhesives remaining after removal of flooring tile and the like, a cleaning composition consisting essentially of;
  (i) from 40 to about 80 weight percent of an organic solvent having a flash point above about 140 degrees F.;
  (ii) from 20 to about 60 weight percent of an inorganic solid adsorbent powder having a particle size passing a 100 mesh screen;
  (iii) a water-in-oil surfactant in an amount from 0.002 to about 0.01 weight percent, sufficient to form said cleaning composition into an oil external phase emulsion;
  (iv) an oil-in-water surfactant in an amount from 0.001 to about 0.05 weight percent, sufficient to convert said oil external phase emulsion to a water external phase emulsion upon the addition of water thereto; and .
  (v) no greater than 20 weight percent water;
(b) permitting said cleaning composition to remain in contact with said adhesive coating for a time sufficient to soften said adhesive;
(c) scrubbing said surface to loosen said adhesive coating and to work the loosened adhesive into said composition, forming an emulsion having a whipped consistency;
(d) adding water to said emulsion of whipped consistency in an amount greater than the volume of said cleaning composition sufficient to convert said emulsion to a water external phase emulsion; and
(e) removing said water external phase emulsion from said substrate.

4,370,175
METHOD OF ANNEALING IMPLANTED SEMICONDUCTORS BY LASERS

Jeffrey I. Levatter, Encinitas, Calif., assignor to Bernard B. Katz, LaJolla, Calif.
Filed Dec. 3, 1979, Ser. No. 100,025
Int. Cl.^{3} H01L *21/26, 21/268*
U.S. Cl. 148—1.5 **12 Claims**



1. A method of producing solar voltaic cells comprising implanting a dopant material into a photo sensitive semiconductor substrate to create a P-N junction, and annealing said substrate with a pulsed laser beam having a wavelength predominantly in the ultraviolet region, a suitable beam annealing energy of at least two joules per pulse, a pulse repetition rate of at least 100 pulses per second and a uniformity of beam pulse output that varies by no more than five percent across the area of beam output.

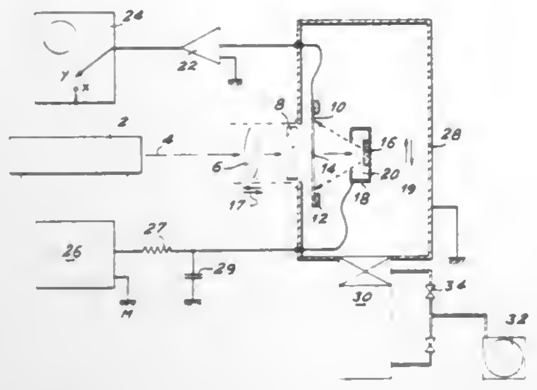
4,370,176
PROCESS FOR FAST DROPING OF SEMICONDUCTORS

Michel Bruel, Veurey-Voroize, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Jan. 23, 1981, Ser. No. 227,763
Claims priority, application France, Feb. 1, 1980, 80 02239
Int. Cl.^{3} H01L *21/263;* **H01J** *37/30, 27/00*
U.S. Cl. 148—1.5 **16 Claims**

1. A process for fast doping of semiconductors consisting of implanting foreign particles in a substrate and in rendering said particles electrically active so as to modify the physical properties of said substrate, comprising the steps of:

subjecting said substrate to a bombardment closely in time and space of said foreign particles constituting a dopant material wherein an energy brought by each particle when it is implanted in said substrate is adjusted so as to produce in cooperation with the other particles a local liquefaction of said substrate;

allowing said particles to be positioned in substitutional sites of the crystal lattice of said substrate; and



allowing said crystal lattice which was disturbed when said particles penetrated in said substrate, to be rearranged.

4,370,177

COATING SOLUTION FOR METAL SURFACES

Frank J. Frelin, Norristown; Timm L. Kelly, Oreland, and Anthony J. Malloy, Willow Grove, all of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 165,734, Jul. 13, 1980, Pat. No. 4,313,769. This application Oct. 9, 1981, Ser. No. 310,175

The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.

Int. Cl.^{3} C23F *7/06*

U.S. Cl. 148—6.27 **21 Claims**

1. An acidic aqueous coating solution which is effective in forming a non-resinous, non-chromate, corrosion-resistant coating on an aluminum surface, said solution consisting essentially of

(a) a metal containing substance wherein the metal is selected from the group consisting of zirconium, titanium, and hafnium ions, and mixtures of two or more of said substances, said metal being present in the solution in an amount of at least about 0.5×10^{-3} m/l,

(b) fluoride in an amount at least sufficient to combine with all of said metal, and

(c) at least two surfactants present in amounts such that the coating formed from said solution has an improved tendency to resist being discolored by hot water, and wherein when two surfactants are present they are present in a weight ratio of from about 0.3:1 to about 3:1.

4,370,178

METHOD OF MAKING AS-PIERCED TUBULAR PRODUCTS

George M. Waid, Burton, and Anthony T. Davenport, Shaker Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Jun. 30, 1981, Ser. No. 278,997

Int. Cl.^{3} C21D *8/10*

U.S. Cl. 148—12 F **1 Claim**

1. A process of making as-pierced steel casing characterized in the as-pierced condition by a yield strength of 80–110 ksi, a minimum ultimate tensile strength of 100 ksi, a minimum elongation of 12½% in two inches, and by a ferrite-pearlite microstructure having a ferrite grain size of about ASTM 7 or finer, comprising the steps providing a killed steel consisting essentially in percent by weight of 0.20–0.35 carbon, 1.0–2.0 manganese, up to about 0.60 silicon, up to about 0.04 for each of phosphorous and sulfur, 0.05–0.25 vanadium, at least one of from 0.005–0.025 nitrogen and from 0.01–0.10 columbium, and the balance iron, heating said steel to a temperature of at least about 2200° F. to dissolve vanadium carbides, piercing said steel, and allowing said steel to cool from said temperature to effect precipitation of vanadium carbides with resulting refinement of austenite to a grain size of about ASTM 5 or finer and of ferrite to a grain size of about ASTM 7 or finer.

4,370,179

METHOD OF MAKING A MONOLITHIC COMPLEMENTARY DARLINGTON AMPLIFIER UTILIZING DIFFUSION AND EPITAXIAL DECOMPOSITION

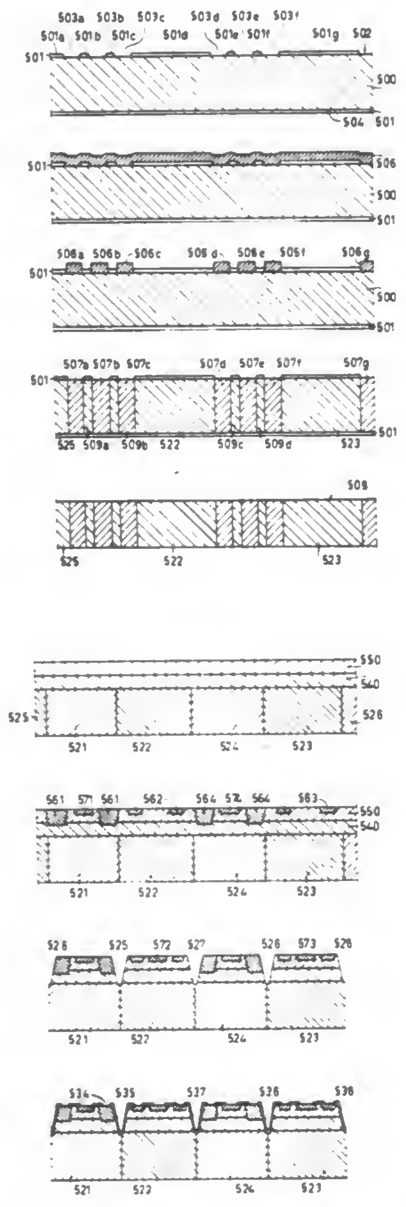
Bernard Roger, Carpiquet, France, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 960,426, Nov. 13, 1978, Pat. No. 4,261,002. This application Oct. 27, 1980, Ser. No. 200,645

Claims priority, application France, Nov. 13, 1978, 77 34126

Int. Cl.^{3} H01L *21/20, 21/76, 21/80*

U.S. Cl. 148—175 **9 Claims**



1. A method of manufacturing a semiconductor device of the type comprising a semiconductor body having at least first and second bipolar and complementary vertical transistors, each transistor comprising a central base region and two external regions serving as emitter and collector regions, said body comprising a substrate covered by a first epitaxial layer of a first conductivity type on which extends a second epitaxial layer of the second conductivity type opposite to the first, the base region of the first transistor and at least a part of an external region of the second transistor being formed by coplanar portions of the first epitaxial layer, the base region of the second transistor and at least a part of an external region of the first transistor being formed by coplanar portions of the second epitaxial layer and a first portion of the substrate comprising at least a part of the collector region of one of said first and second transistors, an insulating barrier separating entirely at least part of said portions of the second epitaxial layer, characterized in that at least a part of the emitter region of the other

transistor comprises a second substrate portion of the opposite conductivity type adjoining and coplanar with, and forming a p-n junction with said first portion, that the insulating barrier extends from the upper surface of said second epitaxial layer down to at least the substrate and that said p-n junction comprises at least a part of a junction which extends from the lower surface of the substrate up to said insulating barrier, and that an electrode is provided on the lower surface of the substrate to connect the first and second substrate portions, the method comprising the steps of:

providing a semiconductor plate of the first conductivity type and comprising said substrate;

locally introducing impurities capable of producing the second conductivity type into at least a portion of said substrate, in a concentration exceeding that of the concentration of impurities in said plate, to form at least a portion of semiconductor material of the second conductivity type in said substrate, the final thickness of said substrate being limited to the thickness of said portion of the second conductivity type;

epitaxially growing a lightly-doped first epitaxial layer of a selected conductivity type on a major surface of said substrate;

epitaxially growing a lightly-doped second epitaxial layer of opposite conductivity type to that of said selected conductivity type on said first epitaxial layer;

forming a plurality of localized semiconductor regions in said second epitaxial layer, including at least first and second localized regions of said selected conductivity type, said first localized region extending through said second epitaxial layer and comprising the base contact of said first transistor, and said second localized region being formed within said second epitaxial layer and comprising an external region of said second transistor;

providing said insulating barrier on said second epitaxial layer; and

providing said electrode on the lower surface of said substrate.

4,370,180

METHOD FOR MANUFACTURING POWER SWITCHING DEVICES

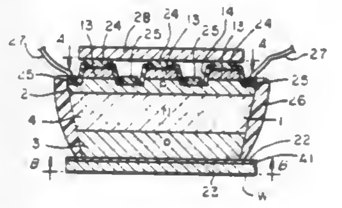
Makoto Azuma, and Junko Akagi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 193,142, Oct. 2, 1980, abandoned. This application Dec. 4, 1980, Ser. No. 213,099

Claims priority, application Japan, Oct. 3, 1979, 54-12671; Nov. 30, 1979, 54-154305

Int. Cl.^{3} H01L *21/225*

U.S. Cl. 148—187 **7 Claims**



1. A method for manufacturing power thyristors, comprising the steps of:

preparing an N-type semiconductor substrate;

forming respective P-type layers on both sides of the semiconductor substrate, one of the layers constituting a P-type base layer, the other layer constituting an anode layer and the N-type substrate located therebetween constituting an N-type base layer;

forming a first film containing N-type impurities on the P-type base layer and doping the N-type impurities into the surface region of the semiconductor substrate;

removing the first film;

heating the semiconductor substrate in order to drive the N-type impurities more deeply into the P-type base layer and making an N-type cathode layer;

forming an oxide layer on the N-type cathode layer;

forming respective second films containing phosphorus as gettering material on both the oxide layer and the P-type anode layer in order to increase the carrier lifetime of the P-type base layer;

removing the second films; and

diffusing carrier lifetime killer atoms into the N-type base layer in order to decrease the carrier lifetime thereof.

4,370,181

PYROTECHNIC NON-AZIDE GAS GENERANTS BASED ON A NON-HYDROGEN CONTAINING TETRAZOLE COMPOUND

Norman H. Lundstrom, Tacoma, Wash., and Graham C. Shaw, Garland, Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Dec. 31, 1980, Ser. No. 221,943

Int. Cl.^{3} C06B *45/00*

U.S. Cl. 149—2 **18 Claims**

1. A solid pellet for generating non-toxic nitrogen gas consisting essentially of a non-hydrogen containing tetrazole compound and a non-oxygen containing oxidizer selected from the group consisting of sulfur, chromium trichloride, molybdenum disulfide, iron trifluoride, and admixture thereof.

4,370,182

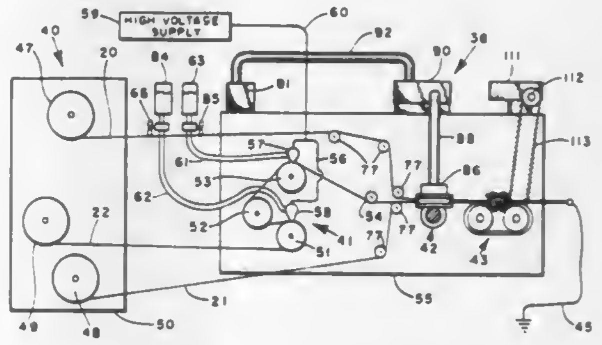
METHOD OF MAKING TAPE TRANSDUCER

Jon Becker, Milpitas; Kirby G. Miller, Saratoga, and Charles F. Burney, Orland, all of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 244,491, Mar. 16, 1981, Pat. No. 4,344,810. This application Dec. 17, 1981, Ser. No. 331,490

Int. Cl.^{3} H01B *13/10, 13/26*

U.S. Cl. 156—52 **4 Claims**



1. A method of making a composite tape transducer comprising an inner strip means having an elongated electrically conductive inner strip and dielectric layers on opposite sides of the inner strip, thereof and a pair of electrically conductive outer strips having widths larger than the width of said inner strip consisting of the steps of

electrically grounding said inner strip,

moving the inner strip means relative to first and second electrodes with one of said dielectric layers adjacent in electrical contact with the first electrode and the other of said layers in electrical contact with the second electrode,

continuously applying a DC voltage across said electrodes and said inner strip whereby to electrically charge said dielectric layers,

moving said outer strips into engagement with opposite sides, respectively, of said inner strip means, and

sealing marginal edge portions of said outer strips together.

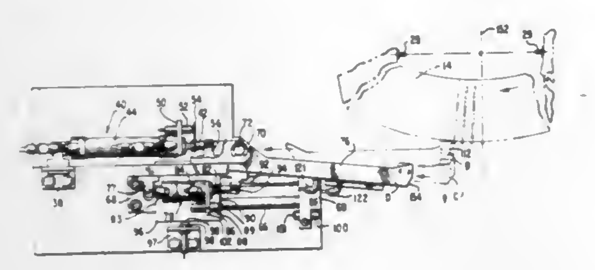
4,370,183
APPARATUS AND METHOD FOR HOLDING AND TACKING MATERIAL

Ronald T. Albo, Los Gatos, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 102,192, which matured from PCT/US79/00917, Oct. 29, 1979, Publication No. W081/01119, Apr. 30, 1981, 102(e) date Oct. 29, 1979, abandoned.

Int. Cl.^{3} B29H *17/02*

U.S. Cl. 156—117 **16 Claims**



10. A method for holding and tacking material (**12**) without slack to a body (**14**) during start up and upon stopping the winding of said material (**12**) on said body (**14**), said body (**14**) being movable in a plane about the axis of rotation of said body (**14**), a shuttle being (**22**) rotatably driven about said body (**14**) in a plane transverse to said body (**14**) and having a supply of material (**12**) carried by said shuttle (**22**), said material (**12**) being drawn from said supply and being advanced to said body (**14**) without slack, comprising:

clamping the material (**12**) to a tacker arm (**76**);
moving said tacker arm (**76**) and said material (**12**) into a contact position against the surface of said body (**14**);
holding said tacker arm (**76**) against said body (**14**) as said tacker arm (**76**) is moved in a generally tangential direction in response to moving said body (**14**);
unclamping the material (**12**) from said tacker arm (**76**) in response to moving the tacker arm (**76**) to a predetermined position; and
moving the tacker arm (**76**) to a position spaced from said body (**14**).

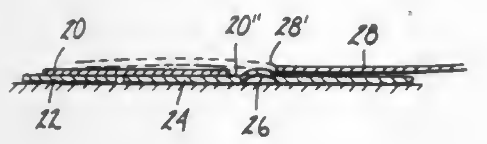
4,370,184
PHOTOGRAPHIC FILM SPLICER

Gerald A. Jensen, Plymouth, and Ted G. Merry, Lindstrom, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Division of Ser. No. 207,453, Nov. 17, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 322,021

Int. Cl.^{3} G03D *15/04*

U.S. Cl. 156—157 **2 Claims**



1. A method of splicing strips of undeveloped photographic film to form an elongated web of photographic film for developing comprising:

applying a heat activatable splice tape to ends of the photographic film strips, the splice tape defining a spliced area on the film strip ends;
applying heat and pressure to the tape and the strips to bond the tape to the ends of the strips; and
applying heat and pressure to an area of one of the photographic film strips proximate an edge of the splice tape outside the spliced area to form a ramp on the film strip proximate the edge of the splice tape outside of the spliced area, the ramp having an inclined portion positioned on a side of the ramp away from the splice tape; such that when the web is severed into individual segments of developed photographic film after the web has been developed and the splice remains attached to one of the segments, and when the severed segments are stacked a leading edge of a trailing film segment which is being stacked on top of the segment with the splice attached initially engages the inclined portion of the ramp and is deflected upward and over the edge of the splice tape, thereby avoiding contact with the edge of the splice tape.

4,370,185
TAPE FIXING DEVICE

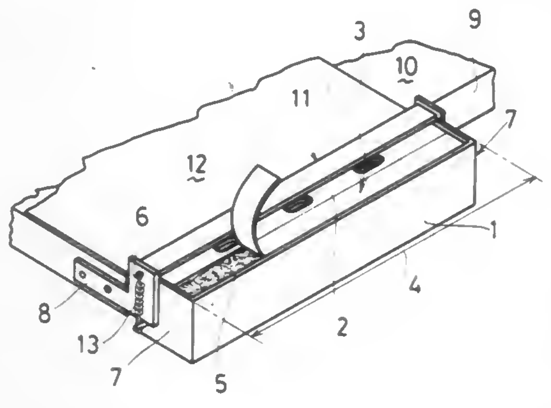
William I. Barker, and Ernest J. Denham, both of Johannesburg, South Africa, assignors to Suspendex (Proprietary) Limited, Johannesburg, South Africa

Filed Jun. 5, 1981, Ser. No. 270,724

Claims priority, application South Africa, Jun. 6, 1980, 80/3381

Int. Cl.^{3} B65C *9/08*

U.S. Cl. 156—565 **5 Claims**



1. An apparatus for affixing an edge tape to an aligned edge of a sheet of paper (**12**) or the like, comprising:

(a) an elongate container (**1**) for storing a stack of edge tapes in the form of adhesive strips (**2**),
(b) a dispensing opening (**3**) defined in one longitudinal side of said container,
(c) a strip retaining member of said container disposed adjacent said opening,
(d) biasing means disposed within said container for urging a stack of strips towards said retaining member,
(e) a sheet support member (**10**), and
(f) means (**6,7,8**) rotatably mounting said container to said support member such that said container may be rotated between a first position whereat the dispensing opening is closely proximate and directly overlies the support member such that an adhesive strip may be applied through said opening to a sheet of paper disposed on said support member, and a second position whereat the container serves as an abutment edge against which a sheet of paper may be positioned to receive an adhesive strip and whereat the dispensing opening is exposed to access to enable the removal of a protective covering overlying an adhesive surface of a top one of said strips.

4,370,186
METHOD FOR MANUFACTURING A METAL-PLASTICS COMPOSITE TUBE AND APPARATUS FOR CARRYING OUT SAID METHOD

Jean-Claude Blandin, and Louis Richard, both of Cholet, France, assignors to Nadia Nicoll, Societe a responsabilite limitee, Cholet, France

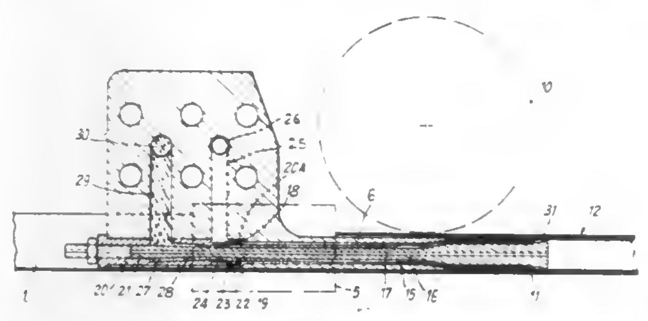
Filed Dec. 19, 1980, Ser. No. 218,261

Int. Cl.^{3} B29D *23/04, 23/10*

U.S. Cl. 156—203 **8 Claims**

1. A method for the manufacture of a metal tube having two layers of plastics materials coated on the internal surface thereof, comprising:

(a) moving a strip of metal into a forming means;
(b) forming the strip into a tube with the longitudinal edges of the strip being in edge contact;
(c) disposing an extrusion nozzle, having an elongated projecting portion, into the formed tube;
(d) seaming the formed tube at the said edge contact;
(e) providing a first and second source of flowable plastic material, each source having communication with the said nozzle, and the first source of plastic material being grafted polyethylene polymer and the second source of plastic material being another polymer;
(f) extruding the first and second plastic materials through respective orifices in the said nozzle such that concentric tubular forms thereof are produced, and wherein the first plastic material surrounds the second plastic material and forms an outer concentric tube; and
(g) urging the first and second plastic materials radically outward whereby the first plastic material contacts the inner surface of the seamed tube and bonds thereto and the second plastic material contacts the first plastic material and bonds thereto.



4,370,187
PROCESS AND APPARATUS FOR PRODUCING A LAMINATED STRUCTURE COMPOSED OF A SUBSTRATE WEB AND A THERMOPLASTIC RESIN WEB EXTRUSION-COATED THEREON

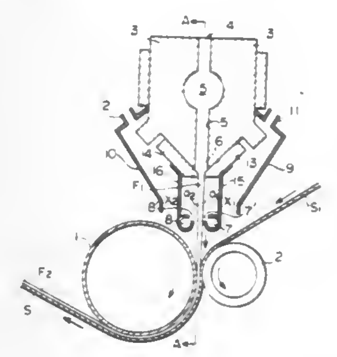
Mikio Katagiri, Ichihara; Yukio Sakota, Chiba; Kunie Hiroshige, and Yukio Adachi, both of Ichihara, all of Japan, assignors to Mitsui Polychemicals Co. Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,577

Claims priority, application Japan, Dec. 21, 1979, 54-165516

Int. Cl.^{3} B32B *31/30*

U.S. Cl. 156—244.23 **10 Claims**



1. In a process for producing a laminated structure composed of a substrate web and a thermoplastic resin web extrusion-coated thereon which comprises melt-extruding a thermoplastic resin from the lip of a T-die composed of a die body and a die jowl to form a thermoplastic resin web in the molten state and passing the thermoplastic resin web together with a substrate in web form through a laminating roll unit consisting at least of a pair of a cooling roll and a nip roll and located apart from the die lip with an air-gap space formed between the die lip and the laminating roll unit, the improvement comprising

(1) blowing an oxidizing gas selected from the group consisting of oxygen, ozone, air, a mixture of at least two of these, and a mixture of at least one of oxygen and ozone with an inert gas in said air-gap space to that surface of the molten thermoplastic resin web which is to make contact with the substrate web, at a flow rate of about 0.02 to about 2 Nm^3 per kilogram of the thermoplastic resin extruded, whereby volatile substances evolved from said surface of the molten thermoplastic resin web are blown off said surface and removing said oxidizing gas and said volatile substances from the air-gap space, and
(2) blowing an inert gas in said air-gap space to that surface of the molten thermoplastic resin web which is to make contact with the cooling roll, at a flow rate of about 0.02 to about 2 Nm^3 per kilogram of the thermoplastic resin extruded, whereby volatile substances evolved from the surface of the molten thermoplastic resin web are blown off said surface and removing said inert gas and said volatile substances from the air-gap space.

4,370,188
METHOD AND APPARATUS FOR INSULATING COILS FOR ROTARY ELECTRIC MACHINES

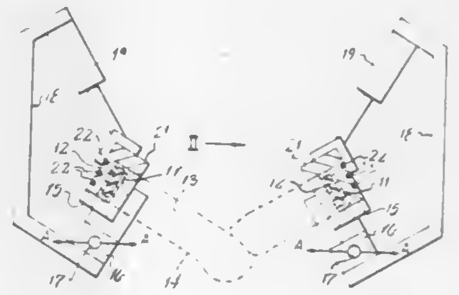
Malcolm Otty, Westering, Mill Hay Rd., Caldy, Merseyside, England

Filed Jul. 9, 1981, Ser. No. 281,724

Claims priority, application United Kingdom, Jul. 9, 1980, 8022523

Int. Cl.^{3} B29C *15/00, 27/26;* **B32B** *31/20*

U.S. Cl. 156—245 **10 Claims**



1. In a method for applying and curing wrapped resin impregnated insulation about a coil for a rotary electric machine, said coil having spaced parallel straight side portions, using press apparatus having a plurality of pressure applying means for each of said side portions including inner pressure applying means remote from ends of said coil and outer pressure applying means disposed on either side of said inner pressure applying means along said straight side portions, the improvement comprising:

applying pressure first by said inner pressure applying means and thereafter applying pressure by said outer pressure applying means, wherein excess resin is caused to flow toward said end portions of said coil from said straight side portions.

4,370,189
MODIFYING THERMOPLASTIC MATERIALS AND PRODUCTS THEREOF

Roy W. Siedenstrang, Akron, and Agmund K. Thorsrud, Bath, both of Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 16, 1980, Ser. No. 217,069

Int. Cl.^{3} B29C *19/02*

U.S. Cl. 156—272.2 **22 Claims**

1. A method for forming a thermoplastic polyalkene surface on at least one side of a thermoplastic elastomeric product comprising:

disposing a sheet of a thermoplastic polyalkene in a mold;
disposing a body of a nonhydrogenated, unvulcanized and unvulcanizable, thermoplastic elastomeric material atop at least a portion of said sheet of polyalkene;

closing said mold; and

subjecting the resultant assembly to microwave energy at a power level, for a time and while applying a pressure sufficient to bond said sheet of polyalkene to said body of elastomeric material and form said body of elastomeric material into an elastomeric product.

4,370,190

PEELABLE BONDED STRUCTURES AND PROCESS FOR PREPARING SAME

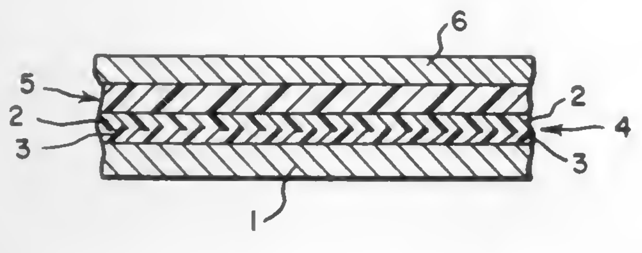
Isao Ichinose, Hiratsuka; Fumio Mori, Yokohama, and Noboru Suzuki, Chigasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 964,188, Nov. 28, 1978, Pat. No. 4,269,321. This application Jan. 21, 1981, Ser. No. 226,556

Claims priority, application Japan, Nov. 29, 1977, 52-142219

Int. Cl.^{3} C09J *5/04*

U.S. Cl. 156—307.3 **15 Claims**



1. A process for preparing peelable bonded structures comprising a first article composed of metal and a second article bonded to the first article through a composite coating layer, said process comprising:

(a) applying to the first article a paint composition comprising (i) an olefin resin (A) modified with a copolymerized carbonyl group-containing ethylenically unsaturated monomer whereby said modified olefin resin contains carbonyl groups at a concentration of between about 0.01 and 200 milliequivalents per 100 g of the modified olefin resin and having a degree of crystallization or at least 50%, and (ii) a coating film-forming base resin (B) at an (A)/(B) weight ratio of between about 0.2/99.8 and 40/60 and having a density greater by about 0.1 than the density of the modified olefin resin in a mixed solvent containing at least about 70% by weight of a solvent component having a solubility parameter of between about 8.5 and 9.5, said mixed solvent being further characterized in that the difference between the boiling points of the highest and lowest boiling solvent components is at least about 20° C.;

(b) curing the applied paint composition to form a first coating layer having a multi-layer distribution structure with resin concentration gradients in the thickness direction such that the modified olefin resin is distributed predominantly in the portion contiguous to the interface between the first and second coating layers and the base resin is distributed predominantly in the opposite portion;

(c) applying another paint composition onto the first coating layer to form a second coating layer; and

(d) heat-bonding a second article to the second coating layer so that the articles have a peel strength of between about 0.05 and 5/kg/cm between the first and second coating layers.

2. A process for preparing peelable bonded structures comprising a first article composed of metal and a second article bonded to the first article through a composite coating layer, said process comprising:

(a) applying to the first article a paint composition comprising (i) an olefin resin (A) modified with a copolymerized carbonyl group-containing ethylenically unsaturated monomer whereby said modified olefin resin contains carbonyl groups at a concentration of between about 0.01 and 200 milliequivalents per 100 g of the modified olefin resin and having a degree of crystallization of at least 50%, and (ii) a coating film-forming base resin (B) at an (A)/(B) weight ratio of between about 0.2/99.8 and 40/60 and having a density greater by about 0.1 than the density of the modified olefin resin in a mixed solvent containing at least about 70% by weight of a solvent component having a solubility parameter of between about 8.5 and 9.5, said mixed solvent being further characterized in that the difference between the boiling points of the highest and lowest boiling solvent components is at least about 20° C.;

(b) curing the applied paint composition to form a first coating layer having a multi-layer distribution structure with resin concentration gradients in the thickness direction such that the modified olefin resin is distributed predominantly in the portion contiguous to the interface between the first and second coating layers and the base resin is distributed predominantly in the opposite portion;

(c) applying another paint composition onto the first coating layer to form a second coating layer; and

(d) heat-bonding a second article having the second coating layer pre-formed thereon to the first coating layer having the multi-layer distribution structure formed therein so that the articles have a peel strength of between about 0.05 and 5/kg/cm between the first and second coating layers.

4,370,191

ELECTRICAL LAMINATE

Masakazu Uekita, and Masaharu Abe, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1980, Ser. No. 164,512

Int. Cl.^{3} C09J *5/02*

U.S. Cl. 156—307.7 **4 Claims**

1. In a method for producing an electrical laminate comprising the steps of impregnating a paper substrate with a curable liquid resin consisting essentially of an unsaturated polyester polymer obtained by esterifying a mixture of a saturated polybasic acid component and an unsaturated polybasic acid component with a substantially stoichiometric amount of a polyol component, and a cross-linking vinyl monomer, laminating a plurality of the resin-impregnated substrates, and curing the laminate, the improvement comprising employing as said liquid resin one consisting of said curable resin which is in liquid phase at room temperature, has a viscosity of 0.1-30 poise and, when fully cured, has a glass transition point from about 20° C. to 80° C.

4,370,192

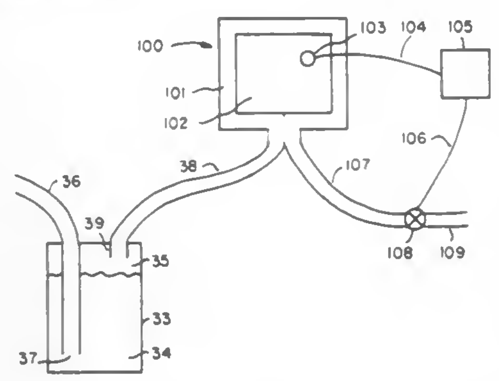
APPARATUS FOR CHEMICAL ETCHING OF SILICON

Richard F. Cooley, Campbell, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 20, 1980, Ser. No. 198,567

Int. Cl.^{3} C23F *1/02;* **F25B** *19/00;* **H01L** *21/306*

U.S. Cl. 156—345 **19 Claims**



1. Structure for holding an etchant for use in etching semiconductor wafers containing on one surface thereof masking material to protect circuitry formed adjacent said one surface from said etchant comprising:

an etchant tank having an inner wall and an outer wall, for containing an etchant for use in etching a material in an exothermic reaction, thereby forming a cooling jacket within said inner and outer walls, said cooling jacket having an inlet and an outlet;

a source of coolant gas connected to said inlet of said cooling jacket;

temperature detection means for providing a signal indicative of the temperature of said etchant;

a vent connected to said outlet; and

control means responsive to said signal indicative of the temperature for controlling the flow of said coolant gas through said cooling jacket;

whereby said coolant gas removes heat generated in the exothermic reaction between said etchant and the material being etched at a rate selected to maintain the temperature of said etchant beneath a selected value wherein said selected value is selected to ensure that said etchant is maintained at a temperature sufficiently low to prevent masking material protecting circuitry from becoming less effective as a mask.

4,370,193

INSERTION OF ACCURATELY POSITIONED CORE TUBES IN WINDING MACHINES

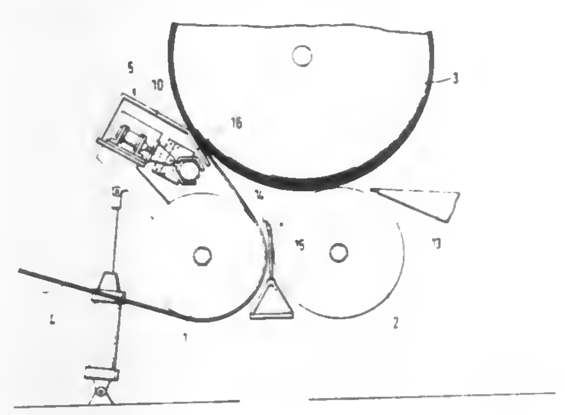
Joachim Knauthe, Hochdahl, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 213,241

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948877

Int. Cl.^{3} B65C *3/12*

U.S. Cl. 156—446 **1 Claim**



1. In an apparatus for insertion of an accurately positioned second core tube provided along a generatrix with means for adhering the head end of a web into the wedge formed by two rotatable support rolls of a winding machine, and for ejection of a first tube supported by said support rolls and wound with said web, the improvement which comprises a pivoted lever arm

(a) mounting a clamping means holding the new second core tube to be substituted for the first core tube about which said web is being wound, and

(b) mounting an ejector bar having a forward end,

means for pivoting said lever arm so that said forward end contacts and then ejects said first tube and web thereon from said wedge while displacing the clamping means from a first inoperative position to a second position adjacent said wedge, means for cutting the web when said first tube has been ejected, and means for opening said clamping means to release said second tube into said wedge whereupon the second tube is rotated by the support rolls and the adhering means on the second tube secures the web to the second tube for winding of said web thereon.

4,370,194

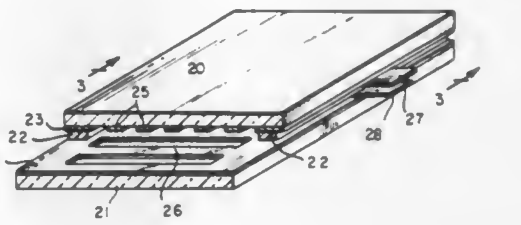
ORIENTATION OF ORDERED LIQUIDS AND THEIR USE IN DEVICES

David C. Shaver, Cambridge; Henry I. Smith, Sudbury, and Dale C. Flanders, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 902,332, May 3, 1978, Pat. No. 4,256,787. This application May 13, 1980, Ser. No. 149,483

Int. Cl.^{3} B05D *1/32;* **C23F** *1/02;* **G02F** *1/13;* **H01L** *21/22*

U.S. Cl. 156—643 **15 Claims**



1. A method for orienting the molecules of liquid crystals comprising the steps of

forming an intermediate masking layer having a predetermined pattern on a selected surface of a substrate;

transferring said predetermined pattern to said selected surface using a planar process which forms a surface relief structure having said predetermined pattern, said surface relief structure being formed so as to have substantially vertical side walls and substantially square corners; and

applying a liquid crystal to said selected surface of said substrate, said surface structure substantially orienting the molecules of said liquid crystal in accordance with said predetermined pattern.

4,370,195

REMOVAL OF PLASMA ETCHING RESIDUES

Bernard Halon, Brooklyn, N.Y., and John L. Vossen, Jr., Bridgewater, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1982, Ser. No. 362,042

Int. Cl.^{3} C23F *1/02;* **B08B** *3/12, 6/00, 7/00*

U.S. Cl. 156—643 **5 Claims**

1. In a process of plasma etching aluminum or an alloy thereof with an etchant gas comprised of at least one carbon-containing gas, wherein etching produces residues which are not susceptible to removal by oxygen plasma or organic solvents, the improvement comprising treating said residues with a nitrogen glow discharge for a time effective to remove the residues or render them susceptible to removal by oxygen plasma or organic solvents.

4,370,196

ANISOTROPIC ETCHING OF ALUMINUM

John L. Vossen, Jr., Bridgewater, N.J., and Bernard Halon, Brooklyn, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1982, Ser. No. 362,043

Int. Cl.^{3} C23F *1/02*

U.S. Cl. 156—643 **8 Claims**

1. A gaseous etchant composition for aluminum and its alloys comprising boron trichloride, trichloromethane and hydrogen.

4,370,197

PROCESS FOR ETCHING CHROME

Oscar R. Abolafia, Endwell; Joseph G. Ameen, Apalachin, and Glenn V. Elmore, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,723

Int. Cl.^{3} C23F *1/02*

U.S. Cl. 156—659.1 **23 Claims**

1. A method for etching chrome which comprises contact-

ing the chrome with an acidic aqueous etchant composition containing water, an inorganic acid, and at least one thiourea compound selected from the group of thiourea, substituted thiourea, or mixtures thereof.

4,370,198

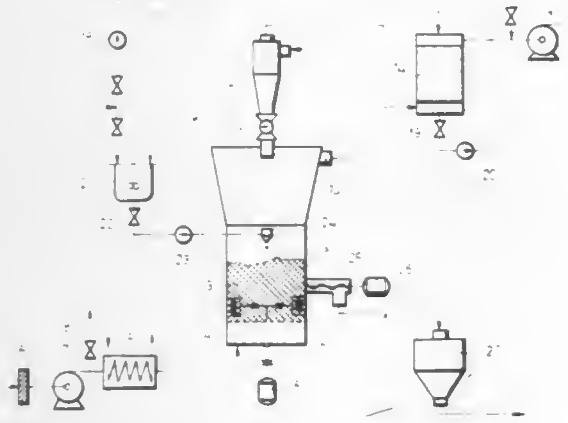
METHOD AND APPARATUS FOR THE RECOVERY OF THE SOLID MATERIAL CONTENT OF SOLUTIONS AND/OR SUSPENSIONS AS GRANULES IN A GAS FLUIDIZED BED

Bela Dencs; Zoltan Ormos, and Karoly Pataki, all of Veszprem, Hungary, assignors to Mta Muszaki Kemiai Kutato Intezet, Veszprem, Hungary

Filed Mar. 13, 1980, Ser. No. 130,038

Int. Cl.^{3} B01D ***1/18***

U.S. Cl. 159—48.1 **12 Claims**



1. In a method for the continuous recovery of the solid material content of liquids, in the form of granules of predetermined particle size distribution, comprising spraying a liquid having a solid material content into a fluidized bed of particles of the same solid material as that of the liquid, and continuously discharging particulate material from the bed at a rate equal to the rate of introduction of the solid material in the liquid; the improvement comprising providing in the fluidized bed a solid stationary surface, positioning a roller with its axis parallel to said fixed surface and its periphery spaced a short distance from said fixed surface so as to define a slit between said fixed surface and said periphery, and bodily moving said roller perpendicular to said axis while maintaining said slit of constant size, thereby continuously to grind said particulate material between said periphery and said fixed surface.

4,370,199

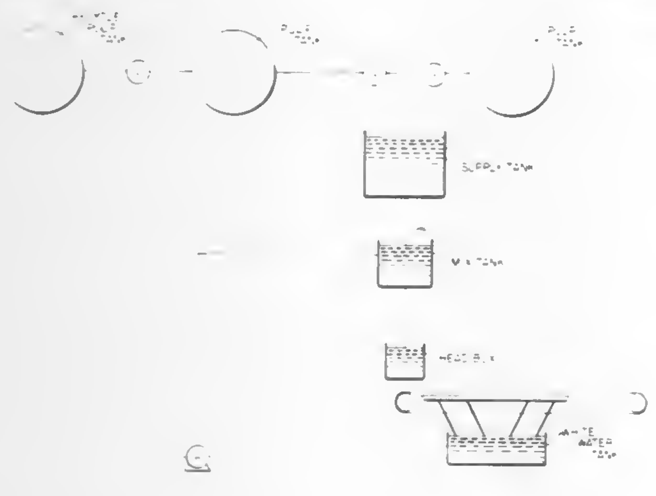
ENZYMATIC CATALYZED BIOCIDE SYSTEM

Steve A. Orndorff, Columbia, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,298

Int. Cl.^{3} D21D ***3/00***

U.S. Cl. 162—161 **5 Claims**



1. The method of controlling the growth of slime in a pulp and paper mill process stream comprising adding to the stream an effective amount of an enzymatic biocide comprising a plant or microbial dehydrogenase enzyme selected from the group consisting of peroxidase and laccase, an oxidant selected from the group consisting of hydrogen peroxide and oxygen and an oxidizable substrate selected from the group consisting of black liquor, acid lignin, catechol, guaiacol, resorcinol or a halide salt, wherein the oxidizable substrate is oxidized to produce oxidation products which are toxic to microorganisms.

3. The method of killing and controlling the growth of microorganisms in an industrial process stream containing or having added thereto an oxidizable substrate selected from the group consisting of black liquor lignin derived phenolics comprising, adding to the stream an effective amount of an enzymatic biocide comprising a plant or microbial dehydrogenase enzyme selected from the group consisting of peroxidase and laccase and an oxidant selected from the group consisting of hydrogen peroxide and oxygen, wherein the black liquor and lignin derived phenolics are oxidized to produce oxidation products which are toxic to microorganisms.

4,370,200

METHOD OF INFLUENCING A PRE-DRAINED FIBROUS WEB ON A SCREEN

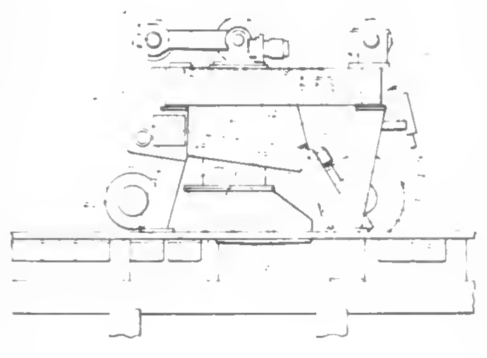
Sylvia Schmidt, Reutlingen; Hansdieter Eckert, Eningen; Wolfgang Holzinger, Reutlingen, and Dietrich Holle, Nideggen, all of Fed. Rep. of Germany, assignors to Neue Bruderhaus Maschinenfabrik GmbH, Reutlingen and Andreas Kufferath KG, Duren-Mariaweiler, both of, Fed. Rep. of Germany, a part interest

Filed Nov. 19, 1980, Ser. No. 208,406

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951183

Int. Cl.^{3} D21F ***1/52, 3/04, 3/06***

U.S. Cl. 162—210 **6 Claims**



1. A method of reorienting fibers in a top layer of a partially pre-drained fibrous web on a first screen including the steps of:

bringing a second continuous porous screen into contact with said fibrous web at a first contact point by means of a porous screen roller and at a second contact point by means of a porous base plate;

subjecting said fibrous web to a surface compression by means of the second continuous porous screen acting at and between the first contact point and the second contact point;

adjusting the distance between the first contact point and the second contact point so that the second continuous porous screen is in contact with said fibrous web over a variable time period;

moving the porous screen roller to adjust the surface compression between said porous screen roller and the second continuous porous screen independently of the surface compression between the porous base plate and the second continuous porous screen, said surface compression being adjusted to form a water film on at least one side of the fibrous web, thereby lowering the surface density of the fibrous web and allowing the fibers in the top layer of said fibrous web to become re-oriented;

maintaining this surface compression between the first contact point and the second contact point over the variable time period in order to prevent water from re-entering the fibrous web and setting the re-oriented fibers in desired positions; and

removing at least a portion of the water forced from the fibrous web during the period of surface compression by causing it to pass upwardly through said second continuous porous screen.

4,370,201

PROCESS FOR MAINTAINING COAL PROPORTIONS IN A COAL BLEND

Douglas E. Lowenhaupt, Plum Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 23, 1981, Ser. No. 276,604

Int. Cl.^{3} C10B ***45/00, 57/04***

U.S. Cl. 201—1 **19 Claims**

1. A process for maintaining the proportions of each coal in a finely divided coal blend at a desired level, which comprises:

(1) making a spectral analysis of at least one sample of said coal blend, said sample having known desired proportions of each said coal,

(2) making a spectral analysis of a coal blend sample of unknown proportions of each said coal,

(3) comparing the spectral analyses of steps (1) and (2), and

(4) upon noting a significant difference between the spectral analyses of steps (1) and (2), making adjustments to achieve a final coal blend having proportions of each said coal closer to those of said coal blend of known desired proportions of each said coal.

4,370,202

METHOD FOR DRY COOLING COKE AND COKE COOLER TO IMPLEMENT THE METHOD

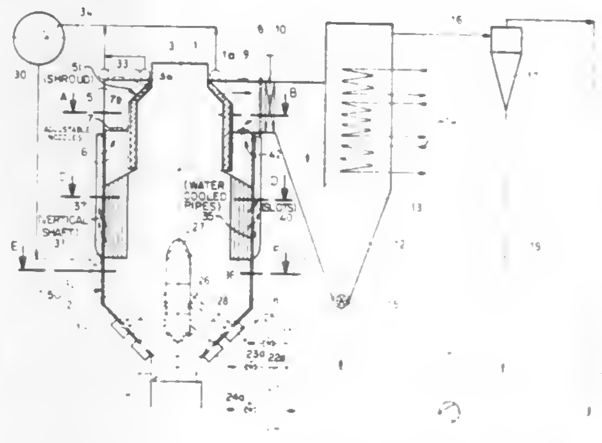
Heinrich Weber, Lenaustr. 2, 4350 Recklinghausen; Kurt Lorenz, Habichstr. 65, 4321 Hattingen, and Horst Dungs, Am Düngelbruch 21, 4690 Herne, all of Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,316

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952065

Int. Cl.^{3} C10B ***39/00***

U.S. Cl. 202—228 **11 Claims**



1. A coke cooler for dry cooling hot glowing coke through the recovery of the sensible heat of the hot glowing coke comprising a vertically elongated vessel at least partly surrounding a cooling chamber, a cylindrical shroud, having an internal prechamber, mounted in the upper end of said vessel and having an inlet extending therefrom for receiving a charge of the hot glowing coke and an outlet for passing the coke through the upper end of said vessel to said cooling chamber, said shroud cooperating with the vessel to provide an annular passage for fluid flow therebetween, said chamber and said annular passage being in fluid communication with each other, said vessel having an upper wall portion comprising a first plurality of pipes and membranes integrally interconnecting adjacent pipes, means for passing an inert gas to said chamber in direct counterflow contact with the coke therein and then to said annular passage to directly cool the coke, means for passing a liquid through a closed path extended through said pipes to indirectly cool the coke, discharge means at the lower end of said vessel for passing cooled coke from said chamber, wall means mounted to the outer surface of said vessel at said upper wall portion to define vertical shafts between said wall means and said upper wall portion, said membranes having a plurality of slots for fluid communication between said cooling chamber and said vertical shafts, and said vessel including a plurality of calibrating holes passing through the vessel wall to establish fluid communication between said vertical shafts and said annular passage whereby at least a part of the inert gas is passed from said inert gas passing means into said chamber, through said slots, through said shafts, through said calibrating holes and into said annular passage.

4,370,203

COOLING DEVICE FOR COKE DRY COOLING

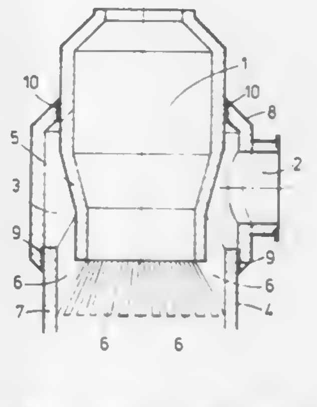
Karl Schmid, and Wilhelm Jakobi, both of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,595

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009818

Int. Cl.^{3} C10B ***39/02***

U.S. Cl. 202—228 **11 Claims**



1. A cooling device for dry cooling of coke supplied from above by gaseous cooling medium supplied from below in counterflow, the cooling device comprising a wall having an axis and forming a prechamber for supplying coke; a housing located substantially downstream of said prechamber in coke supply direction and having separate upper and lower wall; conduit means for discharging a gaseous cooling medium after passing through the coke and arranged in a predetermined upright region of said housing, said prechamber forming wall extending into said upright region and together with said housing bounding an annular hollow which has an increased cross-section in said region; means for mounting said prechamber forming wall on said housing and including a plurality of mounting members which extend between and connect said prechamber forming wall with said housing, said mounting members being spaced from one another in a circumferential direction so as to form therebetween a plurality of passages for passing the gaseous cooling medium; and means for connecting said walls with one another, said connecting means including a first sliding expansion joint provided between and slidingly connecting said upper wall with said lower wall, and a second sliding expansion joint provided between and slidingly connecting said prechamber forming wall with said upper wall.

4,370,204
METHOD FOR THE PURIFICATION OF HEXAMETHYLDISILOXANE

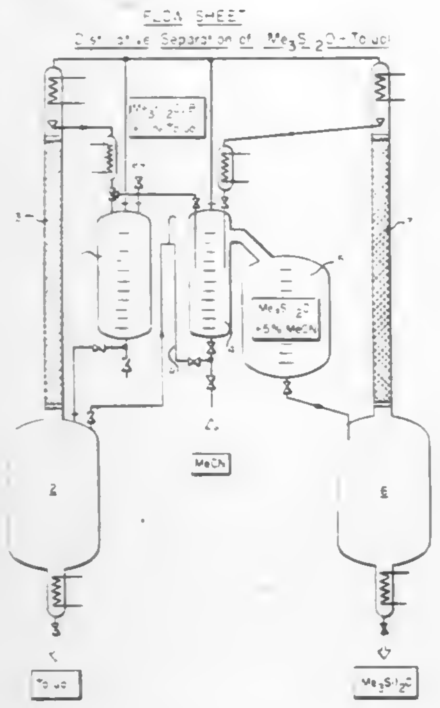
Hans-Joachim Kötzsch, Reinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,466

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108235

Int. Cl.^{3} B01D *3/36*

U.S. Cl. 203—39 **5 Claims**



1. Process for purifying hexamethyldisiloxane which process comprises distilling hexamethyldisiloxane in an azeotropic mixture with acetonitrile, separating the specific lighter phase from the azeotrope, and separating the hexamethyldisiloxane from the acetonitrile by distillation to recover said hexamethyldisiloxane.

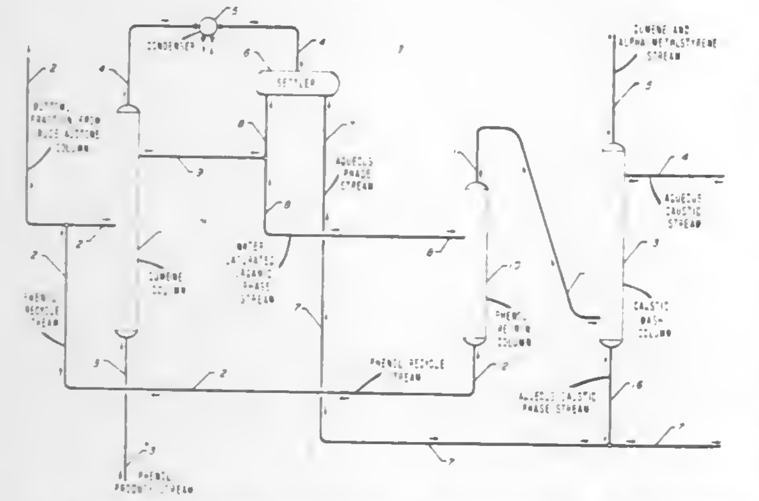
4,370,205
RECOVERY OF CUMENE FROM A MIXTURE THEREOF WITH PHENOL AND WATER

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 3, 1981, Ser. No. 289,592

Int. Cl.^{3} B01D *3/14;* C07C *37/74, 7/04*

U.S. Cl. 203—75 **7 Claims**



1. A process for the recovery of a secondary alkylbenzene from a mixture thereof with water and a phenol derivative of said secondary alkylbenzene which comprises the steps of:

(a) introducing said mixture into a first fractionation column and separating a bottoms fraction comprising the major portion of said phenol derivative, and an overhead fraction comprising said secondary alkylbenzene, water and the residual portion of said phenol derivative;

(b) discharging said bottoms fraction;

(c) condensing said overhead fraction and separating an aqueous phase containing a minor portion of said residual phenol derivative, and a water-saturated organic phase comprising said secondary alkylbenzene and the balance of said residual phenol derivative;

(d) discharging said aqueous phase; and,

(e) introducing the water-saturated organic phase into a second fractionation column, separating a phenol derivative bottoms fraction, and recovering a secondary alkylbenzene overhead fraction having a reduced phenol derivative concentration substantially equivalent to that in azeotropic mixture with said saturation water.

4,370,206
METHOD OF OPERATING AN ELECTROCHEMICAL GAS MEASURING SYSTEM

Gerardo A. Razumney, Philadelphia, Pa., assignor to Rexnord, Incorporated, Milwaukee, Wis.

Filed Jul. 6, 1977, Ser. No. 813,394

Int. Cl.^{3} G01N *27/28, 27/54*

U.S. Cl. 204—1 T **4 Claims**

1. In a method of operating an electrochemical gas measuring system consisting of a gas diffusion sensing electrode, an electrolyte, a non-polarizable, non-catalytic counter electrode, means for applying a bias potential between said electrodes, and means indicating the current flowing as a function of the gas concentration, the improvement comprising increasing the sensitivity of the system to a selected gas species at said gas diffusion sensing electrode by biasing said sensing electrode to a point in the limiting current plateau region of the current voltage curve for the electrochemical reaction of the gas at the sensing electrode, independent of the potential for oxidation of said selected gas species for the sensing electrode.

4,370,207
PROCESS OF ELECTROLYTICALLY PRODUCING OXYACIDS OF CHLORINE

Karl Lohrberg; Rainer Pfohl, both of Heusenstamm, and Martin Gritschke, Karben, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 110,155, Jan. 7, 1980. This application May 29, 1981, Ser. No. 268,421

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901221

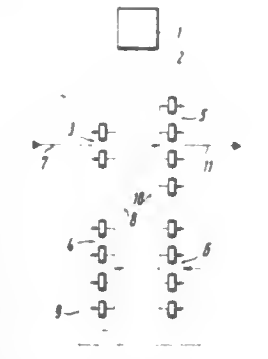
Int. Cl.^{3} C25B *1/24*

U.S. Cl. 204—95 **4 Claims**

1. A process for producing an oxyacid of chlorine or a salt of such acid by an electrolysis of a salt solution which is contaminated with calcium and/or magnesium or of sea water, which comprises:

(a) passing said salt solution through a first electrolytic cell comprising at least one cathode and at least one anode disposed apart from one another, such that the effective velocity of the salt solution through said cell is above 0.9 meter per second and up to 2.0 meters per second; and

(b) thereafter passing the salt solution from step (a) through at least one succeeding electrolytic cell comprising at least one cathode and anode disposed at a distance apart from one another further than said cathode and anode of said first electrolytic cell are disposed from one another and establishing in said succeeding electrolytic cell a velocity for the salt solution of 0.3 meter per second to less than 0.7 meter per second, the velocity stated being for salt solution free from gas.



4,370,208
ELECTROLYTIC PROCESS OF AN AQUEOUS ALKALI METAL HALIDE SOLUTION AND ELECTROLYTIC CELL

Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto, Takasago; Toshiji Kano; Kiyoshi Yamada, both of Kobe, and Yoshio Hatta, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1980, Ser. No. 208,843

Claims priority, application Japan, Nov. 27, 1979, 54-153822

Int. Cl.^{3} C25B *1/34, 9/00*

U.S. Cl. 204—98 **8 Claims**

1. A process for the electrolysis of an aqueous alkali metal halide solution in a cell partitioned by a cation exchange membrane into an anode compartment and a cathode compartment, which comprises supplying washing liquid continuously or intermittently into a liquid seal pot, passing cathode gas evolved from said cell into said liquid seal pot and, contacting said evolved cathode gas washing with said washing liquid in said liquid seal pot and using said washing liquid in said liquid seal pot partly or wholly as adding water for the cathode compartment.

4,370,209
ELECTROLYTIC PROCESS INCLUDING RECOVERY AND CONDENSATION OF HIGH PRESSURE CHLORINE GAS

Wilmer B. Graybill, and Malcolm Korach, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 14,466, Feb. 23, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,427

Int. Cl.^{3} C25B *1/34*

U.S. Cl. 204—98 **13 Claims**

1. In a method of electrolyzing an aqueous alkali metal chloride brine in an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, and a permionic membrane separator therebetween, comprising feeding the brine to the anolyte compartment, passing an electrical current from the anode to the cathode, and recovering chlorine from the anolyte compartment, the improvement comprising:

a. supporting the permionic membrane by maintaining the anode in contact therewith on one side thereof and maintaining the cathode in contact therewith on the opposite side thereof whereby to enable the permionic membrane to withstand a pressure differential of at least 1 pound per square inch;

b. maintaining a superatmospheric pressure in the anolyte compartment, whereby to maintain the chlorine at a superatmospheric partial pressure above 200 pounds per square inch gauge;

c. withdrawing gaseous chlorine from the anolyte compartment at a superatmospheric partial pressure; and

d. cooling, without compression, the superatmospheric pressure gaseous chlorine below the boiling temperature corresponding to the partial pressure thereof, whereby to condense chlorine.

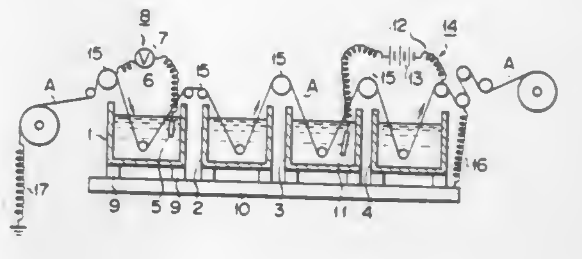
4,370,210
METHOD AND APPARATUS FOR CONTINUOUSLY FORMING COLOR DISPLAY LAYER ON STAINLESS STEEL STRIP

Tsuyoshi Yoshihara, Sanjo, and Nobuaki Ohashi, Niiza, both of Japan, assignors to Nippon Kinzoku Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,165

Int. Cl.^{3} C23F *5/02*

U.S. Cl. 204—140 **5 Claims**



1. A method of continuously forming a color display layer on the surface of a stainless steel strip by immersing the strip in an oxidizing solution comprising:

tentatively immersing a stainless steel strip continuously in an oxidizing solution in a tank for forming a color display layer on the surface of strip which is electrically insulated from the tank, thereby allowing to generate an electrical potential difference between the strip and the tank, and measuring first the relationship between the thickness or color tone of the color display layer and the potential difference between strip immersed in the oxidizing solution and a reference electrode; and

continuously immersing the same kind of stainless steel strip in said oxidizing solution for forming a color display layer on the surface of said strip, the difference in thickness between the actually formed color display layer and a desired color display layer being converted to the difference in potential difference on the basis of the relationship measured first, and the immersion time of strip in the oxidizing solution being controlled on the basis of said difference in potential difference.

5. The method according to claim 1, wherein the stainless steel strip is further introduced into a hardening solution after being rinsed, and a power source is provided between the strip and an electrode immersed in the hardening solution thereby providing an electrical circuit which is substantially electrically separated from the electrical circuit in the oxidizing solution for measuring the potential difference.

4,370,211
METHOD AND APPARATUS FOR CATHODIC PROTECTION

Ludmila Hybler, Hemel Hempstead, England, assignor to Phillips Petroleum Company, Bartlesville, Okla.

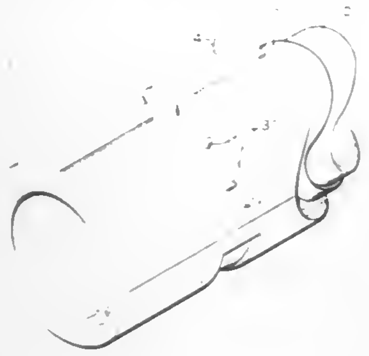
Filed Sep. 23, 1980, Ser. No. 190,003

Int. Cl.^{3} C23F *13/00;* C25B *11/02, 11/04*

U.S. Cl. 204—148 **36 Claims**

25. A method comprising:

oxidizing in a corrosive environment a sacrificial anode comprising a solid body of a sacrificial anode metal having a first surface and an opposing second surface, the second surface being in contact with the corrosive environment, and further comprising a plurality of means for visual or tactile determination of the extent of corrosion of the anode metal, said means comprising radial projections of a relatively non-corrosive material, the radial projections being at least partially encased in the anode material so as to be increasingly exposed as the second surface of the sacrificial anode is corroded, and



determining the extent of corrosion of the anode metal by visual or tactile inspection of the portion of the radial projections extending outward from the second surface.

4,370,212

ELASTOMERIC FILM

Tibor G. Mahr, and Pallatheri M. Subramanian, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1981, Ser. No. 259,422

Int. Cl.^{3} C08F *8/12, 8/42*

U.S. Cl. 204—159.14 **20 Claims**

1. A process for treating ethylene/vinyl acetate copolymer (EVA) comprising:
   - (a) providing an EVA copolymer film containing about 35 to 50 percent copolymerized vinyl acetate by weight, said film being crosslinked as a result of being subjected to a 0.5 to 16 megarad dosage of high energy radiation; and
   - (b) converting greater than about 50 percent of the acetate groups in the film to hydroxyl groups to a depth in the film of 0.5 microns, while converting less than 50 percent of the acetate groups at depths greater than 0.5 microns; and
   - (c) contacting the resulting film with an at least 3 percent finely divided mineral slurry.

4. A process for treating ethylene/vinyl acetate copolymer comprising:
   - (a) providing an EVA copolymer film containing about 35 to 50 percent copolymerized vinyl acetate by weight, said film being crosslinked as a result of being subjected to a 0.5 to 16 megarad dosage of high energy radiation; and
   - (b) converting greater than about 50 percent of the acetate groups in the film to hydroxyl groups to a depth in the film of 0.5 microns, while converting less than 50 percent of the acetate groups to depths greater than 0.5 microns;
   - (c) attaching a coupling agent selected from the group consisting of silane coupling agents, ionic hydrocarbon copolymers and titanate coupling agents to the surface of the film by treating the film with a 1–5 percent solution of the coupling agent in an organic solvent; and
   - (d) attaching finely divided mineral particulates to the coupling agent by treating the film to an at least 3 percent mineral slurry.

7. A process for treating ethylene/vinyl acetate copolymer (EVA) comprising:
   - (a) providing an EVA copolymer film containing about 35 to 50 percent copolymerized vinyl acetate by weight, said film being crosslinked as a result of being subjected to a 0.5 to 16 megarad dosage of high energy radiation; and
   - (b) converting greater than 50 percent of the acetate groups in the film to hydroxyl groups to a depth in the film of 0.5 microns, while converting less than 50 percent of the acetate groups at depths greater than 0.5 microns; and
   - (c) treating the film with a solution of 5–40 percent ionic hydrocarbon copolymer in an at least 3 percent aqueous finely divided mineral slurry.

10. A process for treating ethylene/vinyl acetate copolymer (EVA) comprising:
   - (a) providing an EVA copolymer film containing about 35 to 50 percent copolymerized vinyl acetate by weight, said film being crosslinked as a result of being subjected to a 0.5 to 16 megarad dosage of high energy radiation; and
   - (b) converting greater than 50 percent of the acetate groups in the film to hydroxyl groups to a depth in the film of 0.5 microns, while converting less than 50 percent of the acetate groups at depths greater than 0.5 microns; and
   - (c) treating the film with an at least 3 percent finely divided mineral slurry wherein the finely divided mineral particulates are coated with a coupling agent selected from the group consisting of silane coupling agents, titanate coupling agents, and ionic hydrocarbon copolymers.

4,370,213

OXYGEN SENSOR

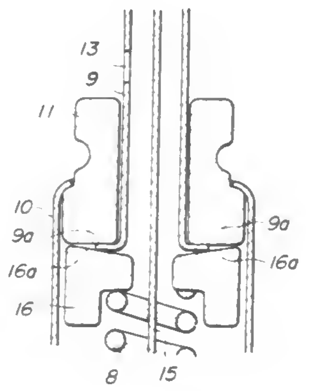
Shuichiro Oki, Aichi, and Tetsuo Watanabe, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 18, 1981, Ser. No. 264,240

Claims priority, application Japan, May 29, 1980, 55/73112[U]

Int. Cl.^{3} G01N *27/46*

U.S. Cl. 204—195 S **3 Claims**



1. In an oxygen sensor, wherein a solid electrolyte consisting of a tubular body closed at its one end and having inner and outer electrodes formed on its inner and outer surfaces respectively is gastightly received in a housing, a center conductor is pressed against the inner electrode by a pressing force of a spring connected to said center conductor, a tubular connecting terminal is electrically connected to said center conductor by a second conductor, and a metallic container receives a portion of an open end of said tubular body and said center conductor,

the improvement comprising:
- a first insulating body supported by the upper end of said metallic container;
- said tubular connecting terminal having an outwardly extending rim formed at an end portion thereof and penetrating through said first insulating body;
- said spring being slidable with respect to said metallic container; and
- a second insulating body being arranged between said rim and said spring and being axially slidable.

4,370,214

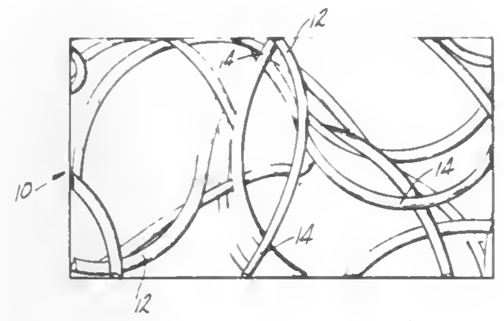
RETICULATE ELECTRODE FOR ELECTROLYTIC CELLS

Igor V. Kadijá, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 25, 1980, Ser. No. 143,970

Int. Cl.^{3} C25B *11/03, 11/04;* **H01M** *4/90, 4/80*

U.S. Cl. 204—242 **11 Claims**



1. A reticulate electrode for use in the electrolysis of aqueous solutions of ionizable compounds which comprises a network of electroconductive metal coated filaments, said filaments being selected from plastics of the group consisting of polyarylene sulfides, polyolefins produced from olefins having 2 to about 6 carbon atoms and their chloro- and fluoro- derivatives, nylon, melamine, acrylonitrile-butadiene-styrene (ABS), and mixtures thereof, said network having interfilament bonding at contact sites between adjacent filaments, and said reticulate electrode having a porosity of at least 90 percent.

4,370,215

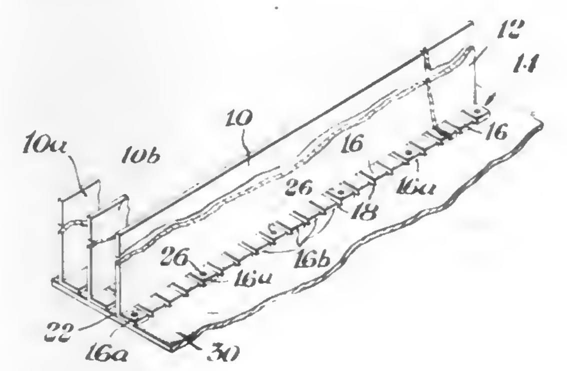
RENEWABLE ELECTRODE ASSEMBLY

Francis D. Frudd, Fairport, N.Y., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 29, 1981, Ser. No. 229,617

Int. Cl.^{3} C25B *9/00, 11/02;* **B23K** *31/00;* **B23P** *19/00*

U.S. Cl. 204—242 **12 Claims**



1. A renewable electrode assembly comprising:
- (1) a support;
- (2) an electrode body; and
- (3) a flange extending from one edge of the electrode body and fastened to the support; said flange having a plurality of tabs, at least one of said tabs being fastened to the support and separable from the electrode body; and at least one tab not being fastened to said support.

4. The electrode assembly of claim 1 or 3 wherein the electrode assembly forms part of an electrolytic cell and the electrode body forms an anode extending into an electrolyte.

4,370,216

ELECTROLYTIC CELL AND ANODE FOR MOLTEN SALT ELECTROLYSIS

Stanley F. Spangenberg; Arlington L. Finley, both of Midland, and D. James Searson, Sanford, all of, MI, assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 6, 1980, Ser. No. 204,733

Int. Cl.^{3} C25C *3/04, 3/06*

U.S. Cl. 204—243 R **9 Claims**

1. An electrode for the electrolysis of molten salts comprising:
   - (a) an uncoated, uncatalyzed hollow ceramic member which comprises a single phase material of an oxide of titanium and a dopant suited to prevent at least a portion of titanium ions having a formal valence of +3 from converting to titanium ions having a formal valence of +4; and
   - (b) an electrically conductive substance occupying at least a portion of the interior of the hollow ceramic member and adapted to transfer electrical energy from a power source to the ceramic member.

4,370,217

TARGET ASSEMBLY COMPRISING, FOR USE IN A MAGNETRON-TYPE SPUTTERING DEVICE, A MAGNETIC TARGET PLATE AND PERMANENT MAGNET PIECES

Hidefumi Funaki, Fuchu, Japan, assignor to Anelva Corporation, Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,778

Claims priority, application Japan, Jun. 16, 1980, 55/80221

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—298 **11 Claims**

1. In a target assembly comprising a target plate, a permanent magnet member, and a conductive body, said target plate being of a predetermined material and having a first and a second principal surface, said conductive body being brought into contact with said second principal surface, said target assembly being for use in a hollow space of a device comprising means for holding at least one object in said hollow space with said object facing said first principal surface, an electrode exposed to said hollow space, and means for supplying an electric voltage between said conductive body and said electrode to produce an electric field, said permanent magnet member being for producing a magnetic field intersecting said electric field, said device being for sputtering said predetermined material primarily from said first principal surface onto said object by the help of said electric and said magnetic fields, the improvement wherein:
- said predetermined material is a magnetic material;
- said permanent magnet member comprising first and second permanent magnet pieces, each having a north and a south pole, said first and said second permanent magnet pieces being brought into contact with said target plate with differently named poles of the respective magnet pieces placed nearer to said target plate.

4,370,218

INORGANIC SALT OXIDATION PROMOTERS FOR HYDROCARBONS

Donald D. Carlos, Louisville, Ky., assignor to Ashland Petroleum Company, division of Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 20, 1981, Ser. No. 245,801

Int. Cl.^{3} C07C *27/10, 27/12;* **C10G** *3/00*

U.S. Cl. 208—3 **18 Claims**

1. A process for oxidizing liquid saturated hydrocarbons primarily containing petrolatums and waxes, said hydrocarbons containing an average of about 20 to about 100 carbon atoms per molecule comprising blowing an oxidizing gas through a liquid mass of said hydrocarbons under a pressure of about 50 to 400 psia in the presence of an oxidation promoting amount of an inorganic salt, the anion of which consists of one or more phosphorous, nitrogen, sulfur, silicon or halogen

atoms and one or more oxygen atoms to yield an oxidized hydrocarbon product having an acid number of at least 9.8.

4,370,219
HYDROCARBON CONVERSION PROCESS EMPLOYING ESSENTIALLY ALUMINA-FREE ZEOLITES

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 16, 1981, Ser. No. 244,471

Int. Cl.^{3} C10G *47/16, 69/04, 69/12, 11/05*

U.S. Cl. 208—59 **24 Claims**

1. A process for converting a hydrocarbonaceous feedstock by subjecting the feedstock to catalytic reactions in three zones, the process comprising the steps of catalytically hydroprocessing the feedstock in a first reaction zone, contacting the product of the first zone in a second reaction zone under cracking conditions including a temperature of from about 650°-1100° F., a pressure of from about 0-2000 psig and an LHSV of from about 0.1-10 with a first catalyst comprising an essentially alumina-free intermediate pore size zeolite and, immediately thereafter, contacting the product of the second reaction zone in a third reaction zone with a second catalyst comprising an essentially alumina-free intermediate pore size zeolite under cracking conditions less severe than the cracking conditions in the second reaction zone including a temperature of from about 400°-700° F., a pressure of from about 0-2000 psig and an LHSV of from about 0.1-10 wherein the less severe cracking conditions are obtained by maintaining a lower temperature in the third reaction zone than in the second reaction zone so as to favor polymerization in the third zone of olefins formed in the second zone whereby selectivity to C_5^+ is increased.

4,370,220
PROCESS FOR REDUCING COKE FORMATION IN HEAVY FEED CATALYTIC CRACKING

Roby Bearden, and Gordon F. Stuntz, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 259,830, May 4, 1981, which is a continuation-in-part of Ser. No. 108,396, Dec. 31, 1979, Pat. No. 4,280,896. This application Jul. 22, 1981, Ser. No. 285,817

Int. Cl.^{3} C10G *9/16, 11/18*

U.S. Cl. 208—108 **14 Claims**

1. A method for passivating a hydrocarbon cracking catalyst utilized to crack hydrocarbon feedstock to lower molecular weight products in the reaction zone of a catalytic cracking system comprising a reaction zone and a regeneration zone, where the feedstock contains at least one metal contaminant selected from the class consisting of nickel, vanadium, and iron, and where at least some of said metal contaminant becomes deposited on the catalyst such that at least a major portion of the total of said metal contaminants deposited on the catalyst comprises only one of said metal contaminants,

and where said metal contaminant contributes to excessive hydrogen and coke production, the method comprising:

A. monitoring the composition of said metal contaminant deposited on the catalyst;

B. adding an effective passivating amount of at least one of said metal contaminants not present as the major contaminant on the catalyst; and

C. passing catalyst from the reaction zone through a regeneration zone maintained under net reducing conditions and through a reduction zone maintained at an elevated temperature for a time sufficient to at least partially passivate said metal contaminants on the catalyst and thereby minimize excessive hydrogen and coke production, while a reducing environment is maintained in said reduction zone by the addition to the reduction zone of a material selected from the class consisting of hydrogen, carbon monoxide and mixtures thereof.

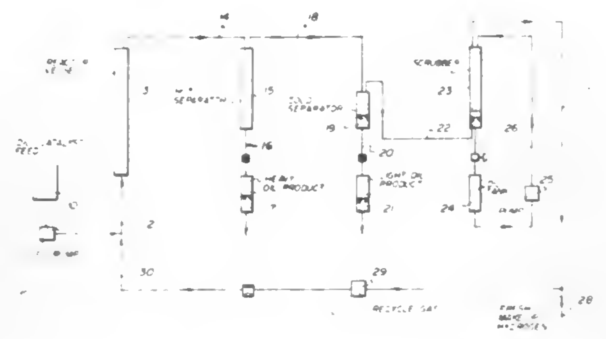
4,370,221
CATALYTIC HYDROCRACKING OF HEAVY OILS

David J. Patmore; Ramaswami Ranganathan; Chandra P. Khulbe, all of Ottawa, and Barry B. Pruden, Calgary, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Energy, Mines and Resources, Ontario, Canada

Filed Mar. 3, 1981, Ser. No. 240,089

Int. Cl.^{3} C10G *47/04*

U.S. Cl. 208—112 **7 Claims**



1. A process for hydrocracking a heavy hydrocarbon oil, at least 50 wt. % of which boils above 524° C. which comprises:

(a) passing a slurry of said heavy hydrocarbon oil and 0.01-5 wt. % of a catalyst comprising finely divided sub-bituminous coal carrying cobalt and molybdenum compounds in amounts of 0.2 to 10 wt. % Co and 0.4 and 20 wt. % Mo in the presence of 500-50,000 scf of hydrogen per barrel of said hydrocarbon oil upwardly through a tubular hydrocracking zone, said hydrocracking zone being maintained at a temperature between about 400° and 500° C., a pressure above 500 psig. and a space velocity between about 0.5 and 4.0 volumes of heavy hydrocarbon oil per hour per volume of hydrocracking zone capacity,

(b) removing from said hydrocracking zone a mixed effluent containing a gaseous phase comprising hydrogen and vaporous hydrocarbons and a liquid phase comprising heavy hydrocarbons, and

(c) separating said effluent into a gaseous stream containing hydrogen and vaporous hydrocarbons and a liquid stream containing heavy hydrocarbons.

4,370,222
FCC REGENERATION

Stephen J. McGovern, Deptford, and John H. Yeigh, Jr., Turnersville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,776

Int. Cl.^{3} C10G *11/18*

U.S. Cl. 208—113 **6 Claims**

1. In a fluidized catalytic cracking process of the type wherein a hydrocarbon feedstock is contacted with cracking catalyst in a reactor vessel under catalytic cracking conditions producing cracked hydrocarbon vapors and coke-contaminated catalyst and wherein said coke-contaminated catalyst is regenerated in a regenerator vessel at a predetermined elevated temperature with air, utilized as a molecular oxygen-containing regeneration gas, passing through said regenerator vessel at a predetermined superficial velocity producing regenerated catalyst and a flue gas comprising oxides of carbon, the improvement which comprises:

(a) introducing oxygen-enriched air into the regenerator vessel as the molecular oxygen-containing regeneration gas,

(b) passing said oxygen-enriched air through said regenerator vessel at substantially the said predetermined superficial velocity, whereby the predetermined elevated temperature in the regenerator vessel is increased, and

(c) cooling at least a portion of the regenerated catalyst from the increased elevated temperature to provide the regenerated catalyst at substantially the said predetermined elevated temperature.

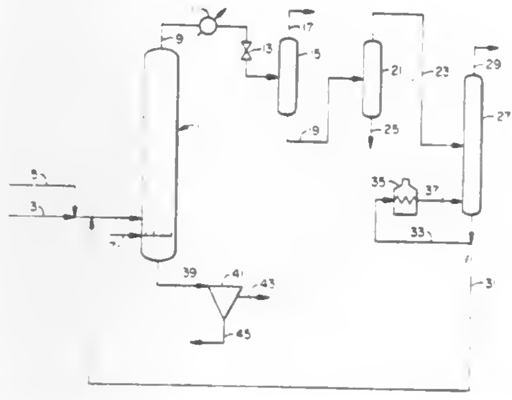
4,370,223
COKING HYDROCARBONACEOUS OILS WITH AN AQUEOUS LIQUID

Phillip R. Bose, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 221,758, Dec. 31, 1980, abandoned. This application Nov. 24, 1981, Ser. No. 324,216

Int. Cl.^{3} C10G *9/26*

U.S. Cl. 208—125 **5 Claims**



1. A process for producing coke from a hydrocarbonaceous oil which comprises:

forming coke by contacting said oil with free oxygen in the presence of an aqueous liquid at a temperature of at least 300° C. and a pressure sufficient to maintain said aqueous liquid at least partially in the liquid phase.

4,370,224
REFORMING WITH MULTIMETALLIC CATALYSTS

Paul E. Eberly, Jr.; Charles H. Mauldin, and William C. Baird, Jr., all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 211,765, Dec. 1, 1980, which is a continuation-in-part of Ser. No. 53,375, Jun. 29, 1979, Pat. No. 4,265,786. This application Nov. 2, 1981, Ser. No. 317,116

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.^{3} C10G *35/085*

U.S. Cl. 208—139 **9 Claims**

1. A process for reforming a hydrocarbon feed at reforming conditions which comprises contacting said feed with a catalyst which comprises from about 0.1 to about 2 percent platinum, from about 0.1 to about 2 percent iridium, from about 0.01 to about 0.1 percent copper, from about 0.001 to about 3 percent selenium, and from about 0.1 to about 2.5 percent halogen, composited with an inorganic oxide support.

4,370,225
DRY MAGNETIC SEPARATORS FOR INCREASED RECOVERY OR ORE AT HIGH BELT SPEEDS

John P. Bingel, Lander, Wyo., and Robert W. Salmi, Grand Rapids, Minn., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1981, Ser. No. 295,895

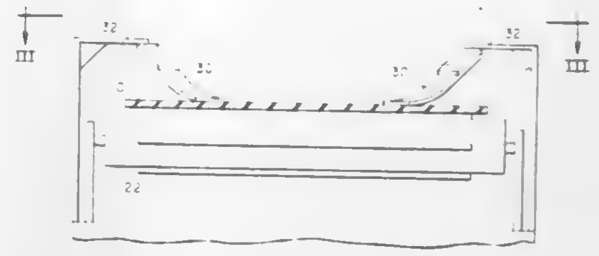
Int. Cl.^{3} B03C *1/16, 1/30*

U.S. Cl. 209—40 **3 Claims**

1. In magnetic ore particles separating apparatus, said apparatus including belt conveyor means, said conveyor including at least one endless belt loop, a head-pulley mounted within said loop at one end thereof, said pulley having magnet means for attracting said ore particles, means for driving said conveyor, and a splitter device located downwardly from said head-pulley and aligned outwardly of said loop so as to effect separation of particles by differences in trajectory and magnetic susceptibility when thrown off the head-pulley end of said loop,

the improvement in said apparatus which comprises:

means for periodically striking said conveyor at at least one location of an upper flight of said belt intermediate said head-pulley and an opposite end thereof so as to effect stratification of said particles by size prior to their arrival at said head-pulley-end



means for regulating the width of the layer of ore particles on said conveyor, said width tapering outwardly toward the side edges of said conveyor means in the direction toward the head-pulley,

whereby, a thin layer of particles stratified by size is obtained at the head-pulley end of said conveyor, thus improving separation of magnetic from non-magnetic particles by differences in the trajectory and magnetic susceptibility thereof.

4,370,226
SIFTING MACHINE

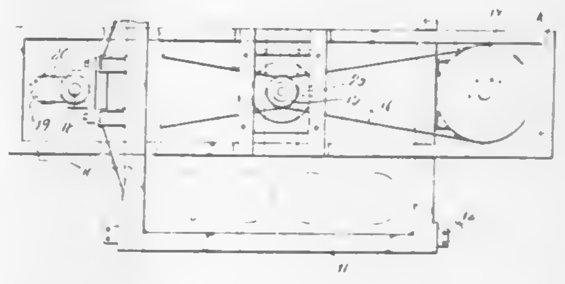
Richard Fullalove, Denton, England, assignor to Henry Simon Limited, Cheshire, England

Filed Feb. 25, 1981, Ser. No. 238,100

Claims priority, application United Kingdom, Mar. 12, 1980, 8008360

Int. Cl.^{3} B07B *1/38*

U.S. Cl. 209—332 **1 Claim**

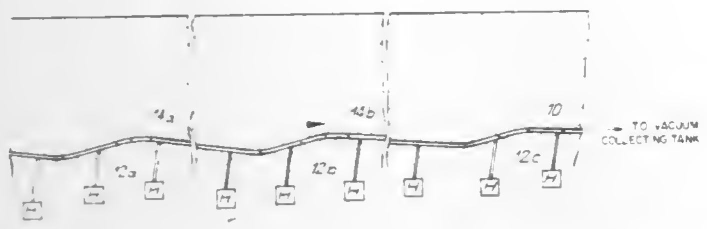


1. A sifting machine comprising a freely suspended sieve box, a motor attached thereto and drivingly connected to at least one rotatable shaft also attached to the sieve box and carrying a throwing weight to impart a sifting motion thereto, said throwing weight being located outside the bounds of the sieve box with the effective mass of said throwing weight being distributed evenly above and below a horizontal plane passing through the centre of gravity of the sieve box, and with an additional throwing weight being mounted for rotation about the central vertical axis of said sieve box.

4,370,227

VACUUM DRAIN FACILITY

Harald R. Michael, Hamburg, Fed. Rep. of Germany, assignor to Electrolux GmbH, Hamburg, Fed. Rep. of Germany
Continuation of Ser. No. 54,921, Jul. 5, 1979, abandoned, which is a continuation of Ser. No. 832,812, Sep. 13, 1977, abandoned. This application Aug. 19, 1980, Ser. No. 179,473
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1976, 2641110
Int. Cl.³ C02F *1/00*
U.S. Cl. 210—170 **7 Claims**

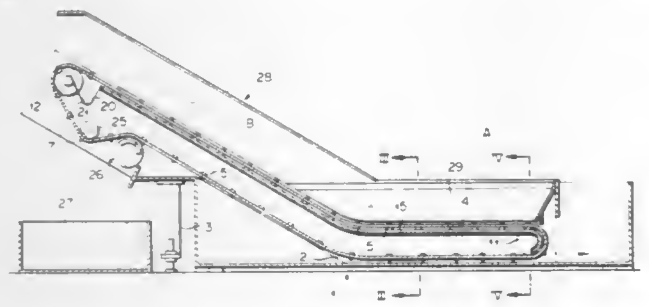


1. In a vacuum drain sewage facility comprising a vacuum conduit connected to a collecting tank that is maintained under vacuum so as to move liquid therethrough without requiring a gravity flow layout, a plurality of house connection means to said vacuum conduit for admitting to the conduit relatively small amounts of collected liquid followed immediately by air in the amount of 2 to 15 times the liquid volumes, said conduit presenting ascending and descending sections, the improvement comprising means for counteracting intermittent wrong-way flow in said conduit, said counteracting means comprising an arrangement wherein the vacuum conduit in the vicinity of the house connections is laid out in the direction of flow with alternating relatively short ascending sections and relatively long descending sections at least twice as long as the ascending sections.

4,370,228

MAGNETIC BELT CONVEYOR TYPE MAGNETIC PARTICLE SEPARATOR

Minoru Tashiro, and Takaaki Uemura, both of Tokyo, Japan, assignors to Bunri Industry Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1981, Ser. No. 316,940
Claims priority, application Japan, Nov. 12, 1980, 55-159294
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—223 **10 Claims**

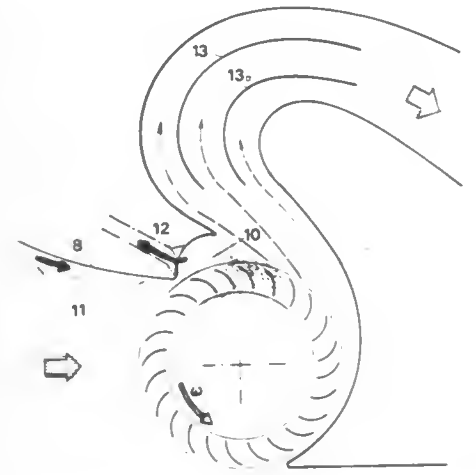


1. In a magnetic belt conveyor type magnetic particle separator comprising a storage tank for storing liquid charged thereto and containing magnetic particles, an endless belt conveyor having one end portion extending in said storage tank and the other end portion extending sidewise from said storage tank in an upwardly inclined direction, and magnet means disposed beneath the forward run of said belt conveyor to extend in the direction of running of said belt conveyor, wherein magnetic particles contained in said liquid are attracted to the upper surface of the forward run of said belt conveyor by the magnetic forces of said magnet means to be conveyed in the state attracted to the belt conveyor up to the forward run end thereof and separated therefrom at said forward run end for being discharged, thereby separating magnetic particles from said liquid; the improvement which further comprises scrapers mounted on the inner side of said belt conveyor in a spaced-apart relation in the direction of running of the belt conveyor and moved in unison therewith over the upper surface of said magnet means to scrape magnetic particles off the upper surface of the magnet means, and protuberances projecting from the outer surfaces of the belt conveyor to catch masses of magnetic particles rolling over the belt conveyor.

4,370,229

HIGH CAPACITY OIL RECUPERATOR FOR DE-POLLUTION IN ROUGH WATERS

André E. Grihangne, 186, Avenue Victor Hugo, Paris, France (75116)
Filed Apr. 28, 1981, Ser. No. 258,393
Claims priority, application France, May 8, 1980, 80 10234
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 **2 Claims**



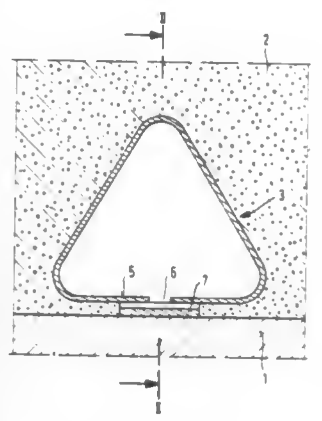
1. A high capacity oil slick recuperator for use in rough waters, comprising:

a stator having an inlet, a rotor rotatable inside said stator and provided with vanes, which rotor sucks in polluted water perpendicularly to its axis of rotation, wherein the stator-rotor assembly is adapted to be entirely submerged and wherein the configuration of the stator generates and maintains, by interaction between stator and rotor, a stream which induces a vortex stabilized in all azimuths on the periphery of the rotor and which is not associated with the general flow of the water stream, the axis of said vortex being parallel to the axis of the rotor and its intensity being dependent on the speed of rotation of the rotor; and wherein the oil slick on the water surface is carried as far as the vortex by the water stream being guided in submersion along a wall extending forward from the stator inlet and intercepting the water surface, and wherein the oil, which is less dense than the water, is caught into said vortex wherefrom it is sucked up as it enters it, via pumping means, towards a storage, the axis of the rotor being substantially horizontal, the said rotor being constituted by a grid of identical vanes arranged in cylindrical form at its periphery and in parallel to its axis of rotation, the upper inside wall profile of the stator being provided close to the periphery of the rotor with a cuspidal edge parallel to the vanes of the rotor and creating with the latter a small gap, the said cuspidal edge ensuring the separation between the incoming and outgoing water streams; the profile of said wall downstream of the said edge being substantially akin to the flow boundary line of said induced vortex, the said profile forming a crook which localizes said vortex; the oil pumping means being located in the vortex and constituted by a parietal intake provided in a concave nose-piece of the crook of the stator and which communicates with an induction pipe of a pump which transfers recuperated oil to the storage.

4,370,230

DRAINPIPE FOR A REVERSIBLE DRAINPIPE FILTER SYSTEM

Josef Tylmann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Apr. 30, 1981, Ser. No. 259,187
Claims priority, application Switzerland, May 12, 1980, 3695/80
Int. Cl.³ B01D *23/20*
U.S. Cl. 210—289 **5 Claims**



5. A reversible filter system for water treatment comprising:

a filter basin having a bottom;

a filter bed of uniform grain size received on said filter basin bottom;

a collecting main extending below said basin along a symmetrical vertical plane;

a plurality of drainpipes mounted within said basin, on said bottom in perpendicular relation to said vertical plane, each said drainpipe being of triangular cross-section and having at least one elongated slot in a surface thereof facing said bottom and an opening in said surface offset from a midpoint of said drainpipe;

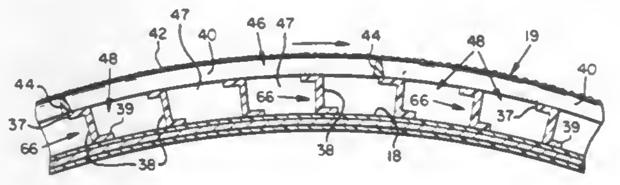
a plurality of immersion tubes, each said tube being connected with an opening in a respective drainpipe and extending into said collecting main; and

a plurality of ledges on said bottom, each said ledge supporting a respective drainpipe thereon and having a plurality of upstanding webs and grooves disposed in alternating relation and in facing relation to said slot of a respective drainpipe.

4,370,231

ROTARY DRUM FILTER

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.
Filed Sep. 4, 1981, Ser. No. 299,535
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—404 **21 Claims**



1. A deck structure for a filtering apparatus including a rotatably mounted, generally cylindrical drum with filtering means and vacuum drainage means associated therewith, wherein said deck structure comprises:

a plurality of circumferentially spaced, axially extending, and radially projecting imperforate channel members affixed to the outer peripheral surface of the drum, said channel members each including a first circumferentially extending surface which is radially spaced from the peripheral surface of the drum, said first surfaces defining filtrate slots which are at least about as wide in a circumferential direction as said first surfaces;

a plurality of axially extending, evenly circumferentially spaced dams mounted adjacent the outer periphery of at least some of said channel members, said dams defining filtrate compartments and subcompartments therebetween which lead to the vacuum drainage means; and

perforate support means for supporting the filtering means above said filtrate compartments.

12. A rotary drum type filtering apparatus adapted to be partially submerged in a tank filled with pulp slurry, wherein the apparatus comprises:

a generally cylindrical, rotatably mounted drum;

a plurality of circumferentially spaced, axially extending, imperforate channel members mounted to the outer peripheral surface of said drum to define a plurality of filtrate subcompartments, said channel members each including a first circumferentially extending surface which is radially spaced from said peripheral surface of said drum, said first surfaces defining filtrate slots therebetween;

a plurality of axially extending dams mounted adjacent the outer periphery of at least some, but fewer than all, of said channel members to define a plurality of filtrate compartments of substantially equal size;

said filtrate slots being at least about one-half of the width, in a circumferential direction, of each said filtrate subcompartment;

perforate filtering means surrounding said drum disposed outwardly of said filtrate compartments for filtering the slurry as it enters said drum;

perforate support means disposed between said filtrate subcompartments and said filtering means, for supporting said filtering means above said filtrate compartments; and

suction drainage means for creating a suction within said drum to draw the filtrate through said filtering means and into said filtrate compartments and subcompartments, and to drain the filtrate therefrom.

4,370,232

SLUDGE DE-WATERING PLANT WITH A PLURALITY OF FILTER PRESSES CONNECTED IN PARALLEL

Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany
Filed Aug. 3, 1981, Ser. No. 289,804
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029438
Int. Cl.³ B01D *25/12*
U.S. Cl. 210—224 **8 Claims**

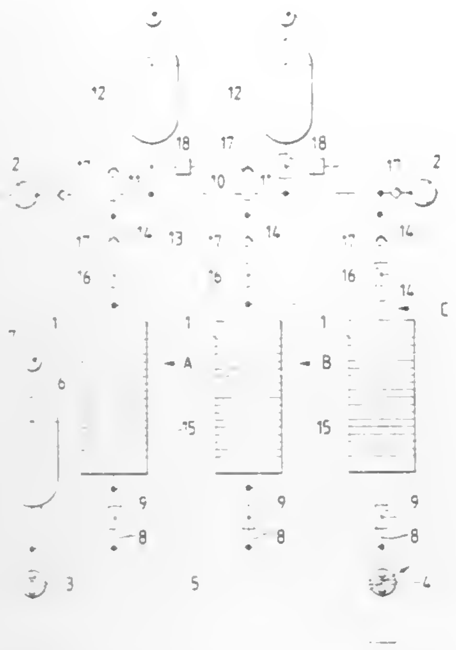
1. A sludge de-watering plant having a plurality of filter presses connected in parallel with at least one low-pressure pump delivering a high rate of sludge and serving substantially for rapid filling of the presses, and at least one high-pressure pump substantially effecting the filtration, the improvement comprising:

(a) at least two low-pressure pumps and at least two high-pressure pumps,

(b) a first pipe system associated with each of said low-pressure pumps and a second pipe system associated with each of said high-pressure pumps,

(c) means connecting said first and second pipe systems to the individual filter presses for mutually independent delivery,

(d) at least one pressure compensation reservoir tank in each of said first and second pipe systems, and



(e) means for mutually controlling the pumps in said first and second pipe systems independently by the relevant pressure prevailing in the pipe systems.

4,370,233
CHEMICAL DETOXIFICATION OF SEWAGE SLUDGE

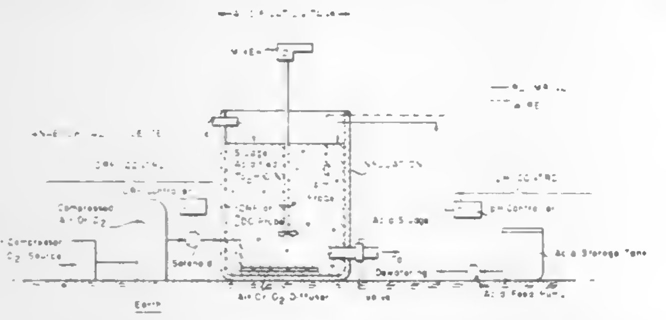
Thomas D. Hayes, Columbus, Ohio; Randolph M. Kabrick, and William J. Jewell, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 10, 1981, Ser. No. 281,950

The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.

Int. Cl.^{3} C02F *11/02, 11/12*

U.S. Cl. 210—609 **9 Claims**



1. A method for the chemical detoxification of anaerobically digested organic sludge, which sludge contains toxic heavy metals in insoluble form, comprising the sequential steps of:

(a) introducing a quantity of anaerobically digested sludge into an insulated acid-resistant reaction vessel, said sludge having a temperature of from about 30° C. to 60° C.;

(b) mixing and aerating said sludge at a rate sufficient to increase the oxidation reduction potential to above +300 mv.;

(c) maintaining said increased oxidation reduction potential for a period of 6–12 hours, thereby to convert the heavy metals within the sludge to a desired oxidation state;

(d) adding to said sludge a quantity of concentrated acid in an amount sufficient to acidify said sludge to a pH of from about 1.0 to about 3.0 for an acidification period of 6 to 12 hours while maintaining said oxidization reduction potential at a level greater than +300 mv., thereby to convert the oxidized heavy metals to their soluble species; and

(e) dewatering the acidified sludge to remove the solubilized heavy metals therefrom, thereby to produce dewatered, detoxified acidic sludge and acidic, heavy-metal-containing water.

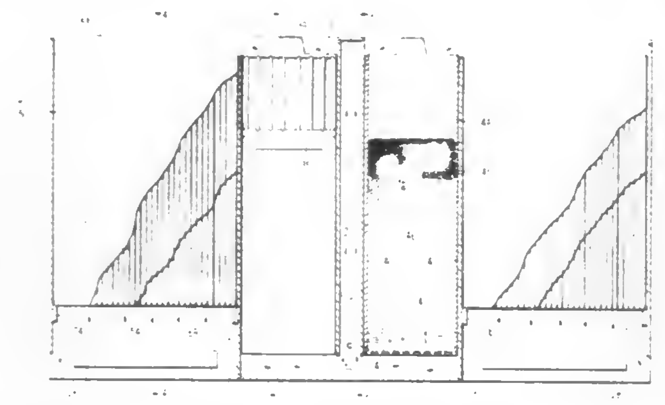
4,370,234
SYSTEM AND METHOD FOR REMOVING AMMONIA FROM WASTEWATER

William P. Marsland, R.R. 3, Box 166, Spring Hill, Kans. 66083

Filed Feb. 5, 1981, Ser. No. 231,833

Int. Cl.^{3} C02F *1/42, 3/08*

U.S. Cl. 210—617 **28 Claims**



1. A method of treating wastewater containing ammonium comprising:

providing a biological filter containing nitrifying bacteria;

providing a bed of ion exchange particles downstream of said biological filter as a substrate for nitrifying bacteria, said ion exchange particles having ammonium exchange properties;

contacting said wastewater with said biological filter;

contacting the resulting bacteria-treated wastewater with said ion-exchange particles under conditions whereby ammonium is transferred from said wastewater to said particles and is converted to an oxygen-containing nitrogen compound.

4,370,235
METHOD OF TREATING EXCESS SLUDGE

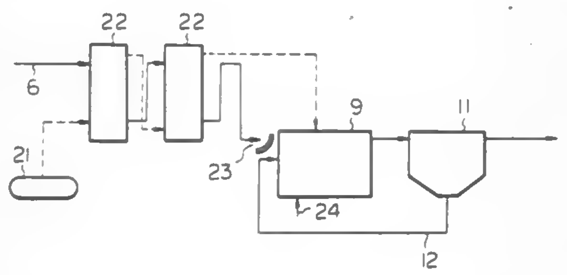
Akira Suzuki, Saitama, and Yasumi Shioya, Higashi Kurume, both of Japan, assignors to Shinryo Air Conditioning Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 43,757, May 30, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,148

Claims priority, application Japan, Jul. 4, 1978, 53-81301

Int. Cl.^{3} C02F *1/78*

U.S. Cl. 210—620 **2 Claims**



1. A method of treating all excess activated sludge discharged from an activated sludge treatment process, comprising:

passing all of said excess sludge obtained from said process, none of which is to be returned to said activated sludge treating process, to a conversion unit;

converting therein the cells of microorganisms in the suspended solids in said excess sludge to an organic liquid by ozonization of the excess sludge;

passing the resulting organic liquid to a digesting stage in which activated sludge utilizes the organic liquid as a nutrient;

aerobically digesting the organic liquid; and

discharging the effluent from the digesting stage.

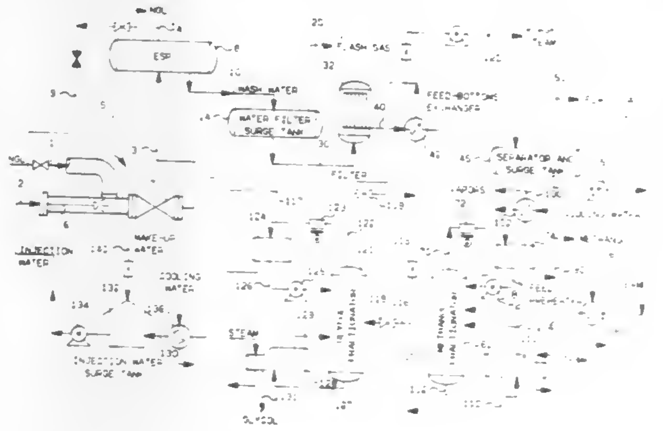
4,370,236
PURIFICATION OF HYDROCARBON STREAMS

Robert C. Ferguson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 16, 1980, Ser. No. 217,068

Int. Cl.^{3} B01D *11/04*

U.S. Cl. 210—634 **15 Claims**



1. Process comprising:

(a) contacting a liquid stream comprising hydrocarbon as its major component and particulate and at least one contaminant selected from the group consisting of hydrogen sulfide, carbon dioxide, methanol, ethylene glycol, and amine as its minor component with an aqueous wash liquid stream comprising water as its major component to form a mixture comprising liquid hydrocarbon, aqueous wash liquid and particulate;

(b) withdrawing from said mixture a purified liquid hydrocarbon stream and a wash stream comprising water, particulate, and at least one contaminant selected from the group consisting of hydrogen sulfide, carbon dioxide, methanol, ethylene glycol and amine;

(c) filtering at least a portion of the particulate from the wash stream to form a filtered wash stream; and

(d) recycling at least a portion of the filtered wash stream to the aqueous wash liquid stream whereby the aqueous wash liquid stream contains at least one contaminant selected from the group consisting of hydrogen sulfide, carbon dioxide, methanol, ehtylene glycol and amine as a minor component.

12. Apparatus comprising:

an electrostatic precipitator;

a filter;

a first conduit emptying into said electrostatic precipitator;

a first means for defining a flow path from a lower portion of the electrostatic precipitator to the filter; and

a second means for defining a flow path between the filter and the first conduit comprising:

a methanol fractionator;

a third means for defining a flow path between the filter and the methanol fractionator; and

a fourth means for defining a flow path from a lower portion of the methanol fractionator to the first conduit.

4,370,237
EXTRACTANTS

Richard J. Dain, Crouch, near Borough Green; Gary D. Manning, Welwyn Garden City, and Alfred R. Burkin, Shenfield, all of England, assignors to Ford & Dain Research Limited, Sevenoaks, England

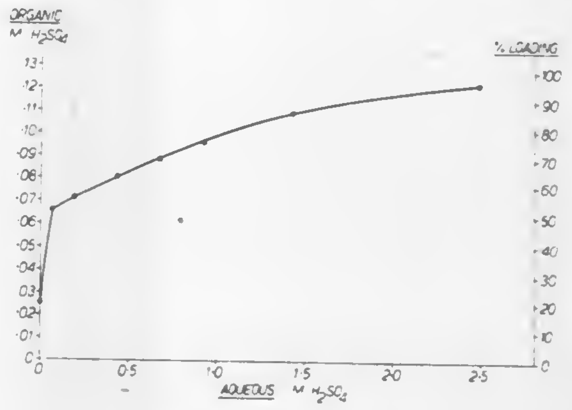
PCT No. PCT/GB79/00171, § 371 Date May 21, 1980, § 102(e) Date May 21, 1980, PCT Pub. No. WO80/00796, PCT Pub. Date May 1, 1980

PCT Filed Oct. 25, 1979, Ser. No. 193,280

Claims priority, application United Kingdom, Oct. 27, 1978, 42255/78

Int. Cl.^{3} B01D *11/04*

U.S. Cl. 210—638 **18 Claims**



1. In an extraction process for extracting ionic values from an aqueous solution containing same, said process comprising first contacting said aqueous solution with an organic hydrophobic liquid extractant phase comprising an extractant for said ions to form a loaded extractant phase, and thereafter stripping said ions from said loaded extractant phase with an aqueous stripping liquid phase, the improvement comprising using, as said extractant, an at least substantially water-insoluble extractant, the molecules of which contain at least one hydrophobic group selected from the group consisting of cyclic phosphazene radicals, linear siloxane radicals, cyclic siloxane radicals, and three-dimensional siloxane radicals.

4,370,238
PROCESS FOR DRYING SURFACTANT-CONTAINING CRUDE OIL

James E. Tackett, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed May 14, 1979, Ser. No. 38,964

Int. Cl.^{3} C10G *33/04*

U.S. Cl. 210—639 **28 Claims**

1. A process for the removal of surfactant from a surfactant produced crude oil comprising drying the micellar produced crude oil to a water content of less than about 10%, and thereafter extracting the surfactant and remaining water from the surfactant produced crude oil with an alcohol selected from the group consisting of alcohols having a carbon to hydroxy group ratio of 3 or less, ethoxylated products of these alcohols and mixtures thereof wherein the alcohol contains less than about 12 percent by volume water.

4,370,239
BISULFITE SPONGE PROCESS

Harbo P. Jensen, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 15, 1980, Ser. No. 216,402

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

Int. Cl.^{3} B01D *15/00*

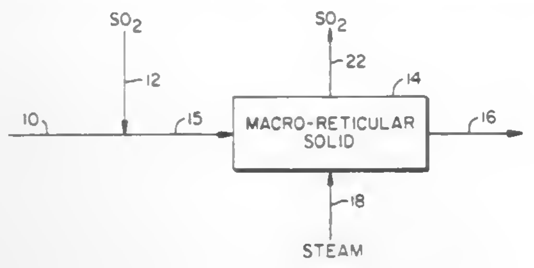
U.S. Cl. 210—668 **6 Claims**

1. A method for removing sulfite ions from an aqueous liquid comprising:

converting at least a portion of said sulfite ions to bisulfite ions by decreasing the pH of said liquid;

contacting said liquid with a porous organic macroreticular solid compound having at least 0.1 milliequivalents of adduct-forming carbonyl functional groups per gram of compound; thereby forming carbonyl adducts of said bisulfite ions and a residual liquid;

withdrawing said residual liquid from contact with said macroreticular solid compound.



4,370,240

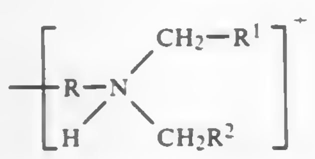
REMOVAL OF IRON COMPOUNDS FROM ORGANIC PROCESS STREAMS

George L. Brownell, Mt. Lebanon Township, Allegheny County; William R. Davie, Hopewell Township, Beaver County, and Marvin C. Fields, Wilkins Township, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 10, 1981, Ser. No. 272,141
Int. Cl.^{3} B01D *15/04*

U.S. Cl. 210—673 7 Claims

1. Method of removing iron compounds from a phenolic composition containing up to 10% water comprising passing the phenolic composition through a bed of resin containing active sites of the general formula



where R is an inert active site connector and R^1 and R^2 are independently selected from the group consisting of H and COOH.

4,370,241

PROCESS FOR THE DETOXIFICATION OF WASTE WATER CONTAINING PHENOL, PHENOL DERIVATIVE OR PHENOL AND FORMALDEHYDE

Helmut Junkermann, Frankfurt, and Horst Krüger, Darmstadt, both of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 862,760, Dec. 20, 1977. This application Nov. 27, 1979, Ser. No. 97,898

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703267; Jan. 27, 1977, 2703268
Int. Cl.^{3} C02F *1/72*

U.S. Cl. 210—759 25 Claims

1. A process of purifying waste water containing (1) phenol in the absence of formaldehyde, (2) a substituted phenol or (3) phenol+formaldehyde comprising treating the waste water with hydrogen peroxide in the presence of either (a) metallic iron under acid conditions and an activator which is a salt of an alkali metal, a salt of an alkaline earth metal, a zinc salt, an aluminum salt, a nickel salt or a manganese salt or is insoluble silica or (b) metallic copper and an activator which is a salt of an alkali metal, a salt of an alkaline earth metal, a zinc salt, an aluminum salt, or a manganese salt or is insoluble silica, said activator being present in an amount of 0.1 to 0.2% based on the hydrogen peroxide.

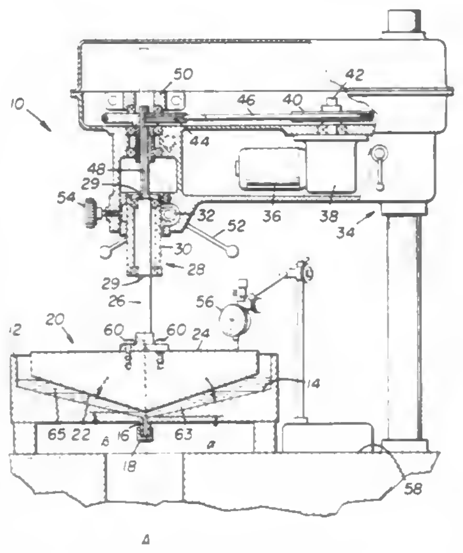
4,370,242

DEVICE FOR AND A METHOD TO SEPARATE ORIENTABLE OR DEFORMABLE PARTICLES

Ken A. Dill, Mountain View; Bruno H. Zimm, La Jolla, and Richard H. Shafer, Mill Valley, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 3, 1980, Ser. No. 193,428
Int. Cl.^{3} B01D *43/00*

U.S. Cl. 210—787 16 Claims



14. A method for separating deformable particles comprising the steps of:

placing a relatively high-density solvent in a container;

placing a rotatable member having a lower surface formed of a surface of revolution in said container;

layering a second quantity of relatively lower-density solvent containing a quantity of deformable particles on top of said relatively high-density solvent;

rotating the rotatable member slowly to create a shear force;

allowing said particles to migrate toward the center of said container;

decreasing the rate of rotation of the rotatable member;

draining off a portion of the solution through a drain located at the apex of the lower cone following a predetermined period of time of rotation.

4,370,243

OIL RECOVERY BY SURFACTANT-ALCOHOL WATERFLOODING

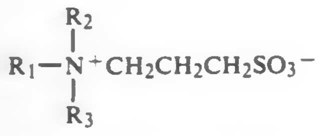
Catherine S. H. Chen, Berkeley Heights, and Yuhshi Luh, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,474
Int. Cl.^{3} E21B *43/22*

U.S. Cl. 252—8.55 D 12 Claims

1. In a method for the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems in which an aqueous fluid is introduced into said reservoir via said injection system to displace oil to said production system, the improvement comprising employing in all or part of said aqueous fluid the following:

(a) a mixture of sulfobetaine of the formula



$$R_1-\overset{\displaystyle R_2}{\underset{\displaystyle R_3}{N^+}}CH_2CH_2CH_2SO_3^-$$

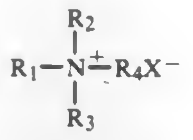
wherein R_1, R_2 and R_3 are hydrocarbyl groups containing 1 to 20 carbon atoms or said hydrocarbyl groups substituted with a hydroxyl group, and a preferentially oil-soluble aliphatic alcohol;

(b) an organic quaternary ammonium compound of the formula

$(R_5)_4N^+X^-$

wherein R_5 is an alkyl group containing 1 to 4 carbon atoms and X is halogen or NO_3; and

(c) a quaternary ammonium thickening agent of the formula



$$R_1-\overset{\displaystyle R_2}{\underset{\displaystyle R_3}{N}}\overset{+}{-}R_4X^-$$

wherein R_1, R_2, R_3 and R_4 are hydrocarbyl groups containing 1 to 20 carbon atoms, at least one of which contains 16 to 20 carbon atoms and X is halogen or NO_3;

wherein:

(i) said mixture (a), said organic quaternary ammonium compound (b) and said thickening agent (c) are introduced into said reservoir in a single slug;

(ii) the concentration of said sulfobetaine in said slug is from about 0.25 to about 3 weight percent;

(iii) the ratio of said sulfobetaine to said alcohol is from 3:1 to 2:1,

(iv) the concentration of said thickening agent (c) in said slug is from about 0.1 to about 5 weight percent; and

(v) the concentration of said organic quaternary ammonium compound (b) in said slug is from about 0.5 to about 5 weight percent.

4,370,244

PROCESS FOR COLD MECHANICAL WORKING OF METALLIC MATERIALS

Harri Weinhold, Kreischa; Heinz-Rüdiger Vogei, Dresden; Bernhard Kurze, Dresden, and Gerhard Koch, Dresden, all of German Democratic Rep., assignors to Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Filed Dec. 17, 1979, Ser. No. 104,160

Claims priority, application German Democratic Rep., Dec. 21, 1978, 210023; Dec. 21, 1978, 210025
Int. Cl.^{3} C10M *5/16*

U.S. Cl. 252—39 7 Claims

1. In a process for cold mechanical treatment of metallic materials of the type in which a lubricant is used on the surface of the material to be treated or of apparatus for treating, the improvement comprising using as lubricant a liquid composition comprising an organic solvent with a boiling point below 200° C. and selected from the group consisting of benzene, monofluorotrichloromethane, monofluorodichloromethane, bromofluormethane, 1-bromo-2-fluoro-diethylene, dibromofluoromethane, monobromomonochlorodifluoromethane and trifluoroacetone, and a calcium salt of a carboxylic acid with more than 10 carbon atoms, which remains after evaporation of the solvent as a solid lubricant layer on the material.

4,370,245

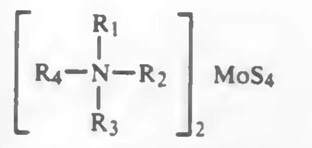
GREASE COMPOSITIONS CONTAINING QUATERNARY AMMONIUM THIOMOLYBDATES

Yumi P. Ryu, Murrysville; James R. Anglin, Gibsonia, and Gary M. Singerman, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 213,676, Dec. 5, 1980, Pat. No. 4,343,747, which is a continuation-in-part of Ser. No. 214,972, Dec. 10, 1980, Pat. No. 4,343,746. This application Dec. 24, 1980, Ser. No. 219,926
Int. Cl.^{3} C10M *1/32*

U.S. Cl. 252—46.4 16 Claims

1. A grease composition comprising a hydrocarbon lubricating oil thickened to a grease with a substituted-urea thickener and a quantity sufficient to improve the extreme pressure properties of the grease of a tetrahydrocarbylammonium thiomolybdate or a mixture thereof having the formula



$$\left[R_4-\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{N}}-R_2\right]_2 MoS_4$$

wherein R_1, R_2 and R_3 are independently selected from straight and branched alkyl and alkenyl having from one to about 30 carbon atoms, R_4 is selected from straight and branched alkyl or alkenyl having from about 4 to about 30 carbon atoms and benzyl, and the total number of carbon atoms in R_1, R_2, R_3 and R_4 is between about 15 and about 80 carbon atoms.

4,370,246

ANTIOXIDANT COMBINATIONS OF MOLYBDENUM COMPLEXES AND AROMATIC AMINE COMPOUNDS

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 27, 1981, Ser. No. 258,160
Int. Cl.^{3} C10M *1/32, 1/38, 1/44, 1/54*

U.S. Cl. 252—46.4 18 Claims

1. A lubricating oil additive comprising a combination of

(a) an oil soluble sulfur containing molybdenum complex prepared by (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improvers, or mixtures thereof to form a molybdenum complex wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom, and (2) reacting said complex with a sulfur containing compound in an amount to provide 0.1 to 4 atoms of sulfur per atom of molybdenum, and

(b) an oil soluble aromatic amine compound or mixtures thereof, wherein the aromatic amine compound of component (b) is present in an amount of from 0.02 to 10 parts by weight per part by weight of the sulfur containing molybdenum complex of component (a).

4,370,247

GEAR AND AXLE OIL COMPOSITION

Marcel A. Ostyn, Bois Guillaume, France, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 28, 1981, Ser. No. 287,869

Claims priority, application United Kingdom, Jul. 29, 1980, 8024774

Int. Cl.^{3} C10M *1/20, 1/26, 1/48*

U.S. Cl. 252—46.7 12 Claims

1. A lubricating oil composition suitable for use as a gear oil or an axle oil comprising:

(a) from 5 to 50 mass % of mineral oil of conventional gear oil or axle oil grade;

(b) from 5 to 30 mass % in total of at least one polyoxyalkylene glycol having a viscosity of from 5 to 30 cSt at 100° C.;

(c) from 25 to 60 mass % in total of at least one di-C_8 to C_{12} alkyl ester of a dicarboxylic acid;

(d) from 0 to 15 mass % in total of at least one conventional extreme pressure agent:

(e) from 0 to 8 mass % in total of at least one conventional VI improver; and

(f) from 0 to 5 mass % of at least one conventional pour point depressant;

the components (a) to (f) totalling together 100 mass %, and said components (a) to (f) also representing at least 95 mass % of the whole lubricating oil composition.

4,370,248

BORATED HYDROXYL-CONTAINING ACID ESTERS AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 132,023, Mar. 20, 1980, abandoned. This application Dec. 16, 1980, Ser. No. 216,881

Int. Cl.[3] C07F *5/04;* **C10M** *1/54*

U.S. Cl. 252—49.6 **19 Claims**

10. A lubricant composition comprising lubricant and a friction reducing amount of a product of reaction obtained by initially reacting (1) a branched aliphatic polyhydric alcohol containing 3 or 4 hydroxyl groups with a monocarboxylic acid such that the initial compound has 2 or 3 acyl groups, 2 when the alcohol has 3 or 4 hydroxyl groups and 3 only when the alcohol has 4 hydroxyl groups and then reacting the ester obtained with (2) a boron compound.

4,370,249

FIRE-RETARDANT CELLULOSE INSULATION AND METHOD OF PRODUCTION

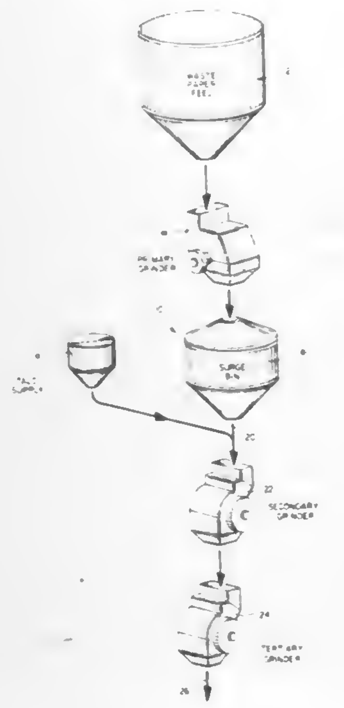
Thomas O. Bird, Idaho Falls, Id.; Jack White, 372 N. 3rd West, Rigby, Id. 83442, and Carl H. Bird, Idaho Falls, Id., assignors to Jack E. White, Rigby and Franklin N. Smith, Jr., Idaho Falls, both of, Id.

Continuation-in-part of Ser. No. 961,088, Nov. 15, 1978, Pat. No. 4,230,585. This application Jul. 9, 1980, Ser. No. 167,271

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.[3] C04B *43/12;* **C09K** *3/28*

U.S. Cl. 252—62 **4 Claims**



1. A fire-resistant, cellulose insulation comprising a finely divided cellulose intimately mixed with talc, the talc being present in an amount within the range on the order of about 5% to 25% by weight and wherein a boron compound is added to the talc in amounts ranging up to 20% by weight.

4,370,250

DETERGENT TABLET

David P. Joshi, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 6, 1976, Ser. No. 747,585

Int. Cl.[3] C11D *3/075, 3/08, 11/00, 17/06*

U.S. Cl. 252—135 **4 Claims**

1. A cleaning tablet comprising a granular detergent, which prior to tableting has a flowability of at least about 70% that of clean, dry sand, said detergent in turn comprising:

(a) from about 60 to 88 percent by weight of spray dried base beads having detergent building properties, comprising from about 45 to about 85% be weight of an alkali metal phosphate wherein from about 30 to about 60 percent of the phosphate is hydrated and the remainder is anhydrous, from about 5 to about 15 percent by weight of a sodium silicate having an Na_2O:SiO_2 ratio of from about 1:1.6 to about 1:3.4 and from about 5 to about 15% water, wherein a portion of the water is present as water of hydration in the hydrated phosphate, the beads being essentially free of organic surfactant, organic detergent or soap, when spray dried;

(b) from about 12 to about 40 percent by weight of a nonionic polyethoxylated synthetic organic detergent;

(c) said beads having a structure of microcrystals and amorphous solid interconnected as an irregular network within the beads, the network defining interconnected irregularly shaped passageways, said passageways comprising a reticular void space within the beads and interconnecting to discrete openings on the external surface of the beads;

(d) the nonionic detergent being applied to the external surfaces of the spray dried beads and being substantially absorbed into the internal passageways of the beads to produce the granular detergent;

(e) the beads, before tableting, having a specific gravity of from about 0.5 to about 0.8;

(f) at least 90% of the beads and the granular detergent having a particle size distributed between 20 mesh and 200 mesh U.S. sieve series; and

(g) the beads, during tableting, being subjected to compression forces of between about ¾ ton to about 3 tons per square inch.

4,370,251

CONTINUOUS PROCESS FOR THE PRODUCTION OF PEROXYCARBOXYLIC ACID COMPOSITIONS

Hsiang P. Liao, Princeton; Richard A. Mohr, Martinsville, and John F. Start, Trenton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 25, 1980, Ser. No. 172,329

Int. Cl.[3] C01B *15/10;* **C07C** *179/10*

U.S. Cl. 252—186.42 **9 Claims**

1. A continuous method of producing peroxycarboxylic acid compositions from corresponding carboxylic acids having no substantial solubility in water comprising establishing in each of at least one reaction vessel comprising a reaction system a reaction mass consisting of a reaction phase having intimately interdispersed therethrough by continuous agitation an organic solvent not substantially miscible therewith and in which said carboxylic acid is not substantially soluble but in which said peroxycarboxylic acid has substantial solubility, said reaction phase consisting of said carboxylic acid, a concentrated strong acid in which said carboxylic acid is substantially soluble, hydrogen peroxide, and resulting reaction products, continuously introducing feed into the first vessel of said system while continuously withdrawing as effluent from the last vessel of said system a portion of said reaction mass contained therein and while continuously transferring from the next preceding vessel, if any, a portion of the reaction mass contained therein to the next succeeding vessel, if any, said feed being made up of hydrogen peroxide, said organic solvent and a solution of said carboxylic acid in said strong acid, and recovering product from said effluent in a cycle comprising first diluting the effluent with mother liquor recovered and recycled from prior effluent, which may be water-reduced, distilling the organic solvent from the diluted effluent, leaving an aqueous liquor containing crystals of the peroxycarboxylic acid previously dissolved in the organic solvent, reacting the acid of the aqueous liquor with borax to form a slurry of boric acid and sodium salt of the strong acid in an aqueous mother liquor, recycling to the step of dilution of the effluent at least the mother liquor portion of said slurry, which may be water-reduced, and separating as product a mixture of crystals of peroxycarboxylic acid, boric acid and said sodium salt from the aqueous liquid with which they are associated in said cycle at a point at which said crystals of all said substances are simultaneously present.

4,370,252

EMULSION POLYMERIZATION PROCESS UTILIZING A HIGHLY DISPERSED ORGANOSULFUR MOLECULAR WEIGHT MODIFIER

Carl A. Uraneck, and Earl Clark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 18,092, Mar. 6, 1979, Pat. No. 4,245,072. This application Sep. 4, 1980, Ser. No. 183,796

Int. Cl.[3] B01J *13/00*

U.S. Cl. 252—311 **23 Claims**

1. A composition suitable for use as a molecular weight modifier in emulsion polymerization comprising a submicron dispersion formed by admixing at least one organosulfur molecular weight modifier, at least one aqueous surfactant, at least one electrolyte, and at least one cosurfactant selected from the group consisting of compounds having 3 to 20 carbon atoms per molecule and the formula of ROH, RCOOH, or RNH_2 wherein R is an alkyl radical, and optionally at least one hydrocarbon under conditions to reduce the average particle size of said molecular weight modifier in said submicron dispersion to less than about 10,000 Å.

4,370,253

ALKENYLSUCCINIC ACID EMULSIONS AND THEIR PREPARATION

Charles M. Selwitz, Monroeville, and Johann G. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 19, 1980, Ser. No. 161,166

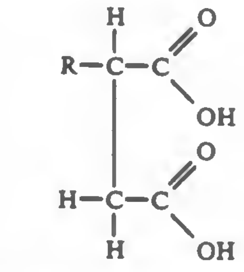
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.[3] B01J *13/00*

U.S. Cl. 252—312 **20 Claims**

1. A process for preparing an aqueous emulsion, which comprises

(a) heating a mixture of water and an alkenylsuccinic acid-containing normally water-insoluble material comprising oleophilic organic material and less than about 95 weight percent alkenylsuccinic acid having the formula



wherein R is an alkyl group having between about 26 and about 100 carbon atoms, at a temperature of between about 50° to about 150° C. for at least about 2 minutes,

(b) cooling the resultant mixture to a temperature in the range of between about 10° and about 30° C.,

(c) vigorously stirring the cooled mixture while maintaining the temperature in the range of between about 10° and below about 40° C. for at least about 2 minutes thereby forming a stable emulsion wherein the average particle diameter of the emulsion particles is between about 2 and about 30 microns.

4,370,254

USE OF PERFLUOROALKANE SULPHONAMIDE SALTS AS SURFACE ACTIVE AGENTS

Karl-Heinz Mitschke, Odenthal, and Hans Niederprüm, Monheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,893

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921142

Int. Cl.[3] B01F *17/26*

U.S. Cl. 252—355 **5 Claims**

1. In the lowering of the surface tension of an aqueous solution by adding thereto a surface active agent, the improvement which comprises employing as the surface active agent a salt of a perfluoroalkane sulphonamide.

4,370,255

STABILIZATION OF AQUEOUS SILICATES USING ALKALI SILICONATES OF SILYLALKYL PHOSPHONATES

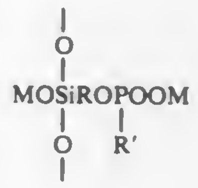
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 891,584, Mar. 30, 1978, abandoned. This application Mar. 18, 1981, Ser. No. 245,059

Int. Cl.[3] C09K *3/00*

U.S. Cl. 252—389 A **77 Claims**

1. A composition of matter which is an alkali siliconate silylalkyl phosphonate which has the general formula



$$\mathrm{MO}\overset{\overset{|}{\mathrm{O}}}{\underset{\underset{|}{\mathrm{O}}}{\mathrm{Si}}}\mathrm{RO}\underset{R'}{\underset{|}{\mathrm{P}}}\mathrm{OOM}$$

wherein

- M is selected from a group consisting essentially of alkaline metal cations selected from a group consisting of sodium, potassium, lithium and rubidium and tetraorgano ammonium cations;
- R is a divalent aliphatic hydrocarbon radical containing 1–3 carbon atoms or the benzylene radical;
- P is the phosphorus atom and,
- R′ is a hydrocarbon radical containing from 1–7 carbon atoms.

4,370,256

CORROSION INHIBITOR FOR ALUMINUM IN AQUEOUS ACIDS

Billy D. Oakes, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 760,043, Jan. 17, 1977, abandoned. This application Mar. 24, 1980, Ser. No. 133,214

Int. Cl.[3] C23F *11/04;* **C23G** *1/06*

U.S. Cl. 252—391 **5 Claims**

1. A corrosion inhibiting composition comprising benzotriazole and an anionic surfactant selected from the group consisting of alkali metal alkyl, aryl and alkylaryl sulfates and

sulfonates; said surfactant being present in from about 25 to about 67 percent of said composition.

4,370,257

CATALYST COMPONENT FOR POLYMERIZATION OF ALPHA-OLEFINS AND METHOD FOR USING THE SAME

Masafumi Imai, Ooi; Hiroshi Ueno, Namekawa; Naomi Inaba, Ooi; Makoto Yoda, Kawagoe, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,024

Claims priority, application Japan, Aug. 30, 1979, 54-109681

Int. Cl.³ C08F *4/02, 4/64*

U.S. Cl. 252—429 B **14 Claims**

1. A supported titanium-containing catalyst component obtained by contacting at a temperature in the range of about 50° to 200° C. (1) a magnesium-containing solid represented by the formula R'OMgX, said magnesium-containing solid obtained by reacting (a) magnesium metal, (b) a halogenated hydrocarbon represented by the formular RX wherein R can be an alkyl, aryl or cycloalkyl group having 1 to about 20 carbon atoms and X is a halogen atom, and (c) a compound represented by the formula $X'_mC(OR')_{4-m}$ wherein X' can be a hydrogen atom, a halogen atom, an alkyl, aryl, cycloalkyl group having from 1 to about 10 carbon atoms or a halogenated alkyl, aryl or cycloalkyl group, R' can be an alkyl or cycloalkyl group having from 1 to about 20 carbon atoms and m is 0, 1 or 2, (2) a titanium compound and (3) one of an electron donor or a compound capable of producing in situ an organic carboxylic acid ester.

4,370,258

CATALYST SYSTEM FOR HYDROFORMYLATION OF OLEFINS

Ikuei Ogata; Yasuziro Kawabata, both of Tokyo; Masato Tanaka, Musashi Murayama, and Teruyuki Hayashi, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Division of Ser. No. 134,100, Mar. 26, 1980, abandoned, which is a division of Ser. No. 18,879, Mar. 9, 1979, Pat. No. 4,229,381. This application May 7, 1981, Ser. No. 261,488

Claims priority, application Japan, Mar. 9, 1978, 53-26824

Int. Cl.³ B01J *31/18, 31/12, 31/21*

U.S. Cl. 252—429 R **5 Claims**

1. A catalyst system for hydroformylation of olefins, which comprises, (1) at least 1×10^{-5} mole of a platinum catalyst, calculated as metallic platinum, per mole of said olefin; (2) 0.5 to 50 moles of an assistant catalyst per mole of said platinum catalyst, calculated as metallic platinum, the assistant catalyst being selected from the group consisting of halides of metals of group IVb of the periodic table; and (3) 0.5 to 10 moles of a bidentate ligand reaction promoter per mole of said platinum catalyst, calculated as metallic platinum, said bidentate ligand having the general formula:

$$R_2X\text{-}Z\text{-}Y\text{-}Z\text{-}XR'_2$$

wherein:

(a) R and R', which may be the same or different, are selected from the group consisting of (i) an alkyl group having 1–12 carbon atoms, (ii) a cycloalkyl group having 6–7 carbon atoms, (iii) an aryl group having 6–10 carbon atoms, and (iv) an aralkyl group having 7–8 carbon atoms;

(b) X is phosphorus, arsenic or antimony;

(c) Y is an alkylene group having 1–3 carbon atoms, a phenylene group, a naphthylene group, or an alicyclic group having a 3- to 6-membered ring; and

(d) Z is a methylene group or oxygen.

4,370,259

OXIDATIVE DEHYDROGENATION CATALYST

Alan D. Eastman, and John H. Kolts, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 149,601, May 13, 1980, Pat. No. 4,310,717. This application Oct. 6, 1981, Ser. No. 308,980

Int. Cl.³ B01J *27/14, 31/12*

U.S. Cl. 252—437 **6 Claims**

1. A catalyst composition consisting essentially of a mixture of oxides of

(a) manganese,

(b) phosphorus, and

(c) an alkali metal wherein the atomic ratio of (a):(b):(c) is 1:0.03 to 0.25:0.06 to 0.30.

4,370,260

METHOD OF PREPARING SUPPORTED PLATINUM GROUP METAL CATALYSTS

Gwan Kim, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,967

Int. Cl.³ B01J *27/02, 27/24*

U.S. Cl. 252—438 **20 Claims**

1. A method of preparing a platinum group metal catalyst composition comprising impregnating a refractory inorganic oxide support with a mixture having a pH from about 1 to about 5, said mixture comprising a platinum sulfito complex solution, a palladium sulfito complex solution, and a rhodium nitrate solution, and activating the impregnated support.

4,370,261

CARRIER CATALYST FOR THE PREPARATION OF VINYL ACETATE FROM ETHYLENE, ACETIC ACID AND OXYGEN IN THE GASEOUS PHASE

Friedrich Wunder, Flörsheim am Main; Therese Quadflieg; Günter Roscher, both of Kelkheim, and Günther Heck, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,038

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811115

Int. Cl.³ B01J *21/08, 23/38, 35/00*

U.S. Cl. 252—460 **3 Claims**

1. An improved catalyst for the preparation of vinyl acetate in the gaseous phase from ethylene, acetic acid and oxygen or oxygen-containing gases of the type containing as an active component a noble metal of subgroup VIII optionally in admixture with gold and/or a compound thereof and an activator of an alkali metal compound and/or an alkaline earth metal compound and/or a cadmium compound wherein said active component is applied onto a carrer, wherein the improvement comprises a carrier consisting essentially of either ribbed rods or rods with a star-shaped cross section.

2. A catalyst as claimed in claim **1**, wherein the cross section of the rods represent a 4- to 6-pointed star.

3. A catalyst as claimed in claims **1** or **2**, wherein the carrier consists of silicic acid.

4,370,262

CATALYTIC STRUCTURE FOR TREATING EXHAUST GASES AND A PROCESS FOR MAKING THE CATALYTIC STRUCTURE

Yukio Takahashi; Yoshijiro Arikawa, and Yoshio Yakushiji, all of Kure, Japan, assignors to Babcock-Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,279

Claims priority, application Japan, Jun. 18, 1979, 54-77272

Int. Cl.³ B01J *21/04, 23/22, 23/28, 23/30*

U.S. Cl. 252—464 **33 Claims**

1. A catalytic structure for treating exhaust gases, composed of a substrate, a roughened surface made of fine particles of aluminum deposited on the surface of said substrate, an aluminum oxide layer formed on said roughened surface, and a catalytic substance adhered onto said aluminum oxide layer,

said catalytic structure being formed by spraying molten aluminum onto the surface of a substrate in the presence of oxygen, adhering a catalytic substance onto the resulting surface, and calcining at 300°–500° C.

4,370,263

CATALYST FOR THE PHOTO-DECOMPOSITION OF WATER AND PROCESS FOR THE PREPARATION OF THE CATALYST

Mario Visca, Alessandria, Italy, assignor to Sibit, S.p.A., Milan, Italy

Filed Jun. 29, 1981, Ser. No. 278,357

Claims priority, application Italy, Jun. 30, 1980, 23123 A/80; Nov. 7, 1980, 25828 A/80

Int. Cl.³ B01J *21/06, 23/20, 23/46*

U.S. Cl. 252—472 **7 Claims**

1. Catalyst for the photodecomposition of water, characterized in that said catalyst consists of particles of TiO_2 doped with Nb, said particles containing RuO_2 on their surface.

4,370,264

METHOD FOR THE COLD STERILIZATION OF PREPARATIONS CONTAINING BLOOD COAGULATION FACTOR VIII

Ronald Kotitschke, and Wolfgang Stephan, both of Dreieich, Fed. Rep. of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,074

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3033932

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B **6 Claims**

1. A process for the cold sterilization of a preparation containing blood coagulation factor VIII, comprising

(A) contacting a protein solution containing factor VIII with a physiologically compatible, non-ionogenic tenside, and then subjecting the solution to

(B) irradiation with ultraviolet light,

(C) treatment with beta-propiolactone, and

(D) to an adsorption treatment with colloidal silica, steps B-C-D being performed in the sequence B-C-D, B-D-C, D-C-B or D-B-C.

4,370,265

WATER SOLUBLE AGENTS EFFECTIVE AS IMMUNOLOGICAL ADJUVANTS FOR STIMULATING IN THE HOST THE IMMUNE RESPONSE TO VARIOUS ANTIGENS AND COMPOSITIONS, NOTABLY VACCINES CONTAINING SAID WATER SOLUBLE AGENTS

Arlette Adam, Palaiseau; Françoise Audibert, Neuilly; Louis Chedid; Jean Choay, both of Paris; Rita Ciorbaru, Montrouge; Fabrielle Ellouz, Bagneux; Dominique Juy, Paris; Pierre Lefrancier, Bures sur Yvette; Claude Merser, Olivet; Jean-Francois Petit, Paris; Pierre Sinay, Orleans, and Edgar Lederer, Sceaux, all of France, assignors to Agence Nationale de Valorisation, Neuilly-sur-Seine, France

Division of Ser. No. 516,991, Oct. 22, 1974, Pat. No. 4,186,194. This application May 15, 1978, Ser. No. 906,003

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. N-Acetylmuramyl-L-alanyl-D-glutamic acid.

4,370,266

MYCOPLANECIN DERIVATIVES AND THEIR PREPARATION

Mamoru Arai; Tatsuo Haneishi; Mutsuo Nakajima; Akio Torikata, and Ryuzo Enokita, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,709

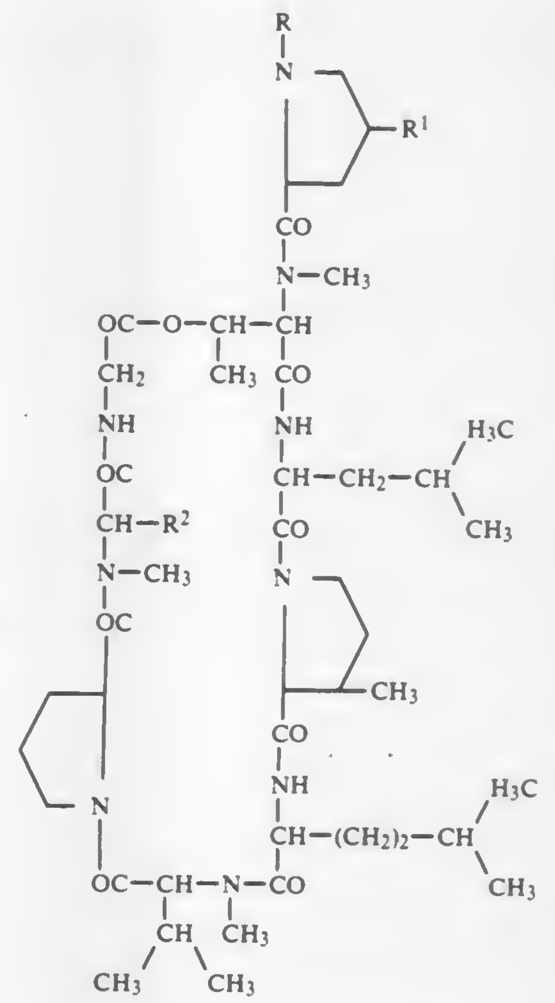
Claims priority, application Japan, Apr. 7, 1980, 55-45402; Apr. 8, 1980, 55-46003

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **3 Claims**

1. Compounds of formula (I):



(I)

wherein:

R represents a hydrogen atom, an N-(α-ketobutyryl)-N-methylvalyl group or an N-(α-hydroxybutyryl)-N-methylvalyl group;

R^1 represents a methyl group or an ethyl group; and

when R^1 represents a methyl group, R^2 represents an isobutyl group, and, when R^1 represents an ethyl group, R^2 represents a pentyl group.

4,370,267

FRACTIONATION AND ISOLATION OF 7S AND 11S PROTEIN FROM ISOELECTRICALLY PRECIPITATED VEGETABLE PROTEIN MIXTURES

William F. Lehnhardt, Decatur; Paul W. Gibson, Mt. Zion, and Frank T. Orthoefer, Decatur, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Aug. 10, 1981, Ser. No. 291,760

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 **13 Claims**

1. A method for converting vegetable protein 7S and 11S mixtures into an enriched 7S protein fraction and an enriched 11S protein fraction, said method comprising:

(a) adding to an aqueous vegetable protein slurry which contains isoelectrically precipitated 7S protein and 11S protein as the major protein components of said slurry a

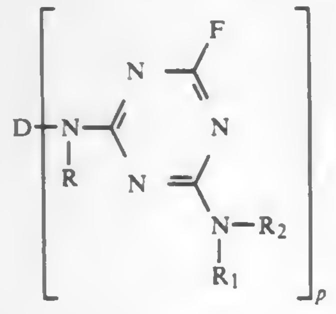
sufficient amount of base to adjust the pH of the slurry to a pH ranging from 5.0 to 5.6 and water-soluble salt to provide a water-soluble salt molar concentration ranging from about 0.01 M to about 0.2 M;
(b) extracting a sufficient amount of 7S protein from the isoelectrically precipitated mixture to provide an enriched water-soluble 7S fraction and an enriched 11S water-insoluble fraction which contains, on a weight basis, 11S as the major water-insoluble protein;
(c) partitioning the extracted 7S protein fraction from the water-insoluble 11S fraction; and
(d) recovering the enriched 7S fraction and the enriched 11S fraction.

4,370,268

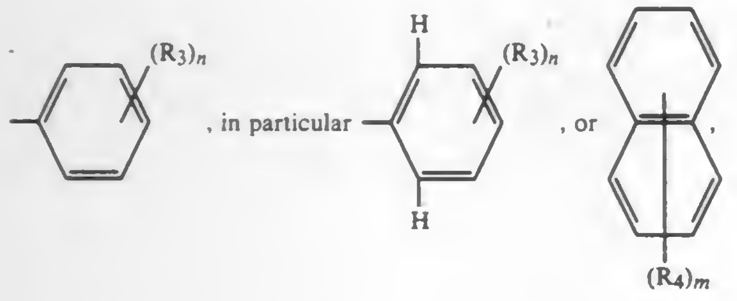
REACTIVE DYESTUFFS

Walter Scholl, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 2, 1978, Ser. No. 956,909
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749647
Int. Cl.^{3} C09B *62/04, 62/06, 62/08, 62/10*
U.S. Cl. 260—146 T **12 Claims**

1. Reactive dyestuffs of the formula

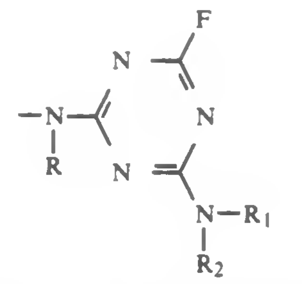


D = the radical of a 1:1 or 1:2 Cr or Co azo complex dyestuff,
R = H or C_1–C_5-alkyl which is unsubstituted or substituted by chloro, bromo, fluoro, hydroxy or sulfo,
R_1 = H or C_1–C_5-alkyl which is unsubstituted or substituted by chloro, bromo, fluoro, hydroxy or sulfo,
R_2 = H, alkyl,



n = 0, 1, 2 or 3,
p = 1 or 2,
R_4 = sulfo, carboxy, C_1–C_5-alkyl, C_1–C_5-alkoxy, chloro, bromo or fluoro,
m = 0, 1 or 2 and
R_3 = sulfo, carboxy, C_1–C_5-alkyl, C_1–C_5-alkoxy, chloro, bromo or fluoro,

the radical



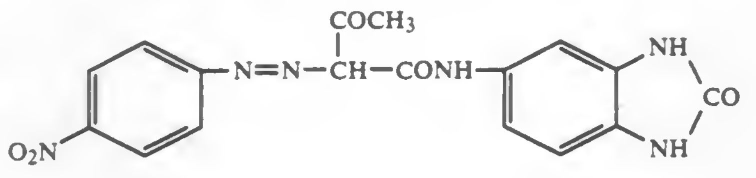
being bonded, directly or via an intermediate member, to a C atom of an aromatic-carbocyclic or aromatic-heterocyclic ring in D.

4,370,269

MONOAZO PIGMENT DERIVED FROM ACETOACETYLAMINO BENZIMIDAZOLONE

Friedrich W. Weingarten, Liederbach am Taunus; Klaus Hunger, and Ernst Klappert, both of Kelkheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 457,971, Apr. 4, 1974, abandoned. This application Mar. 12, 1976, Ser. No. 666,312
Int. Cl.^{3} C09B *29/01, 29/32, 29/33;* **D06P** *1/44*
U.S. Cl. 260—157 **1 Claim**

1. The monoazo pigment of the formula:



4,370,270

NOVEL PIGMENTARY FORM OF β-COPPER PHTHALOCYANINE

Gustav Bock, Neustadt, and Wolfgang Fabian, Wilhelmsfeld, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany
Filed Jun. 17, 1981, Ser. No. 274,423
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023722
Int. Cl.^{3} C09B *47/04*
U.S. Cl. 260—245.87 **2 Claims**

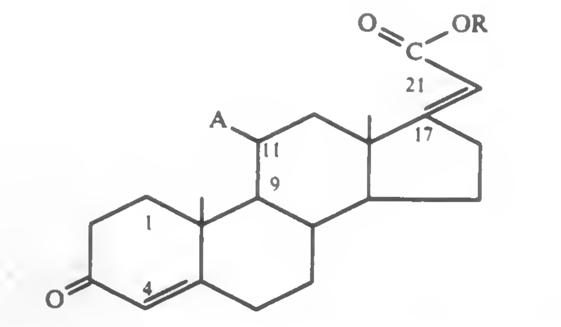
1. A copper phthalocyanine pigment in the β-modification, which consists, to the extent of at least 50% by weight, of flakes which are not less than 10 μm long and not less than 3 μm wide, the length:width ratio being not less than 3.3:1, and which has a reflection maximum between 610 and 640 nm and another between 710 and 740 nm.

4,370,271

PROCESS FOR THE PARTIAL REDUCTION OF C21-STEROID CARBOXYLIC ACIDS AND THEIR ESTERS TO C21-STEROID ALCOHOLS AND NEW C21-STEROID ALCOHOLS

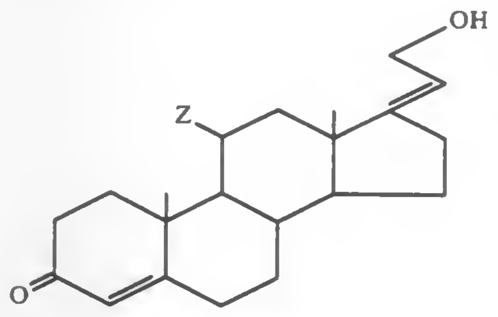
Wolfgang Preuss, Monheim, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany
Filed May 12, 1981, Ser. No. 262,969
Claims priority, application Austria, May 16, 1980, 2628/80
Int. Cl.^{3} C07J *5/00*
U.S. Cl. 260—397.45 **10 Claims**

1. A process for the partial reduction of Δ4,17(20)-C21-steroid carboxylic acids optionally containing further double bonds in the 1- and/or 9(11)-position and their esters corresponding to general formula I below:



(I)

in which R represents hydrogen or a hydrocarbon radical and A represents hydrogen, hydroxyl or, together with the C-atom substituted by A, a carbonyl group and in which, the substituent A may be replaced by an additional olefinic double bond in the 9(11)-position, to C21-steroid alcohols corresponding to general formula II below:



(II)

in which Z has the same meaning as A, but in this case represents hydroxyl instead of a carbonyl group, characterized in that the starting material of general formula I which is unprotected in the A-ring of the steroid ring system is reacted with diisobutyl aluminum hydride in such quantities that all the oxygen-containing functional groups are reduced to the hydroxyl group, and an intermediate Al-containing reaction product is obtained, after which said intermediate Al-containing reaction product is subjected to selective Oppenauer oxidation to form the 3-keto compound.

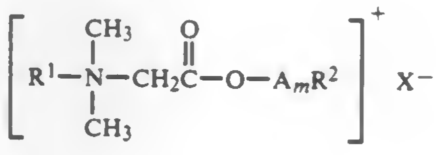
8. 21-acetoxy-pregna-1,4,9(11),17(20)-tetraene-3-one.

4,370,272

ALKOXYLATED QUATERNARY AMMONIUM SURFACTANTS

Joseph R. Wechsler, Chicago, and Mark Lane, Shorewood, both of Ill., assignors to Stepan Chemical Company, Northfield, Ill.
Continuation-in-part of Ser. No. 111,688, Jan. 14, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,402
Int. Cl.^{3} C11D *1/40*
U.S. Cl. 260—404 **13 Claims**

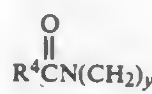
1. A compound of the formula



$$\left[R^1-\underset{CH_3}{\overset{CH_3}{N}}-CH_2\overset{O}{\overset{\|}{C}}-O-A_mR^2\right]^+ X^-$$

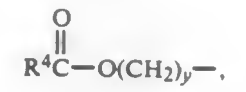
wherein

R^1 is a radical selected from the group consisting of (a) straight chain aliphatic hydrocarbon radicals each of which contains from 12 through 24 carbon atoms, (b) ether radicals each of which has the structure: $R^3O(CH_2)_y$—, (c) amide radicals each of which has the structure



$$R^4\overset{O}{\overset{\|}{C}}N(CH_2)_y-,$$

and (d) ester radicals each of which has the structure



$$R^4\overset{O}{\overset{\|}{C}}-O(CH_2)_y-,$$

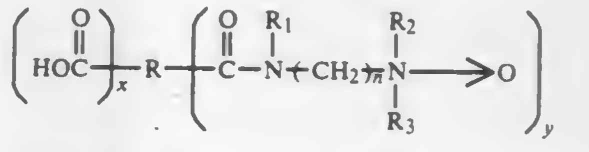
R^2 is a straight chain aliphatic hydrocarbon radical containing from 12 through 32 carbon atoms,
R^3 is a straight chain aliphatic hydrocarbon radical containing from 8 through 18 carbon atoms,
R^4 is a straight chain aliphatic hydrocarbon radical containing from 7 through 17 carbon atoms,
A is an alkoxy radical containing one oxygen atom and either two or three carbon atoms,
X is an atom selected from the group consisting of bromine and chlorine,
m is an integer of from 1 through 12, and
y is an integer which is either 2 or 3.

4,370,273

AMIDOAMINE OXIDES OF POLYMERIC FATTY ACIDS

Donald V. Kinsman, Fort Thomas, Ky., and Clement H. Luken, Jr., Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio
Filed Feb. 6, 1981, Ser. No. 232,101
Int. Cl.^{3} C09F *5/00*
U.S. Cl. 260—404.5 **9 Claims**

1. Amidoamine oxides of polymeric fatty acids obtained by the polymerization of olefinically unsaturated $C_{16\text{-}20}$ monocarboxylic acids and having the formula



$$\left(HO\overset{O}{\overset{\|}{C}}\right)_x R\left(\overset{O}{\overset{\|}{C}}-\overset{R_1}{\overset{|}{N}}-(CH_2)_n\underset{R_3}{\overset{R_2}{N}}\longrightarrow O\right)_y$$

where R represents the hydrocarbon radical residue of the polymeric fatty acid, R_1 is hydrogen or an alkyl group having 1 to 4 carbon atoms, R_2 and R_3 are alkyl groups having 1 to 4 carbon atoms, n is an integer from 2 to 5, y is 1, 2 or 3 and x is an integer so that x+y is equal to 2 or 3.

4,370,274

OLIVE OIL RECOVERY

Harvey E. Finch, Foster City, and Salvatore P. Trapanese, Millbrae, both of Calif., assignors to FPS Development Partnership, Sacramento, Calif.
Filed Dec. 23, 1980, Ser. No. 220,170
Int. Cl.^{3} C11B *1/00, 1/08*
U.S. Cl. 260—412.3 **28 Claims**

1. A method for recovering olive oil from olives comprising:
separating olive pits from olives to obtain a pitless olive meat;
continuously introducing the pitless olive meat to an extraction zone;
mixing an inert additive with the pitless olive meat in the extraction zone;
continuously withdrawing a liquid phase comprising water, olive oil, and a minor proportion to olive pulp from a first portion of the extraction zone;
continuously withdrawing a substantially dry solid olive pulp from a second portion of the extraction zone;
separating the minor proportion of olive pulp from the liquid phase for obtaining a mixture comprising olive oil and water; and
separating water from the mixture for obtaining an olive oil substantially free of water.

4,370,275

PROCESS FOR THE PREPARATION OF CARBONIC ACID ESTERS

Günter Stammann, Cologne; Robert Becker, Leverkusen; Johann Grolig, Leverkusen, and Helmut Waldmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 250,363

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016187

Int. Cl.³ C07C *68/00*

U.S. Cl. 260—463 **8 Claims**

1. Process for the preparation of carbonic acid esters which comprises reacting an alcohol, carbon monoxide and molecular oxygen in the liquid phase, in the presence of a catalyst system which contains

(a) copper and/or copper ions,
(b) one or more anions selected from oxide anion, hydroxide anion and carbonate anion,
(c) halide ions,
(d) one or more nitrogen bases and
(e) optionally, other metal ions of metals from main group 2, of the lanthanide and/or actinide groups and/or of metals with atomic numbers of 25 to 30,

these components (a)–(e) being contained in amounts corresponding to

a ratio of total halide to total metal ranging from 0.5:1 to 2:1 expressed ingram-atoms,
a molar ratio of total nitrogen base to total metal ranging from 0.1:1 to 1.4:1,
a molar ratio of anions corresponding to component (b) to metal halides or metal halide complexes from 0.5:1 to 3:1, and
a ratio of the optionally used other metal ions to copper or copper ions ranging up to 0.625:1 expressed in gram-atoms.

4,370,276

PROCESS FOR THE CONTINUOUS PREPARATION OF DIALKYLPEROXYDICARBONATES

Hans Appel, and Gottfried Brossmann, both of Munich, Fed. Rep. of Germany, assignors to Peroxide Chemie GmbH, Munich, Fed. Rep. of Germany

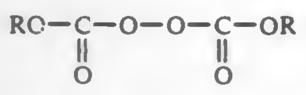
Filed Sep. 16, 1981, Ser. No. 302,863

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038164

Int. Cl.³ C07C *179/18*

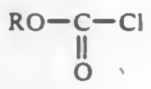
U.S. Cl. 260—463 **14 Claims**

1. Process for the continuous production of dialkylperoxydicarbonates of the formula



$$\mathrm{RO{-}\underset{\underset{O}{\|}}{C}{-}O{-}O{-}\underset{\underset{O}{\|}}{C}{-}OR} \qquad (I)$$

in which R is individually selected from straight-chained, cyclic or branched alkyl radicals of 6 to 18 carbon atoms, which process comprises continuously reacting a chloroformic acid ester of the formula



$$\mathrm{RO{-}\underset{\underset{O}{\|}}{C}{-}Cl} \qquad (II)$$

wherein R is identified as above, in an aqueous medium with hydrogen peroxide and an alkali metal hydroxide at a temperature of from −10° C. to +50° C. in at least two reaction zones connected in series, continuously isolating the dialkylperoxydicarbonate formed from the solvent-free reaction mixture with the use of a centrifuge, wherein the reaction is carried out in the presence of a surfactant and the dialkylperoxydicarbonate formed is separated in molten form from the alkaline reaction mixture heated to or just above the melting temperature of the dialkylperoxydicarbonate.

4,370,277

PHENOXY-CINNAMYL ALCOHOLS

Wolfgang Welter, and Hilmar Mildenberger, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

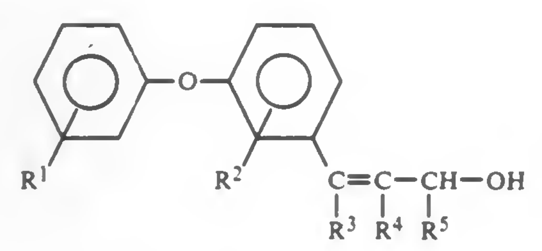
Filed Oct. 26, 1981, Ser. No. 315,156

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040487

Int. Cl.³ C07C *121/75, 43/23*

U.S. Cl. 260—465 F **3 Claims**

1. Phenoxycinnamyl alcohols of the formula:



(I)

in which:

R^1 is hydrogen, halogen, (C_1-C_4)alkyl or (C_1-C_4)alkoxy,
R^2 is hydrogen, halogen, (C_1-C_4)alkyl or trifluoromethyl,
R^3 is hydrogen, Cl, Br, (C_1-C_4)alkyl or cyano,
R^4 is hydrogen, halogen, (C_1-C_4)alkyl, phenyl or halophenyl,
R^5 is hydrogen, (C_1-C_4)alkyl, (C_1-C_3)alkinyl or cyano.

4,370,278

NUCLEOPHILIC SUBSTITUTION PROCESS

Barbara C. Stahly, and G. P. Stahly, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,321

Int. Cl.³ C07C *121/78, 121/66, 53/132*

U.S. Cl. 260—465 E **20 Claims**

1. A process for the preparation of 2-(fluoronitrobenzene)alkyl cyanides which comprises reacting a fluoronitrobenzene with an alpha-substituted alkyl cyanide in a substantially anhydrous aprotic solvent and in the presence of a base so that the alkyl cyanide reactant undergoes a nucleophilic substitution reaction on an unsubstituted carbon atom of the fluoronitrobenzene during which the alpha-substitutent of the alkyl cyanide reactant functions as a leaving group.

15. A process for the preparation of 2-(fluorobiphenylyl) propionic acids which comprises (i) reacting a fluoronitrobenzene with an alpha-substituted propionitrile in a substantially anhydrous aprotic solvent and in the presence of a base so that the alpha-substituted propionitrile undergoes a nucleophilic substitution reaction on an unsubstituted carbon atom of the fluoronitrobenzene during which the alpha-substituent of the propionitrile functions as a leaving group and a 2-(fluoronitrobenzene) propionitrile is formed, (ii) reducing the nitro substituent of said 2-(fluoronitrobenzene) propionitrile to an amino substituent so that a 2-(aminofluorobenzene) propionitrile is formed, (iii) converting said 2-(aminofluorobenzene) propionitrile into a 2-(fluorobiphenylyl) propionitrile by means of a Gomberg-Bachmann reaction, and (iv) converting said 2-(fluorobiphenylyl) propionitrile into the 2-(fluorobiphenylyl) propionic acid.

4,370,279

PROCESS FOR PRODUCTION OF ACRYLONITRILE

Yutaka Sasaki, Yokohama; Tomio Nakamura, Ichikawa; Yoshimi Nakamura, Kawasaki; Kiyoshi Moriya, Kanagawa; Hiroshi Utsumi, Yokohama, and Shigeru Saito, Tokorozawa, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 786,740, Apr. 11, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,351

Claims priority, application Japan, Apr. 10, 1976, 51-39813

The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465.3 **34 Claims**

1. A process for producing acrylonitrile by the vapor-phase catalytic ammoxidation of propylene, which comprises

(I) reacting propylene, a molecular oxygen-containing gas and ammonia in the presence of a catalyst expressed by the following empirical formula

$$Fe_aSb_bMo_cMe_dTe_eQ_fNa_gO_h.(SiO_2)_i$$

wherein Me is at least one element selected from the group consisting of V and W,
Q is at least one element selected from the group consisting of Cu, Mg, Zn and Ni, and
the subscripts a, b, c, d, e, f, g, h and i each represents atomic ratios such that when a=10; b=13 to 20; c=0.1 to 2.5; d=0.05 to 1; e=0.2 to 5; f=0 to 4; g=0 to 3; h=the number of oxygens corresponding to the oxide formed by the combination of said components; and i=25 to 200;

in a fluidized bed catalytic reaction zone at a temperature of about 380° to about 500° C. and a pressure of about 0.2 to about 3 kg/cm²-G while adjusting the propylene/oxygen/ammonia molar ratio to about 1:about 1:about 0.8 to about 1:about 4:about 3;

(II) said catalyst being prepared by
(1) intimately mixing starting materials for said Fe, Mo, Me, Te and Q components in a form soluble in water or nitric acid, a starting material for the Sb component, and silica sol, thereby to form a slurry containing these components and having a non-volatile solids content of about 10 to about 50% by weight;
(2) so that the composition of the final catalyst is within the range expressed by said empirical formula above;
(3) spray-drying the resulting slurry, and
(4) calcining the resulting spray-dried particles at a temperature of about 600° to 950° C. thereby to form a catalyst with a composition within the above empirical formula and with all of the Mo, Me, and Te components substantially dissolved in an iron/antimony oxide compound ($FeSbO_4$) in the form of a solid solution.

4,370,280

PHOSPHONOHYDROXYACETONITRILE, A PROCESS FOR ITS PREPARATION AND ITS USE AS AN INTERMEDIATE PRODUCT FOR THE PREPARATION OF MEDICAMENTS

Hermann Oediger, Cologne; Folker Lieb, Leverkusen, and Hans Disselnkötter, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

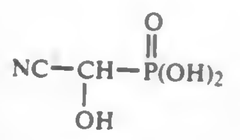
Filed Oct. 5, 1981, Ser. No. 308,734

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039997

Int. Cl.³ C07C *120/00, 121/36*

U.S. Cl. 260—465.6 **5 Claims**

1. A compound which is phosphonohydroxyacetonitrile of the formula



$$\mathrm{NC{-}\underset{\underset{OH}{|}}{C}H{-}\overset{\overset{O}{\|}}{P}(OH)_2} \qquad (I)$$

or a salt thereof.

4,370,281

TRIARYL PHOSPHATES

Brian G. Clubley, Wilmslow; Thomas G. Hyde, Sale, and John F. E. Keenan, Cheadle Hulme, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

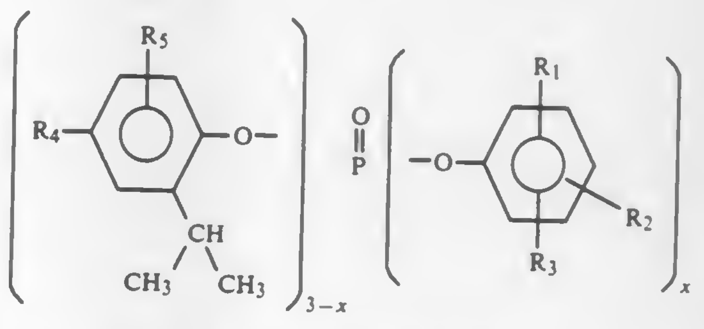
Continuation-in-part of Ser. No. 57,249, Jul. 13, 1979, abandoned. This application Sep. 29, 1981, Ser. No. 306,934

Claims priority, application United Kingdom, Jul. 21, 1978, 30742/78

Int. Cl.³ C07F *9/09*

U.S. Cl. 260—966 **4 Claims**

1. Mixtures of triaryl phosphates of the overall general formula I



wherein x is 1 or 2, R_1 is hydrogen R_2 and R_3 are the same or different and represent hydrogen, t-butyl or isopropyl, R_4 is hydrogen or an isopropyl group and R_5 is an isopropyl group with the proviso that at least one of the aryl radicals is a di-isopropylphenyl radical, but not more than two of the three aryl groups are identical.

4,370,282

CONTROL DEVICE FOR ACCELERATION PUMP

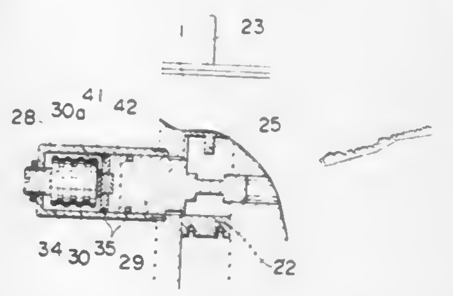
Junichi Yokoyama, Ebina, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 27, 1981, Ser. No. 287,177

Claims priority, application Japan, Jul. 28, 1980, 55-106666[U]

Int. Cl.³ F02M *7/08*

U.S. Cl. 261—34 B **8 Claims**



3. A device for controlling an acceleration pump for a carburetor comprising:

a carburetor body;
an acceleration pump having an acceleration pump cylinder vertically formed in the carburetor body;
a piston slidably placed in the acceleration pump cylinder in a first direction;
a cylindrical stopper casing extending in a second direction substantially perpendicular to the first direction;
a stopper slidably placed in the stopper casing;

said piston having therein a spring chamber formed in the first direction near the upper end of the piston, a hole extending through a portion of the piston, and a pin-like positioning member formed integrally with the piston and protruding into the hole in the first direction;

a push rod having at its lower end a flange like portion slidably placed in the spring chamber;

a coil spring disposed in the spring chamber at the flange like portion of the push rod thereby to bias the push rod upwardly in the first direction;

a return spring placed at the lower end of the piston to bias the piston upwardly in the first direction;

said stopper extending through the hole of the piston;

said carburetor body having a cylinder portion opposing the stopper casing;

actuating means responsive to variations in atmospheric pressure for moving the stopper through the hole;

a spring placed within the cylinder portion of the carburetor body to bias the stopper so that the stopper is pressed against the actuating means by the biasing force thereof;

said stopper having at its intermediate portion first and second small diameter portions in a stepped form, enabling the pin-like positioning member to selectively engage the first and second small diameter portions during stopper movement in the second direction caused by the actuating means in response to variations in atmospheric pressure to selectively shorten the piston stroke as a function of decreasing atmospheric pressure, thereby adjusting the air-fuel ratio.

4,370,283
PROCESS FOR VULCANIZATION OF ELASTOMER PRODUCTS

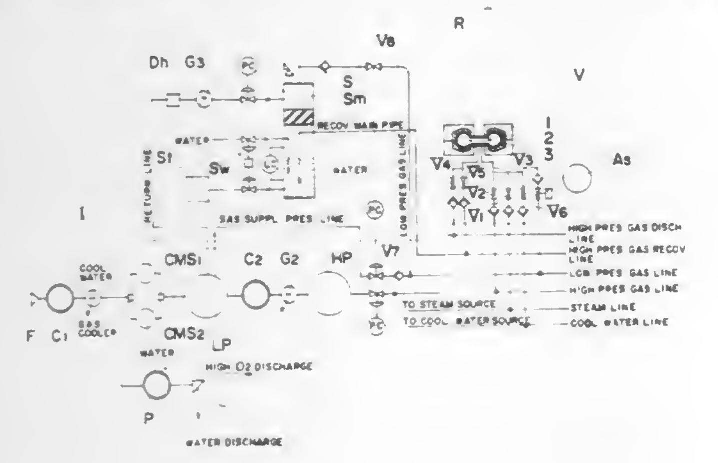
Toshio Arimatsu, Akashi, and Tohatirou Sakon, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Oct. 16, 1981, Ser. No. 311,955

Claims priority, application Japan, Oct. 27, 1980, 55-151171

Int. Cl.^{3} B29H *5/02*

U.S. Cl. 264—37 **6 Claims**



1. A process for vulcanization of elastomer products which comprises the steps of heating under pressure, the elastomer product mounted in a metal mold by supplying thereto vulcanizing medium, suspending the supply of said vulcanizing medium when said elastomer product has reached a predetermined temperature or passed through a predetermined time period, subsequently supplying inert gas preliminarily extracted from atmospheric air with use of molecular sieves, and maintained at least under approximately the same pressure as that of said vulcanizing medium as a heat retaining medium, up to the termination of remaining time period for the heating step so as to maintain the elastomer product at said predetermined temperature, and, upon termination of said heating step, restoring a mixture of the inert gas and the vulcanizing medium so as to derive the inert gas through steam separation for re-utilization of said inert gas for a preshaping of the elastomer product prior to the vulcanization of said elastomer product and the like.

4,370,284
NON-BLEEDING ELECTRODE

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,564

Int. Cl.^{3} B29H *7/20*

U.S. Cl. 264—42 **22 Claims**

1. An electrode precursor consisting essentially of a hydrophobic backing layer containing polytetrafluoroethylene and a pore former, an active layer containing high surface area carbon particles and a pore former and a current distributor wherein the average particle size of said active layer pore former ranges from about 1 to about 40 microns and is sufficiently large to relieve internal liquid pressures generated in said active layer during use thereof after removal of said pore formers.

4,370,285
METHOD OF PRODUCTION OF A LIGHTWEIGHT BUILDING ELEMENT

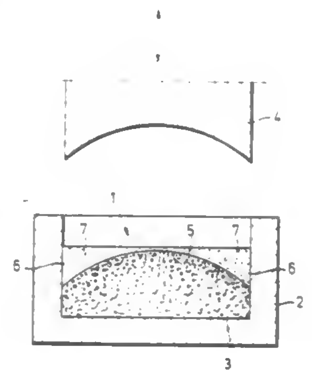
Christian Plück, and Peter Schuster, both of Frechen, Fed. Rep. of Germany, assignors to Schneider GmbH & Co., Frechen, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 195,296

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1979, 2941370

Int. Cl.^{3} B29H *7/20*

U.S. Cl. 264—43 **13 Claims**



1. A process of producing a lightweight building element from foamed ceramics or expanded clay aggregate, wherein expandable or foamable material is heaped in bulk into a mold, including the steps of precompacting the heaped material in the mold to obtain a molded body by performing an inhomogeneous compaction with the peripheral zones of the molded body being subjected to compaction higher than that of a core zone thereof, whereby a free space results from the higher compaction; filling said free space with additionally heaped material; finally compressing the material to obtain the precompacted body; and thereafter firing the precompacted body so that the material thereof will expand in a desired manner with subsequent cooling of the mold and the molded body.

4,370,286
CHLORINATED POLYVINYL CHLORIDE COMPOSITION

Samuel D. Nehmey, Lorain, and James W. Summers, Bay Village, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 14, 1981, Ser. No. 301,905

Int. Cl.^{3} B29H *7/20*

U.S. Cl. 264—53 **10 Claims**

1. Composition of matter adapted to be foamed comprising chlorinated polyvinyl chloride resin containing at least 60% chlorine by weight, an effective amount of a blowing agent to

cause said resin to foam, an effective amount of a nucleating agent for providing nucleating sites for forming cells filled with said blowing agent, and 1 to 30 parts by weight of a processing aid per 100 parts by weight of said resin, said processing aid has a Tg of greater than 60° C., has dilute solution viscosity greater than 1.5, and is selected from copolymers of a styrene and an unsaturated nitrile containing more than 50% of said styrene and 10 to 40% of said nitrile.

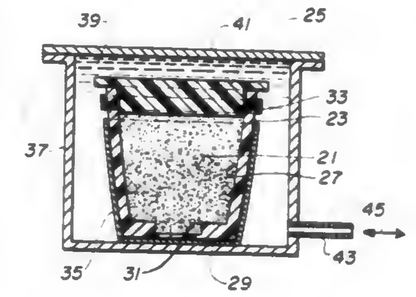
4,370,287
PREFORM METHOD OF SYNTHESIZING A PHOSPHOR

Robert P. Thompson, Millersville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 20, 1981, Ser. No. 246,026

Int. Cl.^{3} B28B *11/00*

U.S. Cl. 264—67 **9 Claims**



1. In a method of synthesizing a phosphor including the steps of providing an intimate dry mixture of compounds containing the constituent chemical elements of said phosphor, heating a quantity of said mixture to a reaction temperature to produce a friable cake of phosphor particles, cooling said cake to room temperature, and then reducing said cake to particles,

the improvement including, prior to said heating step the steps of compressing said quantity of dry mixture in a mold to a prescribed shape and to a prescribed density to produce at least one self supporting preform, removing said preform from said mold, placing said preform in a closed container and then heating said preform in said closed container to produce said friable cake.

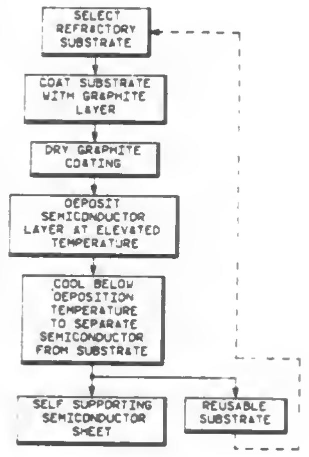
4,370,288
PROCESS FOR FORMING SELF-SUPPORTING SEMICONDUCTOR FILM

M. John Rice, Jr., Tempe, and Ronald N. Legge, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1980, Ser. No. 207,845

Int. Cl.^{3} B29C *13/00*

U.S. Cl. 264—81 **10 Claims**


SELECT REFRACTORY SUBSTRATE
COAT SUBSTRATE WITH GRAPHITE LAYER
DRY GRAPHITE COATING
DEPOSIT SEMICONDUCTOR LAYER AT ELEVATED TEMPERATURE
COOL BELOW DEPOSITION TEMPERATURE TO SEPARATE SEMICONDUCTOR FROM SUBSTRATE
SELF SUPPORTING SEMICONDUCTOR SHEET
REUSABLE SUBSTRATE

1. A process for forming a self-supporting sheet or ribbon of semiconductor material which comprises the steps of: providing a sheet or ribbon substrate or refractory material having an expansion coefficient different from said semiconductor material, said substrate having a surface; coating said substrate including said surface with a layer of graphite; providing a deposition mask near an edge of said surface to limit deposition of said semiconductor material to a portion of said surface interior to said deposition mask; depositing at a first temperature a layer of said semiconductor material overlying said layer of graphite; reducing the temperature to a second temperature lower than said first temperature; and removing said layer of said semiconductor material from said substrate.

4,370,289
FIBROUS WEB STRUCTURE AND ITS MANUFACTURE

Wayne P. Sorenson, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 58,902, Jul. 19, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,835

Int. Cl.^{3} D04H *1/16*

U.S. Cl. 264—113 **2 Claims**

1. A method of forming a fibrous web comprising the steps of dry laying on a forming wire a first layer of non-staple wood fibers of a predetermined length of about ¼ inch; forming filamentary fibers from a melt of molten polymeric material; subjecting said filamentary fibers while in a molten state to convergent air streams to attenuate the fibers until they break and form reduced diameter microfibers from about 5 inches to about 15 inches in length and in randomly oriented array; directing said randomly oriented microfibers onto said first layer of wood fibers on said forming wire to form a layer of randomly oriented overlapping polymeric microfibers on said first layer; dry laying on said layer of microfibers a second layer of non-staple wood fibers of substantially the same lengths as the fibers of said first layer; compacting said layers on said forming wire; and removing said compacted layers as a fibrous web from said forming wire.

4,370,290
PROCESS FOR PRODUCING AROMATIC POLYIMIDE FILAMENTS

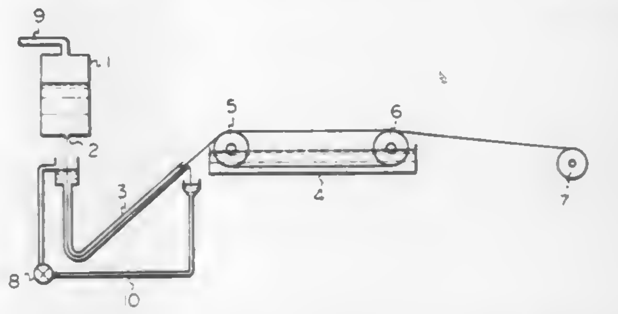
Hiroshi Makino; Yoshihiro Kusuki; Takashi Harada, and Hiroshi Shimazaki, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Japan

Filed May 8, 1981, Ser. No. 261,979

Claims priority, application Japan, May 9, 1980, 55-60516

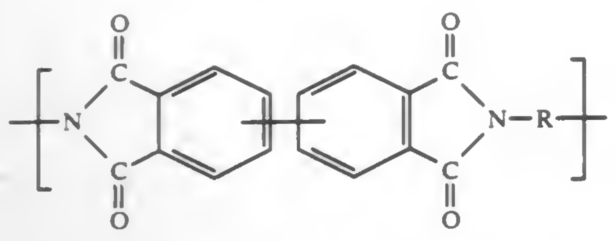
Int. Cl.^{3} D01F *6/00*

U.S. Cl. 264—184 **20 Claims**



1. A process for producing aromatic polyimide filaments, comprising the steps of:

(1) preparing a spinning dope solution of a polymer material consisting of at least one aromatic polyimide having at least 90 molar % of a recurring unit of the formula (I):


(I)

wherein R represents a divalent aromatic radical, in a solvent comprising, as a main component thereof, at least one phenolic compound;

(2) extruding said spinning dope solution through at least one spinning hole to form at least one filamentary stream thereof,

(3) solidifying said filamentary stream of said spinning dope solution to provide at least one undrawn aromatic polyimide filament, and;

(4) drawing said undrawn filament at a temperature of from 20° to 600° C. at a draw ratio of from 1.5 to 5.0.

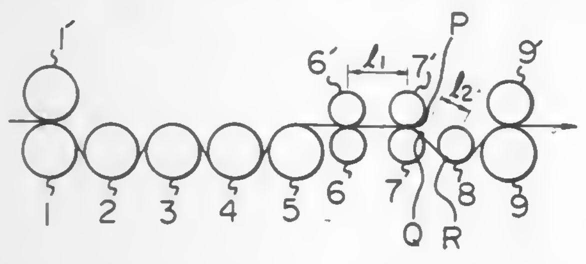
4,370,291
PROCESS FOR PRODUCING POLYESTER FILM
Takahiko Kazama; Yuji Okamura, both of Otsu, and Saburo Fujita, Gifu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,200

Claims priority, application Japan, Sep. 25, 1980, 55-132345

Int. Cl.^{3} B29D *7/02;* B29C *17/02*

U.S. Cl. 264—210.7 **12 Claims**



1. An improvement in a process for producing a polyester film which comprises melt-extruding a polyester predominantly comprised of polyethylene terephthalate into an extrudate in sheet form; quenching the extrudate to a temperature of below Tg to obtain a solidified, substantially amorphous film; drawing the film in the longitudinal direction at a drawing ratio (λt) of larger than 2.4 but smaller than 6.5; quenching the longitudinally drawn film and; then, drawing the quenched film at a drawing ratio of at least 2.5 in the transverse direction;

said improvement comprising conducting said drawing in the longitudinal direction in two steps wherein:

(i) in the first drawing step, the substantially amorphous film is drawn in one or more stages at a total drawing zone length (l_1) of at least 50 mm so that the resulting polyester film possesses a birefringence of from 1×10^{-3} to 12×10^{-3};

(ii) the drawn film is kept, without being quenched to a temperature not higher than the glass transition temperature, in contact with a roll maintained at a temperature of from 100° to 130° C.; and then,

(iii) in the second drawing step, the film is drawn at a drawing ratio (λ_2) of larger than 1.6 but smaller than 2.7 in one stage at a drawing zone length (l_2) of shorter than $l_1/2$.

4,370,292
ENCAPSULATION OF ELECTRONIC DEVICE
Hiroshi Yanase; Fukuo Kanno, and Takeshi Abe, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

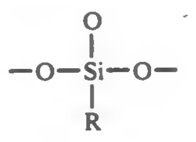
Filed Jun. 4, 1981, Ser. No. 270,233

Claims priority, application Japan, Jul. 4, 1980, 55-90714

Int. Cl.^{3} B29C *6/00*

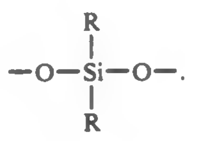
U.S. Cl. 264—272.11 **6 Claims**

1. In an encapsulation of an electronic device with a synthetic resin compound, an improvement characterized in that said synthetic resin compound is a thermoplastic compound having low viscosity in a molding process which comprises polyphenylene sulfide and a filler at a ratio of 1:4 to 4:1 and a tacky or adhesive polymer to restrict moisture penetration at a ratio of 0.1 to 50 wt. parts per 100 wt. parts of polyphenylene sulfide and said encapsulation is carried out by a transfer molding process or an injection molding process, wherein said tacky or adhesive polymer is at least one selected from the group consisting of phenoxy resins, epoxy resins and silicone resins, and wherein said silicone resins have bonds of



$$-\mathrm{O}-\overset{\overset{\mathrm{O}}{|}}{\underset{\underset{\mathrm{R}}{|}}{\mathrm{Si}}}-\mathrm{O}-$$

or bonds of



$$-\mathrm{O}-\overset{\overset{\mathrm{R}}{|}}{\underset{\underset{\mathrm{R}}{|}}{\mathrm{Si}}}-\mathrm{O}-.$$

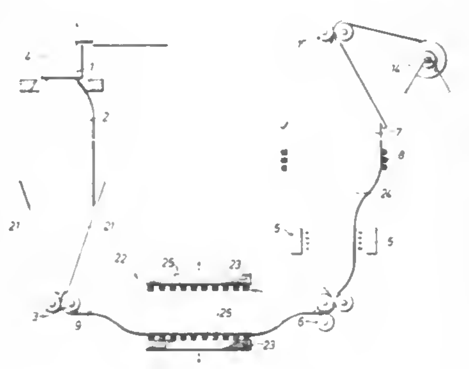
4,370,293
METHOD FOR THE MANUFACTURE OF BIAXIALLY ORIENTATION-STRETCHED PLASTIC FILM
Peter Petersen-Hoj, Espergärde, Denmark, assignor to Tetra Pak Developpement SA, Pully-Lausanne, Switzerland

Filed Jul. 25, 1980, Ser. No. 172,704

Claims priority, application Switzerland, Jul. 26, 1979, 6935/79

Int. Cl.^{3} B29C *17/04*

U.S. Cl. 264—514 **8 Claims**



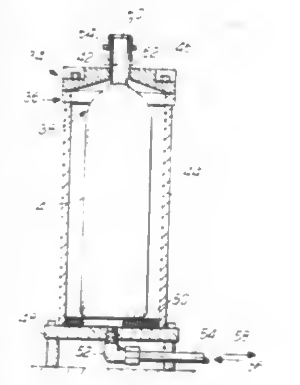
1. A method of manufacturing biaxially orientation-stretched plastic film, comprising the steps of extruding a plastic film through an annular die to form a seamless tube, simultaneously supplying a gas to the inside of the tube during forming to inflate the tube such that the diameter of the tube is at least doubled, simultaneously drawing out the tube at least to the same extent in its longitudinal direction, cooling the tube thus formed, flattening the tube, sealing the tube by conducting the tube between a first pair of driven rolls, expanding the tube formed in the first inflation operation after the flattening between the first pair of rolls by introducing gas, forming a gas reservoir or gas accumulator for continuously retaining a quantity of the introduced gas between the first and second pair of rolls, flattening the tube between the second pair of rolls, controlling the pressure of the gas in the gas reservoir by selectively moving two compression plates toward and away from one another which plates are arranged on either side of the gas reservoir, inflating the flattened tube again with the gas from the reservoir to increase the diameter to orientation stretch the tube, simultaneously further stretching the inflated tube in its longitudinal direction whereby the tube material is biaxially molecular-oriented, said pressure of the gas in the gas reservoir being controlled such that sufficient pressure is provided to ensure a proper subsequent inflation of the tube and to compensate for gas loss.

4,370,294
COMPACTING PARTICULATE MATERIAL INTO A BODY
Jeffrey J. Franken, Birdsborough; Walter W. Gladney, Kutztown, and William R. Yeich, West Lawn, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,424

Int. Cl.^{3} B29C *1/04*

U.S. Cl. 264—571 **7 Claims**



1. A method of forming compactable material into a body having a desired size and shape, comprising:

providing a pouch of a first size, having elastic walls of sufficient strength to at least partially compact the material, such walls being expandable to a second size, larger than the desired body, and having a necked opening therein at a first end of the pouch;

disposing the pouch within a chamber having inside walls conforming to the desired shape of the body but of the second size, the first end of the pouch extending through a necked opening in said chamber and the walls of the first end being sealed to the walls of the opening such that the interior of the pouch is accessible from outside the chamber;

forming a sufficient vacuum condition between the pouch and chamber to substantially elastically expand the pouch to the size and shape of the inside walls of the chamber;

introducing the material into the pouch to load the same, said material substantially conforming, as it is introduced, to the shape and second size of the expanded pouch; and

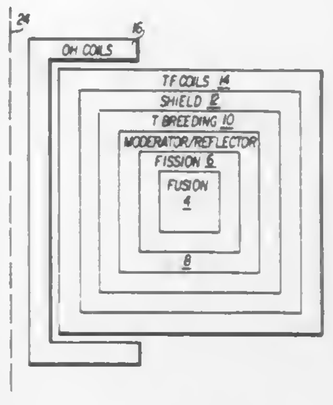
introducing air into the chamber to break the vacuum condition, thereby permitting the pouch to compress the loaded material and maintain the shape for further compacting into the desired body size and shape.

4,370,295
FUSION-FISSION POWER GENERATING DEVICE HAVING FISSILE-FERTILE MATERIAL WITHIN THE REGION OF THE TOROIDAL FIELD COILS GENERATING MEANS
Robert W. Bussard, Arlington, Va., assignor to FDX Associates, L.P., La Jolla, Calif.

Continuation of Ser. No. 888,804, Mar. 21, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,346

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—133 **12 Claims**



1. A fusion-fission reactor having a plasma containing toroidal fusion region for producing high energy neutrons from fusion reactions and a region external to said fusion region containing material which is both fissile with respect to high energy neutrons and fertile with respect to low energy neutrons, said reactor comprising:

(a) An electromagnetic toroidal field generating means having inner and outer structural contours;

(b) a region of fissile-fertile material positioned within said inner and outer structural contours of said toroidal field generating means and constituting a portion thereof; and

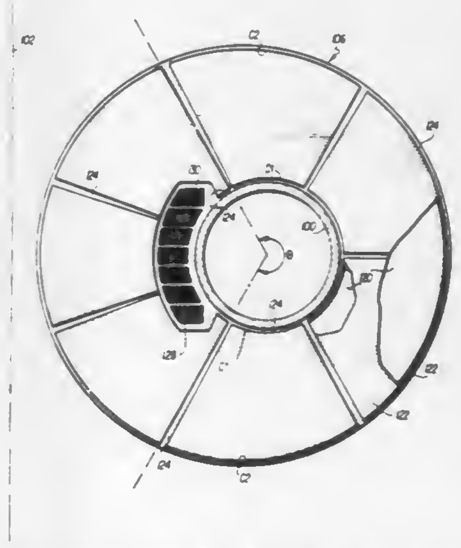
(c) said toroidal field generating means positioned substantially adjacent said toroidal fusion region.

4,370,296
TOROIDAL FUSION REACTOR HAVING OHMIC HEATING COIL SUBSTANTIALLY ADJACENT TOROIDAL FUSION REGION
Robert W. Bussard, Arlington, Va., assignor to FDX Associates, L.P., La Jolla, Calif.

Continuation of Ser. No. 888,803, Mar. 21, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,347

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—133 **8 Claims**



1. A compact toroidal fusion reactor for producing energy from fusion reactions having a plasma containing toroidal fusion region and having a main axis, comprising:

(a) a toroidal field generating means for producing a toroidal magnetic field in said fusion region upon the passage of current therethrough, said toroidal field generating means having an inner circumferential contour and an outer edge, said inner circumferential contour having a recessed portion extending for an arcuate section along the side nearest said main axis and being positioned substantially immediately proximate said toroidal fusion region; and

(b) ohmic heating coils for ohmically heating said plasma, said ohmic heating coils positioned adjacent to said toroidal fusion region and between said toroidal fusion region and said toroidal field generating means in a region provided on the inner circumferential contour of said toroidal field generating means along the side nearest the main axis of said toroidal fusion region.

4,370,297

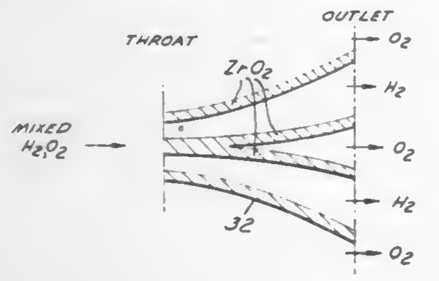
METHOD AND APPARATUS FOR NUCLEAR THERMOCHEMICAL WATER CRACKING

Theodor Teichmann, Plymouth, Mich., assignor to Texas Gas Transmission Corporation, Owensboro, Ky.

Continuation-in-part of Ser. No. 414,369, Nov. 9, 1973, abandoned. This application Jul. 7, 1976, Ser. No. 703,197

Int. Cl.^{3} G21B *1/00*

U.S. Cl. 376—148 **9 Claims**



1. Apparatus for dissociation of steam which comprises a fusion reactor central chamber housing capable of supporting a fusion reaction from a D-T fusion fuel charge placed therein, an energy source directed into said housing to achieve a fusion reaction in said fusion fuel placed in said central chamber to produce among other fusion products alpha and neutron radiation, means for introducing steam to said central chamber in the presence of said fusion reaction to absorb alpha-particle energy therefrom causing decomposition of the steam to release molecular hydrogen, and supersonic effusion filter means for removing the molecular hydrogen from other molecules including molecular oxygen in said central chamber, said supersonic effusion filter means forming an outlet from said central chamber and comprising a zirconium dioxide tube and a zirconium dioxide nozzle on said tube enlarging from said tube to a relatively wide outlet for cooling said molecular hydrogen, said nozzle having a hollow conically shaped zirconium dioxide member pointing in the direction of said central chamber, the zirconium dioxide walls of said nozzle and said conically shaped member allowing oxygen to preferentially diffuse therethough, thereby effecting the separation of the oxygen from the hydrogen.

4,370,298

CONTAINED FISSION EXPLOSION BREEDER REACTOR SYSTEM

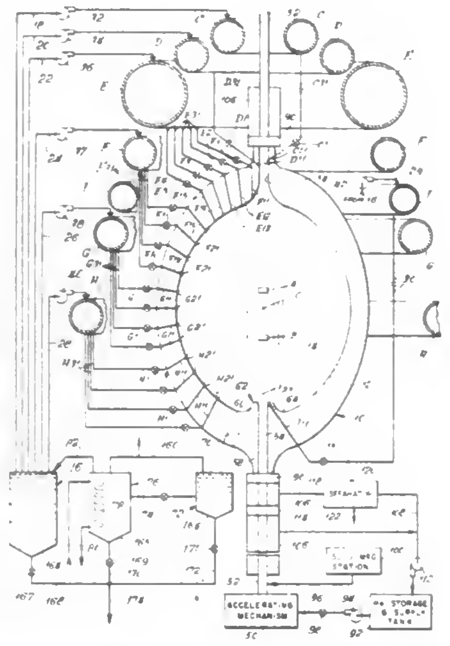
Edward F. Marwick, 5149 Morse Ave., Skokie, Ill. 60077, and Nis H. Juhl, 5405 Wallbridge, Midland, Mich. 48640

Continuation-in-part of Ser. No. 544,178, Jan. 27, 1975, abandoned. This application Aug. 8, 1979, Ser. No. 64,824

Int. Cl.^{3} G21C *1/00*

U.S. Cl. 376—317 **20 Claims**

1. A method of generating thermal energy and isotopes in a contained fission explosion, breeder reactor system, comprising the steps of providing a pressure vessel having an explosion chamber, introducing a pair of slugs each containing a sub-critical mass of actinides into said chamber propelling at least one of said slug pair, said pairs being introduced successively and at predetermined time intervals into the chamber along a flight path where they intercept at or near the center of the chamber and where the combining slug masses become more than critical to produce an explosion injecting a major portion of a working fluid into the chamber in the form of a plurality, draining the working fluid heated by the explosion from the vessel for conversion into useful work, collecting fissile, fertile and irradiated isotopes and debris from the exploded slugs as a precipitate from the working fluid, and fabricating the precipitate into additional slugs.



4,370,299

MOLYBDENUM-BASED ALLOY

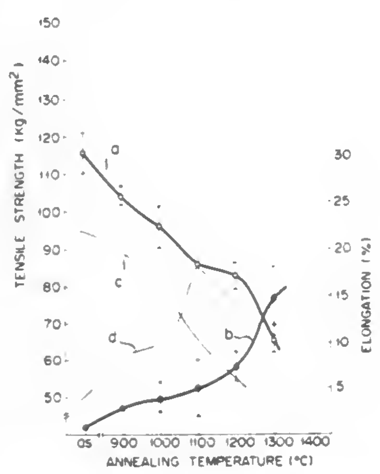
Shotaro Morozumi, 12-504, Kawauchi-jutaku, Mubanchi, Kawauchi, Sendai-shi, Miyagi-ken, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Shotaro Morozumi, Sendai, both of, Japan

Filed Jul. 6, 1981, Ser. No. 280,352

Claims priority, application Japan, Jul. 8, 1980, 55-92198

Int. Cl.^{3} C22C *27/04*

U.S. Cl. 420—429 **7 Claims**



1. A molybdenum-based alloy with excellent hot workability consisting essentially of 0.001 to 0.5% by weight of scandium and the remainder essentially of molybdenum.

4,370,300

AROMATIC ODORANT EMITTING DEVICE

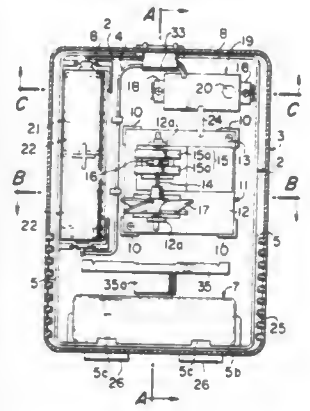
Yasuyuki Mori; Haruo Nishimura, both of Osaka, and Yoshikazu Sugahara, Fujiidera, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1981, Ser. No. 324,487

Claims priority, application Japan, Jan. 23, 1981, 56-8105[U]; Jun. 10, 1981, 56-85463[U]

Int. Cl.^{3} B01F *3/04;* **A61L** *9/04*

U.S. Cl. 422—108 **8 Claims**



1. An aromatic odorant emitting device comprising:

(a) a first mainbody case **2** in a box shape having a plurality of openings **6***f* at the lower portion of its rear surface, said case being fixed onto an wall;

(b) a second cover case **3** detachably mounted onto said first case, said second case being slightly larger than the first case and having a plurality of through slits **25** for exhaustion of an air including an aromatic odorant, at its lower portion, and having the openings **28, 30** at a center portion and a corner of an upper portion thereof;

said first case **2** containing:

(i) an aromatic odorant container **7** for containing the liquid aromatic odorant, to be placed on the bottom plate **5***b;*

(ii) an evaporator **35** having an absorbing piece **38** which is always supplied with the liquid aromatic odorant through the glass fiber bundles **37**, said aromatic odorant container being detachably mounted onto said evaporator;

(iii) a fan unit fixed on an inside thereof being positioned in opposite to said evaporator and said opening **28** for a fan **17** of said unit;

(iv) a photosensor **20** fixed on a portion of said first case **2**, being placed in opposite to said opening **30**;

(v) a thermosensor **19** for controlling a rotational speed of said fan **17**, together with said photosensor **20**;

(vi) a battery container **21** for containing at least one battery to supply its electric current to said thermosensor **19** and the photosensor **20**, being detachably provided for said first case **2**;

said second case **3** having at its upper end thereof a locking mechanism **31** comprising:

(i) a washboard-like piece **32** extending from the case **3** and having a hook **32***a* provided at its tip end for being engaged within an opening **9***a* provided on an engagement piece **9** formed on said first case **2**;

(ii) a slide lever **33** slidably attached on a backside of the washboard-like member **32**, one end **33***a* of which extending forwardly from an opening **34** formed on a front face of said second cover case, another end of which extending at a lower side of a tip end of said washboard-like member **32**, a pair of holding members **33***b*, **33***b* embracing the both sides of said forward tip end of said washboard-like member **32** being formed on said tip end of said slide lever **33**.

4,370,301

DRY DEODORIZING APPARATUS

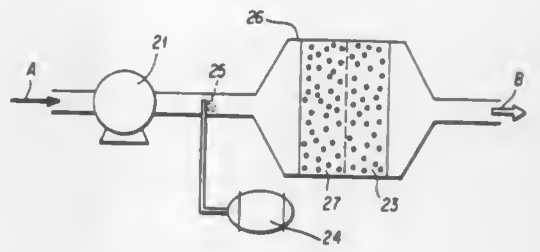
Kunihiro Doi; Tetsu Takeyama, both of Amagasaki, and Kenkoku Azuma, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,286

Claims priority, application Japan, Nov. 28, 1979, 54-154099; Jul. 31, 1980, 55-105792; Jul. 31, 1980, 55-105793; Jul. 31, 1980, 55-105794

Int. Cl.^{3} A61L *9/015, 9/00, 9/16*

U.S. Cl. 422—122 **18 Claims**



1. A dry deodorizing apparatus comprising:

(i) a device to diffuse ozonized air into odorous air containing bad smell components;

(ii) a dry packed layer of a porous carrier into which a bromine compound is impregnated;

(iii) a packed layer of an activated carbon; and

(iv) means for allowing said odorous air to which ozone is added to first pass through said impregnated carrier and then through said layer of activated carbon.

5. A dry deodorizing apparatus, comprising:

(i) a device to diffuse ozonized air into odorous air containing bad smell components;

(ii) a dry packed layer of a porous carrier into which a bromine compound is impregnated;

(iii) a packed layer of a porous material into which an iodide of an alkali metal or an alkali earth metal is impregnated; and

(iv) means for allowing said odorous air to which ozone is added to first pass through said carrier and then through the iodide-impregnated porous material.

4,370,302

MACHINE FOR SOLID PHASE POLYMERIZATION

Akihiro Suzuoka; Toshifumi Okuhira; Eiji Matsumura, and Katsushi Sasaki, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 30, 1980, Ser. No. 221,204

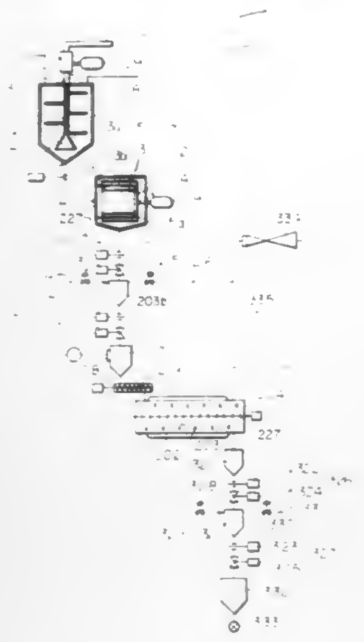
Claims priority, application Japan, Jan. 4, 1980, 55-7; Jan. 4, 1980, 55-9; Aug. 22, 1980, 55-114670

Int. Cl.^{3} B01J *4/00, 19/20;* **C08G** *63/02*

U.S. Cl. 422—137 **4 Claims**

1. A machine for solid phase polymerization comprising means defining a system for supplying particles of a synthetic polymer, means defining a reaction system for effecting solid phase polymerization under a vacuum and heated conditions to said particles of a synthetic polymer fed from said supplying system, and means defining a system for discharging said particles of a synthetic polymer which have been subjected to said solid phase polymerization in said reaction system so that their degree of polymerization is increased, characterized in that said reaction system comprises a horizontal reaction vessel, a shaft rotatable about a horizontal axis within said reaction vessel, at least one screw vane secured to said rotatable shaft and having a multiplicity of small apertures formed therein, and scrapers axially extending between adjacent screw vane portions, said supplying system comprises a pre-treatment apparatus comprising a precrystallizer wherein particles are precrystallized and a beater for separating stuck particles connected to the exit of said precrystallizer, whereby said particles of a synthetic polymer are precrystallized and beaten by means

of said pre-treatment apparatus and then are fed to said reaction system, said machine further comprising intermediate vessels disposed for communication between said reaction system and said discharging system, respectively, and vacuum breakers comprising particle shutters and vacuum valves located downstream of said shutters disposed at the particle supply side and the particle discharge side of said intermediate vessels, respectively.



4,370,303

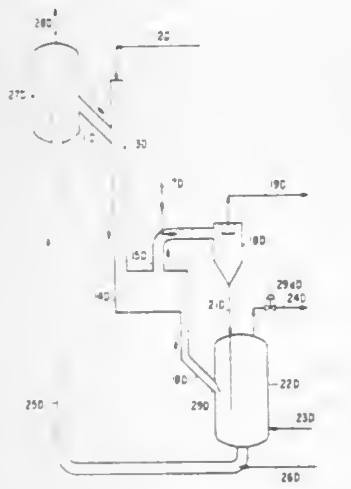
THERMAL REGENERATIVE CRACKING (TRC) APPARATUS

Herman N. Woebcke, Stamford, Conn.; Arju H. Bhojwani, Lawrenceville, N.J.; Robert J. Gartside, Auburndale, Mass., and Axel R. Johnson, North Babylon, N.Y., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Division of Ser. No. 165,782, Jul. 3, 1980, Pat. No. 4,318,800. This application Jun. 11, 1981, Ser. No. 272,457

Int. Cl.^{3} F27B *15/08*

U.S. Cl. 422—144 26 Claims



1. In a TRC apparatus wherein the temperature in the reaction chamber is between 1300° and 2500° F. and wherein the hydrocarbon fluid feed or the hydrosulfurization residual fluid feed oil along with the entrained inert solids and the diluent gas are passed through the reaction chamber for a residence time of 0.05 to 2 seconds, the improvements:

(1) wherein the apparatus for admixing the inert solids rapidly and intimately with the fluid feed introduced simultaneously thereto comprises:
  a. an upper reservoir containing the particulate solids;
  b. a conduit extending downwardly from the reservoir to the reaction chamber, said conduit being in open communication with the reservoir and reaction chamber; and

(2) a solids-gas separator designed to effect rapid removal of particulate solids from a dilute mixed phase stream of solids and gas, said separator comprising a chamber for disengaging solids from the incoming mixed phase stream, said chamber having rectilinear or slightly arcuate longitudinal walls to form a flow path essentially rectangular in cross section, said chamber also having a mixed phase inlet, a gas phase outlet, and a solids phase outlet, with the inlet at one end of the chamber disposed normal to the flow path, the solids outlet at the other end of the chamber, said solids outlet suitable for downflow of discharged solids by gravity, and the gas outlet therebetween oriented to effect a 180° change in direction fo the gas.

4,370,304

TWO-PHASE SPRAYING DEVICE AND REACTION CHAMBER FOR THE PREPARATION OF A PRODUCT CONTAINING AMMONIUM ORTHOPHOSPHATE

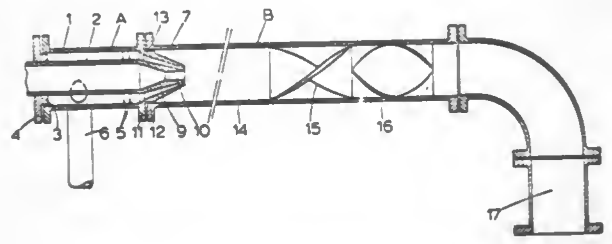
Petrus F. A. M. Hendriks, Geleen; Arie Jansen, Ridderkerk; Willem B. van den Berg, Prinsenbeek, and Cornelis Hoek, Nieuwstadt, all of Netherlands, assignors to Unie van Kunstmestfabrieken, B.V., Utrecht, Netherlands

Division of Ser. No. 43,423, May 29, 1979, Pat. No. 4,313,918. This application Aug. 21, 1981, Ser. No. 294,929

Claims priority, application Netherlands, Jun. 1, 1978, 7805957

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 422—224 2 Claims



1. An apparatus for preparing an ammonium orthophosphate product from ammonia and phosphoric acid comprising,

a two-phase spraying means including two coaxial ducts, one positioned inside the other for supplying respectively phosphoric acid and ammonia and mixing the same together, each of said ducts being tapered and narrower at the outflow ends which are substantially coterminous with each other,

a cylindrical reaction chamber larger than and coaxial with said two-phase spraying means having at least one discharge outlet at one end thereof, and said two-phase spraying means being positioned at least partially in said chamber,

said reaction chamber having a diameter from about 2 to about 4 times the outer diameter of the outflow opening of the outer coaxial duct and said reaction chamber having a length of from about 10 to about 25 times of said diameter,

and a plurality of baffle plates arranged successively downstream of said spraying means in said chamber, each two consecutive baffle plates being twisted in opposite directions and the first of said baffle plates positioned a distance of at least 8 times the diameter of said cylindrical reaction chamber from said coterminous end.

4,370,305

DEVICE FOR THE STERILIZATION OF FLUID SUBSTANCES

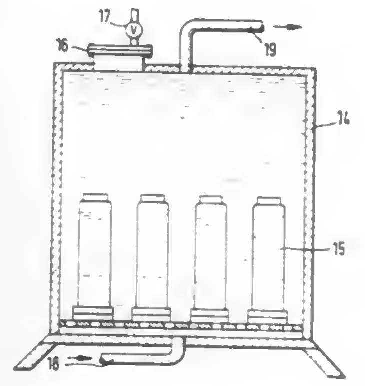
Alvaro Affonso, Bad Homburg von der Hohe, Fed. Rep. of Germany, assignor to Hoelzle & Chelius KG, Neu-Isenburg, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,104

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929813

Int. Cl.^{3} A61L *2/20*

U.S. Cl. 422—292 14 Claims



1. An apparatus for the sterilization of fluids comprising:

a substance capable of generating a disinfecting gas upon chemical activation;

a liquid-impermeable container surrounding said substance, at least a portion of the wall of said container being formed of a solid, non-porous, liquid-impermeable synthetic plastic barrier separating said substance from a fluid to be sterilized and permitting controlled diffusion of disinfecting gas while preventing the passage of impurities and the residue of the gas generation reaction therethrough; and

means for contacting said fluid to be sterilized with said synthetic plastic barrier.

4,370,306

PROCESS FOR SEPARATION OF TRACES OF GASEOUS CONTAMINANTS FROM WASTE GASES BY CHEMICAL ABSORPTION

Kurt Kirchner, Eschborn, and Wolfgang Litzenburger, Herrstein, both of Fed. Rep. of Germany, assignors to Dechema Deutsche Gesellschaft fur Chemisches Apparatewesen E V, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 136,024

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913329

Int. Cl.^{3} B01D *53/34, 57/00*

U.S. Cl. 423—220 17 Claims

1. In the separation of traces of halogens and sulfur from a halogen- and/or sulfur-containing gas stream wherein the gas stream is contacted with a wash liquid to absorb the halogens and sulfur, the improvement which comprises using a gas stream containing as contaminant at least one of a mercaptan, H_2S, HCl, HBr, HI, chlorine, bromine and iodine, and introducing into the wash liquid a pair of electrodes, the anode consisting of a heavy metal which as cation is capable of forming difficultly soluble halides or sulfides with the contaminants that are present.

4,370,307

PREPARATION OF PURE MAGNESIAN VALUES

George G. Judd, Woodville, Ohio, assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 126,005, Feb. 29, 1980, abandoned. This application Oct. 9, 1980, Ser. No. 192,301

Int. Cl.^{3} C01F *5/24, 11/18*

U.S. Cl. 423—432 5 Claims

1. A method for recovering a magnesium carbonate of high purity containing, on an oxide basis, at least 99 percent of magnesium carbonate and not more than 1 percent of calcium carbonate, from an aqueous magnesium hydroxide slurry consisting of water, commercially produced magnesium hydroxide and impurities normally associated with said magnesium hydroxide, and containing an amount of magnesium hydroxide, at least 1 percent, sufficient to form a solution saturated with magnesium bicarbonate and containing a crystalline magnesium carbonate precipitate, said method involving the steps of carbonating the slurry with sufficient carbon dioxide to dissolve a substantial proportion of the magnesium hydroxide therein as magnesium bicarbonate, continuing carbonation under conditions of temperature, time and pressure such that a solution saturated with magnesium bicarbonate and containing an appreciable amount of a crystalline magnesium carbonate precipitate is formed and substantially all calcium present is precipitated so that the slurry contains dissolved magnesium bicarbonate, the crystalline magnesium carbonate precipitate and a calcium carbonate precipitate, separating crystalline magnesium carbonate and other solids from the slurry to recover a solution saturated or essentially saturated with magnesium bicarbonate, decarbonating the magnesium bicarbonate solution to precipitate hydrous magnesium carbonate therein, and separating hydrous magnesium carbonate from the aqueous phase.

4,370,308

PRODUCTION OF CARBON BLACK

Frank R. Williams, Quincy, Mass., and Ronald C. Hurst, Pampa, Tex., assignors to Cabot Corporation, Boston, Mass.

Filed May 15, 1981, Ser. No. 264,186

Int. Cl.^{3} C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 10 Claims

1. In a modular process for producing furnace carbon blacks wherein a fuel and an oxidant are reacted in a first zone so as to provide a stream of hot primary combustion gases possessing sufficient energy to convert a carbon black-yielding liquid hydrocarbon feedstock to carbon black, and wherein in a second zone the liquid hydrocarbon feedstock is peripherally injected, in the form of a plurality of coherent jets, into the stream of gaseous combustion products in a direction substantially transverse to the direction of flow of the stream of combustion gases and under sufficient pressure to achieve the degree of penetration required for proper shearing and mixing of the feedstock, and wherein in a third zone the feedstock is decomposed and converted into carbon black prior to termination of the carbon forming reaction by quenching, and then cooling, separating and recovering the resultant carbon black, the improvement which comprises introducing into the primary combustion gases at a point no further downstream than the point at which the feedstock is injected a material, in elemental or chemically combined form, selected from the group consisting of calcium, barium and strontium, in an amount sufficient to either increase the surface area of the blacks or increase the throughput of the process.

4,370,309

METHOD FOR REMOVING CARBON BLACK DEPOSITS

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 18, 1980, Ser. No. 207,587

Int. Cl.^{3} C01B *31/02*

U.S. Cl. 423—461 23 Claims

1. A method for removing at least a portion of the carbon black deposits on means defining a flow path of an indirected heat exchanger, the carbon black deposits having been laid down by passing a gas stream containing carbon black through the means defining a flow path of the indirect heat exchanger, said method comprising:

selectively introducing additional cleaning carbon black in an amount effective to remove at least a portion of the carbon black deposits into a first portion of the means defining a flow path and flowing said additional cleaning carbon black along with said gas stream through the means defining a flow path to remove at least a portion of the carbon black deposits therefrom; and

selectively introducing additional cleaning carbon black in an amount effective to remove at least a portion of the carbon black deposits into at least one remaining portion of the means defining a flow path and flowing said additional cleaning carbon black along with said gas stream through the means defining a flow path to remove at least a portion of the carbon black deposits therefrom; wherein at least one of selectively introducing additional cleaning carbon black into said first portion and selectively introducing additional cleaning carbon black into said at least one remaining portion comprises introducing additional cleaning carbon black into said means defining a flow path separately from said gas stream containing carbon black.

4,370,310
ZINC ALUMINATE PREPARED USING AN ALUMINA HYDRATE

Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 23, 1981, Ser. No. 276,594

Int. Cl.^{3} C01F *7/02*

U.S. Cl. 423—600 **6 Claims**

1. A method for preparing zinc aluminate comprising the steps of:

wetting particulate alumina hydrate with a suitable dilute acid to form a first paste;

mixing particulate zinc oxide with said first paste to form a second paste; and

calcining said second paste to form said zinc aluminate.

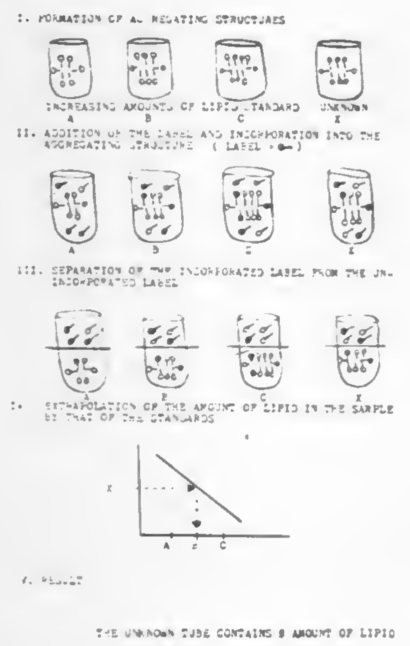
4,370,311
LIPID ASSAY BASED ON AGGREGATING PROPERTIES

John V. Ilekis, 6950 S. Campbell, Chicago, Ill. 60629

Filed Jun. 9, 1981, Ser. No. 271,952

Int. Cl.^{3} G01N *33/92, 33/58*

U.S. Cl. 424—1.1 **6 Claims**


I. FORMATION OF AGGREGATING STRUCTURES
INCREASING AMOUNTS OF LIPID STANDARD
UNKNOWN
A
B
C
X
II. ADDITION OF THE LABEL AND INCORPORATION INTO THE AGGREGATING STRUCTURE (LABEL)
III. SEPARATION OF THE INCORPORATED LABEL FROM THE UNINCORPORATED LABEL
X
A
C
THE UNKNOWN TUBE CONTAINS B AMOUNT OF LIPID

1. A method for measuring the concentration of a lipid in a supporting fluid as an unknown and comprising:

A. selecting for assay a known volume of the sample containing the lipid for measurement and allowing that selected sample to absorb for test a measured amount of the same lipid in labelled form;

B. preparing a known concentration of the lipid as a standard separate from said selected sample;

C. adding to the separate standard a predetermined amount of the lipid in labelled form and allowing the standard to absorb the labelled lipid;

D. effecting separation of the absorbed and unabsorbed labelled lipid in both the sample and the standard and measuring the amount of lipid so absorbed in each of the sample and standard; and

E. comparing the results of step A to the results of step D to determine if the unknown sample contains more or less or substantially the same as the standard.

4,370,312
DECAPEPTIDE

Günther Jung, Tübingen; Hans Brückner, Ostfildern/Nellingen, both of Fed. Rep. of Germany; Peter Swetly, Vienna, Austria, and Gerhard Bozler, Biberach an der Riss, Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellshaft mit beschrankter Haftung, Biberach an der Riss, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,213

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040824

Int. Cl.^{3} G01N *33/00;* **A61K** *39/00;* **C07C** *103/52*

U.S. Cl. 424—1.5 **6 Claims**

1. The decapeptide of the formula H-Ser-Asp-Leu-Pro-Gln-Thr-His-Ser-Leu-Gly-OH.

4,370,313
NITROFURANTOIN DOSAGE FORM

William L. Davies, Norwich, N.Y., assignor to Eaton Laboratories, Inc., Manati, P.R.

Filed Oct. 26, 1981, Ser. No. 314,656

Int. Cl.^{3} A61K *9/32, 31/345*

U.S. Cl. 424—32 **3 Claims**

1. A nitrofurantoin dosage form as a tablet containing a salt of nitrofurantoin or a hydrate thereof and excipients therefor enterically coated with an acrylic resin of the class consisting of an anionic polymer synthesized from methacrylic acid and methacrylic acid methyl ester.

4,370,314
ORAL COMPOSITION CONTAINING ANTIBACTERIAL AGENT

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 638,240, Dec. 8, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 760,202

Int. Cl.^{3} A61K *7/22*

U.S. Cl. 424—54 **18 Claims**

1. A packaged oral composition comprising an aqueous-humectant oral vehicle, a nitrogen-containing quaternary ammonium antibacterial antiplaque agent whose use has been observed to lead to staining of dental surfaces and an additive which reduces such staining consisting essentially of an additive selected from the group consisting of alkali metal hexametaphosphate and mixture of alkali metal hexametaphosphate and alkali metal bicarbonate.

4,370,315
POST-DEPILATORY COMPOSITION REDUCING PROGRESSIVELY THE GROWTH OF BODY HAIR

Daniel Greff, Plaisir; Françoise Petit-Martenon, Paris, and Tran Toan, La Verriere, all of France, assignors to Sederma, Meudon, France

Filed Feb. 22, 1978, Ser. No. 879,929

Claims priority, application France, Feb. 22, 1977, 77 05158

Int. Cl.^{3} A61K *37/48*

U.S. Cl. 424—94 **6 Claims**

1. A process to treat man or other living animals to slow down new growth of body hair after depilation which comprises applying to parts of man or living animals where removal of body hair is desired in an amount and at a frequency sufficient to retard new hair growth a cosmetic preparation consisting essentially of a cosmetic cream, ointment, milk or lotion having incorporated therein at least one lipoxygenase in an amount such that the total lipoxygenase enzyme activity is from 250,000 to 1,000,000 units per 100 grams of said cosmetic preparation and linoleic acid or derivative thereof in amount of 0.5 to 3% of mass of said cosmetic preparation.

4,370,316
PHARMACEUTICAL COMPOSITION COMPRISING EXTRACT FROM POISON POUCH CONTENTS OF BEE USEFUL FOR TREATING DECREASED IMMUNITY

Isamu Saikawa; Takashi Yasuda; Shohachi Murakami, all of Toyama; Toyoo Maeda, Kanazawa; Akira Yotsuji, Toyama; Masahiro Takahata, Toyama; Hisatsugu Tsuda, Toyama; Hidetada Mikami; Hiroshi Sakai, both of Takaoka, and Toshinori Ohashi, Hitachi, all of Japan, assignors to Toyama Chemical Company, Ltd., Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,530

Claims priority, application Japan, May 10, 1979, 54-57461

Int. Cl.^{3} A61K *35/58*

U.S. Cl. 424—98 **1 Claim**

1. A method for treating a host mammal having a decreased immunity, comprising administering to said host mammal an immunostimulating effective amount of the deproteinized extract from the poison pouch contents of bee B-T.

4,370,317
PANCREATIC SPASMOLYTIC POLYPEPTIDE

Klavs H. Jorgensen, Virum; Karin D. Jorgensen, Vedbaek, and Lars Thim, Gentofte, all of Denmark, assignors to Novo Industri A/S, Denmark

Continuation-in-part of Ser. No. 185,796, Sep. 10, 1980, abandoned. This application Mar. 9, 1981, Ser. No. 241,851

Int. Cl.^{3} A61K *37/00*

U.S. Cl. 424—177 **11 Claims**

1. A polypeptide exhibiting the following amino acid composition:

pyrGlu-Lys-Pro-Ala-Ala-Cys-Arg-Cys-Ser-Arg-
1 5 10

-Gln-Asp-Pro-Lys-Asn-Arg-Val-Asn-Cys-Gly-
15 20

-Phe-Pro-Gly-Ile-Thr-Ser-Asp-Gln-Cys-Phe-
25 30

-Thr-Ser-Gly-Cys-Cys-Phe-Asp-Ser-Gln-Val-
35 40

-Pro-Gly-Val-Pro-Trp-Cys-Phe-Ser-Pro-Leu-
45 50

-Pro-Ala-Gln-Glu-Ser-Glu-Glu-Cys-Val-Met-
55 60

-Gln-Val-Lys-Ala-Arg-Lys-Asn-Ser-Gly-Tyr-
65 70

-Pro-Gly-Ile-Cys-Pro-Glu-Asp-Cys-Ala-Ala-
75 80

-Arg-Asn-Cys-Cys-Phe-Ser-Asp-Thr-Ile-Pro-
85 90

-Glu-Val-Pro-Trp-Cys-Phe-Phe-Pro-Met-Ser-
95 100

--Val-Glu-Asp-Cys-His-Tyr
105

wherein pyrGlu (residue 1) stands for pyroglutamic acid, and the physiologically acceptable salts thereof.

4,370,318
BESTATIN-RELATED COMPOUNDS AS IMMUNOPOTENTIATOR

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Takaaki Aoyagi, Fujisawa; Kenji Kawamura, Zama, and Shunzo Fukatsu, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

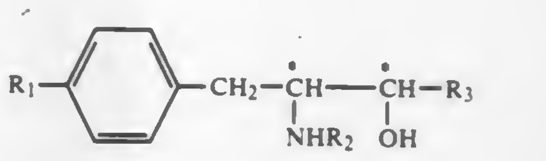
Filed Jun. 10, 1981, Ser. No. 272,211

Claims priority, application Japan, Jul. 7, 1980, 55/91690; Jul. 7, 1980, 55/91691; Jul. 7, 1980, 55/91692

Int. Cl.^{3} A61K *37/00, 31/16, 31/165*

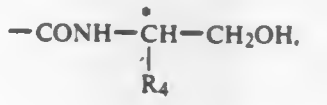
U.S. Cl. 424—177 **12 Claims**

1. A new compound of the general formula

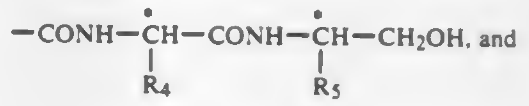


(III)

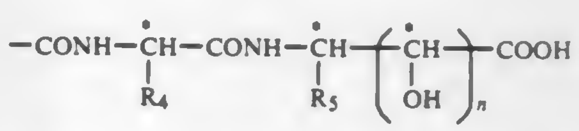
wherein R_1 is a hydrogen atom or a hydroxyl group, R_2 is a hydrogen atom or an alkanoyl group of 2-7 carbon atoms or an alkoxycarbonyl group of 2-7 carbon atoms, and R_3 is selected from the groups:



$$-\mathrm{CONH}-\overset{*}{\underset{R_4}{\mathrm{CH}}}-\mathrm{CH_2OH},$$



$$-\mathrm{CONH}-\overset{*}{\underset{R_4}{\mathrm{CH}}}-\mathrm{CONH}-\overset{*}{\underset{R_5}{\mathrm{CH}}}-\mathrm{CH_2OH},\text{ and}$$



$$-\mathrm{CONH}-\overset{*}{\underset{R_4}{\mathrm{CH}}}-\mathrm{CONH}-\overset{*}{\underset{R_5}{\mathrm{CH}}}-\left(\overset{*}{\underset{\mathrm{OH}}{\mathrm{CH}}}\right)_n-\mathrm{COOH}$$

where R_4 and R_5 may be the same or different from each other and each is an alkyl group of 1-7 carbon atoms, a hydroxyalkyl group of 1-7 carbon atoms, a mercaptoalkyl group of 1-7 carbon atoms, a carboxamidoalkyl group of 2-8 carbon atoms, an aminoalkyl group of 1-7 carbon atoms, a guanidyl-N-alkyl group of 1-7 carbon atoms, an alkylmercaptoalkyl group of 2-7 carbon atoms, a carboxyalkyl group of 2-8 carbon atoms, an aryl group, particularly phenyl, an aralkyl group of 7-8 carbon atoms or a substituted aralkyl group of 7-8 carbon atoms, n is zero or 1, and the asterisk (*) denotes the R-configuration or S-configuration or a combination thereof.

4,370,319
SKIN CONDITIONING COMPOSITIONS

Carole N. Chapin; Gary R. Kelm, and David L. Shelton, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 161,173, Jun. 19, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 245,827

Int. Cl.^{3} A61K *31/695, 47/00*

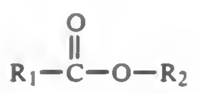
U.S. Cl. 424—184 **11 Claims**

1. A skin conditioning composition comprising:

(A) from about 0.1% to about 5% of an alkali metal phosphoric acid ester of a glyceride selected from the group consisting of a monoglyceride, a diglyceride and mixtures thereof.

(B) from about 0.1% to about 5% of a non-volatile silicone fluid.

(C) from about 0.1% to about 16% of an ester, or mixtures thereof, having the structural formula



$$R_1-\overset{\overset{\large O}{\|}}{C}-O-R_2$$

wherein R_1 and R_2 are both straight chain alkyls having from about 6 to about 22 carbon atoms and the total number of carbon atoms in the ester is at least about 24;

(D) an emollient selected from the group consisting of fatty alcohols, esters having fewer than about 24 carbon atoms, branched chain esters having greater than about 24 total carbon atoms, squalane, liquid or solid paraffins, mixtures of fatty acids and squalane, mixtures of fatty acids and liquid or solid paraffins and mixtures thereof in an amount such that the amount of ester plus emollient is from about 0.2% to about 25%;

(E) from about 0.05% to about 8% of an emulsifier selected from the group consisting of polyethoxylated fatty acids having less than about 30 moles of ethylene oxide per mole of fatty acid, ethoxylated esters, unethoxylated sugar esters, polyoxyethylene fatty ether phosphates, fatty acid amides, phospholipids, polypropoxylated fatty ethers, acyl lactylate salts, polyethoxylated poly (oxypropylene) glycols, polypropoxylated poly(oxyethylene) glycols, poly (oxyethylene) poly (oxypropylene) ethylene diamines, soaps, provided the level of soap is less than about 1.6%, and mixtures thereof; and

(F) water.

4,370,320

(THIONO) (THIOL) PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES OF SUBSTITUTED 4-HYDROXYQUINOLINES AND THEIR USE AS AGENTS FOR COMBATING PESTS

Horst Gildemeister, Wiesbaden; Hilmar Mildenberger, Kelkheim; Werner Knauf, Frankfurt am Main; Anna Waltersdorfer, Frankfurt am Main, and Burkhard Sachse, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

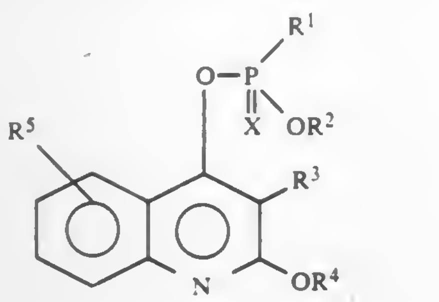
Filed Sep. 18, 1981, Ser. No. 303,475

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035650

Int. Cl.^{3} A61K *31/675;* **C07D** *215/56*

U.S. Cl. 424—200 **6 Claims**

1. A compound of the formula I



(I)

in which R^1 denotes (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_1-C_4)-alkylmercapto, (C_1-C_4)-alkylamino, (C_1-C_4)-dialkylamino or phenyl, R^2 denotes (C_1-C_4)-alkyl, R^3 denotes hydrogen, halogen, COOalkyl, CONH(alkyl) or $CON(alkyl)_2$ with in each case 1-4 C atoms per alkyl radical, or cyano, R^4 denotes (C_1-C_4)-alkyl, R^5 denotes hydrogen, halogen, nitro, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy or trihalogenomethyl and X denotes oxygen or sulfur.

5. A method for combatting insects, acarids or fungi which comprises contacting insects, acarids or fungi with an insecticidally, acaricidally or fungicidally effective amount of a compound defined in claim 1.

4,370,321

PROGESTATIONAL ADJUVANT THERAPY

Martin O. Greaney, and Merritt R. Callantine, both of Evansville, Ind., assignors to Mead Johnson and Company, Evansville, Ind.

Filed Sep. 1, 1976, Ser. No. 719,558

Int. Cl.^{3} A61K *31/56*

U.S. Cl. 424—243 **9 Claims**

1. The adjuvant method of treatment of breast cancer after mastectomy which consists essentially of administering an effective non-toxic metastasis preventing oral or parenteral dose of a 17α-acyloxy-6-methylpregna-4,6-diene-3,20-dione having up to 10 carbon atoms in the acyloxy group to a mastectomized mammal said mammal being diagnostically free of mammary carcinoma on a continuing repetitive regimen during a treatment period after mastectomy when the danger of metastatic transmission or recurrence of said cancer exists wherein at the time of mastectomy said mammal had no metastases outside of the curable area of breast and axilla and had positive axillary lymph nodes.

4,370,322

TOPICALLY ADMINISTRABLE PHARMACEUTICAL COMPOSITIONS CONTAINING ANTI-INFLAMMATORY STEROIDS

Michael J. Busse, Harrow, and Kenneth A. Lees, Northwood, both of England, assignors to Glaxo Group Limited, London, England

Filed Oct. 5, 1981, Ser. No. 308,581

Claims priority, application United Kingdom, Oct. 6, 1980, 8032111

Int. Cl.^{3} A61K *31/56*

U.S. Cl. 424—243 **14 Claims**

1. A pharmaceutical composition ~~comprising~~ comprising an anti-inflammatory steroid selected from beclomethasone 17,21-dipropionate, betamethasone 17-valerate, betamethasone 17,21-dipropionate, clobetasol 17-propionate, clobetasone 17-butyrate and chloromethyl 17α-acetoxy-9α-fluoro-11β-hydroxy-16β-methyl-3-oxoandrosta-1,4-diene-17β-carboxylate dissolved in a liquid oily phase containing at least one oil possessing a viscosity less than 10 centistokes and in which the steroid has a solubility of at least 0.5% by weight at 25° C., being the degree of unsaturation of the steroid in the liquid oily phase of the composition at 25° C. being at least 3.

4,370,323

2-CYANOAZIRIDINYL-(1)-2-SUBSTITUTED-AZIRIDINYL-(1)-METHANES

Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Erich Fauland, Mannheim-Gartenstadt; Uwe Bicker, Mannheim, and Gottfried Hebold, Mannheim-Vogelstang, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

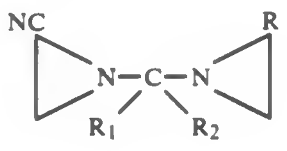
Filed Mar. 9, 1977, Ser. No. 776,068

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610156

Int. Cl.^{3} C07D *403/06, 403/14, 401/14;* **A61K** *31/395*

U.S. Cl. 424—244 **12 Claims**

1. A 2-cyanoaziridinyl-(1)-2-substituted-aziridinyl-(1)-methane of the formula



wherein

R is a nitrile or carbamoyl group, and

R_1 and R_2, which can be the same or different, are hydrogen atoms, alkoxycarbonyl, the alkoxy moiety having up to 6 carbon atoms, or aliphatic hydrocarbon radicals containing up to 10 carbon atoms, which can be straightchained, branched or cyclic, or R_1 and R_2 together with the carbon atom to which they are attached form a carbocyclic ring containing up to 8 ring members.

5. A method for stimulating the immune response of an animal patient which comprises administering to said patient an effective amount of one of the following compounds

2-(2-cyanoaziridinyl-(1))-2-(2-carbamoylaziridinyl-(1))-propane,

1-(2-cyanoaziridinyl-(1))-1-(2-carbamoylaziridinyl-(1))-1-cyclopropyl-ethane,

ethyl α-(2-cyanoaziridinyl-(1))-α-(2-carbamoylaziridinyl(1))-propionate,

diethyl 1-(2-cyanoaziridinyl-(1))-1-(2-carbamoylaziridinyl-(1))-2-methyl-propane,

2-(2-cyanoaziridinyl-(1))-2-(2-carbamoylaziridinyl(1))-n-hexane,

1-(2-cyanoaziridinyl-(1))-1-(2-carbamoylaziridinyl(1))-propane,

4-(2-cyanoaziridinyl-(1))-4-(2-carbamoylaziridinyl-(1))-n-heptane, and

1,1-bis-(2-cyanoaziridinyl-(1))-cyclohexane.

4,370,324

METHOD AND COMPOSITION FOR TREATING AND PREVENTING IRRITATION OF THE EYES

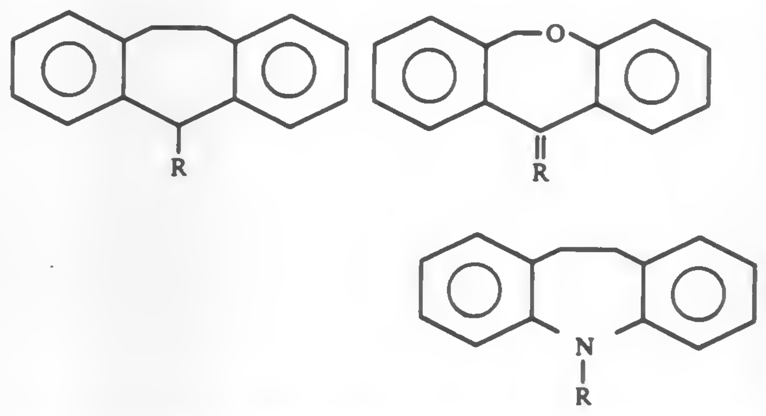
Joel E. Bernstein, 615 Brierhill Rd., Deerfield, Ill. 60015

Filed Sep. 17, 1980, Ser. No. 188,249

Int. Cl.^{3} A61K *43/00, 31/335, 31/135*

U.S. Cl. 424—244 **16 Claims**

1. A method of preventing irritation of the mucous membrane of the eye caused by allergies, chemical pollutants, or physical irritants manifested by redness, tearing, burning discomfort or itching comprising applying topically to said eye a therapeutically effective amount of a tricyclic anti-depressant selected from the group consisting of:



wherein R is an aliphatic secondary or tertiary amine wherein the aliphatic chain is a three carbon chain connected to a nitrogen atom with the tertiary amine having two carbon atoms attached to the nitrogen atom in addition to the aliphatic chain and the secondary amine having one carbon atom attached to the nitrogen atom in addition to the aliphatic chain.

4,370,325

PHARMACEUTICAL COMPOSITIONS AND METHOD OF TREATMENT

Albert M. Packman, Dresher, Pa., assignor to Dermik Laboratories, Fort Washington, Pa.

Filed Mar. 30, 1979, Ser. No. 25,388

Int. Cl.^{3} A61K *31/555*

U.S. Cl. 424—245 **18 Claims**

1. An ophthalmic and otic composition for treating eye and ear irritations and inflammation in warm blooded animals which comprises about 0.001 to about 5% by weight of the total composition of at least a compound selected from the group consisting of bis-(2-pyridyl-1-oxide) disulfide and the adducts of bis-(2-pyridyl-1-oxide) disulfide having the empirical formula:

$$(C_5H_4NOS)_2MY_t \qquad (I)$$

wherein M represents a member selected from the group consisting of zinc, iron, magnesium, tin, cadmium, zirconium, alkali and alkaline earth metals; Y is the anion of an inorganic or organic acid and t is either 1 or 2, together with a suitable isotonic pharmaceutical carrier.

4,370,326

CEPHEM COMPOUNDS AND COMPOSITION

Takao Takaya, Sakai, and Zenzaburo Tozuka, Toyonaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

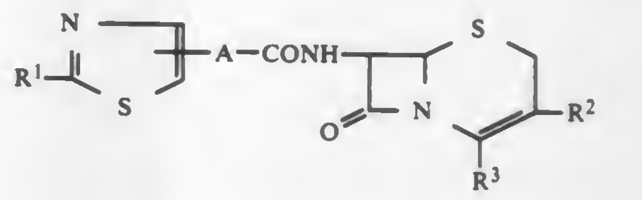
Filed Sep. 6, 1978, Ser. No. 939,982

Claims priority, application United Kingdom, Sep. 13, 1977, 38163/77; Oct. 11, 1977, 42315/77

Int. Cl.^{3} C07D *501/22;* **A61K** *31/545*

U.S. Cl. 424—246 **13 Claims**

1. A compound of the formula:



wherein

R^1 is amino or protected amino,

A is lower alkylene which may be substituted with oxo, hydroxy, amino, protected hydroxy or protected amino,

R^2 is hydrogen, and

R^3 is carboxy or functionally modified carboxy, and its nontoxic, pharmaceutically acceptable salt.

4,370,327

CEPHALOSPORINS AND PHARMACEUTICAL COMPOSITIONS

Bernd Wetzel; Eberhard Woitun, both of Biberach; Wolfgang Reuter, Laupertshausen; Roland Maier, Biberach; Uwe Lechner, Ummendorf, and Hanns Goeth, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

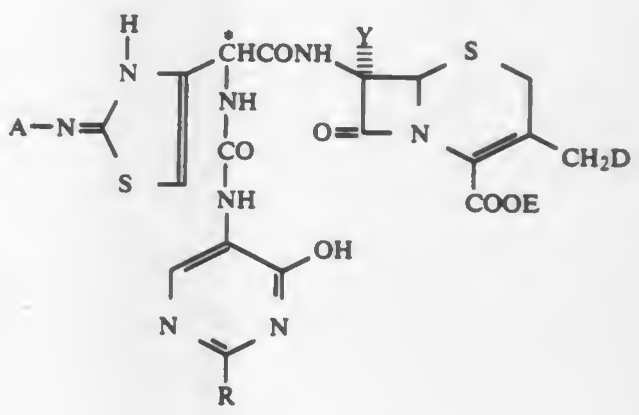
Filed Feb. 23, 1981, Ser. No. 237,066

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007685

Int. Cl.^{3} C07D *501/22, 501/36, 501/46, 501/57*

U.S. Cl. 424—246 **10 Claims**

1. A compound of the tautomeric formulas



(I)

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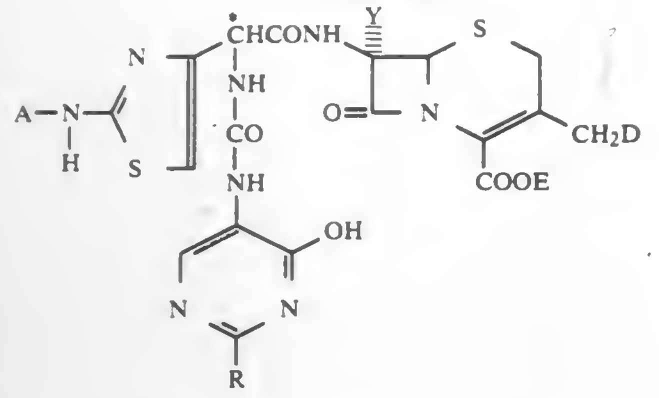
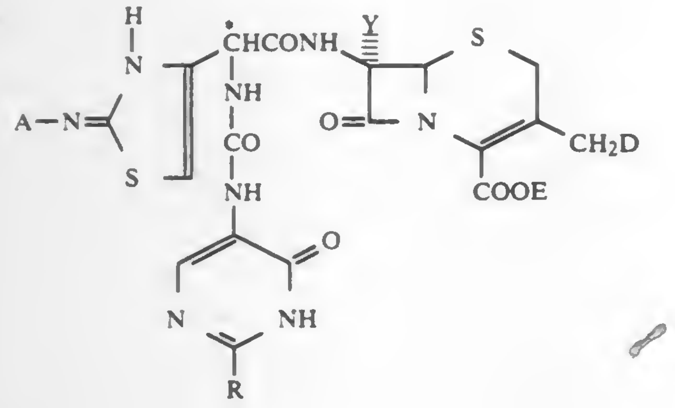
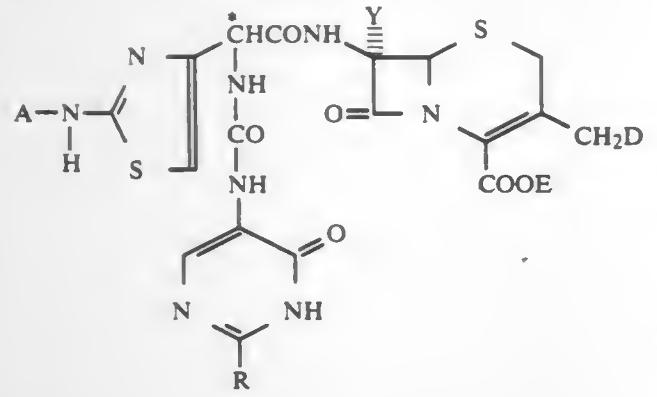


(I′)



(I″)

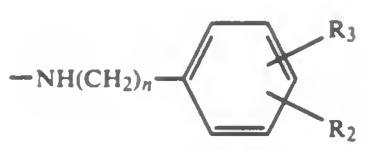
and



(I‴)

wherein

- A is a hydrogen atom or a $—COCH_2Cl$, $—COCH_2Br$, $—COOCH_2CCl_3$, formyl, or trityl group;
- Y, which is in the α-configuration, represents a hydrogen atom or a methoxy group;
- D is a hydrogen atom, an acetoxy, aminocarbonyloxy, pyridinium, or aminocarbonyl-pyridinium group, or the group S-Het, where Het is tetrazol-5-yl, 1-methyl-tetrazol-5-yl, 1,3,4-thiadiazol-5-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or 1,2,4-thiadiazol-5-yl group;
- R represents a hydrogen atom; or cyclopropyl, hydroxyl, or methoxy group; a group of general formula $—NHR_1$, where R_1 represents a hydrogen atom, an aliphatic branched or unbranched hydrocarbon group of from 1 to 6 carbon atoms, optionally containing a double or triple bond, or a cycloalkyl group of from 3 to 6 carbon atoms; a group of general formula —NH—Z—X, wherein
  - Z represents a linear or branched alkylene group of from 1 to 4 carbon atoms or a cycloalkyl group substituted by the substituent X and having from 3 to 6 carbon atoms; and
  - X represents a hydroxyl, mercapto, cyano, aminocarbonyl, aminosulfonyl, acetyl, amino, methylamino, dimethylamino, formylamino, acetylamino, ureido, methylsulfonylamino, methoxy, ethoxy, acetoxy, methylmercapto, methylsulfinyl, methylsulfonyl, carboxyl, or methoxycarbonyl group; or
- a group of general formula



(Ia)

wherein

- n represents the integer 0 to 1 and R_2 and R_3, which may be the same or different, each represent a hydrogen or halogen atom or a hydroxyl, methyl, methoxy, acetylamino, aminocarbonylamino, alkylaminocarbonylamino, dialkylaminocarbonylamino, alkylsulfonylamino, alkylcarbonyl, alkylcarbonyloxy, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, nitro, cyano, methylmercapto, alkylsulfinyl, alkylsulfonyl, aminosulfonyl, alkylaminosulfonyl, or dialkylaminosulfonyl group, wherein the alkyl moieties may each comprise from 1 to 3 carbon atoms; and
- E is a hydrogen atom or a protective group which is easily removable in vitro or in vivo,

or, when E is a hydrogen atom, a non-toxic, pharmacologically acceptable salt thereof with an inorganic or organic base.

9. The method of inhibiting the growth of or destroying pathogenic bacteria in a warm-blooded animal in need thereof, which comprises perorally, parenterally, rectally, or topically administering to said animal an effective antibiotic amount of a compound of claim 1.

4,370,328

CARDIAC STIMULANT 1-(3- OR 4-SUBSTITUTED PIPERIDINO)PHTHALAZINES

Simon F. Campbell, Kingsdown; John C. Danilewicz, Ash, Nr. Canterbury; Allan L. Ham, Broadstairs, and John K. Stubbs, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

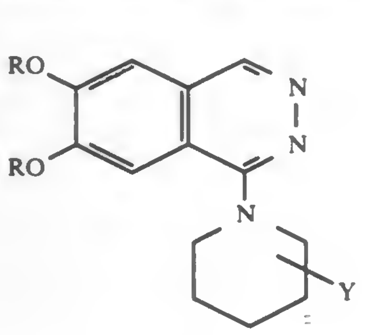
Continuation-in-part of Ser. No. 34,653, Apr. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 953,557, Oct. 23, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,777

Claims priority, application United Kingdom, Nov. 3, 1977, 45670/77; Mar. 28, 1979, 7910843

Int. Cl.³ C07D *237/30*

U.S. Cl. 424—250 **14 Claims**

1. A compound of the formula:



(I)

wherein

- R is a C_{1-6} alkyl group;
- and Y is attached to the 3- or 4-position of the piperidino ring and represents a group of the formula:

$$—X—(CHR^1)_m—Z$$

wherein

- R^1 is selected from the group consisting of hydrogen and C_{1-6} alkyl;
- m is 1 or 2, with the proviso that when m is 2, each R^1 may be the same or different;
- X is selected from the group consisting of oxygen and a direct link, with the proviso that when m is 1, X is a direct link; and
- Z is selected from the group consisting of $—OCONR^4R^5$, $N(R^2)SO_2NR^4R^5$, $—N(R^2)COR^3$, $—N(R^2)SO_2R^3$, $—N(R^2)CONR^4R^5$, $N(R^2)SOR^3$, and $—N(R^2)COOR^3$;

wherein R^2 and R^5 are each independently selected from the group consisting of hydrogen and C_{1-6} alkyl; R^3 is selected from the group consisting of C_{1-6} alkyl, benzyl, C_{3-7} cycloalkyl, phenyl, phenethyl and pyridyl; and R^4 is selected from the group consisting of hydrogen and R^3; provided that when X is a direct link, R^3 or R^4 is C_{3-7} cycloalkyl;

and the pharmaceutically-acceptable acid addition salts thereof.

4,370,329

PIPERAZINE DERIVATIVES AS CIRCULATION-ENHANCING SUBSTANCES

Arthur Scherm, Bad Homburg, and Dezsoe Peteri, Hattersheim, both of Fed. Rep. of Germany, assignors to Merz & Company, Frankfurt, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,189

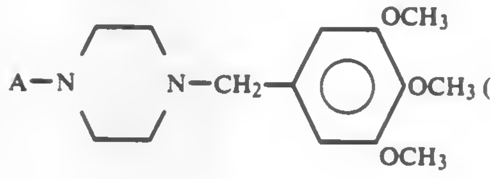
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1979, 2934450; Aug. 25, 1979, 2934488

Int. Cl.³ A01K *31/495;* C07D *295/08*

U.S. Cl. 424—250 **18 Claims**

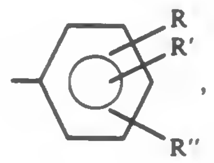
1. A compound selected from the group consisting of

(a) N-(trimethoxybenzyl)-N′-phenylpiperazines having the formula:



(I),

wherein A =



,

wherein

- R is trifluoromethyl, hydroxy, nitro, halogen, lower-alkyl, or lower-alkoxy;
- R′ is hydrogen, trifluoromethyl, halogen, lower-alkyl, or lower-alkoxy;
- R″ is hydrogen or lower-alkoxy,
- or wherein R and either R′ or R″ together stand for lower-alkylene dioxy,
- the substituents R, R′, and R″ in A, when A is disubstituted or trisubstituted, being diloweralkyl, diloweralkoxy, lower-alkylenedioxy, ditrifluoromethyl, triloweralkoxy, or trifluoromethylhalo, and the substituent R in A, when A is monosubstituted, being fluoro, trifluoromethyl, nitro, or hydroxy,

and

(b) acid addition salts thereof.

2. A pharmaceutical composition suitable for use in the enhancement or stimulation of circulation, comprising a compound of claim 1 in an amount effective for such purpose, in association with a pharmaceutical carrier.

4,370,330

METHOD OF ENHANCING CIRCULATION WITH PIPERAZINES

Arthur Scherm, Bad Homburg, and Dezsoe Peteri, Hattersheim, both of Fed. Rep. of Germany, assignors to Merz & Company, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 181,189, Aug. 22, 1980. This application Oct. 5, 1981, Ser. No. 308,607

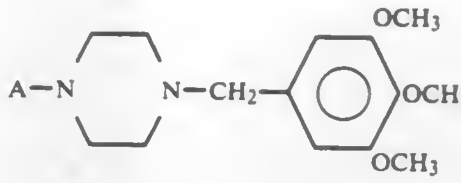
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1979, 2934450; Aug. 25, 1979, 2934488

Int. Cl.³ A61K *31/495;* C07D *295/08*

U.S. Cl. 424—250 **36 Claims**

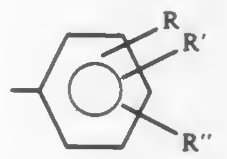
1. Method for the treatment of a subject in need of enhancement or stimulation of circulation, comprising the step of administering to the subject a circulation-enhancing amount of a compound selected from the group consisting of

(a) N-(trimethoxybenzyl)-N′-phenylpiperazines having the formula:



(I)

wherein A =



wherein

- R is trifluoromethyl, hydroxy, nitro, halogen, lower-alkyl, lower-alkoxy, or hydrogen;
- R′ is hydrogen, trifluoromethyl, halogen, lower-alkyl, or lower-alkoxy;
- R″ is hydrogen or lower-alkoxy,
- or wherein R and either R′ or R″ together stand for lower-alkylene dioxy, and

(b) pharmaceutically-acceptable acid addition salts thereof.

4,370,331

L-GLAUCINE CONTAINING COMPOSITION FOR COUGH RELIEF

Alfred G. Maasböl, Hamburg, Fed. Rep. of Germany, assignor to Karl O. Helm Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 895,718, Apr. 12, 1978, abandoned. This application May 16, 1980, Ser. No. 151,197

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717062

Int. Cl.³ A61K *31/47*

U.S. Cl. 424—258 **22 Claims**

1. An antitussive composition comprising a pharmaceutically-acceptable carrier and from about 4 to about 99 percent by weight of a glaucine compound selected from the group consisting of l-glaucine, d,l-glaucine, the physiologically-acceptable salts thereof, and mixtures thereof.

4,370,332

1,2,3,4-TETRAHYDROISOQUINOLINE DERIVATIVES AND THE PREPARATION THEREOF

Teiji Kishimoto, Kawanishi; Hiromu Kochi, Sakai, and Yoshiyuki Kaneda, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

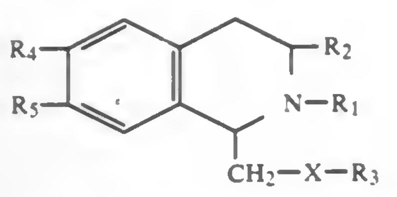
Division of Ser. No. 67,393, Aug. 17, 1979, Pat. No. 4,292,320, which is a continuation of Ser. No. 695,975, Jun. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 489,993, Sep. 19, 1974, Pat. No. 3,978,063. This application Oct. 29, 1980, Ser. No. 201,997

Claims priority, application Japan, Jul. 30, 1973, 47-85987

Int. Cl.³ A61K *31/47;* C07D *409/12*

U.S. Cl. 424—258 **8 Claims**

8. A pharmaceutical composition comprising, as an active ingredient, at least one 1,2,3,4-tetrahydroisoquinoline having the formula:



wherein R_1 and R_2 are each hydrogen or lower alkyl, R_3 is thiadiazolyl optionally substituted by a lower alkyl group, R_4 and R_5 are each hydroxy or a protected hydroxy and X is —O— or —S—, and pharmaceutically acceptable salts thereof, with a pharmaceutically acceptable carrier.

4,370,333
17-CYCLOPROPYLMETHYL-3-HYDROXY-14-METHOXY 7α-METHYL-MORPHINAN-6-ONE AND THERAPEUTIC METHOD OF TREATING PAIN WITH IT

Anil C. Ghosh, Lexington, and Raj K. Razdan, Belmont, both of Mass., assignors to SISA, Incorporated, Cambridge, Mass.

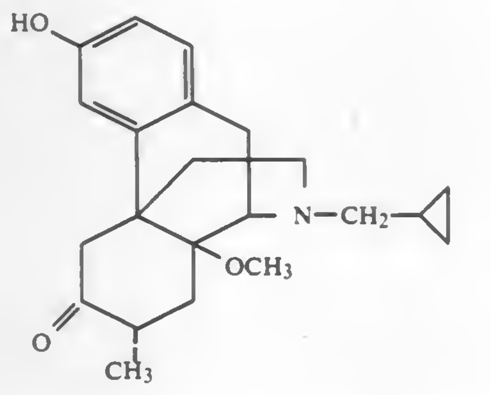
Filed Jun. 29, 1981, Ser. No. 278,760

The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

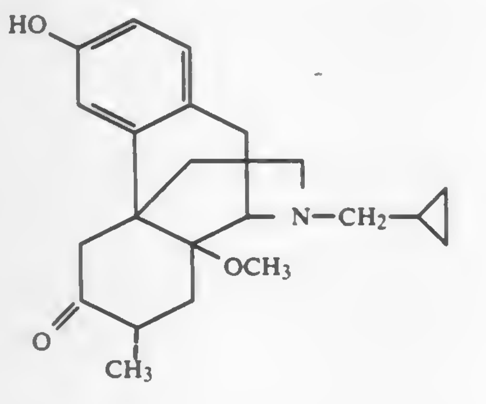
Int. Cl.^{3} A61K *31/485;* **C07D** *221/28*

U.S. Cl. 424—260 **6 Claims**

1. 17-Cyclopropylmethyl-3-hydroxy-14-methoxy-7α-methyl-morphinan-6-one characterized by the structural formula:



4. A therapeutic method for treating pain without liability of drug dependence in an individual for whom such therapy is indicated which method comprises administering to the individual an effective analgesic amount of a compound characterized by the formula:



4,370,334
1,4-DIHYDRO-PYRIDINE DERIVATIVES AND METHODS OF USING SAME

Yoshinari Sato, Takaishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

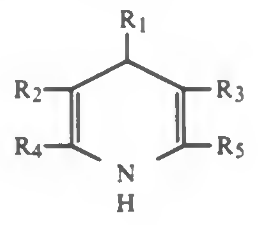
Division of Ser. No. 39,752, May 17, 1979, Pat. No. 4,284,634, which is a continuation-in-part of Ser. No. 809,788, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,994, Jul. 1, 1976, Pat. No. 4,145,432. This application Dec. 4, 1980, Ser. No. 213,048

Claims priority, application United Kingdom, Jul. 2, 1975, 27945/75; Sep. 29, 1975, 39854/75; Dec. 16, 1975, 51524/75; Apr. 5, 1976, 13761/76; Dec. 17, 1976, 52720/76; Jun. 6, 1978, 26429/78; Oct. 10, 1978, 39978/78

Int. Cl.^{3} C07D *213/55;* **A61K** *31/455*

U.S. Cl. 424—266 **30 Claims**

1. A compound of the formula:



wherein

- R_1 is unsubstituted phenyl phenyl monosubstituted with halogen, nitro, hydroxy, trifluoromethyl, halo(lower)alkyl, lower alkyl, lower alkoxy, lower alkenyloxy, cyano, lower alkoxycarbonyl or lower alkylsulfamoyl, disubstituted phenyl selected from 2-chloro-5-nitro, 2,4- or 3,4-dichloro and 3,4-dimethoxy, thienyl or furyl,
- R_2 is lower alkoxycarbonyl, and R_3'' is lower alkoxycarbonyl, lower alkoxy(lower)alkoxycarbonyl, hydroxy(-lower)alkoxycarbonyl, phenyl(lower)alkoxycarbonyl, phenyl(lower)alkoxy(lower)alkoxycarbonyl, phenoxy(-lower)alkoxycarbonyl, N,N-di-(lower)alkylamino(lower-)alkoxycarbonyl or N-(lower)alkyl-N-phenyl(lower)alkylamino(lower)alkoxycarbonyl,
- R_4 is oxo-substituted lower alkyl, and
- R_5 is hydrogen; lower alkyl; or oxo-substituted lower alkyl.

4,370,335
ANTISECRETORY 4-DIPHENYLMETHYL-1-[(OXOALKYL)IMINO]METHYL-PIPERIDINES AND THEIR DERIVATIVES

Malcolm K. Scott, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

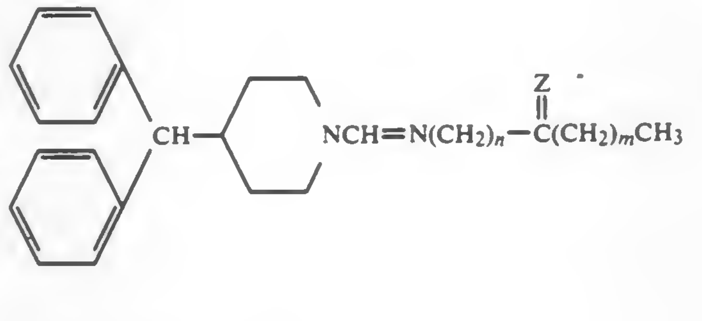
Filed Feb. 2, 1982, Ser. No. 345,128

Int. Cl.^{3} A61K *31/445;* **C07D** *405/12*

U.S. Cl. 424—267 **10 Claims**

1. 4-Diphenylmethyl-1-[(oxoalkyl)imino]methyl-piperidine or a derivative thereof of the formula:

(II)

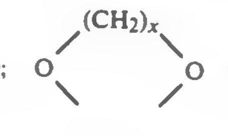


wherein:

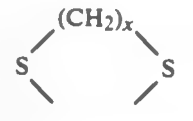
n is an integer from 1–10, inclusive
m is an integer from 0–9, inclusive
n+m=1–10

Z is selected from the following:

O;



wherein x is 2 or 3;



wherein x is 2 or 3;

(OR)$_1$)$_2$ wherein R_1 is C_{1-6} loweralkyl; NOH; and H,OH;

or a pharmaceutically acceptable acid addition salt thereof.

9. A pharmaceutical composition comprising an effective gastric acid secretion inhibiting amount of 4-diphenylmethyl-1-[(oxoalkyl)imino]methyl-piperidines and their derivatives compound of claim 1, in free base or acid addition salt form together with a pharmaceutically acceptable carrier.

4,370,336
3,5-DISUBSTITUTED-1H-1,2,4-TRIAZOLE DERIVATIVES AS ANTIFERTILITY AGENTS

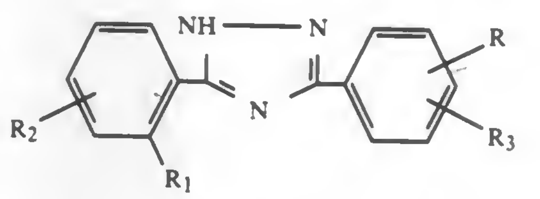
Amedeo Omodei-Sale, Voghera; Pietro Consonni, Milan; Giulio Galliani, Monza, and Leonard Lerner, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 47,411, Jun. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 11,297, Feb. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 897,313, Apr. 18, 1978, abandoned. This application Apr. 16, 1981, Ser. No. 254,729

Int. Cl.^{3} A61K *31/41;* **C07D** *249/08*

U.S. Cl. 424—269 **2 Claims**

1. A method for preventing littering in an impregnated female animal which comprises administering to said animal an effective amount of a compound of the following formula



I

wherein R represents hydrogen, (C_{1-4})alkyl, (C_{1-4})alkoxy, allyloxy, propargyloxy, trifluoromethyl, phenyl, fluoro, chloro or dimethylamino; R_1 represents a (C_{1-4})alkyl group; R_2 represents hydrogen, fluoro, chloro, (C_{1-4})alkyl, methoxy or ethoxy; R_3 represents hydrogen, fluoro, chloro, (C_{1-4})alkyl or (C_{1-4})alkoxy; R and R_2 taken together represent a methylenedioxy group; with the proviso that, when R, R_2 and R_3 all represent hydrogen, R_1 cannot be methyl; with the further proviso that, when R_2 and one of R and R_3 represent hydrogen, R_1 and the other of R and R_3 cannot simultaneously represent methyl; or a salt thereof with a pharmaceutically acceptable acid.

4,370,337
1,2,4-TRIAZOLE DERIVATIVES AS ANTIFERTILITY AGENTS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

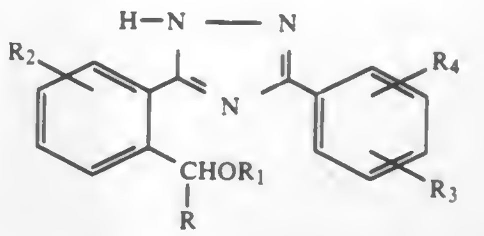
Amedeo Omodei-Sale', Voghera-Pavia; Pietro Consonni, Milan, and Giulio Galliani, Monza, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 87,376, Oct. 23, 1979. This application Jul. 16, 1980, Ser. No. 283,715

Int. Cl.^{3} A61K *31/41;* **C07D** *249/08*

U.S. Cl. 424—269 **1 Claim**

1. A method for preventing reproduction in a warm-blooded animal which comprises administering to the animal a dosage from about 0.8 to about 50 mg/Kg of body weight of a compound of the formula



wherein R represents hydrogen or methyl, R_1 represents hydrogen or $(C_1–C_4)$ alkyl, or R and R_1 taken together represent a further bond between the carbon and the oxygen atom, R_2 represents hydrogen, chloro, fluoro, bromo, $(C_1–C_4)$ alkyl or $(C_1–C_4)$ alkoxy, R_3 represents $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, allyloxy, propargyloxy, trifluoromethyl, phenyl, chloro, fluoro, bromo or dimethylamino and R_4 represents hydrogen, chloro, fluoro, bromo, $(C_1–C_4)$ alkyl or $(C_1–C_4)$ alkxoy or R_3 and R_4 taken together represent a methylenedioxy group.

4,370,338
MEDICAMENT BASED ON 2-AMINO-6-TRIFLUOROMETHOXY-BENZOTHIAZOLE

Jacques Mizoule, Villeneuve la Garenne, France, assignor to Pharmindustrie, Gennevilliers, France

Filed Oct. 5, 1981, Ser. No. 308,695

Claims priority, application France, Oct. 17, 1980, 80 22218

Int. Cl.^{3} A61K *31/425*

U.S. Cl. 424—270 **7 Claims**

1. A medicament, particularly useful as an anticonvulsant, anxiolytic and hypnotic, which contains a pharmaceutically acceptable vehicle and, as active substance, 1 to 50 mg per unit dose of 2-amino-6-trifluoromethoxy-benzothiazole or a salt of this compound with a pharmaceutically acceptable acid.

4,370,339
METHOD FOR TREATING INFLAMMATORY CONDITIONS

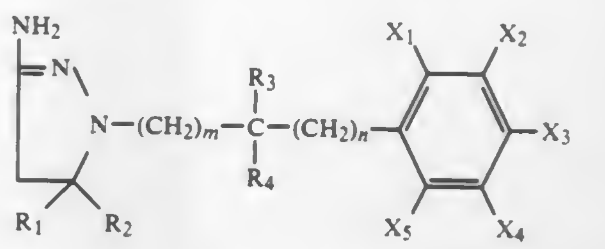
Fortuna Haviv, Deerfield; Robert W. DeNet, Waukegan, and William A. Boulanger, Urbana, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 14, 1981, Ser. No. 301,475

Int. Cl.^{3} A61K *31/415*

U.S. Cl. 424—273 P **6 Claims**

1. A method for treating an inflammatory condition in a mammalian patient which comprises administering to a patient requiring such treatment an effective amount of a compound having the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein:

- m and n are integers ranging from 0 to 6,
- R_1, R_2, R_3, R_4 and R_5, which can be the same or different, are hydrogen or lower alkyl,
- X_1, X_2, X_3, X_4 and X_5, which can be the same or different, are hydrogen, halogen, alkyl, cycloalkyl, alkoxy, alkanoyloxy, haloalkyl, phenyl, phenoxy, benzoyloxy, mercaptoalkyl, amino, alkylamine, hydroxyl, nitro, and nitrile,

each of X_1–X_5, when they contain carbon, having not more than 6 carbon atoms.

4,370,340

BENZOTHIAZOL-2-ONE-3-ALKANOIC ACIDS AND ESTERS AND ALDOSE REDUCTASE INHIBITING COMPOSITIONS THEREOF

Ikuo Ueda; Masaaki Matsuo, both of Toyonaka; Susumu Satoh, Ikeda, and Takao Watanabe, Mukou, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

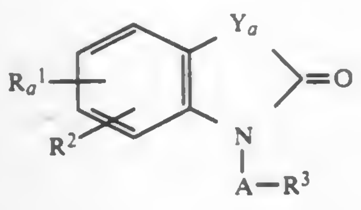
Filed Jun. 2, 1980, Ser. No. 155,185

Claims priority, application Japan, Jun. 12, 1979, 54-74239

Int. Cl.³ C07D *277/68;* **A61K** *31/425*

U.S. Cl. 424—274 **4 Claims**

1. A compound of the formula:



wherein

$R_a{}^1$ is halogen, nitro, amino, (C_3 to C_8)cycloalkyl, phenyl or phenoxy

R^2 is halogen or C_1–C_6 alkyl,

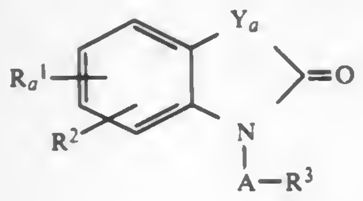
R^3 is carboxy or esterified lower alkoxycarbonyl,

Y_a is sulfur, and

A is C_1–C_6 alkylene,

and pharmaceutically acceptable salts thereof.

4. An aldose reductase inhibiting pharmaceutical composition which comprises, as an effective ingredient, at least one compound of the formula:



wherein

$R_a{}^1$ is halogen, nitro, amino, (C_3 to C_8)cycloalkyl, phenyl or phenoxy

R^2 is halogen or C_1–C_6 alkyl,

R^3 is carboxy or lower alkoxycarbonyl,

Y_a is sulfur, and

A is C_1–C_6 alkylene,

or pharmaceutically acceptable salts thereof with a pharmaceutically acceptable carrier.

4,370,341

6,7,8,9-TETRAHYDRO-3H-BENZ[E]INDOL-8-AMINE DERIVATIVES

Andre A. Asselin, St. Laurent, and Leslie G. Humber, Dollard Des Ormeaux, both of Canada, assignors to Ayerst, McKenna & Harrison, Ltd., Montreal, Canada

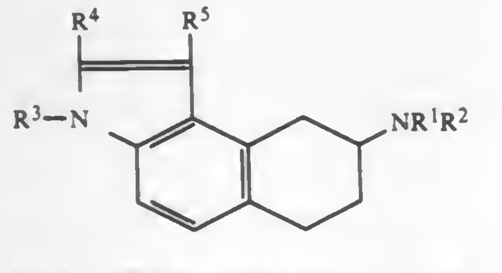
Filed Dec. 11, 1980, Ser. No. 215,482

Int. Cl.³ A61K *31/40;* **C07D** *209/56*

U.S. Cl. 424—274 **13 Claims**

1. A compound of the formula

(I)



in which R^1, R^2, R^3, R^4 and R^5 each is hydrogen or lower alkyl having 1 to 5 carbon atoms, or a therapeutically acceptable acid addition salt thereof.

6. A pharmaceutical composition for stimulating dopamine-receptors, which comprises a therapeutically effective amount of a compound of claim 1, or a therapeutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

4,370,342

S-ALKYL 3-ALKYLTHIOPROPIONOTHIOATE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICINAL USE

Haireddin Jacobi, Leichlingen, and Wolfgang Opitz, Overath, both of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany

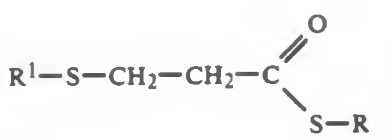
Filed Mar. 6, 1981, Ser. No. 241,147

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012000

Int. Cl.³ A61K *31/38, 31/44;* **C07C** *153/00;* **C07D** *333/24*

U.S. Cl. 424—275 **17 Claims**

1. A compound which is an S-alkyl 3-alkylthiopropionothioates of the formula



$$R^1-S-CH_2-CH_2-C\begin{array}{l}/\!\!/O\\ \diagdown S-R\end{array} \qquad (I)$$

in which

R and R^1 are identical or different and each represents a substituted straight-chain or branched alkyl radical, which is substituted by amino, alkylamino, dialkylamino, aryl, aryloxy, or hetero-aryl, the said aryl and hetero-aryl radicals in turn being optionally substituted by 1, 2 or 3 identical or different substituents selected from halogen, alkyl, alkoxy, trifluoromethyl, nitro, aralkoxy or aryloxy, or represent a cyclic alkyl radical.

4,370,343

METHOD FOR CONTROLLING HYPERTENSION

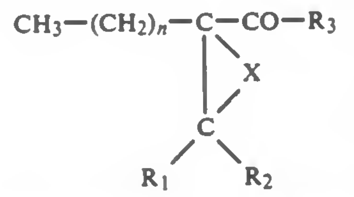
Richard Mohrbacher, Maple Glen; Winston Ho, Hatfield, and Gene Tutwiler, Churchville, all of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Sep. 21, 1981, Ser. No. 303,753

Int. Cl.³ A61K *31/335, 31/38*

U.S. Cl. 424—275 **16 Claims**

1. A method which comprises administering to a hypertensive animal a therapeutically-effective antihypertensive amount of a compound selected from the group consisting of glycidic and thioglycidic acid compounds having the formula:



wherein n is an integer from 7 to 21; R_3 is a member selected from the group consisting of OH, O-loweralkyl, NH_2, NH-loweralkyl, and NH-loweralkyl-OH; X is a member selected from the group consisting of O and S; and each of R_1 and R_2 is a member selected from the group consisting of hydrogen and loweralkyl; or a therapeutically active basic salt of the foregoing acid.

4,370,344

5′-AMINOALKYL-4′-ALKYLPSORALENS

Kurt D. Kaufman, Kalamazoo, Mich. (by Marilee Kaufman, conservator), assignor to Elder Pharmaceuticals, Inc., Hamilton, Ind.

Continuation-in-part of Ser. No. 73,908, Sep. 10, 1979, Pat. No. 4,298,614. This application Feb. 23, 1981, Ser. No. 236,644

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ C07D *493/04;* **A61K** *31/34*

U.S. Cl. 424—279 **6 Claims**

1. 5′-primaryaminoloweralkyl-4′-loweralkylpsoralen.

4,370,345

PHENOXYPHENYLPROPENYLOXYCARBONYL COMPOUNDS AND THEIR USE AS INSECTICIDES AND ACARICIDES

Wolfgang Welter; Hilmar Mildenberger, both of Kelkheim; Werner Knauf; Anna Waltersdorfer, both of Frankfurt am Main, and Werner Bonin, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,150

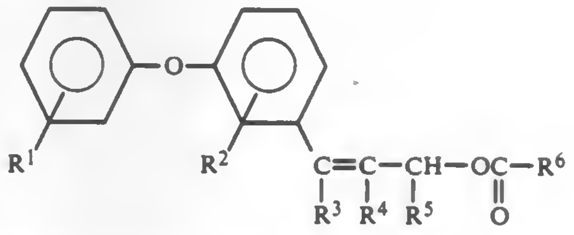
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040488

Int. Cl.³ A01N *43/30, 53/00;* **C07C** *69/743, 121/75*

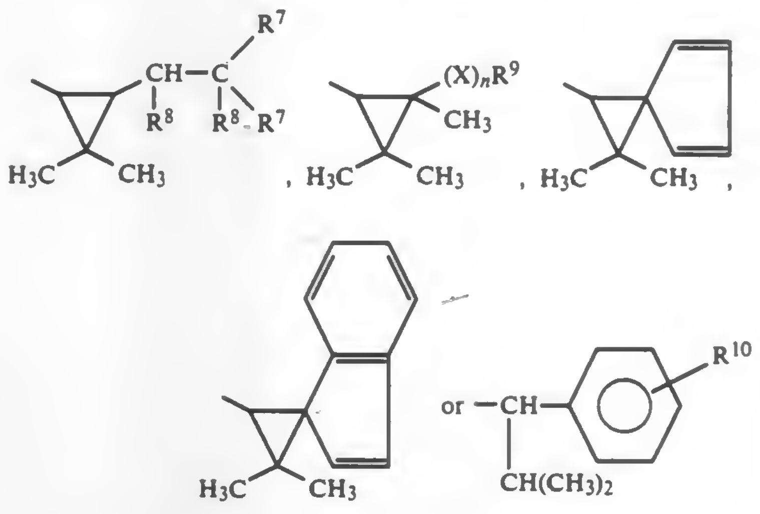
U.S. Cl. 424—282 **14 Claims**

1. A compound of the formula

(I)



in which R^1 denotes hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy, R^2 denotes hydrogen, halogen, C_1–C_4 alkyl or trifluoromethyl, R^3 denotes hydrogen, halogen, cyano or C_1–C_4 alkyl, R^4 denotes hydrogen, halogen, C_1–C_4 alkyl, phenyl or halogenophenyl, R^5 denotes hydrogen, C_1–C_4 alkyl, C_2–C_3 alkynyl or cyano, R^6 denotes a radical of the formula



R^7 denotes halogen, C_1–C_4 alkyl, phenyl or halogenophenyl, R^8 denotes halogen or the two R^8s together denote a further chemical bond, R^9 denotes C_1–C_4 alkyl, phenyl or halogenophenyl, R^{10} denotes hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogeno-(C_1–C_4) alkoxy, halogeno-(C_1–C_4) alkylthio or methylenedioxy, X denotes oxygen or sulfur and n denotes 0 or 1.

2. A compound of the formula I in the form of its optical enantiomers and/or its stereoisomers.

4,370,346

HALOGENATED ESTERS

Nazim Punja, Crowthorne, England, assignor to Imperial Chemical Industries PLC, London, England

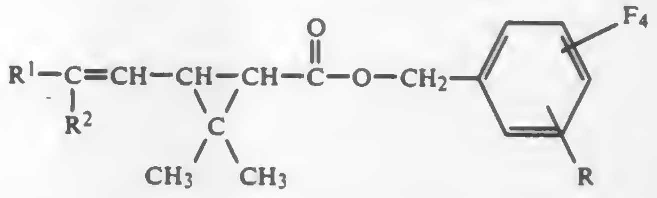
Continuation-in-part of Ser. No. 211,943, Dec. 1, 1980. This application Dec. 9, 1981, Ser. No. 329,135

Claims priority, application United Kingdom, Dec. 21, 1979, 7944151; Nov. 20, 1980, 8037257; Dec. 17, 1980, 8040400

Int. Cl.³ C07C *69/743;* **A01N** *53/00*

U.S. Cl. 424—305 **8 Claims**

1. A compound of formula:



wherein R^1 and R^2 are both chloro or one of R^1 and R^2 is chloro or fluoro and the other is trifluoromethyl and R is in the 4-position with respect to the cyclopropane ester group and is selected from alkoxymethyl, alkylthiomethyl, phenoxymethyl, alkanesulphinylmethyl, alkanesulphonylmethyl, alkylaminomethyl and dialkylaminomethyl groups containing up to four carbon atoms in the alkyl or alkane moiety.

4. An insecticidal composition comprising an insecticidally effective amount of a compound according to claim 1 in association with an agriculturally acceptable diluent or carrier material.

4,370,347

METHOD OF TREATING ANXIETY WITH 2′-(ORTHOCHLOROBENZOYL)-4′-CHLOROGLYCYLANILIDES, AND COMPOSITIONS THEREOF

Gilbert Mouzin; Henri Cousse, and Antoine Stenger, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Division of Ser. No. 76,841, Sep. 19, 1979. This application Oct. 19, 1981, Ser. No. 312,529

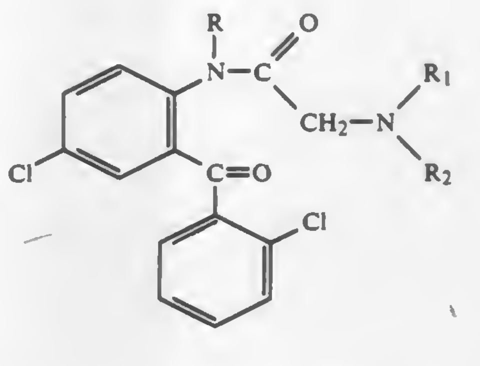
Claims priority, application France, Sep. 25, 1978, 78 27401

Int. Cl.³ A61K *31/16*

U.S. Cl. 424—324 **6 Claims**

1. A pharmaceutical composition, suitable for use in the treatment of anxious states, comprising a 2′-(orthochlorobenzoyl)-4′-chloroglycylanilide selected from compounds having the formula I:

(I)



in which:

R represents hydrogen or lower-alkyl;

R_1 and R_2 are lower-hydroxyalkyl,

and a pharmaceutically acceptable inorganic or organic acid addition salt thereof,

in an amount effective for said purpose, in association with a pharmaceutical carrier.

4,370,348

METHOD OF INDUCING CYTOPROTECTION

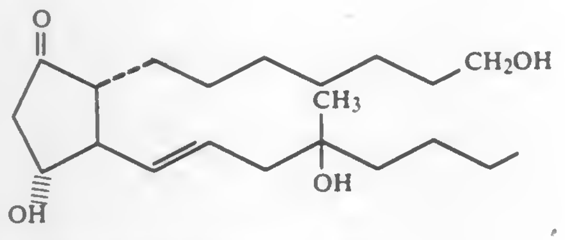
David A. Shriver, Martinsville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 3, 1981, Ser. No. 270,165

Int. Cl.^{3} A61K *31/12*

U.S. Cl. 424—331 **8 Claims**

1. The method of inducing cytoprotection in mammals by increasing the natural integrity of the gastrointestinal mucosa which comprises administering to a mammal in need of such therapy a cytoprotective-effective amount of a prostaglandin derivative of the formula



in a pharmaceutically acceptable carrier.

4,370,349

PROCESS FOR PREPARING FREEZE-DRIED LIPOSOME COMPOSITIONS

John R. Evans; Francis J. T. Fildes, and Jean E. Oliver, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 67,948, Aug. 20, 1979, Pat. No. 4,311,712, which is a continuation of Ser. No. 889,926, Mar. 24, 1978, abandoned. This application Sep. 18, 1981, Ser. No. 303,578

Claims priority, application United Kingdom, May 10, 1977, 19510/77

Int. Cl.^{3} A61K *47/00*

U.S. Cl. 424—365 **9 Claims**

1. A method for the manufacture of a freeze-dried, potential liposome, mixture which comprises preparing an aqueous liposome composition comprising at least one lipid-soluble or lipid-bound biologically active compound, and then freeze-drying the said composition to produce a freeze-dried, potential liposome, mixture.

4,370,350

CHEWING GUM METHOD

E. Eugene Fisher, Chicago; R. Ray Estes, Downers Grove, both of Ill.; Orvin D. Lokken, and Elmer G. Paquette, both of Madision, Wis., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Apr. 28, 1980, Ser. No. 144,685

Int. Cl.^{3} A23G *3/30*

U.S. Cl. 426—5 **10 Claims**

1. A method of making a chewing gum composition comprising the steps of:

reducing the viscosity of a chewing gum base to a value less than approximately 200,000 cps by heating to a temperature in the range of approximately 70° to 90° C.;

rapidly adding to said base a substantial portion of the total amount of an unheated bulking agent;

homogeneously mixing said bulking agent with said base while said bulking agent is added thereto;

cooling the mixture to a temperature in the range of 35° to 70° C. to increase the viscosity of the mixture and to form granules thereof; and

adding to the cooled mixture the balance of said bulking agent in order to form layers thereof around said granules.

4,370,351

PROCESS FOR ENRICHING THE PROTEIN CONTENT OF FOOD AND FEEDSTUFF AND PRODUCTS THEREOF

James L. Harper, Rte. 2, Box 340-A, Ocilla, Ga. 31774

Continuation of Ser. No. 938,045, Aug. 30, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,487

Int. Cl.^{3} A23L *1/00;* **C12N** *1/14;* **A01G** *1/04*

U.S. Cl. 426—7 **2 Claims**

1. A process for increasing the protein content and improving the overall amino acid balance of a cereal grain which contains carbohydrates, without substantially altering the protein present in the cereal grain, by fixing nitrogen from a gaseous mixture containing molecular nitrogen comprising the steps of:

(a) forming a mixture of from about 40% to about 60% by weight cereal grain and from about 40% to about 60% by weight water;

(b) sterilizing said mixture in order to substantially eliminate the growth of substances which might compete with the growth of a spawn culture of the genus Pleurotus;

(c) inoculating said mixture with from about 1% to about 5% by weight of at least one member selected from the group consisting of *Pleurotus ostreatus, Pleurotus ulmarius, Pleurotus sapidus, Pleurotus cornucopiae,* and *Pleurotus florida;*

(d) maintaining the inoculated mixture in the presence of a mixture of a gaseous mixture of molecular nitrogen and oxygen at a temperature of from about 10° C. to about 46° C. for from about 21 to about 35 days so as to enable the mycelium of said spawn culture of the genus Pleurotus to reproduce; and

(e) recovering from the inoculated mixture as a food product the cereal grain with an increased protein content and improved amino acid balance without substantial alteration of the protein initially present.

4,370,352

NON-FRIED INSTANT COOKING DRY NOODLES

Sanpei Murakami, Osaka; Sadao Kokeguchi, Ibaragi; Hiroshi Takahashi, Suita, and Ken Okada, Osaka, all of Japan, assignors to Kanebo Foods, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 197,211, Oct. 15, 1980, abandoned, and Ser. No. 1,352, Jan. 4, 1979, Pat. No. 4,243,680. This application Dec. 30, 1980, Ser. No. 221,514

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.^{3} A23L *1/16*

U.S. Cl. 426—557 **12 Claims**

1. A non-fried, oil-free instant cooking dry noodle product capable of transformation into an edible cooked or boiled state within a short period of time when immersed in hot water and consisting of a starch-containing component comprised mainly of wheat or grain flour, said noodle product characterized by:

an average pore volume in the range of about 0.07 to about 0.40 ml/g;

the starch contained in the starch-containing component having an α-conversion degree of at least 85%, as measured by the diastase enzyme process;

a fine porous texture providing communication between the external surfaces of the noodles product with the internal portions thereof by a network of fine pores;

smooth, non-coated surfaces devoid of bubble-like formations;

devoid of portions of the dry noodle product sticking to adjacent portions;

storage stable for at least one year without substantial change in product quality; said noodle product yielding a non-sticking good sense, feel and taste when transformed into the edible coated state.

4,370,353

ACID-RESISTING WHIPPING CREAM POWDER AND PROCESS FOR PRODUCING THE SAME

Naoki Yagi, Suita; Kwang Y. Kim, Higashi Osaka; Tarushige Nakaji, and Kazuuki Fujisaki, both of Yao, all of Japan, assignors to Minaminihon Rakuno Kyodo Kabushiki Kaisha, Miyazaki, Japan

Filed Oct. 8, 1980, Ser. No. 195,187

Claims priority, application Japan, Apr. 7, 1980, 55-45969

Int. Cl.^{3} A23L *1/19*

U.S. Cl. 426—570 **12 Claims**

1. An acid-resisting whipping cream powder which comprises a caseinate selected from the group consisting of sodium caseinate and calcium caseinate; 10 to 70% by weight of a vehicle selected from the group consisting of lactose and dextrin, based on the total weight of the powder; 30 to 80% by weight of a member selected from the group consisting of milk fat, palm oil, coconut oil, soybean oil, cottonseed oil and a hardened oil thereof, based on the total weight of the powder; 5 to 20% by weight of an acetylated monoglyceride, based on the content of the said group member; and 0.5 to 10% by weight of a cyclic phosphate selected from the group consisting of sodium hexametaphosphate, sodium ultraphosphate and phytic acid based on the caseinate.

4,370,354

STABILIZED FRUIT SUSPENSIONS AND METHOD FOR PREPARING THE SAME

Dianne P. Leipold, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 3, 1981, Ser. No. 327,150

Int. Cl.^{3} A23L *1/06;* **A23C** *9/123, 9/13*

U.S. Cl. 426—573 **8 Claims**

1. In a fruit suspension containing fruit, sugar, low methoxyl pectin and water, the improvement which comprises incorporating xanthan in an amount such that the xanthan to pectin ratio is from about 30:70 to about 70:30 based on the total weight of the xanthan and pectin added.

4,370,355

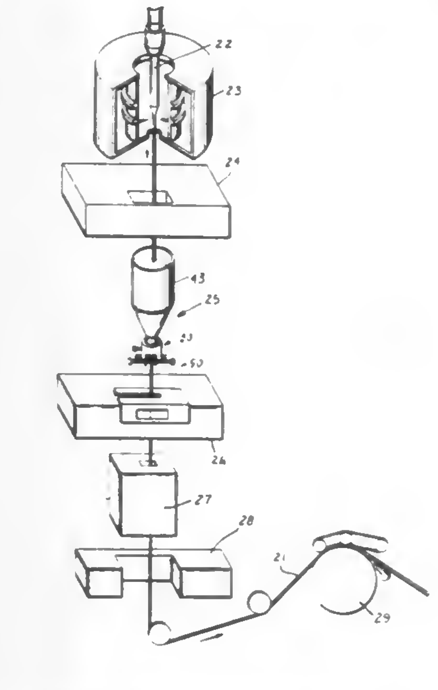
METHODS OF AND APPARATUS FOR COATING LIGHTGUIDE FIBER

Paul J. Niesse, Atlanta, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,866

Int. Cl.^{3} B05D *1/26;* **G02B** *5/14*

U.S. Cl. 427—9 **9 Claims**



1. A method of coating lightguide fiber to provide a coated fiber having a predetermined diameter, said method including the steps of:

providing a supply of coating material;

providing a die having a passageway which communicates with the supply of the coating material, the die having an orifice which is disposed in a plane normal to the fiber and which is capable of being changed in cross-sectional size and configuration by the controlled application of forces about the periphery of the die;

moving a lightguide fiber along a path which extends through the passageway of the die to cause the fiber to be coated with a layer of the coating material;

measuring the diameter of the coated fiber; and

in response to the step of measuring the diameter of the coated fiber, regulating the orifice by applying substantially coplanar forces in a controlled manner about the periphery of the die to cause the coated fiber to have the predetermined diameter.

4,370,356

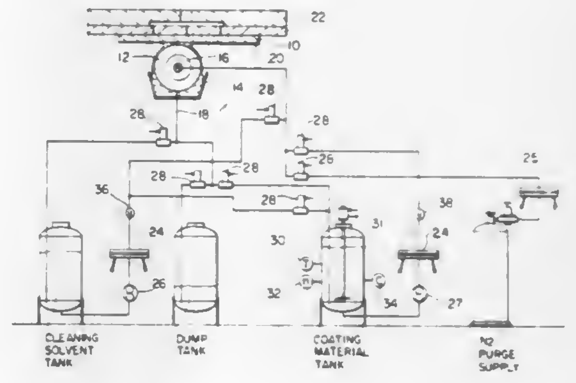
METHOD OF MENISCUS COATING

Hendrik F. Bok, Fairhaven, Mass., and Philip J. Birbara, Windsor Locks, Conn., assignors to Integrated Technologies, Inc., Acushnet, Mass.

Filed May 20, 1981, Ser. No. 265,724

Int. Cl.^{3} B05D *3/06, 1/28*

U.S. Cl. 427—38 **15 Claims**



1. Method of meniscus coating of an object comprising:

A. Flowing a coating material from the interior and through the wall of a stationary, permeable cylindrical surface, so as to develop downward laminar flow of coating material on the outside of the cylindrical surface;

B. Advancing an object to be coated in a plane tangentially to said laminar flow of coating material, such that a leading surface portion of the object intersects laminar flow of coating material at the apex of the cylindrical surface;

C. Supporting uniform meniscii of flowing coating material both at the leading edge and the trailing edge of coating material contacting said object; and

D. Uniformly disengaging the coated surface of the object from said lamainar flow of coating material.

9. Method of meniscus coating of an object as in claim 1, further including initially scrubbing and rinsing said object prior to said flowing of coating material.

10. Method of meniscus coating of an object as in claim 9, further including plasma cleaning of the object surface prior to said flowing of coating material.

4,370,357

PROCESS OF CONTINUOUS METAL COATING

LeRoy O. Swartz, Bensalem, Pa., assignor to Cleveland Gear Company, Bensalem, Pa.

Filed Mar. 11, 1981, Ser. No. 242,621

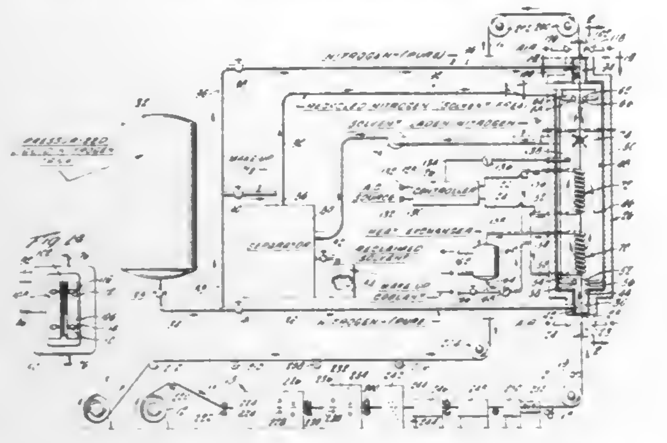
Int. Cl.^{3} B05D *3/02*

U.S. Cl. 427—46 **3 Claims**

1. A method of recovering solvents evaporated during dry-

ing of solvent-borne coatings on continuously coated metal strip comprising:

(1) coating the strip;
(2) passing the strip continuously through a chamber having a nitrogen atmosphere;
(3) heating the strip above 450° Fahrenheit by electromagnetic induction means to drive off the solvent from the coating to create a solvent-laden nitrogen atmosphere;



(4) keeping the solvent-laden nitrogen atmosphere above 300° Fahrneheit by controlling the temperature of the strip;
(5) removing the solvent-laden nitrogen atmosphere from the chamber; and
(6) separating the solvent from the nitrogen.

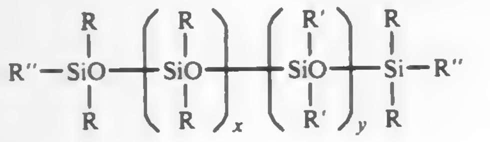
4,370,358
ULTRAVIOLET CURABLE SILICONE ADHESIVES

Susan E. Hayes, Schenectady, and Richard P. Eckberg, Round Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,258
Int. Cl.³ C08F *2/50;* C08G *77/40*
U.S. Cl. 427—54.1 **14 Claims**

1. A solventless ultraviolet radiation curable composition for forming a pressure sensitive silicone adhesive comprised of:

(a) 100 parts by weight of an epoxy functional silicone polymer having the general formula:



$$R''-\overset{R}{\underset{R}{SiO}}-\left(\overset{R}{\underset{R}{SiO}}\right)_x-\left(\overset{R'}{\underset{R'}{SiO}}\right)_y-\overset{R}{\underset{R}{Si}}-R''$$

wherein R is a monovalent hydrocarbon radical, and R′ is the same as R or a phenyl radical and R″ is an epoxy-containing aliphatic or cycloaliphatic radical; having, approximately, 0.01 to 0.05 mole % epoxy content and a viscosity of, approximately, 100 to 5000 centipoise at 25° C., χ is an integer representing 85 to 100 mole percent of the polymer units and y represents 0 to 15 mole percent diphenyl siloxy units;

(b) 90 to 280 parts by weight of a silicone MQ resin or mixture of such resins selected from:

(i) a first silicone resin comprised of mono-functional $R_3SiO_{0.5}$ units and tetra-functional SiO_2 units where R is as described above and the ratio of mono-functional units to tetra-functional units is, approximately, 0.5 to 2.0:1; or

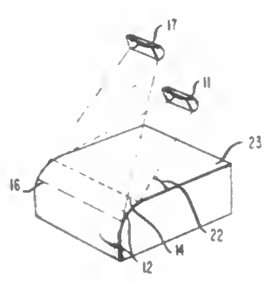
(ii) a second silicone resin comprised of $R_aR_b''SiO_{0.5}$ units and SiO_2 units wherein R is as described above and R″ represents aliphatic or cycloaliphatic epoxide radicals; having, approximately, 0 to 0.005 mole % epoxy content, the sum of a band b is 3, and wherein the ratio of mono-functional to tetra-functional units is approximately 0.5 to 2.0:1, and

(c) an amount of ultraviolet light sensitive catalyst effective for initiating the cure of said silicone adhesive composition.

4,370,359
FABRICATION TECHNIQUE FOR JUNCTION DEVICES

Linus A. Fetter, Jackson; Richard E. Howard, Holmdel; Evelyn L. Hu, Somerset, and Lawrence D. Jackel, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 18, 1980, Ser. No. 178,900
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—63 **11 Claims**

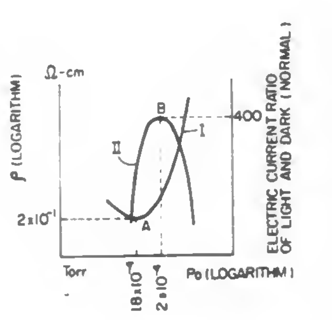


1. A process for forming a junction device comprising the steps of depositing a first material layer, depositing an insulating material on a portion of said first material layer by impingement of a flux on said first material layer, and forming said junction device on an exposed portion of said first material layer characterized in that said junction device is formed on an edge of said first material layer by an edge aligning technique comprising the steps of positioning said first material layer relative to said flux such that the angle between said flux and said first material layer is smaller than the angle from the major surface of said first material layer to a line tangent to this layer at a point on the boundary line defining the extremity of the area where said insulating material is to be formed.

4,370,360
FILM TYPE LIGHT RECEIVING ELEMENT AND SPUTTER METHOD OF MANUFACTURING THE SAME

Mario Fuse, and Mutsuo Takenouchi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,735
Claims priority, application Japan, Mar. 14, 1980, 55-31517
Int. Cl.³ H01L *27/14*
U.S. Cl. 427—76 **7 Claims**

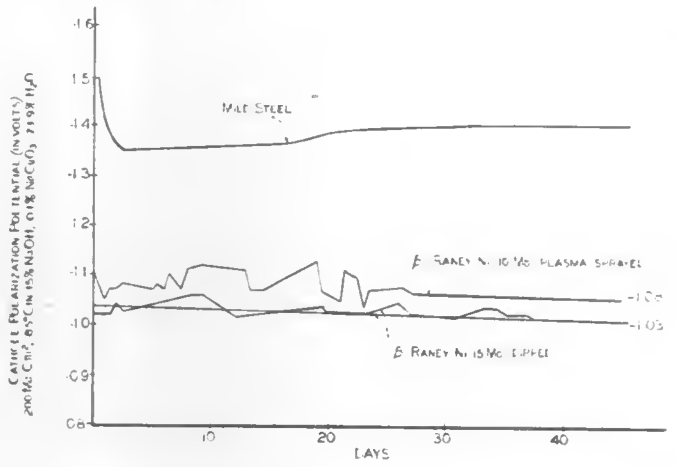


1. A film type light receiving element comprising: an insulating substrate having a flat and smooth surface; metal electrodes and a photoconductive film provided in the form of layers on said flat and smooth surface; and an optically transmissive electrode film formed on said photoconductive film, a portion of said optically transmissive electrode film adjacent said photoconductive film having a high specific resistance and the remaining portion having a low specific resistance layer.

4,370,361
PROCESS OF FORMING RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application Aug. 18, 1980, Ser. No. 179,150
Int. Cl.³ B05D *5/12;* B01J *35/00*
U.S. Cl. 427—123 **7 Claims**



1. A method of producing a low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell which comprises the steps of:

(a) coating with aluminum the surface of a clean non-porous conductive base metal substrate of a nickel-molybdenum alloy of a weight percent molybdenum within the range of from about 5 to about 20 and a weight percent nickel within the range of from about 95 to about 80;

(b) heat treating said coated surface by maintaining said surface at a temperature within the range of from about 700° to about 750° C. for a time from about 5 to about 15 minutes to diffuse a portion of said aluminum into outer portions of said structure to produce an integral nickel-molybdenum-aluminum alloy layer in said outer portions predominantly of Beta phase grains but insufficient to create a predominance of Gamma phase grains in said outer portions; and

(c) leaching out residual aluminum and intermetallics from the alloy layer until a porous Raney nickel-molybdenum layer is formed integral with said structure.

4,370,362
METHOD OF MANUFACTURING TRANSFER PAPERS

Yoshi Matsui, 28-15 2-chome, Asakusabashi, Taito-ku Tokyo, Japan

Filed May 26, 1981, Ser. No. 267,332
Claims priority, application Japan, May 27, 1980, 55-70357
Int. Cl.³ B41M *5/00*
U.S. Cl. 427—153 **2 Claims**

1. A method of making a transfer paper, which comprises forming a homogeneous mixture of cobalt thiocyanate, wax, a non-ionic surfactant, and another surfactant to form a wax ink, and melt coating the wax ink on to at least one surface of a base material.

4,370,363
COATING COMPOUND FOR SILICA BRICKS

Peter Schulz, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H, Bochum, Fed. Rep. of Germany

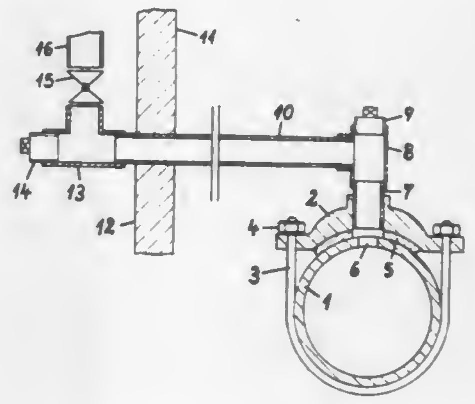
Filed Aug. 14, 1981, Ser. No. 292,890
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032920
Int. Cl.³ B05D *3/02, 1/02, 7/22, 1/28*
U.S. Cl. 427—230 **8 Claims**

1. A method for glazing the surfaces of silica bricks used in coke ovens, which comprises forming a suspension of water-glass powder and glass powder in a concentrated water-glass solution, applying the suspension in solution to the surfaces of silica bricks, drying said bricks, and then baking said bricks to form a protective layer which will prevent the penetration of liquid and gaseous substances into the brick.

4,370,364
METHOD FOR LINING PIPE MAINS HAVING BRANCHING DOMESTIC CONNECTION PIPES

Hübert Boer, Reken, Fed. Rep. of Germany, assignor to diga - die gasheizung GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 333,222
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101409
Int. Cl.³ B05D *7/22, 3/12*
U.S. Cl. 427—238 **3 Claims**



1. A method for lining main pipes, to which branching domestic connection pipes are connected, with an internal coating of a hardening plastic composition with which the main pipe is spread, comprising the steps of

introducing from a house interior an inflatable bladder with a connected pressure line into an opened domestic connection pipe into a region of its junction with the main pipe,

inflating the bladder through the connected pressure line and closing the domestic connection pipe tightly and in pressure-tight manner by means of the bladder in the region of said junction with the main pipe,

spreading the main pipe with plastic composition to form an internal coating therein, a composition plug, being determined in size by the position of the bladder, being forced into the junction of the domestic connection pipe,

then removing the pressure from the bladder and withdrawing the bladder with the pressure line again from the domestic connection pipe, and

before hardening of the plastic composition generating in the domestic connection pipe a sudden negative pressure from the house interior of such magnitude that the composition plug located in the junction is sucked into the domestic connection pipe and deformed into a lining in the domestic connection pipe in the region of said junction which lining uninterruptedly continues the internal coating of the main pipe.

4,370,365
METHOD FOR IMPARTING WATER-REPELLENCY TO WOVEN FABRICS

Minoru Takamizawa; Akira Abe; Katsusuke Kasahara, all of Annaka; Yukito Komeno, Fukui, and Akira Aoyama, Takefu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo and Agehara Orimono Kogyo K.K., Fukui, both of, Japan

Filed Oct. 19, 1981, Ser. No. 312,828
Claims priority, application Japan, Oct. 21, 1980, 55-147334
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—387 **15 Claims**

1. A silicone-based water-repellent agent for imparting water-repellency to a woven fabric which comprises, as the silicone ingredient thereof:

from 10 to 90% by weight of a component (a) which is an organohydrogenpolysiloxane containing, in a molecule, at least one organohydrogensiloxane unit represented by the general formula

$$R^1{}_aH_bSiO_{(4-a-b)/2},$$

in which
- R^1 denotes a monovalent hydrocarbon group having from 1 to 30 carbon atoms,
- a is a number of 0, 1, or 2 and
- b is a number of 1 or 2 with the proviso that a+b is equal to 1, 2 or 3;

and

from 90 to 10% by weight of a component (b) which is selected from the group consisting of component (b-1), component (b-2) and combinations thereof, wherein component (b-1) is an alkenyl group-containing diorganopolysiloxane expressed by the average unit formula

$$R^2{}_cSiO_{(4-c)/2},$$

in which
- R^2 denotes a monovalent hydrocarbon group, at least 5% by moles of the monovalent hydrogen groups denoted by R^2 being alkenyl groups, and
- c is a positive number from 1.95 to 2.02 inclusive, and component (b-2) is a resinous organopolysiloxane composed of the monofunctional organosiloxane units represented by the general formula

$$R^3{}_3SiO_{0.5},$$

in which
- R^3 denotes a monovalent hydrocarbon group having from 1 to 6 carbon atoms,
- and the tetrafunctional siloxane units expressed by the formula SiO_2, the molar ratio of the monovalent organosiloxane units to the tetrafunctional siloxane units being in the range from 0.4:1 to 1.2:1.

4,370,366

PROCESS FOR THE PRODUCTION OF AN ESTER MIXTURE, EMULSIONS CONTAINING THIS MIXTURE, AND THE APPLICATION THEREOF

Hans Deiner, Neusäss, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,078

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031933

Int. Cl.^{3} B05D *3/02;* **C07C** *67/02;* **C09F** *5/08*

U.S. Cl. 427—389.9 **6 Claims**

1. Process for the production of a mixture of esters of chlorine substituted phenols, characterised in that
- (a) 1 mol of 2.2'-dihydroxy-5.5'-dichloro-diphenyl methane with
- (b) 1 to 2.5 mols of acetic anhydride and
- (c) 0.8 to 2.2 mols of fatty acids with 6 to 20 C atoms are reacted together, with reflux, and the acetic acid formed and also any excess acetic anhydride are largely removed by distillation at elevated temperature.

4,370,367

SELF-BONDING FLAME SPRAY WIRE FOR PRODUCING A READILY GRINDABLE COATING

Edward R. Novinski, Mineola, and John H. Harrington, Warick, both of N.Y., assignors to Metco Inc., Westbury, N.Y.

Division of Ser. No. 936,169, Aug. 23, 1979, Pat. No. 4,276,353. This application Feb. 12, 1981, Ser. No. 233,804

Int. Cl.^{3} B32B *15/16*

U.S. Cl. 427—423 **9 Claims**

1. In the flame spray process, the improvement which comprises flame spraying a flame spray wire comprising a sheath of aluminum and a compacted powder core containing about 10 to 90% by weight of nickel, about 10 to 90% by weight of stainless steel, about 1 to 10% aluminum, and about 1/4 to 10% metal oxide, based on the total powder compacted core, said stainless steel and metal oxide content being in sufficient quantity and proportions that when sprayed will produce a readily grindable coating.

4,370,368

PLASTIC BOTTLES AND PROCESS FOR PREPARATION THEREOF

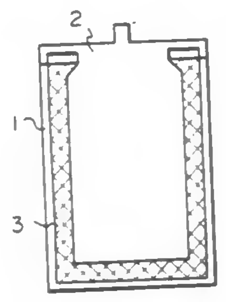
Sadao Hirata, Yokohama; Isao Tanikawa, Ayase, and Yoshitsugu Maruhashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,772

Claims priority, application Japan, May 7, 1980, 55-59505; May 7, 1980, 55-59506

Int. Cl.^{3} B65D *23/00*

U.S. Cl. 428—35 **26 Claims**



1. A molded plastic bottle the walls of which are molded from a wall-forming component consisting essentially of a copolymer consisting essentially of 99 to 70% by weight of vinylidene chloride and 1 to 30% by weight of at least one acrylic or methacrylic monomer and further including up to 100 parts by weight of at least one member selected from other ethylenically unsaturated monomers per 100 parts by weight of the total amount of said two monomers, said copolymer having an oxygen permeability constant of less than 9×10^{-14} cc·cm/cm^2·sec·cmHg as measured at a temperature of 20° C. and a relative humidity of 100% and a water vapor permeability constant of less than 3×10^{-3} g·cm/m^2·day as determined according to the method of JIS Z-0208.

4,370,369

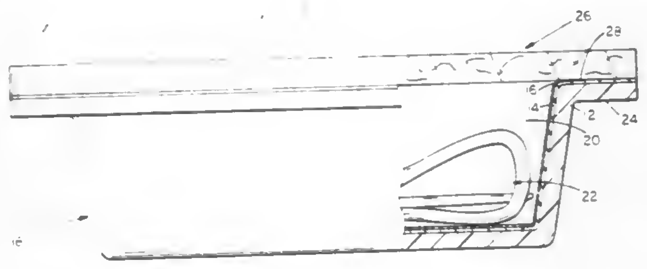
HEAT-SEALABLE SHEET AND CONTAINER

Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Jul. 2, 1981, Ser. No. 279,855

Int. Cl.^{3} B65D *85/00;* **B32B** *1/02, 1/04, 27/08*

U.S. Cl. 428—35 **20 Claims**



6. A thermoformed heat-sealable object for heat-sealable bonding at a bond region to a second object, said heat-sealable object comprising
- a rigid structural layer of sufficient thickness and strength to provide bulk and rigidity to said first object,
- a sticky heat-sealing layer on top of said structural layer, and
- a nonsticky cover layer on top of said heat-sealing layer, said cover layer being sufficiently thin and being made of material with strength and melt characteristics appropriate to cause exposure and bonding of said heat-sealing layer when heat-sealing temperature and pressure are applied to said bond region, and to cause the first object to have nonsticky surfaces before heat-sealing and after heat-sealing at regions other than said bond region.

7. The object of claim 6 in which said heat-sealable object is a container and said bond region is an annular flange surrounding a depressed portion, and said second object is a cover for sealing to said flange.

4,370,370

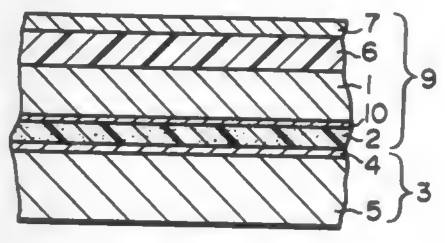
THERMOSENSITIVE RECORDING ADHESIVE LABEL

Susumu Iwata, Shizuoka, and Keiichi Maruta, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,694

Int. Cl.^{3} B41M *5/18*

U.S. Cl. 428—40 **16 Claims**



1. A thermosensitive recording adhesive label comprising:
- a support sheet;
- a thermosensitive coloring layer formed on the front side of said support sheet, said thermosensitive coloring layer comprising a colorless or light-colored leuco dye and an acidic material capable of coloring said leuco dye when heat is applied thereto;
- a front barrier layer formed on said thermosensitive coloring layer, said front barrier layer comprising a water-soluble polymeric material capable of preventing intrusion of materials which may discolor said thermosensitive coloring layer;
- a back barrier layer formed on the back side of said support sheet, said back barrier layer comprising a water-soluble polymeric material capable of preventing intrusion of materials which may discolor said thermosensitive coloring layer;
- an adhesive layer formed on said back barrier layer; and
- a disposable backing sheet which is attached to said adhesive layer and can be peeled off said adhesive layer when said thermosensitive recording adhesive label is used.

4,370,371

RUBBER DISC FOR A RECORD PLAYER TURNTABLE

Akitaro Nakahira, Takarazuka, Japan, assignor to Hohyu Rubber Co., Ltd., Osaka, Japan

PCT No. PCT/JP80/00282, § 371 Date Jul. 16, 1981, § 102(e) Date Jul. 16, 1981, PCT Pub. No. WO81/01481, PCT Pub. Date May 28, 1981

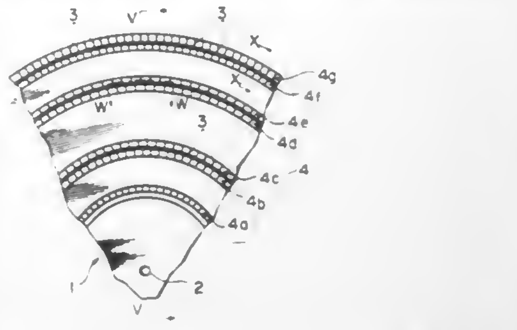
PCT Filed Nov. 18, 1980, Ser. No. 285,102

Claims priority, application Japan, Nov. 20, 1979, 54-151123; Feb. 1, 1980, 55-11619; Oct. 13, 1980, 55-143417; Oct. 13, 1980, 55-143418; Oct. 15, 1980, 55-144998

Int. Cl.^{3} B32B *3/02;* **G11B** *3/62*

U.S. Cl. 428—65 **25 Claims**

1. A rubber disc for a record player turntable which is a sheet-like cured molding of a rubber composition, said cured molding having a hardness within the range from 30° as measured with an A-type rubber hardness tester to 15° as measured with an F-type rubber hardness tester and an impact resilience of not less than 40%.



4,370,372

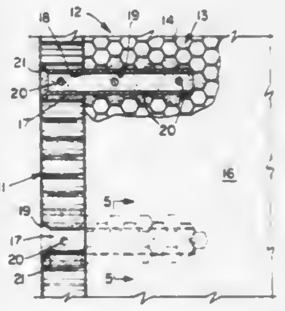
METHOD OF JOINING HONEYCOMB PANELS USING A FASTENER ELEMENT

William E. Higgins, Largo, and Richard C. Lazzara, St. Petersburg, both of Fla., assignors to Advanced Technology & Research, Inc., Largo, Fla.

Filed Mar. 30, 1981, Ser. No. 248,894

Int. Cl.^{3} B32B *3/12, 7/08*

U.S. Cl. 428—116 **9 Claims**



4. Coupling means for securing together two abutting honeycomb panels each having internal cellular structure positioned between cover sheet members, comprising means providing aligned bores in the respective panels, at least one of said bores being a through bore extending entirely through its panel, including the respective cover sheet members, each bore being surrounded by regions where cell walls are ruptured to provide spaces of irregular size and location during formation of said bores, an open-ended hollow tubular fastener inserted through said bores to bridge said aligned bores, said fastener having side wall apertures that communicate with said regions in both panels and a solid column of anchoring material located within the hollow portion of said fastener, said column having branches extending through said apertures to occupy said regions.

4,370,373

FLEXIBLE EDGING OF DESKS

Thomas H. Janicz, Haverford, Pa., assignor to Burlington Industries, Inc., Greensboro, N.C.

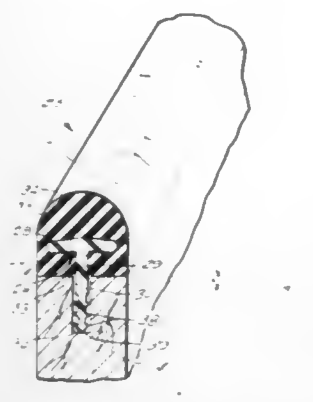
Filed Jul. 17, 1980, Ser. No. 169,742

Int. Cl.^{3} B32B *3/02, 5/18*

U.S. Cl. 428—151 **13 Claims**

1. A structure providing a protective edge of a piece of furniture and distinct from structural components of the piece of furniture, said structure consisting essentially of:
- a core consisting essentially of an elongated member of relatively hard, rigid material having an elongated cross-member disposed in a plane, and an elongated leg disposed in a plane substantially perpendicular to the plane of said cross-member and integral therewith along substantially the entire length thereof; and
- an elongated body of relatively soft, flexible material, formed around the core cross-member so that the cross-

member is substantially completely encompassed by the flexible, relatively soft material, with at least a portion of the leg extending outwardly from the body and attached to structural components of the piece of furniture;



said elongated core and body being substantially coextensive along their entire length.

4,370,374

MULTILAYER PLASTIC FILM, PROCESS FOR ITS PRODUCTION AND ITS USE

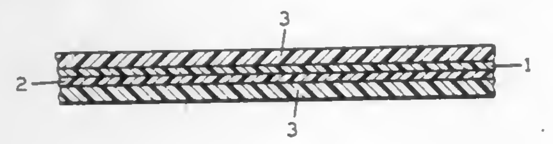
Fritz Raabe, and Robert Schruhl, both of Bonn, Fed. Rep. of Germany, assignors to Plate Bonn Gesellschaft mit beschrankter Haftung, Bonn, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,042

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935631

Int. Cl.^{3} B32B *27/08, 27/40, 31/00*

U.S. Cl. 428—216 **17 Claims**



1. Multilayer plastic film useful for encapsulating objects, which comprises
   (a) a first individual film having a thickness of from 10 to 50 microns and a softening point of from 140° to 250° C., and
   (b) a second film having a thickness of from 10 to 50 microns, a softening point of from 70° to 130° C. and an initial melting point of from 100° to 190° C., there being a temperature difference of from 10° to 60° C. between the softening point and the initial melting point of the second film.

4,370,375

ABRASION-RESISTANT MONOFILAMENT WITH MOLYBDENUM DISULFIDE USEFUL IN THE FORMATION OF PAPERMAKING BELTS

William B. Bond, Marietta, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1981, Ser. No. 255,743

Int. Cl.^{3} D03D *15/10;* **D21F** *7/08*

U.S. Cl. 428—229 **8 Claims**

1. A polyamide monofilament characterized by improved transverse abrasion resistance, oriented about from 3.4 to 6.0 times the original length, having a diameter of about from 5 to 30 mils and comprising filament-forming polyamide and about from 3 to 10 weight percent, based on the total weight of the monofilament, of molybdenum disulfide.

7. In a woven, heat set, papermaking belt of machine and transverse direction thermoplastic filaments, the improvement wherein at least about 25% of the filaments in the transverse direction are monofilaments having a diameter of about from 5 to 30 and comprising filament forming polyamide and about from 3 to 10 weight percent, based on the total weight of the filament, of molybdenum disulfide.

4,370,376

TETRAFLUOROETHYLENE POLYMER DISPERSIONS

Subhash V. Gangal, and Allan H. Olson, both of Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 141,688, Apr. 18, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,825

Claims priority, application United Kingdom, Apr. 10, 1981, 8111396

Int. Cl.^{3} B32B *5/16*

U.S. Cl. 428—241 **7 Claims**

1. A coating dispersion which imparts resistance to attack by acidic flue gas to glass fabric coated with said dispersion, consisting essentially of
   (a) water,
   (b) 5-65% by weight tetrafluoroethylene polymer, said weight based on weight of water and polymer, said polymer being of film-forming molecular weight,
   (c) 2-60% by weight of a polyhydrolyzable silane of the formula

$$R_1Si{-}(OR)_3$$

   wherein R is lower alkyl, preferably alkyl of 1-3 carbon atoms, and R_1 is phenyl or substituted lower alkyl, preferably of 1-3 carbon atoms, in which the substituents are selected from halogen, quaternary ammonium, or —NR′R″ in which R′ and R″ are each H, lower alkyl, lower alkoxyalkyl, amino lower alkyl, hydroxyl lower alkyl, or substituted amino lower alkyl, said weight based on weight of tetrafluoroethylene polymer,
   (d) 1-20% by weight of a hydrocarbyl siloxane, said weight based on weight of tetrafluoroethylene polymer,
   (e) 1-20% by weight of a polymer of a fluorinated ester of an acrylic acid, said weight based on weight of tetrafluoroethylene polymer.

2. The coating dispersion of claim 1 wherein the tetrafluoroethylene polymer is polytetrafluoroethylene.

3. The coating dispersion of claim 2 wherein the silane has the formula $R_1Si(OR)_3$ wherein R is $—CH_3$ or $—C_2H_5$ and R_1 is substituted lower alkyl in which the substituent is in the γ position and is an amino- or amino-substituted group.

4. The coating dispersion of claim 3 wherein the silane is γ-aminopropyl triethoxy silane.

5. The coating dispersion of claim 3 wherein the silane is γ-aminopropyl trimethoxy silane.

4,370,377

METALLIZED LABELS FOR CONTAINERS

Johannes T. Brugmans, Enkhuizen, Netherlands, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Dec. 5, 1980, Ser. No. 213,682

Claims priority, application Netherlands, Jul. 1, 1980, 8003810

Int. Cl.^{3} B32B *5/16, 27/00;* **C09J** *7/02*

U.S. Cl. 428—327 **4 Claims**

1. A metallized label for containers including bottles which comprises a coating of lacquer, containing 2 to 10% by weight of an additive, wherein said percentage is calculated on the amount of resin in the lacquer and wherein said additive is soluble in an aqueous caustic soda solution containing 1.5% by weight of caustic soda, heated at 80° C.; a stratum of metal deposited upon the lacquer coating, wherein said lacquer does not attack the metal stratum of said label; a laminating adhesive; a stratum of paper and an adhesive.

4,370,378

LOW DENSITY, EXTRUDED ETHYLENIC POLYMER FOAMS

Vincent S. Zabrocki, Newark, and Marlin G. Bussey, Thornville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 158,856, Jun. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 20,681, Mar. 15, 1979, abandoned. This application Oct. 1, 1981, Ser. No. 307,567

Int. Cl.^{3} B32B *7/00;* **C08F** *110/02*

U.S. Cl. 428—339 **5 Claims**

1. As an article of manufacture, an ethylenic polymer resin extruded foam plank having a density of from about 0.8 to 1.6 pounds per cubic foot, dimensional stability, substantially closed-cell structure, a cross-sectional area of at least 6 square inches, and a minimal cross-sectional dimension of at least 0.5 inch, wherein said ethylenic polymer resin consists essentially of non-crosslinked low density polyethylene and wherein said foam plank contains less than about 20 percent of open cells therein.

4,370,379

METHOD FOR PREPARING ORIGINAL FOR PROJECTION AND TRANSFER FILM FOR ELECTROSTATIC PHOTOGRAPHY FOR USE IN CARRYING OUT SAID METHOD

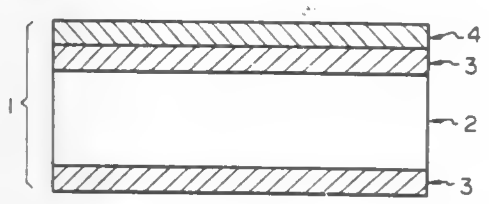
Mamoru Kato, Hirakata; Shoji Matsumoto, Neyagawa, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 139,480, Apr. 11, 1980, Pat. No. 4,320,186. This application Jul. 16, 1981, Ser. No. 284,069

Claims priority, application Japan, Apr. 13, 1979, 54/44263

Int. Cl.^{3} B32B *27/06, 27/36;* **G03G** *13/16*

U.S. Cl. 428—341 **7 Claims**



1. A transfer film capable of production of a transparent original for projection of images, said transfer film comprising a heat-resistant transparent plastic film substrate, a toner receiving layer constituting a binder resin in an amount of at least 1.0×10^{10} to 1.0×10^{13} Ω, and an undercoating layer interposed between said substrate and said toner receiving layer, said undercoating layer comprising an electrically conductive resin in an amount of at least 25% by weight of the undercoat, said undercoating layer being applied in an amount of at least 1.0 g/m^2 and having a surface resistance of 1.0×10^6 to 9.0×10^9 Ω.

4,370,380

PRESSURE-SENSITIVE ADHESIVE

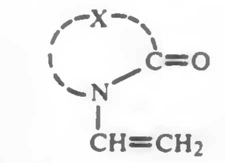
Kishore R. Shah, Chelmsford, Mass., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 137,297, Apr. 4, 1980, Pat. No. 4,337,325, which is a continuation-in-part of Ser. No. 201,349, Oct. 27, 1980, Pat. No. 4,300,820. This application Apr. 12, 1982, Ser. No. 367,256

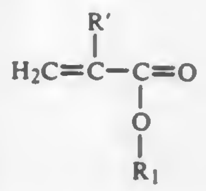
Int. Cl.^{3} C09J *7/02;* **C08L** *35/00, 39/06*

U.S. Cl. 428—355 **8 Claims**

1. An adhesive sheet material comprising a flexible backing and supported thereon a pressure-sensitive adhesive layer comprising a composition consisting essentially of an optically clear blend of (1) a water-soluble polymer of a vinyl lactam having the structure



in which X represents an alkylene bridge having three to five carbon atoms, or a copolymer thereof with 1 to 80 mole percent of copolymerizable monomer containing a polymerizable ethylenic unsaturation, and (2) a tacky water-insoluble copolymer comprising (A) an ester or a mixture of esters having the structure



$$H_2C{=}\overset{\overset{\displaystyle R'}{|}}{C}{-}\underset{\underset{\underset{\displaystyle R_1}{|}}{\underset{\displaystyle O}{|}}}{C}{=}O$$

in which R′ represents hydrogen or methyl and R_1 represents alkyl having from 1 to 14 carbon atoms and (B) from 1 to 12% by weight, based on the tacky copolymer of an ethylenic monomer containing an acid group, said vinyl lactam polymer or copolymer being present in an amount from 1 to 30% by weight of the blend and having a glass transition temperature from 20° to 150° C., and the tacky copolymer having a glass transition temperature below 0° C. and being present in an amount from 70 to 99% by weight of the blend and being substantially free from cross-linking and having a viscosity less than 50,000 cp at 350° F. so that it possesses by itself insufficient cohesive strength to be useful as a pressure-sensitive adhesive, said blend having a viscosity less than 100,000 cps at 350° F.

4,370,381

GRANULOCYTE-SEPARATING MATERIAL AND GRANULOCYTE SEPARATOR

Katsunori Horikoshi, and Tsutomu Abe, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 1981, Ser. No. 239,259

Claims priority, application Japan, Mar. 12, 1980, 55-30247; Mar. 12, 1980, 55-30248

Int. Cl.^{3} B32B *9/00;* **B01D** *15/00, 39/08;* **D02G** *3/00*

U.S. Cl. 428—392 **9 Claims**

1. A granulocyte-separating material comprising a carrier in the form of a film, granule, powder or fiber having coated thereon a fatty acid derivative containing a fatty acid moiety having 10 to 22 carbon atoms.

4,370,382

MODIFIED ZINC-RICH COATINGS

George A. Salensky, Whitehouse Station, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 19, 1980, Ser. No. 160,940

Int. Cl.^{3} B32B *15/08*

U.S. Cl. 428—418 **10 Claims**

1. Corrosion resistant article comprising a metallic substrate and adhering thereto as a coating a composition comprising:
   (A) a thermoplastic polyhydroxyether reaction product of substantially equimolar amounts of a polynuclear dihydric phenol and epichlorohydrin, said thermoplastic polyhydroxyether having a degree of polymerization of at least about 80;
   (B) about 300 to about 1100 parts by weight, per 100 parts of polyhydroxyether, of zinc pigment;
   (C) about 80 to about 300 parts by weight, per 100 parts of polyhydroxyether, of zinc phosphosilicate;
   (D) 0 to about 35 parts by weight, per 100 parts of polyhy-

droxyether, of a heat hardened resole phenol-aldehyde condensation resin; and

(E) 0 to about 15 parts by weight, per 100 parts of polyhydroxyether, of a suspending agent.

4,370,383
MAGNETIC RECORDING MEDIUM
Hiroshi Kawahara, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 207,899

Claims priority, application Japan, Jan. 22, 1980, 55-5271

Int. Cl.^{3} G11B *5/70*

U.S. Cl. 428—425.9 **6 Claims**

1. In a magnetic recording medium which comprises a substrate coated with a magnetic layer comprising a magnetic powder and a binder, the improvement characterized in that said binder comprises, as a rubber component, a urethane resin comprising the reaction product of a C_4–C_8 alkylenediisocyanate as an isocyanate component and a C_3–C_{12} alkyleneglycol as a polyol component.

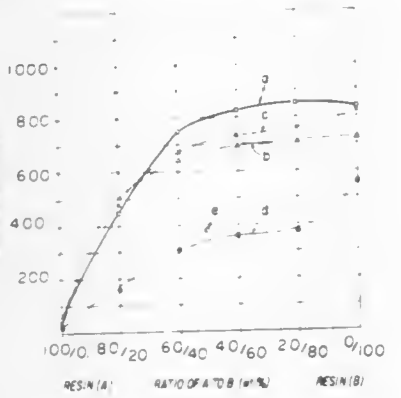
4,370,384
MAGNETIC RECORDING MEDIUM
Akihiko Hosaka; Yukihiro Isobe, and Kiyotaka Okuyama, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,665

Claims priority, application Japan, Oct. 3, 1980, 55-137812

Int. Cl.^{3} G11B *5/68*

U.S. Cl. 428—425.9 **3 Claims**



1. In a magnetic recording medium having a substrate coated with a magnetic layer comprising a magnetic powder and a binder, the improvement characterized in that said binder in said magnetic layer consists essentially of 20 to 70 wt.% of a polyester resin, 80 to 30 wt.% of a vinyl chloride-vinylidene chloride copolymer and a polyisocyanate.

4,370,385
MASKING OF ABRASION INJURY ON GLASS ARTICLES
Akiteru Yoshida; Akiro Yokoo; Shuichi Yokokura, all of Takasaki; Minoru Takamizawa, Tokyo; Yoshio Inoue, and Hiroshi Yoshioka, both of Annaka, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 83,126, Oct. 9, 1979, abandoned. This application Sep. 3, 1981, Ser. No. 299,249

Claims priority, application Japan, Jul. 18, 1979, 54/90330

Int. Cl.^{3} B32B *17/10*

U.S. Cl. 428—429 **9 Claims**

1. A scuff-masking composition for glass articles which comprises, in solution if solvent is present:

Component A which is an organopolysiloxane represented by the average compositional formula

$$(C_6H_5)_x\cdot(CH_3)_y\cdot(OR)_z\cdot Si\cdot O_{\frac{4-(x+y+z)}{2}}$$

wherein R is an alkyl group having 1 to 4 carbon atoms, and x, y and z are the numbers having the relationship

$1 \leqq x+y < 2$

$1 < y/x < 10$

$0.4 \leqq z < 2;$

Component B which is a curing catalyst for component A; and

Component C which is a surfactant, the quantity of the surfactant being in amounts sufficient to improve removability of the cured product by aqueous alkali said composition being curable at up to about 50° C.

2. The composition as set forth in claim **1**, in which the composition is in the form of an alcohol solution.

5. The glass article which has a coat film on at least a part of its surface thereby masking scuffs on the surface, the film being a cured product of the composition claimed in claim **1** or **2**.

4,370,386
REINFORCED UNSATURATED POLYESTER RESIN LAMINATE
Masakazu Uekita, Kobe; Yasuo Fushiki, Takatsuki, and Masaharu Abe, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 15, 1980, Ser. No. 189,860

Claims priority, application Japan, Sep. 19, 1979, 54-121180

Int. Cl.^{3} B32B *15/08, 15/12, 27/04, 27/42*

U.S. Cl. 428—458 **7 Claims**

1. An electrical laminate having a cladding metal foil adhesively bonded to at least one side thereof, said laminate comprising a plurality of fibrous cellulosic sheet layers each impregnated with and joined together by a cured unsaturated polyester resin, said cellulosic sheets each having a deposit thereon in direct contact with its cellulosic fiber surface of a mixture or condensate essentially consisting of an aminoplast and a fatty derivative having at least one functional group capable of condensation with the methylol group of said aminoplast, the pick up amount of said deposit being 3 to 30% by weight of said paper sheet on dry basis.

4,370,387
PRE-COATED STEEL SHEETS AND PROCESS FOR PRODUCTION THEREOF
Nagaharu Ueno; Joji Oka; Hidejiro Asano, all of Tokyo; Takahisa Ogasawara, Tokai; Kiyokazu Mizutani, Inagawa, and Yoshiitsu Tominaga, Tokyo, all of Japan, assignors to Toagosei Chemical Industry Co., Ltd. and Nippon Steel Corporation, both of Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,307

Claims priority, application Japan, Mar. 19, 1980, 55-33891

Int. Cl.^{3} B32B *9/06*

U.S. Cl. 428—458 **18 Claims**

10. A pre-coated steel sheet produced by coating a resin composition comprising mainly an acryloyloxy- or methacryloyloxy-terminated polyester on the surface of a steel sheet, said acryloxy- or methacryloyloxy-terminated polyester being prepared by reacting a hydroxy-terminated polyester comprising (a) a dicarboxylic acid unit containing about 10 to about 80 mol% of a terephthalic acid unit and (b) a dihydric alcohol unit containing about 30 mol% or more of a dihydric alcohol unit containing 3 or more carbon atoms, and having a number average molecular weight of about 400 to about 5,000, with acrylic acid or methacrylic acid, and curing the thus-coated resin composition by irradiating the sheet with an electron beam.

4,370,388
LAMINATED MULTILAYER STRUCTURE
Masaharu Mito, and Masahiro Koya, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,192

Claims priority, application Japan, Mar. 14, 1979, 54-28784

Int. Cl.^{3} B32B *15/08*

U.S. Cl. 428—461 **8 Claims**

1. A laminated multilayer structure composed of a grafted high-density polyethylene resin layer directly attached to a layer of a resin selected from the group consisting of polyamide resins, polyester resins, saponified copolymers of ethylene and vinyl acetate, or to a metal layer; characterized in that said grafted high-density polyethylene resin layer is composed of

(a) 97 to 50 parts by weight, per 100 parts by weight of the resins (a) and (b) combined, of a high-density polyethylene resin having a density of 0.945 to 0.970 g/cm^3 and being grafted with an aliphatic dicarboxylic acid or its functional derivative, said resin being optionally mixed with a high-density polyethylene resin having a density of 0.945 to 0.970 g/cm^3,

(b) 3 to 50 parts by weight, per 100 parts by weight of the resins (a) and (b) combined, of an ethylene/4-methyl-1-pentene copolymer having an ethylene content of 93 to 99.5 mole% and a melt index at 190° C. of 0.1 to 10 g/10 min., and

(c) 0 to 20 parts by weight, per 100 parts by weight of the resins (a) and (b) combined, of one member of the group consisting of a rubbery synthetic polymer and copolymer.

4,370,389
COATED PAPER OF IMPROVED PRINTABILITY
Toshimasa Ogura, Tokyo, and Yasunosuke Sakai, Funabashi, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,803

Claims priority, application Japan, Apr. 16, 1980, 55-50128

Int. Cl.^{3} B32B *27/08*

U.S. Cl. 428—511 **13 Claims**

1. A coated paper comprising a base paper and, provided thereon, a coating layer containing a latex and a paper-coating pigment, which is characterized in that said latex is a latex of a styrene-butadiene block copolymer wherein the proportions of styrene and butadiene are 60–92% by weight and 8 to 40% by weight, respectively, or modified styrene-butadiene copolymer wherein the copolymer is a copolymer of styrene, butadiene, and an acrylic or methacrylic ester wherein the proportions contained in the modified styrene-butadiene copolymer are 55 to 85% by weight, 10–40% by weight, and 5 to 35% by weight, respectively, the styrene block of which is composed of 8 to 40 monomeric units.

4,370,390
3-D CHOPPED-FIBER COMPOSITES
Robert C. Burk, Chesterfield, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 15, 1981, Ser. No. 273,487

Int. Cl.^{3} B32B *9/00, 27/14, 15/04*

U.S. Cl. 428—614 **17 Claims**

1. A material formed by molding, having a composite structure comprising:

a matrix material; and

a plurality of discrete reinforcing fiber elements randomly oriented, overlapping and interlocking with respect to each other and contained in and bonded to said matrix material, said fiber elements further comprising:

at least three uni-directional fibers, each having a longitudinal axis, joined together before adding said matrix material, so that each of said fibers is oriented in fixed, skewed and overlapping relationship with the remaining of said at least three fibers and at least one of said at least three fibers lies in a plane other than the plane of said axes of the remainder of said at least three fibers.

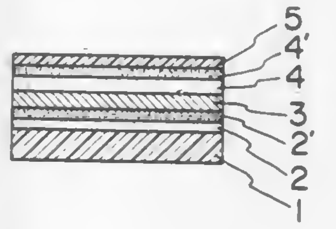
4,370,391
RECORDING MATERIAL
Koichi Mori, and Masafumi Nakao, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 245,061

Claims priority, application Japan, Mar. 18, 1980, 55-34238

Int. Cl.^{3} B32B *15/04;* **G01D** *15/10, 15/34*

U.S. Cl. 428—697 **11 Claims**



1. A recording material, comprising: a substrate; and superimposed on top of the substrate in the following order, a first stabilizing layer; a low toxicity metallic recording layer; and a second stabilizing layer; said first stabilizing layer being composed of an auxiliary metal oxide layer as an upper layer and an inorganic compound layer formed of an inorganic compound selected from the group consisting of a metal oxide, a metal nitride and a metal fluoride as a lower layer for converting said auxiliary metal oxide layer to a surface-flat glassy material, wherein when said inorganic compound layer is a metal oxide, the metal oxide of the auxiliary metal oxide layer is different from the metal oxide of the inorganic compound layer.

7. A recording material according to claim **1**, wherein said metallic recording layer is a combination of two metals which produce a eutectic.

4,370,392
CHROME-HALOGEN ENERGY STORAGE DEVICE AND SYSTEM
Robert F. Savinell, Akron, and Chung-Chiun Liu, Cleveland, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Jun. 8, 1981, Ser. No. 271,578

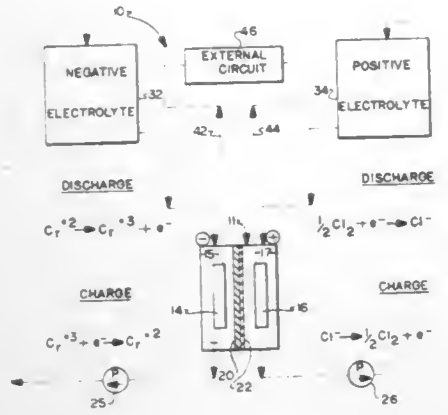
Int. Cl.^{3} H01M *8/04*

U.S. Cl. 429—15 **24 Claims**

1. A metal-halogen energy storage device, comprising:

an electro-chemical cell, said cell having an anion permeable membrane,

a positive electrode and a negative electrode located in said cell, said anion permeable membrane separating said positive electrode and said negative electrode and forming a chamber for each said electrode, a negative fluid, said negative fluid located in said negative electrode chamber, said negative fluid having ions therein selected from the group consisting of tin, titanium, vanadium and chromium;


10
NEGATIVE ELECTROLYTE
32
46
EXTERNAL CIRCUIT
42
44
34
POSITIVE ELECTROLYTE
DISCHARGE
$Cr^{+2} \rightarrow Cr^{+3} + e^-$
DISCHARGE
$\frac{1}{2}Cl_2 + e^- \rightarrow Cl^-$
11
15
17
CHARGE
14
16
CHARGE
$Cr^{+3} + e^- \rightarrow Cr^{+2}$
$Cl^- \rightarrow \frac{1}{2}Cl_2 + e^-$
P
20
22
P
25
26

a positive fluid, said positive fluid located in said positive electrode chamber, said positive fluid having a halogen gas and halogen ions therein.

4,370,393

SOLID ELECTROLYTES

Tetsuo Watanabe, Nagoya; Syunzo Mase, Tobishima, and Shigeo Soejima, Nagoya, all of Japan, assignors to NGK Insulators Ltd., Nagoya, Japan

Filed Sep. 8, 1980, Ser. No. 184,979

Claims priority, application Japan, Sep. 18, 1979, 54/118716

Int. Cl.³ C04B *35/48;* H01M *6/18*

U.S. Cl. 429—193 **1 Claim**

(5000 Magnifications)

1. A solid electrolyte of ZrO_2 ceramics consisting essentially of cubic crystals, monoclinic crystals and tetragonal crystals owing to addition of Y_2O_3, having an average grain size of monoclinic crystals and tetragonal crystals of not greater than 2 μm, a ratio of the intensity of the monoclinic $(11\bar{1})$ X-ray diffraction line to that of the cubic (200) line being 0.01–2.5 and a ratio of the intensity of the tetragonal (200) X-ray diffraction line to that of the cubic (200) line being not greater than 1.0, wherein monoclinic crystal grains and tetragonal crystal grains are present between cubic crystal grains.

4,370,394

SALT COMPOSITION USABLE AS A FUSED ELECTROLYTE IN ACCUMULATORS

Frederic Breda, Pas-de-Calais; Pierre Jonville, Clermont-Ferrand, both of France; Angelo Bonomi, Onex, and Jack Ambert, Grand-Lancy, both of Switzerland, assignors to Proge Groupement d'Interet Economique, Paris, France

Division of Ser. No. 143,289, Apr. 24, 1980, Pat. No. 4,287,270. This application Jun. 8, 1981, Ser. No. 271,120

Claims priority, application France, Apr. 26, 1979, 79 11226

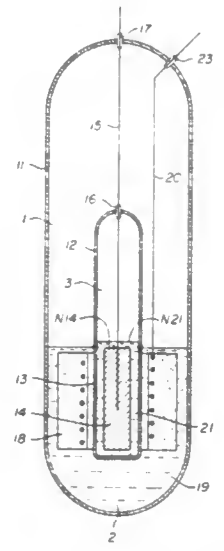
Int. Cl.³ H01M *6/04*

U.S. Cl. 429—199 **2 Claims**

1. A process for preparing a hydroxide-free alkali salt composition for use as a molten anode electrolyte in a secondary cell having an alkali metal anode and an alkali alumina separator, which method comprises:

preparing a mixture of alkali metal amide, alkali metal hydride, and alkali metal halide;

and adding aluminium to the mixture;



whereby the aluminium reacts with the alkali metal amide to form aluminium amide and alkali metal.

4,370,395

ALKALINE CELL

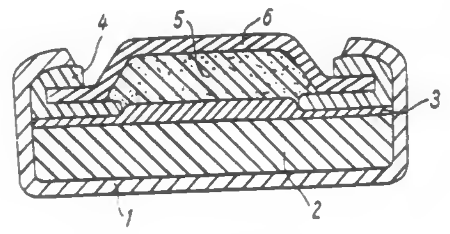
Toru Nagaura, Koriyama, and Takayuki Aita, Fukushima, both of Japan, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 3, 1981, Ser. No. 270,100

Claims priority, application Japan, Jun. 4, 1980, 55-75286

Int. Cl.³ H01M *4/32, 4/34*

U.S. Cl. 429—219 **3 Claims**



1. An alkaline cell comprising a cathode material, an alkaline electrolyte and an anode material and wherein the cathode material comprises an Ni- and Ag-containing oxide having trivalent nickel ion and monovalent silver ion present in a substantially equimolar ratio.

4,370,396

PROCESS FOR PRODUCING COLOR FILTER PLATES

Masamichi Sato; Kenji Matsumoto, both of Asaka, and Shunichi Naito, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Fuji Photo Optical Co., Ltd., Saitama, both of, Japan

Filed Feb. 17, 1981, Ser. No. 235,228

Claims priority, application Japan, Feb. 15, 1980, 55/18091

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—7 **6 Claims**

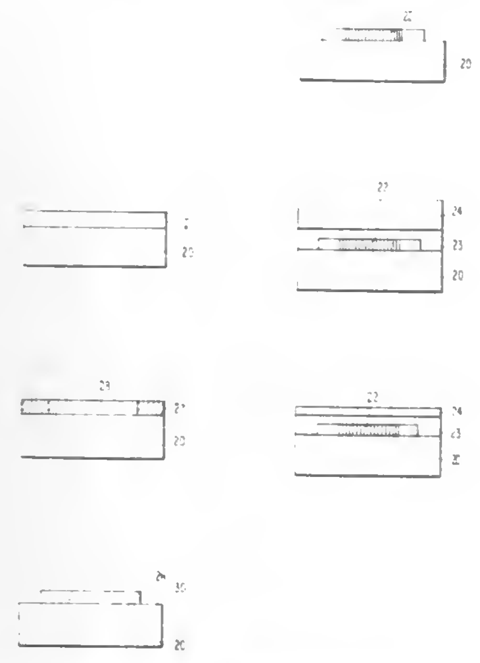
1. A process for producing a color filter plate which comprises

forming a color filter pattern on a silver halide emulsion layer of a photographic material comprising a transparent support with emulsion layer thereon, while the emulsion layer of areas to be removed is subjected to imagewise exposure, development and an etch-bleaching treatment to remove the emulsion layer of said areas,

adhering a transparent plate to said emulsion layer, and

abrading thereafter either the transparent support or the transparent plate to a desired thickness,

wherein said formation of a color filter pattern on a silver halide emulsion is performed by a process which comprises carrying out a pattern exposure for the first color of a black-white silver halide emulsion layer in a photographic material comprising a support and at least one black-white silver halide emulsion layer provided on the support, forming a pattern containing a dye of the first



color by color development with a developer containing a color coupler, carrying out a pattern exposure for the second color of the unexposed part containing silver halide, forming a pattern containing a dye of the second color by color developement with a developer containing a color coupler, and optionally repeating the same steps forming a pattern containing a dye of subsequent colors, to form an image composed of at least two colors, and removing silver after the final color development.

4,370,397

PRESENSITIZED PLASTIC CARD, TAMPERPROOF IDENTIFICATION CARD PREPARED THEREFROM, AND PROCESS FOR MANUFACTURE OF TAMPERPROOF IDENTIFICATION CARD

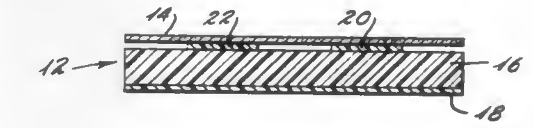
Claude Ceintrey, Neuville les Dieppe, and Monique Detain, Aubermesnil Beaumais, both of France, assignors to Rhone-Poulenc Systemes, Creteil, France

Filed Apr. 22, 1980, Ser. No. 142,764

Claims priority, application France, Apr. 24, 1979, 79 10375

Int. Cl.³ G03C *3/00;* G09F *3/02*

U.S. Cl. 430—10 **20 Claims**



1. A tamperproof identification card bearing information which may be in the form of photograph, images, indicia and the like, which comprises:

a plastic support and one or more exposed and developed photosensitive zones carried on at least one of the major surfaces of said support, said zone comprising an exposed and developed layer of a photosensitive composition comprising an intimate mixture of (a) at least one photosensitive diazonium salt, (b) a coupling agent for said salt, and (c) at least one first thermally activated adhesive resin having a VICAT softening point in the range of from about 40° C. to about 140° C., the weight ratio of the salt plus coupling agent to the adhesive resin being from about 50:50 to about 5:95; said photosensitive zones having been exposed to actinic light through an original to be reproduced, to decompose the diazonium salt in the exposed portions of said zones, the unexposed portions of said zones having been developed in an alkaline medium to form photograph, images, indicia, and the like and then dried; and

a protective plastic film consisting essentially of, or having at least one surface layer consisting essentially of, a second thermally activated adhesive resin having a VICAT softening point in the range of 40° C. to 140° C., and laminated to the layer side of said support and the dried, developed photosensitive composition; wherein at least one of said support and said protective plastic film is transparent, whereby the information provided by the developed photosensitive composition can be viewed.

4,370,398

ELECTROSTATIC COPYING PROCESS

Tsutomu Sato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,514

Claims priority, application Japan, Apr. 26, 1979, 54-51915; Oct. 13, 1979, 54-131991; Oct. 15, 1979, 54-131801

Int. Cl.³ G03G *13/01, 13/22*

U.S. Cl. 430—42 **8 Claims**

1. An electrostatic copying process comprising the steps of:

(a) providing a photoconductive member having a conductive substrate, an inner photoconductive layer formed on the substrate and an outer photoconductive layer formed on the inner layer;

(b) forming an electrostatic charge of a first polarity at an interface of the inner and outer layers;

(c) radiating a light image onto the outer layer to form an electrostatic image corresponding thereto at the interface through localized photoconduction; and

(d) repeatedly applying toner to the outer layer to form toner images thereon and transferring the toner images to respective copy sheets;

the process further comprising the step, performed between steps (b) and (c), of:

(e) applying a charge of a second polarity which is opposite to the first polarity to the outer layer;

step (e) comprising applying the charge of the second polarity having a magnitude such that a surface potential on the photoconductive member has the first polarity after step (b) and also step (e);

charge dissipation time constants for the inner and outer layers provided in step (a), a magnitude of the charge of the first polarity applied in step (b) and the magnitude of the charge of the second polarity applied in step (e) being selected in such a manner that an increase in the surface potential as a function of time due to charge dissipation in the inner and outer layers is substantially equal to a decrease in the surface potential as a function of time due to charge leakage in step (d).

4,370,399

EQUISENSITIVE AMBIPOLAR INDIUM DOPED SELENIUM CONTAINING ELECTROPHOTOGRAPHIC MATERIALS, PLATES AND METHOD

Syamal K. Ghosh, Elk Grove Village, and Frank D. Kelly, Chicago, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

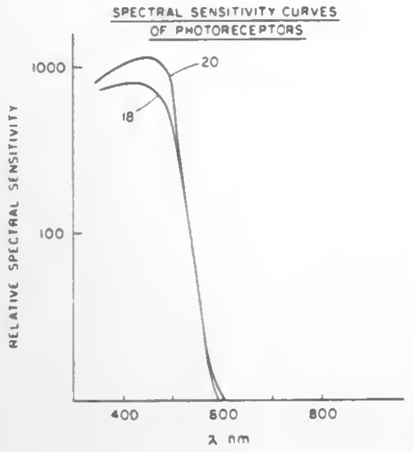
Filed Mar. 23, 1981, Ser. No. 246,605

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—58 **10 Claims**

1. An ambipolar electrophotograhic plate comprising a

conductive substrate and a photoconductive layer on the substrate in which the photoconductive layer comprises selenium



doped with indium in an amount within the range of 10–500 ppm.

4,370,400
DRY TRANSFER OF ELECTROPHOTOGRAPHIC IMAGES

Sidney Cooper, Roslyn Harbor, and Ezekiel J. Jacob, Brooklyn, both of N.Y., assignors to Ani-Live Film Service Inc., New York, N.Y.

Division of Ser. No. 799,476, May 23, 1977, Pat. No. 4,216,283. This application Jan. 16, 1980, Ser. No. 112,827

Int. Cl.^{3} G03G *13/16*

U.S. Cl. 430—126 **11 Claims**

1. A carrier sheet used in (A) an electrophotographic process comprising depositing an image by electrophotographic means, upon said (a) carrier sheet, corresponding to information to be recorded, forming a pattern of a toner composition on said carrier sheet corresponding to said electrostatic image thereby forming a toner-image, said carrier sheet being abhesive toward said toner-developed (deposited) image comprising an intumescent electroscopic powder mixture comprising a thermoadhesive agent containing microspheres carrying or containing adhesive.

4,370,401
LIGHT SENSITIVE, THERMALLY DEVELOPABLE IMAGING SYSTEM

John M. Winslow, South St. Paul, and Kenneth G. Gatzke, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 101,196, Dec. 7, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,323

Int. Cl.^{3} G03C *1/52*

U.S. Cl. 430—178 **18 Claims**

1. An imageable layer comprising (a) a polymeric binder, (b) a bleachable dye or a leuco dye, (c) a nitrate salt, and (d) a photosensitive diazonium salt, said nitrate salt in said imageable layer being capable of liberating HNO_3, NO, NO_2 or N_2O_4 in oxidizing amounts when said layer is heated to no more that 200° C. for 60 seconds.

4,370,402
DYE REDUCING COMPOSITION FOR DYE TRANSFERS, PHOTOGRAPHIC TRANSPARENCIES AND COLOR PRINTS

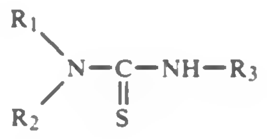
Harry Anderson, 83 Morgan St., Apt. 3 J, Stamford, Conn. 06905

Filed Sep. 24, 1980, Ser. No. 190,359

Int. Cl.^{3} G03C *5/54;* **D06L** *3/00*

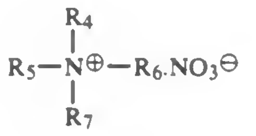
U.S. Cl. 430—237 **14 Claims**

1. An aqueous composition for removing dyes from or reducing dye intensity in photographic color dye transfers and for removing or reducing the intensity of retouching dyes in color transparencies and color prints, which composition comprises, per 100 parts by weight of water, from about 1 to about 10 parts by weight of a thiourea compound of the formula:



$$R_1R_2N-C(=S)-NH-R_3$$

wherein R_1 is hydrogen, methyl or ethyl, and R_2 and R_3 are each hydrogen or alkyl of from 1 to 4 carbon atoms, and from about 5 to about 20 parts by weight of an ammonium nitrate compound of the formula



$$R_5-\overset{\displaystyle R_4}{\underset{\displaystyle R_7}{N^{\oplus}}}-R_6.NO_3^{\ominus}$$

wherein R_4 represents hydrogen, C_1–C_{22} alkyl which may be mono- or poly-substituted by halogen or hydroxy or which may be interrupted by an amido group; or a C_6–C_{10} aralkyl or alkaryl group optionally substituted by halogen or hydroxy, R_5 represents hydrogen, C_1–C_8 alkyl optionally substituted by hydrogen or hydroxy, or C_6–C_{10} aralkyl or alkaryl optionally substituted by halogen or hydroxy, and each of R_6 and R_7 represents hydrogen or C_1–C_4 alkyl optionally substituted by halogen or hydroxy.

4,370,403
PHOTOPOLYMERIZABLE RADIATION-SENSITIVE RESIN COMPOSITION AND RADIATION-SENSITIVE SHEET MATERIAL

Kiyofumi Takaki, Yao, Japan, assignor to Tokuji Arai, Yokohama, Japan and Birger Takle, Asker, Norway

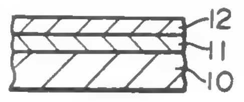
PCT No. PCT/JP80/00198, § 371 Date Apr. 24, 1981, § 102(e) Date Apr. 24, 1981, PCT Pub. No. WO81/00626, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 28, 1980, Ser. No. 261,175

Claims priority, application Japan, Aug. 28, 1979, 54-108570

Int. Cl.^{3} G03C *1/78*

U.S. Cl. 430—271 **15 Claims**



1. A photopolymerizable radiation-sensitive resin composition comprising a styrene-maleic acid copolymeric resin, and,

a combination of an ethylenically unsaturated compound which is a mixture of the following compounds (A) and (B):

(A) one or more ethylenic compounds having a molecular weight of 150 or more, a boiling point, under normal pressure, of 100° C. or more, at least one acryloyl or methacryloyl group, and a terminal hydroxyl group, and;

(B) one or more ethylenic compounds having a molecular weight of 150 or more, a boiling point, under normal pressure, of 100° C. or more, and at least one acryloyl or methacryloyl group and no terminal hydroxyl group;

and a photopolymerization initiator which comprises benzyl and dimethyl amino benzaldehyde.

4,370,404
DESENSITIZING SOLUTION FOR LITHOGRAPHIC PRINTING PLATE

Hiromichi Tachikawa; Yohonosuke Takahashi; Kazuo Ishii; Tomoaki Ikeda, and Fumiaki Shinozaki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 78,267, Sep. 24, 1979, Pat. No. 4,328,304. This application Nov. 5, 1981, Ser. No. 318,495

Claims priority, application Japan, Sep. 22, 1978, 53-117728

Int. Cl.^{3} G03F *7/02*

U.S. Cl. 430—302 **19 Claims**

1. A process for preparing a lithographic printing plate which comprises exposing a lithographic printing plate forming material having a photopolymerizable photosensitive layer containing an ethylenically unsaturated compound, developing said exposed material and treating the exposed material with a desensitizing solution comprising a free radical photopolymerization inhibitor, a hydrophilic colloid and water, said free radical photopolymerization inhibitor being present in the desensitizing solution in an amount sufficient to normally prevent selectively the formation of stain on non-imaged areas during printing.

4,370,405
MULTILAYER PHOTORESIST PROCESS UTILIZING AN ABSORBANT DYE

Michael M. O'Toole, San Jose; En-Den D. Liu, Mountain View, and Mark S. Chang, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 30, 1981, Ser. No. 248,927

Int. Cl.^{3} G03C *5/00*

U.S. Cl. 430—312 **3 Claims**

1. An improved process of photoetching a substrate having surface topography, of the type wherein a first material is deposited over the substrate to produce a planarizing layer which is thick enough that it has a substantially planar top surface in spite of the underlying topography, a resist is deposited above the planarizing layer to form a resist layer thereby producing a multilayer substrate coating having the planarizing layer sandwiched between the substrate and the resist layer, the resist layer is exposed to light in a range in which the resist is sensitive, said light having been passed through a mask to expose only selected portions of the resist layer, the resist layer is developed to produce a pattern, and the layers of the substrate coating between the resist layer and the substrate are processed to replicate the pattern in such layers, the improvement comprising:

selecting a dye which strongly absorbs light at the wavelengths used to expose the resist layer; and

dissolving the dye in a layer which is sandwiched between the substrate and the resist layer.

4,370,406
DEVELOPERS FOR PHOTOPOLYMER LITHOGRAPHIC PLATES

Thomas H. Jones, Naperville, Ill., assignor to Richardson Graphics Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 107,452, Dec. 26, 1979, abandoned, which is a continuation of Ser. No. 900,276, Apr. 26, 1978, abandoned. This application May 12, 1981, Ser. No. 263,073

Int. Cl.^{3} G03C *5/24, 5/34;* **G03F** *7/02, 7/08*

U.S. Cl. 430—331 **14 Claims**

1. A composition which is a developer or developer solution replenisher for photopolymeric lithographic plates, the developer composition being of the non-emulsion subtractive type that is a single-phase solution consisting of an active solvent in admixture with a water miscible cosolvent and water, said active solvent having a water solubility concentration at which it is partially water insoluble or only partially soluble within the total developer composition, said active solvent also being a good solvent for unexposed photopolymer of a lithographic plate, which photopolymer is insolubilized upon exposure to actinic radiation, said active solvent being ethylene glycol monobutyl ether acetate, said cosolvent being selected from the group consisting of water-miscible alcohols, glycols, glycol ethers, ketones and acetates, and said active solvent being dissolved within the total composition in admixture with said water-miscible cosolvent at an unexposed photopolymer swelling concentration at which said active solvent migrates out of the developer composition to swell the unexposed photopolymer of the exposed and imaged lithographic plate for subsequent removal thereof from the plate, said photopolymer swelling concentration of the active solvent being no more than 10 weight percentage points less or greater than said water solubility concentration of the active solvent, based on the weight of the total developer composition.

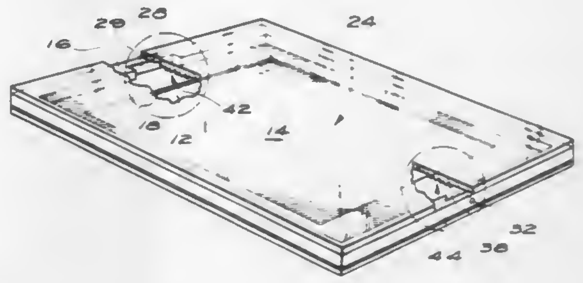
4,370,407
PHOTOGRAPHIC PRODUCTS INCLUDING LIQUID SPREADING MEANS

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 143,230, Apr. 24, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,616

Int. Cl.^{3} G03C *5/54, 1/76, 1/40, 5/24*

U.S. Cl. 430—403 **16 Claims**



16. A method of processing a photographic film unit with low viscosity processing liquid, said method comprising the steps of:

introducing processing liquid having a viscosity in the range of 0 to 250 centipoises into a space between first and second sheets of the film unit for spreading in both the lateral and longitudinal direction within the space to process an imaging portion of one of the sheets, and

inhibiting movement of the wavefront of the liquid in the longitudinal direction to the imaging portion until the wavefront extends across the entire width of the imaging portion, transversely of the longitudinal direction.

4,370,408
METHOD FOR REPAIRING SURFACE DEFECTS IN AN IMAGE OR PICTURE FILM

Hans Kiening, Hoehenbergweg 15, D-8170 Bad Toelz, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,082

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 3026029

Int. Cl.^{3} G03C *5/24*

U.S. Cl. 430—432 **5 Claims**

1. A method for repairing surface defects such as depressions and scratches in picture films including a carrier film portion, comprising the steps of feed advancing the developed film to a utilization station, providing a continuous feed advance zone for the film upstream of said utilization station as viewed in the feed advance direction of the film, spraying a predetermined quantity of repair liquid onto the film surface at said continuous feed advance zone, and dosing said predetermined quantity of repair liquid so that it is sufficient to form a layer on the film which has a layer thickness of a few microns, preferably 1 to 5 microns, said layer thickness being sufficiently thin to assure a quick evaporation on any undamaged film surface portions while simultaneously providing such an accumulation of repair liquid in said depressions and scratches that evaporation from these depressions and scratches is substantially delayed.

4,370,409

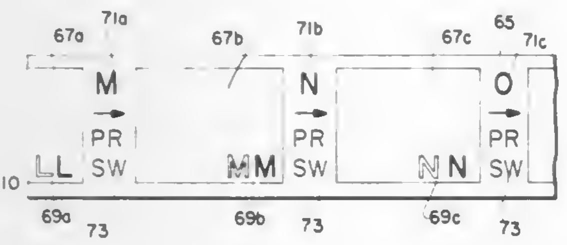
FILM IDENTIFICATION METHOD

Theodore Bostroem, 470 Park Rd. Extended, Middlebury, Conn. 06762

Filed Jun. 24, 1981, Ser. No. 277,038

Int. Cl.^{3} G03C *1/76*

U.S. Cl. 430—496 **17 Claims**



12. A photographic film comprising:
- an undeveloped photographic film strip having exposure zones and areas adjacent said exposure zones;
- first exposure identification indicia positioned in said areas adjacent said exposure zones, individual ones of said first indicia being associated with separate exposure zones for individually identifying said exposure zones; and
- second exposure identification indicia corresponding to said first indicia and of a size relatively smaller than said first indicia, said second indicia being disposed within said exposure zones.

4,370,410

SILVER HALIDE COLOR PHOTOSENSITIVE MATERIAL

Toshifumi Iijima, Kokubunzi; Wataru Fujimatsu, Hachioji, and Kaoru Onodera, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Dec. 23, 1981, Ser. No. 333,899

Claims priority, application Japan, Dec. 26, 1980, 55-187438

Int. Cl.^{3} G03C *1/76*

U.S. Cl. 430—505 **6 Claims**

1. A silver halide color photosensitive material for taking a photograph comprising a red photosensitive silver halide emulsion layer, a green photosensitive silver halide emulsion layer and blue photosensitive silver halide emulsion layer and each of which comprises a coupler out of every three kinds of the couplers, namely, anti-diffusive yellow, magenta and cyan couplers, and in which said green photosensitive silver halide emulsion layer is composed of at least two layers and between those of which said red photosensitive silver halide emulsion layer is arranged, and said green photosensitive silver halide emulsion layer comprises an anti-diffusive yellow coupler.

4,370,411

METHOD FOR PRODUCING A LONG SCALE DIRECT-POSITIVE PHOTOGRAPHIC EMULSION

Richard J. Byer, Rochester, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 11, 1980, Ser. No. 186,291

Int. Cl.^{3} G03C *1/36*

U.S. Cl. 430—596 **5 Claims**

1. A direct-positive photographic element comprising a support having coated thereon a single chemically fogged direct-positive silver halide emulsion, the silver halide grains of which have been fogged to a continuously varying degree and exhibit a multitude of photographic sensitivities within the same emulsion, whereby a Density vs. Log of Exposure curve of said element provides extended exposure latitude and exhibits no discrete steps.

4,370,412

AQUEOUS HYDROPHILIC COLLOID COATING COMPOSITION CONTAINING A COMBINATION OF ANIONIC SURFACTANTS

Susan J. Cruikshank, and Michael W. Orem, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1978, Ser. No. 942,201

Int. Cl.^{3} G03C *1/76, 1/38;* C08K *89/00*

U.S. Cl. 430—635 **2 Claims**

2. A photographic element comprising a support and at least one layer containing gelatin, sodium dodecyl sulfate and sodium lauroyl sarcosinate, the combined weight of said sodium dodecyl sulfate and said sodium lauroyl sarcosinate being in the range of from about 0.5 to about 3 parts per 100 parts by weight of gelatin, and said sodium dodecyl sulfate being present in an amount of from about 0.3 to about 2 parts per part by weight of said sodium lauroyl sarcosinate.

4,370,413

MICROMETHOD FOR THE DETERMINATION OF ENDOTOXINS

Ishak Neeman, Haifa, Israel, and Stephen L. Gaffin, Durban, South Africa, assignors to Technion Research and Development Foundation, Ltd., Haifa, Israel

Filed Feb. 17, 1981, Ser. No. 235,153

Claims priority, application Israel, Feb. 14, 1980, 59383

Int. Cl.^{3} C12Q *1/06, 1/29, 1/04;* C12M *1/34*

U.S. Cl. 435—39 **8 Claims**

1. A micromethod for the quantitative determination of endotoxins with Limulus Amebocyte Lysate (L.A.L.) reagent, which comprises the steps of: (a) admixing the sample containing the endotoxins with a microamount of L.A.L. reagent; (b) introducing the mixture into a capillary tube; (c) incubating the capillary tube at a temperature range of 20° to 40° C.; (d) measuring the hydrostatic pressure required to cause the formed viscous mass to flow from said capillary tube; and (e) determining the quantity of endotoxin in the sample by comparing the measured hydrostatic pressure to a previously determined standard relating hydrostatic pressure to endotoxin content.

4,370,414

PROCESS FOR PRODUCING 6-AMINOPENICILLANIC ACID AND 6-AMINOPENICILLANIC ACID S-OXIDE

Takashi Mitsugi, Izumiotus; Ryonosuke Muneyuki, Kyoto; Yoshiharu Wakisaka, Takarazuka; Kenzo Koizumi, Sakai, and Eiji Kondo, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Oct. 6, 1980, Ser. No. 194,277

Claims priority, application Japan, Oct. 30, 1979, 54-140928

Int. Cl.^{3} C12P *37/06;* C12R *1/06*

U.S. Cl. 435—44 **4 Claims**

1. A process for producing 6-aminopenicillanic acid S-oxide which comprises contacting benzylpenicillin S-oxide with enzyme produced by a microbe belonging to Arthrobacter genus.

4,370,415

PROCESS FOR PRODUCING UROPORPHYRIN III

Ichiro Kojima, Yokosuka; Kenji Maruhashi, Yokohama, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 204,789

Claims priority, application Japan, Nov. 7, 1979, 54-143198

Int. Cl.^{3} C12P *17/18*

U.S. Cl. 435—119 **7 Claims**

1. A process for producing uroporphyrin III, which comprises cultivating a uroporphyrin III-producing microorganism of *Arthrobacter hyalinus*, *Arthrobacter pascens* or a variety or mutant thereof in a culture medium containing a carbon source, a nitrogen source and a mineral, and recovering uroporphyrin III from the culture broth.

4,370,416

HYDROXY-CINNAMIC ACID ESTER HYDROLASE AND PROCESS FOR PRODUCING SAME

Shigemichi Okamura, Noda, and Masazumi Watanabe, Kashiwa, both of Japan, assignors to Kikkoman Corporation, Noda, Japan

Filed Nov. 27, 1981, Ser. No. 325,182

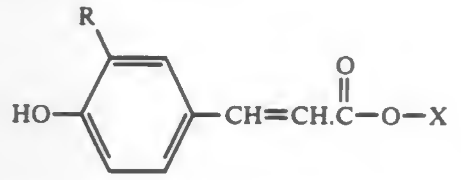
Claims priority, application Japan, Dec. 8, 1980, 55-172118

Int. Cl.^{3} C12N *9/18;* C12P *7/42;* C12G *1/02;* A23F *5/16;* A23L *2/34;* C12P *7/62*

U.S. Cl. 435—197 **8 Claims**

1. A novel hydroxy-cinnamic acid ester hydrolase having the following characteristic properties:

(1) It is a novel hydroxy-cinnamic acid ester hydrolase which specifically hydrolyzes the ester linkage of hydroxy-cinnamic acid ester substances represented by the following general formula:



$$HO\text{—}C_6H_3(R)\text{—}CH{=}CH.\overset{\overset{O}{\|}}{C}\text{—}O\text{—}X$$

wherein R is hydrogen atom, hydroxyl group or methoxyl group and X is tartaric acid residue or quinic acid residue, and has no tannic acid-decomposing activity substantially;

(2) Its optimum pH for its action is about 6.5 and its stable pH range is 3 to 7.5;

(3) Its action temperature is in the range of 20° to 60° C., in particular, 45° to 60° C.;

(4) It completely loses its activity when heat-treated at 70° C. for 10 minutes, and it keeps survived 80% of its activity when heat-treated at 60° C. for 10 minutes;

(5) It is inhibited by Hg^{++}, Fe^{++}, 8-hydroxyquinoline, iodine and diisopropylfluorophosphoric acid, and there is no particular activator nor stabilizer for it;

(6) It has a molecular weight of 150,000 as measured at 4° C. in 0.1 M citrate buffer solution having a pH value of 5.0; and

(7) It is an acidic protein having an isoelectric point of PI 4.8.

4,370,417

RECOMBINANT DEOXYRIBONUCLEIC ACID WHICH CODES FOR PLASMINOGEN ACTIVATOR

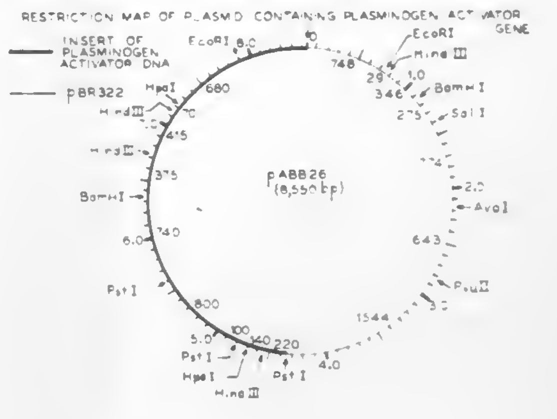
Paul P. Hung, Waukegan; Shaw-Guang Lee, Libertyville; Ranajit Roychoudhury, Wadsworth, all of Ill.; Barry J. Ratzkin, Houston, Tex.; W. Jürgen Schrenk, Weilheim, Fed. Rep. of Germany, and Michael C. Chen, Painted Post, N.Y., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 3, 1980, Ser. No. 137,032

Int. Cl.^{3} C12P *21/00;* C12N *15/00*

U.S. Cl. 435—212 **25 Claims**

1. A recombinant plasmid adapted for transformation of a microbial host said plasmid comprising a plasmid vector into which a polydeoxyribonucleotide segment which codes for plasminogen activator protein has been inserted.



17. A polydeoxyribonucleotide segment which codes for plasminogen activator protein.

4,370,418

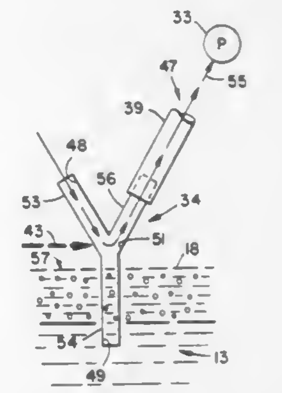
LIQUID LEVEL CONTROL BY SUBSURFACE DRAW OFF

Benjamin L. Koopman, Gainesville, Fla.; Antonio O. Lau, Morristown; Peter F. Strom, Highland Park, both of N.J., and David Jenkins, Kensington, Calif., assignors to University of California, Berkeley, Calif.

Filed Jul. 24, 1981, Ser. No. 286,372

Int. Cl.^{3} C12M *1/36*

U.S. Cl. 435—289 **10 Claims**



1. In a fluid system having a vessel which receives an inflow of liquid and having a liquid level control for maintaining a predetermined liquid level in the vessel and which includes a discharge pump for withdrawing liquid from said vessel, the improvement comprising:
- discharge flow intake structure having a branched discharge flow intake path which includes a first inlet situated above said predetermined liquid level, a second inlet situated below said predetermined liquid level, and a flow junction situated at said predetermined liquid level, said pump being communicated with both of said first and second inlets through said flow junction, wherein said liquid in said vessel has a surface layer with a composition differing from that of the subjacent volume of said liquid in said vessel, wherein said second inlet of said discharge flow intake structure is situated below said surface layer and within said subjacent volume of said liquid, wherein said discharge flow intake structure includes a first tubulation extending upwardly from said flow junction and having an opening above said flow junction constituting said first inlet, a second tubulation extending downwardly from said flow junction and having an opening below said flow junction constituting said second inlet, and a third tubulation extending upwardly from said flow junction at an angle with respect to said first tubulation to communicate said flow junction with said discharge pump.

4,370,419

TRAY FOR IDENTIFYING MICROORGANISMS

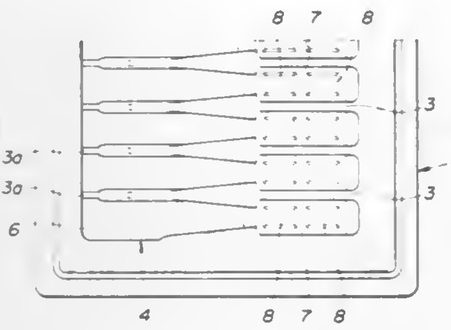
Tamotsu Iida, Oyama; Seiji Enomoto, Saitama, and Michiya Kimura, Oyama, all of Japan, assignors to Eiken Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,473

Claims priority, application Japan, Mar. 18, 1981, 56-38022[U]

Int. Cl.³ C12M *1/20*

U.S. Cl. 435—301 **3 Claims**



1. A tray for identifying microorganisms, comprising:

a tray body, comprising:
  a first wall which defines an interior space;
  a plurality of parallel cells extending across said interior space;
  a plurality of parallel partition walls separating said cells and extending across said interior space, having a height substantially equal to that of said first wall;
  a plurality of crest barriers extending substantially perpendicularly across substantially the middles of said cells between pairs of said partition walls and dividing each of said cells into a flat bottomed cell for bacterial suspension and a small cell, each of said crest barriers having a gradual slope portion rising from one of said cells for bacterial suspension and a steep slope portion rising substantially vertically from one of said small cells, said crest barriers each having a height less than that of said partition walls, each of said partition walls having a reduced height portion abutting said first wall adjacent a pair of said cells for bacterial suspension, each of said small cells being wider than said crest barriers and having a bottom with at least two wells, each of said crest barriers decreasing in width from said cell for bacterial suspension to said small cell; and

a cover fitting over said tray body comprising:
  a top;
  a peripheral wall; and
  a lower lip, said peripheral wall and said lower lip being provided with a plurality of outwardly bulging vent passages to allow communication of the interior space of said tray body with the atmosphere.

4,370,420

PREPARATION OF DRIED BAKER'S YEAST

Philippe Clement, Roubaix, and Jean-Paul Rossi, Marcq en Baroeul, both of France, assignors to Societe Industrielle LeSaffre, Paris, France

Continuation-in-part of Ser. No. 702,019, Jul. 2, 1976, abandoned. This application Jun. 21, 1978, Ser. No. 917,726

Claims priority, application France, Jul. 3, 1975, 75 20943

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ C12N *1/18*

U.S. Cl. 435—256 **8 Claims**

1. A process for preparing a yeast composition in solid particular form, consisting essentially of an active baker's yeast and an emulsifying agent, said process comprising successively

(1) selecting a yeast strain stable to drying, and which has the further characteristic in fresh compressed yeast form of releasing at least 105 ml of gas in test A_1, in two hours wherein, in said test A_1, the said fresh baker's yeast in an amount corresponding to 160 mg of dry material, and diluted in 15 ml of water containing 27 g of NaCl and 4 g of $(NH_4)_2SO_4$ per liter, is added to 20 g of flour incubated at 30° C. and kneaded for 40 seconds to obtain a dough, maintaining said dough at 30° C. in a vessel for 13 minutes after the beginning of said kneading, thereafter hermetically sealing said vessel and measuring the total amount of gas produced, in ml at 30° C. and 760 mm of Hg, after the expiration of 120 minutes;

(2) cultivating said yeast strain discontinuously in a plurality of multiplication cycles, having several hours duration each, and carried out in vats previously provided with inoculating yeast and water, by regulated inflows of molasses and other nutrients including nitrogen and P_2O_5, harvesting the yeast the end of each multiplication cycle, and wherein during the last of said multiplication cycles, the cultivation conditions consisting essentially in the combination of:
  (i) continuous inflows of the molasses;
  (ii) maintaining a value of between about 3.8 and about 5 for the weight ratio of

$$\frac{\text{(Culture medium)}}{\text{(molasses)}}$$

wherein the term "(culture medium)" refers to the entire content of the culture vat including water, yeast and nutrient substances at the end of the last multiplication cycle, and
  wherein the term "(molasses)" refers to the total quantity of molasses introduced into the vat during said last multiplication cycle,
  (iii) regulating the respective inflows of molasses nitrogen and P_2O_5 such that the yeast harvested at the end of the last multiplication cycle has
  (A) an amount of buds which is less than 5%, and
  (B) a protein content in said yeast in an amount which corresponds to the optimum activity of the selected strain, wherein the said optimum activity is the activity which corresponds to the protein content of the yeast for which a higher protein content gives no more than a slight gain in activity and will cause a definite deterioration in the stability of the yeast, and
  (C) the following characteristics
    (a) a trehalose content in the dry matter of at least 12%
    (b) a ratio of nitrogen to P_2O_5 content of between 2.3 and 3.8; and

harvesting the thus-cultivated yeast at the end of said last multiplication cycle,

(3) thereafter separating, washing and filtering or compressing the thus-cultivated and harvested yeast so as to obtain a compressed yeast having the characteristic that the supernatant liquid obtained by centrifuging a cream formed of 100 g of said compressed yeast containing 30–35% of dry matter, and admixing the same with 30 g of demineralized water will exhibit a cryoscopic lowering of at most 0.3° C.;

(4) then adding to said thus-obtained compressed yeast an emulsion of an emulsifying agent having an HLB value of between 3 and 11 in water and having film forming properties sufficient to provide adequate protection and to facilitate its reconstitution in use, and said emulsifying agent being between about 0.5 and 2% by weight of the finished dry yeast product; and

(5) finally, dividing into fine particles the thus-obtained compressed yeast emulsifying agent composition and drying the same in particulated condition under gentle drying conditions, either by flash pneumatic conveyor drying, or fluidized bed drying, or a combination of flash pneumatic conveyor drying and fluidized bed drying, and at least sufficient to reduce the water content thereof to the level of a dry matter content between 94% and 97%.

4,370,421

ELECTRICALLY INSULATING SUBSTRATE AND A METHOD OF MAKING SUCH A SUBSTRATE

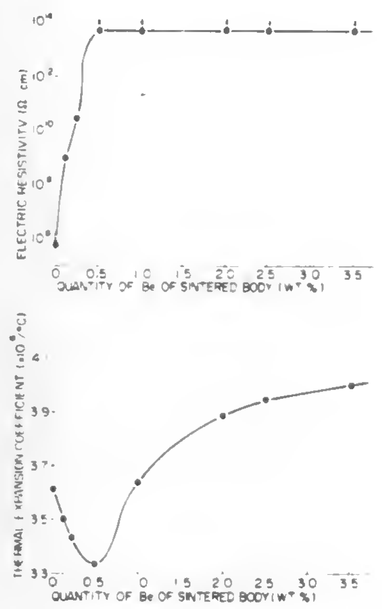
Yasuo Matsushita; Yukio Takeda; Kousuke Nakamura, and Tokio Okoshi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1980, Ser. No. 203,554

Claims priority, application Japan, Nov. 5, 1979, 54-142059; Jun. 6, 1980, 55-75601

Int. Cl.³ C04B *35/56;* C22C *29/00*

U.S. Cl. 501—88 **8 Claims**



1. An electrically insulating substrate comprising a sintered body, said sintered body consisting essentially of 0.1 to 3.5 weight % of beryllium in the form of a compound consisting of beryllium oxide, up to 0.1 weight % of aluminum, up to 0.1 weight % of boron, up to 0.4 weight % of free carbon and a balance of silicon carbide, said sintered body having a density of at least 90% relative density with respect to the theoretical density of said silicon carbide, having a thermal conductivity of at least 0.4 cal/cm.sec.°C. at 25° C., having an electrical resistivity of at least 10^7 Ohm.cm at 25° C. and having a coefficient of thermal expansion of up to 4×10^{-6}/°C. from 25° C. to 300° C.

8. An electrically insulating substrate made of a sintered body having a relative density of 90% or more, said sintered body consisting essentially of 0.1 to 3.5% by weight of beryllium in the form of beryllium oxide and a balance of silicon carbide, said sintered body being produced by sintering a mixture consisting essentially of beryllium oxide and a balance of silicon carbide having an average grain size of up to 10 μm in a non-oxidizing atmosphere at 1850° to 2500° C.

4,370,422

PROCESS FOR THE PRODUCTION OF MAGNESIUM OXIDE FROM BRINE OR BITTERN

Jajnya D. Panda, and Santosh K. Mahapatra, both of Orissa, India, assignors to Dalmia Institute of Scientific and Industrial Research and Orissa Cement Limited, both of Orissa, India

Filed Dec. 16, 1980, Ser. No. 216,810

Claims priority, application United Kingdom, Apr. 30, 1980, 8014325

Int. Cl.³ C04B *9/14*

U.S. Cl. 501—108 **13 Claims**

3. A process for the production of magnesium oxide from brine or bittern containing magnesium chloride in a concentration of at least 25° Be consisting essentially of

(a) adding to the brine or bittern, as a source of MgO and/or CaO, MgO or $Mg(OH)_2$ or calcined magnesite or calcined dolomite or calcined calcite/limestone in such amount that in the case of MgO, $Mg(OH)_2$ or calcined magnesite, the molar ratio of $MgO:MgCl_2$ is in the range of 1:1.5 to 1:15 (i.e. 0.66:1 to 0.066:) or, in the case of calcined dolomite, the molar ratio of $MgO+CaO:MgCl_2$ is in the range of 0.66:1 to 0.05:1, or, in the case of calcined calcite/limestone, the molar ratio of $CaO:MgCl_2$ is in the range of 0.66:1 to 0.1:1,
(b) keeping the mixture at a temperature below 90° C. till a solidified mass is formed;
(c) drying the said solid mass at a temperature up to 200° C.;
(d) calcining the said mass at a maximum temperature of 1200° C.; and
(e) briquetting the calcined mass into desired shapes with the addition of organic or inorganic binder, and firing the said briquettes at above 1400° C.

7. A process according to claim 3, which comprises the addition of chromite or chrome ore in addition to the binder.

4,370,423

FAST-CURING FOAMABLE COMPOSITION BASED ON ETHYLENE TERPOLYMERS

John Rys-Sikora, Bel Aire, Md., assignor to Bata Limited, Toronto, Canada

Filed Sep. 18, 1981, Ser. No. 303,479

Int. Cl.³ C08J *9/10*

U.S. Cl. 521—84 **9 Claims**

1. A foamable composition comprising:
(a) a terpolymer consisting of
  (i) ethylene;
  (ii) 10 to 40 percent by weight of a softening monomer selected from the group consisting of alkyl acrylates and methylacrylates having linear or branched alkyl groups of 1 to 18 carbon atoms, vinyl ethers of saturated carboxylic acids having 1 to 18 carbon atoms and vinyl alkyl ethers wherein the alkyl group contains 1 to 18 carbon atoms; and
  (iii) 1.0 to 20 percent by weight carbon monoxide such that the melt index of the terpolymer is 0.5 to 500;
(b) a free radical crosslinking agent; and
(c) a chemical blowing agent.

4,370,424

PLASTIC AND FOAM PLASTIC AND METHOD FOR MAKING THEM

Heinz Baumann, Kleinniedesheim, Fed. Rep. of Germany, assignor to Schaum-Chemie W. Bauer GmbH & Co KG, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 65,039, Aug. 9, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,028

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834794

Int. Cl.³ C08J *9/30*

U.S. Cl. 521—121 **13 Claims**

1. A method for making a plastic foam comprising intimately mixing a concentrated acidic aqueous solution of a phenol and a sulfonic acid, the concentrated solution having a water content of about 20 to 30% by weight, with a foamed solution of an aldehyde and a tenside, and permitting the foam to harden.

4,370,425

PROCESS FOR OBTAINING PERMANENTLY SELF-EXTINGUISHING CELLULAR MATERIALS WHICH HAVE A LOW DENSITY AND HIGH MECHANICAL CHARACTERISTICS

Giancarlo Carignani, Roma, and Aldo Cipriani, Colleferro, both of Italy, assignors to Shia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Nov. 5, 1980, Ser. No. 204,254

Claims priority, application Italy, Nov. 20, 1979, 27441 A/79

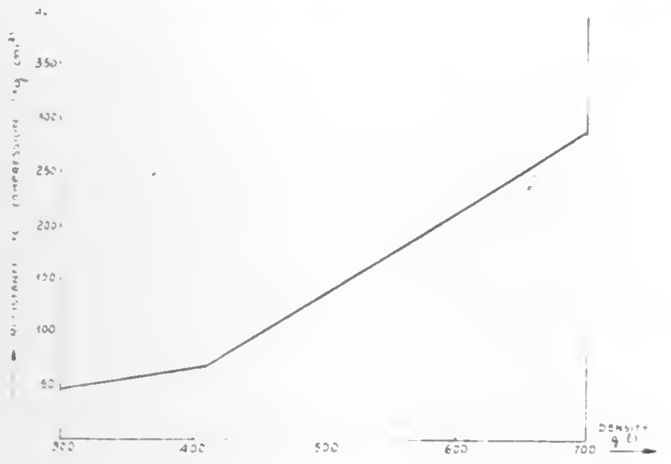
Int. Cl.³ C08V *9/30;* C08L *67/00*

U.S. Cl. 521—138 **6 Claims**

1. Permanently self-extinguishing cellular materials consisting essentially of brominated unsaturated polyester resins con-

taining an amount of bound bromine of between 10 and 30%, said cellular materials being characterized in that

(a) they have been obtained by mechanical incorporation of gas into a brominated unsaturated polyester resin prepared by bromination of an alkyd, containing units derived from tetra-hydrophthalic anhydride in its chains in an amount higher than 20% by weight of the alkyd, and by subsequent dilution with styrene and/or vinyltoluene, until cross-linkable liquid foams are obtained, which latter foams are subsequently subjected to cross-linking;



(b) they have a density below 700 grams per liter; and
(c) they have a resistance to compression, as a formed product, higher than 50 kg per cm^2, correlated to the density according to the attached FIG. 1.

4,370,426
BINDER FOR MANUFACTURING TUFTED FLOOR COVERINGS

Jean-Claude Daniel, Fontenay; Jacques Grossoleil, Paris, and Robert Roullet, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 898,955, Apr. 21, 1978, Pat. No. 4,246,309. This application Aug. 15, 1980, Ser. No. 178,468

Claims priority, application France, Apr. 22, 1977, 77 12160

The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.

Int. Cl.³ C08J *3/00*

U.S. Cl. 523—310 **2 Claims**

1. Process for preparing a binder of an aqueous latex base binder of a synthetic styrene-butadiene copolymer for use in the manufacture of tufted floor coverings having improved wear resistance in which the content in the latex of water soluble compounds dissolved in the aqueous phase is less than 0.5% by weight in relation to the polymer, comprising subjecting a latex of a styrene-butadiene copolymer prepared by emulsion polymerization in aqueous medium to ultrafiltration through a semi-permeable membrane having a cutoff within the molecular range of 5,000 to 100,000 to remove a sufficient quantity of hydrosoluble compounds, adding water to the latex during the ultrafiltration to maintain a substantially constant ponderal content of the latex in dry material between 5-70% during the filtration step.

4,370,427
ALKYLATED ISOADIPOGUANAMINE-FORMALDEHYDE CROSSLINKING RESIN AND IMPROVED COATING COMPOSITIONS PRODUCED THEREFROM

Francis E. Schweitzer, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,551, Aug. 8, 1980. This application Oct. 29, 1981, Ser. No. 316,110

Int. Cl.³ C08L *33/02, 63/02, 67/02, 67/08*

U.S. Cl. 523—400 **9 Claims**

1. An improved coating composition of the kind having:
(1) binder constituents consisting essentially of a film-forming material and a crosslinker for the film-forming material, wherein the film-forming material is selected from the group consisting of acrylic resins, polyester or alkyd resins, and epoxy resins, or mixtures of these, and
(2) a solvent for the binder constituents, wherein the improvement is characterized in that the crosslinker for the film-forming material is an alkylated isoadipoguanamine-formaldehyde resin consisting essentially of the reaction product of:
(1) an isoadipoguanamine mixture consisting essentially of:
  (a) about 87-95 percent by weight, based on the weight of the isoadipoguanamine mixture, of 2-methylglutaroguanamine,
  (b) about 4-12 percent by weight, based on the weight of the isoadipoguanamine mixture, of 2-ethylsuccinoguanamine, and
  (c) about 1-2 percent by weight, based on the weight of the isoadipoguanamine mixture, of adipoguanamine;
(2) from 3-6 moles of formaldehyde per mole of said isoadipoguanamine mixture; and
(3) a stoichiometric excess of an aliphatic alcohol having 1-4 carbon atoms or of a mixture of such alcohols.

4,370,428
PIGMENTED PEROXIDE AND POLYESTER COMPOSITIONS

Carlos R. Danville, 4505 Gilhouse St., Toledo, Ohio 43623

Filed Oct. 17, 1980, Ser. No. 197,798

Int. Cl.³ C08K *5/00;* **C08L** *67/00*

U.S. Cl. 523—508 **10 Claims**

1. A polyester resin composition comprising a polyester resin, and fillers, the improvement comprising an amount of from 0.025 weight percent to 0.40 weight percent based on the total weight of the resin of 1-[(4-methyl-2-nitrophenyl)azo]-2-naphthalenol pigment.

4,370,429
DISPERSING SOLID CARBONACEOUS MATERIAL IN WATER

John B. Clarke, Bradford, and Leslie Pitts, Ilkley, both of England, assignors to Allied Colloids Limited, Bradford, England

Filed May 27, 1981, Ser. No. 267,485

Claims priority, application United Kingdom, May 31, 1980, 8017896

Int. Cl.³ C08K *3/20*

U.S. Cl. 524—60 **9 Claims**

1. An aqueous slurry comprising solid particulate carbonaceous material, water and a stabilising amount of a dispersing agent, characterised in that the carbonaceous material is coke or coal and the dispersing agent comprises a quaternary ammonium synthetic polymer made by polymerisation of ethylenically unsaturated monomer or monomers and having a solution viscosity, as measured using a suspended level viscometer on a 1% solution in deionised water at 25° C., of 1 to 500 cs.

4,370,430
HINDERED AMINE LIGHT STABILIZERS FOR POLYMERS

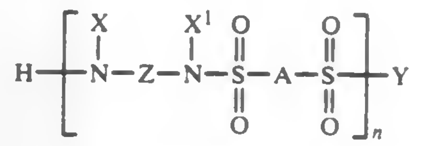
Joseph A. Hoffman, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 31, 1981, Ser. No. 297,681

Int. Cl.³ C08K *5/35, 5/34;* **C07D** *413/12, 401/12, 211/06*

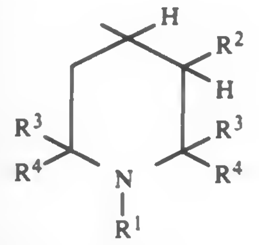
U.S. Cl. 524—96 **13 Claims**

1. An oligomer of the formula (I)



(I)

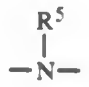
wherein X and X^1 are the same or different, and represent hydrogen, C_1-C_{20} alkyl, or the radical (II)



(II)

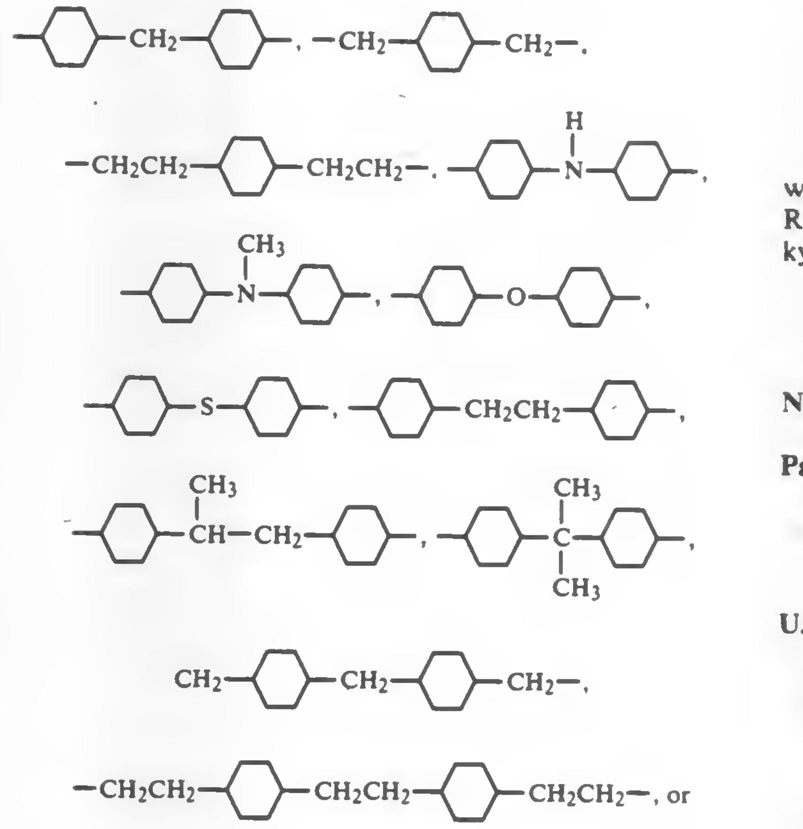
wherein R^1 represents hydrogen, C_2-C_3 hydroxyalkyl, C_1-C_8 alkyl, hydroxyl, or oxyl; R^2 represents hydrogen, C_1-C_8 alkyl, or benzyl; R^3 and R^4, which may be the same, or different, represent C_1-C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5-C_{10} cycloalkyl,

Z represents C_2-C_{20} alkylene, either straight-chained or branched, wherein the alkylene chain may be interrupted by oxy, thio, or



$$-\overset{R^5}{\overset{|}{N}}-$$

radicals, wherein R^5 represents hydrogen, C_1-C_{20} alkyl, or the radical (II); C_5-C_{10} cycloalkylene



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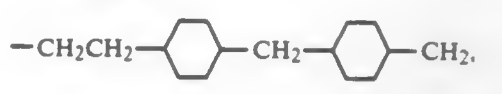
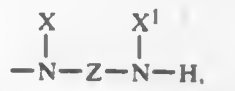


C_6-C_{12} arylene, or C_8-C_{16} aralkylene,

A is a C_6-C_{12} arylene radical, or a substituted C_6-C_{12} arylene wherein the substitutents, which may be the same, or different, are C_1-C_8 alkyl, C_1-C_8 alkoxy, C_1-C_8 alkylamino, or di(C_1-C_8)alkylamino,

n is an integer greater than 1 and less than 5,

And, Y represents halo, C_1-C_8 alkylamino, di(C_1-C_8)alkylamino, piperidyl, pyrrolidyl, morpholino, or



$$-\overset{X}{\overset{|}{N}}-Z-\overset{X^1}{\overset{|}{N}}-H,$$

wherein X, X^1, and Z are as previously defined; with the proviso that at least one piperidinyl moiety of formula (II) is present in the repeating unit.

7. A method for stabilizing a polymer subject to degradation by ultraviolet radiation which comprises incorporating into said polymer an ultraviolet radiation stabilizingly effective amount of an oligomer of claim 1.

4,370,431
PROCESS FOR COLORING FIBRE FORMING POLYAMIDES IN THE MELT WITH AZO PIGMENTS

Paul Lienhard, Frenkendorf, and Armand Roueche, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

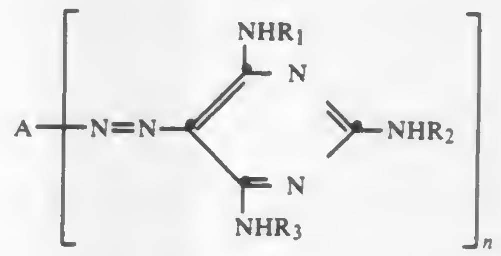
Filed Aug. 10, 1981, Ser. No. 291,546

Claims priority, application Switzerland, Aug. 20, 1980, 6285/80

Int. Cl.³ C08L *77/00*

U.S. Cl. 524—100 **9 Claims**

1. A process for colouring fibre forming polyamides in the melt, which process comprises the use of an azo pigment of the formula



wherein A is the radical of a diazo or tetraazo component, R_1, R_2 and R_3 are hydrogen atoms or alkyl, cycloalkyl, phenylalkyl or aryl radicals, and n is 1 or 2.

4,370,432
HOT MELT ADHESIVE COMPOSITIONS OF NEUTRALIZED SULFONATED EPDM AND TACKIFIER MIXTURE

Pawan K. Agarwal, Westfield, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 4, 1981, Ser. No. 299,592

Int. Cl.³ C08L *23/32, 23/16, 23/20*

U.S. Cl. 524—216 **11 Claims**

1. A hot melt adhesive composition which consists of:
(a) a neutralized sulfonated EPDM terpolymer having about 5 to about 50 meq. of neutralized sulfonated groups per 100 grams of said neutralized sulfonated EPDM terpolymer;
(b) about 25 to about 250 parts by weight of a polyisobutylene per 100 parts of the neutralized sulfonated polymer;

(c) about 25 to about 250 parts by weight of a hydrocarbon resin of a petroleum or coal tar distillate per 100 parts by weight of said neutralized sulfonated EPDM terpolymer; and

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4,370,433

HIGH STRENGTH DIENE/MONOVINYL AROMATIC COPOLYMER-BASED ADHESIVES

George M. Allison, III, Bartlesville, Okla., and Mason S. Wilt, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 10, 1981, Ser. No. 282,216

Int. Cl.^{3} C08L *93/00;* **C08F** *2/00, 4/00*

U.S. Cl. 524—274 **11 Claims**

1. A method for producing a branched copolymer comprising copolymerizing conjugated diene monomers and monovinylaromatic monomers using a monolithium initiator and then reacting the resulting lithium terminated polymer segments with a coupling agent having at least three functional groups capable of reacting with the resulting lithium terminated polymer segments to couple said coupling agent and the lithium terminated polymer segments, said method being further characterized in that the copolymerization is carried out in the presence of an amount of tertiary butylchloride that will improve the holding power that the polymer will impart to a pressure sensitive adhesive composition.

4,370,434

MERCAPTO ACID ESTER ANTIOXIDANTS FOR POLYMERS

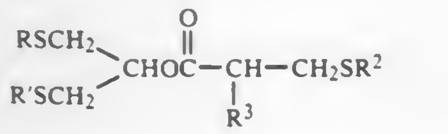
Richard H. Kline, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 252,778, Apr. 10, 1981. This application Apr. 5, 1982, Ser. No. 365,115

Int. Cl.^{3} C08K *5/37*

U.S. Cl. 524—289 **6 Claims**

1. A composition comprising (a) organic material selected from the group of oxidizable polymers, oils, resins, waxes and fuel containing an effective amount of a mixture of (b) a phenolic antioxidant, and (c) a compound of the formula I:



$$\left.\begin{array}{l}\mathrm{RSCH_2}\\ \mathrm{R'SCH_2}\end{array}\right\rangle \mathrm{CHO}\overset{\displaystyle \mathrm{O}}{\overset{\|}{\mathrm{C}}}-\underset{\displaystyle \mathrm{R^3}}{\underset{|}{\mathrm{CH}}}-\mathrm{CH_2SR^2}$$

(I)

wherein R, R′ and R^2 are alkyl radicals having 1 to 20 carbon atoms, phenyl radicals which may be substituted by 1 or 2 alkyl groups having 1 to 8 carbon atoms, aralkyl radicals having 7 to 12 carbon atoms or cycloalkyl radicals having 5 to 12 carbon atoms and R^3 is hydrogen or an alkyl radical having 1 to 4 carbon atoms; the ratio of (c) to (b) ranging from 1 to 4 to 4 to 1.

4,370,435

ASPHALT BASED COATINGS

Michael G. Roberts, and Joseph F. Tanner, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 26, 1981, Ser. No. 314,829

Int. Cl.^{3} C08K *5/10*

U.S. Cl. 524—312 **10 Claims**

1. A composition comprising a solvent solution of a chemically modified asphalt and an oil based paint, the solvent solution and the vehicle of the paint being compatible.

4,370,436

PROCESS FOR PREPARING FILLED POLYTETRAFLUOROETHYLENE MOLDING POWDER

Yukiharu Nakamura, Ibaraki, and Shoji Kawachi, Nishinomiya, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 7, 1981, Ser. No. 281,062

Claims priority, application Japan, Jul. 8, 1980, 55-93702

Int. Cl.^{3} C08K *5/01, 5/02;* **C08L** *27/18, 43/04*

U.S. Cl. 524—322 **5 Claims**

1. In a process for preparing a filled polytetrafluoroethylene molding powder by agitating finely-divided polytetrafluoroethylene particles having an average particle size of not more than 100 μm. and a particulate hydrophilic filler in water in the presence of a water-immiscible organic liquid, the improvement which comprises, agitating a mixture of water and a particulate hydrophilic filler which has been surface-treated with an aminosilane compound, said agitating being conducted in the presence of at least one member selected from the group consisting of a higher fatty acid having 12 to 18 carbon atoms and an anionic surface active agent; adding to the agitating mixture the finely-divided polytetrafluoroethylene particles and the water-immiscible organic liquid in that order; and agitating the resulting mixture for a time sufficient to agglomerate the particles.

4,370,437

NITRITE-SORBATE STABILIZING SYSTEM

Kenneth W. Willcox, and James C. Randall, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 5, 1982, Ser. No. 345,967

Int. Cl.^{3} C08K *0/00*

U.S. Cl. 524—397 **22 Claims**

1. A composition comprising:

(a) a linear or radial block copolymer of a conjugated diene and a monovinyl-substituted aromatic hydrocarbon;

(b) a metal nitrite; and

(c) a metal sorbate; wherein said metal nitrite and said metal sorbate are independently derived from the metals of Groups IA and IIA of the Periodic Table of Elements; wherein said metal nitrite and said metal sorbate are at least partly soluble in water; and wherein said metal nitrite and said metal sorbate are added in amounts sufficient to at least partially suppress get or fisheye formation or to improve thermal stability.

4,370,438

POLYESTER BLEND COMPOSITIONS EXHIBITING SUPPRESSION OF TRANSESTERIFICATION

Andrea A. DeGuia, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,563

Int. Cl.^{3} C08L *67/02*

U.S. Cl. 524—412 **29 Claims**

1. A non-burning, non-dripping polyester blend composition exhibiting suppression of transesterification, said composition comprising:

(a) approximately 35 to 85% by weight of a blend of polyethylene terephthalate and polybutylene terephthalate wherein the polyethylene terephthalate comprises approximately 10 to 25% by weight of the blend;

(b) approximately 5 to 60% by weight of a reinforcing agent;

(c) approximately 4 to 15% by weight of at least one halogen containing organic flame retardant compound; and

(d) approximately 2 to 10% by weight of the amorphous non-abrasive reaction product of antimony trioxide or a compound of antimony which generates antimony trioxide and a substrate comprising a hydrous compound of silicon in a weight ratio within the range of approximately 1:1 to 1:4, on an antimony trioxide:substrate basis.

4,370,439

METHOD OF PREPARING A SIZING COMPOSITION FOR TREATING GLASS FIBERS

Carl A. Melle, Gibsonia; Donald E. McWilliams, Pittsburgh, and Balbhadra Das, Allison Park, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 22, 1979, Ser. No. 22,673

Int. Cl.^{3} C08L *67/06*

U.S. Cl. 524—513 **45 Claims**

1. A stable aqueous emulsion for incorporation into a sizing composition for treating glass fibers, comprising:

about 0.1 to about 10 parts per hundred parts of resin of unhydrolyzed amino-functional silane,

one hundred parts of a polyester resin having free carboxyl functionality and having ethylenic unsaturation and where the polyester and silane are combined to favor the acid-base salt reaction between the free carboxyl groups of the polyester resin and the amine group of the silane over the formation of silane dimers by combination of hydrolyzed silanes, and

an amount of water to produce an emulsion having a total solids content in the range of about 5 to about 20 weight percent.

4,370,440

COMPOSITIONS COMPRISING CHLOROSULPHONATED POLYETHYLENE, CARBOXYLATED BUTADIENE-ACRYLONITRILE AND MAGNESIUM OXIDE USEFUL FOR LINERS OR MEMBRANES

Herbert F. Schwarz, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Oct. 8, 1980, Ser. No. 195,253

Claims priority, application Canada, Nov. 9, 1979, 339502

Int. Cl.^{3} C08L *33/02;* **C08K** *3/22*

U.S. Cl. 524—522 **4 Claims**

1. An improved liner or membrane composition characterized in that it comprises from about 90 to about 55 parts by weight of chlorosulphonated polyethylene and from about 10 to about 45 parts by weight of carboxylated butadiene-acrylonitrile polymer, for a total of 100 parts by weight of polymers, said chlorosulphonated polyethylene containing from about 38 to about 42 weight percent of chlorine and from about 0.9 to about 1.1 weight percent of sulphur and said carboxylated butadiene-acrylonitrile polymer being a solid polymer having a Mooney (ML 1+4 at 100° C.) of from about 45 to about 70 and containing from about 25 to about 30 weight percent of acrylonitrile and from about 5 to about 10 weight percent of an unsaturated carboxylic acid monomer, and said composition also contains, per 100 parts by weight of polymers, from about 3 to about 7 parts by weight of magnesium oxide.

4,370,441

SILICONIZED POLYESTER THERMOSETTING COATING COMPOSITIONS

Joseph E. Gaske, Mt. Prospect; Thomas H. Plaisance, Wilmette, and Kazys Sekmakas, Palatine, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 29, 1981, Ser. No. 268,633

Int. Cl.^{3} C08L *67/02, 67/00, 83/06, 61/26*

U.S. Cl. 524—539 **9 Claims**

1. An organic solvent solution coating composition adapted to deposit a thermosetting weather-resistant coating comprising three essential resin components, as follows:

1- an essentially nonfunctional organic solvent-soluble silicone resin reaction product of a highly branched, low molecular weight hydroxy functional polyester with an hydroxy or alkoxy-functional organic polysiloxane, said polysiloxane being present in an amount of from 8% to 20% of the weight of the three resin components, and said polyester and said polysiloxane being combined in approximately stoichiometric proportions;

2- a reactive organic solvent-soluble essentially linear high molecular weight hydroxy functional polyester, said hydroxy functionality being present in an amount to provide a thermoset film by reaction with aminoplast resin, said reactive polyester constituting the balance of the three resin components; and

3- from 3% to 15%, based on the weight of the three resin components, of a heterocyclic aminoplast resin for curing said reactive polyester, said components 1 and 2 being compatible in the solution and at least partially incompatible in a film as the solvent evaporates, so that components 2 and 3 can cure is a deposited film and adhere the coating to a metal substrate, and component 1 can concentrate at the surface to enhance the weather resistance which is obtained when a deposited coating is baked.

4,370,442

FIRE RETARDANT COMPOSITIONS

Glenn A. Pearson, 3709 S. George Mason Dr., Falls Church, Va. 22041

Filed Dec. 5, 1980, Ser. No. 214,017

Int. Cl.^{3} C08L *61/20*

U.S. Cl. 524—598 **13 Claims**

1. A resinous aqueous solution comprising the reaction product in about 100–200 parts of water of (a) about 75–100 parts of aldehyde, (b) about 30–50 parts of urea, (c) about 20–40 parts of melamine and (d) about 100–125 parts of phosphoric acid, the solution being a stable clear solution having a good shelf life and forming flexible, waterproof and nonburning films on substrates.

4,370,443

NOVEL POLYMERIC COMPOUNDS, PROCESSES AND METHODS OF USE

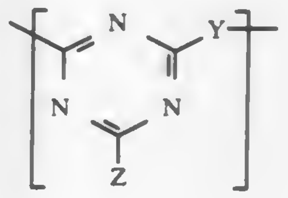
Eugene P. Wesseler, Sharonville, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 254,501, Apr. 15, 1981, Pat. No. 4,347,352, which is a continuation-in-part of Ser. No. 126,995, Mar. 31, 1980, Pat. No. 4,314,001. This application Jan. 11, 1982, Ser. No. 338,789

Int. Cl.^{3} C08L *79/04;* **D21H** *3/48, 3/80, 3/82*

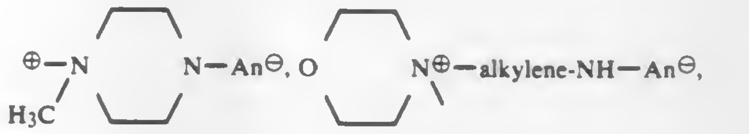
U.S. Cl. 524—612 **3 Claims**

1. A method of mordanting water-soluble dyestuffs on cellulosic fibers in the manufacture of paper which comprises treating said fibers in the form of an aqueous suspension with a water-soluble dyestuff and a water-soluble polymeric quaternary ammonium compound consisting essentially of repeating units of the formula



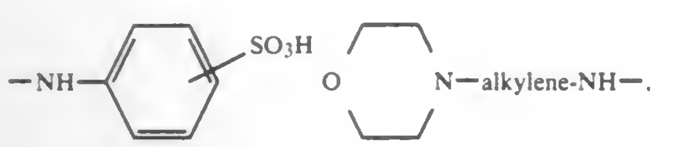
wherein:

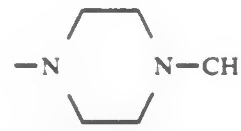
Y represents a moiety selected from the group consisting of $-\mathrm{N}^{\oplus}(\mathrm{CH_3})_2\text{-alkylene-NR}-\ \mathrm{An}^{63}$,



and $-\mathrm{N}^{\oplus}(\mathrm{CH_3})_2\text{-alkylene-}\mathrm{N}^{\oplus}(\mathrm{CH_3})_2\text{-}2\mathrm{An}^{\ominus}$;

Z represents a moiety selected from the group consisting of $-\mathrm{N}(\mathrm{R^1})\text{-alkylene}^1\text{-}\mathrm{N}(\mathrm{R^2})_2$, $-\mathrm{N}^{\oplus}(\mathrm{R^1})_2\mathrm{R^3}\mathrm{An}^{\ominus}$,





$—NH\text{-alkylene}^1\text{-}NR^4\text{-alkylene}^1\text{-}NH_2$ in which alkylene and alkylene^1 are each selected from the group consisting of $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, and $—CH_2CH_2CH_2CH_2—$; R, R^1, R^2, and R^4 are each selected from the group consisting of hydrogen, non-tertiary C_1 to C_4 hydroxyalkyl and non-tertiary C_1 to C_4 alkyl; R^3 is a non-tertiary C_1 to C_{18} alkyl; and $An^{\ominus}$ is a monovalent anion.

4,370,444

CONCENTRATED AQUEOUS SOLUTION OF PHENOL AND FORMALDEHYDE STABLE AT LOW TEMPERATURE PROCESS FOR PREPARING SAME

Silvestro Pezzoli, Biassono, and Giancarlo Rossi, Monza, both of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Jun. 11, 1981, Ser. No. 272,622

Claims priority, application Italy, Jun. 11, 1980, 22698 A/80

Int. Cl.^{3} C08L *5/00*

U.S. Cl. 524—732 7 Claims

1. An aqueous, fluid, storage-fluid solution of phenol, formaldehyde and a stabilizer, wherein: the molar ratio of the phenol to the formaldehyde is from 0.5:1 to 1.3:1; the water content does not exceed 30% by weight; the stabilizer comprises a carbohydrate or a mixture of carbohydrates in a proportion of from 1 to 10% by weight; the solution being free from purposely added acids and bases and its content of any genetic formic acid being not greater than 0.04% by weight.

4,370,445

POLYURETHANE-BASE MATERIAL SUITABLE FOR USE FOR MAKING FIRE ARRESTING WALLS

Norbert Depetris, Carry le Rouet, and Claude Bovis, Martigues, both of France, assignors to Chloe-Chimie, Paris, France

Filed Nov. 13, 1980, Ser. No. 206,347

Claims priority, application France, Jun. 7, 1979, 79 14522

Int. Cl.^{3} C08G *18/32;* C08L *75/12*

U.S. Cl. 524—742 **11 Claims**

1. Composition for filling internal cavities in strong walls and doors having good resistance to mechanical stresses and to heat, consisting of 30 to 70 parts by weight of polyurethane resin forming components:

from 10 to 60 parts by weight of divided elemental sulphur,

from 0 to 15 parts by weight of flame and heat retardants in the form of halogenated compounds selected from the group consisting of chlorinated paraffin, chlorinated diphenyls and dibromopropanol.

4,370,446

METHOD FOR MANUFACTURE OF POLYBUTADIENE-MODIFIED UNSATURATED POLYESTER

Tsutomu Toyoda; Iwao Maekawa; Hirobumi Izumi, and Tadashi Fuzii, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,698

Claims priority, application Japan, Jun. 12, 1980, 55-79654

Int. Cl.^{3} C08G *63/76;* C08L *67/04*

U.S. Cl. 525—36 25 Claims

1. A method for the manufacture of a polybutadiene-modified unsaturated polyester, comprising the steps of:

(I) preparing a reaction product by reacting as component (A) an α,β-unsaturated dicarboxylic acid or anhydride with as component (B) at least one compound selected from the group consisting of (i) air-drying allyl compounds, (ii) unsaturated animal and vegetable oils, the fatty acids thereof, and the transesters thereof with polyols, and (iii) a dicyclopentadiene or a hydroxylated cyclopentadiene at a (B)/(A) component molar ratio within the range of from 0.8 to 1.2, and

(II) thereafter reacting the resultant product with as component (C) at least one compound selected from the group consisting of α,ω-polybutadiene glycol and α,ω-hydrogenated polybutadiene glycol.

4,370,447

UNSATURATED POLYESTER RESIN COMPOSITIONS

Katuhiro Ishikawa; Ryotaro Ohno, and Masatoshi Arakawa, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

PCT No. PCT/JP80/00163, § 371 Date Mar. 11, 1981, § 102(e) Date Mar. 11, 1981, PCT Pub. No. WO81/00258, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 18, 1980, Ser. No. 253,832

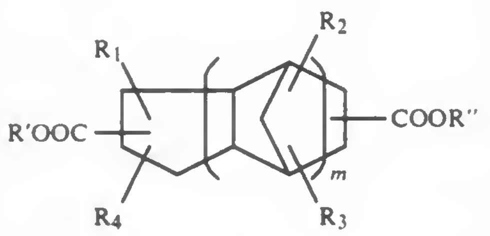
Claims priority, application Japan, Jul. 19, 1979, 54-90957

Int. Cl.^{3} C08G *63/76;* C08L *67/00*

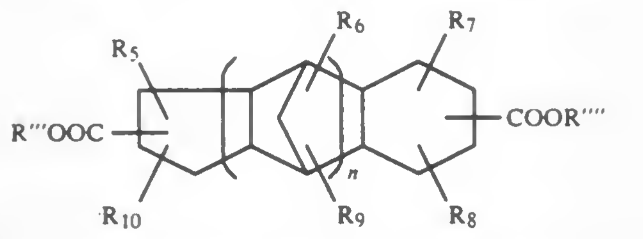
U.S. Cl. 525—39 21 Claims

1. Unsaturated polyester resin compositions comprising (A) unsaturated polyesters prepared from unsaturated polybasic acid components, saturated polybasic acid components, and polyhydric alcohol components, and (B) α,β-ethylenically unsaturated monomer components, which are characterized in that:

(1) all or part of said saturated polybasic acid components consist of at least one of saturated dibasic acids or esters thereof represented by the formula:



(R_1 to R_4 are each hydrogen or alkyl, R′ and R″ are the same or different and each represent hydrogen or ester-exchangeable alkyl, and m is 1 or 2), or the formula:



(R_5 to R_{10} are each hydrogen or alkyl, R‴ and R⁗ are the

same or different and each represent hydrogen or ester-exchangeable alkyl, and n is zero or 1),

(2) all or part of said polyhydric alcohol components consist of at least one glycol selected from the group consisting of ethylene glycol, propylene glycol, neopentyl glycol, and bisphenol A derivatives, and

(3) all or part of said α,β-ethylenically unsaturated monomer components consist of an aromatic vinyl monomer.

4,370,448

THERMOSETTING COMPOSITION COMBINED HIGH VINYL DIOLEFIN POLYMER WITH HIGH VINYL LOW VINYL DIOLEFIN POLYMER

John E. Leland, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 24, 1981, Ser. No. 247,040

Int. Cl.^{3} C08L *9/06, 9/00*

U.S. Cl. 525—99 9 Claims

1. A thermosetting composition comprising:

(a) High vinyl diolefin polymer chosen from among the group consisting of (1) homopolymers of 1,3-butadiene having about 50 to about 90 percent 1,2 addition and (2) copolymers of about 50 to about 95 weight percent 1,3-butadiene having about 50 to about 90 percent 1,2 addition and about 50 to about 5 weight percent styrene and

(b) About 15 to about 35 weight percent of total polymer phase of a normally solid elastomeric 1,3-butadiene polymer consisting of segments of high vinyl having about 50 to about 90 percent 1,2 addition and low vinyl having about 5 to about 15 percent 1,2 addition in a weight ratio of high vinyl:low vinyl of about 60:40 to about 40:60.

4,370,449

TRANSITION METAL COMPOSITION AND PRODUCTION THEREOF

Ashley D. Bye, The Hague, Netherlands, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 936,892, Aug. 25, 1978, Pat. No. 4,203,867. This application Nov. 1, 1979, Ser. No. 90,119

Claims priority, application United Kingdom, Aug. 31, 1977, 36343/77; May 24, 1978, 21733/78

Int. Cl.^{3} C08F *4/64, 10/00*

U.S. Cl. 525—247 12 Claims

1. A process for the production of a polymer or copolymer of an olefine monomer wherein at least one olefine monomer, or a mixture of at least one olefine monomer and ethylene, is polymerised by contacting the at least one olefine, or mixture thereof with ethylene, under polymerisation conditions with an olefine polymerisation catalyst comprising

(1) a titanium trichloride-containing material; and

(2) at least one organo-metallic compound of aluminium, or of a non-transition metal of Group IIA of the Periodic Table, or a complex of an organo-metallic compound of a non-transition metal of Group IA or Group IIA of the Periodic Table with an organo-aluminium compound,

wherein the titanium trichloride-containing material which is component (1) of the catalyst is obtained by a process which consists essentially of

(1) reducing titanium tetrachloride by reacting the titanium tetrachloride with a reducing agent under conditions to give a solid titanium trichloride product which includes an associated aluminium compound containing aluminium and chlorine atoms, wherein the titanium trichloride is formed predominantly in the solid beta-form;

(2) contacting a suspension of the solid reduction product of step (1) with reagents consisting of compound E and compound L either simultaneously or sequentially, at least part of the contacting being effected while maintaining the suspension at a temperature of at least 60° C. in the presence of at least compound E or compound L; and

(3) subsequent to the contacting with the compound E washing the solid product obtained with an inert hydrocarbon or inert halohydrocarbon liquid

where

E is an ether or a thioether; and

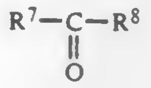
L is an organic Lewis Base compound selected from esters of the formula

$$R^1R^2R^3CCOOR^1;$$

esters and partial esters of aliphatic diols and polyols; amines of the formula

$$R^4R^5R^6N;$$

and ketones of the formula



$$R^7—\underset{\underset{O}{\|}}{C}—R^8$$

where

R^1 is a hydrocarbyl group;

R^2 and R^3 are each, independently, a hydrogen atom or a hydrocarbyl group; or the group $R^1R^2R^3C—$ is a substituted or unsubstituted, saturated or unsaturated, condensed or uncondensed hydrocarbyl ring system;

R^4 and R^5 are hydrocarbyl groups;

R^6 is a hydrogen atom, a hydrocarbyl group or a group

$$—C_mH_{2m}NR^4R^5;$$

or R^4 and R^5, optionally together with R^6, together form a substituted or unsubstituted, saturated or unsaturated, condensed or uncondensed ring system;

R^7 is a hydrocarbyl group;

R^8 is a hydrocarbyl group, which may optionally be substituted with one hydrocarbonoxy group; and

m is 1, 2 or 3.

4,370,450

PROCESS FOR THE PRODUCTION OF POLAR-MODIFIED POLYPROPYLENE AND ITS USE

Ulrich Grigo, Krefeld; Josef Merten, Korschenbroich, and Rudolf Binsack, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 266,949

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021105

Int. Cl.^{3} C08F *255/02*

U.S. Cl. 525—262 **5 Claims**

1. A process which comprises the steps of

(1) preparing an aqueous suspension which, based on 100 to 2000 parts by weight of water, contains

(a) 100 parts by weight of particles of a polymer selected of the group consisting of crystalline homo-polypropylene and crystalline copolymers of copolymerized units of at least 70% by weight of propylene and another α-olefin,

(b) 4 to 30 parts by weight of a polar-vinyl monomer,

(c) based on 100 parts by weight of monomer, 0.1 to 10 parts by weight of a radical chain polymerization initiator which has a half-life of at least 2 h at a temperature of 80° to 135° C. and

(d) 10 to 1200 parts by weight of an organic solvent which is capable of swelling polypropylene, has a boiling point at 760 Torr of at least 100° C., is miscible with the monomer in any proportion and is an aromatic hydrocarbon, an aliphatic hydrocarbon, a halogenated aromatic hydrocarbon or a mixture thereof:

(2) heating the aqueous suspension without decomposition of the initiator of (c) to swell the polymer of (a) and permit

the monomer of (b) to penetrate into said polymer and then

(3) maintaining the aqueous suspension at a temperature of $\geqq 85°$ C. until the polymerization of said monomer has ceased.

4,370,451

NOVEL BLOCK COPOLYMERS INCLUDING ACRYLONITRILE SEQUENCES AND SEQUENCES INCLUDING UNITS DERIVED FROM GLUTARIMIDE UNITS AND PROCESSES FOR PREPARING SAME

Vladimir A. Stoy, Princeton, N.J., assignor to S.K.Y. Polymers, Princeton, N.J.

Continuation-in-part of Ser. No. 166,032, Jul. 7, 1980, and a continuation-in-part of Ser. No. 188,060, Sep. 17, 1980, Pat. No. 4,337,327. This application Feb. 8, 1982, Ser. No. 346,417

Int. Cl.³ C08F *220/48, 293/00*

U.S. Cl. 525—294 7 Claims

1. A novel block copolymer of a molecular weight of from 10,000 to 2,000,000 comprised of acrylonitrile sequences and sequences comprised of at least about 50 mole percent acrylamide units and organo-substituted amide units derived from glutarimide units, said acrylonitrile sequences having a molecular weight of at least 400, said sequence of said acrylamide and said organo-substituted amide units having a molecular weight of at least 400.

4,370,452

PROCESS TO INDUCE RAPID CURING OF A COPOLYESTER RESIN WITH EPOXIDE COMPOUNDS AND A COMPOSITION FORMED FOR THAT PROCESS

Paul L. Heater, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 12, 1981, Ser. No. 223,972

Int. Cl.³ C08L *63/00, 67/02*

U.S. Cl. 525—438 19 Claims

1. A process to induce rapid curing of a copolyester resin, comprising:

reacting from about 0.001 to about 10.0 weight percent of a curing reaction catalyst with the copolyester resin during the polymerizaton of the copolyester resin, such that the copolyester resin has activated termini prior to compounding the copolyester resin with an epoxide compound, said activated termini permitted rapid curing of the copolyester resin after said compounding and during heating of the copolyester-epoxide mixture;

said polymerization comprises an esterification stage, a condensation stage, a reactor compounding stage, and finishing stage;

said reaction occurring during said reactor compounding stage; and

wherein said curing reaction catalyst is selected from compounds having the formulae, and combinations thereof:

$N^+R_4X^-$

where R, which may be the same of different, is selected from the group consisting of an alkyl radical having from 1 to 18 carbon atoms, a halo-substituted alkyl radical having from 1 to 18 carbon atoms, a hydroxy substituted alkyl radical having from 1 to 18 carbon atoms, an aryl radical having from 6 to 24 carbon atoms, and an aralkyl radical having from 7 to 24 carbon atoms, and combinations thereof; and where X is a halide radical selected from the group consisting of fluoride, chloride and bromide;

AR_t

where R is the same as that described above and may be the same or different; where A is selected from the group consisting of N, P, and Sn; and where t is 3 when A is N or P or is 4 when A is Sn; or

$(R_3COO^-)_n(M)^{n+}$

where n is a number from 1 to 3, where R is the same as that described above, where M is a metal cation selected from the group consisting of cations of metals in Groups I and II of the Periodic Table of the Elements, and Fe, Sn, and Co.

4,370,453

PROCESS FOR PREPARING CATHODIC ELECTRODEPOSITABLE COATING COMPOSITION

Hiroyoshi Omika, Yokohama; Hajime Hara, Fujisawa; Yutaka Otsuki, Yokohama; Yoshihiko Araki, Kawasaki, and Kazuho Aoyama, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Apr. 20, 1981, Ser. No. 255,664

Claims priority, application Japan, Apr. 28, 1980, 55-55473

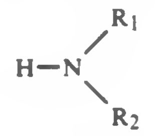
Int. Cl.³ C08L *63/00;* **C09D** *3/58, 5/40*

U.S. Cl. 525—450 6 Claims

1. A process for preparing a cathodic electrodepositable coating composition which comprises, in sequence,

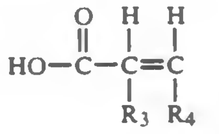
(i) epoxidizing a high-molecular-weight compound containing a carbon-carbon double bond and having a molecular weight of 500 to 10,000 and an iodine value of 100 to 500 to form an epoxidized high-molecular-weight compound containing 0.5 to 12% by weight of oxirane oxygen,

(ii) reacting a part of the epoxy groups of the epoxidizing high-molecular-weight compound with a basic amine compound of the general formula



wherein R_1 and R_2, independently from each other, represent a hydrocarbon group having 1 to 10 carbon atoms which may be partly replaced by a hydroxyl group, and R_1 and R_2 together may form a cyclic structure,

(iii) reacting a part or the whole of the remaining epoxy groups with an α,β-unsaturated monocarboxylic acid of the general formula



$$HO-\overset{\overset{\displaystyle O}{\|}}{C}-\underset{\underset{\displaystyle R_3}{|}}{\overset{\overset{\displaystyle H}{|}}{C}}=\underset{\underset{\displaystyle R_4}{|}}{\overset{\overset{\displaystyle H}{|}}{C}}$$

wherein R_3 and R_4 represent a hydrogen atom or a methyl group, at least one of them being a hydrogen atom,

to prepare a resin composition, and

(iv) neutralizing the resin composition with an organic or inorganic acid to render it water-soluble or water-dispersible.

4,370,454

PREPARATION OF MALEIC ANHYDRIDE COPOLYMERS

Karlheinz Messmer, Ludwigshafen; Hermann Fischer; Heinrich Hartmann, both of Limburgerhof; Walter Denzinger, Speyer; Rolf Schneider, Mannheim; Klaus Wulz, Lambsheim, and Hans-Juergen Raubenheimer, Ketsch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Feb. 19, 1982, Ser. No. 350,356

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108100

Int. Cl.³ C08L *37/00*

U.S. Cl. 526—88 6 Claims

1. A process for the preparation of a maleic anhydride copolymer powder by copolymerization, wherein a solution or

dispersion of maleic anhydride in a C_1–C_8-alkyl vinyl ether and/or a C_3–C_{10}-alkene, containing from 3 to 25 moles of the C_1–C_8-alkyl vinyl ether and/or C_3–C_{10}-alkene per mole of maleic anhydride, is brought into contact with a powder bed under polymerization conditions, and is polymerized in the bed whilst the reaction mass is circulated and the powder state is maintained, and the heat generated during polymerization is removed by evaporating excess monomer which boils lower than maleic anhydride.

4,370,455

PROCESS FOR POLYMERIZING OR COPOLYMERIZING OLEFINS

Takashi Ueda; Syuji Minami; Mamoru Kioka, all of Ohtake, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 101,470

Claims priority, application Japan, Dec. 11, 1978, 53-151999

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—125 9 Claims

1. In a process for producing a polymer or a copolymer of an alpha-olefin having 2 to 12 carbon atoms which comprises continuously polymerizing or copolymerizing said alpha-olefin or alpha-olefin with up to 5 mole % of a diolefin in the presence of a catalyst comprising a transition metal catalyst component and an organo-aluminum catalyst component; the improvement wherein:

[I] said polymerization or copolymerization is carried out in the presence of a catalyst composed of:

(A) a solid magnesium compound obtained by reacting (i) an adduct between a magnesium halide and an electron donor selected from the group consisting of an alcohol with 1 to 18 carbon atoms, an aldehyde with 2 to 15 carbon atoms, a carboxylic acid with 2 to 18 carbon atoms and an amine, with (ii) an organoaluminum compound having the following formula:

$R^1{}_mAl(OR^2)_nH_pX_q$

wherein R^1 and R^2 are identical or different and represent a hydrocarbon group having 1 to 5 carbon atoms, X represents halogen, m is a number in the range of $0<n\leqq 3$, n is a number in the range of $0\leqq n<3$, p is a number in the range of $0\leqq p<3$, and q is a number in the range of $0\leqq q<3$ and $m+n+p+q=3$, or having the following formula:

$M^1AlR^1{}_4$

wherein M^1 represents Li, Na or K, and R^1 is the same as defined above,

(B) a liquid titanium or vanadium metal compound, and

(C) an organoaluminum compound, and

[II] said continuous polymerization or copolymerization is carried out while feeding compound (B) separately from other compounds (A) and (C) into a polymerization or copolymerization zone, components (A), (B), and (C) being fed continuously to said zone.

4,370,456

CATALYST COMPOSITION FOR COPOLYMERIZING ETHYLENE

Kathleen F. George, Crosslanes, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 23, 1981, Ser. No. 324,075

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—125 38 Claims

1. A continuous process for producing ethylene copolymers containing at least 90 mol percent of ethylene and no more than 10 mol percent of one or more alpha olefins containing from 3 to 8 carbon atoms, said copolymers being produced in granular form and having a density of from 0.91 g/cm³ to 0.94 g/cm³,

which comprises contacting a mixture of ethylene and at least one alpha olefin containing from 3 to 8 carbon atoms, at a temperature of from 30° C. to 105° C. and a pressure no greater than 1000 psi, in a gas phase reaction zone, with particles of a catalyst system comprising a precursor composition having the formula

$Mg_mTi(OR)_nX_p[ED]_q$

wherein R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, or COR′ wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms,

X is selected from the group consisting of Cl, Br, I, and mixtures thereof,

ED is an organic electron donor compound selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

m is 0.5 to 56,

n is 0, 1 or 2,

p is 2 to 116, and

q is 2 to 85,

said precursor composition being diluted with a silica support containing from 5 percent by weight to 15 percent by weight of a dialkylzinc compound having the formula

$ZnR''R'''$

wherein R″ and R‴ are alkyl radicals containing from 1 to 12 carbon atoms,

and said precursor composition being completely activated with an organoaluminum activator compound having the formula

$Al(R'''')_dX'_eH_f$

wherein X′ is Cl or OR′′′′′,

R′′′′ and R′′′′′ are saturated hydrocarbon radicals containing from 1 to 14 carbon atoms,

e is 0 to 1.5,

f is 0 or 1, and

$d+e+f=3$,

said activator compound being employed in an amount such as to provide a total aluminum:titanium molar ratio in said reaction zone of from 10:1 to 400:1.

4,370,457

CATALYST SYSTEM

Nikolaous K. Balint, Du Page, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 35,603, May 3, 1979, abandoned, which is a division of Ser. No. 881,828, Feb. 27, 1978, Pat. No. 4,171,284. This application Dec. 12, 1980, Ser. No. 215,676

Int. Cl.³ C08F *4/64, 10/06*

U.S. Cl. 526—137 7 Claims

1. A polymerization process comprising contacting, under polymerization conditions, propylene or a mixture of propylene and one or more copolymerizable alpha-olefins with a catalyst comprising a titanium triahalide; a dialkyl aluminum halide; and an effective amount of a hexavalent sulfur mineral acid or anhydride selected from the group consisting of chlorosulfonic acid and sulfur trioxide in a molar ratio to titanium trihalide from about 0.005 to 1 to about 0.5 to 1, whereby the amount of n-hexane soluble polymeric product is decreased.

4,370,458

PROCESS FOR THE MANUFACTURE OF POLYOLEFINS

Jürgen Falbe, Dinslaken; Peter Schneller, Oberhausen; Wolfgang Payer, Wesel; Ingrid Förster, Mulheim; Boy Cornils, Dinslaken; Hans-Walter Birnkraut, Oberhausen; Siegfried Lutze, Gelsenkirchen, and Karl Otterbein, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie AG, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 785,275, Apr. 6, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 954,021

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1976, 2630262

Int. Cl.^{3} C08F *4/64, 10/02*

U.S. Cl. 526—138 **4 Claims**

1. In a process for the polymerization of ethylene or a mixture of ethylene with an α-olefin with a C_3–C_{15} α-olefin in solution, suspension or in the gas phase by contacting the ethylene or ethylene-α-olefin mixture at 20°–250° C. at 1 to 50 bar pressure with a mixed catalyst comprising a titanium (III) trichloride and an organoaluminum compound in the presence of hydrogen, the improvement which comprises employing as the organoaluminum compound 0.1 to 20 mols of triethylaluminum, triisobutylaluminum or isoprenylaluminum per mol titanium (III) trichloride and including in the reaction mixture oxygen at a concentration of 0.001 to 0.1 volume percent, based upon the volume of ethylene.

4,370,459

POLYMERIZING UNSATURATED MONOMERS WITH GEM-DIPEROXYESTER CATALYST

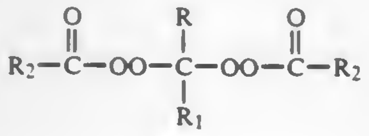
Ronald L. Pastorino, Larkspur; Lawrence A. Bock, Walnut Creek, and Reidar Halle, Novato, all of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,210

Int. Cl.^{3} C08F *4/36, 14/06*

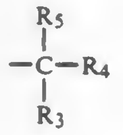
U.S. Cl. 526—227 **10 Claims**

1. In the polymerization of a monomer mass containing a monomer selected from vinyl chloride, ethylene, styrene, and methyl methacrylate and in the copolymerization of vinyl chloride and vinyl acetate by subjecting said monomers or comonomers to polymerization conditions in the presence of an initiating amount of organic peroxide, the improvement in which said organic peroxide has the formula:



$$R_2-\overset{\overset{O}{\|}}{C}-OO-\underset{R_1}{\overset{R}{C}}-OO-\overset{\overset{O}{\|}}{C}-R_2$$

where R is selected from methyl and ethyl; R_1 is ethyl when R is ethyl; R_1 is hydroxyalkyl of 1 to 7 carbon atoms when R is methyl; and each R_2 is



$$-\underset{R_3}{\overset{R_5}{C}}-R_4$$

where each of R_3, R_4, and R_5 is selected from hydrogen and alkyl, provided not more than one of R_3, R_4, and R_5 is hydrogen, R_3, R_4, and R_5 collectively containing from 2 to 12 carbon atoms.

4,370,460

COPOLYMERS BASED ON STYRENE AND ACRYLIC ACID ESTERS AND/OR METHACRYLIC ACID ESTERS, AND THEIR USE IN GASOLINE-CONTAINING MASONRY PAINTS OR RENDERS

Gerhard Neubert, Battenberg, and Eckehardt Wistuba, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinlein-Pfalz, Fed. Rep. of Germany

Filed Jun. 16, 1981, Ser. No. 274,195

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023326

Int. Cl.^{3} C08F *220/12*

U.S. Cl. 526—329.2 **1 Claim**

1. A benzene-soluble copolymer, having a K value of from 15 to 60, which contains, as copolymerized units,

(A) from 10 to 40% by weight of styrene,

(B) from 10 to 50% by weight of tert-butyl acrylate and/or vinyl pivalate,

(C) from 20 to 40% by weight of isobutyl methacrylate,

(D) from 5 to 20% by weight of acrylic acid esters and/or methacrylic acid esters of alkanols of 10 to 20 carbon atoms and

(E) from 0 to 5% by weight of monoolefinically unsaturated monocarboxylic acids of 3 to 5 carbon atoms or their β-hydroxy (C_{2-3}) alkyl esters, and/or monoolefinically unsaturated dicarboxylic acids of 3–5 carbon atoms, their β-hydroxy (C_{2-3}) alkyl esters or mono-(C_{1-18}) alkyl esters or mixtures of said monoolefinically unsaturated carboxylic acids or esters, the amount of component (D) being from 20 to 50% by weight of that of component (A), and the sum of the percentages of A to E being 100.

4,370,461

ORGANO PHOSPHORUS-CONTAINING COMPOUNDS AS CATALYSTS FOR DEBLOCKING BLOCKED ISOCYANATES

Bruce L. Burton, Lake Jackson, Tex., and George A. Doorakian, Bedford, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 27, 1981, Ser. No. 286,925

Int. Cl.^{3} C08G *18/14, 18/80*

U.S. Cl. 528—45 **19 Claims**

1. A process for deblocking blocked isocyanates which process comprises heating a composition containing a blocked isocyanate in the presence of, as a deblocking catalyst, an organo phosphorus-containing compound selected from phosphonium compounds and phosphines at a temperature and time for said deblocking to occur.

4,370,462

CURABLE RESIN COMPOSITION

Nobuyuki Ikeguchi, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 6, 1979, Ser. No. 91,815

Claims priority, application Japan, Nov. 13, 1978, 53-139721

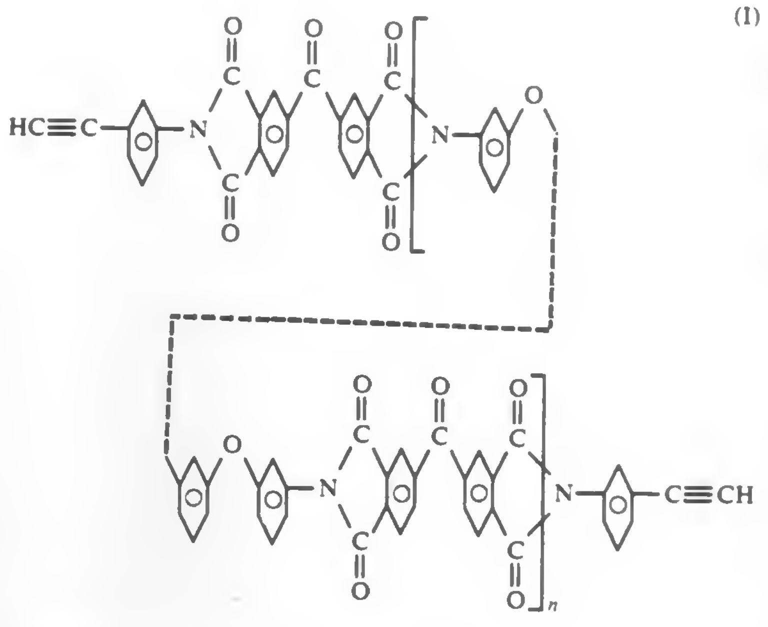
Int. Cl.^{3} C08G *18/28*

U.S. Cl. 528—73 **4 Claims**

1. A curable resin composition comprising

(A) 80 to 99 parts by weight of a polyfunctional aromatic cyanate ester monomer, an aromatic cyanate ester homoprepolymer, or a coprepolymer of an aromatic cyanate ester and an amine of the formula $R^2\text{-}(NH_2)n$ wherein R^2 is a polyvalent aromatic or alicyclic organic group, and n is an integer of from 2 to 5, and

(B) 20 to 1 parts by weight of a compound of the formula (I)



(I)

wherein n is an integer of from 1 to 5.

4,370,463

PROCESS FOR NO-BAKE FOUNDRY APPLICATION UTILIZING POLYURETHANES BASED ON AMINE POLYOLS

Robert J. Schafer, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 72,730, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 915,413, Jun. 14, 1978, abandoned. This application Mar. 30, 1981, Ser. No. 248,165

Int. Cl.^{3} C08G *18/50;* **B22C** *1/22*

U.S. Cl. 528—78 **27 Claims**

1. Process for casting lightweight metals comprising:

(a) Forming a foundry mix said mix comprising an aggregate, a polyisocyanate and an amine polyol wherein the aggregate comprises at least 90% by weight of said mix;

(b) Shaping said mix to form a foundry shape;

(c) Allowing said mix to cure after said shape has been formed;

(d) Forming a shaped lightweight metal casting by using said cured shaped mix and by casting melted light weight metal into contact with said cured shaped mix; and

(e) Removing the cured shaped mix from said light weight metal casting;

4,370,464

CATIONIC POLYMER FLOCCULANT

Katsutoshi Tanaka, Chigasaki; Hisao Takeda, Zama; Mutsumi Kawano, Chigasaki, and Isao Miyahara, Samukawa, all of Japan, assignors to Kyoritsu Yuki Co., Ltd. and Mitsubishi Chemical Industries, Ltd., both of Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,930

Claims priority, application Japan, Jun. 9, 1981, 56-88731

Int. Cl.^{3} C08G *65/26*

U.S. Cl. 528—99 **11 Claims**

1. A cationic polymer flocculant comprising a polycondensate of (i) epihalohydrine and (ii) a mixture of component (a) and component (b) at a molar ratio of (a)/(b) in the range of 90/10 to 50/50 wherein said component (a) is a reaction product of monohydric phenol with formaldehyde and dialkylamine of two to six carbon atoms, and said component (b) is a reaction product of bisphenol with formaldehyde and dialkylamine of two to six carbon atoms.

4,370,465

EPOXY RESINS HAVING IMPROVED PHYSICAL PROPERTIES WHEN CURED

Ross C. Whiteside, Jr., Angleton; Adolphus V. Gist, Lake Jackson, both of Tex., and George A. Doorakian, Bedford, Mass., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 212,959, Dec. 4, 1980, Pat. No. 4,352,918. This application Dec. 14, 1981, Ser. No. 330,047

Int. Cl.^{3} C08G *59/62, 59/68, 59/50*

U.S. Cl. 528—104 **35 Claims**

1. A product resulting from curing a mixture of

(1) an epoxy resin prepared by reacting

(A) an epoxy resin which is a glycidyl ether of a dihydric phenol having an average of more than one glycidyl ether group per molecule with

(B) a dihydric phenolic compound in the presence of

(C) a phosphonium catalyst employing components (A) and (B) in quantities such that the phenolic hydroxyl to epoxide equivalent ratio is that which will provide a theoretical percent epoxide of the resultant reaction product of from about 2.7 to about 14;

wherein the catalyst, component (C), is employed in a quantity such that the epoxy resin which would result when subjecting a mixture of components (A), (B) and (C) to suitable reaction conditions produces an advanced epoxy resin wherein the difference obtained by subtracting the percent epoxide obtained by analysis from the theoretical percent epoxide is from about 0.5 to about 4; and

(2) a curing quantity of a curing agent therefor.

4,370,466

OPTICALLY ANISOTROPIC MELT FORMING POLYESTERS

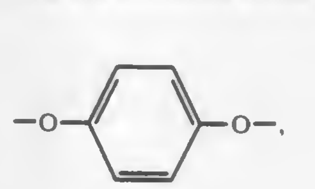
Roger K. Siemionko, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 28, 1981, Ser. No. 306,592

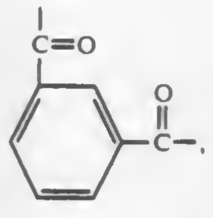
Int. Cl.^{3} C08G *63/60*

U.S. Cl. 528—190 **8 Claims**

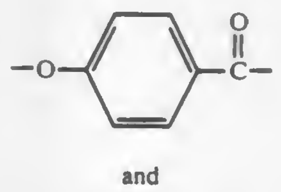
1. Fiber-forming melt-spinnable copolyesters that exhibit optical anisotropy in the melt consisting essentially of Units I, II, III and IV having the structural formulas:



I

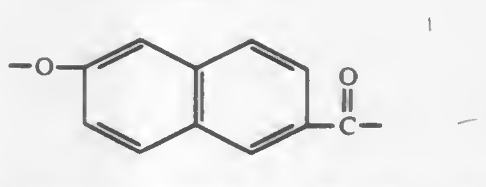


II



III

and



IV

wherein said polyesters comprise at least about 10 mole % of Unit I, at least about 10 mole % of Unit II, from about 40 to 70 mole % of Unit III and from about 2.5 to 15 mole % of Unit

IV, the number of dioxy units in the polyester being substantially equal to the number of dicarbonyl units.

4,370,467
CURABLE RESIN COMPOSITION FROM POLYFUNCTIONAL AROMATIC ESTER AND MALEIMIDE COMPOUND

Morio Gaku, Showamachi, and Nobuyuki Ikeguchi, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
Filed Jul. 3, 1980, Ser. No. 165,560
Claims priority, application Japan, Jul. 9, 1979, 54/86743
Int. Cl.^{3} C08G *73/12, 83/00*
U.S. Cl. 528—322 9 Claims

1. A curable resin composition comprising:
- (i) catalytic components comprising at least one peroxide and at least one other catalytic component, and
- (ii) a resin component consisting essentially of:
  - (a) at least one compound selected from the group consisting of:
    - (1) a polyfunctional aromatic cyanate ester monomer represented by the formula

$$R\!\!-\!\!\!(O-C\equiv N)_m$$

wherein m is an integer of 2 to 10 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,
    - (2) a homoprepolymer of one or more cyanate esters of (1), and
    - (3) a coprepolymer of (1) and an amine; and
  - (b) at least one component selected from the group consisting of:
    - (1) a polyfunctional maleimide,
    - (2) a homoprepolymer of one or more maleimides of (1), and
    - (3) a coprepolymer of (1) and an amine,

said composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product.

4,370,468
BIAXIALLY DRAWN POLYHEXAMETHYLENE ADIPAMIDE FILM

Osamu Nakajima, Moriyama; Yukinori Matsuoka, Shiga, and Yoshiaki Nakayama, Moriyama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan
Filed Nov. 5, 1980, Ser. No. 204,276
Claims priority, application Japan, Nov. 13, 1979, 54-146033
Int. Cl.^{3} C08G *69/46*
U.S. Cl. 528—335 2 Claims

1. A biaxially drawn film composed substantially of polyhexamethylene adipamide, said film having a refractive index of at least 1.560 in both the longitudinal direction and the transverse direction and an ultraviolet absorbance E_{268} of not more than 0.4, as measured at a wavelength of 268 $m\mu$ on a film solution in formic acid, and wherein said film exhibits a shrinkage factor of not more than 5% in both the longitudinal direction and the transverse direction, as measured after dipping in hot water at 135° C. for 10 minutes.

4,370,469
POLYPHENYLENESULFIDE SHEET-LIKE MATERIAL

Yukichi Deguchi, Ohtsu; Yukio Noguchi, Shiga, and Hiroaki Kobayashi, Ohtsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Mar. 10, 1981, Ser. No. 242,306
Int. Cl.^{3} C08G *75/14*
U.S. Cl. 528—388 11 Claims

1. A sheet-like material comprising a composition mainly consisting of high molecular weight poly p-phenylenesulfide, characterized in that:
- a. the amount of ingredient which is extracted through chloroform extraction of said sheet-like material is less than 1.5 wt% of the entire weight of said sheet-like material prior to said extraction, and
- b.
  - (i) the index of crystallinity of said poly-p-phenylenesulfide is in the range of about 2.5 and below 8.0,
  - (ii) the crystallite size of said poly p-phenylenesulfide is in the range of about 50 Å and below 100 Å, and
  - (iii) the orientation factors of said poly p-phenylenesulfide, measured in three directions comprising through the sample, edgewise and endwise, are above 0.70, as measured by wide angle X-ray diffraction.

4,370,470
MULTISTAGE, AGITATED CONTACTOR AND ITS USE IN CONTINUOUS PRODUCTION OF ARYLENE SULFIDE POLYMER

Fernando C. Vidaurri, Borger, Tex., and Kenneth L. Anderson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 16, 1981, Ser. No. 254,679
Int. Cl.^{3} C08G *75/14*
U.S. Cl. 528—388 14 Claims

1. A method for continuous preparation of arylene sulfide polymer comprising
- (1) introducing a polyhalo-substituted aromatic compound and a compound chosen from among the group consisting of (i) sulfur-containing complex produced from a suitable sulfur source, alkali metal hydroxide, at least one organic amide and, optionally, at least one polymerization modifying compound and (ii) suitable sulfur source, alkali metal hydroxide, a least one organic amide and, optionally, at least one polymerization modifying compound into at least a first chamber in a contacting apparatus comprising (A) a cyclindrical, vertically elongated shell having closed ends and separated by horizontal baffle plates into a multiplicity of discrete chambers with access from one chamber to another through concentric circular openings, axially centered in said baffles and (B) a continuous rotatable shaft extending concentric with said baffles within said shell with at least one agitator means attached thereto positioned in each chamber, said shaft and said circular openings providing annular openings such that the ratio of backflow rate to feed rate through the openings is less than 1.5:1.
- (2) passing said reaction mixture through chambers of said contactor while maintaining each chamber within conditions for producing arylene sulfide polymers; and
- (3) recovering arylene sulfide polymer from a chamber of the contactor removed from the chamber in which the initial reactants were introduced.

4,370,471
HEAT CURING ARYLENE SULFIDE POLYMER

Emigdio J. Salmon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 6, 1981, Ser. No. 260,960
Int. Cl.^{3} C08G *75/14*
U.S. Cl. 528—388 6 Claims

1. A method for curing particulate arylene sulfide polymer comprising:
- (a) preheating said particulate polymer from ambient temperature to a skin temperature within a range of about 230° to about 260° C. utilizing the frictional heat developed by the agitation of the particulate polymer in a polisher apparatus,
- (b) transferring said preheated particles to a curing vessel, and
- (c) further heating said preheated particulate polymers for a time and at a bed temperature to produce cured polymer having a pre-selected melt flow range lower than the melt flow range of the polymer prior to curing.

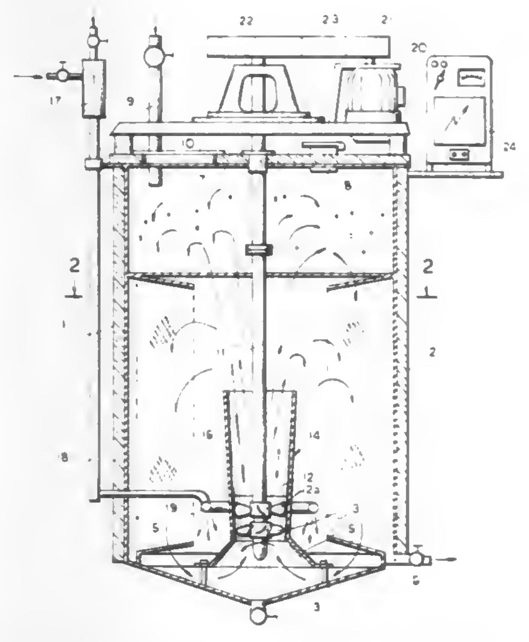
4,370,472
PLASMA EXPANDER

Toshiji Igarashi, Tokorozawa; Keiichi Nomura, Hohya; Kunji Naito, and Mikihiko Yoshida, both of Okayama, all of Japan, assignors to Hayashibara Biochemical Laboratories, Inc., Okayama, Japan
Filed May 21, 1980, Ser. No. 152,151
Claims priority, application Japan, May 25, 1979, 54-63976
Int. Cl.^{3} A61K *31/715;* **C07H** *1/08*
U.S. Cl. 536—1.1 3 Claims

1. A sterile, isotonic solution containing 4 to 10% w/v of a refined pullulan having a molecular weight distribution within the range of from 30,000 to 90,000.

4,370,473
METHOD OF EXTRACTING FRUIT AND VEGETABLE PRESSINGS AND VEGETATION RAW MATERIALS

Kiril S. Marev; Hristo G. Krachanov; Anton A. Bratanov, and Nikolay A. Kirchev, all of Plovdiv, Bulgaria, assignors to VI po Hranitelna I Vkussova Promishlenost, Plovdiv, Bulgaria
Filed Aug. 15, 1980, Ser. No. 178,577
Claims priority, application Bulgaria, Aug. 16, 1979, 46895
Int. Cl.^{3} C08B *37/06*
U.S. Cl. 536—2 2 Claims



1. A method for the extraction of a mass of fruit or vegetable pressings, or plant raw materials in a closed system by simultaneous mechanical and hydrodynamic effects on the materials, comprising subjecting the mass to a plurality of extractions in two cyclically alternating modes of fountain and turbulent agitation of different intensities by a rotary agitator having blades driven at blade tip speeds in an over-all range of from 3 to 25 m/sec.

4,370,474
11-DEOXY-CARMINOMYCIN COMPOUNDS

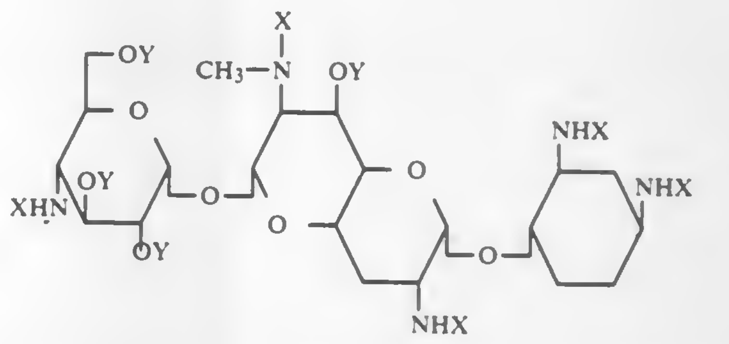
Giuseppe Cassinelli, Pavia; Arpad Grein, Milan; Sergio Merli, Milan, and Giovanni Rivola, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy
Filed Nov. 15, 1979, Ser. No. 94,671
Claims priority, application United Kingdom, Nov. 21, 1978, 45434/78
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.^{3} A61K *31/65, 31/71;* **C12P** *19/56, 29/00*
U.S. Cl. 536—6.4 4 Claims

1. An antibiotic compound selected from the group consisting of 11-deoxy-14-hydroxy-carminomycin and the aglycone thereof.

4,370,475
APRAMYCIN DERIVATIVES

Kikuo Igarashi, Itami; Tsunetoshi Honma, Ikoma, and Tamio Sugawara, Mino, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
Filed Oct. 22, 1981, Ser. No. 313,969
Claims priority, application Japan, Oct. 24, 1980, 55-149820
Int. Cl.^{3} A61K *31/71;* **C07H** *15/22*
U.S. Cl. 536—16.8 4 Claims

1. An apramycin derivative of the formula



wherein X represents hydrogen or an amino protecting group selected from the group consisting of C_2–C_5 alkanoyl, C_2–C_6 alkoxycarbonyl, C_7–C_{10} aroyl, C_6–C_{10} aryloxycarbonyl, C_7–C_{12} aralkoxycarbonyl, m-nitrophenylthio, and triphenylthio; Y represents hydrogen or a hydroxy protecting group selected from the group consisting of formyl, acetyl, benzoyl, benzyl, and tetrahydropyranyl; and the broken line represents the presence or absence of a double bond,

or a pharmaceutically acceptable acid addition salt thereof.

4,370,476
DEXTRAN POLYCARBOXYLIC ACIDS, FERRIC HYDROXIDE COMPLEXES

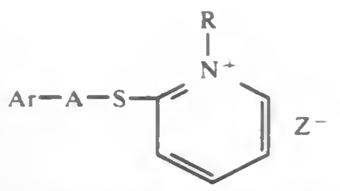
Thomas C. Usher, P.O. Box N7525, Nassau, The Bahamas, and Izu Hattori, 4 Box Hill Dr., West Hill, Ontario, Canada
Continuation-in-part of Ser. No. 58,151, Jul. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 764,194, Jan. 31, 1977, abandoned. This application Oct. 23, 1980, Ser. No. 200,031
Int. Cl.^{3} C08B *37/02*
U.S. Cl. 536—113 2 Claims

1. A complex of ferric hydroxide with a dextran carboxylic acid derivative having a mean molecular weight range between about 1000 and 9000 and an intrinsic viscosity of between 0.028–0.085, and in which a plurality of pairs of carboxylic acid groups are distributed upon intermediate glycosyl units of the dextran polymer.

4,370,477
CERTAIN 2-(ARYLALIPHATIC THIO)-PYRIDINIUM COMPOUNDS

Roger Crossley, Reading, England, assignor to John Wyeth and Brother Limited, Maidenhead, England
Division of Ser. No. 170,366, Jul. 21, 1980, Pat. No. 4,304,781, which is a continuation-in-part of Ser. No. 98,420, Nov. 29, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 286,831
Claims priority, application United Kingdom, Nov. 30, 1978, 46722/78
Int. Cl.^{3} C07D *213/02*
U.S. Cl. 542—413 10 Claims

1. A compound of the formula:



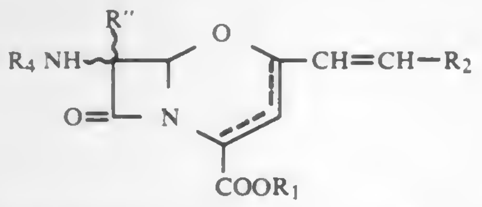
wherein Ar is phenyl substituted by one or more of the following: hydroxyloweralkyl, lower alkoxyloweralkyl, amino, loweralkylamino, diloweralkylamino, trifluoromethyl, loweralkyl, phenyl, arylloweralkyl or 7 to 12 carbon atoms, benzyloxy or disubstituted by a lower alkylenedioxy radical, A is saturated or unsaturated loweralkylene of 1 to 6 carbon atoms, which may be substituted by loweralkyl, phenyl, oxo or hydroxy, S is sulphur, R is loweralkyl of 1 to 4 carbon atoms or aralkyl of 7 to 10 carbon atoms, and Z^- is a pharmaceutically acceptable anion.

4,370,478
OXACEPHALOSPORINS

Daniel Farge, Val de Marne; Pierre L. Roy, Thiais; Claude Moutonnier, Le Plessis Robinson; Bernard Plau, Creteil, and Jean-Francois Peyronel, Palaiseau, all of France, assignors to Rhone-Poulenc Industries, Paris, France

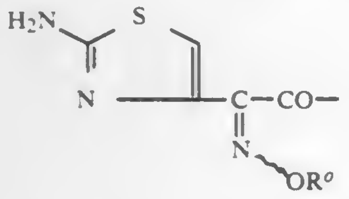
Filed Nov. 19, 1981, Ser. No. 323,112
Claims priority, application France, Nov. 20, 1980, 80 24639
Int. Cl.^{3} C07D *498/04*
U.S. Cl. 542—427 **9 Claims**

1. An oxacephalosporin of the formula:

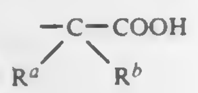


which is in the form of a bicyclooct-2-ene or bicyclooct-3-ene and of which the substituent in the 3-position exhibits E/Z stereoisomerism, and in which

(a) the symbol R_1 represents a hydrogen atom or an acid-protecting radical, the symbol R_4 represents a hydrogen atom or a radical of the general formula:



of which the amine group is free or protected and in which R° represents a hydrogen atom, an oxime-protecting radical, an alkyl or vinyl radical or a free or protected carboxyalkyl radical of the formula:



$$-\underset{R^{a}\qquad R^{b}}{\mathrm{C}}-\mathrm{COOH}$$

in which the radicals R^a and R^b, which are identical or different, represent hydrogen atoms or alkyl radicals, or together form an alkylene radical containing 2 or 3 carbon atoms, or R_4 represents an α-carboxyarylacetyl radical of which the carboxyl group is free or protected and in which aryl represents phenyl unsubstituted or substituted by a free or protected p-hydroxy radical, thien-2-yl, or thien-3-yl, and the symbol R″ represents a hydrogen atom or a methoxy radical in the 7α-position, or alternatively

(b) the symbol R_1 represents an acid-protecting radical which can easily be removed, the symbol R_4 represents an amine-protecting radical and the symbol R″ represents a hydrogen atom or a methoxy radical in the 7α-position or a hydrogen atom in the 7β-position, and the symbol R_2 represents a radical of the formula:

$$-O-SO_2R_3$$

$$\text{or } -O-COR'_3$$

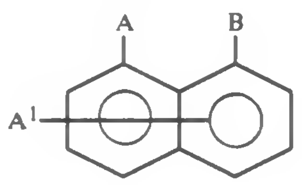
in which formulae R_3 is a linear or branched alkyl radical of 1 to 4 carbon atoms, trifluoromethyl, trichloromethyl, or phenyl which is unsubstituted or substituted by a halogen atom or by an alkyl or nitro radical, and R'_3 is defined in the same way as R_3 or represents an acylmethyl, 2-acylethyl, 2-acylpropyl, alkoxycarbonylmethyl, 2-alkoxycarbonylethyl or 2-alkoxycarbonylpropyl radical or R_2 is a halogen atom, it being understood that, unless otherwise mentioned, the above-mentioned alkyl or acyl radicals and portions are linear or branched and contain 1 to 4 carbon atoms, in its E or Z forms and mixtures thereof, and, if appropriate, in its syn or anti forms and mixtures thereof.

4,370,479
HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

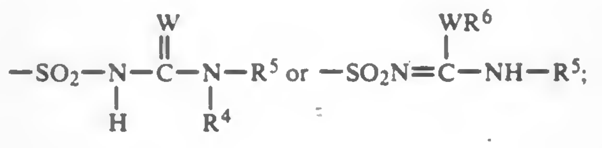
Continuation-in-part of Ser. No. 98,724, Nov. 30, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 184,371
Int. Cl.^{3} C07D *233/54;* **A01N** *43/50*
U.S. Cl. 544—278 **24 Claims**

1. A compound of the formula



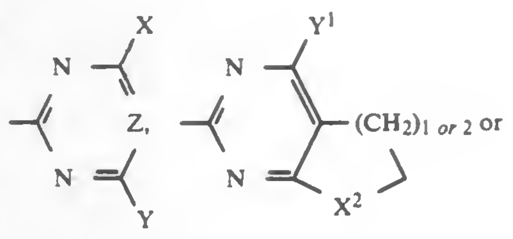
wherein

A^1 is H, F, Cl, Br, CH_3O or NO_2;
A is Cl, F, Br, NO_2, CH_3, $-SO_2NR^1R^2$, $-SO_2N(CH_3)(OCH_3)$, $-S(O)_nR^3$, $-OR^3$, $-OSO_2R^3$ or OSO_2CF_3;
B is



$$-SO_2-\underset{H}{N}-\overset{W}{\overset{\|}{C}}-\underset{R^4}{N}-R^5 \text{ or } -SO_2N{=}\overset{WR^6}{\overset{|}{C}}-NH-R^5;$$

n is 0, 1 or 2;
R^1 is C_1-C_4 alkyl;
R^2 is C_1-C_4 alkyl;
R^3 is C_1-C_4 alkyl;
R^4 is H or CH_3;
R^5 is



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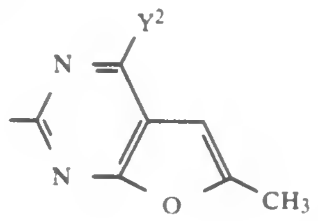


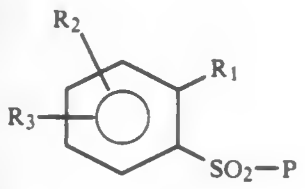
R^6 is C_1-C_6 alkyl;
R^{10} is H or CH_3;
R^{11} is C_1-C_3 alkyl;
R^{12} is C_1-C_3 alkyl or C_3-C_6 alkenyl;
T is O or N-OR^{12};
W is O or S;
X is CH_3, CH_3O or CH_3CH_2O;
X^2 is O or CH_2;
Y is H, C_1-C_3 alkyl, CH_3OCH_2, $CH_3CH_2OCH_2$, OCH_2CO_2—(H or C_1-C_2 alkyl), $OCH(CH_3)CO_2$(H or C_1-C_2 alkyl), O—(C_1-C_3 alkyl), O—(C_3-C_4 alkenyl) or $NR^{10}R^{11}$;
Y^1 is H, CH_3 or OCH_3;
Y^2 is H or CH_3; and
Z is N;
and their agriculturally suitable salts.

4,370,480
HERBICIDAL UREAS AND ISOUREAS

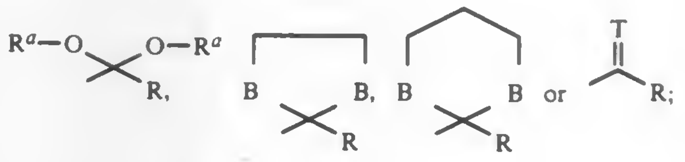
George Levitt, Wilmington, and Wallace C. Petersen, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,891, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 98,776, Nov. 30, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 212,869
Int. Cl.^{3} C07D *239/24;* **A01N** *43/54*
U.S. Cl. 544—320 **15 Claims**

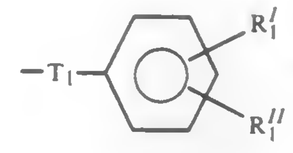
1. A compound of the formula:

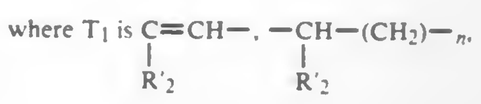


where
R_1 is



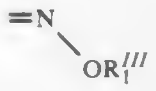
B=O or $S(O)_G$;
G=O or 2;
R^a is CH_3 or CH_3CH_2;
R=H; C_1-C_{12} alkyl; C_2-C_6 alkenyl; C_2-C_6 alkynyl; C_1-C_4 alkyl substituted with one to four substituents selected from 0-3 F, 0-3 Cl, 0-3 Br, 0-2 OCH_3, 0-1 cyano, 0-1 CO_2R_1' where R_1' is C_1-C_3 alkyl; CO_2R_1'; C_2-C_4 alkenyl substituted with 1-3 Cl; C_3-C_6 cycloalkyl; C_5-C_6 cycloalkenyl; C_5-C_6 cycloalkyl substituted with substituents selected from 1-3 CH_3 or one of CH_3CH_2, Cl, OCH_3; C_4-C_7 cycloalkylalkyl;





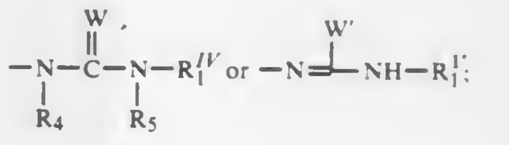
$$\text{where } T_1 \text{ is } \underset{R'_2}{\mathrm{C}}{=}CH-,\ -\underset{R'_2}{\mathrm{C}}H-(CH_2)-_n,$$

or a single bond;
where
R_2' is H or CH_3, n is 0 or 1;
$R_1{}^{I}$ and $R_1{}^{II}$ are independently H, CH_3, Cl or OCH_3;
T=O or



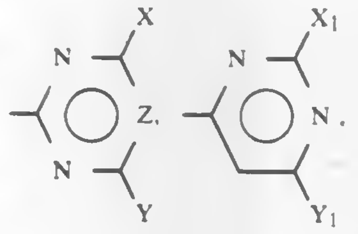
$$=N-OR_1^{III}$$

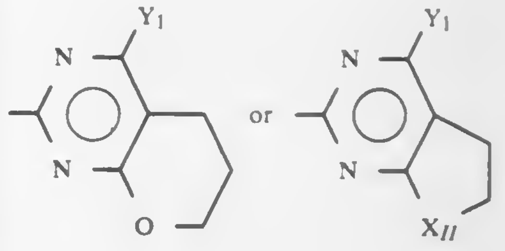
where $R_I{}^{III}$ is H, C_1-C_4 alkyl or C_3-C_4 alkenyl;
R_2=H, F, Cl, Br, C_1-C_3 alkyl, NO_2, SO_2CH_3, OCH_3, SCH_3, CF_3 or $N(CH_3)_2$;
R_3=H, F, Cl, Br or CH_3;
P=



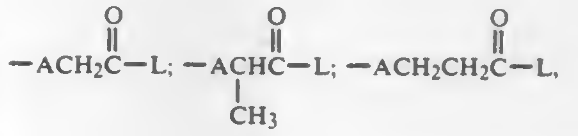
$$-\underset{R_4}{N}-\overset{W}{\overset{\|}{C}}-\underset{R_5}{N}-R_1^{IV} \text{ or } -N{=}\overset{W'}{\overset{|}{C}}-NH-R_1^{I};$$

where
R_4=H or CH_3;
R_5=H, CH_3 or OCH_3;
W=O or S;
$R_1{}^{IV}$=

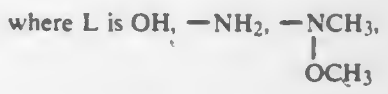




where
Z=CH;
X=H, Cl, $-CH_3$, $-OCH_3$, $-OCH_2CH_3$ or $-OCH_2CH_2OCH_3$;
Y=H; Cl; C_1-C_4 alkyl; C_1-C_4 alkyl substituted with $-OCH_3$, $-OC_2H_5$, $-CN$, $-CO_2CH_3$, $-CO_2C_2H_5$ or 1-3 atoms of F, Cl, Br; C_3-C_4 alkenyl; $-CH_2C{\equiv}CR_6$ where R_6 is H, $-CH_3$, $-CH_2Cl$; $-A-(CH_2)_{n'}-A_1-(C_1$-C_3 alkyl) where n′ is 2 or 3, A is O or S and A_1 is O, S or SO_2;

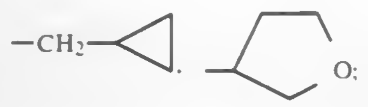


$$-ACH_2\overset{O}{\overset{\|}{C}}-L;\ -A\underset{CH_3}{\mathrm{C}}H\overset{O}{\overset{\|}{C}}-L;\ -ACH_2CH_2\overset{O}{\overset{\|}{C}}-L,$$



$$\text{where L is OH, } -NH_2,\ -\underset{OCH_3}{N}CH_3,$$

—NH(C_1-C_4 alkyl), —N(C_1-C_4 alkyl)$_2$, C_1-C_6 alkoxy; SCN; —N_3; NR_7R_8 where R_7 is H or CH_3 and R_8 is H, —OCH_3, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, C_1-C_4 alkyl substituted with —CN or —CO_2CH_3 or $CO_2C_2H_5$, C_3-C_4 alkenyl or C_2-C_3 alkyl substituted with OCH_3 or OC_2H_5, or R_7 and R_8 can be taken together to form —$CH_2CH_2CH_2CH_2$— or —$CH_2CH_2OCH_2CH_2$—; —O—R_9 where R_9 is C_1-C_4 alkyl, C_2-C_4 alkyl substituted with 1-3 atoms of F, Cl or Br, C_1-C_4 alkyl substituted with cyano, C_3-C_4 alkenyl, —$CH_2C{\equiv}CR_6$, where R_6 is as previously defined,



—SR_{10} where R_{10} is C_1-C_4 alkyl, C_1-C_2 alkyl substituted with CN, allyl or propargyl;

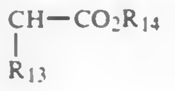
X_1=H, Cl, OCH_3, OCH_2CH_3 or CH_3;

Y_1=H, OCH_3 or CH_3;

X_{II}=O or CH_2;

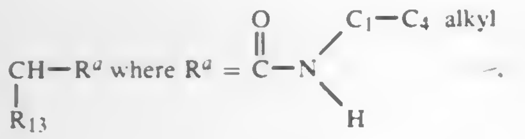
$X_1{}^{I}$ and $Y_1{}^{I}$=CH_3 or OCH_3;

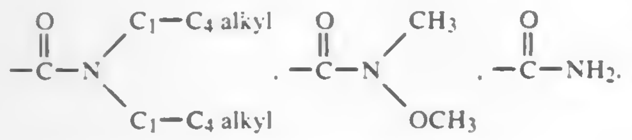
W′=SR_{11} or OR_{12}; where R_{11} and R_{12}=C_1-C_{12} alkyl; C_3-C_4 alkenyl; $CH_2CH_2OCH_3$; $CH_2CH_2OCH_2CH_3$; $CH_2CH_2CH_2OCH_3$; benzyl;



$$\underset{R_{13}}{\underset{|}{CH}}-CO_2R_{14}$$

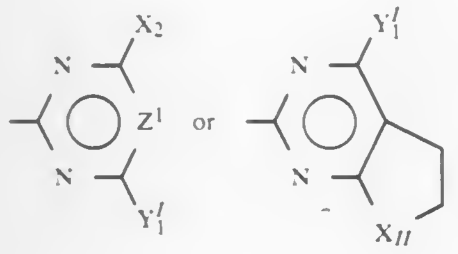
where R_{13} is H or CH_3, R_{14} is C_1-C_4 alkyl; R_{11} also=





CN, C_2-C_4 alkenyl, C_2-C_4 alkynyl, phenyl and phenyl substituted with CH_3 or Cl;

$R_1{}^{V}$=



where

Z^{I}=CH;

$Y_1{}^{I}$=CH_3 or OCH_3;

X_2=CH_3; C_1-C_4 alkoxy; $O(CH_2)_{n''}$ OR_{15} where n″ is 1-3, R_{15} is C_1-C_3 alkyl; $OCHR_{16}CO_2R_{17}$ where R_{16} is H or CH_3; OCH_2CF_3 or OCH_2CCl_3; R_{17} is C_1-C_3 alkyl; and

X_{II}=O or CH_2;

with the provisos that:

(1) when Y contains ≧4 carbon atoms, R contains ≦4 carbon atoms;

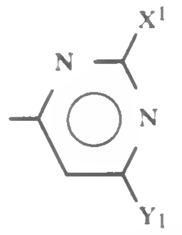
(2) when X is Cl, then Y is Cl;

(3) when X and Y are both H, then R is ≦4 carbon atoms;

(4) when Z≠N or CH, then X=H, CH_3, OCH_3 or Cl and Y=H, CH_3 or OCH_3;

(5) both X_1 and Y_1 cannot be H; and

(6) when $R_1{}^{IV}$ is



then R_4 and R_5 are hydrogen and R≦5 carbon atoms;

(7) when T is =N—$OR_1{}^{III}$, then R contains ≦5 carbon atoms;

and their agriculturally suitable salts.

4,370,481

PROCESS FOR THE PRODUCTION OF 3-PICOLINE

Rolf Dinkel, Münchenstein, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Mar. 12, 1982, Ser. No. 357,626

Claims priority, application Switzerland, Mar. 18, 1981, 1836/81

Int. Cl.^{3} C07D *213/08, 213/10*

U.S. Cl. 546—251 **6 Claims**

1. Process for the production of 3-picoline characterized in that a first educt consisting of acetaldehyde and/or at least one acetaldehydeacetal and/or crotonaldehyde is reacted with a second educt consisting of formaldehyde and/or at least one formaldehydeacetal and/or hexamethylenetetramine in a liquid, aqueous phase at a temperature of 180° to 280° C. in a closed vessel in the presence of an amide of a carboxylic acid.

4,370,482

SYNTHESIS OF TETRAMISOLE, LEVAMISOLE AND THEIR DERIVATIVES

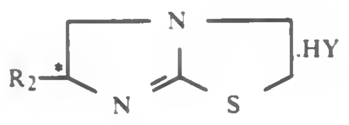
Sivaraman Raghu, Norwalk; Arthur K. Hoffmann, New Canaan, and Balwant Singh, Stamford, all of Conn., assignors to American Cyanamid Co., Stamford, Conn.

Division of Ser. No. 878,049, Feb. 15, 1978, Pat. No. 4,314,066, which is a division of Ser. No. 739,923, Nov. 8, 1976, Pat. No. 4,087,611, which is a continuation-in-part of Ser. No. 680,302, Apr. 26, 1976, abandoned. This application Oct. 28, 1981, Ser. No. 315,788

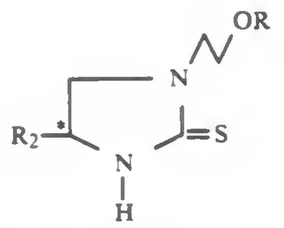
Int. Cl.^{3} C07D *513/04*

U.S. Cl. 548—155 **6 Claims**

1. A method for the preparation of an optically active compound of the formula:



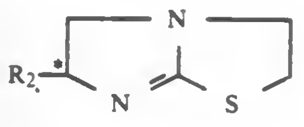
wherein R_2 is selected from the group consisting of phenyl and phenyl substituted with up to two groups selected from the group consisting of halo, C_1-C_6 alkyl, C_1-C_6 alkoxy and trifluoromethylphenyl, and Y is selected from the group consisting of a pharmaceutically acceptable anion, which comprises heating a substituted optically active imidazolidinethione of the formula:



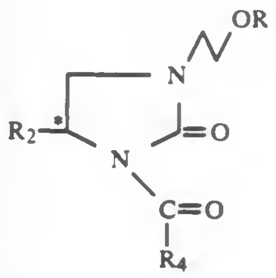
wherein R_2 is as previously defined and R is selected from the

group consisting of C_1-C_6 alkyl, halo C_1-C_6 alkyl, phenyl, C_1-C_6 alkylphenyl, C_1-C_6 alkoxyphenyl and halophenyl with HY, wherein Y is as previously defined in a suitable solvent at a temperature from about 0° to about 200° C. and recovering the substituted optically active 2,3,5,6-tetrahydroimidazo[2,1-b] thiazole acid addition salt of the free base.

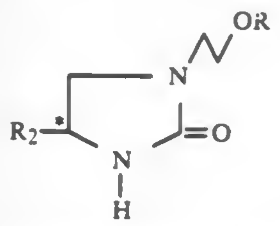
4. A method for the preparation of an optically active compound of the formula:



wherein R_2 is selected from the group consisting of phenyl and halophenyl which comprises hydrolyzing an optically active imidazolidone of the formula:



wherein R_4 is selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, phenoxy, C_5-C_{10} cycloalkyl, phenyl, and phenyl or phenoxy substituted with up to four groups selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, halo and trifluoromethyl and R is selected from the group consisting of hydrogen, C_1-C_6 alkyl, halo, C_1-C_6 alkyl, phenyl, phenyl substituted with up to three groups selected from the group consisting of C_1-C_6 alkyl, halo and C_1-C_6 alkoxy and COR_3, wherein R_3 is selected from the group consisting of hydrogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, phenoxy, halo C_1-C_6 alkyl, phenyl and phenyl or phenoxy substituted with up to four groups selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, halo and trofluoromethyl by heating said optically active imidazolidone from about 70° to about 100° C. in the presence of a hydroxide source in water or alcohol to afford an optically active imidazolidone of the formula:



wherein R_2 is as previously defined and R is selected from the group consisting of hydrogen, C_1-C_6 alkyl, halo, C_1-C_6 alkyl, phenyl, and phenyl substituted with up to three groups selected from the group consisting of C_1-C_6 alkyl, halo and C_1-C_6 alkoxy, refluxing said optically active imidazolidone with a reagent capable of substituting sulfur for oxygen in a suitable solvent at a temperature from about 80° C. to about 200° C. and recovering the substituted optically active 2,3,5,6-tetrahydroimidazo[2,1-b]thiazole.

4,370,483

PROCESS FOR THE MANUFACTURE OF 2-HYDROXYBENZOTHIAZOLES

Theodor Papenfuhs, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,604

Claims priority, application Fed. Rep. of Germany, May 5, 1980, 3017153

Int. Cl.^{3} C07D *239/88*

U.S. Cl. 548—165 **5 Claims**

1. A process for the manufacture of a 2-hydroxybenzothiazole compound which comprises reacting at a temperature within the range of 80°-200° C. a 2-aminobenzothiazole compound with an alkali metal hydroxide or alkaline earth metal hydroxide in a substantially anhydrous solvent or diluent medium stable to alkalis, said medium containing less than about 2.5 weight % of water, relative to the reaction mixture, and cyclizing the alkali metal or alkaline earth metal salt of the ortho-mercapto-N-phenylurea compound so obtained, by heating the ortho-mercapto-N-phenylurea compound with an acid to a temperature in the range from 40° to 100° C.

4,370,484

SCEPTRIN AN ANTIMICROBIAL AGENT FROM *AGELAS SCEPTRUM*

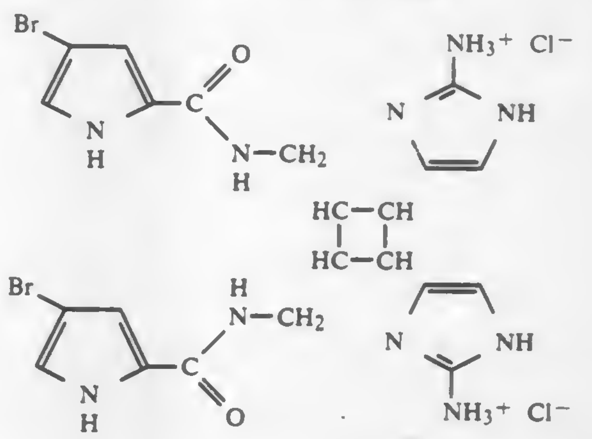
D. John Faulkner, La Jolla, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 12, 1981, Ser. No. 242,728

Int. Cl.^{3} C07D *403/14*

U.S. Cl. 548—316 **5 Claims**

1. An antimicrobial agent having the formula:



or the free amine thereof, or a lower aliphatic carboxylic acid amide of said free amine, or another mineral acid salt of said free amine, a tautomer of any of said compounds, or any of said compounds associated with water of crystallization.

4,370,485

GERMAAZASPIRODIONES

Chester M. McCloskey, 1981 Sinaloa Ave., Altadena, Calif. 91001; James R. Fischer, 3930 Mural Dr., Claremont, Calif. 91711, and Leonard F. Scott, 245 Mira Mar Ave., Long Beach, Calif. 90803

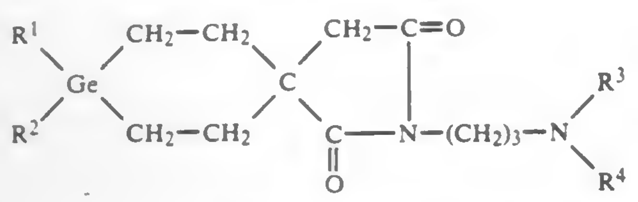
Continuation-in-part of Ser. No. 33,429, Apr. 26, 1979, Pat. No. 4,248,785. This application Sep. 27, 1979, Ser. No. 79,328

The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.

Int. Cl.^{3} C07F *7/30*

U.S. Cl. 548—404 **28 Claims**

1. A dialkylgermaazaspirodione compound in crystalline form and having the formula:



wherein R^1 and R^2 are the same or different alkyl groups of 1 to 4 carbon atoms and R^3 and R^4 are the same or different alkyl groups of 1 to 4 carbon atoms.

5. N-(3-dimethylaminopropyl)-2-aza-8,8-dibutyl-8-germaspiro[4:5]decane-1,3-dione in crystalline form.

4,370,486

BIPHENYL COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS INTERMEDIATE PRODUCTS FOR OPTICAL BRIGHTENERS, DYESTUFFS, PLASTICS AND MEDICAMENTS

Horst Harnisch, Much, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

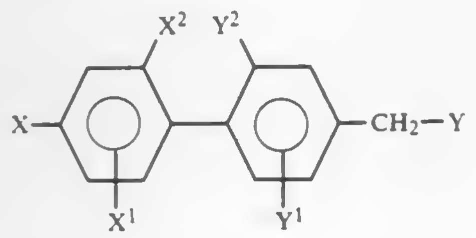
Filed Aug. 14, 1981, Ser. No. 292,868

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3033002; Dec. 19, 1980, 3048088

Int. Cl.^{3} C07C *103/38, 103/76*

U.S. Cl. 549—46 **3 Claims**

1. Compounds of the formula



wherein

X represents hydrogen, —CH_2—Y, SO_3H or a radical A,

A represents C_1–C_6-alkyl, trifluoromethyl, cyclohexyl, C_1–C_4-alkoxy, chlorine, bromine or fluorine,

X^1 represents hydrogen, methyl, chlorine or SO_3H,

X^2 represents hydrogen or methyl,

Y represents an acetamido or propionylamido radical which is substituted in the α-position by 1 to 3 halogen atoms, or a phthalimido group, or a benzamido group optionally substituted on the nucleus by up to three C_1–C_4-alkyl, chlorine, bromine, methoxy, ethoxy, nitro and/or cyano groups and or at the amido nitrogen atom by a C_1–C_2-alkyl group,

Y^1 represents hydrogen, methyl or SO_3H and

Y^2 represents hydrogen, or

X^2 and Y^2 together form an ethylene radical or a —SO_2— bridge,

with the proviso that at least one radical Y represents halogen-substituted acetamido or propionylamido or optionally substituted benzamido if the compounds are free from sulphonic acid groups or from —SO_2— bridges.

4,370,487

PROCESS FOR, RESPECTIVELY, THE PRODUCTION AND PURIFICATION OF DICARBOXYLIC AND POLYCARBOXYLIC ACID ANHYDRIDES

Gerhard Meyer, Blumenstr. 26, 8753 Obernburg, and Erich Klimesch, Berlinerstr. 11, 8765 Erlenbach, both of Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,384

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015988

Int. Cl.^{3} C07D *307/60, 493/04*

U.S. Cl. 549—242 **5 Claims**

1. Process for, respectively, the production and purification of dicarboxylic and polycarboxylic acid anhydrides by dehydration of the respective dicarboxylic or polycarboxylic acids or, in given instances, by dehydration of the respective dicarboxylic or polycarboxylic acids contained in the anhydrides to be purified, characterized by heating at temperatures from 120° to 200° C., the dicarboxylic or polycarboxylic acid, or, respectively, the anhydride to be purified, in an organic solvent in the presence of activated carbon, and by removing the water becoming free thereby in azeotropic solution with the solvent.

4,370,488

ALKALI METAL COMPLEX COMPOUNDS

Borislav Bogdanovic, Mülheim/Ruhr, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mülheim, Fed. Rep. of Germany

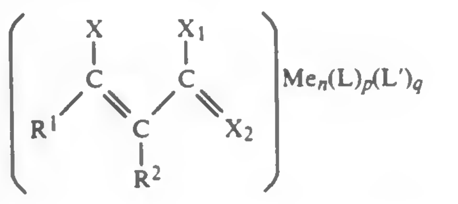
Division of Ser. No. 115,595, Jan. 28, 1980, Pat. No. 4,301,081, which is a division of Ser. No. 905,489, May 12, 1978, Pat. No. 4,229,354. This application Jun. 18, 1981, Ser. No. 274,947

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722221

Int. Cl.^{3} C07C *57/03, 153/023;* **C07D** *307/06*

U.S. Cl. 549—429 **9 Claims**

1. An alkali metal complex compound of general formula I



I

wherein Me represents an alkali metal, each X,X_1 and X_2 represents sulphur or oxygen with the proviso that X and X_1 are the same, n represents a whole number from 3 to 20, L and L′ represent a mono- or polyfunctional ether or amine, respectively, p and q are whole numbers from 0 to 4, R^1 and R^2 are each hydrogen, alkyl, cycloalkyl, aralkyl or aryl moieties and/or two or more such moieties closed to form an aliphatic or aromatic ring system.

4,370,489

HERBICIDAL COMPOUNDS

Heinz Boesenberg, Langenhain; Gerhard Hörlein, Frankfurt am Main; Helmut Köcher, Hofheim, and Peter Langelüddeke, Diedenbergen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

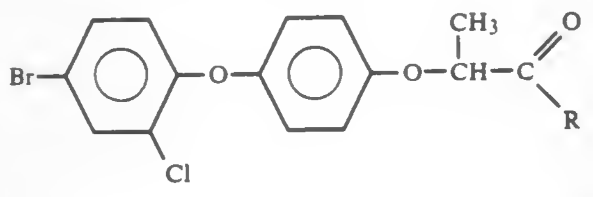
Filed Jan. 14, 1977, Ser. No. 759,490

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1976, 2601548

Int. Cl.^{3} C07C *69/76*

U.S. Cl. 560—62 **14 Claims**

1. Compounds of the formula I



I

in which R represents hydroxyl, (C_1–C_{10}) alkoxy, but not the iso-propoxy or n-butoxy member thereof, (C_1–C_6)-alkylthio, (C_2–C_4) alkenyloxy, cyclohexyloxy, cyclopentyloxy, phenoxy or phenylthio both optionally substituted once or twice with halogen, benzyloxy, benzylthio or -O-cat in which "cat" stands for the cation of an inorganic or organic base.

4,370,490

PROCESS FOR PRODUCING METHACRYLIC ACID BY OXIDATIVE DEHYDRATION OF ISOBUTYRIC ACID AND CATALYST THEREFOR

Wilhelm Gruber, Darmstadt, and Günter Schröder, Ober-Ramstadt, both of Fed. Rep. of Germany, assignors to ROHM GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,279

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032423; Feb. 2, 1981, 3103410

Int. Cl.^{3} C07C *51/377, 57/05, 67/317*

U.S. Cl. 560—214 **21 Claims**

1. A process for producing methacrylic acid or an ester thereof comprising contacting in gaseous phase in presence of oxygen isobutyric acid or the corresponding ester thereof with a metal oxide catalyst substantially free of sulfate and consisting essentially of oxides of molybdenum, vanadium, phosphorus, and a metal selected from the group consisting of alkali metals, alkaline earth metals, zinc, silver, aluminum, titanium, lead, manganese, iron, cobalt, nickel, and tin.

4,370,491

CONTINUOUS PREPARATION OF ACETIC ACID ESTERS

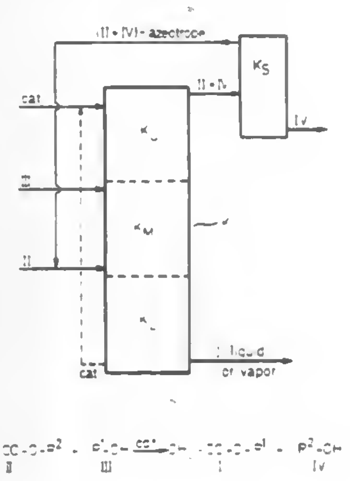
Kaspar Bott, Wachenheim; Gerd Kaibel, Lampertheim; Herwig Hoffmann, Frankenthal; Rudolf Irnich, Bobenheim, and Eberhard Schaefer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,470

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019767

Int. Cl.^{3} B01D *3/36;* **C07C** *67/02, 67/06*

U.S. Cl. 560—234 **5 Claims**



1. In a process for the preparation of an acetic acid ester of the formula

$$CH_3—CO—O—R^1 \qquad I$$

where R^1 is an organic radical other than methyl or ethyl, by alkali-catalyzed trans-esterification of an acetic acid ester of the formula

$$CH_3—CO—O—R^2 \qquad II$$

where R^2 is methyl or ethyl, with an alcohol

$$R^1—OH \qquad III$$

accompanied by removal of the alcohol

$$R^2—OH \qquad IV,$$

the improvement which comprises:

(a) carrying out the trans-esterification reaction in the middle section K_M of a distillation column K, the alcohol III being fed as liquid into the upper zone and the ester II into the lower zone of K_M, using 1 mole up to not more than 3 moles of the ester II per mole of the alcohol III,

(b) introducing the alkaline catalyst into the upper part K_U of the column K,

(c) separating a mixture of the alcohol IV and the ester II obtained in the upper part K_U of the column into the alcohol IV alone and an azeotropic mixture of II and IV, recycling said azeotropic mixture to the lower zone of K_M, and

(d) withdrawing the ester I from the lower zone of the lower section K_L of the column K.

4,370,492

PREPARATION OF VINYL ACETATE FROM ETHYLENE, ACETIC ACID AND OXYGEN IN THE GASEOUS PHASE

Friedrich Wunder, Flörsheim am Main; Therese Quadflieg; Günter Roscher, both of Kelkheim, and Günther Heck, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 20,038, Mar. 13, 1979. This application Sep. 5, 1980, Ser. No. 184,532

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811115

Int. Cl.^{3} C07C *67/055*

U.S. Cl. 560—245 **12 Claims**

1. In a process for the preparation of vinyl acetate in the gaseous phase by reacting ethylene with acetic acid and oxygen or oxygen-containing gases in the presence of a catalyst containing a noble metal of sub-group VIII of the periodic table, or a compound thereof, and as an activator an alkali metal compound, an alkaline earth metal compound or a cadmium compound, or any combination thereof, the improvement which comprises applying said noble metal and said activator onto a carrier consisting essentially of particles of silicic acid having a star-shaped cross section with a core portion and at least 3 star points with a core diameter in the range of 2 mm to 4 mm, an average radius of 1.5 mm to 7.5 mm as measured by the distance from the center of the core portion to the apex of a star point and an average indentation in the range of 0.5 mm to 6.5 mm as measured by the distance from the outer surface of the core portion to the apex of a star point.

4,370,493

SYNTHESIS OF ALPHA-AMINO ACIDS

Jefferson W. Davis, Jr., San Francisco, Calif., assignor to The United States of America as represented by the Secretary of Energy, Washington, D.C.

Division of Ser. No. 77,811, Sep. 21, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,106

Int. Cl.^{3} C07C *99/10*

U.S. Cl. 562—444 **5 Claims**

1. An improved process for synthesizing an alpha-amino acid comprising:

reacting a metal cyanide with an aldehyde or a ketone in the absence of water to form a corresponding cyanohydrin of the formula:

$$R_1R_2C(OH)CN$$

wherein R_1 and R_2 represent hydrogen, alkyl radicals of 1 to 10 carbon atoms, alkenyl radicals of 2 to 4 carbon atoms, aryl radicals of 6 to 12 carbon atoms, alkaryl radicals of 7–8 carbon atoms, aralkyl radicals of 7–8 carbon atoms, and p-hydroxyphenyl radicals,

reacting said cyanohydrin with thionyl chloride to form a chlorosulfinyl nitrile of the formula:

$$R_1R_2C(OSOCl)CN,$$

reacting said chlorosulfinyl nitrile with formamide to form a nitrile sulfite of the formula:

$[R_1R_2C(CN)O]_2$ SO.

reacting the nitrile sulfite so formed with ammonia to form an amino nitrile of the formula:

$R_1R_2C(NH_2)CN$; and

hydrolyzing said amino nitrile to the alpha-amino acid.

4,370,494
CONVERTING ENZYME INHIBITORS

George C. Wright, and Ronald E. White, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,683

Int. Cl.^{3} C07C *101/26*

U.S. Cl. 562—450 **1 Claim**

1. The compound N-(1-carboxy-3-phenylpropyl)glycyl-N'-(2,3-dihydro-1H-indene-1-yl)glycine.

4,370,495
PROCESS FOR THE PREPARATION OF α-[4-(4-CHLOROBENZOYLAMINOETHYL)-PHENOXY]-ISOBUTYRIC ACID

Peter Beyer, Mannheim-Wallstadt, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

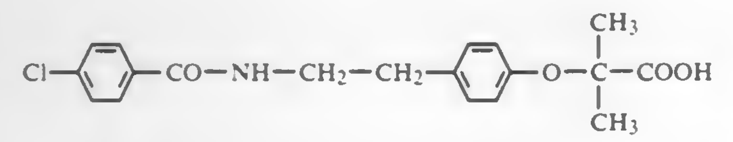
Filed Apr. 17, 1979, Ser. No. 30,798

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820759

Int. Cl.^{3} C07C *99/00*

U.S. Cl. 562—451 **6 Claims**

1. In a process for the preparation of 2-[4-(4-chlorobenzoylaminoethyl)-phenoxy]-2-methylpropionic acid of the formula



$$Cl-C_6H_4-CO-NH-CH_2-CH_2-C_6H_4-O-\overset{CH_3}{\underset{CH_3}{C}}-COOH$$

comprising reacting N-(4-chlorobenzoyl)-tyramine with acetone and chloroform, the improvement consisting of carrying out the reaction at a temperature of from about 20° to 40° C. in a mole ratio of 1:20–100:2–10 (tyramine:acetone:chloroform), and in the presence of 3 to 4 moles of alkali per mole of chloroform.

4,370,496
PROCESS FOR CONTINUOUS PRODUCTION OF HIGH PURITY TEREPHTHALIC ACID

Motoo Shigeyasu, and Michio Kuki, both of Matsuyama, Japan, assignors to Matsuyama Petrochemicals Inc., Osaka, Japan

Continuation of Ser. No. 671,929, Mar. 31, 1976, abandoned. This application Oct. 20, 1978, Ser. No. 953,321

Claims priority, application Japan, Dec. 25, 1975, 50-155553

Int. Cl.^{3} C07C *51/42, 51/16*

U.S. Cl. 562—487 **17 Claims**

1. In a process of continuously producing high purity terephthalic acid by continuously introducing one or more p-dialkylbenzenes into an oxidation reactor together with a solvent and an oxidation catalyst, subjecting the raw material to a liquid phase oxidation with molecular oxygen or molecular oxygen containing gas, and separating and recovering terephthalic acid formed from the reaction mixture, the improvement which comprises continuously or intermittently introducing the oxidation reaction product from the oxidation reactor into a stabilizer which can retain the oxidation reaction product from the oxidation reactor for 10 to 200 minutes and also can keep the volume change of the contents below 27% by volume even while oxidation reaction product is being introduced and oxidatively treating the oxidation reaction product in the stabilizer, to completely oxidize oxidizable materials selected from the group consisting of unreacted feed materials, reaction intermediate products and active compounds, for about 10 to 200 minutes at a temperature and pressure the same as or lower than those employed in the preceding oxidation reaction by continuously introducing a molecular oxygen containing gas selected from the group consisting of an off-gas exhausted from the oxidation reactor and a mixture thereof with air, said molecular oxygen containing gas having an oxygen concentration of 2 to 15 volume % so that the oxygen concentration in the reaction system does not exceed the explosive limit during said treatment and while maintaining the volume change of the contents in the stabilizer below about 27% by volume, by controlling the amount of the oxidation reaction product introduced from the oxidation reactor to the stabilizer and the amount of the oxidation reaction product discharged from the stabilizer, thereby to maintain the volume change of the contents below about 27% by volume.

4,370,497
OXIDATION PROCESS USING TELLURIUM OXIDE CATALYSTS

Derek H. R. Barton, Centre Residental du CNRS, 91190 Gif sur Yvette, France; Steven V. Ley, 10, Viney Bank, Addington, Surrey, United Kingdom (CR0 9JS), and Clive A. Meerholz, 14 Southhall Close, Ware, Hertfordshire, United Kingdom (SG12 7PE)

Filed Aug. 7, 1980, Ser. No. 175,847

Claims priority, application United Kingdom, Aug. 8, 1979, 7927604

Int. Cl.^{3} C07C *127/19*

U.S. Cl. 564—55 **8 Claims**

1. A process for the preparation of a compound of formula:

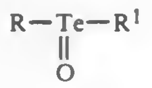
$R^3(X^1)_mCO(X^2)_nR^4$

wherein X^1 and X^2 which may be the same or different, each represents an oxygen or sulphur atom or the group —NH—; m and n, which may be the same or different are each 0 or 1; and R^3 and R^4, which may be the same or different, each represents a hydrogen atom, a C_{1-5} alkyl or alkenyl group, a C_{1-32} cycloalkyl group optionally including double bonds, a C_{7-10} aralkyl group or a C_{6-12} aryl group such groups optionally being substituted by halogen, amino, carboxyl, hydroxy, C_{1-6} alkyl and/or C_{1-6} alkoxy; or R^3 and R^4 together form a ring(s) which may possess up to 32 carbon atoms and which may have double bonds and be optionally substituted by halogen, amino, carboxyl, hydroxy, C_{1-6} alkyl and/or C_{1-6} alkoxy

which process comprises oxidising a compound of formula:

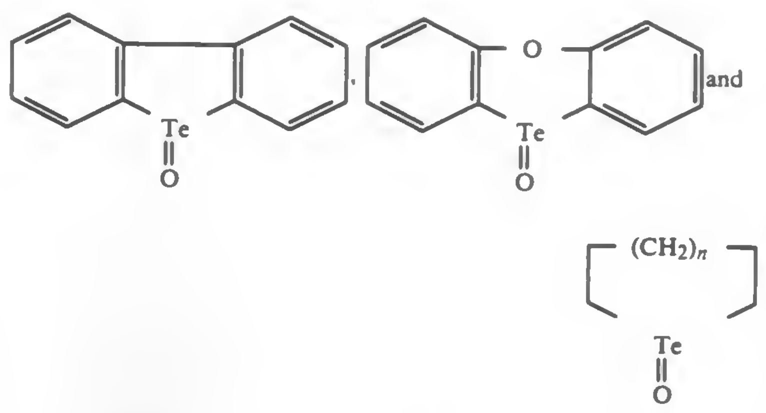
$R^3(X^1)_mCY(X^2)_nR^4$

wherein Y represents a sulphur or selenium atom; and X^1, X^2, R^3, R^4, m and n are as herein defined by means of a telluroxide of the formula:



$$R-\underset{\underset{O}{\|}}{Te}-R^1$$

wherein R and R^1, which may be the same or different each represent a phenyl group optionally substituted by halogen, C_{1-6} alkyl, phenyl, phenoxy, di(C_{1-6} alkyl) amino, hydroxy, carboxy, chlorocarbonyl, nitro and/or C_{1-6} alkoxy optionally substituted by an alkoxycarbonyl group in which the alkoxy moiety contains 1 to 6 carbon atoms; or R and R^1 together with the tellurium atom therebetween represent a group selected from



in which n is 0 or 1, which group may optionally be substituted by halogen, C_{1-6} alkyl, phenyl, phenoxy, di(C_{1-6} alkyl) amino, hydroxy, carboxy, chlorocarbonyl, nitro or C_{1-6} alkoxy optionally substituted by an alkoxycarbonyl group in which the alkoxy moiety contains 1 to 6 carbon atoms.

4,370,498
PREPARATION OF α-KETOCARBOXYLIC ACID N-ACYLAMIDES

Gerhard Bonse, Cologne, and Heinz U. Blank, Odenthal, [illegible] of Fed. Rep. of Germany, assignors to Bayer Aktiengesellsch[illegible] Leverkusen, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,497

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009044

Int. Cl.^{3} C07C *102/08, 103/147, 103/19, 103/24*

U.S. Cl. 564—155 **15 Claims**

1. An α-ketocarboxylic acid N-acylamide of the formula

$R^1—CO—CO—NH—CO—R^2$

in which

R^1 is an optionally substituted aliphatic radical with up to 12 carbon atoms, an optionally substituted cycloalkyl radical with 3 to 10 carbon atoms, an optionally substituted heterocyclic radical, and

R^2 is an optionally substituted aliphatic radical with up to 8 carbon atoms or an optionally substituted phenyl radical.

5. A process for the preparation of α-ketocarboxylic acid N-acylamide according to claim 1, comprising reacting an acyl cyanide of the formula

$R^1—CO—CN$

with a carboxylic acid anhydride of the formula

$R^2—CO—O—CO—R^2$

in the presence of a strong acid at a temperature between about −50° and +150° C., the molar ratio of the acyl cyanide to the carboxylic acid anhydride being from about 1.0.5 to 1:10, the molar ratio of acid to acyl cyanide being from about 0.5:1 to 10:1 and the molar ratio of carboxylic acid anhydride to acid being about 1:2, and then adding water to the reaction mixture.

4,370,499
3-NITRO-ACETOACETANILIDES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Heinz U. Blank, Odenthal; Erich Wolters, Niederzier; Karl W. Müller, Leverkusen, and Günter Rottloff, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,388

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020443

Int. Cl.^{3} C07C *103/34*

U.S. Cl. 564—200 **1 Claim**

1. 2-Chloro-5-nitro-pivaloyl-acetanilide.

4,370,500
COMPOUND: *D*-N-(2-AMINO-2-PHENETHYL)-2-METHOXYETHYLAMINE AND PROCESS FOR PREPARING THE SAME BY SELECTIVE CRYSTALLIZATION

Nancy S. Kurose, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,216

Int. Cl.^{3} C07C *87/28*

U.S. Cl. 564—304 **5 Claims**

1. The compound: d-N-(2-amino-2-phenethyl)-2-methoxyethylamine.

2. A process for the recovery of the compound of claim 1, d-N-(2-amino-2-phenethyl)-2-methoxyethylamine, which comprises the steps of: forming a slurried solution of a mixture of dl-N-(2-amino-2-phenethyl)-2-methoxyethylamine, and dibenzoyl-d-tartaric acid in an aqueous acidic menstruum containing ammonium chloride, refluxing the resultant slurried solution, cooling the latter, filtering and decomposing the latter to obtain the desired d-N-(2-amino-2-phenethyl)-2-methoxyethylamine enantiomer in good optical purity and yield.

4,370,501
SYNTHESIS OF BIS(AMINOPHENYL) COMPOUNDS

Kreisler S. Y. Lau, Alhambra, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 5, 1981, Ser. No. 308,324

Int. Cl.^{3} C07C *87/50*

U.S. Cl. 564—330 **8 Claims**

1. A process for conversion of bisphenols to dianilines comprising the steps of:

a. forming the reaction product of an anhydrous bis-phenol and a halogenated phenyl-quinazoline by heating said compounds in the presence of a crown ether catalyst, a strong base, and a high-boiling polar solvent;

b. subjecting said product to a thermal rearrangement by heating it in an inert atmosphere to thereby form a bis-quinazolinone; and

c. hydrolyzing said bis-quinazolinone by refluxing it in the presence of a strong base in an alcoholic solvent, thereby forming a dianiline.

4,370,502
PROCESS FOR PRODUCING P-NITROANILINE

Taira Harada, Mitaka; Toyozi Shimizu, Iwakuni, and Takenori Nagaoka, Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

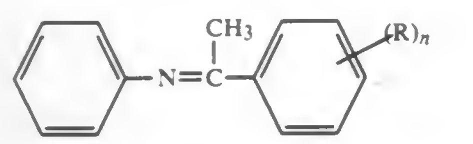
Filed Mar. 13, 1981, Ser. No. 243,496

Claims priority, application Japan, Mar. 17, 1980, 55-32626

Int. Cl.^{3} C07C *85/24, 87/60, 119/10*

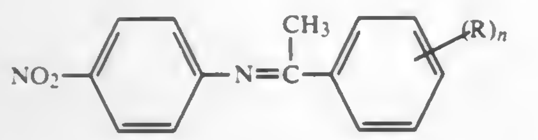
U.S. Cl. 564—411 **7 Claims**

1. A process for producing a p-nitroaniline, which comprises nitrating an α-methylbenzalaniline of the formula



wherein R represents an alkyl group having 1 to 5 carbon atoms, and n is 0 or 1,

with nitric acid having a concentration of at least 90% in the presence of a halogenated aliphatic hydrocarbon solvent and concentrated sulfuric acid to form a p-nitro-α-methylbenzalaniline of the formula



wherein R and n are as defined above, and hydrolyzing the p-nitro-α-methylbenzalaniline.

4,370,503

CATALYST FOR METHYLAMINES PRODUCTION

Loren D. Brake, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1981, Ser. No. 247,136

Int. Cl.³ C07C *85/02, 85/06*

U.S. Cl. 564—474 **3 Claims**

1. In the catalytic preparation of methylamines from methanol or dimethyl ether and ammonia using a silica-alumina catalyst, the improvement which comprises using a catalyst which contains, by weight, 1–13% of silica and 87–99% of alumina.

4,370,504

PROCESS FOR PRODUCING PERFLUOROCARBON GROUP-CONTAINING ALDEHYDES

Iwao Ojima, and Takamasa Fuchikami, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Japan

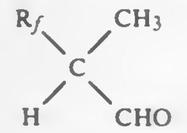
Filed Mar. 4, 1981, Ser. No. 240,361

Claims priority, application Japan, Mar. 7, 1980, 55/28061

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **5 Claims**

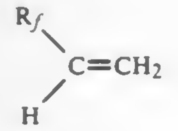
1. A process for producing an aldehyde containing a perfluorocarbon group represented by the formula:



$$R_f(CH_3)C(H)CHO$$

wherein R_f represents a perfluoroalkyl group having up to 20 carbon atoms, a perfluoroaryl group having 6 to 10 carbon atoms, or a perfluorocycloalkyl group having 5 to 8 carbon atoms,

which comprises reacting an olefin containing a perfluorocarbon group represented by the formula:



$$R_f(H)C{=}CH_2$$

wherein R_f is as defined above,

with carbon monoxide and hydrogen in the presence of a rhodium catalyst which is $Rh(PY_3)_3X$, $Rh(CO)(PY_3)_2X$, $HRh(CO)(PY_3)_3$, $Rh_6(CO)_{16}+mPY_3$, $Rh/C+mPY_3$, $RhCl_3+mPY_3$, $[RhCl(C_8H_{12})]_2+mYP(CH_2)_4PY_2$, $[Rh(C_8H_{12})_2]^+Z^-+mPY_3$, $[Rh(norbornadiene)_2]^+Z^-+mY_2P(CH_2)_2PY_2$, or $[Rh(CO)_2Cl]_2+mPY_3$, wherein X represents halogen, Y represents phenyl, substituted phenyl, phenoxy, substituted phenoxy, benzyl, substituted benzyl, alkyl, substituted alkyl, alkoxy, substituted alkoxy, or dialkylamino, Z represents ClO_4, BF_4, PF_6 or BPh_4, ph represents phenyl, and m is a number of 1 to 50.

4,370,505

1,1,3,3-SUBSTITUTED HYDROXYINDANES

Alfons Klein, Dusseldorf; Karlfried Wedemeyer, Cologne, and Jürgen Thies, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

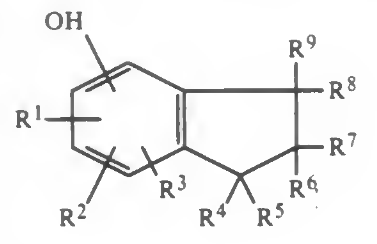
Continuation of Ser. No. 664,729, Mar. 8, 1976, abandoned, which is a continuation of Ser. No. 431,801, Jan. 8, 1974, Pat. No. 3,954,889. This application Dec. 21, 1977, Ser. No. 863,019

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1973, 2304588; Apr. 16, 1973, 2319079

Int. Cl.³ C07C *39/12*

U.S. Cl. 568—734 **11 Claims**

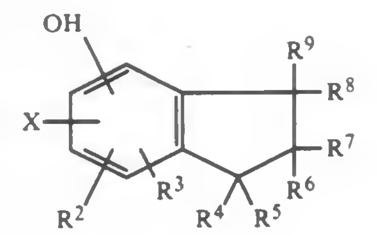
1. 1,1,3,3-substituted hydroxy-indanes of the formula



wherein

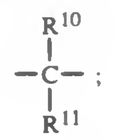
R^1 is selected from the group of hydrogen, halogen and optionally substituted alkyl having up to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, aralkyl with up to 6 carbon atoms in the alkyl part and up to 14 carbon atoms in the aryl part and phenyl, naphthyl or anthranyl and the foregoing substituted by alkyl with up to 12 carbon atoms; or

R^1 is of the group



wherein

X is sulfur of the group



$$-C(R^{10})(R^{11})- ;$$

R^2 and R^3 can be the same or different and are selected from the group of hydrogen, halogen and optionally substituted alkyl of up to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, aralkyl with up to 6 carbon atoms in the alkyl part and up to 14 carbon atoms in the aryl part, phenyl, naphthyl and anthranyl and the foregoing substituted by alkyl with up to 12 carbon atoms; or, if

R^2 and R^3 are in the ortho position to each other, they can form a condensed carbocyclic 5-membered ring together with the carbon atoms of the benzene ring to which they are attached as substituents,

R^4, R^5, R^8 and R^9 are the same or different and are selected from the group of optionally substituted alkyl with up to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, aralkyl with up to 6 carbon atoms in the alkyl part and up to 14 carbon atoms in the aryl part, phenyl, naphthyl and anthranyl or the foregoing substituted by alkyl with up to 12 carbon atoms; or

R^4 and R^5 and/or R^8 and R^9 can form a cycloaliphatic ring together with the carbon atom to which they are attached as substituents;

R^6 and R^7 are the same or different and are selected from the group consisting of optionally substituted alkyl with up to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, aralkyl with up to 6 carbon atoms in the alkyl part and up to 14 carbon atoms in the aryl part, phenyl, naphthyl, anthranyl and the foregoing substituted by alkyl with up to 12 carbon atoms, hydrogen or R^6 and R^7 can form a carbocyclic ring together with the carbon atom to which they are attached as substituents;

where any group of R^1 to R^9 is substituted it is substituted by an alkyl group of up to 12 carbon atoms and R^{10} and R^{11} can be identical or different and are selected from the group of hydrogen and optionally substituted alkyl with up to 12 carbon atoms where the substituent is an alkyl group with up to 12 carbon atoms or R^{10} and R^{11} can form a cycloaliphatic ring together with the carbon atom to which they are attached as substituents.

4,370,506

TERBUTYLATING HYDROXYAROMATIC COMPOUNDS

Francesco Ancillotti, San Donato Milanese; Giuseppe Terzoni, Piacenza; Lidio Micucci, Milan; Paolo Maggioni, Montevecchia, and Pietro Panseri, Bergamo, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Jul. 24, 1981, Ser. No. 286,612

Claims priority, application Italy, Aug. 6, 1980, 24025 A/80

Int. Cl.³ C07C *37/11*

U.S. Cl. 568—785 **4 Claims**

1. In a process for the terbutylation of a phenolic compound by means of an alkyltert-butyl ether, comprising the steps of reacting in a first stage said phenolic compound in substantially stoichiometric ratios at a temperature comprised between 60° C. and 130° C. in the presence of a catalyst of acidic nature, the improvement consisting of removing the alcohol which is formed in said first stage and completing the reaction, after said alcohol removal, under substantially the same reaction conditions used in said first stage.

4,370,507

ETHANOL FROM METHANOL AND SYNTHESIS GAS

Duane C. Hargis, Pleasant Ridge, and Michael Dubeck, Birmingham, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 186,217, Sep. 11, 1980. This application Jan. 8, 1982, Ser. No. 338,088

Int. Cl.³ C07C *29/00*

U.S. Cl. 568—902 **6 Claims**

1. A process for selectively producing ethanol which comprises reacting methanol with carbon monoxide and hydrogen in the presence of a heterogenous catalyst comprising rhodium and iron in the reduced state deposited on a support of alumina impregnated with a promoter amount of a heterocyclic amine at reaction conditions correlated so as to favor the formation of a substantial proportion of ethanol.

4,370,508

PARA-SELECTIVE ZEOLITE CATALYSTS TREATED WITH NITROGEN COMPOUNDS

Warren W. Kaeding, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,485

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 **12 Claims**

1. A process for converting aromatic compounds to a dialkyl benzene compound mixture highly enriched in the para-dialkylbenzene isomer, said process comprising contacting said aromatic compounds under conversion conditions with a modified zeolite based catalyst comprising a crystalline zeolite material characterized by a silica to alumina ratio of at least 12 and a constraint index of from about 1 to 12, said catalyst having been modified by treatment with a para-selectivity-enhancing oxide material and further having been contacted with a nitrogen-based treating agent selected from nitrogen dioxide and ammonia under para-selectivity enhancing conditions.

4,370,509

SOLAR CELL ARRAY

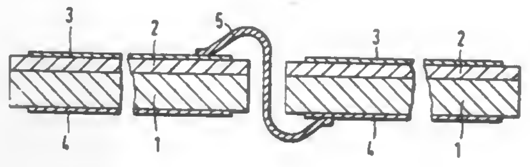
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,926

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036261; Jun. 23, 1981, 3124581

Int. Cl.^{3} H01L *31/04*

U.S. Cl. 136—244 **4 Claims**



1. A solar cell array comprising solar cells which are connected together electrically, in which the electrical connections between the solar cells are strips or wires comprising amorphous metals.

4,370,510

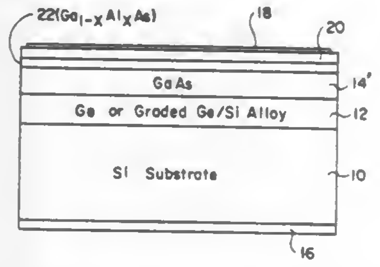
GALLIUM ARSENIDE SINGLE CRYSTAL SOLAR CELL STRUCTURE AND METHOD OF MAKING

Richard J. Stirn, Pomona, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Sep. 26, 1980, Ser. No. 191,008

Int. Cl.^{3} H01L *31/06, 31/18*

U.S. Cl. 136—262 **8 Claims**



6. A solar cell comprised of a single crystal silicon substrate, a single-crystal interlayer, and a single-crystal GaAs film epitaxially grown on said interlayer, said interlayer being comprised of epitaxial single-crystal semiconductor material having a closer match in lattice and thermal expansion with single-crystal GaAs than with the single-crystal silicon of said substrate, a back contact on said substrate and a grid contact on said film said interlayer being comprised of step graded germanium-silicon alloy, with low germanium content at the silicon substrate interface, and a high germanium content at the upper surface.

4,370,511

FLEXIBLE GAS INSULATED TRANSMISSION LINE HAVING REGIONS OF REDUCED ELECTRIC FIELD

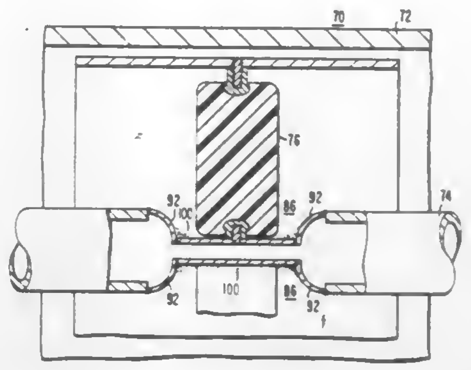
Alan H. Cookson, Pittsburgh; William H. Fischer, Wilkins Township, Allegheny County; Kue H. Yoon, Pittsburgh, and Jeffry R. Meyer, Penn Hills Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1981, Ser. No. 244,587

Int. Cl.^{3} H01B *9/06, 9/04;* **H02G** *5/06*

U.S. Cl. 174—14 R **43 Claims**

1. A transmission line, comprising:
(a) an outer conductor;
(b) an inner conductor adapted for connection to an energizing source and disposed interiorly within said outer conductor;
(c) support means for insulatedly supporting said inner conductor within said outer conductor; and
(d) radially flexible field control means for reducing at a predetermined location along the periphery of said inner conductor the electric field created when said inner conductor is energized and permitting radial flexing of said inner conductor.



4,370,512

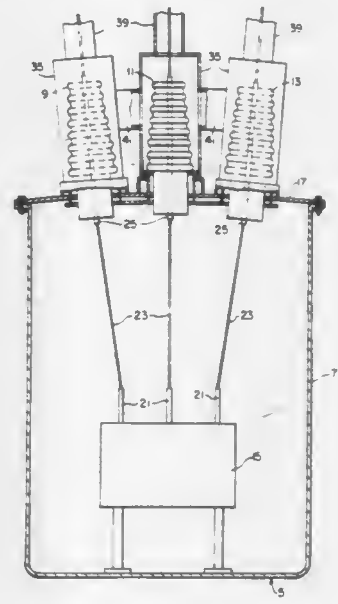
SHIELDING DEVICE FOR ELECTRICAL INDUCTIVE STRUCTURE

Michael W. Thomas, Marshall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 23, 1981, Ser. No. 237,016

Int. Cl.^{3} H01F *27/34, 27/04*

U.S. Cl. 174—18 **4 Claims**



1. An electrical inductive structure for eliminating power losses, comprising:
(a) a tank having a metal wall including openings therein;
(b) electrical inductive apparatus within the tank and having terminals thereon;
(c) a bushing extending through each opening;
(d) conductor means extending through each bushing and connected to the terminals;
(e) an electrically conductive shielding member within the tank and disposed between the openings and having portions extending through the openings;
(f) electrically conductive means externally of the tank and comprising a bus duct housing disposed about each bushing and electrically connected to the portions of the shielding member; and
(g) an air return conduit between the bus duct housings and electrically insulated from the bus duct housings and being spaced from the tank wall.

4,370,513

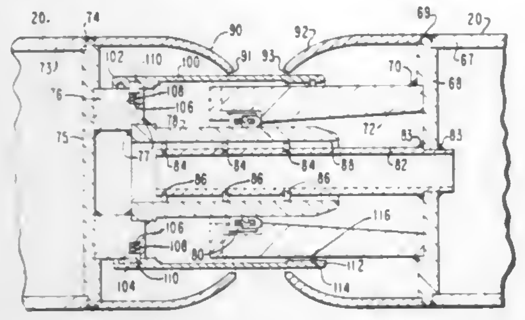
SEMI-FLEXIBLE GAS-INSULATED TRANSMISSION LINE USING PROTECTION TUBE IN CONDUCTOR PLUG-IN JOINT

Prasad R. Kommineni, Westboro, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1982, Ser. No. 363,755

Int. Cl.^{3} H01B *9/06, 9/04;* **H02G** *5/06*

U.S. Cl. 174—21 JS **4 Claims**



1. A gas-insulated transmission line comprising:

an elongated outer sheath;

a cylindrical first main conductor having a first diameter disposed within said outer sheath and having an end thereto;

a first element fixedly secured to said first main conductor end and extending radially inwardly therefrom;

a socket member fixedly secured to said first element and extending longitudinally outwardly therefrom, said socket member having a second diameter less than said first diameter;

a cylindrical second main conductor having said first diameter disposed within said outer sheath and having an end thereto spaced-apart from said first main conductor end;

a second element fixedly secured to said second main conductor end and extending radially inwardly therefrom;

an adapter member fixedly secured to said second element and extending longitudinally outwardly therefrom;

a hollow plug member fixedly secured to said adapter member and extending outwardly therefrom into said socket member, said plug member and said socket member being in electrical contact;

a rigid protection tube fixedly secured to said first element and extending outwardly therefrom into said plug member, said protection tube having a plurality of circumferentially extending bearing strips secured about the outer surface thereof, said bearing strips contacting the inner surface of said plug member;

an insulating gas electrically insulating said first and second main conductors from said outer sheath; and

means for insulatably supporting said first and second main conductors in said outer sheath.

4,370,514

HIGH-VOLTAGE BUSHING WITH DOUBLE-LAYERED POTENTIAL CONTROL INSERTS

Günther Matthäus, Spardorf, and Joachim Ruffer, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,373

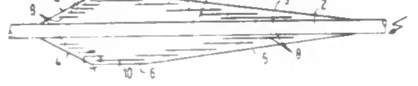
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946172

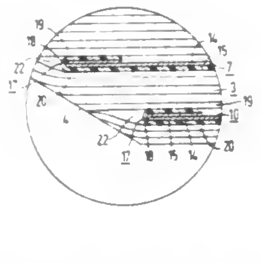
Int. Cl.^{3} H01B *17/28*

U.S. Cl. 174—31 R **4 Claims**

1. A high voltage insulating bushing of the type having at least one conductor part at a high voltage with respect to at least a second conductor part at a reference potential, the insulating bushing further having an insulator body formed of wound insulating foils with at least one electrically conductive potential control insert disposed within preselected insulating foil windings in the insulator body, the high voltage insulator bushing comprising:

at least one double layer foil which forms the electrically conductive potential control insert, said double layer foil being prefabricated in the form of continuous and coextensive contiguous layers of electrically conductive material and insulating material, said insulating material having a high dielectric constant ϵ_r, said double layer foil being folded upon itself along an edge near an outer boundary surface of the insulating body to form an edge wherein said electrically conductive layer is enclosed within said insulating layer of said double layer foil; and





an insulation medium impregnating the high voltage insulating bushing.

4,370,515

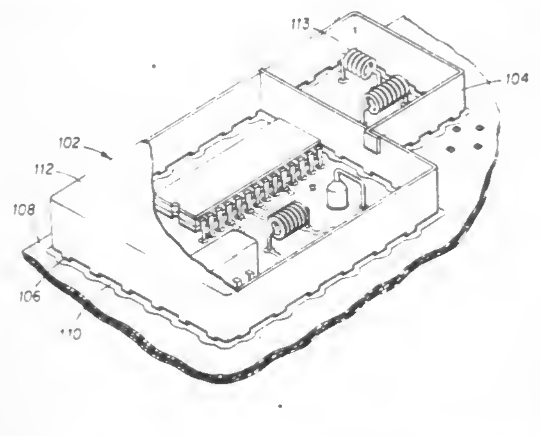
ELECTROMAGNETIC INTERFERENCE

Jay W. Donaldson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 106,600, Dec. 26, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,721

Int. Cl.^{3} H05K *9/00*

U.S. Cl. 174—35 R **10 Claims**



1. An electromagnetic interference (EMI) shielding structure, comprising: first and second planar elements, at least one of the planar elements comprising a ground-plane circuit of a printed circuit board, the printed circuit board having a plurality of apertures therein and an electronic circuit thereon; walls intermediate the planar elements, the walls including a plurality of tabs projecting from a longitudinal edge of the walls, each of the tabs extending into a corresponding one of the plurality of apertures of the printed circuit board and connected electrically to the ground-plane circuit, the planar elements being spaced apart by the walls, and means for attaching the walls to the planar elements, the EMI shielding structure defining an enclosure bound peripherally by the walls and the planar elements including at least a portion of the ground-plane circuit, the electronic circuit being electromagnetically isolated inside the enclosure, the walls being formed of a continuous strip of metal having a corner formed therein by manually bending the strip of metal, the corner including a groove across the strip of metal on one side thereof interiorly of the corner to facilitate the bending, the groove having a depth essentially half the thickness of the strip of metal and a width which predetermines the degree of bending of the metal strip, the groove including first and second edges where the groove intersects the one side, the edges abutting each other to limit the degree of bending of the strip of metal.

4,370,516

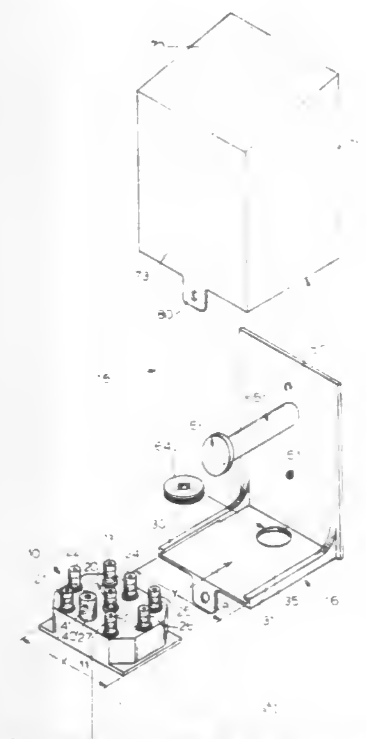
COOPERATIVE TV-FM CABLE SPLITTER-GROUND MODULE AND HOUSING THEREFOR

Arvin K. Bailey, Jr., 113 Estes Dr. Extension, and Richard S. Taylor, 115 Estes Dr. Extension, both of Carrboro, N.C. 27510

Filed May 11, 1981, Ser. No. 262,035

Int. Cl.^{3} H05K *5/00*

U.S. Cl. 174—59 **3 Claims**



1. A coaxial cable TV-FM signal splitter-ground module, module support and associated housing adapted for establishing a standard type of signal splitting and local electrical grounding installation for varying numbers of signal receivers to be serviced from a common incoming signal cable, comprising:

(a) a signal splitter-ground module having an input cable port, a selected number and at least one output port, splitting means adapted to split an incoming signal received at said input cable port and derive therefrom a selected number and at least one of other signals selectively conducted to said number of output ports, a metal enclosure enclosing said splitting means and mounting said ports with one side of each said port being electrically grounded through said enclosure and at least one dimension of said enclosure being of a predetermined selected standard length, a grounding connector comprising means electrically connected to said enclosure and adapted to releasably receive one end of a ground wire having another portion connected to electrical ground for grounding said enclosure and the side of each said port electrically grounded therethrough; and

(b) a support-housing structure adapted for being detachably secured to a building and for releasably receiving and providing weather protective covering for said splitter-ground module and the signal coupling connections associated therewith, said support-housing structure comprising:

(i) a horizontal rectangular base wall member defined by front, back and side edges, having securing means sized to accommodate said splitter-ground module enclosure dimension and adapted for slidably receiving and supporting a portion of said splitter-ground module enclosure incorporating said dimension and for supporting said splitter-ground module within the confines of said base wall member, having an aperture formed in said base wall member in a central, rearwardly located portion thereof and adapted for passage of incoming and outgoing cables to be coupled to said ports;

(ii) a vertical rectangular back wall member secured to the said back edge of said base wall member and extending upwardly therefrom in perpendicular relation thereto, said back wall member being adapted to be secured to a building structure for supporting said base wall member with said module thereon;

(iii) a horizontal post member secured to and extending outwardly from said back wall member and overlying and vertically spaced above said splitter-ground module, said post member being adapted to receive and support selected service loop portions of incoming and outgoing cables above said splitter-ground module; and

(iv) a housing formed for slidable fit on said back wall member and having top, side and front wall portions adapted when said housing is installed on said back wall member to provide in cooperation with said base and back wall members a weather-protected enclosure surrounding said splitter-ground module, said post member and those service loop portions of cabling supported on said post member.

4,370,517

POLYOLEFIN COMPOSITIONS FOR ELECTRICAL INSULATION

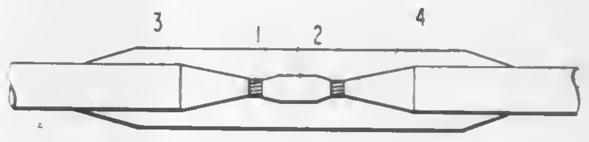
Kenichiro Soma; Shoji Kuma; Harunori Sakaguchi; Hisanari Shirai; Ryoichi Ito, and Toshio Shiina, all of Ibaraki, Japan, assignors to Hitachi Cable Limited, Tokyo, Japan

Continuation of Ser. No. 974,271, Dec. 28, 1978, abandoned. This application Dec. 18, 1980, Ser. No. 217,926

Claims priority, application Japan, Dec. 29, 1977, 52-159423; Dec. 6, 1978, 53-151268

Int. Cl.^{3} H02G *15/02;* **D03D** *13/00*

U.S. Cl. 174—74 A **10 Claims**



1. A polyolefin insulated electric cable exhibiting the effect of suppressed water tree formation which comprises an electrical insulation layer provided around a conductor, said insulation layer comprising a polyolefin grafted with an ester type polyfunctional monomer, which polyolefin contains 0.01 to 0.888% by weight of ester groups.

4,370,518

SPLICE FOR LEAD-COATED AND INSULATED CONDUCTORS

Raymond L. Guzy, Morton Grove, Ill., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 99,692, Dec. 3, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 287,400

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.^{3} H01R *4/70;* **H02G** *15/08*

U.S. Cl. 174—84 R **8 Claims**

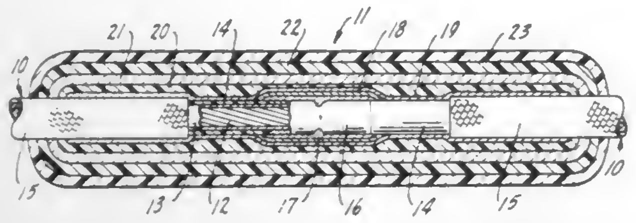
6. A cable splice comprising:

a metallic sleeve member extending over conductor end portions and frictionally engaging the conductor end portions;

a first layer of adhesive covering said sleeve member and extending over exposed conductor end portions;

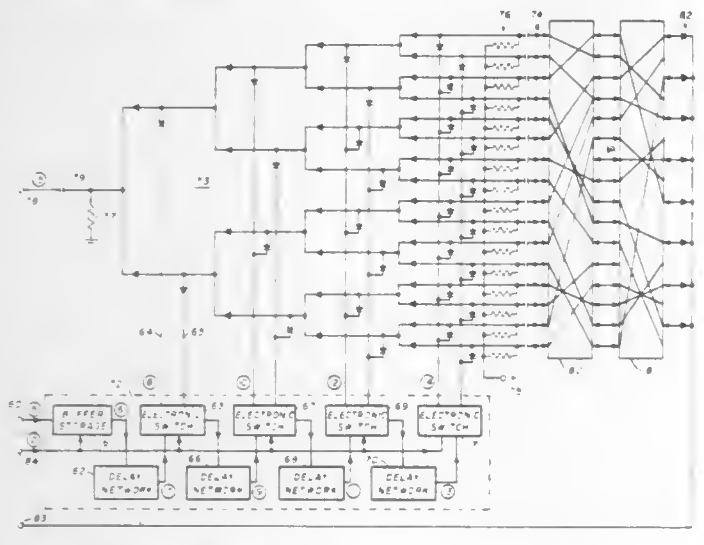
a helically wrapped insulation layer of uncured thermoset-

ting elastomeric polymer tape surrounding said layer of adhesive;
an overlapped layer of fabric;
a helically-wrapped layer of heat-shrinkable polymeric material tape surrounding said layer of fabric;



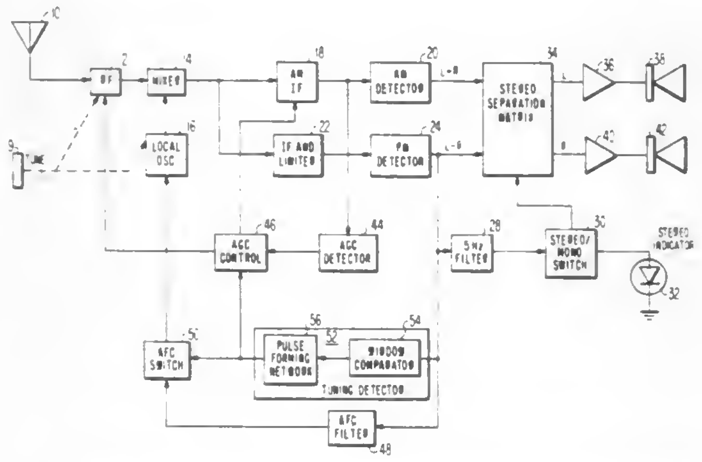
a sleeve of heat shrinkable polymeric material surrounding said layer of heat shrinkable polymeric material tape; and
a layer of foil located intermediate said metallic sleeve member and said helically-wrapped layer of heat-shrinkable polymeric material tape, said layer of foil being covered with a second layer of adhesive covering.

4,370,519
AUTOKEY GENERATOR FOR SECRET COMMUNICATION SYSTEM
Beryl L. McArdle, Rochester, N.Y., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Dec. 6, 1949, Ser. No. 131,436
Int. Cl.³ H04L *9/00, 7/08*
U.S. Cl. 178—22.14 **4 Claims**



1. An autokey generator adapted for use in a secret communication system, comprising the combination of a source of binary digit pulse intelligence signals in digital mark-space form having a predetermined number of digital pulse intervals in each intelligence signal interval; a plurality of bistable switch means connected in sequence, each said switch means having a tripped state and a reset state, a source of reset signals connected to each of said switch means, said reset signals occurring at the end of each digit interval; means for tripping the first said switch means in response to the receipt of a mark pulse from said source of intelligence signals; means for setting each said switch means, except the first, in accordance with the state of the preceding said switch means upon the receipt of a said reset pulse, each said switch means having at least a pair of output terminals furnishing output signals of opposite polarity; diode matrix means having a plurality of output terminals, responsive to the respective outputs of said switch means for energizing individual ones of said output terminals in correspondence with particular combinations of output signals from said switch means, said matrix means being operated to pass said output signals from said switch means to one of said output terminals at a given instant, depending uniquely upon the configuration of polarities then present on said output terminals of said switch means, an autokey code output terminal, and means for connecting fewer than all of said output terminals of said matrix means in parallel to said autokey code output terminal, whereby said autokey code appearing on said autokey code output terminals contains a pattern of pulses determined by, but different from, the pattern of pulses appearing in said intelligence signals.

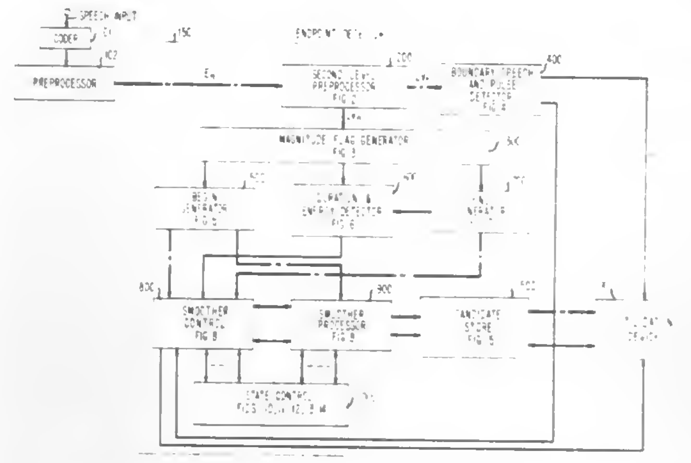
4,370,520
AM STEREO RECEIVER
Max E. Malchow, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 26, 1981, Ser. No. 266,984
Int. Cl.³ H04B *1/12;* H04H *5/00*
U.S. Cl. 179—1 GS **5 Claims**



1. In an AM stereo system including tuning means for tuning said system to various RF signals corresponding to respective stations to produce an IF signal, at least one gain controlling stage responsive to an AGC signal, and AGC means for generating said AGC signal in response to the strength of said received RF signals, apparatus comprising:
tuning detector means for providing a first signal when said receiver is not being tuned and a second signal when said receiver is being tuned; and
gain control means operating in conjunction with said AGC means and responsive to said first signal for establishing a first IF amplitude versus received RF signal strength characteristic and responsive to said second signal for establishing a second IF amplitude versus received RF signal strength characteristic, which second characteristic has a greater slope than said first characteristic.

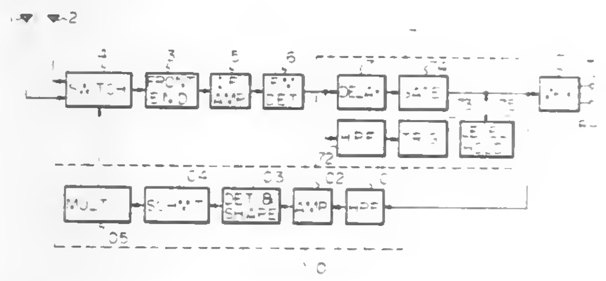
4,370,521
ENDPOINT DETECTOR
James D. Johnston, Millington, N.J.; Lori F. Lamel, Cambridge, Mass.; Lawrence R. Rabiner; Aaron E. Rosenberg, both of Berkeley Heights, N.J., and Jay G. Wilpon, North Plainfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 19, 1980, Ser. No. 218,207
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **22 Claims**

1. Apparatus for determining endpoints of an applied speech utterance in a noise prone environment comprising:
means for receiving an input signal including a speech utterance;
means responsive to said input signal for generating digital signals corresponding thereto;
means responsive to said digital signals for developing signals representative of the energy levels of said digital signals;
means responsive to said energy level signals for detecting the endpoints of said applied speech utterance;
characterized in that said endpoint detecting means (**150**) comprises:
means (**300**, **500**, **600**, **700**) responsive to said energy level signals for developing a plurality of energy signal pulses, each energy signal pulse corresponding to a sequence of said energy level signals which exceeds a prescribed level for at least a predetermined period of time; and


SPEECH INPUT
CODER
PREPROCESSOR
SECOND LEVEL PREPROCESSOR FIG. 2
BOUNDARY SPEECH AND PULSE DETECTOR FIG. 4
MAGNITUDE FLAG GENERATOR FIG. 3
BEGIN GENERATOR FIG. 5
DURATION & ENERGY DETECTOR FIG. 6
SMOOTHER CONTROL FIG. 7
SMOOTHER PROCESSOR FIG. 8
STATE CONTROL

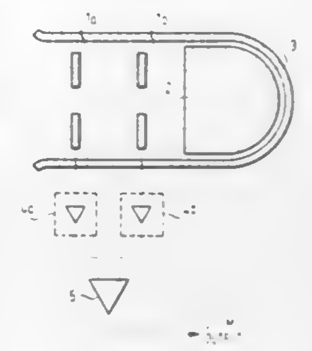
means (**800**, **900**, **1000**) responsive to said energy signal pulses for developing a plurality of endpoint candidate signals, each of said endpoint candidate signals being representative of probable beginning and ending points of said applied speech utterance.

4,370,522
FM RECEIVER FOR USE WITH MOTORCARS
Shigeki Takeda; Junichi Shibata; Masashi Shimakata; Yasuhiro Oshime; Shintaro Gomi, and Katsuaki Kawamura, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Mar. 3, 1981, Ser. No. 241,460
Claims priority, application Japan, Mar. 3, 1980, 55-26274; Mar. 3, 1980, 55-27291[U]
Int. Cl.³ H04N *5/00;* H01Q *1/00, 1/32, 3/00*
U.S. Cl. 179—1 GD **6 Claims**



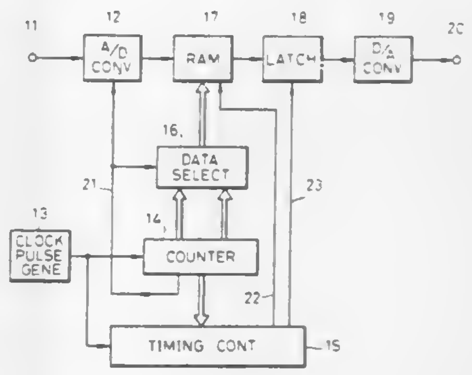
1. An FM receiver comprising:
at least two receiving directional antennas which have directions of maximum sensitivity different from each other;
demodulating circuit adapted to demodulate a frequency-modulated signal wave into a low frequency signal substantially corresponding to the original modulating signal;
pulse noise suppressing means connected to said demodulating circuit for suppressing high frequency noise components in said low frequency signal;
multipath noise detecting circuit connected to said pulse noise suppressing means for monitoring the output signal of said pulse noise suppressing means and generating alternately one of at least two predetermined control signals when multipath noise components with frequencies lower than said high frequency noise components appear in the output of said pulse suppressing means;
switching means connected to said multipath noise detecting circuit for selectively connecting, in response to said control signals, one of said antennas to the input of said demodulating circuit; and
a multiplex decoding circuit connected to said pulse noise suppressing means for decording the low frequency signal into the multiplexed original signals.

4,370,523
PROCESS AND APPARATUS FOR CONVERTING SOUND WAVES INTO DIGITAL ELECTRICAL SIGNALS
Karl O. Bäder, Lahr, Fed. Rep. of Germany
Filed May 27, 1981, Ser. No. 267,478
Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020247
Int. Cl.³ H04R *1/20*
U.S. Cl. 179—1 DM **11 Claims**



1. A process for converting sound waves into digital electrical signals wherein the sound waves are continuously simultaneously detected by first and second electro-acoustic transducers which are disposed at a spacing from each other in the direction of incidence of the sound and which thereby produce electrical signals in dependence on the received sound, and a respective difference pulse code modulation signal in the form of a 1-bit signal is formed from the comparison of each two electrical signals which respectively correspond to two said simultaneously detected sound waves.

4,370,524
CIRCUIT FOR TIME COMPRESSION AND EXPANSION OF AUDIO SIGNALS
Seisuke Hiraguri, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Continuation-in-part of Ser. No. 962,794, Nov. 20, 1978, abandoned. This application Oct. 9, 1980, Ser. No. 195,639
Claims priority, application Japan, Nov. 22, 1977, 52-139439
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—15.55 T **7 Claims**



1. A time compression or expansion circuit for audio signals comprising:
(a) an analog to digital converter for converting an input audio signal to a digital signal;
(b) a random access memory coupled to said analog to digital converter for writing in and reading out the digital signal supplied from said analog to digital converter;
(c) a latch circuit coupled to the output of said random access memory for holding a signal which has been read out from said random access memory;
(d) a digital to analog converter coupled to said latch circuit for converting the output of said latch circuit to an analog signal and producing and output analog signal which is

compressed or expanded in time base with respect to said analog signal;

(e) a clock pulse generator for generating a clock pulse;

(f) a counter circuit for counting the clock pulses from said generator and for producing as outputs thereof an address datum for writing-in of which address changes at a first predetermined rate, an address datum for reading-out of which address changes at a second predetermined rate different from said first predetermined rate, a writing-in and reading-out switching signal, and a timing signal;

(g) a data selector for sending alternatively and selectively the address datum for writing-in and the address datum for reading-out supplied from the counter circuit, to said random access memory, in response to the writing-in and reading-out switching signal supplied from said counter circuit; and

(h) a timing controller supplied with the clock pulse from the generator and the timing signal from the counter circuit for producing a series of writing-in pulses and a series of strobe pulses which exist alternatively and have a common frequency regardless of mode of compression or expansion or rate thereof, said analog to digital converter converting the input audio signal to the digital signal in response to the writing-in and reading-out switching pulse from the counter circuit, said random access memory writing the signal from the analog to digital converter, in response to the writing-in pulse fed from the timing controller, into an address thereof designated by the address datum for writing-in, and reading a signal out of an address designated by the address datum for reading-out in response to the strobe pulse of said common frequency, the written address of the memory being read multiple times or skipped being read according to said mode and rate, said latch circuit holding the signal read out from the random access memory in response to the strobe pulse from the timing controller.

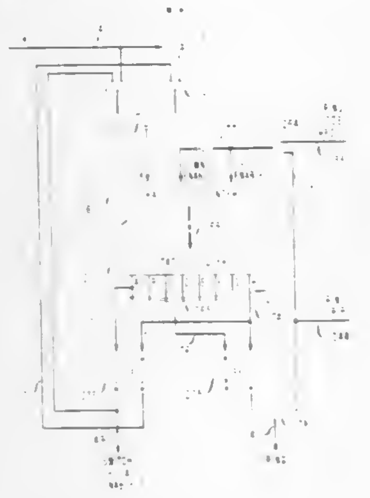
4,370,525
VARIABLE RATE TIMING CIRCUIT

Gordon K. Francis, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,886

Int. Cl.^{3} H04Q *11/04;* **H03K** *17/296, 21/30*

U.S. Cl. 179—16 A **7 Claims**



1. A timing circuit comprising
a sequential circuit (**267**),
at least two sources (**261,262**) of clock pulses of differing repetition rates,
means (**273**) responsive to the output of said sequential circuit for selectively connecting said sources of clock pulses to said sequential circuit, and
means for selectively advancing or reversing the states of said sequential circuit.

4,370,526
ARRANGEMENT FOR APPLYING A RINGING VOLTAGE TO A SUBSCRIBER'S LINE

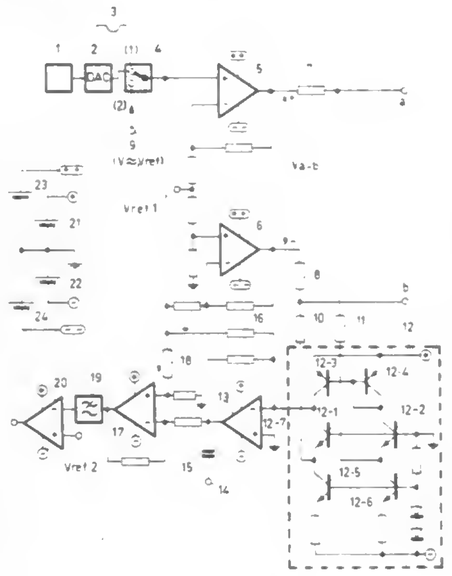
Franciscus A. C. M. Schoofs; Aloysius J. Nijman, and Frederik van Dongen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,214

Claims priority, application Netherlands, Feb. 12, 1980, 8000859

Int. Cl.^{3} H04M *19/02*

U.S. Cl. 179—51 AA **3 Claims**



1. An arrangement for applying a combination of a d.c. voltage signal and a low-frequency a.c. voltage signal to a subscriber's line of an automatic telephony system, the low-frequency a.c. voltage signal being used to actuate a ringing device forming part of the subscriber's apparatus, comprising a low-frequency a.c. voltage generator from which two low-frequency a.c. voltages are derived which are applied in anti-phase phases to different wires of the subscriber's line, characterized in that means have been provided for forming the two low-frequency a.c. voltages such that the low-frequency a.c. voltage between the wires has a waveform in which the portion of each period during which the said low-frequency a.c. voltage is positive with respect to the mean level of the said low-frequency a.c. voltage differs from the portion during which the said low-frequency a.c. voltage is negative, the mean level being located halfway between the extreme values of the said low-frequency a.c. voltage, as a result of which the low-frequency a.c. voltage between the wires of the subscriber's line has a direct current component which may be used as the d.c. voltage signal.

4,370,527
ARRANGEMENT FOR FEEDING A SUBSCRIBER DEVICE

Günter W. Ruff, Auenwald, and Hartmut Scheffler, Aspach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

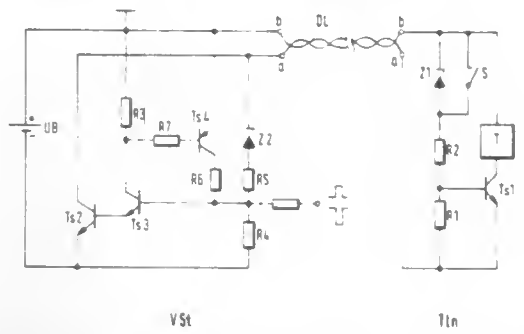
Filed Feb. 27, 1981, Ser. No. 239,103

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007549

Int. Cl.^{3} H04M *19/00*

U.S. Cl. 179—70 **14 Claims**

1. In a circuit for supplying operating power from a power supply at a central office to a telephone device at a subscriber location via a two-wire line, and including switching means at the subscriber location actuatable to effect connection of the telephone device to the power supply to place the device into operation, the improvement comprising: a first switching device connected between said power supply and said line for controlling the supply of power to said line; and a second switching device connected between said line and said telephone device for controlling the delivery of power from said line to said telephone device, with each said switching device being connected to switch in response to the traversing of a threshold by the voltage or the current which is on the two-wire line and which is caused by said power supply.



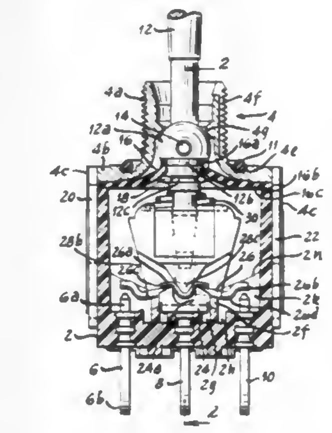
4,370,528
MINIATURE SEALED TOGGLE SWITCH

Louis F. Aschenbach, Menomonee Falls, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 16, 1981, Ser. No. 243,687

Int. Cl.^{3} H01H *21/04*

U.S. Cl. 200—6 BB **20 Claims**



1. A miniature environmentally sealed toggle switch adapted for mounting on a panel comprising:

a housing having a base provided with a contact compartment and a cover having a bushing for extending through a hole in the mounting panel;

stationary contacts in said compartment having terminals extending through said base to the outside;

a movable contactor supported on one of said stationary contacts serving as a pivot therefor and being rockable in opposite directions to engage and disengage at least one other stationary contact;

a toggle lever extending down through said bushing and means pivotally supporting said toggle lever in said bushing for pivotal movement limited by said bushing;

an actuator engaging said contactor and being slidable therealong to rock the same;

means coupling said toggle lever to said actuator comprising a hole in said actuator into which the inner end portion of said toggle lever extends and a frustoconical compression spring biasing said actuator against said contactor so that said actuator slides along said contactor and concurrently rocks in unison with said toggle lever as the latter is pivotally operated from one operating position to another;

and sealing means comprising a gasket hugging said toggle lever below its pivot and means stretching said gasket to the periphery of said base and said cover.

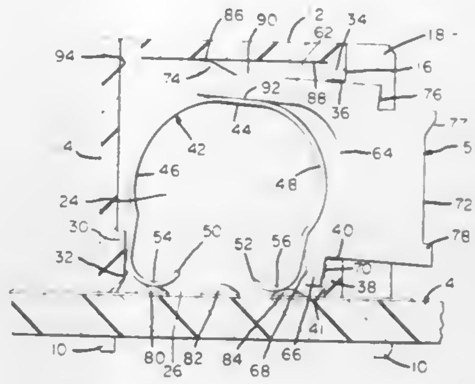
4,370,529
SWITCH HAVING SWITCH CONTACTS ENGAGEABLE DIRECTLY WITH CIRCUIT BOARD CONTACTS

Winfield W. Loose, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 16, 1981, Ser. No. 321,880

Int. Cl.^{3} H01H *15/00, 9/20*

U.S. Cl. 200—16 D **12 Claims**



1. A switch which is intended for mounting on a circuit board, the switch comprising a prismatic insulating housing having oppositely facing external endwalls, an external topwall, oppositely facing external sidewalls extending between the endwalls, and a base, at least one switch cavity in the housing, the cavity having a switch contact and an actuator therein, the switch being characterized in that:

the cavity has a first opening at the base of the housing and a second opening in one of the external walls other than the endwalls,

the cavity has an elongated circuitiously formed spring therein, the spring having spaced-apart ends which are proximate to the first opening, the ends having switch contacts thereon, at least one of the ends being movable upon the application and removal of a flexing force to an intermediate portion of the spring,

the actuator being movably contained in the cavity and being in engagement with the intermediate portion of the spring, the actuator having an engageable portion which projects through the second opening in the housing which can be engaged by an externally applied force to push the actuator into the associated cavity, the actuator being normally in a first position in which the engageable portion projects through the second opening to an extended position,

the actuator being movable inwardly of the cavity to a depressed position upon application of an external force to the engageable portion with accompanying application of a flexing force to the intermediate portion of the spring whereby, the switch can be mounted on a circuit board with the switch contacts associated with a pair of circuit board contacts and with the switch contacts against the circuit board contacts when the actuator is in one of its positions, at least one of the switch contacts being spaced from its associated circuit board contact when the actuator is moved to its other position.

4,370,530
ELECTROLYTIC CELL ELECTRICAL SHUNTING SWITCH ASSEMBLY

Paul O. Wayland, Montour Falls, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 28, 1980, Ser. No. 154,153

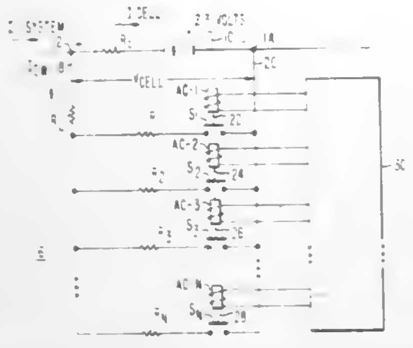
Int. Cl.^{3} H01H *33/66*

U.S. Cl. 200—144 B **10 Claims**

1. An electrical shunting switch assembly adapted to be electrically connected in parallel across an electrolytic cell, which assembly comprises;

(a) a plurality of electrically parallel branch conductor paths each of which includes a vacuum switch and a series resistance of predetermined value in each parallel switch containing branch, so that the current in each respective parallel branch is limited to a predetermined design value, and

(b) means for asynchronously operating the vacuum



switches to divert an increased portion of the current from the switch assembly back through the cell when the voltage across the switch assembly exceeds the cell electrolyzing potential, whereby the arc current which an individual vacuum switch must dissipate upon switch opening is limited to the predetermined design value.

4,370,531

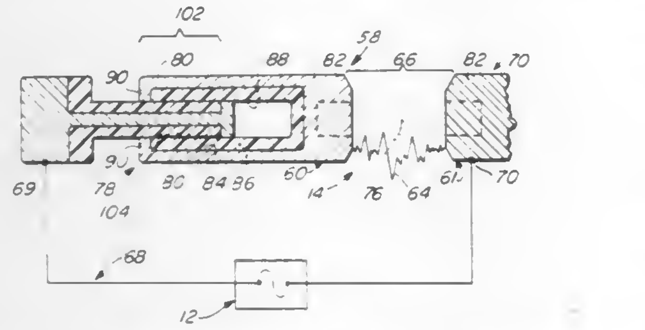
ELECTRIC SWITCH AND IMPROVED DEVICE USING SAME

Thomas J. Tobin, Northbrook, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Sep. 19, 1980, Ser. No. 188,660

Int. Cl.^{3} H01H *33/06*

U.S. Cl. 200—151 **20 Claims**



1. An electrical switch for opening a first current path in which the switch is included, comprising:

a pair of normally electrically interconnected contacts for carrying current in the first current path, the contacts being relatively movable apart along a fixed line of direction to break the electrical interconnection therebetween and to open the first current path, at least one of the interconnected contacts defining an enclosed chamber;

a terminal in the first current path;

means for

(a) electrically connecting a first of the contacts to the terminal when the contacts are electrically interconnected so that the terminal and contacts are in series in the first current path, and

(b) electrically insulating the first contact from the terminal as and when the contacts move apart; and

ignitable means within the chamber for pressurizing the chamber upon ignition thereof to rapidly drive the contacts apart.

4,370,532

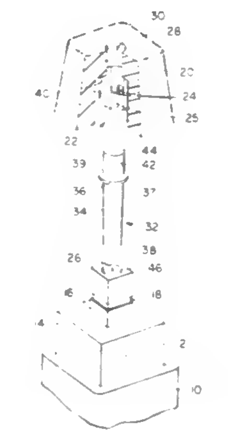
LIGHTED ELECTRICAL PUSHBUTTON SWITCH

Todd C. Green, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 237,346

Int. Cl.^{3} H01H *3/12*

U.S. Cl. 200—314 **3 Claims**



1. A lighted pushbutton switch comprising a light source, a housing that houses said light source, an actuating pushbutton mounted for reciprocating movement in said housing, said pushbutton having a keycap retaining post that extends therefrom, a keycap that has a retaining means which cooperates with said post to secure said keycap on said keypost, said keypost also having a passageway which extends all the way through said keypost into the interior of said housing so that it is in alignment with said light source, and said keycap having a channel therein which is in light communication with said passageway so that light from said light source that passes through said passageway will also pass through said channel said keycap to an outside viewer and a light pipe that has a first section which inserted into said passageway and a second section which projects into said channel, said keycap including a cavity adapted to surround the key post, the passageway in the keycap communicating with the cavity, said light pipe including abutment and alignment means situated between the first and second sections and adapted to cooperate with a surface on the cavity of the keycap and the free end surface of the key post after said keycap is assembled onto the post.

4,370,533

KEYBOARD SWITCH AND PROCESS FOR PRODUCTION THEREOF

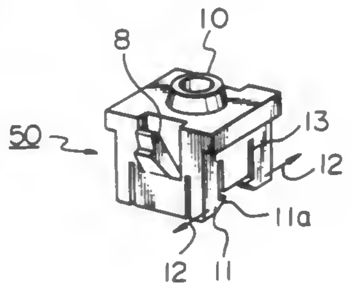
Seisuke Kamei, Nagano; Hideo Nabetani, and Ryohei Kinoshita, both of Suzaka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1980, Ser. No. 213,402

Claims priority, application Japan, Dec. 10, 1979, 54/160030

Int. Cl.^{3} H01H *3/12, 13/52*

U.S. Cl. 200—340 **9 Claims**



1. A push-button switch having in a housing thereof a switch contact spring driven by the vertical movement of a drive rod which comprises: a plate spring element having an upwardly extending drive-rod support-portion and a bent switch contact spring-driving portion extending transversely downwardly from the drive-rod support portion of the plate element for engagement with the switch contact spring, wherein said drive rod is formed of a molded synthetic resin fixedly mounted around the support-portion of the plate spring element, and wherein said drive rod drives said switch contact spring through the switch contact spring-driving portion, the contact spring-driving portion further acting as a return spring for the drive-rod.

4,370,534

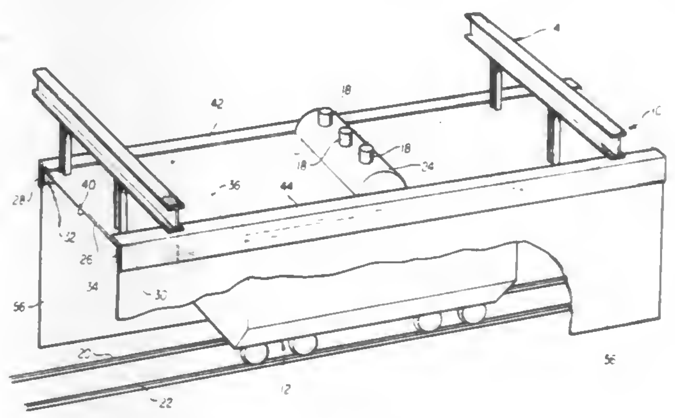
APPARATUS AND METHOD FOR HEATING, THAWING AND/OR DEMOISTURIZING MATERIALS AND/OR OBJECTS

Deryck Brandon, P.O. Box 176, Charlottesville, Va. 22902

Continuation-in-part of Ser. No. 229,523, Jan. 29, 1981, abandoned, which is a continuation of Ser. No. 28,601, Apr. 9, 1979, Pat. No. 4,256,944. This application Mar. 25, 1981, Ser. No. 247,261

Int. Cl.^{3} H05B *6/80*

U.S. Cl. 219—10.55 A **18 Claims**



1. An apparatus for heating, thawing and/or demoisturizing materials stored in a gondola-type container having an open face and a predetermined length and width, comprising:

shielding hood means adapted for forming a shielded microwave cavity in combination with said container, said hood means defining a longitudinal axis and having front and back ends separated by a distance along said longitudinal axis of at least twice the length of said container, said hood means comprising shielding means for blocking microwave leakage from the microwave heating cavity formed by said hood means and said container, said shielding means disposed in contacting engagement with said container to form said cavity in the space enclosed between said shielding hood means and said container;

microwave radiation means mounted in the middle of said shielding hood means for radiating the materials within the container with microwave energy upon contacting engagement of the shielding hood means and the container; and

means adapted for transporting said container from the front end to the back end of said hood means with said shielding means in contacting engagement with said container, said microwave radiation means radiating said materials as said materials pass adjacent thereto;

whereby the materials stored in the container within the microwave cavity formed by the container and the shielding hood means are heated, thawed, and/or demoisturized by the microwave energy produced by the microwave radiation means.

4,370,535

MICROWAVE OVEN POWER CONTROL SYSTEM

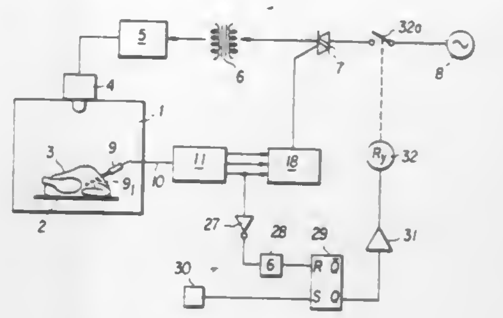
Tomimitsu Noda, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 90,684, Nov. 2, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 274,867

Claims priority, application Japan, Nov. 6, 1978, 53-152533

Int. Cl.^{3} H05B *6/68*

U.S. Cl. 219—10.55 B **10 Claims**



1. A microwave oven having an open cavity, comprising:

an electric power source;

a magnetron for generating microwave energy in the oven cavity in which frozen foods to be thawed are placed, wherein the frozen food is thawed by absorption of the microwave generated by said magnetron; and

thawing control means coupled to said magnetron in order to control the power of said magnetron during a thawing operation, said control means comprising,

sensor means for detecting the temperature of the food placed in the oven cavity, and

temperature setting means for decreasing the magnetron power output step by step in response to the food temperature detected by the sensor means to thaw the food without impairment thereof,

comparator means connected to said sensor means and provided with at least one preset temperature signal with which the detected food temperatures from said sensor means are compared to generate at least one comparison result,

shift register means for producing duty cycle signals for differing predetermined time duration,

gating means coupled to said comparator means and said shift register means for producing a magnetron duty cycle control signal based on a logical combination of said at least one comparison result and the duty cycle signals produced by said shift register means,

wherein the duty cycle of said magnetron is controlled based on said duty cycle control signal to control the magnetron energy output in dependence on the temperature of the food placed in the oven cavity.

4,370,536

EFFICIENCY ADAPTIVE EDM APPARATUS AND METHOD

Jean-Pierre Kruth, Heverlee, Belgium, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed May 7, 1980, Ser. No. 147,507

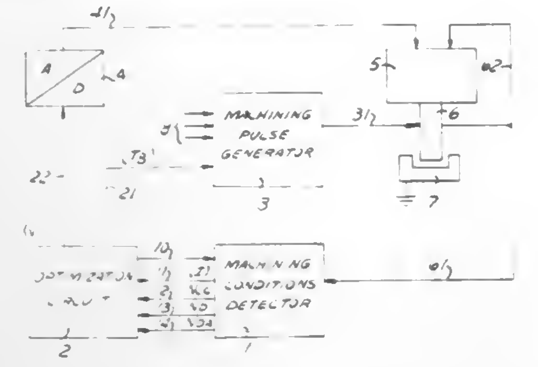
Claims priority, application Switzerland, May 8, 1979, 4302/79

Int. Cl.^{3} B23P *1/08*

U.S. Cl. 219—69 M **12 Claims**

1. A method for machining by electrical discharges an electrode workpiece by means of an electrode tool, wherein consecutive voltage pulses are applied between the electrodes for machining by electro-erosion said electrode workpiece, and wherein a magnitude representing the machining performance index is obtained and a machining parameter is automatically varied by incremental steps such as to provide said magnitude with a maximum value, said method comprising determining a curve representing said magnitude as a function of said ma-

chining parameter and giving to each consecutive incremental step a first value when said curve has a positive slope and a second value when said curve has a negative slope, said second value being greater than said first value.

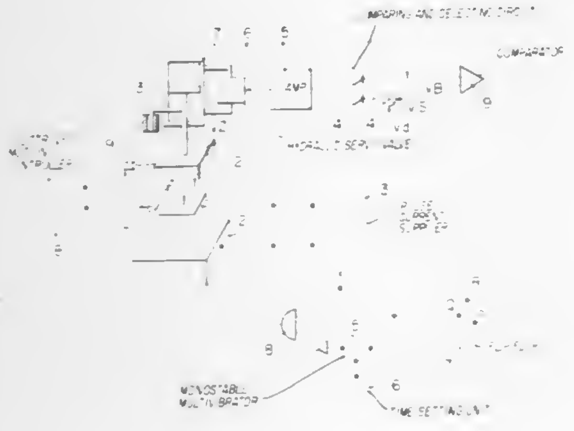


4,370,537
ELECTRIC DISCHARGE MACHINE

Toshiro Oizumi; Tetsuro Ito, and Shigeo Yamada, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00112, § 371 Date Jan. 29, 1981, § 102(e) Date Jan. 29, 1981, PCT Pub. No. WO80/02665, PCT Pub. Date Dec. 11, 1980

PCT Filed May 27, 1980, Ser. No. 232,030
Int. Cl.^{3} B23P *1/14*
U.S. Cl. 219—69 V **8 Claims**

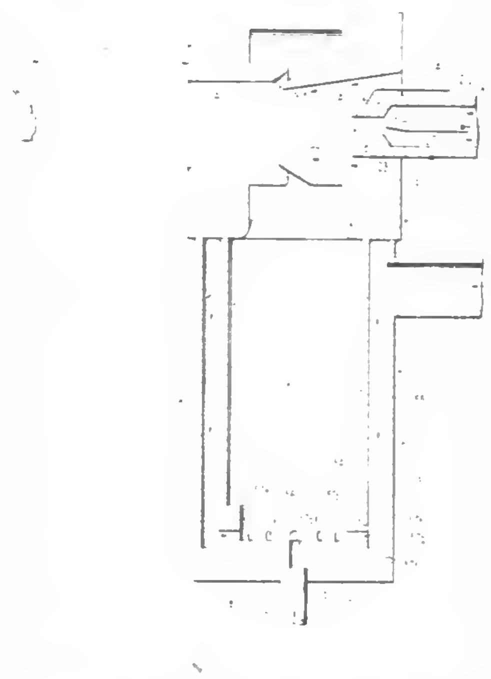


1. An electric discharge machine comprising: an electric power source for supplying an electric discharge machining energy between an electrode and a workpiece to be machined; feeding means for effecting the relative feeding motions of said electrode and said workpiece in a certain direction; and means for effecting such relative rocking motions as have a directional component perpendicular to said certain direction, whereby said electric discharge machining energy is supplied from said electric power source, while effecting the rocking motions by said rocking motion effecting means, thereby to make it possible to accomplish a rocking machining operation, wherein the improvement comprises: position detecting means for detecting that said electrode and said workpiece take a predetermined positional relationship in said certain direction; means made responsive to the signal from said detecting means to maintain a signal outputting condition; and means for generating a command for effecting said rocking machining operation by the output signal from said means for a predetermined time period sufficient to provide a uniform machining on each part of said workpiece when and after said predetermined positional relationship is taken and means for holding said electrode and said workpiece in said predetermined positional relationship, said holding means being adapted to control said relative feeding motion effecting means in response to the signal of said position detecting means thereby to hold said electrode and said workpiece in said predetermined positional relationship.

4,370,538
METHOD AND APPARATUS FOR ULTRA HIGH VELOCITY DUAL STREAM METAL FLAME SPRAYING

James A. Browning, Hanover, N.H., assignor to Browning Engineering Corporation, Hanover, N.H.

Filed May 23, 1980, Ser. No. 152,966
Int. Cl.^{3} B23K *9/00*
U.S. Cl. 219—121 PY **14 Claims**



1. A flame spraying method comprising the steps of:

forming a primary jet stream of melted material particles suspended in a very hot carrier gas,

igniting a fuel/air mixture in an internal burner combustion chamber to create high pressure, high temperature products of combustion within the confined volume of the combustion chamber,

discharging the hot products of combustion from said internal burner through a manifold nozzle closing off said combustion chamber as a converging annular flow from a circular series of closely spaced nozzle orifices or a narrow continuous slot of circumferential ring geometry including a diminished core section defining the inner envelope of said converging annular secondary jet stream,

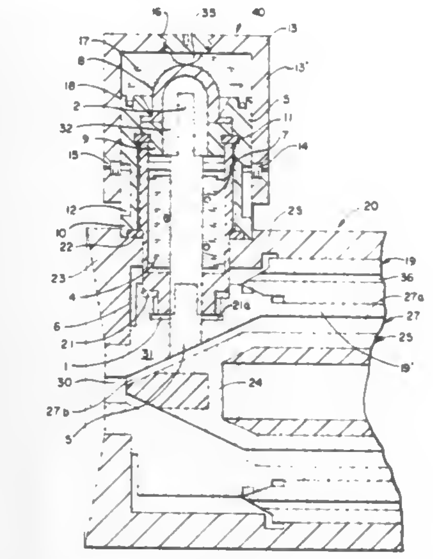
introducing said primary jet stream molten particles within said carrier gas upstream of and axially into the secondary jet stream in the direction of flow of said secondary jet stream, and

controlling combustion within said internal burner to accelerate said molten particles to supersonic velocity and to thereby create an extended length small diameter stream of molten particles downstream of said manifold nozzle of extremely high particle density for rapid, high bonding strength molten particle deposition on a surface to be coated, while maintaining the temperature of the secondary jet stream at a sufficiently high value to prevent solidification of the molten particles prior to impact on said surface.

4,370,539
DEVICE FOR THE MANUAL START-UP OF A PLASMA TORCH

Dimo T. Garlanov; Marin G. Beloev; Vladimir P. Hlebarov; Mariana V. Kolarova, and Ivan V. Vangelov, all of Sofia, Bulgaria, assignors to NPK za Kontrolno Zavarachni Raboti, Sofia, Bulgaria

Filed Oct. 7, 1980, Ser. No. 194,886
Int. Cl.^{3} B23K *9/16*
U.S. Cl. 219—121 PW **3 Claims**



1. In a plasmatron having an anode and cathode spaced from each other so as to sustain an arc therebetween, a nozzle disposed forwardly of the anode and cathode, and means to supply a stream of gas under pressure which flows between the anode and cathode and out of the nozzle, a manual start-up device comprising an electrically conductive plunger constituting a start-up electrode slidably mounted in and in electrical contact with a first one of said anode and cathode for selective advance movement toward and retraction from the second one of said anode and cathode, a first resilient means opposing the advance of the start-up electrode toward the second one of said anode and cathode, whereby to create an arc when the start-up electrode is retracted, away from the second one of said anode and cathode, from its fully advanced position, means mounting the start-up electrode, said start-up electrode mounting means being rotatable to a limited degree when it is in its retracted position, means automatically releasably locking the start-up electrode into its retracted position comprising a second resilient means constantly urging the start-up electrode mounting means and the electrode toward the terminus of their rotation wherein the start-up electrode mounting means and the start-up electrode are locked against axial movement, the means mounting the start-up electrode having an electrically insulated manually engageable means, whereby the start-up electrode mounting means and the start-up electrode may be turned against the action of the second resilient means to a position in which they are free for axial movement toward the second one of said anode and cathode.

4,370,540
REFLECTIVE BEAM ROTATOR

Jack W. Davis, East Hartford, and Paul R. Blaszuk, Lebanon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 1,038, Jan. 4, 1979. This application Nov. 24, 1980, Ser. No. 209,940
Int. Cl.^{3} B23K *27/00*
U.S. Cl. 219—121 LM **3 Claims**

1. An improved method of altering a workpiece comprising the steps of:

(a) generating a beam of radiation having a first propagation direction, a predetermined beam area in a plane perpendicular to said propagation direction and a predetermined amount of power distributed in first intensity distribution in said predetermined beam area;

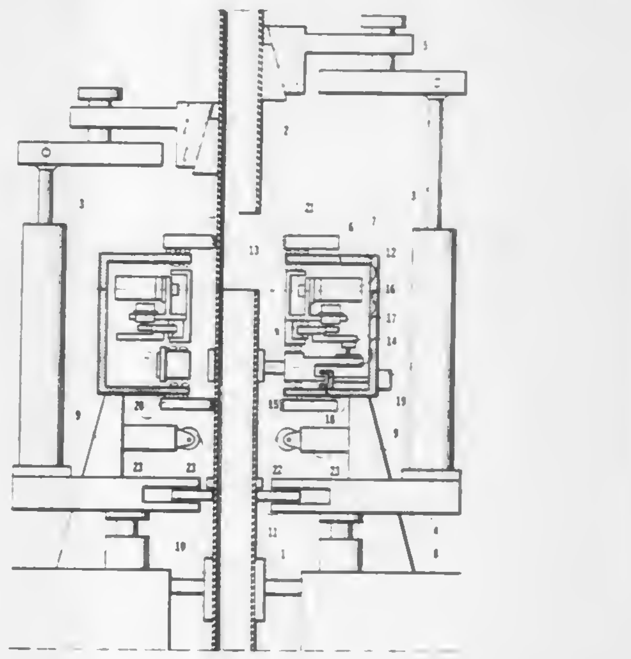
(b) directing substantially all of said predetermined amount of power in said beam onto said workpiece along a radiation path having a radiation axis, said amount of power being distributed in a plane perpendicular to said radiation axis with a second intensity distribution dependent on said first intensity distribution, whereby said radiation alters a parameter of said workpiece by a variable amount having a parameter variation distribution dependent on said second intensity distribution, wherein the improvement comprises:

(c) directing substantially all of said predetermined amount of power in said beam simultaneously onto said workpiece and simultaneously rotating said second intensity distribution of said beam about said radiation axis, with a predetermined rate of rotation such that said parameter variation distribution of said workpiece increases in uniformity.

4,370,541
ELECTRON BEAM CHAMBER FOR BUTT WELDING PIPES

Bruno de Sivry, Paris; Bernard Sudreau, Puteaux; Claude Carsac, St Leu la Foret; Jean-Pierre Hamon, Cergy, and Michel Fuzeau, Parthenay, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Apr. 21, 1981, Ser. No. 256,171
Claims priority, application France, Apr. 25, 1980, 80 09343
Int. Cl.^{3} B23K *15/00*
U.S. Cl. 219—121 EC **9 Claims**



1. An electron beam welding chamber for use in the butt joining of two elongate pipes which coaxially extend in their longitudinal directions at a center of the welding chamber, comprising: at least one electron gun (12), mounting equipment means (13) for supporting, positioning and displacing said electron gun in direct relation to a butt joint to be welded between two pipes, said mounting equipment means including clamping means (15) for directly gripping a first elongate pipe

(1) to which a second elongate pipe (2) is to be butt welded, an envelope (7) defining an enclosure (6) surrounding and interiorly containing said electron gun and associated mounting equipment means, a fixed structure coupled to and supporting said envelope, retractable, spaced sealing means (20, 21) individually provided at opposite longitudinal ends of said enclosure for sealing against the respective first and second pipes, said clamping means being disposed within said envelope and enclosure and between said spaced sealing means, means for creating a vacuum in said enclosure, and mechanical means (18,19; 24,25) for selectively connecting said mounting equipment means to said envelope to enable, in one position of said mechanical connection means, relative displacement between said mounting equipment means and said envelope such that with said envelope resting on said fixed structure, said mounting equipment means is rigidly connectable to the first elongate pipe by said clamping means.

4,370,542
CABLE MARKING METHOD AND APPARATUS

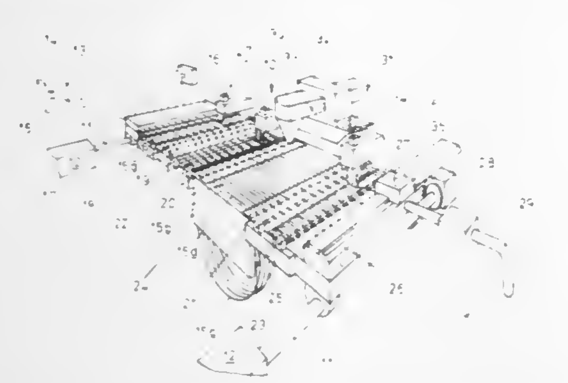
John B. Mills, Yeovil, and Christopher H. Roberts, Crewkerne, both of England, assignors to Westland Aircraft Limited, Yeovil, England

Filed May 18, 1981, Ser. No. 264,847

Claims priority, application United Kingdom, May 22, 1980, 8016933

Int. Cl.^{3} B23K *9/00;* B41F *17/00*

U.S. Cl. 219—121 LH **16 Claims**



1. A method of marking an identification at pre-selected intervals along a cable length by laser marking means comprising the steps of arranging the cable with two longitudinally spaced-apart portions located in generally parallel juxtaposed relationship across a marking platen, sequentially moving an alternate one of the cable portions along the platen whilst maintaining the other portion stationary, and positioning and operating the laser marking means to mark a desired identification on the stationary one of said cable portions while said other cable portion is moving across the platen.

4,370,543
SHOWER-SAUNA INSTANTANEOUS ELECTRIC STEAM OR HOT WATER SUPPLY UNIT

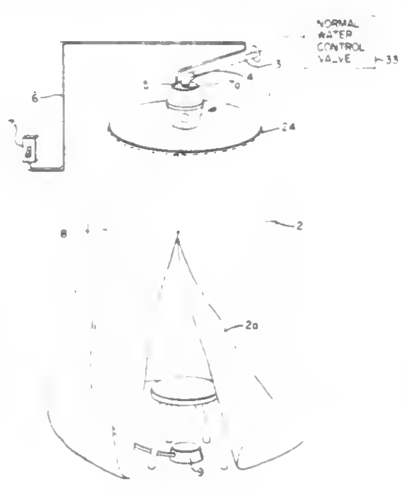
Laszlo Nemeth, Carrera 67 #50-33, Bogata, Colombia

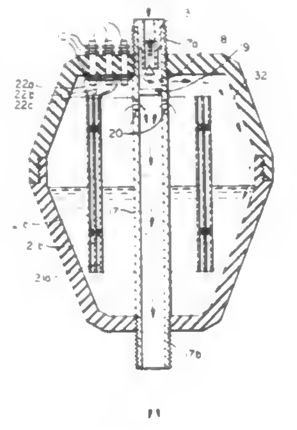
Filed Oct. 6, 1980, Ser. No. 191,222

Int. Cl.^{3} F22B *1/30;* H05B *3/60;* A61H *33/06*

U.S. Cl. 219—275 **8 Claims**

1. Apparatus for a shower and sauna comprising a container means of electrically insulative material for accommodating a volume of water, a substantially vertical central tube means extending through the container means for supplying water into the container means and removing hot water and steam from the container means, means provided on the upper end of the tube means for enabling a connecting of the central tube means to a source of water, means for automatically and instantaneously heating the volume of water in the container means so as to enable a generation of one of hot water and steam including a plurality of spaced tubular electrically conductive plates disposed in the container means and means for connecting the tubular plates with the source of electric current for passage of electric current through the water between the plates to generate Joule heat, means firmly mounting the tubular plates in the container means, means for mounting a sauna curtain on the container so as to define a sauna area below the container means including a flat dish-shaped member of a size and shape defining the top wall of the sauna area mounted on a lower end of the central tube means, means for releasably securing the dish-shaped member to the central tube means, means provided in the central tube means for distributing the water supply to the container means and removing generated steam or hot water from the container means, the lower end of the central tube means forming an exit for steam and hot water to the sauna area and means provided for maintaining a predetermined spacing between the respective tubular plates.





4,370,544
HAIR DRYER

Nobuiti Fujishima, Hikone; Hideharu Nakano, Omihachiman, and Yukio Wada, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 12, 1980, Ser. No. 215,840

Claims priority, application Japan, May 15, 1980, 55-65505

Int. Cl.^{3} H05B *1/00;* A45D *20/12;* F04B *35/04*

U.S. Cl. 219—370 **9 Claims**

1. A hair dryer comprising:

a housing including a pair of side walls and a recessed peripheral groove formed between said side walls,

electrically actuated air blowing means disposed in said housing and arranged to blow air through an air discharge port of said housing,

electrical actuated heating means in said housing for heating said air prior to discharge,

a manually movable switch assembly disposed in said housing,

an electrical cord operably connectible to said blowing and heating means through said switch assembly which is manually movable between ON- and OFF-positions,

said cord including an exposed portion windable around said housing within said peripheral groove, and

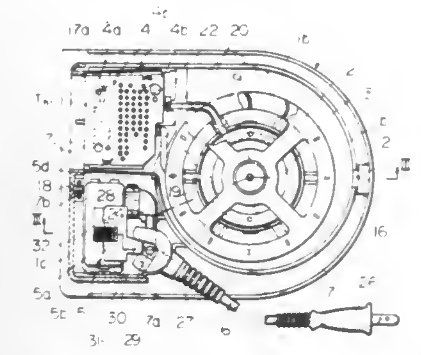
a bushing movably disposed in said housing and connected to said cord, said bushing being movable between

a first position in response to said cord being wound in said groove and with said switch assembly in said OFF-position, and

a second position when said cord is unwound,

said switch assembly and said bushing including mutually cooperative surfaces arranged for mutual engagement when said bushing is in said first position and said switch assembly is in said OFF-position, to prevent said switch assembly from being moved to the ON-position,

said surfaces being arranged to mutually disengage when said bushing is moved to said second position in response to unwinding of said cord, to enable said switch assembly to be moved to the ON-position.



4,370,545
COOKING APPARATUS

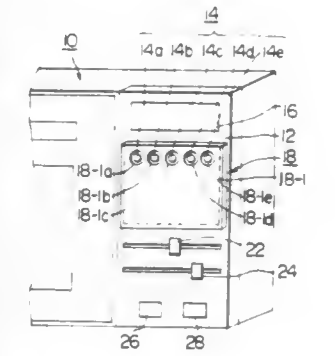
Kouichi Hotta, Yachio; Yukichi Yazawa, Kashiwa, Japan, and Osami Tatsukawa, Matsudo, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Kashiwa, Japan

Filed Oct. 29, 1980, Ser. No. 201,765

Claims priority, application Japan, Oct. 30, 1979, 54-140155

Int. Cl.^{3} H05B *1/02*

U.S. Cl. 219—491 **4 Claims**



1. A cooking apparatus comprising: heating means; a plurality of cooking program cards; a card holder for accommodating therein a selected one of said cooking program cards; a cover member mounted on said card holder for movement between open and closed positions; a group of switches disposed within said card holder for selectively determining heating modes of said heating means of said cooking apparatus; and a plurality of through-holes formed in said cover at locations respectively corresponding to said switches so that said switches can be selectively accessed through the corresponding through-holes, each cooking program card being formed with through-holes of a size to permit said switches to extend therethrough at locations corresponding to the positions of those of said switches which are not to be actuated when the cooking program card placed in said card holder and is pressed against said group of the switches, while those of said switches located at positions corresponding to the portions of said cooking program card where said through-holes are not formed are caused to be actuated under the pressure exerted by said cooking program card upon closing of said cover member, each of said cooking program cards having a surface on which required information concerning the cooking process associated with said cooking program card is inscribed, said cover member having a portion enabling said information inscribed on the cooking program card inserted in said card holder to be viewed externally through said cover member, and at least a knob coupled to said heating means for adjustably setting a cooking temperature, said knob being adapted to be manually set in accordance with the information inscribed on the surface of the selected cooking program card inserted in said card holder.

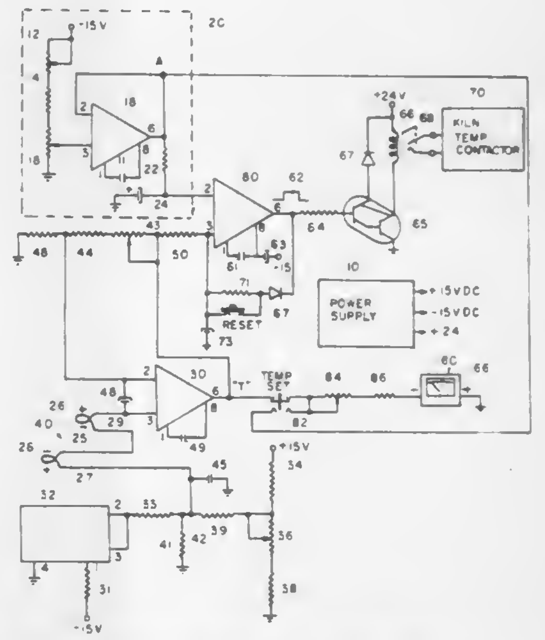
4,370,546
KILN TEMPERATURE CONTROLLER

Gene L. Warner, P.O. Box 604, Grand Haven, Mich. 49417

Filed Feb. 17, 1981, Ser. No. 234,873

Int. Cl.^{3} H05B *1/02*

U.S. Cl. 219—497 **5 Claims**



1. A kiln temperature controller comprising:

circuit means for providing first signals representative of a selectable desired kiln temperature;

temperature detection means for providing second signals representative of the detected kiln temperature, said temperature detection means comprising:

a first thermocouple for insertion in a kiln for detecting the temperature within a kiln;

a second thermocouple coupled in series with said first thermocouple in opposite polarity thereto, with said second thermocouple positioned in the kiln temperature controller;

means for defining a heat sink disposed in the kiln temperature controller;

a solid state temperature sensing circuit in the kiln temperature controller, said temperature sensing circuit having a thermal connection to said means for defining a heat sink and said solid state temperature sensing circuit being coupled in series with said first and second thermocouples for providing an output signal having a polarity opposite that of said second thermocouple to nullify ambient temperature variations of the kiln temperature controller such that said temperature detection means provides an output signal accurately representing the detected kiln temperature;

said second thermocouple having a thermal connection to said means for defining a heat sink for providing said second thermocouple with an isothermal relationship with respect to said solid state temperature sensing circuit;

a solid state temperature compensated voltage source for said temperature sensing circuit;

said solid state temperature compensated voltage source being provided with an isothermal relationship with said solid state temperature sensing circuit and said solid state temperature compensated voltage source being provided with V_{be} characteristics identical to the V_{be} characteristics of said solid state temperature sensing circuit; and

comparator circuit means coupled to said circuit means and to said temperature detection means for providing control output signals employed for actuating a kiln to apply heat to the kiln when the detected kiln temperature is below the desired kiln temperature.

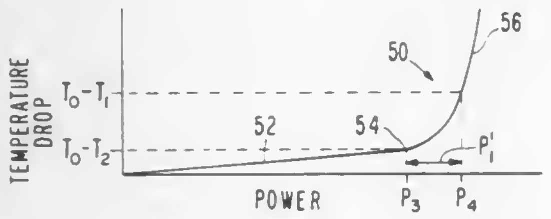
4,370,547
VARIABLE THERMAL IMPEDANCE

Curtis E. Ward, Los Altos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 98,012, Nov. 28, 1979, which is a continuation of Ser. No. 901,937, May 1, 1978, abandoned. This application Apr. 16, 1981, Ser. No. 254,811

Int. Cl.^{3} H05B *1/02*

U.S. Cl. 219—497 **4 Claims**



1. A method of regulating the temperature of a heat source element which can be operated in a mode wherein heat is generated, comprising the steps of:

operating said element in said mode;

establishing a thermal connection via a heat pipe between said element and a heat sink for removing heat from said element, the relationship of the temperature difference between the ends of said heat pipe to the power-transfer through said heat pipe exhibiting a significantly more strongly non-linear characteristic in a high-power transfer region than in the lower power-transfer regions;

supplying heat from a control heater to said heat pipe in real time servo response to the temperature of said element; and

operating said heat pipe in a temperature gradient region which includes at least a portion of said high power-transfer region, the power level of said element being approximately within said high power-transfer region.

4,370,548
ELECTRICAL HEATING ELEMENT

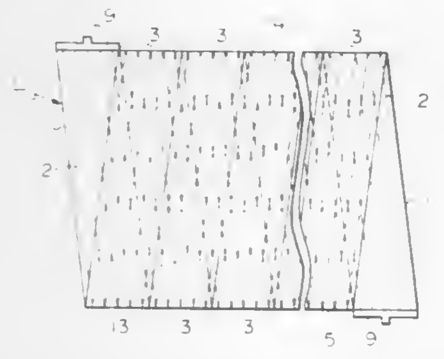
Toshio Nagasawa, and Yoshio Nishihara, both of Kyoto, Japan, assignors to Ube Industries, Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,447

Claims priority, application Japan, Aug. 14, 1979, 54-102792

Int. Cl.^{3} H05B *3/36*

U.S. Cl. 219—549 **8 Claims**



1. An electrical heating element of a sheet form comprising a rectangular web of a thermoplastic resin having a plurality of flexible metal conductor wires arranged therein in parallel to one another along the longitudinal direction of the web, said web being folded in succession at predetermined intervals along folding lines inclined at a small acute angle to the transverse direction of the web to form an essentially two-layer rectangular sheet.

4,370,549
ELECTRONIC COUNTER CIRCUIT FOR TAPE RECORDER

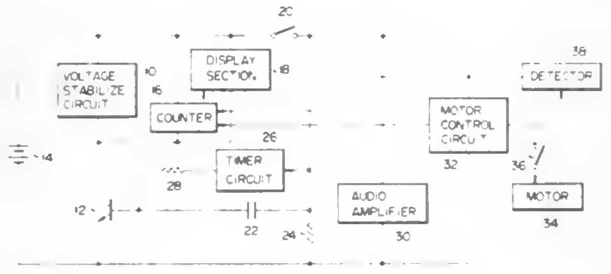
Yoshio Tomizawa, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,450

Claims priority, application Japan, Apr. 20, 1979, 54-52980

Int. Cl.^{3} G06M *3/14*

U.S. Cl. 235—92 MP **5 Claims**



1. A tape recorder comprising:

a source of electrical power;

voltage stabilizing means coupled to said power source for stabilizing a voltage supplied from said power source;

counter means, power-supplied by said voltage stabilizing means, for indicating an amount of tape movement;

operating switch means coupled to said power source and which is selectively operable for selectively stopping movement of the tape of the tape recorder;

timer means responsive to operation of said operating switch means for stopping said movement of the tape for generating an inhibit signal upon the lapse of a predetermined time period after said operation of said operating switch means; and

switching means coupled between said power source and said voltage stabilizing means and further coupled to said timer means for electrically disconnecting said voltage stabilizing means from said power source responsive to said inhibit signal from said timer means.

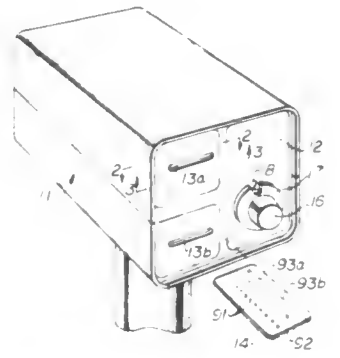
4,370,550
DUAL READ-RECORD HEAD FOR MAGNETIC CARD MACHINE ACTUATOR

George B. Sidline, Belmont, Calif., assignor to Service Distributors, Inc., San Francisco, Calif.

Filed Oct. 29, 1980, Ser. No. 201,693

Int. Cl.^{3} G06K *5/00*

U.S. Cl. 235—449 **8 Claims**



1. A system for actuating apparatus external to said system comprising a card having a longitudinal strip of magnetic material thereon encoded with two separate longitudinal tracks, a first said track being magnetically encoded with first signals indicating a number of potential uses of said card to actuate said apparatus, said second track being magnetically encoded with second signals comprising timing pulses spaced longitudinally along said second track at equidistant intervals,

a card reader comprising guide means shaped to receive said card, reversible drive means for driving said card in both directions longitudinally of said guide means, a read-write first head positioned to read said first track as it moves inward of said guide means and write on said first track as it moves outward of said guide means and a second read head positioned to read said second track as said card is driven in either direction by said drive means, a counter receiving said second signals from said second head at a rate proportional to the speed of movement of said card, a shift register storing said first signals on a time sequence as determined by said second signals, first means receiving signal from said shift register and emitting a third signal which is numerically one less than said first signal, second means for energizing said apparatus if said third signal is numerically at least one, said first head writing said third signal on said first track in timed relation as read on said second track by said second head,

a punch positioned to punch said card as said card travels outward of said guide means, electrical means for actuating said punch and a control for said electrical means energized dependent upon said counter so that, for each use of said card, said card is punched at a separate location.

4,370,551
FOCUS DETECTING DEVICE

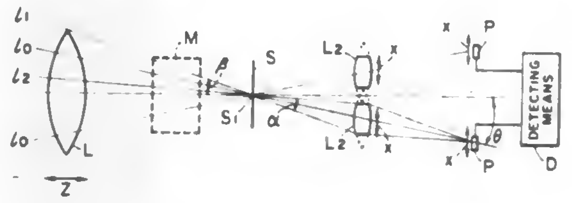
Toru Fukuhara, Isehara, and Ken Utagawa, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 242,886

Claims priority, application Japan, Mar. 18, 1980, 55-33383; Oct. 24, 1980, 55-150971

Int. Cl.^{3} G01J *1/20*

U.S. Cl. 250—201 **3 Claims**



1. In a focus detecting device having an objective lens, a pair of re-imaging lenses for receiving the light imaged by said objective lens to form a first and a second image, respectively, a pair of focus detecting photoelectric converters disposed near the focal planes of said pair of re-imaging lenses, respectively, said pair of photoelectric converters being adapted to produce photoelectric outputs corresponding to the position changes of said first and second images caused on said photoelectric converters by movement of said objective lens in the direction of the optical axis, and detecting means for receiving the outputs from said pair of photoelectric converters and detecting whether or not said objective lens is in its in-focus condition, the improvement residing in that said pair of re-imaging lenses are provided so that the F-number of each re-imaging lens in a direction perpendicular to the direction of movement of the image formed thereby is smaller than the F-number of the same lens in the direction of movement of the same image position-changed on said photoelectric converters.

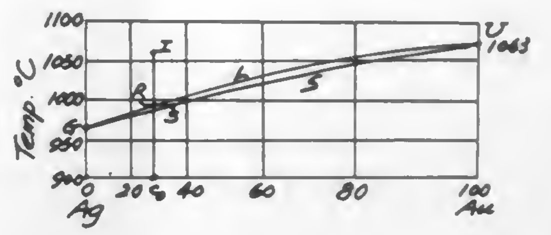
4,370,552
METHOD FOR ORE PROSPECTING

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Filed Oct. 31, 1980, Ser. No. 202,706

Int. Cl.^{3} G01V *5/00*

U.S. Cl. 250—253 **25 Claims**



1. A method for evaluating the size and value of an at least partially hidden, frozen ore body comprising:

locating a portion of said ore body;

determining the concentration values of a selected chemical element at two positions in said ore body;

measuring the distance between said two positions;

estimating the freezing segregation behavior of said selected element during the freezing of said ore body; and

from said determined concentration values, measured distance, and estimated freezing segregation behavior calculating the size of the still hidden portion of said ore body.

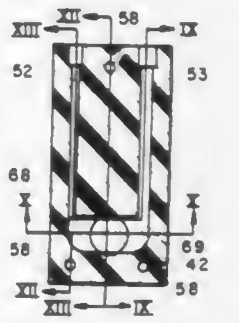
4,370,553
CONTAMINATED SAMPLE GAS ANALYZER AND GAS CELL THEREFOR

Roy A. Waycaster, Tecumseh; William T. Baker, Ann Arbor, and Jerry D. Bidle, Tecumseh, all of Mich., assignors to Sensors, Inc., Saline, Mich.

Filed Jul. 2, 1980, Ser. No. 165,250

Int. Cl.^{3} G01J *1/04*

U.S. Cl. 250—343 **34 Claims**



1. A gas analyzer for performing gas analysis on a sample gas containing contaminants comprising:

a source of radiant energy;

means for directing radiant energy through a sample gas, the radiant energy being directed along a sample gas optical path;

a gas cell comprising a sample gas cell having a sample enclosure for containing a sample gas volume, a sample window means for defining a portion of said sample gas optical path extending through said sample gas volume, an inlet for supplying sample gas to said sample gas volume and an outlet for exhausting sample gas from said sample gas volume, said sample cell being provided with a flow pattern extending transversely with respect to said sample gas optical path, said flow pattern being defined by an inlet manifold interconnecting said inlet and said sample gas volume, said inlet manifold being provided with a roughly constant cross-sectional area, and an outlet manifold extending from said sample gas volume to said outlet, said outlet manifold being provided with a roughly constant cross-sectional area, the cross-sectional area of said outlet manifold being greater than the cross-sectional area of said inlet manifold, the cross-sectional area of said inlet manifold being provided with a shape having roughly equilateral dimensions at said inlet to an elongate shape having a roughly uniform width at said sample volume, and the cross-sectional area of said outlet manifold being provided with an elongate shape having a roughly uniform width at said sample volume to a shape having roughly equilateral dimensions at said outlet, whereby turbulent flow and dead space in said sample gas volume is minimized;

a connector module for defining a channel for slidably receiving said gas cell and to provide for the periodic removal and replacement of said gas cell while maintaining the optical alignment of the gas analyzer;

detector means for receiving radiant energy from said sample gas optical path;

means for securing together in optical alignment said source, said means for directing radiant energy, said connector module and said detector; and

circuit means for analyzing the output of said detector and indicating the concentration of predetermined constituents of the sample gas.

4,370,554
ALIGNMENT SYSTEM FOR PARTICLE BEAM LITHOGRAPHY

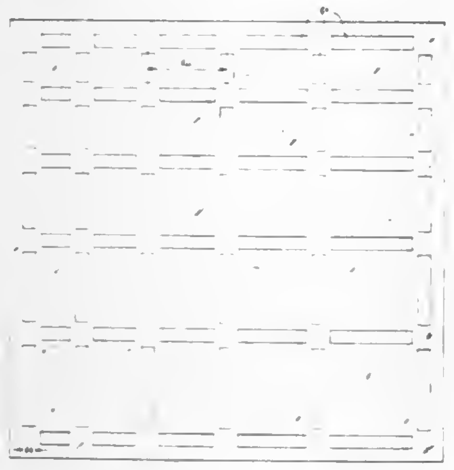
Harald Bohlen, Boeblingen; Johann Greschner, Pliezhausen; Werner Kulcke, Boeblingen, and Peter Nehmiz, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,118

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939044; European Pat. Off., Jun. 26, 1980, 80103603

Int. Cl.^{3} G01N *23/00*

U.S. Cl. 250—491.1 **18 Claims**



1. In a particle beam projection system for exposing a substrate having alignment marks comprising an exposure mask in adjacent relation and close proximity to said substrate, at least one alignment grid in said exposure mask, the alignment grid consisting of a plurality of openings arranged in matrix-fashion, the center spacings of the openings in the alignment grid increasing upon advance in two directions perpendicular to each other in such a way that no distance can be represented by the sum of smaller distances, and said alignment grid forming partial beams from a particle beam whose interaction with said alignment marks of corresponding structure on the substrate forms an alignment signal for registering the mask and the substrate.

4,370,555
DEVICE FOR STORING A SOURCE OF PHOTONS AND FOR IRRADIATING A BODY BY THE RADIATION FROM SAID SOURCE

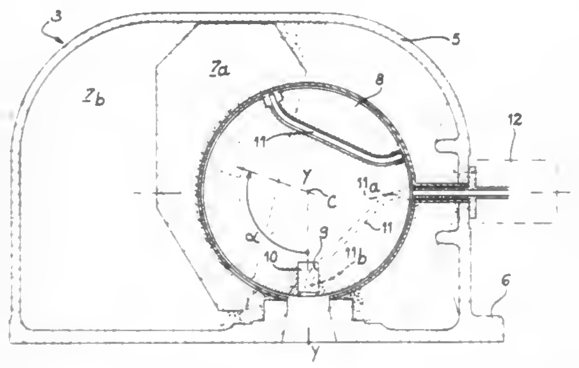
Jean-Pierre Brethon, Orsay; Jean-Paul Guiho, Le Mesnil St. Denis; Gerard Taniel, Les Essarts le Roi, and Georges Viel, Orsay, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Societe CGR-MeV, Buc, both of, France

Filed May 14, 1980, Ser. No. 149,927

Claims priority, application France, Nov. 14, 1978, 78 32123

Int. Cl.^{3} G21F *5/02*

U.S. Cl. 378—120 **9 Claims**



1. A photon storing and irradiation device having a radiation shielded body comprising a cylindrical container of circular cross section, having an axis (A), in said body; a disk housing located in said cylindrical container, dimensioned slightly smaller than that of said cylindrical container; a cylindrical gamma radiation containing housing in said disk, said housing having an opening on the periphery of the disk, with an axis perpendicular to axis (A) when the disk is rotated inside said body; said disk also containing a passage having an opening at one and the other of its ends at the periphery of the disk and capable of being located simultaneously opposite an optical device and a precollimator located in the walls of said cylindrical container and connected by an optical fiber, the ends of which, respectively called the receiver and emitter are located at right angles to each end of said passage via dismountable fixing means, and also having an optical device adjacent said body capable of producing a ray of light onto the receiver of said fiber; means for rotating said disk between a first position enabling said housing to irradiate a desired object for which the axis of said housing axis coincides with the axis (Y,Y) of the precollimator, and a second position for which said irradiation source is in a stored position while enabling the optical device by means of the optical fiber to produce a ray of light at the precollimator; and a part having an axis (Y,Y) perpendicular to axis (A) in the bottom of said body with said precollimator disposed at right angles to said port of axis (Y,Y).

4,370,556
SELF-SUPPORTING MASK, METHOD FOR PRODUCTION AS WELL AS USE OF SAME

Gerhard Stengl, Purkersdorf, and Hans Löschner, Vienna, both of Austria, assignors to Rudolf Sacher Gesellschaft m.b.H., Vienna, Austria

Filed Dec. 16, 1980, Ser. No. 217,064

Claims priority, application Austria, Dec. 27, 1979, 8153/79

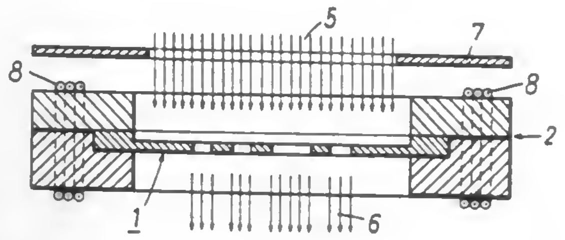
Int. Cl.^{3} G01J *1/00*

U.S. Cl. 250—503.1 **17 Claims**

1. In a self-supporting mask for use in the treatment of substrates by irradiation or by a stream of particles constituting an image-forming medium having a mask foil fastened to a frame, the mask foil having at least one transparent region which is transparent to the image-forming medium, and a region which is opaque to the image-forming medium, the improvement wherein

said mask foil is thermally prestressed at a predetermined temperature of use by predetermined forces exerted by said frame on said mask foil, said mask foil and said frame being at a predetermined assembly temperature level below said predetermined temperature of use when said mask foil and said frame are fastened together,

and wherein said mask foil and said frame are made of respectively different materials such that the coefficient of thermal expansion of the material of said frame is greater than the coefficient of thermal expansion of the material of said mask foil to permit said mask foil to remain thermally prestressed at the predetermined temperature of use.



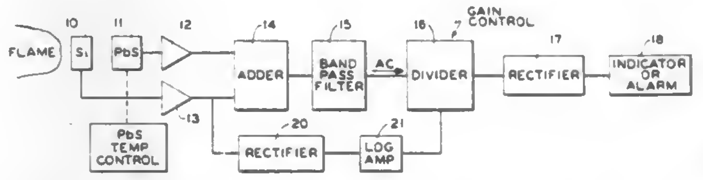
4,370,557
DUAL DETECTOR FLAME SENSOR

Roger E. Axmark, and Ernest A. Satren, both of Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1980, Ser. No. 181,580

Int. Cl.^{3} H05B *33/00*

U.S. Cl. 250—554 **12 Claims**



1. In a multi-burner boiler installation of the type described, a flame monitoring system for a burner comprising:

first flame radiation sensing means responsive to a first radiation wavelength range, said first means providing a first electrical signal indicative of flame radiation sensed at said first wavelength range;

dissimilar flame radiation sensing means responsive to a different radiation wavelength range than said first means, said dissimilar means providing a second electrical signal indicative of flame radiation sensed at said different wavelength range;

a burner of said multi-burner installation for providing a proximate burner flame;

means positioning said first and said dissimilar sensing means to receive radiation from the proximate flame;

means for summing said first and second electrical signals from said sensing means;

filter means for passing the AC flicker components and filtering out the DC components of the summed signals to provide an AC output signal;

means for rectifying to DC said first electrical signal to provide a third signal;

non-linear amplifying means for compressing the dynamic range of said third signal which may vary in intensity by orders of magnitude at the input, to provide an output signal which is a function of the input signal but compressed in dynamic range;

divider means having a dividend input and a divisor input;

means connecting the compressed signal to the divisor input;

means connecting the AC output signal to the dividend input; and,

further means connecting the output of the divider means to indicator means.

4,370,558
FILM BLACKENING AREA MEASURING EQUIPMENT

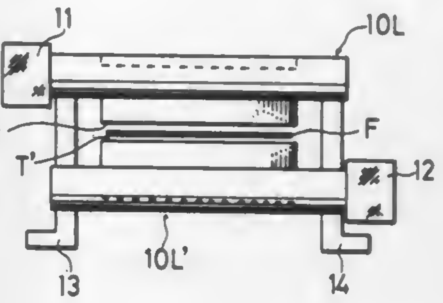
Minoru Kinoshita, Kyoto, and Masaji Mizuta, Uji, both of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Apr. 13, 1981, Ser. No. 253,675

Claims priority, application Japan, Apr. 30, 1980, 55-058531

Int. Cl.^{3} G01N *21/59*

U.S. Cl. 250—559 **2 Claims**



1. An apparatus for measuring film blackening area, having a detecting mechanism so composed to project light onto a film and to receive the light passed through the film by a receiver element, an amplification mechanism to amplify the output from the said receiver element, and a subtraction mechanism to subtract the amplified output from a reference signal, the difference between the said amplified output and the reference signal being calculated as a blackening signal to measure the blackening area of the film, comprising an amplification factor variable mechanism which is composed as the said amplification mechanism, and a comparator for comparing the output of the said amplification factor variable mechanism with the said reference signal, the output signal from the said comparator being supplied into the said amplification factor variable mechanism, the amplification factor being controlled depending on the magnitude of the said input signal and being fixed by a film insertion signal from a film feed mechanism.

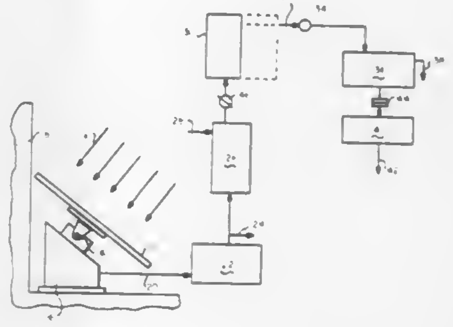
4,370,559
SOLAR ENERGY SYSTEM

David T. Langley, Jr., c/o 220 S. Main St., Los Angeles, Calif. 90012

Filed Dec. 1, 1980, Ser. No. 211,767

Int. Cl.^{3} H01L *31/04*

U.S. Cl. 290—1 R **2 Claims**



1. A solar energy apparatus, comprising, in combination:

(a) solar energy means for converting solar energy to electrical energy:

(b) conversion means operably connected to the solar energy means for converting to mechanical form an energy output of the solar energy means;

(c) energy storage means operably connected to the conversion means for storing energy in mechanical form received from the conversion means, and forming a potential energy storage facility permitting use of the energy at selected later times, the energy storage means including elevatable, solid weight means for storing potential energy, and clutch means connected to the generator means for permitting the potential energy to be transferred from the weight means to the generator means by downward movement of the weight means, the energy storage means further including a chain connected to the weight means, and sprocket means arranged engaging the chain and operably connected to the generator means and conversion means for alternately moving the chain and being moved selectively by the chain in dependence on which of the generator means and conversion means is being operated, irregular movement of the chain by the sprocket means, through operation of the clutch means of the conversion means, elevating the weight means, and disengagement of the clutch means permitting the weight means to fall at a uniform rate and actuate the generator means; and

(d) generator means operably connected to the energy storage means for selectively converting energy stored in the energy storage means from mechanical form into electrical form.

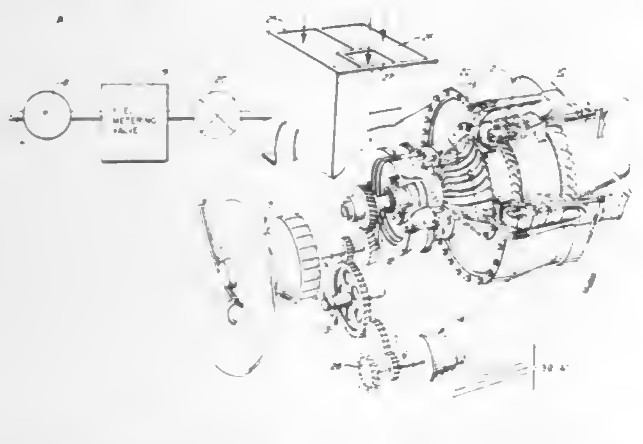
4,370,560
COMPRESSOR LOAD CONTROL FOR AN AUXILIARY POWER UNIT

Dennis T. Faulkner; Timothy F. Glennon, both of Rockford, and Albert L. Markunas, Roscoe, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 85,121, Oct. 15, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 242,058

Int. Cl.^{3} H02P *9/04*

U.S. Cl. 290—40 C **3 Claims**



1. In an aircraft auxiliary power unit, having an engine, a generator driven by the engine, an air compressor driven by the engine, the speeds of the engine, air compressor and generator being directly related,

a fuel valve for the engine, and an engine control having means responsive to engine speed for controlling the fuel valve to maintain constant engine speed,

an improved transient engine speed control, comprising:

means for varying the loading of the air compressor on said engine; and

means responsive to the speed of one of the engine, generator or compressor for varying the compressor loading simultaneously with control of said fuel valve to minimize variation of the speed of the output frequency of the generator.

4,370,561
VEHICLE MULTIPLEX SYSTEM

George R. Briggs, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,343

Int. Cl.^{3} G08C *15/12*

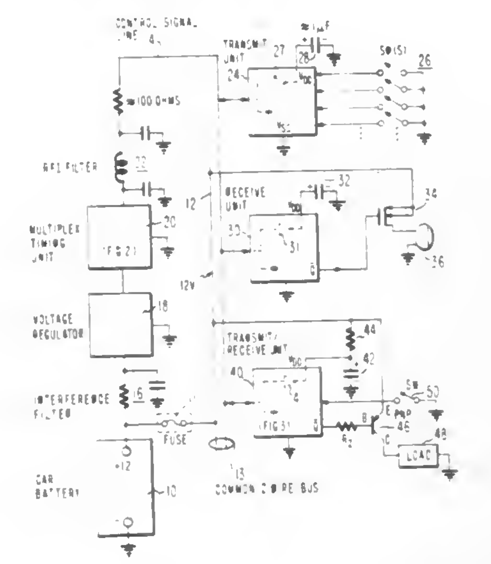
U.S. Cl. 307—9 **10 Claims**

1. A vehicle multiplex system, comprising

a power conductor for conveying electrical power to power-operated units on the vehicle,

a signal conductor,

a multiplex timing unit for applying a tri-state timing waveform to said signal conductor, said waveform including a master timing interval followed by a plurality of sequential channel intervals, each channel interval including a control time period during which the timing unit allows the voltage on the signal conductor to float,



a plurality of control signal transmitters each operative in response to a physical command to apply a corresponding control signal to the signal conductor during a control time period in a channel interval assigned to the transmitter, and

a plurality of control signal receivers each operative to control the connection of electrical power from the power conductor to a power-operated unit in response to a control signal received from the signal conductor during a control time period in a channel interval assigned to the receiver.

4,370,562
ELECTRIC POWER DISTRIBUTION SYSTEM

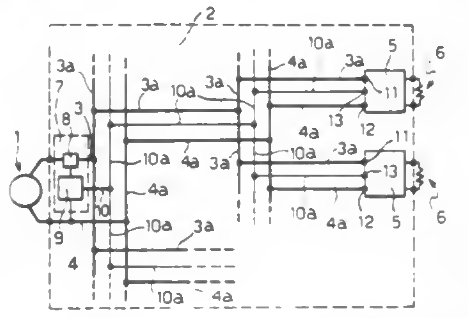
Mario Palazzetti, and Gianfranco Salotti, both of Avigliana, Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Feb. 25, 1981, Ser. No. 237,823

Claims priority, application Italy, Mar. 11, 1980, 67378 A/80

Int. Cl.^{3} H02J *3/14*

U.S. Cl. 307—38 **5 Claims**



1. An electric power distribution system comprising:

two power supply conductors;

a plurality of power outlet units connected to said two supply conductors whereby to enable the connection to the system of a corresponding plurality of electrical loads;

control conductor means;

a control unit connected by said control conductor means to each said power outlet unit and adapted:

(a) to carry out, at the moment of connection of a said load to a said power outlet unit, a measurement indicative of the increase in power which would need to be supplied by the system to power this load, this measurement being effected in such a manner as to avoid appreciable overloading of the system;

(b) to effect a comparison of the result of said measurement with a measure of the additional power suppliable by the system, and

(c) to provide a comparison-indicative signal indicative of the result of said comparison;

each said power outlet unit including a switching arrangement having two operational states, in the first of which the connection of a said load to said power outlet unit results in the load being inserted between said control conductor means and one of the said supply conductors whereby to enable the control unit to carry out said measurement for that load and effect said comparison, and in the second of which the said switching arrangement connects the load across the two said supply conductors; change over from said first to said second state occurring only when the comparison-indicative signal provided by the control unit indicates that the power required for the operation of this load will not result in the maximum power suppliable by the system being exceeded,

said control conductor means include a primary control conductor emanating from said control unit and a plurality of further control conductors branching from said primary control conductor and each connected to a respective said power outlet unit, and each said power outlet unit comprising:

first and second input terminals connected respectively to said first and second power supply conductors of the distribution system;

a third input terminal connected to the corresponding said further control conductor;

first and second output terminals to which, in use, an electrical load can be connected;

first and second fixed electrical contacts;

a relay including an excitation winding and a movable contact member, said movable contact member being connected to the said first output terminal and being movable between a working position and a rest position in which it is in contact, respectively, with said first and second contacts, and the said excitation coil of the relay being connected between the third input terminal and the said second contact, and

a hold-on coil connected between said first input terminal and said first fixed contact and operative to maintain the said movable contact member in its working position for the entire period of time during which a said load connected to the power outlet unit is supplied by the said electric power distribution system.

4,370,563
METHOD OF AND APPARATUS FOR LOAD AND/OR LOAD CONTROL SIGNALING TO CUSTOMERS IN A POWER SYSTEM

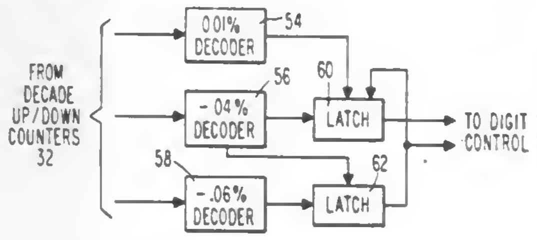
John M. Vandling, deceased, late of Pleasantville, N.Y., and Patricia Vandling, executrix, Hoanjovo La., Pleasantville, N.Y. 10570

Continuation-in-part of Ser. No. 856,757, Dec. 2, 1977, Pat. No. 4,246,492. This application Dec. 24, 1980, Ser. No. 219,985

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.^{3} H02J *13/00*

U.S. Cl. 307—40 **29 Claims**



1. Apparatus for use in a power generating system wherein power is transmitted at a nominal standard frequency, the frequency is controllably varied from said nominal standard to signal load and/or load control information, and the frequency is also varied without signaling load and/or load control information, said apparatus comprising:

detector means for detecting variations in frequency signaling load and/or load control information while ignoring other frequency variations; and

load signal means coupled to said detector means for signaling a detected variation in frequency.

4,370,564
AC SWITCHING DEVICE

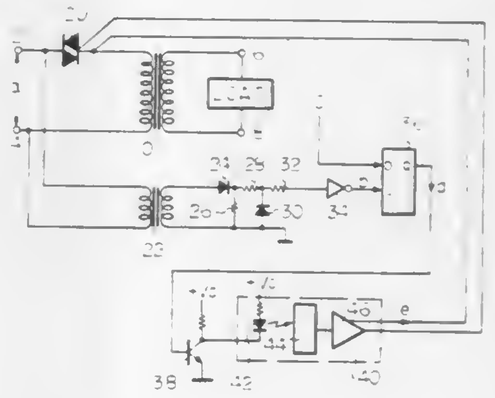
Yoh Matsushita, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,931

Claims priority, application Japan, Jun. 4, 1980, 55-74163; Jun. 4, 1980, 55-74164

Int. Cl.^{3} H04B *3/54;* H01H *9/54*

U.S. Cl. 307—140 **10 Claims**



1. An AC switching device comprising:

a transformer consisting a primary winding to be connected to an AC power source and a secondary winding to be connected to a load, said load producing a turn-on command signal and a turn-off command signal;

a switching element connected to the transformer at the primary winding for turning on and off an alternating current from the AC power source;

zero-crossing point detecting means connected to the transformer at the primary winding for detecting a zero-crossing point where the alternating current shifts from a predetermined one of positive and negative phases to the other to produce a zero-crossing point detection signal; and

control means responsive to the turn-on and turn-off command signals to control the switching element to be turned on and off respectively always at said zero-crossing point in synchronism with the zero-crossing point detection signal.

4,370,565
TIMED ELECTRIC SWITCH

Rodney Hayden, Stoney Creek, Canada, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 967,923, Dec. 11, 1978, Pat. No. 4,276,483. This application Oct. 27, 1980, Ser. No. 200,856

Claims priority, application Canada, Aug. 21, 1978, 301690

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.^{3} H01H *43/24*

U.S. Cl. 307—141 **5 Claims**

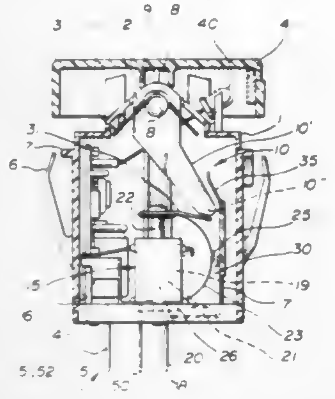
1. A timed switch for an electric load which comprises

a housing,

relay means mounted within said housing, said relay means including a pair of relay contacts for series connection with said load, movable relay core means connected to at least one of said contacts and relay holding means which when activated exert a holding force on said movable core means to hold said contacts in a closed condition and which when deactivated release said core means to release said contacts to an opened condition,

a timer circuit mounted within said housing,

manually actuable means carried by said housing for moving said contacts to the closed condition, said timer circuit being activated in response to the closing of said contacts by said manually actuable means, said relay holding means being activated in response to the closing of said contacts by said manually actuable means to exert the holding force on said core means and to hold said contacts in the closed condition,



means interconnecting said timer circuit and said relay holding means for deactivating said relay holding means to release said core means and to release said contacts to the opened condition upon expiry of a predetermined time period measured by said timer circuit,

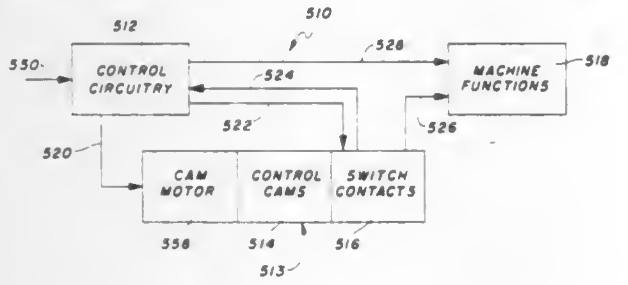
said manually actuable means also including means for physically moving said contacts to the opened condition upon manual actuation thereof without having to overcome the holding force of said relay holding means on said core means.

4,370,566
APPLIANCE CONTROL SYSTEM
Leroy A. Perry, Danville, and Charles E. Scott, Noblesville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Apr. 15, 1981, Ser. No. 254,377

Int. Cl.^{3} H01H ***43/00***

U.S. Cl. 307—141 **15 Claims**



1. A control system for an appliance having a plurality of different operational cycles, comprising:

cam operated switch means for controlling the coupling of electrical power to the appliance, said switch means including a plurality of rotatable cams for operating said switch means in response to the rotational position of said cams, said switch means being adapted for electrical rotation of said cams;

digital electronic control circuit means for controlling said electrical rotation, said control circuit means including means for receiving a selection of any one of said cycles for the operation of said appliance; and

second circuit means coupled between said switch means and said control circuit means and responsive to said means for receiving for supplying information on the rotational position of said cams to said control circuit means to enable control of said electrical rotation in accordance with a cycle selection.

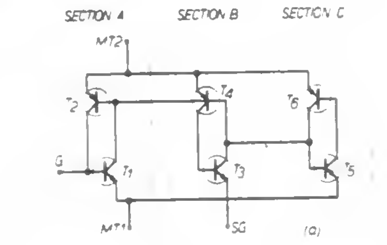
4,370,567
SEMICONDUCTOR SWITCH DEVICE SUITABLE FOR A.C. POWER CONTROL
Anthony Lear, Huntingdon, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

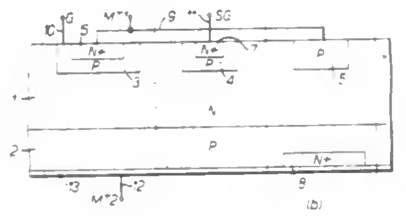
Filed Aug. 21, 1980, Ser. No. 179,574

Claims priority, application United Kingdom, Aug. 22, 1979, 7929184

Int. Cl.^{3} H03K ***17/72***

U.S. Cl. 307—252 T **23 Claims**





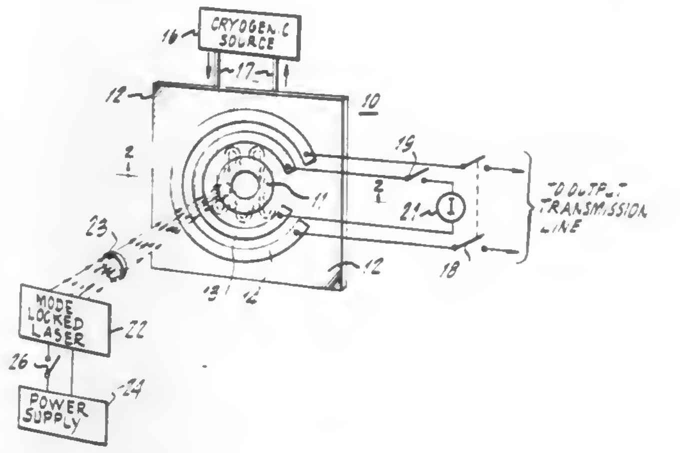
1. A semiconductor switch device including a thyristor structure having first, second and third four-layer semiconductor switch components formed in the same semiconductor body; said semiconductor body comprising a first continuous layer of a first conductivity type in overlying relationship with a second continuous layer of a second conductivity type opposite from that of said first conductivity type, said first and second layers providing opposite major surfaces of said semiconductor body; said first switch component having a first region of the second conductivity type in said first layer and forming a first gate of the switch device, and a second region of the first conductivity type in said first region; said second switch component having a third region of the conductivity type in said first layer and a fourth region disposed in the second layer opposite the third region and having the first conductivity type; said third semiconductor switch component having a fifth region of the second conductivity type in said first layer and a sixth region of the first conductivity type in at least one of said first and second layers, said third switch component electrically coupled through the semiconductor body to the first and second switch components; each of said switch components having one end electrode at said first major surface and another end electrode at said opposite major surface; connection means for joining the second and third regions to form a first main terminal of the switch device; conductive means connecting surface areas of the second layer opposite the first and fifth regions to said fourth region, said conductive means forming a second main terminal of the switch device and an end terminal contact to one of said fifth and sixth regions providing a second gate for the switch device.

4,370,568
SUPERCONDUCTING, FAST RISE-TIME VOLTAGE SOURCE
Robert M. Lumley, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,076

Int. Cl.^{3} H03K ***3/38***

U.S. Cl. 307—260 **6 Claims**



1. Apparatus for generating an electrical pulse having an extremely short rise-time comprising:

an electrically conducting toroid;

means for cooling said toroid to approximately absolute zero, whereupon said toroid becomes superconducting;

means, magnetically coupled to said toroid, for inducing a perpetually circulating current in said toroid;

means for heating a portion of said toroid to a temperature above the critical temperature thereof; and

means, magnetically coupled to said toroid, for sensing the abrupt drop in the circulating current that occurs therein when said critical temperature is exceeded, wherein said toroid, said current inducing means, and said current sensing means comprise coplanar, coaxial, thin metallic films deposited on a substrate.

4,370,569
INTEGRATABLE SINGLE PULSE CIRCUIT
Dan M. Hunsinger, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1980, Ser. No. 202,279

Int. Cl.^{3} H03K ***5/06, 5/153***

U.S. Cl. 307—266 **1 Claim**

1. A circuit for generating a single pulse in response to an applied trigger having a width greater than the generated single pulse comprising:

an input port for receiving an applied input trigger;

an output port coupled to said input port for providing a single pulse having a select width in response to said input trigger, said output port comprising a first transistor having its base coupled to said input port and its collector uncoupled for connection to an external connection;

timing means coupled to said input port for delaying said input trigger by a select time t, said timing means comprising

(a) a second and a third transistor, said second transistor having its base coupled to said input port and its collector coupled to a first temperature compensated capacitor and to the base of said third transistor, and

said third transistor having a collector coupled to a second temperature compensated capacitor and to said shunt means, and

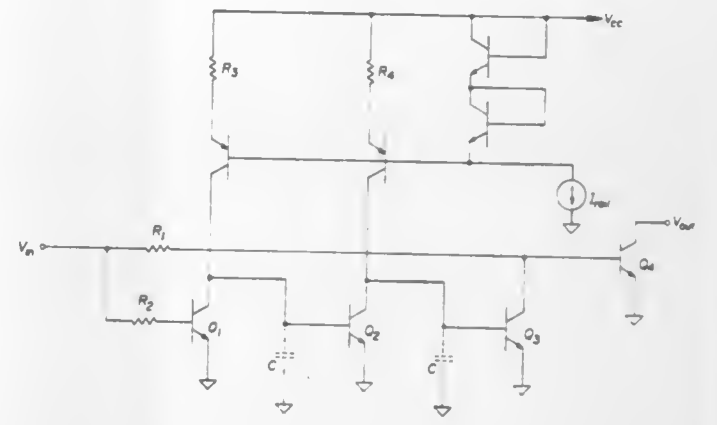
(b) two temperature compensated current sources having

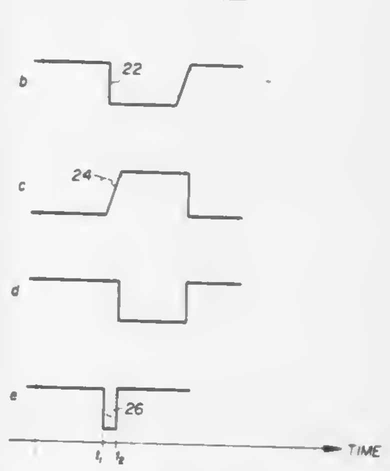
a fifth transistor having its collector coupled to said second transistor collector and its emitter coupled to a first resistor,

a sixth transistor having its collector coupled to said third transistor collector and its emitter coupled to a second resistor,

a first diode means coupled to an input of a second diode means, and

a rail current source coupled to the output of said second diode means and to the base of said fifth transistor and to the base of said sixth transistor, thereby said timing means is independent of temperature; and





shunt means coupled to said output port for truncating said input trigger in response to said input trigger delayed by t applied thereto to provide said single pulse, said shunt means comprising a fourth transistor having its base coupled to the collector of said third transistor and its collector coupled to the base of said first transistor.

4,370,570
CIRCUIT FOR MINIMIZING RADIATION
Glen R. Dash, 16 Pierce Rd., Watertown, Mass. 02172, and Isidor Straus, 2 Ridgewood Rd., Malden, Mass. 02148

Filed Nov. 24, 1980, Ser. No. 209,331

Int. Cl.^{3} H03K ***3/01, 3/33***

U.S. Cl. 307—270 **4 Claims**

1. A clock driver circuit comprising;

a pair of bipolar transistors each having base, emitter and collector electrodes,

means coupling the base electrodes at common base node,

a pair of current determining resistors one associated with each bipolar transistor,

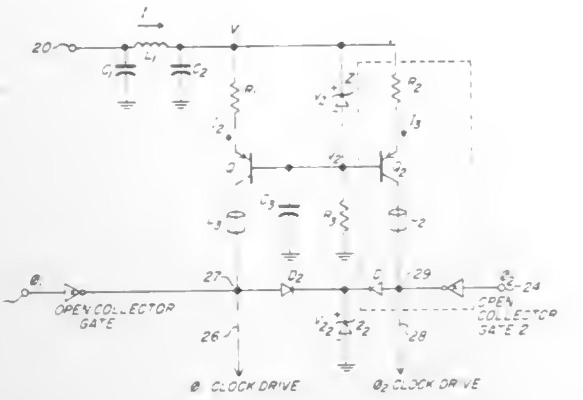
means defining an input power terminal to which a DC voltage is applied,

passive conducting means coupling the power terminal to each resistor with the resistor coupled in turn to one of the emitter and collector electrodes,

first and second gates having outputs coupling respectively to define first and second clock drive lines,

passive conductive means coupling the other of the emitter and collector electrodes to the respective first and second clock drive lines,

a first Zener diode and a pair of diodes coupled respectively to the gate outputs,



and a second Zener diode coupled from the common base node to a common connection of the resistors.

4,370,571

RELAY DEVICE

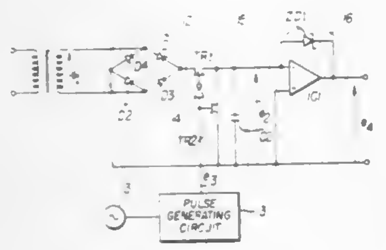
Fumio Andow, Hachioji, and Norio Fujisawa, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jan. 4, 1980, Ser. No. 109,552

Claims priority, application Japan, Mar. 20, 1979, 54/31680

Int. Cl.^{3} G11C *27/02*

U.S. Cl. 307—353 **20 Claims**



1. A relay device comprising:

a rectifying circuit which rectifies an input AC electric quantity and produces a rectified output quantity;

holding means connected to the rectifying circuit for holding the peak value of the rectified output quantity of the rectifying circuit;

resetting means connected between the rectifying circuit and the holding means for resetting to a predetermined first level the held peak value of the holding means, said resetting means including a switching element connected to said holding means;

pulse generating means connected to the switching element for generating pulses to drive said switching element; and

detecting means having an input coupled to the holding means for detecting the held peak value of the holding means and for producing an output at a predetermined second level if said held peak value exceeds a predetermined threshold voltage level, comprising

an operational amplifier; and

a zener diode connected between the input and the output terminals of the operational amplifier, said operation amplifier being coupled to the output of said holding means.

4,370,572

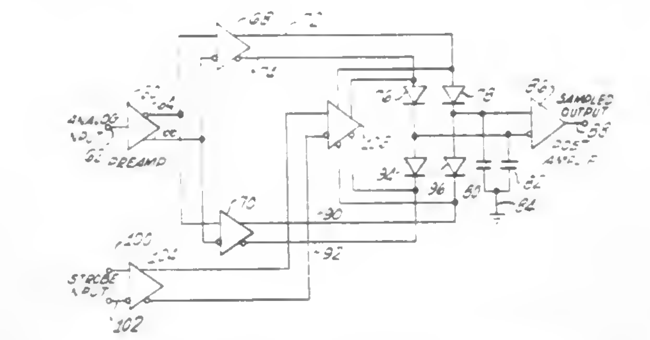
DIFFERENTIAL SAMPLE-AND-HOLD CIRCUIT

Albert E. Cosand, Agoura, and Kenneth B. de Graaf, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 17, 1980, Ser. No. 112,963

Int. Cl.^{3} G11C *27/02*

U.S. Cl. 307—353 **8 Claims**



1. A monolithic differential sample-and-hold circuit, comprising:

a preamplifier for processing an analog input signal and providing corresponding differential analog signals;

a first differential amplifier connected to receive the analog signals from said preamplifier to provide a first amplified differential analog signal;

a second differential amplifier also connected to receive the analog signals from said preamplifier, to provide a second amplified differential analog signal identical to said first amplified differential analog signal;

two capacitors, each having a grounded terminal and an ungrounded terminal;

a first pair of diodes having anode terminals connected to receive said first amplified differential analog signal, and cathode terminals each connected to said ungrounded terminal of a different one of said capacitors;

a second pair of diodes having cathode terminals connected to receive said second differential analog signal and anode terminals connected to corresponding cathode terminals of said first pair of diodes;

a post-amplifier having differential inputs connected to said ungrounded terminals of said capacitors; and

a bias signal source connectable to said first and second pairs of diodes to provide forward bias in response to a tracking-mode signal and reverse bias in response to a hold-mode signal;

whereby said first and second pairs of diodes are forward-biased in response to the tracking-mode signal, to allow said first and second amplified differential analog signals to be coupled through said first and second pairs of diodes to said capacitors, and are reverse-biased in response to the hold-mode signal, to isolate said capacitors from said analog signals.

4,370,573

WAVE FORM TRANSITION SEQUENCE DETECTOR

Bruce C. Keene, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Nov. 28, 1980, Ser. No. 210,950

Int. Cl.^{3} H03K *5/26*

U.S. Cl. 307—514 **3 Claims**

1. Apparatus for determining the relative order of occurrence of a transition from a first to a second state between a first and a second input wave form signal, said apparatus comprising:

a first switching transistor means having base, emitter and collector electrodes;

a second switching transistor means having base, emitter and collector electrodes;

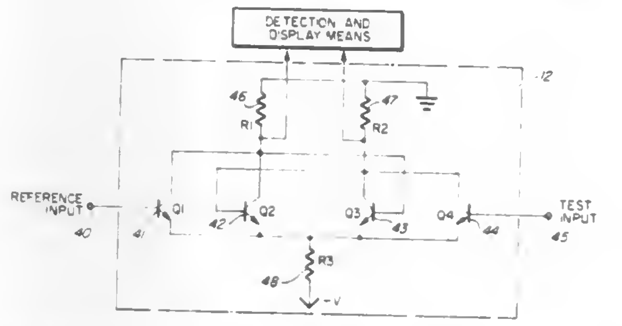
means connecting said collection of said first transistor means to said base electrode of said second transistor means and means connecting said collector of said second transistor means to said base electrode of said first transistor means;

a third and a fourth transistor means, each having base, emitter and collector electrodes;

means connecting said collector of said third transistor means to said collector of said first transistor means and, through a first load resistor, to a first common point fixed reference potential;

means connecting said collector of said fourth transistor means to said collector of said second transistor means and, through a second load resistor, to said first common point;

means connecting said emitters of said first, second, third and fourth transistor means together and, through a common emitter resistor, to a second common point of reference potential;



means coupling said first input wave form signal to said base electrode of said third transistor means and means coupling said second input wave form signal to said base electrode of said fourth transistor means;

differential output signal means connected, respectively, to said collectors of said first and second transistor means; and

detector means connected to said output signal means for determining the relative polarity of the differential output signal as an indication of said relative order of occurrence a transition of state between said first and second wave form signal.

4,370,574

DETECTOR FOR TIME DIFFERENCE BETWEEN TRANSITIONS IN TWO WAVE FORMS

Raymond E. Nielsen, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Nov. 28, 1980, Ser. No. 211,162

Int. Cl.^{3} H03K *5/26*

U.S. Cl. 307—514 **4 Claims**

1. Apparatus for determining the relative order of occurrence of transitions in signal level state in a first and a second wave form signal; and for determining time difference therebetween, said apparatus comprising:

a pair of transistor means cross-coupled to provide a bistable transistor unit;

a third transistor connected to selectively provide a short-circuit path across one transistor of said pair;

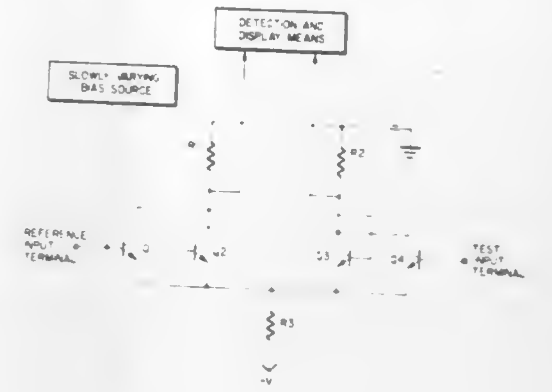
said third and fourth transistors each having a control electrode to control the respective short-circuit paths;

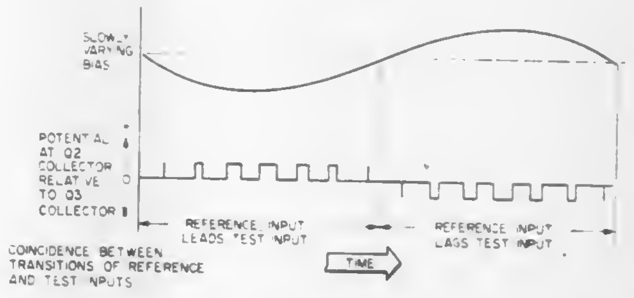
means coupling said first input wave form signal to said control electrode of said third transistor and means coupling said second input wave form signal to said control electrode of said fourth transistor to control the selective actuation of said respective short-circuit paths, said short circuit paths, when actuated, inhibiting the bistable actuation of said bistable transistor unit;

said bistable transistor unit being triggered to one or the other of its bistable states depending upon which of said input wave form signals first undergoes a transition to block said short-circuit path associated therewith, such triggering occurring on each cyclic transition of said wave form signals;

bias signal means providing a bias signal, said bias signal being symmetrical about a zero value and varying slowly with respect to said first and second input wave form signal;

means coupling said bias signal means to superimpose said bias signal on said first input wave form signal at said control electrode of said third transistor time shifting the triggering base level of said third transistor in accordance with the instantaneous level of said bias signal thereby





producing positive output signals during one part of said symmetrical bias signal and negative output signals during the remainder of said symmetrical bias signal; and

means connected to said bistable transistor unit to detect the ratio of said positive and negative signals as a function of the order of occurrence of said transitions in said first and second wave form signals and the time difference therebetween.

4,370,575

HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH ACTIVE LOADS

Joseph C. McAlexander, III, Sugar Land; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 944,822, Sep. 22, 1978, Pat. No. 4,239,993. This application Oct. 14, 1980, Ser. No. 196,987

Int. Cl.^{3} H03K *5/24;* G11C *7/06*

U.S. Cl. 307—530 **10 Claims**

1. A sense amplifier for a semiconductor memory device of the type having an array of rows and columns of memory cells with each column split into two column line halves and sense amplifiers connected to pairs of sense nodes at ends of each pair of column line halves, each sense amplifier comprising:

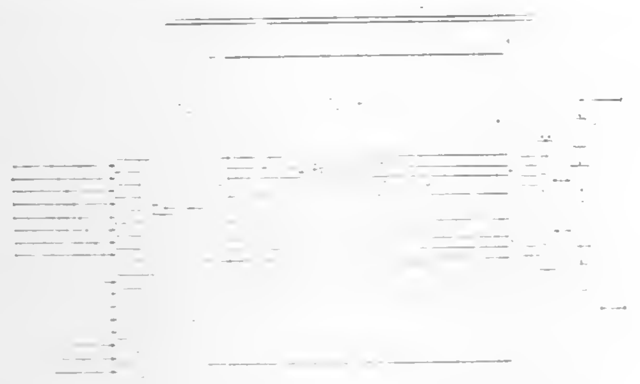
a pair of cross-coupled driver transistors, a pair of coupling transistors, a pair of grounding transistors and a pair of pull-up transistors, each of the transistors having a current path and a control electrode,

means connecting the current path of each of the coupling transistors in series with the current path of a separate one of the driver transistors between one of the sense nodes and a grounding node and connecting the current paths of both of the grounding transistors in parallel between the grounding node and reference potential,

the current paths of the pull-up transistors being connected separately between the sense nodes and a supply voltage,

means for precharging the sense nodes prior to an active operating cycle,

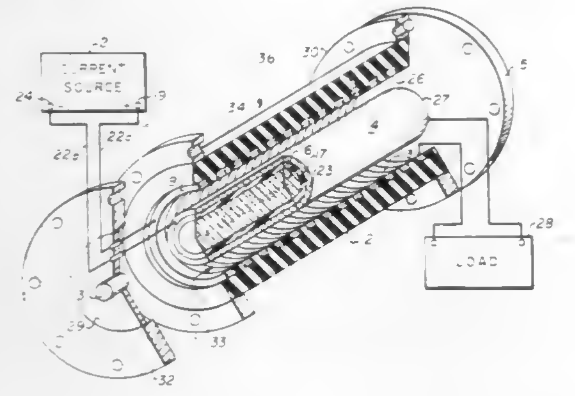
means for addressing a selected row of the memory cells in the array at a first time in the beginning of said operating cycle,
means for maintaining the voltage on the control electrodes of the coupling transistors at a level to render the current paths highly conductive prior to said first time,
means for applying a clock voltage to turn on one of the grounding transistors at a second time subsequent to the said first time in the beginning of an active operating cycle and for applying another clock voltage to turn on the other of the grounding transistors at a third time subsequent to the second time, said one of the grounding transistors being much smaller than the other of the grounding transistors,



coupling means separately connecting the control electrodes of the pull-up transistors to the sense nodes, the coupling means being conductive only for a given voltage differential during the active operating cycle,
clock means to boost the voltage on the control electrode of one of the pull-up transistors higher at a fourth time in the active operating cycle just following the third time,
means to shift the voltage on the control electrodes of the coupling transistors from a higher level at about said first time prior to the beginning of active operating cycle to a lower level during the active operating cycle.

4,370,576
ELECTRIC GENERATOR

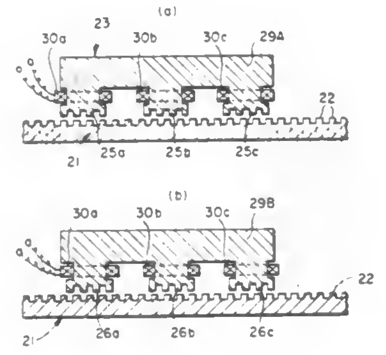
John S. Foster, Jr., Pleasanton; James R. Wilson, Livermore, and Charles A. McDonald, Jr., Danville, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Feb. 21, 1962, Ser. No. 175,393
Int. Cl.³ H02K *1/00;* G21B *1/00;* G01R *33/02*
U.S. Cl. 310—10 **14 Claims**



1. In an electrical energy generator, the combination comprising a first elongated annular electrical current conductor having at least one bare surface extending longitudinally and facing radially inwards therein, a second elongated annular electrical current conductor disposed coaxially within said first conductor and having an outer bare surface area extending longitudinally and facing said bare surface of said first conductor, the contiguous coaxial areas of said first and second conductors defining an inductive element, means for applying an electrical current to at least one of said conductors for generating a magnetic field encompassing said inductive element, and explosive charge means disposed concentrically with respect to said conductors including at least the area of said inductive element, said explosive charge means including means disposed to initiate an explosive wave front in said explosive advancing longitudinally along said inductive element, said wave front being effective to progressively deform at least one of said conductors to bring said bare surfaces thereof into electrically conductive contact to progressively reduce the inductance of the inductive element defined by said conductors and transferring explosive energy to said magnetic field effective to generate an electrical potential between undeformed portions of said conductors ahead of said explosive wave front.

4,370,577
LINEAR MOTOR

Noriaki Wakabayashi; Terumichi Fukumoto, both of Hirakata, and Nobuhiro Ueda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 17, 1981, Ser. No. 284,564
Claims priority, application Japan, Jul. 22, 1980, 55-100691
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—12 **1 Claim**

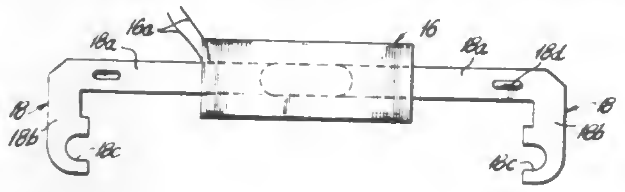


1. A linear motor comprising: a stator along which many magnetic teeth are formed with a constant pitch; a mover which faces said stator across a narrow gap and has the same magnetic teeth as that of the stator; and a mover guiding means which guides the mover smoothly along the stator while maintaining said narrow gap; wherein the mover comprises: a permanent magnet which is long in the longitudinal direction of the stator; two cores which are stacked perpendicularly to the longitudinal direction of the stator with said permanent magnet between them; and a plurality of coils, each of which is wound over said two cores and said permanent magnet and has a magnetization axis which is perpendicular to the longitudinal direction of the stator, wherein each of said two cores has n groups (wherein n is an integer) of magnetic teeth facing the stator, and wherein in each of said n groups of magnet teeth, the pitch of a tooth is constant and is the same as that of the magnetic teeth of the stator, but wherein in each core, the phases of the magnetic teeth of each group are different from each other.

4,370,578
COIL/CORE ASSEMBLY WITH INTERFERENCE FIT

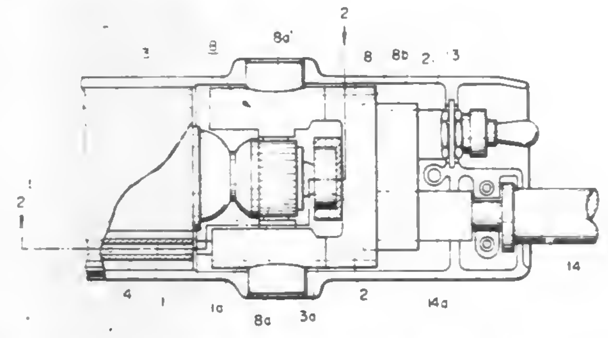
Wilhelm K. P. H. Tilse, Birkenfeld, Fed. Rep. of Germany, assignor to Timex Corporation, Waterbury, Conn.
Filed Jun. 18, 1981, Ser. No. 274,850
Int. Cl.³ H02K *15/08*
U.S. Cl. 310—42 **4 Claims**

1. A coil/core assembly for a stepping motor comprising an elongated coil formed of a plurality of wound turns of wire with inner turns of wire defining a longitudinal bore through the coil, and comprising a pair of flat core members, each having a long portion disposed in the bore and a short portion extending at right angles thereto disposed outside the bore, said long portions extending through the bore in opposite directions from their respective short portions with inner sides in intimate contact with one another and with outer sides facing the inner turns of the coil, the outer side of the long portion of each core member having an outwardly extending, coil-engaging bump projecting from the end thereof near its respective short portion in interference fit with the inner turns of the coil near opposite ends of the bore, whereby the core members are held in contact together and to the coil by interference fit in the bore when said long portions of the core members are fully inserted into the bore.



4,370,579
POWER TOOL HAVING A PRINTED CIRCUIT BOARD

Jyuro Kobayashi; Masanori Ito, and Hiroyasu Ishikawa, all of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan
Filed Sep. 25, 1981, Ser. No. 305,778
Claims priority, application Japan, Sep. 26, 1980, 55-134778
Int. Cl.³ H02K *5/14, 7/14*
U.S. Cl. 310—50 **6 Claims**



1. A power tool having, within a housing, a stator including a pair of stator coils and a plurality of stator terminals connected to said stator coils, a rotor having a commutator rotatably mounted with respect to the stator, a switch having a pair of terminals and a power cable end block having a pair of terminals, comprising within said housing:
a brush holder assembly including pair of transversely spaced apart, axially extending parallel blocks of insulative material each holding a brush and a pair of conductors extending parallel therethrough, each of said conductors including a terminal at one end thereof for connection with an associated one of said stator terminals, said parallel blocks being connected together by a web member so that each brush is brought into contact with said commutator,
an electrical circuit board located adjacent to the web member of said brush holder assembly remote from said stator; and
a positioning member of insulative material adjacent to said printed circuit board remote from said brush holder assembly for positioning the terminals of said switch and power cable end block in contact with said printed circuit board;
said electrical circuit board including a circuit pattern which permits the terminals of said switch and power cable end block to be mutually connected and further electrically connected to the conductors of said brush holder assembly so that said stator coils; commutator, brushes and switch are connected in a series circuit with said power terminals.

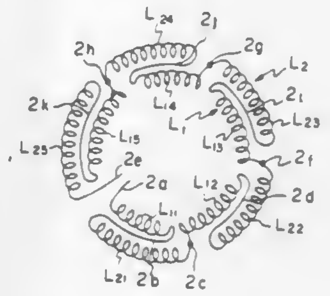
4,370,580
RELUCTANCE MOTOR

Martin Burgbacher, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren GmbH und Co. KG, St. Georgen, Fed. Rep. of Germany
Filed Jun. 12, 1980, Ser. No. 158,982
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925392
Int. Cl.³ H02K *19/14*
U.S. Cl. 310—67 R **6 Claims**

1. A reluctance motor comprising:
a stator comprising
a plurality of poles,
a winding with at least one coil for each pole and a phase combination providing a rotary magnetic field,
a squirrel cage rotor comprising
a plurality of pole portions, each having respective pole ends, a pole span between said ends and a pole middle,
a plurality of flux path portions extending towards the airgap side of the rotor between the rotor slots, wherein a region corresponding to a fraction from about 0.2 to 0.6 of the range corresponding to a pole pitch around the pole middle is provided with yoke-reducing, non-magnetic portions which are aligned with the slots of the rotor, said portions varying in their magnetic structure between pole portions subsequent on the circumference of the rotor.

4,370,581
MULTILAYERED COIL STRUCTURE

Yoshimitsu Nakamura, Settsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan
Continuation of Ser. No. 945,836, Sep. 26, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,497
Claims priority, application Japan, Sep. 30, 1977, 52-118125
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—198 **6 Claims**



1. A cylindrically-shaped multilayered coil structure for use in coreless motors, comprising more than two coil sections each having a width equal to the circumference of the cylindrical coil structure divided by the number of coil sections, each coil section including at least inner and outer coil layers ex-

tending diagonally between opposite axial ends of the cylindrical coil structure, each such layer including a plurality of turns of a coil wire which extend diagonally completely around the circumference and forming an initial turn and a final turn, the initial and final turns of each outer layer being disposed adjacent to said initial and final turns, respectively, of the inner layer of the same coil section, each coil section including a crossing part interconnecting the final turn of the inner layer with the initial turn of the outer layer, each crossing part being of one integral piece and being continuous and unbroken from the final turn of the associated inner layer to the initial turn of the associated outer layer, each crossing part disposed axially inwardly of the axial end at which it is located, and being positioned in between the associated inner and outer layers.

4,370,582

AXIAL GAP SQUIRREL CAGE INDUCTION ELECTRIC MOTOR

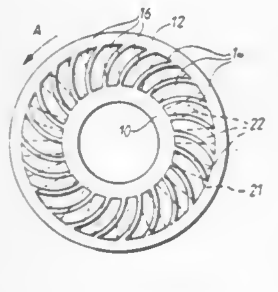
Roy W. Addicott, Burnham-on-Sea, and Bernard Capaldi, Woolavington, both of England, assignors to Sealed Motor Construction Company, Limited, England

Filed Oct. 9, 1980, Ser. No. 195,436

Claims priority, application United Kingdom, Oct. 18, 1979, 7936228

Int. Cl.^{3} H02K *3/06*

U.S. Cl. 310—211 **3 Claims**



1. An axial gap squirrel cage induction motor comprising an annular stator presenting an annular face, and a rotor presenting a face towards said annular face of the stator, said stator and rotor faces defining between them an axial gap; the stator comprising an annular core of magnetic material and having radial slots formed in the annular face of the core adjacent the axial gap, in which radial slots are located energizing windings for the stator, whereby said face of the stator presents a series of regions of alternately magnetic and non-magnetic material provided respectively by the unslotted portions of the stator core and the material of the energizing windings located in the slots; the rotor comprising a magnetic component and a non-magnetic conductive component, the non-magnetic conductive component comprising radially inner and outer rings joined by a series of bars spaced apart to define interstitial regions there between, the magnetic component occupying said interstitial regions, whereby the rotor between said rings has directly opposite said face of the stator adjacent the axial gap an annular portion formed of a series of alternately non-magnetic and magnetic material provided respectively by said bars and said interstitial magnetic material; said bars of the rotor following a curved path between the inner and outer conductive rings, the direction of the bars having a higher radial component at their radially inner end than at their radially outer end such that the curved conductive bars of the rotor do not register with the radial slots in the stator when viewed in the axial direction.

4,370,583

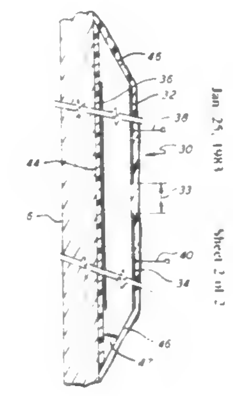
PIEZOELECTRIC MOTOR FOR DITHERING RING LASER GYROSCOPES

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 16, 1981, Ser. No. 225,490

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—331 **7 Claims**



1. In a drive motor for dithering a ring laser gyroscope having a hub, a movable outer rim, at least one elongate, flexible spoke connecting the hub to the outer rim, and at least one transducer attached to the spoke for deflecting the spoke, the improvement comprising:

the transducer consisting of a piezoelectric element having a single electrode on the side of the element which is attached to the spoke, and a pair of electrodes on the opposite side, one electrode of the pair located nearer to the hub and the other located nearer to the rim; and

means for applying a drive voltage to only the pair of electrodes.

4,370,584

ELECTRODE CONFIGURATION FOR THICKNESS-SHEAR MODE PIEZOELECTRIC VIBRATOR

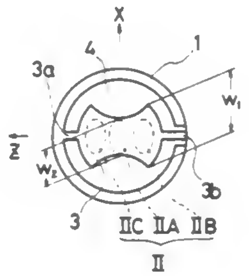
Hitoshi Ikeno; Tetsuro Konno; Mitsuyuki Sugita, and Hirofumi Yanagi, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Mar. 10, 1980, Ser. No. 128,952

Claims priority, application Japan, Mar. 12, 1979, 54-28417

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—365 **17 Claims**



1. A thickness-shear mode piezoelectric vibrator comprising: a thickness-shear mode piezoelectric piece having opposite major surfaces and vibratable in a fundamental main vibration mode and spurious vibration modes; and driving electrodes disposed on said opposite major surfaces of said piezoelectric piece for driving said piezoelectric piece in the fundamental main vibration mode, one of said driving electrodes being disposed on one of said major surfaces and overlying the center portion thereof at a location where electric charge concentrates during the fundamental main vibration, and the other of said driving electrodes being disposed on the other of said major surfaces and overlying portions thereof at a location other than where electric charge concentrates during at least

one spurious mode vibration, said other driving electrode being configured to define an electrode-free region where said other major surface is free of and not covered by said other driving electrode, said electrode-free region having a center region located where electric charge concentrates during the fundamental main vibration and two side regions one on either side of the center region in the direction of the Z axis of the piezoelectric piece at locations where components of electric charge concentrate during said one spurious vibration, the two side regions being wider than the center region in the direction of the X axis of the piezoelectric piece.

4,370,585

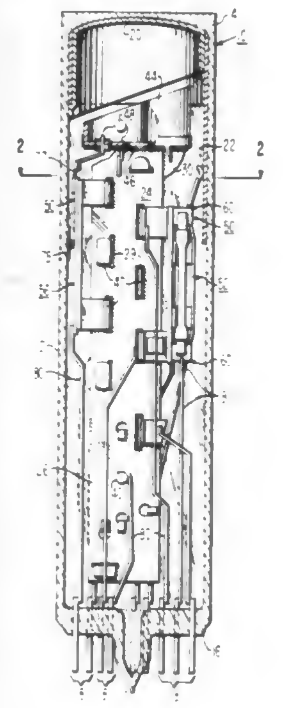
EVAPORATOR SUPPORT ASSEMBLY FOR A PHOTOMULTIPLIER TUBE

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,768

Int. Cl.^{3} H01J *40/06*

U.S. Cl. 313—102 **10 Claims**



1. An electron discharge device comprising an evacuated envelope having an interior surface, a photoemissive cathode within said envelope, an electrode assembly having at least one electrode spaced from said cathode, an alkali metal source within said envelope for vapor depositing at least one alkali metal to form said cathode, and evaporator support means including at least one insulator support member attached to said electrode assembly for aligning said electrode assembly with respect to said interior envelope surface, said evaporator support means including at least a pair of electrical terminals attached to said insulator member and to said alkali metal source to provide support thereto and means for evaporating alkali metal therefrom.

4,370,586

IMAGE INTENSIFIER TUBE HAVING AN INTERNAL ALKALI BAFFLE

Robert W. Fitts, Lititz, Pa., assignor to RCA Corporation, New York, N.Y.

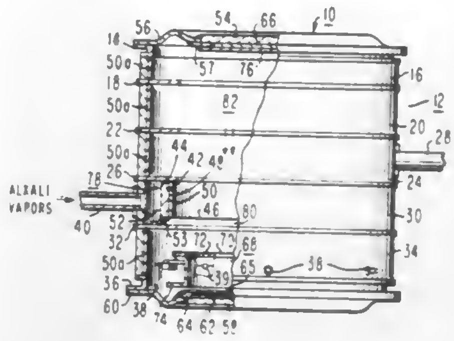
Filed Mar. 27, 1981, Ser. No. 248,062

Int. Cl.^{3} H01J *31/50, 40/06*

U.S. Cl. 313—102 **12 Claims**

1. In an image intensifier tube including a substantially cylindrical envelope having a photoemissive cathode at one end and a phosphor screen at the other end, said envelope also including a tubulation extending therethrough for introducing a constituent of said cathode, the improvement comprising

a baffle ring of an electrically insulative material located inside said tube adjacent said tubulation, said baffle ring forming an interior annular chamber with said cylindrical envelope, the chamber having an annular exit passage



between said baffle ring and an inwardly-extending portion of said envelope.

4,370,587

LAMP/REFLECTOR UNIT

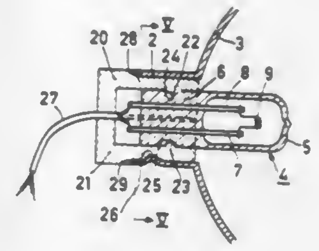
Victor R. Notelteirs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 208,969

Claims priority, application Netherlands, Dec. 21, 1979, 7909231

Int. Cl.^{3} H01J *5/16, 61/40*

U.S. Cl. 313—113 **7 Claims**



1. A lamp/reflector unit comprising a metal reflector body having a necked portion near the apex of a concave reflecting portion and also comprising an electric lamp having a glass lamp envelope with a pinch seal in which current supply conductors are embedded which extend from outside the lamp envelope to an electric element accommodated inside the lamp envelope, which pinch seal is fixed in the necked portion of the reflector body, characterized in that the pinch seal of the lamp envelope is enclosed laterally between at least two moulded members, the surface of the pinch seal is provided with a profiled portion which is in engagement with counter-profiled portion on at least one of the moulded members and keeps the lamp locked against axial movement, and that the necked portion of the reflector body keeps the lamp with the moulded members fixed in the reflector body.

4,370,588

CATHODE ASSEMBLY

Kenji Takahashi, Hyogo, and Yukio Takanashi, Hiratsuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 20, 1980, Ser. No. 161,569

Claims priority, application Japan, Jun. 21, 1979, 54-77522

Int. Cl.^{3} H01J *1/94, 19/48*

U.S. Cl. 313—270 **5 Claims**

1. A cathode assembly for cathode-ray tube comprising:

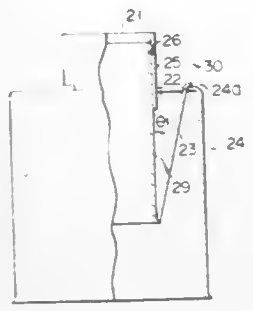
a cathode sleeve having a blackened surface;

a first cylindrical reflective member having an unblackened surface fixedly positioned about a top end portion of said cathode sleeve with a fixing point therebetween and having one end portion thereof closed by a metal member; and

a second cylindrical reflective member positioned about said cathode sleeve on the same axis therewith and having a diameter greater than that of said cathode sleeve,

support member means for fixing the position of said second cylindrical reflective member with respect to said cathode sleeve,

both said first and second cylindrical reflective members providing means for reflecting radiant heat from said cathode sleeve,



said second cylindrical reflective member having an upper portion that is apart from and overlapping in vertical position a lower portion of said first cylindrical reflective member, and

the length of said first cylindrical reflective member being selected such that an angle formed between the longitudinal direction of said cathode sleeve and a straight line connecting a heat radiation peak point on the outer surface of said cathode sleeve and an inner edge of a top opening portion of said second cylindrical reflective member, on a plane passing through said same axis, is 30° or less.

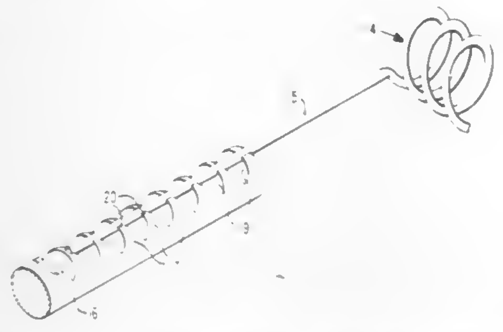
4,370,589
FILAMENT CONNECTOR MEANS FOR ELECTRIC INCANDESCENT LAMP

Aristide R. DeCaro, Edison, and Henry M. Nixon, Westfield, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 2, 1980, Ser. No. 182,923

Int. Cl.^{3} H01K *1/42, 9/08*

U.S. Cl. 313—315 **7 Claims**



1. In an electric incandescent lamp having a sealed light-transmitting envelope, the combination of;

a filament of refractory metal wire having a coiled body portion and uncoiled leg portions that extend laterally from and terminate said coiled body portion,

a pair of substantially rigid lead-in wires extending into said envelope and having inner end segments that are disposed in aligned overlapped relationship with the respective uncoiled leg portions of the filament, and

means electrically connecting the uncoiled leg portions of the filament to the associated overlapped end segments of said lead-in wires comprising a plurality of spaced serrations on each of the end segments of the lead-in wires that are welded to said leg portions,

said serrations extending transversely across the respective lead-in wire segments and being so spaced and dimensioned that the filament leg portions are in bridging relationship with a plurality of the serrations on the associated lead-in wire segments and are also fused to only the crowns of the bridged serrations so that the filament is thereby securely fastened to each of the lead-in wires at a series of spaced locations along the respective lead-in wires.

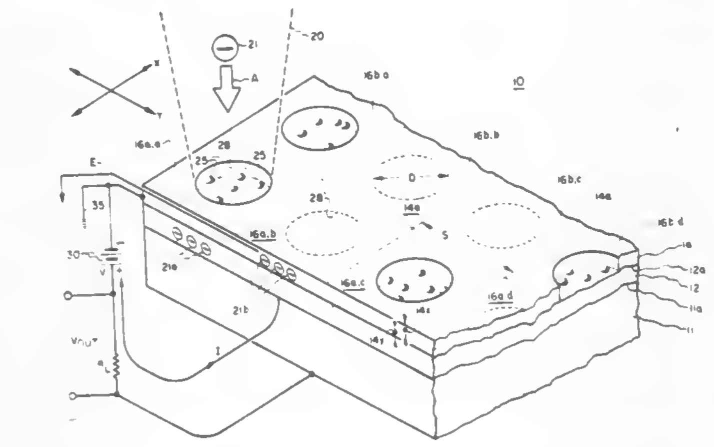
4,370,590
METHOD FOR WRITING ON ARCHIVAL TARGET AND TARGET PRODUCED THEREBY

Harold F. Webster, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 68,680, Aug. 22, 1979, Pat. No. 4,287,572. This application Sep. 25, 1980, Ser. No. 190,941

Int. Cl.^{3} H01J *31/08, 31/58*

U.S. Cl. 313—391 **12 Claims**



1. An archival memory target for use in an electron-beam-addressed memory, comprising:

a substrate of a semiconductor material, said substrate having a surface;

a single continuous layer of insulative material fabricated upon said semiconductor substrate surface; and

a layer of a conductive masking material fabricated directly upon a surface of the single insulative layer furthest from the substrate; said masking material being material which, when molten, does not wet the surface of the single insulative layer an aperture being melted through only the masking material layer at each data storage site at which a first binary value of data is to be stored in a two-dimensional array of potential data storage sites assigned upon the surface of the masking layer farthest from said insulative layer, the material of said masking layer remaining unmelted at others of the potential data storage sites of said array at which the remaining value of binary data is to be stored.

4,370,591
COLOR PICTURE TUBE SHADOW MASK

Yoshio Satoh, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

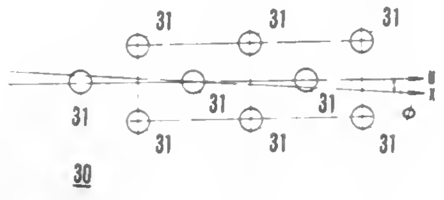
Filed Aug. 18, 1980, Ser. No. 179,475

Claims priority, application Japan, Sep. 14, 1979, 54-117251; Nov. 14, 1979, 54-146559

Int. Cl.^{3} H01J *29/07, 29/80*

U.S. Cl. 313—402 **4 Claims**

1. In a color picture tube comprising a fluorescent screen formed on the inner surface of the panel and consisting of a majority of trios of phosphor dots, a dot type shadow mask having apertures which are arrayed horizontally and vertically and spaced from the fluorescent screen by a predetermined distance, and an in-line type three-electron-gun structure for emitting beams of electrons which pass through said apertures of the shadow mask and impinge upon the fluorescent screen to establish trios of electron beams, the improvement wherein the horizontal arrangement of said apertures is defined by,



$$x = \frac{n}{2} P_H$$

$$y = \frac{mPv}{2} \epsilon^{\frac{1}{2} A(\frac{nPH}{2})2}$$

where x and y represent coordinates of the apertures of the shadow mask in Cartesian coordinates whose origin coincides with the center of the fluorescent screen, Pv the vertical pitch between apertures of the shadow mask at coordinates (0, 0), P_H the horizontal pitch between apertures at coordinates (0, 0), m and n an integer, (m+n) being an even number, and A a constant, such that the interdistance between adjacent electron beams on the fluorescent screen based on beams of electrons passing through said apertures at the corners of the shadow mask is made substantially equal.

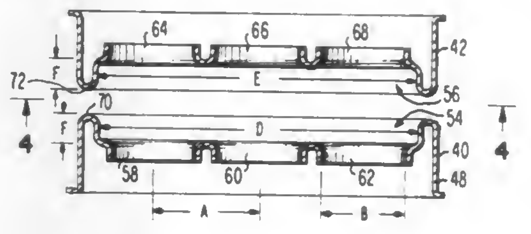
4,370,592
COLOR PICTURE TUBE HAVING AN IMPROVED INLINE ELECTRON GUN WITH AN EXPANDED FOCUS LENS

Richard H. Hughes, and Bruce G. Marks, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,692

Int. Cl.^{3} H01J *29/50, 29/56*

U.S. Cl. 313—414 **11 Claims**



1. In a color picture tube havinng an inline electron gun for generating and directing a plurality of electron beams along coplanar paths toward a screen of said tube, said gun including a main focus lens for focusing said electron beams, the improvement comprising

the main focus lens being formed by two spaced electrodes, each electrode including a portion having a plurality of apertures therein equal to the number of electron beams, each electrode also including a peripheral rim, the peripheral rims of the two electrodes facing each other, the apertured portion of each electrode being within a recess set back from the rim, said recess having substantially straight wall sections parallel to the coplanar paths of the electron beams.

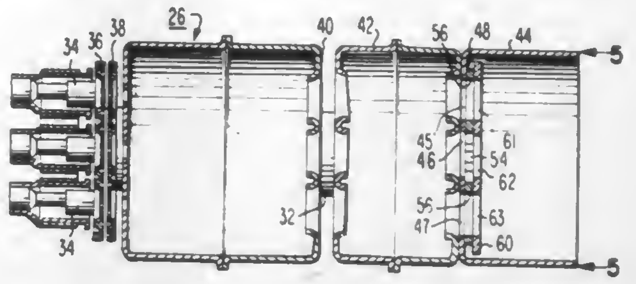
4,370,593
IN-LINE ELECTRON GUN AND METHOD FOR MODIFYING THE SAME

Raymond H. Sweigart, Lancaster, and Mary E. Doersom, Ephrata, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,434

Int. Cl.^{3} H01J *29/50*

U.S. Cl. 313—414 **6 Claims**



1. An in-line electron gun comprising:

first electrode means for producing and directing a plurality of electron beams along spaced co-planar paths having a common general direction,

second electrode means disposed along said beam paths and spaced from said first electrode means for focusing said beams,

a shield cup disposed adjacent to said second electrode means, said shield cup having a back surface with a plurality of co-planar apertures therethrough, and

a first pair of magnetically permeable members attached to said back surface of said shield cup, said first pair of magnetic members being disposed adjacent to one of said shield cup aperture, the combination with said shield cup of;

a nonmagnetic plate having a plurality of co-planar plate apertures therethrough, and

a second pair of magnetically permeable members attached to one surface of said plate, said plate being attached to said back surface of said shield cup so that said second pair of members are disposed between said shield cup and said plate and whereby said plate apertures are substantially aligned with said shield cup apertures.

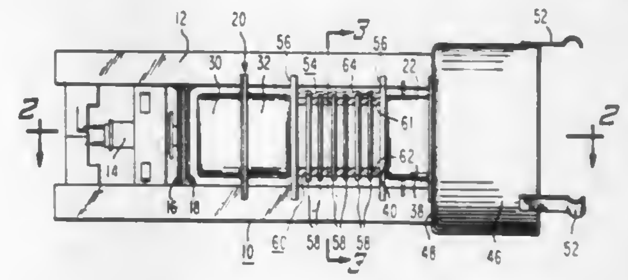
4,370,594
RESISTIVE LENS STRUCTURE FOR ELECTRON GUN

Philip Kuzenetzoff, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,539

Int. Cl.^{3} H01J *29/56, 29/48, 29/82*

U.S. Cl. 313—458 **8 Claims**



1. An electron gun comprising:

(a) first and second accelerating and focusing electrodes fixedly mounted on a plurality of elongated insulator support rods disposed alongside said electrodes, and

(b) a resistive lens structure disposed between and electrically connected to said accelerating and focusing electrodes, said lens structure comprising:

(1) a plurality of apertured electrode plates which are mutually spaced with their apertures sufficiently aligned to permit passage of an electron beam along a

path therethrough, and, which when impressed with mutually different voltages, established an extended electron beam focusing lens between said first and second accelerating and focusing electrodes, and

(2) a plurality of resistive spacer blocks alternately stacked with said electrode plates, there being at least one of said resistive blocks disposed between and in contact with each pair of adjacent electrode plates, whereby a high resistance continuity is provided from electrode plate to electrode plate along the stack of electrode plates and resistive blocks from one end of said stack to the other, and

(c) wherein said first and second accelerating and focusing electrodes comprise means for applying different electrical voltages to the ends of said stack whereby current flows through said stack thereby creating said mutually different voltages on each of said electrode plates, thereby establishing said extended electron beam focusing lens.

4,370,595
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

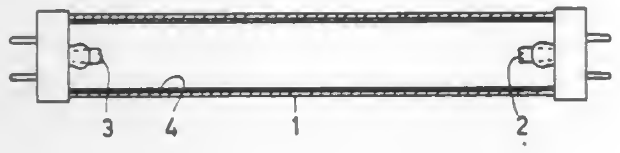
Petrus J. M. Willemsen; Willem L. Konijnendijk, and Robert C. Peters, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,326

Claims priority, application Netherlands, Jul. 3, 1979, 7905162

Int. Cl.³ H01J *61/30, 61/44*

U.S. Cl. 313—486 **4 Claims**



1. A low-pressure mercury vapor discharge lamp for radiation purposes having a discharge tube made of glass having an absorption edge between 280 and 305 nm, the tube being coated on the inside with a luminescent layer comprising a luminescent material which has the characteristic line emmission of gadolinium at 312 nm, the luminescent layer comprises a borate activated by Gd and Bi, this borate having a composition defined by the formula $LA_{1-x-y}GdxBi_yO_6$, wherein 0.15 is less than or equal to x, 0.001 is less than or equal to y which is less than or equal to 0.05 and (x+y) is less than or equal to 1, the luminescent layer containing a ternary aluminate activated by Gd and Pb and having the hexagonal magneto-plumbite structure, the aluminate having the composition ABC, wherein A represents from 25-99 mole % ½ Gd_2O_3, 1-35 mole % PbO and, up to ½ La_2O_3, wherein B represents Al_2O_3, not more than 20 mole % of the Al_2O_3 being replaceable by Sc_2O_3 and wherein C represents a material selected from the group consisting of MgO and ZnO, up to 10 mole % of the Al_2O_3 possibly being replaceable by an equivalent quantity of SiO_2 together with at least a compound selected from the group consisting of MgO and ZnO, up to 70 mole % of A being replaceable by a compound selected from the group consisting of SrO and CaO, simultaneously, an amount of C equivalent to the amount of B replaced, being replaceable by ½ Al_2O_3, A, B and C satisfying the conditions [A] is greater than or equal to 0.02, 0.55 is less than or equal to [B] which is less than or equal to 0.95 and [C] is greater than or equal to ½ A.

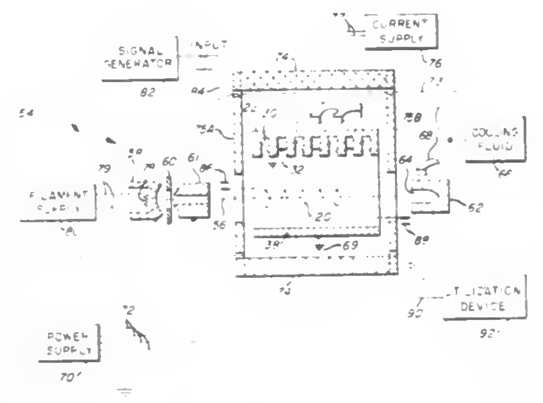
4,370,596
SLOW-WAVE FILTER FOR ELECTRON DISCHARGE DEVICE

Donald L. Winsor, Wakefield, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 1, 1970, Ser. No. 33,759

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.6 **6 Claims**



1. A traveling wave electron interaction device comprising:

a helical periodic electromagnetic energy slow-wave propagating structure comprising a plurality of spaced elements;

a plurality of dielectric members contacting each of said slow-wave structure elements and defining therebetween a plurality of spaced apertures; and

a filter assembly comprising a plurality of waveguides periodically successively contacting the dielectric members on at least one side of said slow-wave structure;

said waveguides defining therebetween a parallel plate transmission line having a predetermined cutoff frequency characteristic to substantially inhibit propagation of energy in the backward wave mode without substantially perturbing amplification of forward wave modes of said energy propagating along said structure.

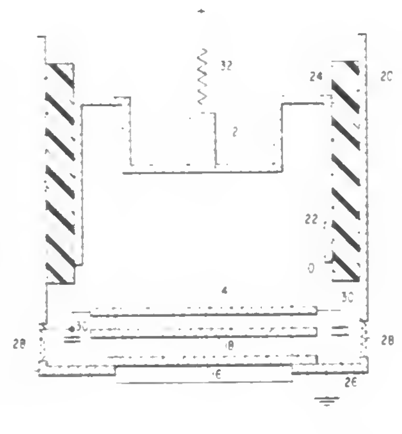
4,370,597
THYRATRON SWITCH FOR NARROW PULSES

Maurice Weiner, Ocean City, and William Beattie, Rumson, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 12, 1981, Ser. No. 224,603

Int. Cl.³ H03K *3/55*

U.S. Cl. 315—58 **7 Claims**



1. Apparatus for supplying narrow width high voltage modulation pulses to a load, comprising a switch which is a thyratron having anode, grid and cathode electrodes; resistance means connected between the anode electrode and the positive side of a high voltage direct-current source; a connection from the cathode electrode to the negative side of said source; an outer cylindrical shield surrounding said thyratron; said load being coupled between said outer shield and the cathode electrode; an inner cylindrical shield located between said outer shield and the thyratron, with means connecting the anode electrode to the inner shield, to thereby provide capacitive energy storage means between the anode electrode and the outer shield; operative in response to a trigger pulse between the grid and cathode electrodes which causes the thyratron to conduct and thereby produces said narrow width high voltage output pulse at said load.

4,370,598
BIFILAR HELICAL ELECTRODE ARRANGEMENT FOR TRANSVERSELY EXCITING GASEOUS LASER MEDIA

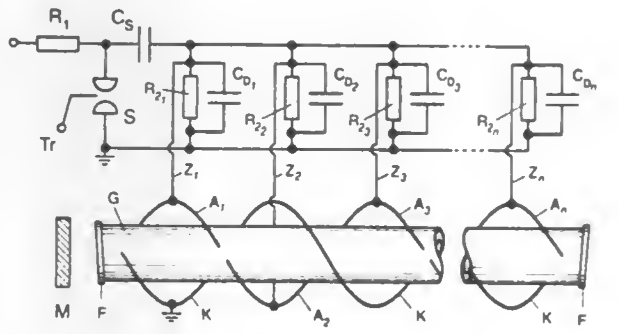
Karl-Heinz Krahn, Hustadtring 147, 4630 Bochum-Querenburg, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,367

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939121

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—59 **7 Claims**



1. A bifilar helical electrode arrangement for the transverse excitation of a gaseous laser medium disposed within a laser envelope, comprising a helical anode and a helical cathode extending along said laser envelope, a plurality of capacitors closely adjacent to and spaced along the lengths of said anode and said cathode, low resistance and low inductance leads connecting one terminal of each capacitor to said anode, low resistance and low inductance leads connecting the other terminal of each capacitor to said cathode, and a pulse generator connected between said anode and cathode for delivering high-voltage pulses to said capacitors in parallel.

4,370,599
SELF SHIFT TYPE GAS DISCHARGE PANEL

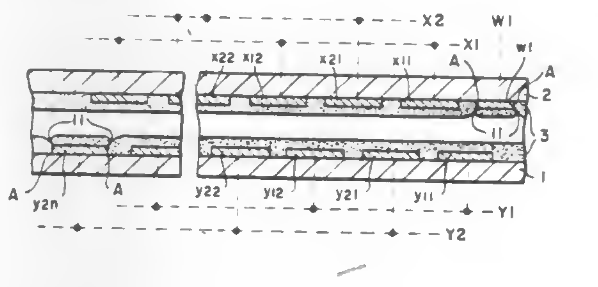
Tsutae Shinoda, Akashi; Kazuo Yoshikawa, Kobe, and Yoshinori Miyashita, Himeji, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1980, Ser. No. 213,464

Claims priority, application Japan, Dec. 17, 1979, 54-164319

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—217 **19 Claims**



1. A self shift type gas discharge panel comprising

a regularly arranged plurality of discharge cells defining an array of shift channels wherein electrodes defining the discharge cells are sequentially and regularly connected to a plurality of buses, covered with a dielectric layer and placed face to face in a gas discharge space,

a write discharge cell with a write electrode at one end of each said shift channel, and

path means provided in said dielectric layer for leaking wall charges accumulated on said dielectric layer to at least one outermost electrode along each said shift channel.

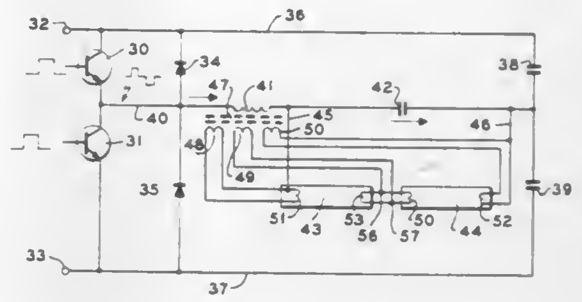
4,370,600
TWO-WIRE ELECTRONIC DIMMING BALLAST FOR FLUORESCENT LAMPS

Zoltan Zansky, Roseville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 26, 1980, Ser. No. 210,651

Int. Cl.³ H05B *41/29, 41/392*

U.S. Cl. 315—244 **23 Claims**



1. A two-wire electronic ballast arrangement for fluorescent lamp dimming comprising:

a source of direct current;

a source of variable square wave voltage; inverter means adapted to be fed by said source of direct current and modulated by said variable square wave voltage, said inverter means including resonant inductor-capacitor circuit means having inductive coil means and first capacitor means connected in series adapted to resonante at their natural frequency and to provide sinusoidal voltage across said capacitor means as the output of said inverter means to the fluorescent lamps;

auxiliary winding means associated with said inductive coil means, said auxiliary winding means being adapted to be connected to the filaments of one or more fluorescent lamps for heating, such that the voltage supplied to heat the filaments of said one or more lamps remains substantially constant during dimming of said one or more fluorescent lamps, said fluorescent lamps further being adapted to be connected across said first capacitor means.

4,370,601
HIGH PRESSURE DISCHARGE LAMP APPARATUS

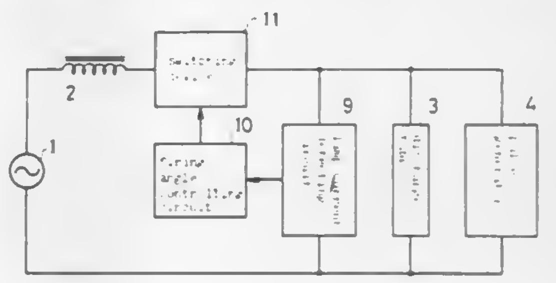
Shigeru Horii, Suita; Nobuhisa Yoshikawa, Sakai, and Kazutaka Koyama, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 20, 1981, Ser. No. 255,635

Claims priority, application Japan, Apr. 21, 1980, 55-53063

Int. Cl.³ G05F *1/00*

U.S. Cl. 315—307 **5 Claims**



1. A high pressure discharge lamp apparatus comprising:

a discharge tube,

a current limiting device and an over-current protecting device which are connected in series with said discharge tube across a power source, a pulse generator connected in parallel to said discharge tube to supply pulses to said discharge tube, and

a lamp current detecting circuit to detect a lamp current and give control signal to said over-current protecting device.

4,370,602

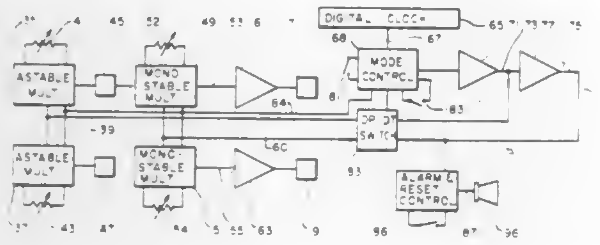
WATERBED VIBRATOR

Johnny O. Jones, Jr., #1 Cross Creek, Irvine, Calif. 92714, and Charles C. White, Jr., 1300 Adams, Apt. 5P, Costa Mesa, Calif. 92626

Division of Ser. No. 800,588, May 25, 1977, abandoned. This application Mar. 31, 1980, Ser. No. 135,297

Int. Cl.^{3} H02K *33/00*

U.S. Cl. 318—114 **16 Claims**



1. A vibrator system for inducing vibration in furniture, comprising:

a pair of electrical-mechanical transducers mounted at spaced locations on said furniture, each of said transducers producing output mechanical vibration, the amplitude and frequency of which is independently controlled by the respective amplitude and frequency of a pair of independent electrical driving signals;

means producing said independent pair of electrical driving signals, said means supplying independent cyclicly varying signals to each of said pair of transducers, said means independently controlling the frequency and amplitude of each of said pair of signals, said means comprising:

- a pair of astable multivibrators;
- a pair of monostable multivibrators, each of said monostable multivibrators responsive to one of said astable multivibrators and connected to drive one of said transducers;
- a pair of switching transistors, each of said transistors responsive to one of said monostable multivibrators for controlling the current to one of said transducers; and
- each of said pair of astable multivibrators and each of said pair of monostable multivibrators including an independent control element permitting control of the frequency and amplitude of vibration of said transducers; and

means producing an output ramp signal for controlling said independent control elements of each of said two astable multivibrators and each of said two monostable multivibrators.

4,370,603

SHUNT FIELD CONTROL APPARATUS AND METHOD

James H. Franz, Jr., Murrysville, and Stanley W. Jones, McMurray, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1980, Ser. No. 199,798

Int. Cl.^{3} H02P *5/06*

U.S. Cl. 318—523 **12 Claims**

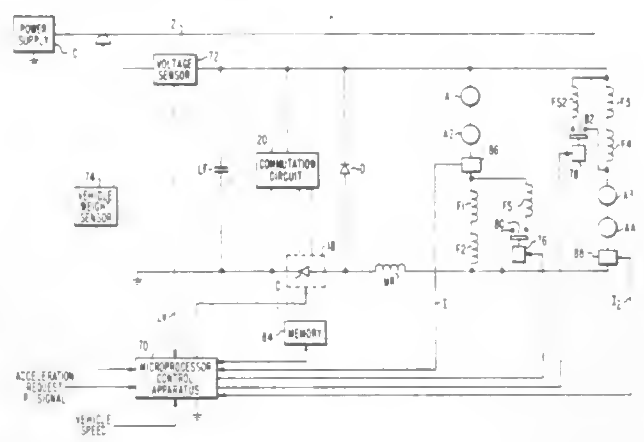
9. In the method of controlling field operation of a motor coupled with a chopper operative with a supply line voltage, said motor having a full field mode and a shunt field mode and being operative with a chopper having a current limit, the steps of

determining the actual full field mode current of the motor,

determining the actual chopper current limit in relation to the supply line voltage,

determining a predicted shunt field mode current in relation to the actual full field mode current when the motor is in the full field mode,

comparing a predicted shunt field mode current with the actual chopper current limit to establish when a predetermined relationship has occurred, and



providing the shunt field mode of the motor when that relationship has occurred after a predetermined full field mode of that motor.

4,370,604

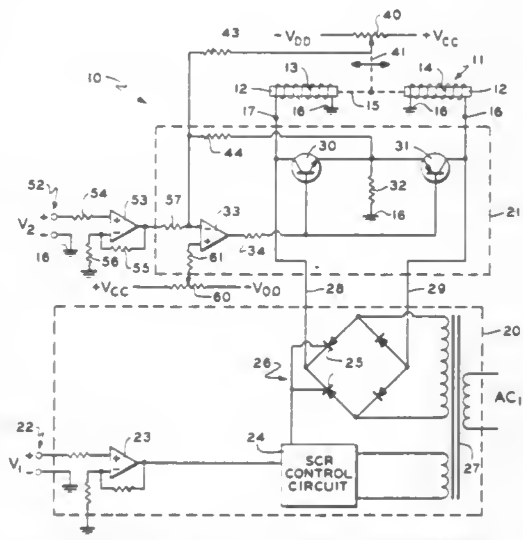
SOLENOID ACTUATED SERVO SYSTEM

Patrick J. Griffin, Annapolis, Md., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 25, 1981, Ser. No. 277,561

Int. Cl.^{3} G05B *11/00*

U.S. Cl. 318—687 **10 Claims**



1. A solenoid actuated servo system comprising:

solenoid actuator means having armature means and first and second coils, energization of which respectively tends to move the armature means in opposite directions;

position control means having an input terminal for receiving a position control voltage and first and second output terminals for supplying electric currents suitable for energizing the coils of said solenoid actuator means, the currents varying differentially in response to variations in the position control voltage;

means connecting the first and second output terminals of said position control means to the first and second coils respectively of said solenoid actuator means;

feedback means for generating a feedback voltage indicative of the position of the armature means of said solenoid actuator means;

position command input means for receiving a position command signal and supplying a corresponding position command voltage; and

combining means connected to receive and combine the feedback voltage and the position command voltage to produce the position control voltage, and to supply the position control voltage to said position control means.

4,370,605

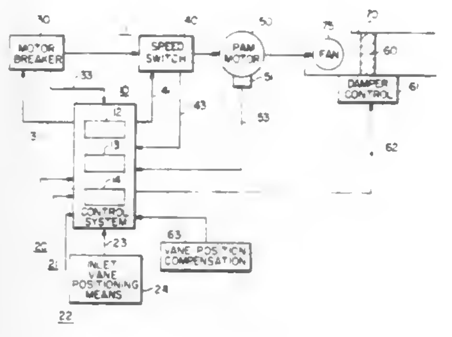
TWO-SPEED MOTOR CONTROL

Stephen J. Breznican, New Kensington, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 2, 1980, Ser. No. 182,922

Int. Cl.^{3} H02P *5/40*

U.S. Cl. 318—773 **13 Claims**



1. A control system for controlling the speed of a motor system having a pole-amplitude-modulated (PAM) motor which includes a set of windings which can be connected in different configurations to produce respectively different motor operating speeds; said control system comprising:

switching means for connecting the motor windings in a low speed configuration in one switch state and for connecting the motor windings in a high speed configuration in a second switch position;

breaker means for coupling the motor windings to a power source;

sequencer means for changing the motor speed on demand when predetermined permissive conditions exist, said sequencer means in sequence opening said breaker means if it is closed and operating said switching means to configure the motor winding for the demanded speed and closing said breaker means to enable the motor to be moved to the demand speed; and

means for generating confirmation signals for the state of at least said switch means and said breaker means to advance the operation of said sequencer means during a motor speed change.

4,370,606

CHARGING APPARATUS

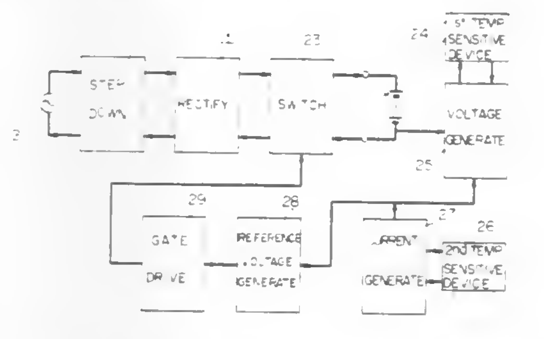
Hiromi Kakumoto, and Kaoru Furukawa, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 10, 1980, Ser. No. 196,014

Claims priority, application Japan, Oct. 13, 1979, 54-132266

Int. Cl.^{3} H02J *7/10*

U.S. Cl. 320—35 **29 Claims**


STEP DOWN
RECTIFY
SWITCH
23
24
1st TEMP SENSITIVE DEVICE
VOLTAGE GENERATE
25
29
28
GATE DRIVE
REFERENCE VOLTAGE GENERATE
CURRENT GENERATE
26
2nd TEMP SENSITIVE DEVICE

1. A charging apparatus for a rechargeable battery, comprising:

charging current providing means for providing a charging current to said rechargeable battery,

first temperature detecting function means responsive to the temperature of said rechargeable battery,

second temperature detecting function means responsive to the ambient temperature,

current generating means responsive to one of said first and second temperature detecting function means for generating a current which is changeable following the change of the temperature as detected,

voltage generating means connected to receive said current generated from said current generating means and responsive to the other of said first and second temperature detecting function means for generating a voltage which is changeable following the change of the temperature detected, and

charge control means responsive to the output voltage of said voltage generating means for controlling said charging current provided from said charging current providing means to said rechargeable battery.

4,370,607

STATIC HIGH VOLTAGE SWITCH USABLE IN A SWITCHABLE HIGH VOLTAGE D.C. GENERATOR

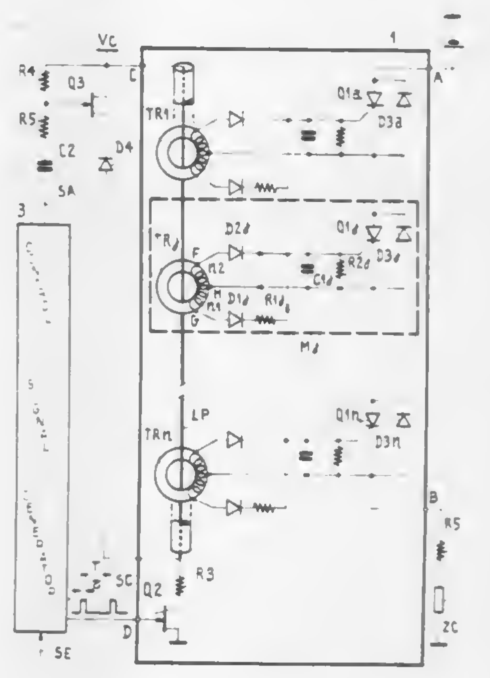
Jacques Dassonville, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 24, 1981, Ser. No. 257,131

Claims priority, application France, Apr. 29, 1980, 80 09619

Int. Cl.^{3} H03K *17/74*

U.S. Cl. 323—271 **7 Claims**



1. A static high voltage switch for controllably coupling and decoupling a high voltage D.C. source to and from a load, comprising:

a bridge of n series-connected, electrically controllable switch circuits, each switch circuit including at least one semiconductor switching element and having a current input, a current output and a control port including a control input and a contol return, the current output of a switch circuit being connected to the current input of the adjacent switch circuit of the bridge to form the series connection of switch circuits, the current input of the first switch circuit of the bridge and the current output of the last switch circuit of the bridge comprising terminal ends of the bridge for connection to the high voltage D.C. source and load, respectively;

a plurality of n-toroidal cores, one core being associated with each of the switch circuits, each core being wound with a secondary winding including first and second ends and an intermediate tap;

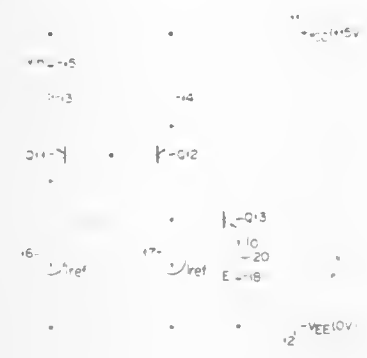
a plurality n of circuit means, one circuit means being associated with each toroidal core and its corresponding switch circuit for coupling the secondary winding of its associated toroidal core to the control port of its associated switch element, each circuit means including a first diode and series resistor coupling the first end of its associated secondary winding to the control input of its associated switch circuit, a second diode coupling the second end of the associated secondary winding to the control input, means for coupling the control return to the intermediate tap of the secondary, and a capacitor coupling the control input to the control return; and

a primary winding formed by an insulated wire element passing through each of the n-toroidal cores for coupling to an external control signal source for controlling the static high voltage switch.

4,370,608
INTEGRABLE CONVERSION CIRCUIT FOR CONVERTING INPUT VOLTAGE TO OUTPUT CURRENT OR VOLTAGE

Katsumi Nagano, Hiratsuka, and Daijiro Kubo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 8, 1981, Ser. No. 252,197
Claims priority, application Japan, Apr. 14, 1980, 55-49022
Int. Cl.^{3} G05F *3/16*
U.S. Cl. 323—316 7 Claims

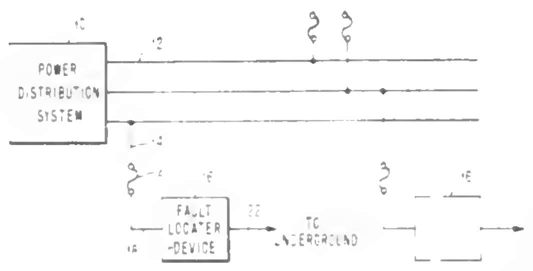


1. A conversion circuit comprising:
a. first and second power supply terminals adapted for connection respectively to high and low potentials of a DC power source;
b. first and second transistors each having a base, emitter, and collector, the bases of said first and second transistors being commonly connected to each other;
c. first resistance means having first and second ends with the first end thereof connected to the emitter of said first transistor;
d. second resistance means connected between the emitter of said second transistor and said first power supply terminal and having a resistance value substantially equal to that of said first resistance means;
e. input voltage supply means connected to said second end of said first resistance means and said first power supply terminal for supplying an input voltage;
f. first and second current supply means respectively connected between the collector of said first transistor and said second power supply terminal and between the collector of said second transistor and said second power supply terminal for supplying said first and second transistors with currents; and
g. output control means having the main current path thereof connected between the emitter of said second transistor and an output terminal and being controlled by the signal from the connecting point between said second transistor and said second current supply means.

4,370,609
FAULT ISOLATOR FOR ELECTRIC UTILITY DISTRIBUTION SYSTEMS

Delano D. Wilson, Scotia, and Dale E. Hedman, Schenectady, both of N.Y., assignors to Power Technologies, Inc., Schenectady, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,222
Int. Cl.^{3} G01R *31/02*
U.S. Cl. 324—51 15 Claims

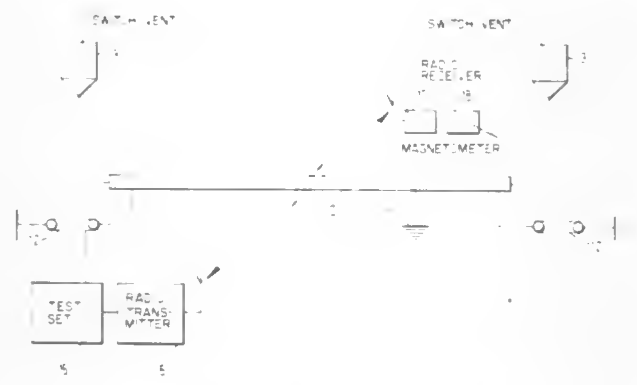


1. Apparatus for detecting faults on a power line in an electrical power system; comprising:
a variable impedance means which provides a first low impedance and a second high impedance;
power line switching means for connecting said variable impedance means in series with said power line to provide a sufficient voltage on said power line to cause an initial current I_1 to flow to test for a fault; and
said variable impedance means including reactance means responsive to said initial current I_1 of predetermined value to cause said variable impedance means to exhibit said first low impedance while said initial current I_1 flows for a predetermined period of time to enable detection of a fault condition, and reactance switching means responsive to said initial current I_1 to cause said variable impedance means to exhibit said second high impedance thereby limiting the flow of current to a low level I_2;
whereby said apparatus limits both the magnitude and time duration of the current so as not to adversely effect system components.

4,370,610
LOCATING SHEATH FAULTS IN UNDERGROUND POWER SUPPLY CABLES

Kenneth R. Allen, Longwood; John K. Allen, Huddersfield, and Gordon G. McNally, Fenay Bridge, all of England, assignors to Bicc Public Limited Company, London, England

Filed Aug. 27, 1979, Ser. No. 69,855
Claims priority, application United Kingdom, Aug. 30, 1978, 34935/78
Int. Cl.^{3} G01R *31/08*
U.S. Cl. 324—52 10 Claims

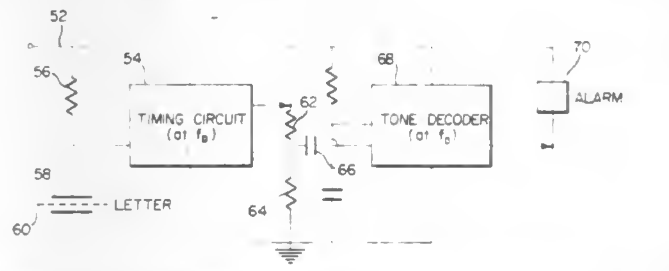


8. Apparatus for locating an earth fault on a sheath of an underground cable comprising means for applying pulses of direct current to a sheath, means for producing synchronizing signals coincident with the d.c. pulses, a portable magnetometer, with a visual indicator, for searching for the magnetic field due to a fault current to earth flowing in the sheath and, associated with the magnetometer, a portable receiver for receiving the synchronized signals, the arrangement being such that visual indications on the magnetometer and said synchronized signals can be compared to identify the approximate position of the earth fault along the cable.

4,370,611
IDENTIFICATION OF MATERIALS USING THEIR COMPLEX DIELECTRIC RESPONSE

William D. Gregory, Vienna, and Luigi Morelli, Sterling, both of Va., assignors to Georgetown University, Washington, D.C.

Continuation of Ser. No. 847,425, Nov. 1, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,452
Int. Cl.^{3} G01R *27/26*
U.S. Cl. 324—61 R 12 Claims

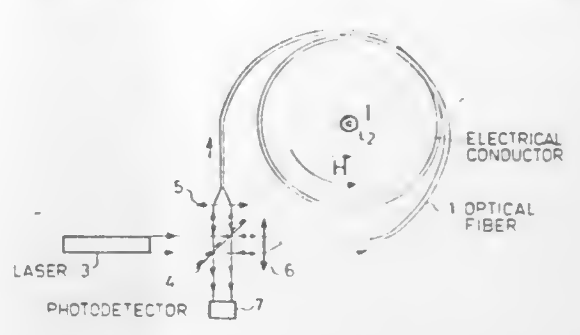


1. Method for identifying material having frequency responsive dielectric and conductive properties, said method comprising:
(a) providing a capacitive system for producing an output signal and for producing a change in output signal when a material to be identified is brought within the influence of said capacitive system, said output signal having a value reflective of the dielectric and conductive properties of said material, said capacitive system including at least one capacitive element;
(b) establishing a reference value of an output signal of said capacitive system in the absence of any material to be identified in said system, said output signal being with reference to a plurality of frequencies applied to said system, each of said plural frequencies being pre-selected so that output signal has a value reflective of said dielectric and conductive properties when said material is brought within the influence of said system;
(c) introducing the material to be identified into the influence of said capacitive system and subjecting said material to said plurality of frequencies to produce an output signal having a value reflective of the dielectric and conductive properties of said material;
(d) resolving said output signal into separate resolved components including a resolved capacitive component and a resolved conductive component, for each of said plural pre-selected frequencies, each of said resolved capacitive and conductive components having a value reflective of said dielectric and conductive properties of said material;
(e) identifying said material by determining the change in value of at least one of said resolved capacitive and conductive components for each of said plural pre-selected frequencies from the reference value of said output signal to the value obtained when said material is brought within the influence of said capacitive system, to give at least one set of material identification data corresponding to at least one of said resolved capacitive and conductive components at each of said plural pre-selected frequencies, said at least one set of material identification data corresponding to said dielectric and conductive properties of said material, and using at least one of said sets to identify said material.

4,370,612
INTERFEROMETRIC OPTICAL FIBER ELECTRIC CURRENT MEASURING DEVICE

Claude Puech; Herve Arditty, and Michel Papuchon, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 23, 1980, Ser. No. 171,285
Claims priority, application France, Jul. 24, 1979, 79 19078
Int. Cl.^{3} G01R *19/00*
U.S. Cl. 324—117 R 10 Claims

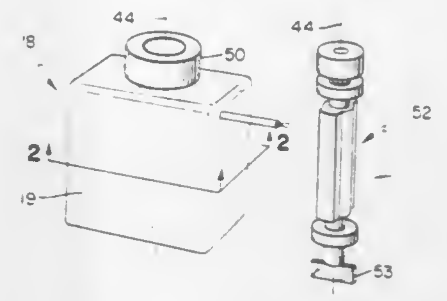


1. An interferometric optical-fiber device for measuring electrical currents comprising a wound optical fiber forming at least one turn about the conductor in which flows the current I to be measured, the two ends of said optical fiber being coupled to a light source by means of an optical device comprising means for separating the beam from the source into two waves intended to flow in the fiber in opposite directions, said optical device comprising also means for recombining the waves emerging from the fiber and a device for detecting the radiation resulting from the recombination, the signal from said detection device being related to the phase shift $\Delta\phi_1$ between the two waves flowing in opposite directions, this phase shift being induced by the current I by Faraday effect in the fiber, said measuring device comprising furthermore a signal-processing device coupled to the detector supplying a current measurement.

4,370,613
GALVANOMETER WITH MOLDED OUTER LAYER UNDER HOOP STRESS

Jean I. Montagu, Brookline, Mass., assignor to General Scanning, Inc., Watertown, Mass.

Continuation-in-part of Ser. No. 96,612, Nov. 23, 1979, abandoned, and Ser. No. 81,171, Oct. 2, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,597
Int. Cl.^{3} G01R *1/04, 5/14;* H02K *15/14;* H05K *5/00*
U.S. Cl. 324—154 R 20 Claims



1. A limited rotation galvanometer having a shaft adapted to be deflected in accordance with an electrical drive signal applied to said galvanometer,
said galvanometer comprising a stator assembly formed of at least one stationary permanent magnet and at least one pole piece cooperatively arranged about a hollow bore,
a rotor associated with said shaft and mounted to turn in said hollow bore,
and an electrical winding wound about said pole piece and adapted to receive said drive signal,
said stator assembly and rotor defining magnetic circuitry for operation of said galvanometer,

the deflection of said rotor being dependent upon the rigidity of said stator assembly and the value of the torque applied between said stator assembly and said rotor by the application of said drive signal to said winding,

said galvanometer including a molded, hoop-like outermost layer of rigid, reinforced stress-resistant synthetic resin material extending continuously around the exterior of said galvanometer,

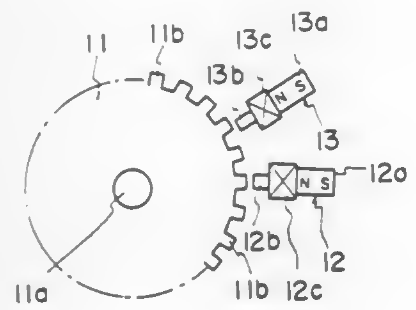
said synthetic resin having the property of shrinking at least 1% during solidification,

said layer engaging the outer surfaces of said winding, said magnet, and said pole piece,

said molded hoop-like layer residing under substantial prestress hoop tension as the result of shrinkage during solidification of said synthetic resin during molding,

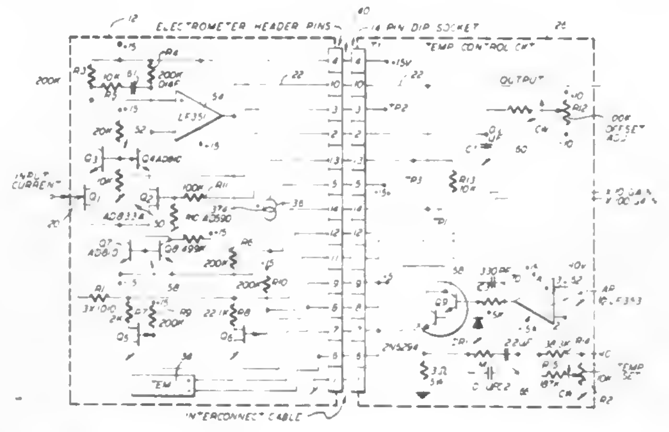
said molded hoop-like external layer applying stress to said stator assembly, thereby to force said magnet and said pole piece against one another, thereby imparting rigidity to said stator assembly and contributing to the accuracy of the deflection of said galvanometer.

4,370,614
SPEED AND DIRECTION DETECTOR
Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan
Filed Jul. 28, 1980, Ser. No. 172,651
Claims priority, application Japan, Jul. 25, 1979, 54/102600
Int. Cl.^{3} G01P *3/48, 3/54*
U.S. Cl. 324—173 **4 Claims**



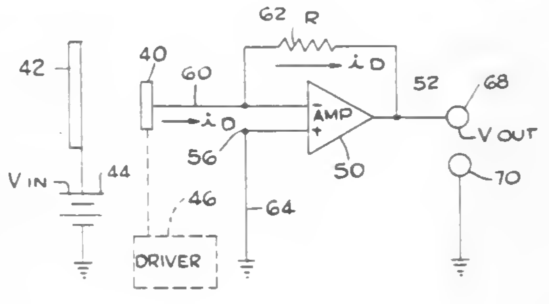
1. A speed anad direction detector for detecting the rotational speed and the rotational direction of a rotary machine, comprising:
- a circular rotational member having a plurality of equally speced-apart teeth on the outer circumference thereof;
- first and second magnetic sensors positioned in such a manner that said first magnetic sensor is located at a position displaced circumferentially from one of said equally spaced-apart teeth of said circular rotational member by an angular distance equivalent to ¼ of the pitch of said equally spaced-apart teeth when said second magnetic sensor is directly opposite one of said equally spaced-apart teeth;
- a rotational direction discriminating circuit operatively connected to said first and second magnetic sensors; and
- a housing including a yoke member to which said first and second magnetic sensors are fixedly secured;
- said first and second magnetic sensors each comprising:
  - a permanent magnet secured fixedly to the yoke member of the housing;
  - a magnetic pole extending from said permanent magnet and positioned so as to face the equally spaced-apart teeth on said circular rotational member; and
  - a detection coil wound upon said magnetic pole, said permanent magnet, said magnetic pole, said equally spaced-apart teeth on said circular rotational member, the body of said rotational member and said housing forming a magnetic path.

4,370,615
HIGH SPEED TEMPERATURE CONTROLLED ELECTROMETER
Wayne J. Whistler, Glendora, and Robert S. Loveland, West Covina, both of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Oct. 14, 1980, Ser. No. 196,997
Int. Cl.^{3} G01N *27/00*
U.S. Cl. 324—457 **19 Claims**



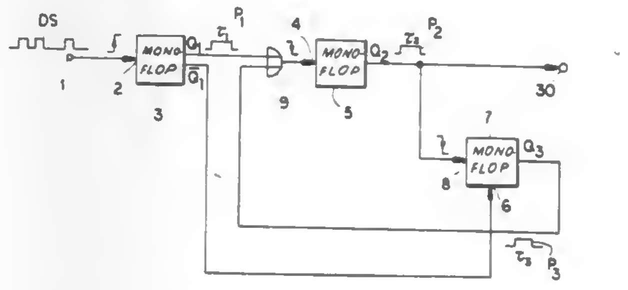
1. An electrometer for measuring extremely low currents, in the order of ion current levels, comprising:
- an input and an output,
- preamplifier means connected to said input and adapted to convert the current applied to said input to a voltage corresponding in value to the value of said input current,
- sensor means connected to said preamplifier means for sensing the temperature of said preamplifier during its operation, and
- means connected to said sensor means for controlling the temperature of said preamplifier and sensor means during operation so as to maintain said preamplifier and sensor within a predetermined range of temperature.

4,370,616
LOW IMPEDANCE ELECTROSTATIC DETECTOR
Bruce T. Williams, 86 Park Lane Cir., Lockport, N.Y. 14094
Filed Aug. 15, 1980, Ser. No. 178,387
Int. Cl.^{3} G01R *5/28*
U.S. Cl. 324—458 **12 Claims**



1. A non-contacting electrostatic detector comprising:
- (a) a detector electrode sensitive to electrostatic quantities such as electrostatic fields, voltages, charges and the like;
- (b) means operatively associated with said electrode for varying the capacitive coupling between said electrode and an electrostatic quantity to which said electrode is exposed;
- (c) an operational amplifier having an output and a pair of inputs, one of which is operatively associated with the summing node of the amplifier;
- (d) means for defining a feedback path between said amplifier output and said amplifier summing node, said feedback path having an impedance;
- (e) means for connecting said detector electrode to said one amplifier input so that said detector is operated directly into said amplifier summing node; and
- (f) means for connecting the other of said amplifier inputs to an electrical reference;
- (g) whereby said detector is held at virtual ground and said amplifier is operated as a current to voltage converter to provide an output voltage equal to the product of the amplifier input current and the impedance of said feedback path.

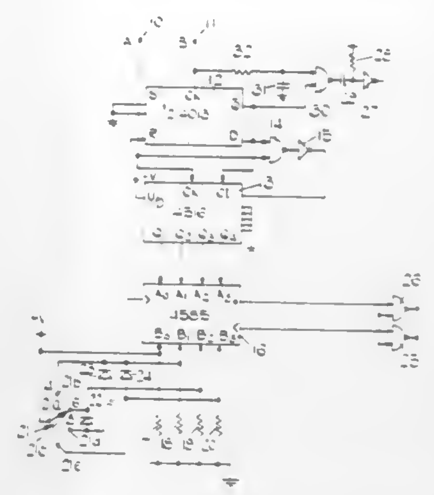
4,370,617
SYNCHRONIZATION EXTRACTOR RESPONSIVE TO DIGITAL SIGNALS
Dieter Brandt, St. Johann, Fed. Rep. of Germany, assignor to Wandel & Goltermann GmbH & Co., Muhleweg, Fed. Rep. of Germany
Filed Aug. 15, 1980, Ser. No. 178,384
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933322
Int. Cl.^{3} H03K *1/17;* H03B *1/00*
U.S. Cl. 328—63 **8 Claims**



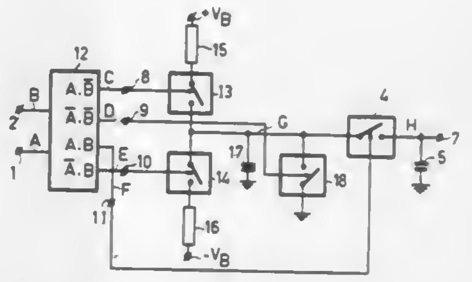
1. A synchronization extractor responsive to an incoming digital signal subject to phase jitter appearing on an input terminal thereof and including high-voltage pulses which last less than a predetermined mean bit period, comprising:
- pulse-shaping means connected to said input terminal for receiving said incoming signal and emitting a start pulse of a duration less than said mean bit period in response to a high-voltage pulse of said signal; and
- pulse-generating means with a pulse-repetition frequency substantially corresponding to the reciprocal of said means bit period, said pulse-generating means being connected to said pulse-shaping means for instant inhibition by a leading edge and instant retriggering by a trailing edge of each start pulse, thereby emitting a train of sync pulses recurring substantially at said mean bit period while closely following minor phase shifts undergone by the bits of said incoming signal.

4,370,618
CIRCUIT FOR RECOGNIZING CYCLICALLY OCCURRING PULSE SEQUENCES
Michael J. Walker, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England
Filed May 21, 1980, Ser. No. 152,121
Claims priority, application United Kingdom, May 25, 1979, 791388
Int. Cl.^{3} H03K *5/19, 21/30, 21/36*
U.S. Cl. 328—120 **4 Claims**

1. A circuit for distinguishing specific pulse patterns in a pulse train comprising input means from a detecting means for detecting specific events in the pulse train, a counter, a logic circuit connected to said input means and to said counter and controlling said counter so as to commence counting of the pulses in the pulse train when said logic circuit receives an input from said detecting means and to stop counting either when the next input is received from said detecting means or when a predetermined count has been reached, whichever occurs first, and comparison means connected to the counter output and providing an output signal when the number of pulses counted by the counter on receipt of the next input from the detecting means is less than the predetermined count by one count.



4,370,619
PHASE COMPARISON CIRCUIT ARRANGEMENT
Albert M. A. Rijckaert, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 10, 1980, Ser. No. 168,841
Claims priority, application Netherlands, Jul. 17, 1979, 7905541
Int. Cl.^{3} H03D *13/00;* H03K *19/21, 5/26*
U.S. Cl. 328—133 **6 Claims**



1. A phase comparison circuit for measuring the phase difference between first and second pulse trains comprising, first and second inputs for receiving said first and second pulse trains, respectively, a capacitor, first and second switchable current sources having outputs connected to said capacitor, a switchable constant voltage source connected to said capacitor, a sampling circuit coupled to said capacitor, and a control circuit having input means coupled to said first and second inputs and output means coupled to switching signal inputs of said current sources, said constant voltage source and said sampling circuit, said constant voltage source being arranged to produce, when activated, an output voltage which lies between the open circuit output voltages of said first and second current sources, said control circuit being responsive to first and second pulse trains applied to said first and second inputs, respectively, by (a) activating said first current source for periods when a pulse of the first pulse train is present while a pulse of the second pulse train is absent, (b) activating said second current source for periods when a pulse of the second pulse train is present while a pulse of the first pulse train is absent, (c) activating said constant voltage source each time pulses of the first and second pulse trains are absent simultaneously, and (d) activating said sampling circuit each time pulses of the first and second pulse trains are present simultaneously.

4,370,620

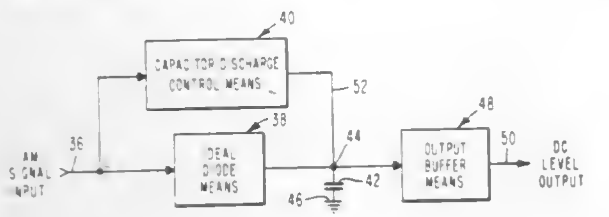
EFFICIENT HIGH PERFORMANCE ENVELOPE DETECTOR WITH CONTROLLED DECAY ENVELOPE DETECTION

Lucas K. Tin, Fremont, CA, assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 29, 1980, Ser. No. 201,851

Int. Cl.^{3} H03D *1/10, 1/18*

U.S. Cl. 329—192 **9 Claims**



1. An envelope detector for generating a DC level representing the amplitude of the envelope of an amplitude modulated input signal comprising;

means for supplying the input signal as a charging signal;

capacitor means responsive to the charging signal; and

discharge control means for providing an increasing discharge current through a discharge path for said capacitor means for a selected time period of the input signal.

4,370,621

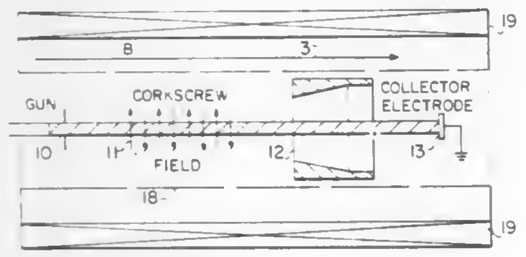
HIGH EFFICIENCY GYROTRON OSCILLATOR AND AMPLIFIER

Phillip A. Sprangle, Silver Spring, Md.; Robert A. Smith, Washington, D.C., and Kwo R. Chu, Annandale; Michael E. Read, Vienna, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 11, 1980, Ser. No. 129,294

Int. Cl.^{3} H01S *4/00*

U.S. Cl. 330—4 **5 Claims**



1. In a relativistic electron cyclotron maser having a cavity resonator positioned in an axial magnetic field to receive therethrough a spiralling beam of electrons for producing stimulated emission of radiation by the electrons at the frequency of a wave mode supported by the cavity resonator, the beam of electrons passing through a phase-bunching region and an energy extraction region in the cavity resonator,

efficiency-enhancement means for setting a bunching parameter α to a value much less than unity in the phase-bunching region of the cavity resonator to maximize the phase-bunching of electrons in the beam, and for causing the bunching parameter α to increase in the energy-extraction region of the cavity resonator so that the bunched electrons in the beam reach their minimum energies at the same time, wherein the bunching parameter

$$\alpha = \frac{\epsilon c}{2r_o\Delta\omega}$$

and wherein:

ϵ=dimensionless ratio of the cavity-wave-mode, electric field amplitude E to the magnetic field amplitude B at the entrance to the resonator

c=speed of light (2.998×10^{10} cm sec^{-1})

r_o=Larmor radius of the electrons at the entrance to the resonator in cm.

$\Delta\omega$=frequency mismatch between the Doppler-shifted cavity wave mode and the cyclotron frequency of the electrons, in sec^{-1}.

4,370,622

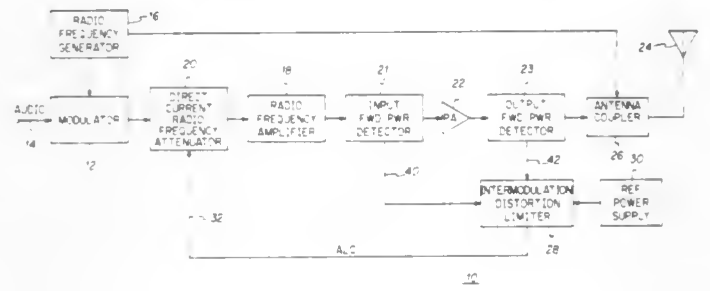
IMD LIMITER

Sherman J. Hornbeck, Cedar Rapids, Iowa, and Jack C. Thornton, Satellite Beach, Fla., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 23, 1981, Ser. No. 246,455

Int. Cl.^{3} H03G *3/00, 11/00;* H04B *1/04*

U.S. Cl. 330—207 P **14 Claims**



1. An intermodulation distortion limiter for controlling the ratio of average power to peak envelope power in an output signal from a power amplifier comprising:

control means, responsive to a control signal, for controlling the amplitude of an input signal applied to the power amplifier, the input signal having associated therewith, when applied to the power amplifier, an average power and a peak envelope power;

first detector circuit means for detecting the difference between the peak envelope power and the average power of the input signal to provide a first reference signal thereby;

selectable reference source for providing first and second selectable reference signals:

reference generator means for generating a second reference signal that is responsive to the first reference signal and the first selectable reference signal;

second detector circuit means for comparing the peak envelope power of the output signal and the second selectable reference signal to obtain a first analog representation of the peak envelope power difference thereby;

third detector circuit means for detecting the difference between the average power of the output signal and the second reference signal to obtain a second analog representation of the average power difference; and

combination means for combining the first and second analog representations to obtain the control signal to which the control means is responsive.

4,370,623

PUSH-PULL AMPLIFIER CIRCUIT

Hideki Nagasawa, Nagaoka, Japan, assignor to Kabushiki Kaisha Nagasawa, Nagaoka, Japan

Continuation of Ser. No. 71,865, Sep. 4, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,183

Claims priority, application Japan, Sep. 14, 1978, 53-113917

Int. Cl.^{3} H03F *3/26*

U.S. Cl. 330—267 **16 Claims**

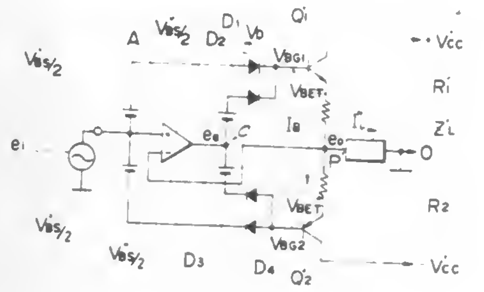
1. An amplifier comprising:

(a) means for supplying an input signal to said amplifier;

(b) a push-pull amplifier including first and second complementary transistors having respective output terminals connected together at a first junction, said first junction being connected to a load;

(c) a DC amplifier having a non-inverting input terminal and an inverting input terminal, said means for supplying an input signal being connected to said non-inverting input terminal, said first junction being connected to said inverting input terminal;

(d) a first biasing power supply circuit having first and second halves operative together to produce a predetermined first potential and a first biasing current, a first junction at first terminals of said first and second halves being connected to said first and second transistors respectively, a second junction at second terminals of said first and second halves, each of said first and second halves being operative to establish half of said first potential at said first terminals thereof, said means for supplying an input signal being connected to second junction;



(e) a second biasing power supply circuit having third and fourth halves operative together to produce a predetermined second potential and a second biasing current, a third junction at first terminals of said third and fourth halves, each of said third and fourth halves being operative to establish half of said second potential at second terminals thereof, said DC amplifier having an output connected to said third junction, and;

(f) means responsive to an output of said DC amplifier for applying the first predetermined potential to the base of said first transistor and applying the second predetermined potential to the base of said second transistor, or conversely effecting the same, to produce a bias current in said push-pull amplifier which balances one half of said first potential with a potential at said first junction.

4,370,624

LOW NOISE AMPLIFIER CIRCUIT WITH REDUCED LOW-FREQUENCY GAIN

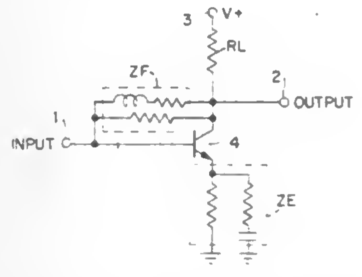
Tadao Ogawa, Hino, and Nobuhide Yamaguchi, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1980, Ser. No. 211,050

Claims priority, application Japan, Nov. 28, 1979, 54-154035

Int. Cl.^{3} H03F *1/34*

U.S. Cl. 330—294 **5 Claims**



1. A low noise amplifier circuit, comprising:

a transistor comprising base, emitter, and collector terminals;

an input terminal connected to said base terminal;

an output terminal connected to said collector terminal;

a load resistor connected to said output terminal;

a first impedance element connected between said base and collector terminals, having a zero, a pole and an impedance with a first constant low value at low frequencies, a second constant high value at high frequencies and increasing smoothly between the first constant low value and the second constant high value over an intermediate range of frequencies; and

a second impedance element connected between said emitter terminal and ground, having a zero, a pole and an impedance with a first constant high value at the low frequencies, a second constant low value at the high frequencies and decreasing smoothly between the first constant high value and the second constant low value over the intermediate range of frequencies,

the zero of said first impedance element coincides approximately with the pole of the second impedance element and the pole of the first impedance element coincides approximately with the zero of the second impedance element, and

the first constant low value of said first impedance element is greater than the first constant high value of said second impedance element.

4,370,625

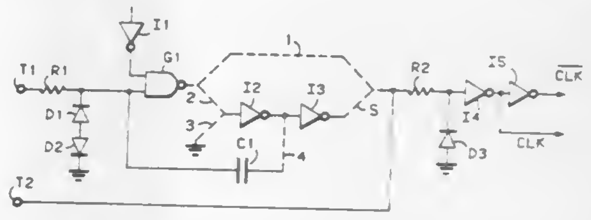
INTEGRATED CIRCUIT HAVING ELEMENTS FOR SELECTIVELY FORMING AN RC OR A CRYSTAL OSCILLATOR

Ashok H. Someshwar, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 7, 1981, Ser. No. 223,183

Int. Cl.^{3} H03B *5/20, 5/32*

U.S. Cl. 331—49 **6 Claims**



1. An integrated circuit having a plurality of circuit elements comprising:

a first terminal and a second terminal;

a first inverter having an input coupled to the first terminal, a second inverter, and a third inverter; and

a capacitor;

wherein the circuit elements are interconnected by one of a first or a second process step; and

wherein an RC oscillator is provided in response to a resistor being coupled between the first and second terminals, and in response to an output of the first inverter being coupled to an input of the second inverter, an output of the second inverter being coupled to an input of the third inverter, an output of the third inverter being coupled to the second terminal, and the capacitor coupled between the input of the first inverter and the output of the second inverter by the first process step; or

wherein a crystal oscillator is provided in response to a crystal being coupled between the first and second terminals, and in response to the output of the first inverter being coupled to the second terminal by the second process step.

4,370,626
OUTPUT COUPLING CIRCUIT FOR LC LOCAL OSCILLATOR

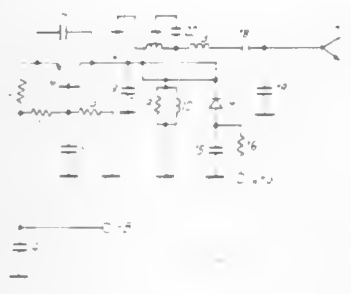
Susumu Ushida, Soma, Japan, assignor to Alps Electric Co. Ltd., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 175,953

Claims priority, application Japan, Aug. 8, 1979, 54-109059[U]

Int. Cl.^{3} H03B *5/12, 5/18*

U.S. Cl. 331—96 **2 Claims**



1. In a local oscillator circuit including:
a local oscillator having a conductive element receiving oscillating energy from said local oscillator;
means for receiving oscillating energy from said conductive element, said receiving means including a pickup coil disposed in the vicinity of said conductive element so as to be inductively coupled thereto; and
a capacitor connected between said pickup coil and ground;
the improvement wherein said capacitor is connected to a portion of said pickup coil and ground, and the values of said capacitor and said portion of said pickup coil connected to ground therethrough are selected so that said capacitor and said portion of said pickup coil will resonate at frequencies higher than those frequencies in the frequency band generated by said local oscillator.

4,370,627
INTEGRATED INJECTION LOGIC AMPLIFIER AND OSCILLATOR CIRCUITS

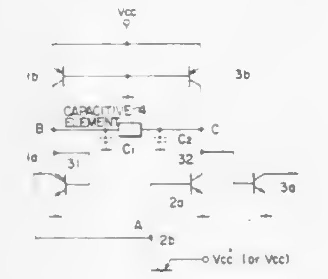
Kenji Kaneko, Hachioji, and Takahiro Okabe, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 922,370, Jul. 6, 1978, Pat. No. 4,233,574. This application Mar. 31, 1980, Ser. No. 135,669

Claims priority, application Japan, Jul. 15, 1977, 52-84278; Mar. 24, 1978, 53-33051; May 19, 1978, 53-66547

Int. Cl.^{3} H03F *3/195, 3/18;* **H03B** *5/36*

U.S. Cl. 331—108 D **10 Claims**



6. A circuit comprising an amplifier having a first transistor which has a first load transistor connected to a collector thereof, a second transistor which has a second load transistor connected to a collector thereof, means for transmitting a collector output of said first transistor to a base of said first transistor, means for transmitting a collector output of said first transistor to a base of said second transistor, an input terminal connected to a base of said first transistor, and a first output terminal connected to a collector of said second transistor, wherein said first transistor has a first collector connected to a third load transistor and a second collector connected to said first load transistor, and said collector output of said first transistor is directly transmitted to said base thereof from said first collector, and further comprising a capacitive element which is connected between said input terminal and said first output terminal, so that a collector output of said second transistor is fed back to a base of said first transistor so that said circuit operates as an oscillator, wherein current gains of said first transistor and said second transistor are made different thereby to make a collector current of said second transistor and a collector current of said second load transistor substantially equal thereby to shorten the oscillator start-up time.

10. A circuit comprising an amplifier having a first transistor which has a first load transistor connected to a collector thereof, a second transistor which has a second load transistor connected to a collector thereof, means for transmitting a collector output of said first transistor to a base of said first transistor, means for transmitting a collector output of said first transistor to a base of said second transistor, an input terminal connected to a base of said first transistor, and a first output terminal connected to a collector of said second transistor, wherein said first transistor has a first collector connected to a third load transistor and a second collector connected to said first load transistor, and said collector output of said first transistor is directly transmitted to said base thereof from said first collector, said circuit further comprising a first bias connection terminal coupled to the emitter of the first load transistor for connection to a first bias source having a first polarity, and second bias connection terminals coupled to the emitters of the second and third load transistors for connection to a second bias source having said first polarity, wherein the voltage levels for said first and second bias sources and the characteristics of said transistors are set so that when the bias sources are coupled to said respective bias connection terminals and an input signal is provided to the input terminal, the base of the second transistor is biased to a point to provide an amplified output at said output terminal,
wherein said first and second bias sources have different voltage levels to cause different currents through said load transistors to produce said amplified output.

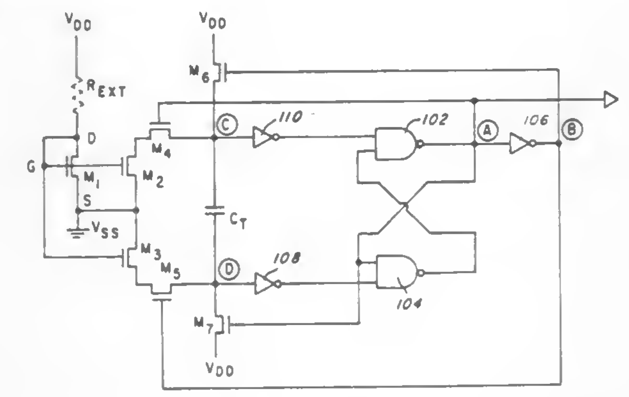
4,370,628
RELAXATION OSCILLATOR INCLUDING CONSTANT CURRENT SOURCE AND LATCH CIRCUIT

Alva Henderson, and Douglas B. Hoy, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 17, 1980, Ser. No. 207,312

Int. Cl.^{3} H03K *3/282*

U.S. Cl. 331—111 **2 Claims**



1. A self compensating oscillator circuit comprising:
a cross-coupled, set-reset latch circuit, having first and second input terminals and an output terminal;
means connected to the output terminal for providing an inverted output;
a timing capacitor connected across the input terminals;
first, second, and third field-effect transistors, the drain of the first transistor being connected in common with the gates of the first, second, and third transistors;
a first voltage source connected to the drain of the first transistor;
a second voltage source connected to the sources of the first, second and third transistors;
a fourth field-effect transistor connecting the drain of the second transistor to the first input terminal of the latch circuit, the gate of the fourth transistor being connected to the latch output;
a fifth field-effect transistor connecting the drain of the third transistor to the second input terminal of the latch circuit, the gate of the fifth transistor being connected to the inverted latch output;
a third voltage source;
a sixth field-effect transistor connecting the first input terminal to the third voltage source, the gate of the sixth transistor being connected to the inverted latch output; and
a seventh field-effect transistor connecting the second input terminal to the third voltage source, the gate of the seventh transistor being connected to the latch output.

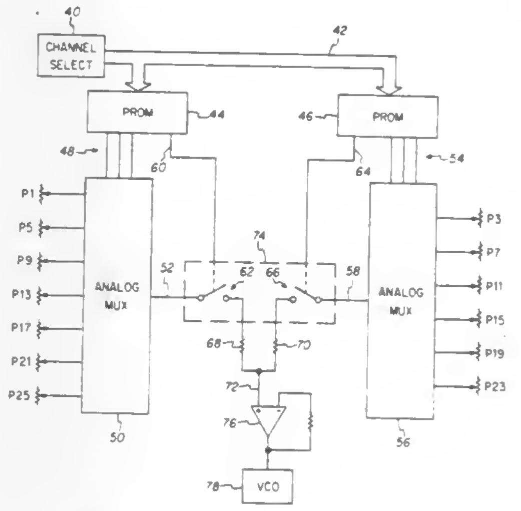
4,370,629
VOLTAGE CONTROLLED OSCILLATOR WITH REDUCED NUMBER OF TUNING POTENTIOMETERS

Thomas F. Martin, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 3, 1980, Ser. No. 203,789

Int. Cl.^{3} H03B *1/00;* **H03J** *5/00*

U.S. Cl. 331—179 **6 Claims**



1. In a voltage supply system for a VCO (Voltage Controlled Oscillator) generating N preset frequencies in accordance with N input VCO tuning voltages, the improvement comprising:
a plurality of (N/2)+1 separate dedicated reference voltages, and means for generating said N input VCO tuning voltages from said reference voltages, including switch means for applying predetermined combinations of said reference voltages as said input VCO tuning voltages, a different one of the reference voltages being applied for each odd numbered one of said input VCO tuning voltages, the remaining even numbered ones of said input VCO tuning voltages being equal to one-half the sum of adjacent said reference voltages.

4,370,630
ISOLATING CONNECTOR

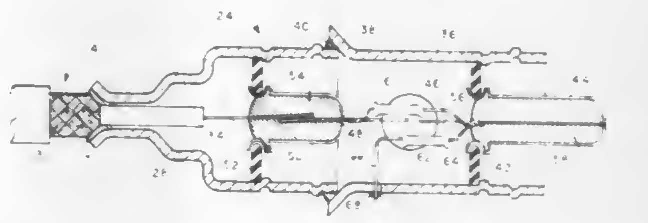
Raymond G. Capek, Elmhurst, and Elgie E. Garrett, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed May 18, 1981, Ser. No. 264,924

Int. Cl.^{3} H03H *7/01*

U.S. Cl. 333—24 C **3 Claims**

1. In a cable having an outer shield surrounding an inner conductor, and having a connector on one end of the shield which capacitively isolates the shield to prevent conduction of DC and low frequency AC currents in the shield, an isolator for the cable's center conductor, comprising:
a connector plug having a generally tubular shell, one end of which is adapted to connect electrically to the cable's shield and to receive the shield's inner conductor inside the shell, and an opposite end which is adapted to mate with a female plug;
a connector pin;
means for supporting the connector pin within the shell while electrically isolating the pin from the shell so that the pin extends from said opposite end of the shell;
a capacitance disposed within the shell and electrically connected in series with the connector pin and the cable's inner conductor;



a first bleeder resistance disposed within the shell and electrically connected in parallel with said capacitance; and
a second bleeder resistance disposed within the shell and electrically connected in series with the shell and the connector pin,
whereby the cable's inner conductor and the connector pin are isolated from each other for DC and low frequency AC currents while higher frequency AC currents are coupled from the pin to the inner conductor, and the capacitance coupled to the inner conductor and the cable's shield is provided with bleeder resistance.

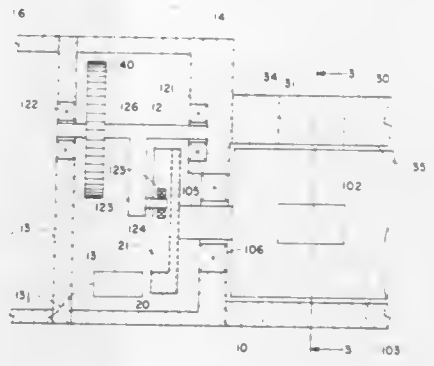
4,370,631
WAVEGUIDE SWITCH

Robert L. Gerber, and Larry C. Raper, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,337

Int. Cl.^{3} H01P *1/10*

U.S. Cl. 333—106 **10 Claims**



1. A waveguide switch for selectively diverting electromagnetic energy among a plurality of connected waveguides in response to a switching command comprising:
a rotor housing having a plurality of waveguide ports connected to waveguides and a cylindrical void communicating to the ports;
a rotor rotatably mounted within said cylindrical void for diverting electromagnetic energy among the ports, having waveguide bends therein which are selectively aligned with the ports in said rotor housing;
biasing means for selectively rotating said rotor, said biasing means including,
a Geneva wheel connected to said rotor,
a driving guide engaged by said Geneva wheel for providing a driving engagement therewith,
first and second electromechanical transducers mechanically coupled to said driving guide for providing torque

thereto to selectively rotate or break the rotation for said rotor;
electrical power means for supplying driving and braking electrical currents to said first and second electromechanical transducers of said biasing means; and
control circuit means responsive to the switching command. for providing signals to said electrical power means for determining the sequence of driving and braking electrical currents applied to said first and second electromechanical transducers, whereby rotation of said rotor is effected without bounce.

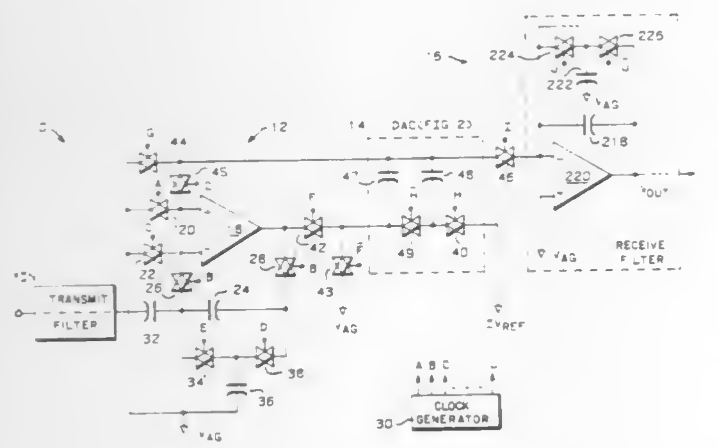
4,370,632
MULTIPLE FUNCTION OPERATIONAL AMPLIFIER CIRCUIT

Robert N. Allgood; Stephen H. Kelley; Richard W. Ulmer, all of Austin, and Henry Wurzburg, Round Rock, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1981, Ser. No. 261,848

Int. Cl.^{3} H03H *11/12;* **H03F** *1/34*

U.S. Cl. 333—173 **8 Claims**



1. A circuit for providing sample and hold and comparator functions with only one operational amplifier and inherently achieving auto-zeroing comprising:
an operational amplifier having inverting and non-inverting inputs and an output;
input capacitance means having a first plate coupled to an input terminal, and a second plate;
first switching means for selectively connecting the second plate of the input capacitance means to the inverting input of the operational amplifier;
feedback capacitance means having a first plate connected to the input capacitance means, and a second plate;
second switching means for selectively connecting the output of the operational amplifier to the second plate of the feedback capacitance means; and
third switching means for selectively connecting the non-inverting input of the operational amplifier to a reference voltage whereby a sample of an input signal applied to the input terminal is applied to the feedback capacitance means and held thereon.

4,370,633
ACOUSTIC WAVE BANDPASS ELECTRICAL FILTERS

John Schofield, Coulsdon, England, assignor to U.S. Philips Corporation, New York, N.Y.

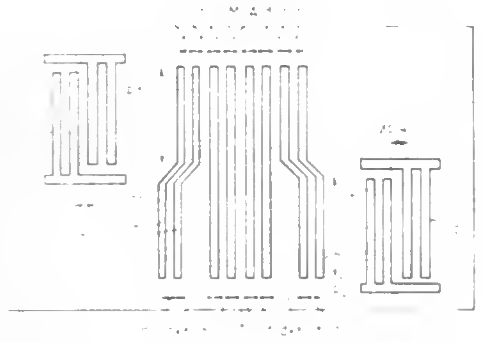
Filed Feb. 20, 1981, Ser. No. 236,357

Claims priority, application United Kingdom, Jan. 19, 1981, 8101527

Int. Cl.^{3} H03H *9/64, 9/145*

U.S. Cl. 333—195 **8 Claims**

1. In an acoustic wave bandpass electrical filter including a substrate able to propagate acoustic waves at a surface thereof, input transducing means arranged to launch acoustic wave energy along a first propagation track at said surface, output transducing means arranged to receive acoustic wave energy from a second propagation track at said surface, and electrical coupling means arranged on said surface so as to receive acoustic wave energy from the input transducing means in the first track and to relaunch at least part of that energy as acoustic wave energy towards the output transducing means in the second track, in which the combined amplitude-frequency response of the input and output transducing means has a first frequency passband which is substantially the desired passband of the filter and further frequency passbands having a harmonic relationship to said first passband, said coupling means comprising an array of conducting strips across the first track and an array of conducting strips across the second track, the conducting strips of each array being discrete parallel strips electrically insulated from each other and strips of the two arrays being electrically connected in pairs with each pair including one strip from each array, the improvement wherein the strips of the coupling means are arranged in at least one first group, the first group comprising three sub-groups and each sub-group comprising strips from both arrays, the sub-group spacing in the first track being different from the sub-group spacing in the second track, and the composition of the three sub-groups of the first group and their separation along the first and second tracks being selected to provide a stopband in the amplitude-frequency response of the coupling means which suppresses a selected said further passband.



4,370,634
CIRCUIT BREAKER

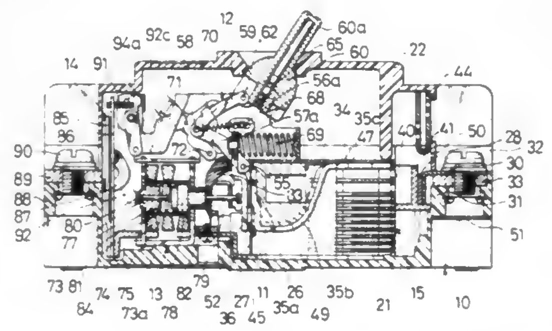
Hideya Kondo; Youichi Yokoyama; Youichi Aoyama, and Tamotsu Mori, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 14, 1981, Ser. No. 263,487

Claims priority, application Japan, May 20, 1980, 55-67306

Int. Cl.^{3} H01H *75/00, 77/00, 83/00*

U.S. Cl. 335—16 **5 Claims**



1. A circuit breaker comprising a housing, a manual contact opening and closing mechanism including a handle extending from said housing and a link operatively coupled to said handle, said mechanism being made operative through the handle by locking a tripping member to the mechanism while being made inoperative by releasing said tripping member, a movable contactor having a movable contact and capable of being rocked by the manual contact opening and closing mechanism, a fixed contactor having a fixed contact with which said movable contact is engageable, means for resiliently biasing said movable contactor to be separated from said fixed contactor, an arc suppressing means including a deion grid assembly, a first arc running plate extending from the fixed contactor and a second arc running plate extending from a position adjacent both the fixed and movable contactors to a position adjacent a free end of said first arc running plate, said first arc running plate having a lower portion disposed parallel to said second arc running plate and in facing relationship therewith, said lower portion of said first arc running plate and said second arc running plate arranged to conduct arc currents in mutually opposite directions and being spaced apart sufficiently to prevent short-circuiting therebetween and close enough to generate therebetween a magnetic force which drives an arc toward said deion grid assembly, said first arc running plate further including an upper portion opposed to the second arc running plate in a wider spaced relation thereto and an intermediate portion extended diagonally between said lower and upper portions, said deion grid assembly being arranged in said wider space, and a tripping means for releasing said tripping member from the manual contact opening and closing mechanism so as to separate the movable contactor from the fixed contactor at least by a force of said biasing means in response to an excess current.

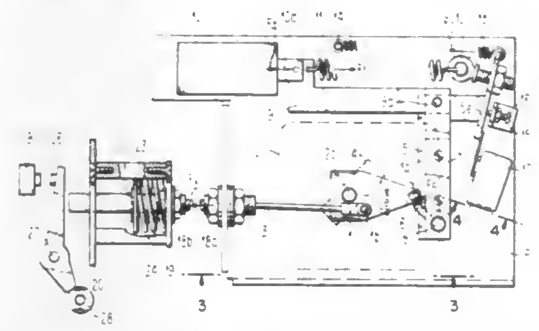
4,370,635
UNDERVOLTAGE RELEASE DEVICE FOR A CIRCUIT BREAKER

John T. Carroll, Cary, N.C., and Miguel B. Yamat, Franklin, Wis., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Sep. 29, 1980, Ser. No. 191,535

Int. Cl.^{3} H01H *73/00, 83/00*

U.S. Cl. 335—20 **25 Claims**



1. An undervoltage release device for a circuit breaker, comprising:
(a) a solenoid for sensing and undervoltage, said solenoid having a plunger and exercising a holding force on said plunger when energized by a control voltage, said plunger being movable between an attacted position in the presence of said control voltage and a released position in the presence of an undervoltage condition;
(b) a trip spring for storing energy and for discharging said energy for tripping said circuit breaker;
(c) an electric charging motor;
(d) means for coupling said motor to a source of electric current;
(e) driving means operably coupled to said charging motor, said driving means upon rotation of said motor being moved by said motor from a tripped position towards a stand-by position;
(f) connection means mechanically coupling said trip spring to said driving means for charging said trip spring in response to movement of said drive means;
(g) movable blocking means for stopping and holding said driving means in said stand-by position;
(h) a coil spring coupled between said plunger and said driving means, said coil spring being charged by movement of said driving means to said stand-by position in counteraction to the holding force of said plunger; and
(i) releasing means coupled to said plunger and movable thereby from a first position to a second position for moving said blocking device to thereby release said driving means from its stand-by position;
whereby movement of said plunger from said attracted position to said released position frees said driving means from its stand-by position, thereby releasing said trip spring.

4,370,636
ELECTROMAGNETIC DUAL BREAK CONTACTOR

John R. VanPatten, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Apr. 3, 1981, Ser. No. 250,825

Int. Cl.^{3} H01H *67/02*

U.S. Cl. 335—132 **13 Claims**

1. Dual break electrical contactor structure comprising:
(a) an insulative base member;
(b) a first conductor attached to a surface of said base member, said first conductor having an end terminating on said surface, a finite portion of said first conductor approaching said end being substantially straight;
(c) a second conductor attached to said surface of said base member, said second conductor having an end terminating on said surface, a finite portion of said second conductor approaching said end thereof being substantially straight, said finite portion of said first conductor approaching said end thereof from a first direction and said finite portion of said second conductor approaching said end thereof from a second direction directly opposed to said first direction, each of said finite portions being spaced from but parallel to and overlapping the other of said finite portions in the plane of said surface;
(d) first and second contact tips mounted respectively on said first and second conductors adjacent their parallel overlapping finite portions;
(e) a conducting contact carrying bridge having a contact tip on each end thereof, each contact tip being positioned for mating with a corresponding one of said first and second contact tips on said first and second conductors, respectively; and,
(f) means for causing said bridge to move between a non-contacting and a contacting position with said conductors whereby a current path may be formed between said first and second conductors when said bridge is in a contacting position and said current path is interrupted when said bridge is in said non-contacting position.

4,370,637
MAGNETIC ACTUATOR

Lucien Siffroi, Versailles, France, assignor to La Telemecanique Electrique, France

Filed Mar. 31, 1980, Ser. No. 135,377

Claims priority, application France, Mar. 30, 1979, 79 08029

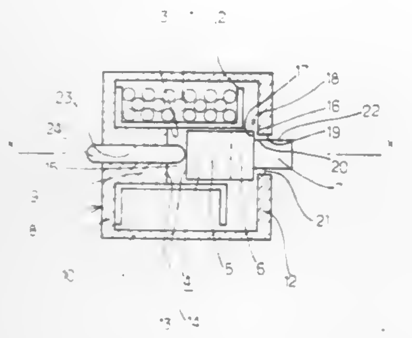
Int. Cl.^{3} H01H *9/00*

U.S. Cl. 335—174 **3 Claims**

1. An actuator comprising:
(i) an energizing winding,
(ii) a magnetisable core axially movable with respect to said winding into a rest position and a working position, said core including a first portion and a second portion and a third portion disposed axially between said first and third

portions, said first portion being always within said winding and said second and third portions being at least partially externally of said winding when in said rest position,

(iii) a magnetisable field structure adapted to become magnetised upon current flow in said energizing winding, said field structure including a portion positioned within the winding and presenting a first polar surface spaced, in the rest position of the core, by a first axial gap from the first core portion, said field structure extending about the winding and presenting a second polar surface spaced by a second and radial gap from said second portion of the core and a third polar surface spaced by a third and axial gap from said third portion of the core, said third gap being in the rest position of the core of less width than said first gap, said magnetisable core normally being held in said rest position by the magnetic flux passing through the second and third gaps, when the intensity of the said current flow is under a predetermined value, whereas the said magnetisable core is moved to the said second position by the magnetic flux passing through the first gap, as soon as the intensity of the said current flow exceeds the said predetermined value.



4,370,638
DOUBLE-FUNCTION SOLENOID OPERATED SWITCH

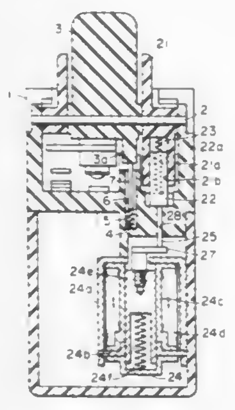
Nobuhiro Takeda; Shigeo Mizuno; Masaichi Hattori, and Yukio Takaishi, all of Aichi, Japan, assignors to Tokai Rika Co., Ltd., Aichi, Japan

Filed May 18, 1981, Ser. No. 264,784

Claims priority, application Japan, May 19, 1980, 55-67431[U]

Int. Cl.³ H01H *45/02, 3/20*

U.S. Cl. 335—186 **3 Claims**



1. A double-functional solenoid-operated switch comprising:

a frame;

an automatic knob pivotally coupled to said frame;

a sliding rod inserted in a hole formed in said automatic knob;

a first spring inserted in said hole to urge said sliding rod toward an opening of said hole;

a moderating plate having on its top a notch over which said sliding rod slides;

a detent plate on which said sliding rod slides along, said detent plate having a moderating portion which holds said sliding rod together with said moderating plate and being installed in said frame so as to slide freely in the axis direction of said sliding rod; and

a solenoid having a second spring which continuously urges said detent plate toward the axis direction of said sliding rod through a core.

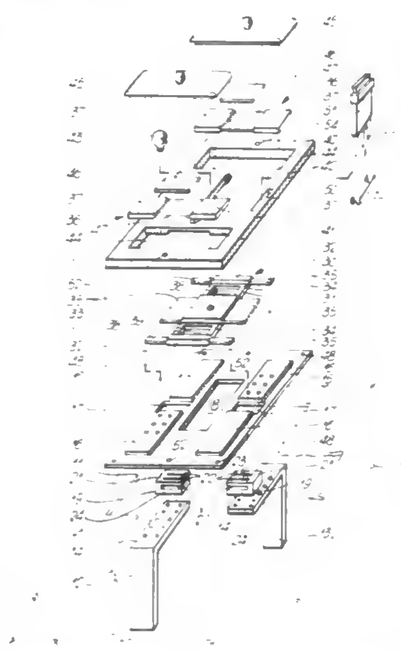
4,370,639
HIGH CAPACITY CHANGE-OVER POWER SUPPLY FUSE

Guy Vallee, Ste. Catherine, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 23, 1981, Ser. No. 236,755

Int. Cl.³ H01H *85/26*

U.S. Cl. 337—230 **9 Claims**



1. A high capacity change-over power supply fuse, comprising:

an incoming bus and an outgoing bus, spaced laterally;

a support member extending over said buses, and two apertures in the support member in lateral alignment, an aperture over each bus;

a contact member mounted on each bus and projecting through said apertures in the support member;

a fuse element holder mounted on said support member to slide longitudinally, in either of two directions, relative to said contact members, said holder including two fuse element mounting positions spaced apart along the holder, a mounting position on either side of said contact members;

a cover over said support member and said holder, said cover having two apertures spaced apart, one on each side of said contact members, and positioned such that when one of said fuse element mounting positions is between said contact members the other of said fuse element mounting positions is beneath one of said apertures in said cover for access thereto;

means extending through said cover for sliding said fuse element holder longitudinally in either of said directions, movement in one direction positioning a first fuse element in a first said mounting positions in contact with said contact members and positioning a second fuse element in a second of said mounting positions under one of said apertures in said cover, movement in the other direction positioning said second fuse element in contact with said contact members and positioning said first fuse element under the second of said apertures in said cover, a fuse element positioned under either of the apertures in the cover capable of being removed, and replaced, without exposure to busses or contact members.

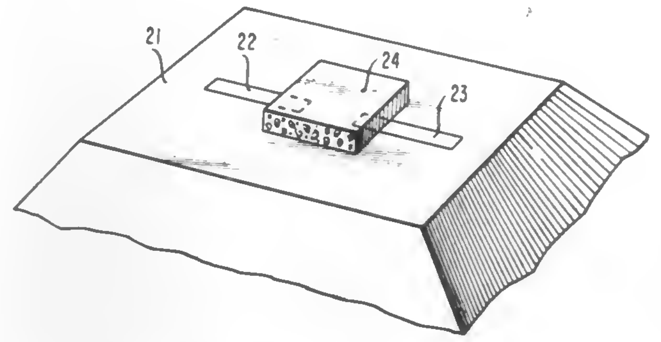
4,370,640
METAL-SEMICONDUCTOR THERMAL SENSOR

Robert C. Dynes, Summit, N.J., and John M. Mochel, Champaign, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 10, 1980, Ser. No. 186,004

Int. Cl.³ H01C *7/04*

U.S. Cl. 338—25 **26 Claims**



1. A thermal energy sensing device comprising a metal-semiconductor body in contact with spaced electrical conducting leads,

characterized in that said body comprises regions selected from the group consisting of metallic and intermetallic dispersed in a semiconductor matrix, wherein the resistivity of said body is greater than 300 microhm-centimeters at 20 degrees C., and the conductivity of said body is less than 50 $(\text{ohm-cm})^{-1}$ at 4.2 degrees kelvin.

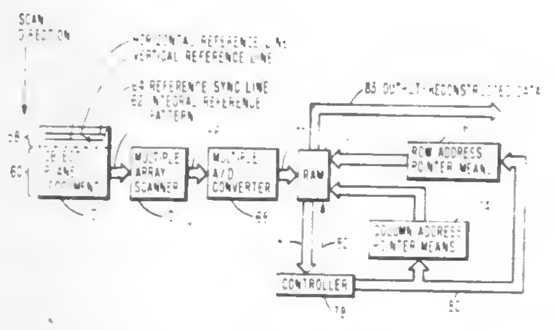
4,370,641
ELECTRONIC CONTROL SYSTEM

Sherwood Kantor, Longmont, Colo.; Randall A. Maddox, Lexington, Ky., and Paul S. Yosim, Lafeyette, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 15, 1979, Ser. No. 66,740

Int. Cl.³ G06K *9/32*

U.S. Cl. 340—146.3 H **23 Claims**


SCAN DIRECTION
HORIZONTAL REFERENCE LINE
VERTICAL REFERENCE LINE
REFERENCE SYNC LINE
83 OUTPUT RECONSTRUCTED DATA
MULTIPLE ARRAY SCANNER
CONVERTER
RAM
ROW ADDRESS POINTER MEANS
COLUMN ADDRESS POINTER MEANS
CONTROLLER

1. Method to automatically correct abutment, alignment and skew in the composite image of a continuous object being reproduced by the arrays of a multiple array scanner, said method comprising the steps of:

generating an electronic image of a test pattern;

analyzing the electronic image to obtain an alignment error, an abutment error and a skew error;

storing the errors; and

correlating the errors with the composite electronic image of the continuous object to generate thereafter a continuous image of the continuous object.

4,370,642
SINGLE NON-LINEAR CONVERTER LADDER NETWORK HAVING ANALOG SWITCHES WITH DIGITAL CONTROL

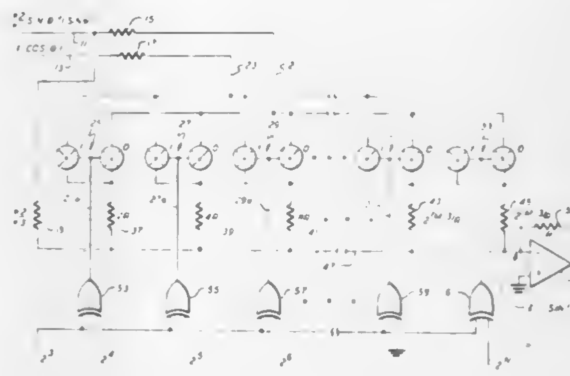
Edward C. Costello, Scarsdale, N.Y., and David J. Simon, Glen Rock, N.J., assignors to The Singer Company, Little Falls, N.J.

Continuation of Ser. No. 47,180, Jun. 8, 1979, abandoned, which is a continuation of Ser. No. 853,342, Nov. 21, 1977, Pat. No. 4,164,729. This application Nov. 24, 1980, Ser. No. 209,454

The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.

Int. Cl.³ G05B *1/00;* H03K *13/02;* G08C *9/00*

U.S. Cl. 340—347 SY **3 Claims**



1. An improved ladder network for simultaneous implementation of nonlinear sine and cosine functions having the general form $K_1N/(1+K_1N)$ in a converter comprising:

(a) a plurality of binarily weighted resistors;

(b) a first analog signal line connected in common to one end of all said resistors;

(c) a plurality of single pole double throw analog switches equal in number to the number of resistors in said plurality, each having a common terminal, a normally open terminal, a normally closed terminal and a control input, the common terminals connected to respective ones of said plurality of resistors;

(d) means for coupling the bits of a digital word representative of an angle to the respective control inputs of said switches;

(e) an analog sine signal line connected through a first resistor to the normally open terminals of all of said switches; and

(f) an analog cosine signal line connected through a second resistor to the normally closed terminals of all of said switches.

4,370,643
APPARATUS AND METHOD FOR COMPRESSIVELY APPROXIMATING AN ANALOG SIGNAL

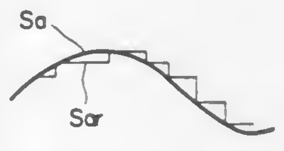
Masatsugu Kitamura, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed May 5, 1981, Ser. No. 260,806

Claims priority, application Japan, May 6, 1980, 55-59638

Int. Cl.³ H03K *13/00*

U.S. Cl. 340—347 SH **25 Claims**



1. Apparatus for compressively approximating an analog signal comprising:

(a) first means for sampling and holding the amplitude of said analog signal in response to a sampling signal;

(b) second means for producing a first signal indicative of the difference between the amplitude of said analog signal and the amplitude of an output signal from said first means;

(c) third means for producing a second signal indicative of the average amplitude of said analog signal around an instant at which said analog signal has been sampled;

(d) fourth means for producing a third signal when said first signal has a given relationship with respect to said second signal; and

(e) fifth means for producing said sampling signal in response to said third signal.

4,370,644

ALARM DEVICE FOR A DOOR, AUTOMATICALLY SWITCHED OFF DURING A LICIT ACCESS

Serge-Andre Droz, 14 avenue du Lignon, 1219 Le Lignon, Switzerland

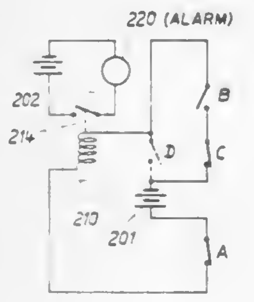
PCT No. PCT/CH80/00012, § 371 Date Oct. 1, 1980, § 102(e) Date Sep. 29, 1980, PCT Pub. No. WO80/01617, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 31, 1980, Ser. No. 252,977

Claims priority, application Switzerland, Feb. 1, 1979, 991/79

Int. Cl.³ G08B *13/08, 23/00*

U.S. Cl. 340—528 **9 Claims**



1. An alarm device for a door having a lock including a retractable bolt, which device is automatically switched off during a licit access, said alarm device comprising a control circuit including, in series, an electric power source, and first, second and third switches, the first and the second switches being respectively closed and open when the door is closed and, conversely, open and closed when the door is fully open, and simultaneously closed during opening and closing of the door, said retractable bolt on said door functioning for locking and unlocking the door, means coupling said bolt to said third switch whereby said third switch is closed except when the bolt is retracted, a relay interconnected with said switches and actuated upon the simultaneous closing of the three switches, and an alarm circuit connected with said relay and operated when the relay is actuated.

4,370,645

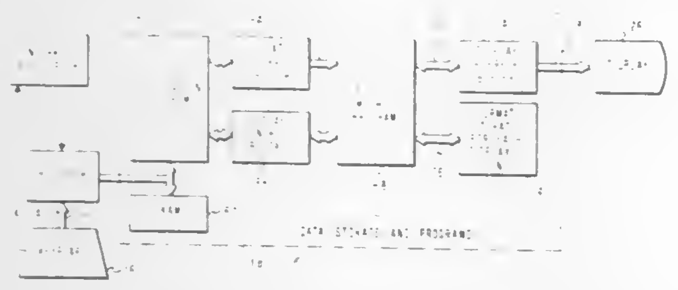
GHOST CURSOR IN DISPLAY ALL CODES MODE

William C. Cason, Austin; Ward A. Kuecker, Round Rock, and Susan D. Stratton, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,047

Int. Cl.³ G09G *1/02*

U.S. Cl. 340—709 **11 Claims**



1. In a text display system operable in an all codes mode for displaying a frame of text and control codes including a text cursor adjacent a text code, control code, or display position at which a text processing operation can next be effected relative to text and control codes stored in a text storage buffer, the improvement comprising:

first means, while in said all codes mode, for determining a hidden codes mode position on the display screen associated with a current position of said text cursor; and

second means, while in said all codes mode, for displaying a ghost cursor at said hidden codes mode position.

4,370,646

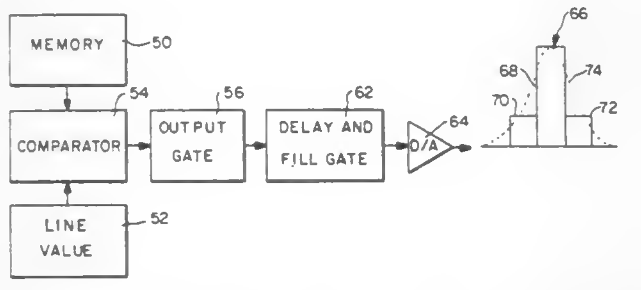
METHOD AND MEANS FOR CONTROLLING ELECTRON BEAM IN A RASTER SCAN MONITOR

John E. Mahony, Sacramento, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Nov. 3, 1980, Ser. No. 203,654

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—722 **5 Claims**



1. In a raster scan display system in which electron beam energization during a raster line scan is controlled by comparing a raster line value to stored magnitude digital data as a raster line is scanned, the method of generating a control signal for energizing the electron beam comprising the steps of

generating a first pulse when said raster is to be illuminated,

generating a second pulse preceding said first pulse,

generating a third pulse succeeding said first pulse, and,

applying said first, second, and third pulses to digital to analog converter circuitry whereby a control signal is obtained having a peak magnitude in response to said first pulse and a lesser magnitude in response to said second and third pulses.

4,370,647

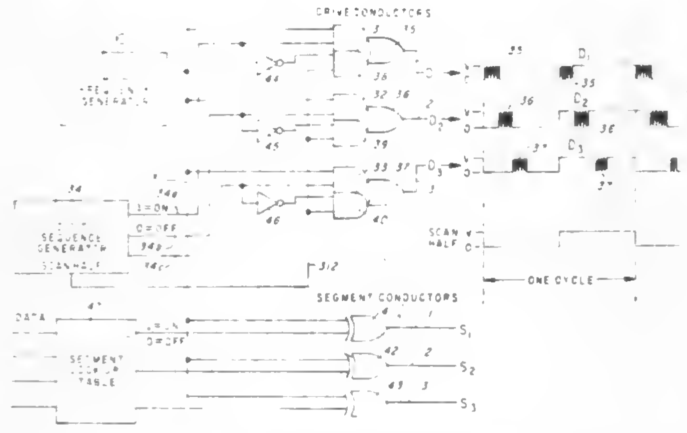
SYSTEM AND METHOD OF DRIVING A MULTIPLEXED LIQUID CRYSTAL DISPLAY BY VARYING THE FREQUENCY OF THE DRIVE VOLTAGE SIGNAL

George L. Brantingham, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 15, 1980, Ser. No. 121,952

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—784 **10 Claims**



1. A liquid crystal display system comprising:

(a) a liquid crystal display responsive to the application of an electric field, said display including a plurality of segment electrodes formed on one substrate thereof and a plurality backplane electrodes formed on the opposite substrate thereof, each segment electrode cooperating with a corresponding backplane electrode to form a display segment;

(b) M number of segment conductors each being coupled to a respective group of said segment electrodes and N number of drive conductors each being coupled to a respective group of said backplane electrodes;

(c) signal generating means for generating first and second electrical signals at first and second predetermined frequencies respectively, said second frequency being substantially higher than said first frequency;

(d) first logic means coupled to said N drive conductors for applying the second signal to said drive conductors one-at-a-time in a predetermined sequence during each display scan cycle, said first signal being applied to said drive conductors during the remainder of the cycle;

(e) second logic means coupled to said M segment conductors for applying signals thereto, said second logic means being responsive to data signals indicative of the information to be displayed, said data signals representing the ON and OFF states of each segment, each segment signal being comprised of second signal components which are out of phase with respect to the second signal component of the corresponding drive conductor for the ON segments and in phase with respect to the second signal component of the corresponding drive conductor for the OFF segments so that the resultant signal applied to the ON segments has a higher frequency than that of resultant signal applied to the OFF segments.

4,370,648

SYNCHRONIZING CIRCUIT FOR USE WITH A TELECOMMUNICATION SYSTEM

Theodore Wagner, West Palm Beach; Ramesh M. Vyas, Boca Raton, and Samuel Liang, Deerfield Beach, all of Fla., assignors to Siemens Corporation, Iselin, N.J.

Filed Mar. 31, 1981, Ser. No. 249,399

Int. Cl.³ H04J *3/06;* H04Q *11/04*

U.S. Cl. 340—825.2 **9 Claims**

1. A synchronizing circuit for use with a digital communication system, said system including a transmission line arranged between a transmitting and a receiving terminal for transmitting a serial data stream at a fixed data rate under control of a system clock pulse train received by a system clock pulse line and arranged in frames each composed of a first data word containing a binary synchronization code for recovering a frame in the continuous serial data stream and a signalling code for enabling control operations of said communication system and at least a second data word containing binary coded information, said synchronizing circuit adapted to be connected to said receiving end of said transmission line for recovering the alignment of consecutive frames in the serial data stream and comprising, in combination:

(a) a serial/parallel converter being designed for a capacity of one data word of said frame and having a serial data input coupled to said transmission line, a clock input connected to said system clock pulse line, and a plurality of parallel data outputs;

(b) a synchronizing detector logic network having parallel inputs each connected to a respective one of said parallel data outputs of said serial/parallel converter and having a first and a second output, said synchronizing detector logic network generating a first and a second control signal at the respective one of said first and second outputs, wherein a respective one of said control signals occurs whenever a condition at said parallel data outputs of said serial/parallel converter reflects a synchronization code in form of a normal synchronizing bit pattern and an inverted synchronizing bit pattern, respectively;

(c) means for delaying said first control signal for a time period equivalent to the time required for receiving one frame and having an input and an output, said input of said delay means being connected to said first output of said synchronizing detector logic network;

(d) an AND-gate having a first and a second input and an output generating in synchronized operation a synchronizing signal once every alternate frame, said first input of said AND-gate being connected to said output of said delay means and said second input of said AND-gate being connected to said second output of said synchronizing detector logic network; and

(e) a time slot generator having a clock input for receiving said system clock pulse trains, a synchronizing signal input connected to the output of said AND-gate and a first and a second generator output each carrying a respective one of a first and a second enabling signal, said time slot generator including means for counting subsequent clock pulses under control of said synchronizing signal such that during receiving the first data word said first generator output and during the receiving the second data word said second generator output subsequently are carrying a respective one of said enabling signals.

4,370,649

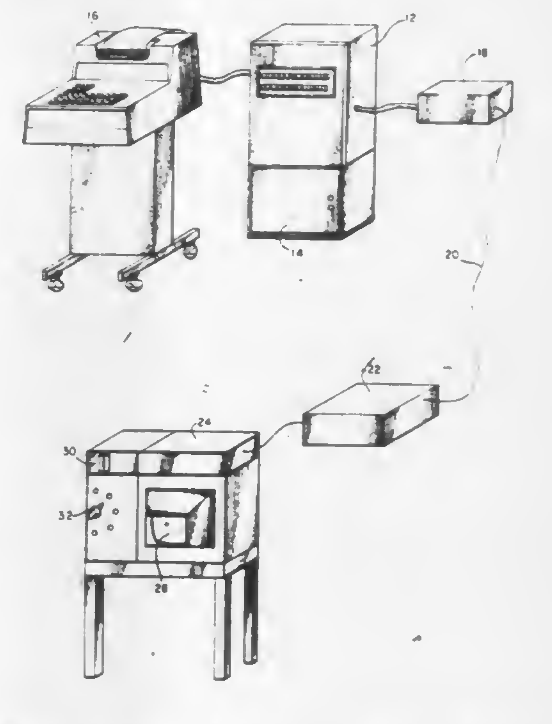
PAYMENT RESPONSIVE DATA DISPLAY NETWORK

Gerard A. Fuerle, 4434 N. Third St., Philadelphia, Pa. 19140

Filed May 19, 1981, Ser. No. 265,063

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.35 **9 Claims**



1. A payment responsive system for displaying information, comprising:

at least one remote terminal for displaying information for a preset time upon payment, said remote terminal having sufficient storage for all selectable information; and,

a central processor adapted to control input of information and transmission to the remote terminal, said transmission to be initiated at programmed times by the central processor independently of any occurrence of a display query at the remote terminal.

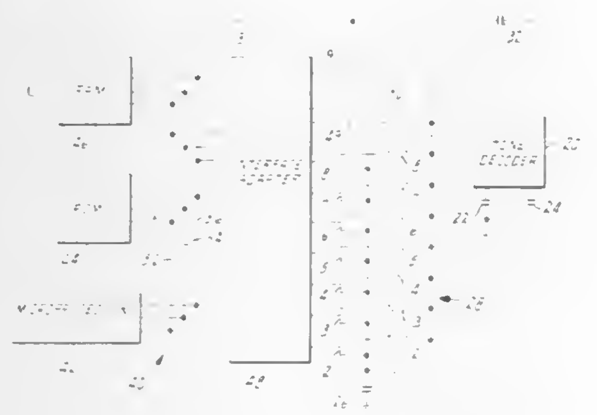
4,370,650
TONE DETECTION CIRCUITRY

Donald L. Norrell, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 1, 1981, Ser. No. 249,882

Int. Cl.^{3} H04Q *9/00, 11/02;* **G01R** *23/02*

U.S. Cl. 340—825.71 **6 Claims**



1. Tone detection circuitry for determining the receipt of a tone signal having a frequency within a selected one of a plurality of bandwidths including:

timing resistance;

timing capacitance;

a tone decoder operatively connected to said timing resistance and said timing capacitance, said tone decoder providing a signal output at a free running frequency that is inversely proportional to the product of said timing capacitance and timing resistance and providing a signal output at the frequency of an input tone signal to said decoder when such input tone signal is within the response bandwidth of the decoder; and

control means operatively connected to said tone decoder, said timing resistance and said timing capacitance, said control means providing a calibration routine which is operable subsequent to each energization of the control means for determining the product of said timing resistance and said timing capacitance for each of the plurality of bandwidths for establishing the free running frequency of said decoder as close as possible to the center frequency of each of the plurality of bandwidths, providing a retrievable record based on the product of the timing resistance and timing capacitance determined for establishing the free running frequency of said tone decoder for each of the plurality of bandwidths and providing for the selective retrieval of said retrievable record for any one of the plurality of bandwidths and establishing the product of said timing resistance and said timing capacitance in accordance with the retrieved record.

4,370,651
ADVANCED PLASMA PANEL TECHNOLOGY

George A. Reible, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,270

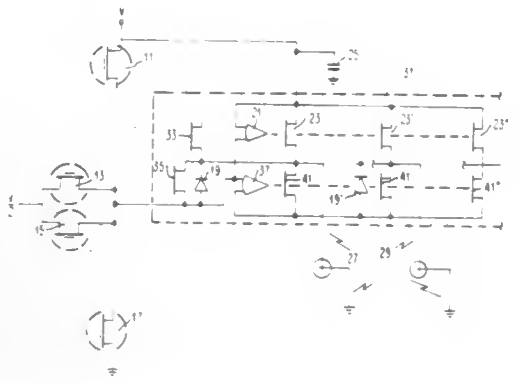
Int. Cl.^{3} H04Q *9/00;* **H05B** *37/00, 41/14*

U.S. Cl. 340—825.86 **10 Claims**

1. A composite drive system for a plasma display device having a plurality of cells defined by the intersection of orthogonal conductor arrays, the discharge of selected cells providing a visual display, comprising in combination,

analog circuit means for generating a background sustain signal,

said analog circuit means comprising a plurality of high voltage circuit means for generating a signal having positive and negative excusions from a reference level,



a plurality of individual line driver circuits for applying said background sustain signal to the individual lines of said panel, and

means for controlling the operation of said line driver circuits during discharge of said selected cells to compensate for the degradation of said background sustain signal due to said discharge.

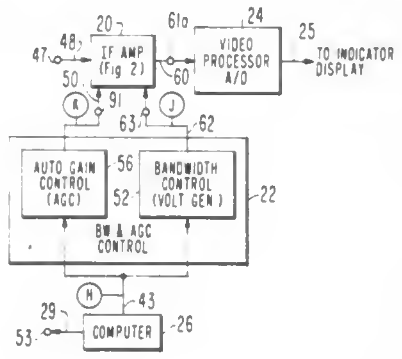
4,370,652
CONTROL SYSTEMS FOR RADAR RECEIVERS

George A. Lucchi, Granada Hills, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,937

Int. Cl.^{3} G01S *7/34*

U.S. Cl. 343—5 SM **10 Claims**



1. In a return echo ranging system, comprising:

means for transmitting a ranging signal;

a receiver for receiving one or more echo signals from said ranging signal;

means for sampling said echo signals according to a respective one of a plurality of predetermined receiver bandwidths, each one of said plurality of receiver bandwidths corresponding to a respective bandwidth portion of the frequency spectrum of an expected echo signal from subsequent ranging signals, to generate a sample signal indicative of the frequency spectrum bandwidth portion of such an expected echo signal; and

means responsive to said sample signal for varying the bandwidth of said receiver to substantially match the bandwidth of the frequency spectrum of said expected echo signal.

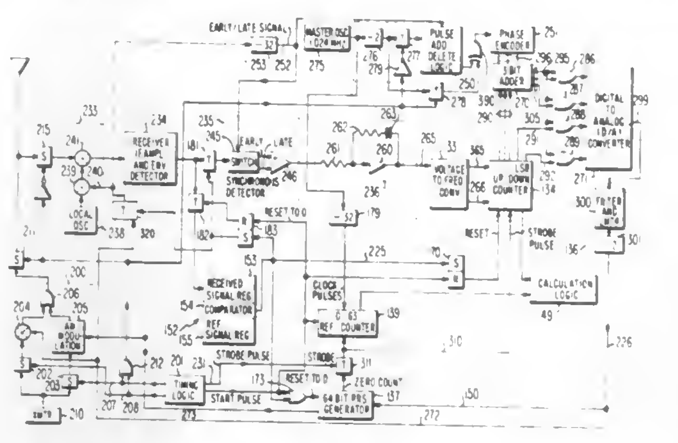
4,370,653
PHASE COMPARATOR SYSTEM

Albert T. Crowley, Gloucester Township, Camden County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,998

Int. Cl.^{3} G01S *13/78*

U.S. Cl. 343—6.5 LC **8 Claims**



1. An interrogator for use in a range finding system comprising interrogator means and transponder means for generating and transmitting an interrogation signal having a first encoded portion and a first basic tone portion and a responsive signal having a second encoded portion and a second basic tone portion, in which said transponder means responds to said interrogation signal to generate and transmit said responsive signal with said second encoded and basic tone portions thereof being phase synchronous with said first encoded and basic tone portions as received at said transponder means, and in which said interrogator means comprises:

signal generating means for generating said interrogation signal and for storing the phases of said first encoded and basic tone portions of said interrogation signal;

first means for determining the difference between the stored phase of said first encoded portion of said interrogation signal and the phase of said second encoded portion of the received responsive signal;

second means for determining the difference between the stored phase of said first basic tone of said interrogation signal and the phase of said second basic tone portion of the received responsive signal to produce a first signal whose frequency is proportional to said phase difference and a second signal indicating the leading or lagging phase relationship of said first and second basic tones;

up/down counter means constructed to count at a rate determined by the frequency of said first signal and in a direction determined by said second signal; and

said signal generating means comprising means responsive to the count in said up/down counter means to alter the stored phase of said first basic tone portion towards synchronization with the phase of said received second basic tone until phase synchronization is attained.

4,370,654
APPARATUS FOR PRODUCING A FREQUENCY CHANGE OF A WAGE PROPAGATING SIGNAL

Thomas E. Krutsch, 12745 Moorpark St., Studio City, Calif. 91604

Filed Jan. 25, 1980, Ser. No. 115,776

Int. Cl.^{3} G02B *5/122;* **H01Q** *15/18*

U.S. Cl. 343—18 D **2 Claims**

1. An apparatus for producing a frequency change of wave propagating energy wherein said apparatus is mounted on a moving structure, said apparatus comprising:

a. self-directing reflecting means for reflecting the wave propagating energy which is stationary relative to said moving structure;

b. intermediate reflecting means for reflecting the incoming wave propagating energy from its source toward said self-directing reflecting means and reflecting the outgoing wave propagating energy from said self-directing reflecting means back toward its source; and

c. rotating means for rotating said intermediate reflecting means about an axis which is parallel to the direction of travel of the wave propagating energy with said self-directing reflecting means being radially disposed about

the axis of rotation of said intermediate reflecting means whereby said self-directing reflecting means is effectively moving toward or away from the wave propagating energy in relation to the structure on which said apparatus is mounted while reflecting the wave propagating energy back to the source thereof.

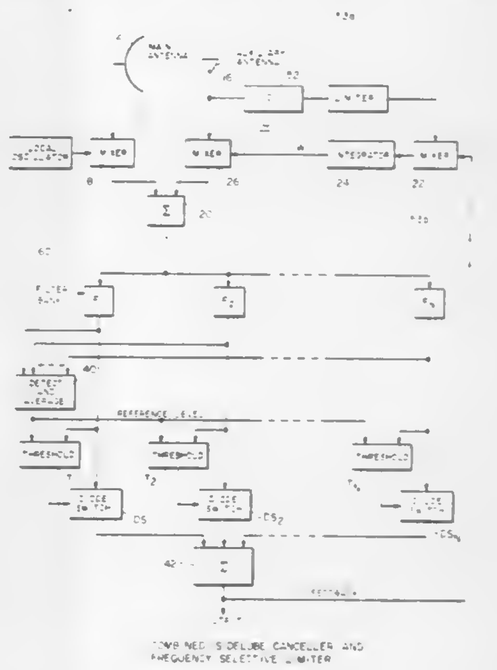
4,370,655
COMBINED SIDE LOBE CANCELLER AND FREQUENCY SELECTIVE LIMITER

Raymond J. Masak, East Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1980, Ser. No. 221,737

Int. Cl.^{3} H04B *7/08*

U.S. Cl. 343—100 LE **8 Claims**



1. A side lobe interfering signal canceller system for an ECCM radar system having a main antenna and at least one auxiliary antenna comprising:

an adaptive side lobe interfering signal canceller system in circuit with said main and auxiliary antennas and including a first summing network coupled to said main and auxiliary antennas and at least one adaptive control loop;

and a frequency selective system connected in series with the output of said first summing network and including a second summing network providing a system output and a feedback signal, said feedback signal being coupled to said adaptive control loop;

said adaptive side lobe canceller being responsive to the feedback signal of said second summing network whereby a weighting signal is generated and applied to said first summing network for cancelling the side lobe interfering signals.

4,370,656

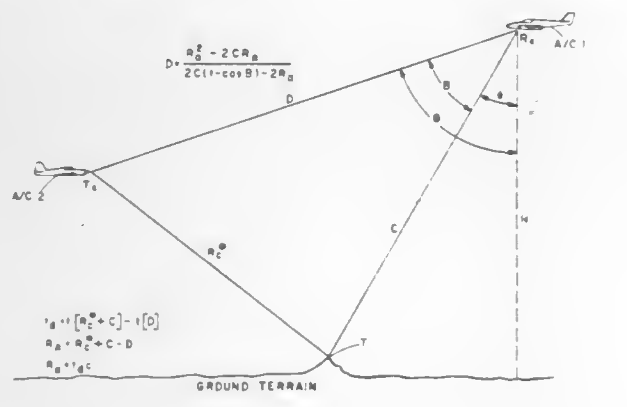
USE OF BISTATIC RADAR SYSTEM FOR DETERMINING DISTANCE BETWEEN AIRBORNE AIRCRAFT

Lawrence M. Frazier, West Covina, and Benjamin G. Lewis, Corona, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Oct. 27, 1980, Ser. No. 200,660

Int. Cl.^{3} G01S *5/10*

U.S. Cl. 343—112 D **6 Claims**



1. A bistatic passive radar system for airborne use in a first aircraft in conjunction with a host transmitter located in a second aircraft that may be at a different altitude than the first aircraft, characterized by means for determining the distance between the aircraft comprising

means for receiving radar signals from the host transmitter directly and via reflection from a selected ground target located between the two aircraft;

means coupled to the receiving means for determining the apparent range R_a from the host transmitter to the receiving means in response to receipt of said radar signals;

means for determining the altitude H of the first aircraft;

means for determining the angle θ with respect to vertical at which the radar signals are received directly from the host transmitter and for determining the angle ϕ with respect to vertical at which the reflected radar signals are received; and

means for computing the distance D between the aircraft from the determined values of R_a, H, θ and ϕ.

4,370,657

ELECTRICALLY END COUPLED PARASITIC MICROSTRIP ANTENNAS

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 9, 1981, Ser. No. 241,955

Int. Cl.^{3} H01Q *1/38*

U.S. Cl. 343—700 MS **11 Claims**

1. An electrically end coupled parasitic microstrip antenna for providing high gain in the end fire mode, comprising:

a. a thin ground plane conductor;

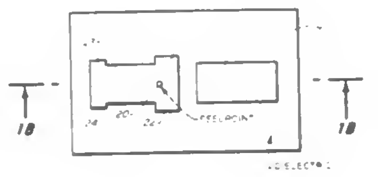
b. a driven microstrip radiating element having a feedpoint thereon;

c. said driven radiating element being fed from a microwave transmission line at said feedpoint;

d. at least one parasitic microstrip radiating element being spaced apart from one end of said driven radiating element in an end-to-end arrangement;

e. said driven microstrip radiating element and said at least one parasitic microstrip radiating element being equally spaced apart from said ground plane and separated from said ground plane by a dielectric substrate;

f. said driven microstrip radiating element being electrically coupled end-to-end to said at least one parasitic microstrip radiating element by the electric field generated in said driven element when excited to radiate by energy fed to said feedpoint; both said driven element and said at least one parasitic element being excited to radiate, the energy in the end fire direction adding between the end-to-end coupled microstrip elements to provide high gain;



g. the antenna radiation pattern being determined by the phase relationship and amplitude distribution between said excited driven element and said at least one parasitic element, the phase relationship and amplitude distribution being governed by the end-to-end separation between the driven element and said at least one parasitic element and the length of said at least one parasitic element; the mutual coupling impedance and the input impedance of the driven element which together form the antenna impedance also being governed by the end-to-end separation between the driven element and said at least one parasitic element.

4,370,658

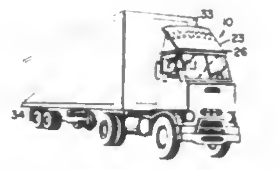
ANTENNA APPARATUS AND METHOD FOR MAKING SAME

Fred G. Hill, 8591 Ideal Ave. South, Cottage Grove, Minn. 55016

Filed Apr. 29, 1981, Ser. No. 258,688

Int. Cl.^{3} H01Q *1/32*

U.S. Cl. 343—713 **12 Claims**



1. A combination dual antenna and air current deflector shield for mounting as an accessory on an outside surface and transverse to a body of a motor vehicle comprising:

(a) a planar member having a first layer of a hard gel coat and second, third and fourth layers of polyester resin and fiberglass, said planar member being configured in the shape of an air current deflector shield;

(b) a generally planar first conductor member having an elongate primary member and a plurality of secondary members connected to and generally perpendicular to said primary member, said first conductor member being encapsulated between said second and said third layers;

(c) a generally planar second conductor member having an elongate primary member and a plurality of secondary members connected to and generally perpendicular to said primary member, said second conductor member being encapsulated between said third and said fourth layers;

(d) a first coupler mounted to said planar member having a first terminal suitable for providing electrical connection to an electrical reference potential of a motor vehicle and a second terminal operatively connected to the first antenna conductor member suitable for connection to an input/output terminal of a receiver/transmitter; and

(e) a second coupler mounted to said planar member having a first terminal suitable for providing electrical connection to an electrical reference potential of a motor vehicle and a second terminal operatively connected to the first antenna conductor member suitable for connection to an input/output terminal of a receiver/transmitter, whereby when said planar member is mounted to the outside surface of a motor vehicle, said planar member is an air current deflector shield.

4,370,659

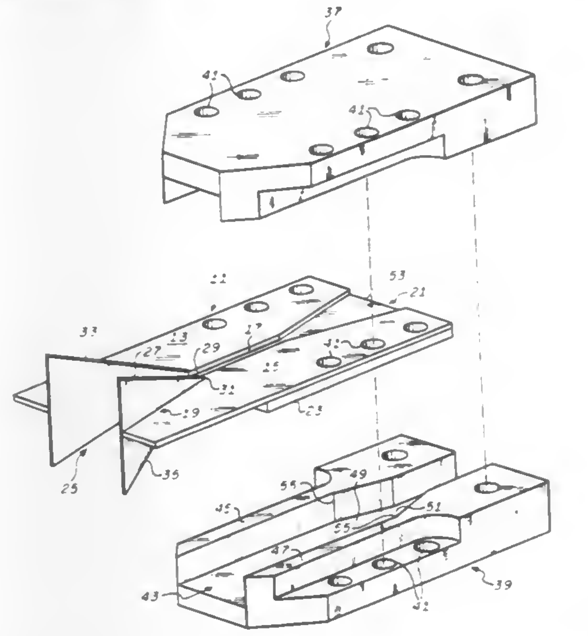
ANTENNA

James C. Chu; Patrick E. Crane, both of Tampa, Fla.; Jack V. D'Agostino, Florissant, Mo., and Paul M. Schwartz, Belleair Beach, Fla., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 285,218

Int. Cl.^{3} H01Q *1/20*

U.S. Cl. 343—772 **9 Claims**



1. A sectoral antenna for use with finline electromagnetic wave transmission means of the type having two thin coplanar fin elements disposed with adjacent edges forming a narrow channel transmission path having a flare from a first end at a predetermined angle, said antenna comprising first and second triangular shaped planar members, each having a vertex and a base opposite said vertex, said triangular shaped planar members disposed in planes normal to said plane of said fin elements, and supported respectively by said adjacent edges of said fin elements along said flare such that said vertex of each triangular shaped planar member is positioned adjacent said first end of said narrow channel and housing means enclosing said transmission path.

4,370,660

BROADBAND ELLIPTIC SHEET ANTENNA

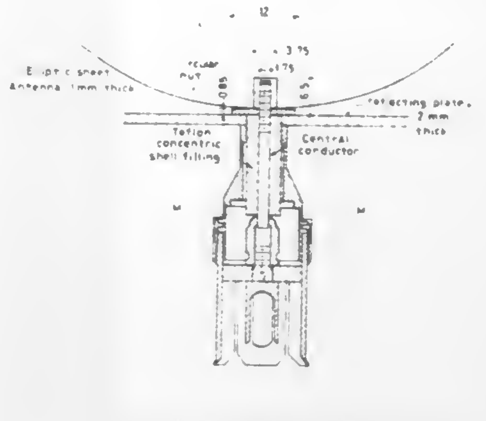
Moustafa N. I. Fahmy, Ammariya Building, (Flat 46), Al-Batt-'ha St., Riyadh, Saudi Arabia

Filed May 17, 1978, Ser. No. 906,672

Int. Cl.^{3} H01Q *9/28*

U.S. Cl. 343—795 **3 Claims**

1. A broadband monopole antenna comprising a conducting elliptical sheet having an eccentricity of 0.8, a ground plane spaced from said elliptical sheet parallel to the major axis and perpendicular to the minor axis, a 50 ohm coaxial cable feed line having an outer conductor connected to said ground plane and an inner conductor passing through a hole in said ground plane, an insulating washer surrounding said inner conductor, a circular nut welded to said elliptical sheet at said minor axis, said inner conductor being in threaded communication with said nut to feed power to said elliptical sheet and to maintain its position with respect to the ground plane.


12
Elliptic sheet Antenna 1mm thick
circular nut
Reflecting plate, 2 mm thick
Teflon concentric shell filling
Central conductor

DETAILS OF THE INPUT REGION AND COAXIAL FEED OF ELLIPTIC SHEET MONOPOLE ANTENNA

4,370,661

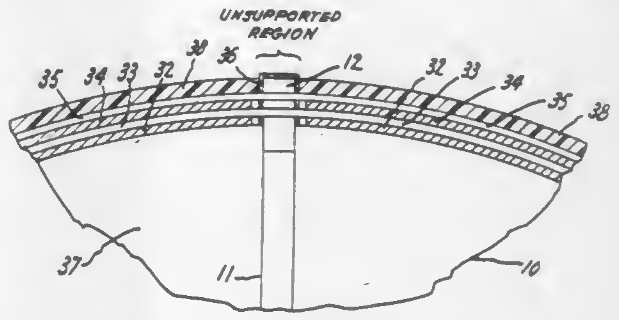
EASILY ASSEMBLED TRANSVERSE MAGNETIC PRINTING HEAD

Ami E. Berkowitz, Schenectady, N.Y.; Joseph A. Lahut, Waynesboro, Va., and Jish M. Wang, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 60,921, Jul. 26, 1979, abandoned. This application Oct. 2, 1980, Ser. No. 193,398

Int. Cl.^{3} G11B *9/00*

U.S. Cl. 346—74.5 **7 Claims**



1. A transverse magnetic printing head driven in a coincident current mode in which there are $(W \times D)$ recording gaps organized into W adjacent word segments, each word segment having D independent digits, said head comprising:

a rigid supporting member having a transverse slot therein;

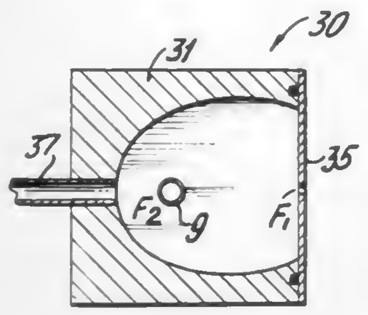
a comb structure of high magnetic permeability material with teeth forming $(W \times D)$ recording gaps between the tips of said teeth, said comb structure being received into the transverse slot of said supporting member in such a manner that the teeth of said comb structure protrude above said supporting member;

an insulated word line drive circuit with W independent word lines, each of said word lines forming a zig-zag pattern spaced so as to match the spacing of the teeth on the comb structure, each of said word lines repeatedly crossing said transverse slot and threading through a selected one of said recording gaps, said word line drive circuit being mounted in a flush manner against said supporting member so as to align the magnetic comb structure with said transverse slot; and

an insulated digit line drive circuit with D independent digit lines, each digit line, d_i, for i ranging from 1 to D, being spaced and laid out in such a manner so as to thread through the i^{th} recording gap position in alternate word segments and through the $(D-i+1)^{th}$ recording gap position in the remaining word segments, each such digit line also repeatedly crossing said transverse slot, said digit line drive circuit being mounted in a flush manner either over or under said word line drive circuit so as to align the magnetic comb structure with the transverse unsupported gap region.

4,370,662
INK JET ARRAY ULTRASONIC SIMULATION

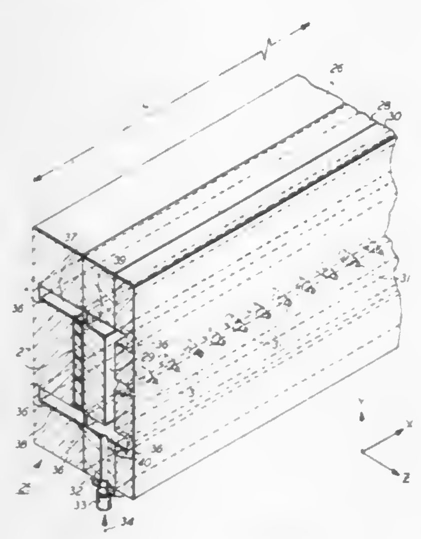
Shou L. Hou, Radnor, Pa., and Isao Tashiro, Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 2, 1980, Ser. No. 212,250
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 23 Claims



1. An ink jet array apparatus for the generation of a plurality of continuous streams of ink drops comprising:
- an elongated ink chamber having means connecting the chamber to a source of ink under pressure;
- an ink jet orifice plate connected to said chamber as one of the walls of the chamber and having a plurality of orifices to form an array of ink jet filaments; and
- an elongated electro-acoustic transducer means within said chamber to convert electrical energy into perturbations of the ink;
- wherein the inner walls of the chamber, in cross-section, are sectors of an ellipse, the transducer means is positioned at one focus of said ellipse and the orifices are positioned at the other focus of the said ellipse.

4,370,663
THIN BODY INK DROP GENERATOR

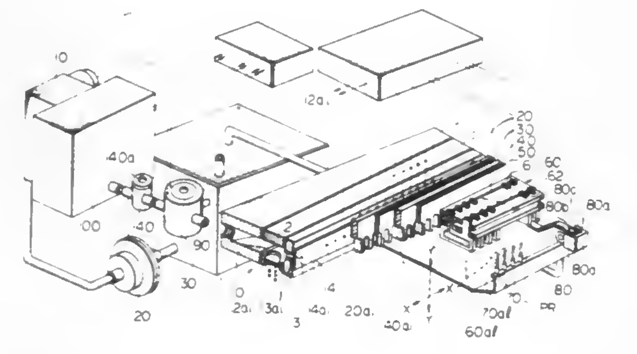
Roger G. Markham, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 3, 1980, Ser. No. 212,646
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 12 Claims



5. A liquid drop generator comprising a wide thin flexible piezoelectric exciter, backing, transmission and nozzle plates arranged to support said piezoelectric exciter between the backing and transmission plates and to define a wide, thin liquid chamber between the transmission and nozzle plates, said exciter and chamber bounded by a top and bottom moat chamber formed by said backing, transmission and nozzle plates to confine acoustic energy generated by the exciter to certain regions of the backing, transmission and nozzle plates,
- a plurality of nozzles formed in the nozzle plate and arranged along the thin lateral dimension of the chamber for emitting liquid columns under pressure from which drop streams are formed in flight toward a target,
- the width of the chamber and arrangement of the nozzles being a distance that is a significant portion of the width or length of a target.

4,370,664
INK JET PRINTING APPARATUS

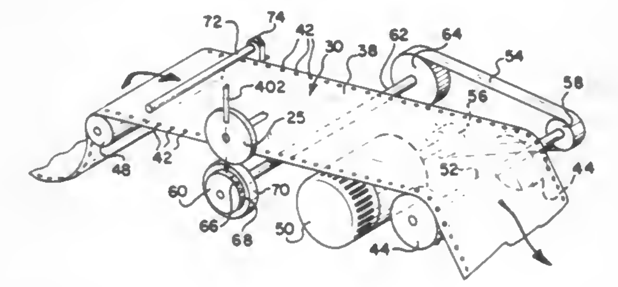
Masanori Horike; Yutaka Yoshiba, and Yutaka Ebi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 3, 1981, Ser. No. 250,464
Claims priority, application Japan, Apr. 14, 1980, 55-48882; Apr. 17, 1980, 55-50907; Apr. 18, 1980, 55-51398
Int. Cl.^{3} G01D *18/00*
U.S. Cl. 346—75 5 Claims



1. An ink jet printing apparatus comprising:
- an ink ejection head having a plurality of nozzles each for ejecting a jet of ink;
- charging means for electrostatically charging the ink jet;
- deflection position control means adapted to repeat detection and adjustment of a deflection position a plurality of times; and
- control means for controlling at least one of the charging means and deflecting means to adjust a voltage level which determines an amount of the deflection of the ink jet;
- the voltage level which determines an amount of deflection being variable;
- the amount of variation of the voltage level decreasing progressively as the deflection adjustment is repeated.

4,370,665
PAPER TRANSPORT FOR A PRINTER TEST UNIT

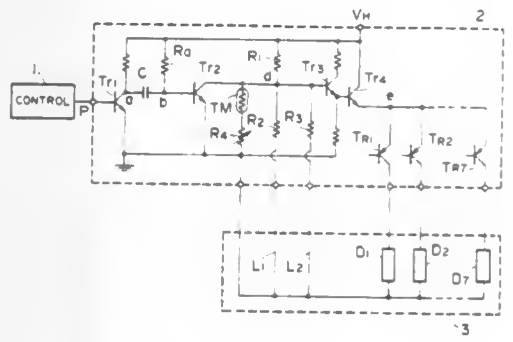
Robert J. Scranton, Dayton, and James R. Meckstroth, Centerville, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Apr. 27, 1981, Ser. No. 257,677
Int. Cl.^{3} G01D *18/00*
U.S. Cl. 346—75 19 Claims



1. A paper transport for use with a printer system of the type arranged to print documents as said documents are successively transported past a print station, said system including a photo-optical document detector for detecting movement of successive documents past said print station by directing a beam of light across the path of said documents at said print station and detecting changes in the amount of light reflected to said photo-optical document detector, comprising:
- means for transporting a paper web past said print station for printing on said web, and
- document simulator means, positioned at said print station, for cyclically altering the amount of light reflected to said photo-optical document detector, whereby movement of documents past said print station is simulated and printing may be effected on said paper web in response to changes in the amount of light reflected from said document simulator means.

4,370,666
THERMAL HEAD DRIVING DEVICE

Atsushi Noda, and Takayoshi Hanagata, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1980, Ser. No. 173,888
Claims priority, application Japan, Aug. 10, 1979, 54/102626
Int. Cl.^{3} G01D *15/10*
U.S. Cl. 346—76 PH 15 Claims

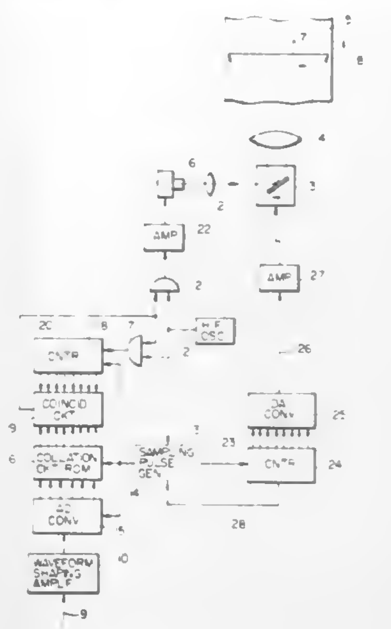


1. A driving device connected to a source of printing pulses for driving a thermal head that includes a plurality of heating resistors, said driving device comprising:
- a driving circuit for applying a current to drive said thermal head in response to printing pulses;
- a safety circuit connected to said source and to said driving circuit for limiting the duration of the printing pulses applied to drive said thermal head to a predetermined duration; and
- a temperature correcting circuit connected to said safety circuit for varying the voltage of printing pulses applied by said safety circuit to said driving circuit in accordance with the ambient temperature and for maintaining constant the current applied to said thermal head by said driving circuit in response to the printing pulses, while controlling the bias to said driving circuit.

4,370,667
LASER RECORDER

Yuji Ohara, and Masahiro Ohnishi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 4, 1981, Ser. No. 231,561
Claims priority, application Japan, Feb. 8, 1980, 55/14627
Int. Cl.^{3} G01D *15/4*
U.S. Cl. 346—108 6 Claims

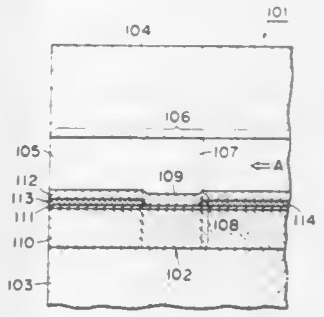
1. A laser recorder device comprising: means for scanning a recording medium with a plurality of parallel scanning lines; means for generating a recording beam in response to input pulses, said beam being scanned by said scanning means onto said recording medium; means for generating high frequency pulses for application to said beam generating means; means for generating sampling pulses for sampling an input signal, the frequency of said high frequency pulse signal being at least two orders of magnitude greater than the frequency of said sampling pulse signal, the phase of said sampling pulse signal being different for adjacent scanning lines; and means for applying a number of said pulses of said high frequency pulse signal to



said beam generating means in response to a predetermined function of said sampled input signal.

4,370,668
LIQUID EJECTING RECORDING PROCESS

Toshitami Hara, Tokyo, and Shigeyuki Matsumoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 18, 1980, Ser. No. 208,040
Claims priority, application Japan, Dec. 28, 1979, 54-171336
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—140 R 5 Claims



1. A liquid ejecting recording process using a liquid ejecting recording head comprising: a liquid discharging portion including an orifice for ejecting liquid droplets, a heat acting portion in communication with the orifice, said heat acting portion being a portion where heat energy for discharging liquid droplets acts on a liquid, and an electrothermal transducer having a laminated structure provided on a substrate, with the structure comprising a lower layer positioned on the substrate, a resistive heater layer having electrodes A and B electrically connected thereto, and an upper layer positioned uppermost from the substrate and having a heating surface a portion of which is positioned in the heat acting portion, so that when a potential V is applied to the heating surface and potentials V_A and V_B are generated at the electrodes A and B, respectively, of said resistive heater layer, the potential V applied to the heating surface is kept at a potential intermediate the potentials V_A and V_B.

4,370,669

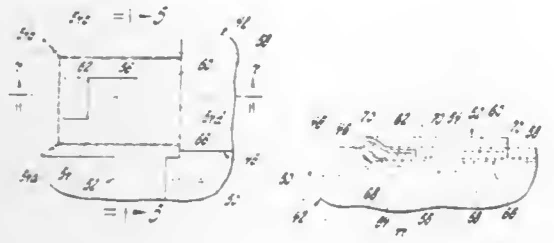
REDUCED SOURCE CAPACITANCE RING-SHAPED IGFET LOAD TRANSISTOR IN MESA-TYPE INTEGRATED CIRCUIT

William B. Donley, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 16, 1980, Ser. No. 169,527

Int. Cl.^{3} H01L *29/78*

U.S. Cl. 357—23 **3 Claims**



1. In a self-aligned polysilicon gate depletion-type n-channel IGFET having an electrically shorted source region and gate, a drain region coupled with a source of constant potential, having said source region coupled with a source of time varying potential, and formed on a P type silicon mesa that is surrounded by P+ type silicon under a thick silicon dioxide field layer, the improvement comprising means for reducing transistor source capacitance in response to said time varying potential coupled with said source region, the improvement including the polysilicon gate being a ring, the ring wholly encloses a portion of the mesa spaced inwardly from said P+ type silicon, and the enclosed mesa portion serves as the IGFET source region, and no portion of the IGFET source region intersects the P+ type silicon and IGFET capacitance attributable thereto upon variations in source potential is eliminated.

4,370,670

TRANSISTOR WITH PLURAL PARALLEL UNITS

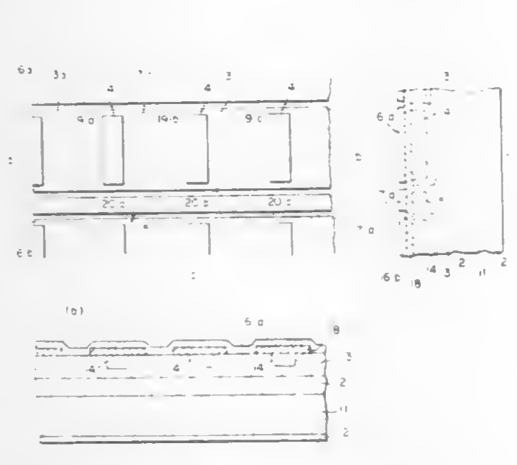
Yoshiaki Nawata; Yasutaka Nakatani, both of Yakohama, and Haruki Nakazawa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 7, 1980, Ser. No. 138,111

Claims priority, application Japan, Apr. 11, 1979, 54-43967

Int. Cl.^{3} H01L *29/72*

U.S. Cl. 357—36 **24 Claims**



1. A transistor comprising,

a collector region having a first conductivity type,

a base region having the opposite conductivity type disposed in contact with said collector region,

at least one emitter region having said first conductivity type formed in said base region,

a plurality of isolation regions having said opposite conductivity type selectively formed in each said emitter region to divide each said emitter region into a respective plurality of smaller emitter regions, each said smaller emitter region forming a p-n junction with said base region over essentially the entire area of the smaller emitter region, and

a stabilizing resistor corresponding to at least one of each said smaller emitter regions and located in the vicinity thereof, each said stabilizing resistor having a first terminal connected to the respective smaller emitter region(s) at a position over and within said area of said p-n junction.

4,370,671

SEMICONDUCTOR DEVICE

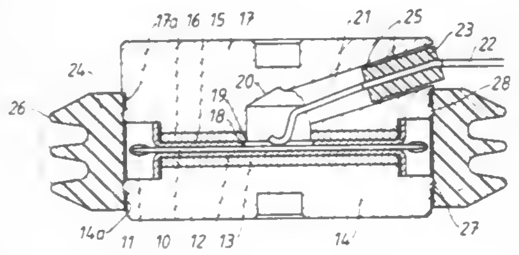
Gunno Eriksson, Hallstahammar, and Anders Nilarp, Vasteras, both of Sweden, assignors to Asea Aktiebolag, Vasteras, Sweden

Filed Feb. 13, 1980, Ser. No. 121,155

Claims priority, application Sweden, Feb. 21, 1979, 7901535

Int. Cl.^{3} H01L *23/42*

U.S. Cl. 357—79 **6 Claims**



1. A semiconductor device comprising a semiconductor wafer arranged between two metallic connecting members for supplying electric current to and leading it from said semiconductor wafer, each of said connecting members having a substantially cylindrical external part with at least one of the substantially cylindrical parts including an aperture, a control electrode extending through said aperture and contacting said semiconductor wafer, and a ring made from a material selected from the group consisting of a sulphone polymer and polyphenylene sulphide and having peripheral ridge portions on the internal surface thereof surrounding and in engagement with respective ones of said substantially cylindrical parts with a surface pressure of at least 10 N/mm^2, each of said peripheral portions, prior to engagement of the ring with said substantially cylindrical parts, having a diameter larger than the diameter of the cylindrical part with which it is substantially engaged, a plug of the same material as said ring and including ridges engaging the internal surface of said aperture with a pressure of at least 10 N/mm^2, whereby said connecting members and said ring form a protective casing around the semiconductor wafer.

4,370,672

COLOR SUBCARRIER REGENERATOR FOR SLOW DOWN PROCESSOR

Michael D. Ross, Somerdale, and Jon K. Clemens, Skillman, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,277

Int. Cl.^{3} H04N *5/76, 9/46*

U.S. Cl. 358—312 **6 Claims**

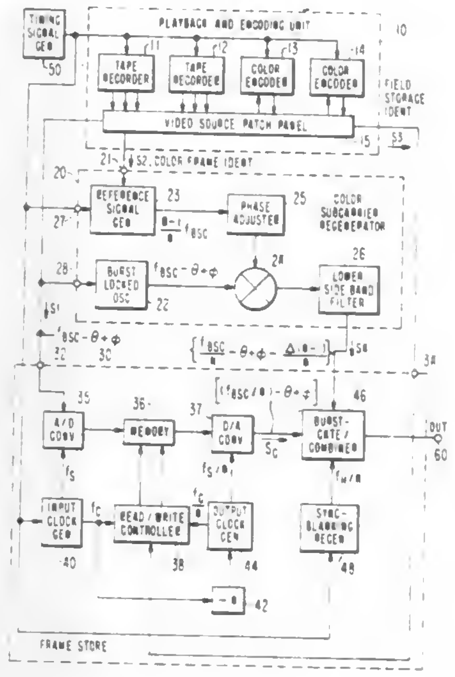
1. A color subcarrier regenerator for use in a video signal frame store of the type in which luminance and chrominance components of a composite video input signal are stored at one rate and recovered from the frame store at a lesser rate 1/N, N being an integer greater than unity, said regenerator comprising:

first means responsive to the color burst component of said input video signal for producing a first conversion signal having a frequency equal to that of said color burst component;

second means responsive to a fixed reference frequency signal for producing a second conversion signal having a frequency less than that of said first conversion signal by a factor (N−1)/N;

third means for multiplying said conversion signals to form a product signal having sum and difference components;

fourth means for applying said difference component of said product signal as a color subcarrier reference signal to a combining means in said frame store for forming a composite video output signal having a regenerated burst component; and



fifth means for effectively adjusting the phase of said difference component of said product signal to a value such that said regenerated burst component exhibits a phase relative to the chrominance component of said video output signal substantially equal to the phase relationship between the chrominance and burst components of said composite video input signal.

4,370,673

SIGNAL GENERATOR FOR A COLOR TELEVISION TRANSMITTING SYSTEM

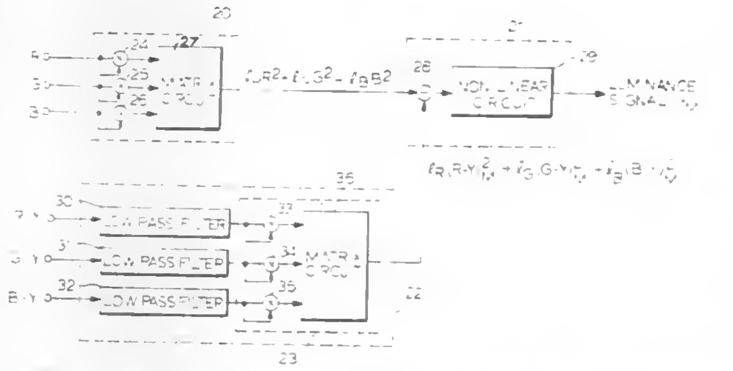
Tetsuo Tomimoto, Osaka; Yoshitomi Nagaoka, Neyagawa; Reiichi Sasaki, Yawata, and Hiroshi Oyama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1980, Ser. No. 218,012

Claims priority, application Japan, Dec. 20, 1979, 54-166507

Int. Cl.^{3} H04N *9/535*

U.S. Cl. 358—21 R **7 Claims**



1. A signal generator for a color television transmitting system which has a narrower bandwidth color-difference signal channel than a luminance signal channel, said signal generator comprising:

a primary color level detector, which is supplied with primary color signals representative of red, green and blue levels of a picture, for substantially respectively squaring said primary color signals, and for adding said squared signals together, and for outputting a primary color level signal representative of a luminance of a picture;

a color-difference level detector, which is supplied with wideband color-difference signals representative of red, green and blue chrominance levels of a picture, for extracting low frequency components of said color-difference signals, and for respectively squaring said low frequency components, and for adding said squared low frequency components together, and for outputting a color-difference level signal representative of a luminance component conveyed by said color-difference signal;

a luminance signal producer, which is supplied with said primary color level signal and said color-difference level signal, for outputting a luminance signal in response to the difference between said primary color level signal and said color-difference level signal.

4,370,674

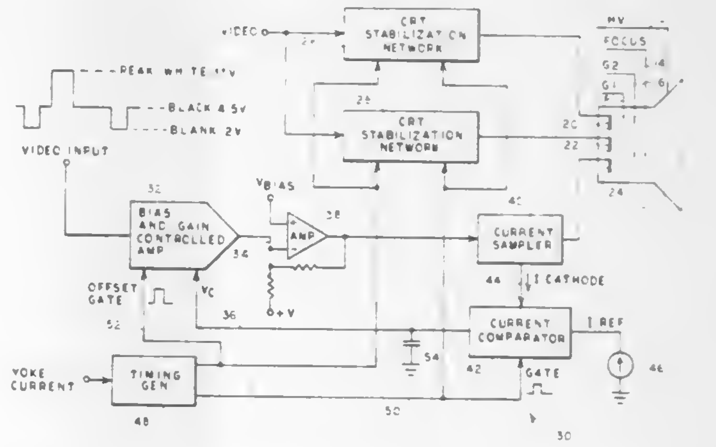
STABILIZATION NETWORK FOR A CATHODE RAY TUBE

Fred D. Johnson, Evanston; Michael D. Flasza, and Wayne E. Bretl, both of Schaumburg, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 3, 1981, Ser. No. 239,969

Int. Cl.^{3} H04N *9/16*

U.S. Cl. 358—74 **12 Claims**



1. In a color television receiver which develops a video drive signal and which includes a cathode ray tube having at least one cathode, a stabilization network which compensates for variable emission characteristics of the cathode, comprising:

a variable gain amplifier receiving the video drive signal for driving the cathode with an amplified video signal and a D.C. bias, said amplifier being responsive to a variable control voltage for altering its gain and its D.C. bias output such that, for a given cathode current which is developed in response to the D.C. bias, a selected peak white cathode current is developed in response to peak white portions of the video signal;

means for generating a fixed reference current indicative of a desired black level cathode current;

a comparator receiving the cathode current and the reference current and responsive to an enabling signal for comparing the cathode current to the reference current and for generating a control signal indicative of the difference between the cathode current and the reference current;

means for coupling the control signal to the amplifier; and

a timing generator for applying an enabling signal to the comparator and for simultaneously driving the video drive signal to black level during the receiver's vertical interval so that the control signal simultaneously alters both the gain and the D.C. bias output of the amplifier such that the cathode current is set to the reference black level current, and video drive signals received subsequent to the vertical interval are amplified so that their peak white portions develop given peak white cathode currents.

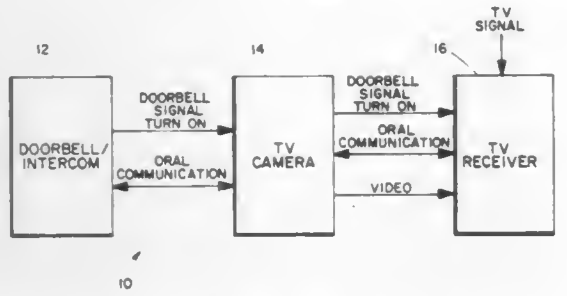
4,370,675
DOORBELL ACTUATED TELEVISION SECURITY SYSTEM

William E. Cohn, Skokie, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 5, 1981, Ser. No. 222,816

Int. Cl.^{3} H04N *7/18*

U.S. Cl. 358—108 **7 Claims**



1. A doorbell actuated video and audio security system comprising:

a video camera;

a television receiver including a power switch, video and audio signal processing circuitry, a video display and audio speaker/microphone combination, said television receiver coupled to said video camera for receiving and displaying video information therefrom;

an intercom system coupling a speaker/microphone combination located in the general vicinity of said video camera to the audio speaker/microphone in said television receiver;

first bistable switching means coupled to said doorbell for turning on said television receiver and providing camera video information and intercom audio signals thereto if said power switch is OFF; and

second switching means coupled to said doorbell and responsive to the actuation thereof for switching the input to said television receiver video and audio signal processing circuitry from received television signals to said camera video information and intercom audio signals, respectively, if said power switch is ON when said doorbell is actuated.

4,370,676
CARRIER REGENERATING CIRCUIT FOR A SYNCHRONOUS DETECTOR

Masayuki Hongu, Kawasaki; Shigeru Omuro, Higashimine; Hiroyuki Kita, Yokosuka, and Masaharu Tokuhara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,739

Claims priority, application Japan, Jul. 3, 1980, 55-90990

Int. Cl.^{3} H04N *5/44;* H03D *3/18*

U.S. Cl. 358—188 **7 Claims**

1. A synchronous detector for detecting an information signal modulated onto a carrier, comprising:

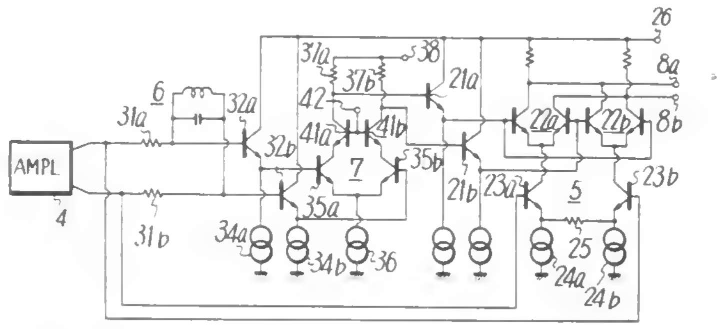
means for receiving said modulated information signal;

filter means coupled to said receiving means, said filter means including a tuning circuit tuned to the frequency of said carrier;

emitter follower means connected to the output of said filter means;

limiter means including a differential amplifier having first and second transistors, base electrodes of which are connected to the output of said emitter follower means, and third and fourth transistors, base electrodes of which are connected together, and emitter electrodes of which are respectively connected to collector electrodes of said first and second transistors, collector electrodes of said third and fourth transistors being output terminal means for providing a switching carrier; and

multiplier means having first and second input terminals respectively coupled to said output terminal means of said limiter means and to said receiving means, for multiplying said modulated information signal and said switching carrier to obtain said information signal.



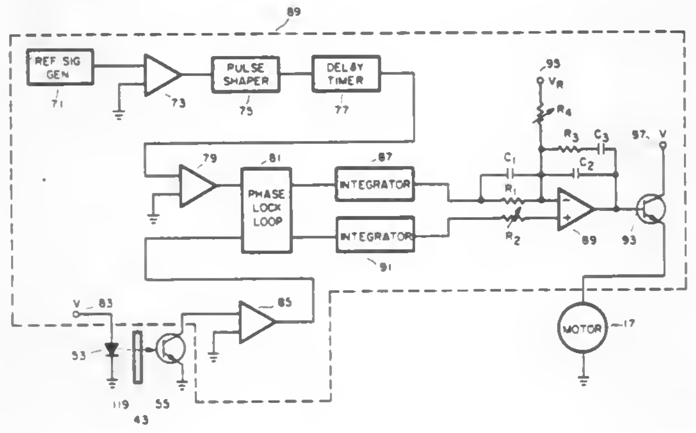
4,370,677
ROTATING SHUTTER SYSTEM FOR IMPROVING THE RESOLUTION OF A VISUAL DISPLAY SYSTEM

Dorothy M. Baldwin, Lake Monroe; Frank J. Oharek, Orlando, both of Fla., and Curt Stahl, Scarsdale, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 11, 1980, Ser. No. 215,213

Int. Cl.^{3} H04N *5/30, 5/72*

U.S. Cl. 358—225 **13 Claims**



1. A rotating shutter system for improving the resolution of an annular probe based 360° visual display system, comprising in combination:

a rotating shutter having on one surface thereof a plurality of evenly spaced opaque radial lines;

servo motor means effectively connected to said rotating shutter for rotating said shutter at a predetermined speed;

transmitting means positioned above said rotating shutter, and having an input for broadcasting through said rotating shutter a light beam such that said light beam will be broken by the opaque radial lines of said rotating shutter at a frequency corresponding to the speed of rotation of said rotating shutter;

sensing means positioned below said rotating shutter in alignment with said transmitting means and having an output for receiving said broken light beam, and for providing at the output thereof a shutter error signal in response to the broken light beam received thereby, said shutter error signal having a frequency corresponding to the frequency at which said light beam is broken by said rotating shutter; and

feedback circuit means comprising:

a reference signal generator having an output;

a pulse shaper having an input effectively connected to the output of said reference signal generator, and an output;

a delay timer having an input connected to the output of said pulse shaper, and an output;

a phase lock loop having a reference input effectively connected to the output of said delay timer, a signal input effectively connected to the output of said sensing means, a slow error signal output, and a fast error signal output;

a first integrator having an input connected to the slow signal error output of said phase lock loop, and an output;

a second integrator having an input connected to the fast signal error output of said phase lock loop, and an output;

a differential amplifier having a negative input connected to the output of said first integrator, a positive input connected to the output of said second integrator, and an output;

a direct current voltage source having an output; and

a transistor having a collector connected to the output of said direct current voltage source, a base connected to the output of said differential amplifier, and an emitter connected to the input of said servo motor means.

4,370,678
RECORDING APPARATUS WITH BEAM SCAN INFORMATION READING

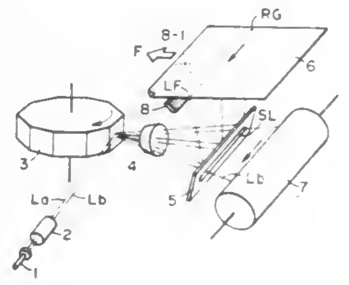
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,828

Claims priority, application Japan, Dec. 21, 1979, 54-166571; Jan. 24, 1980, 55-7223

Int. Cl.^{3} H04N *1/24*

U.S. Cl. 358—285 **8 Claims**



1. A recording apparatus with beam scan information reading, comprising:

a semiconductor array laser capable of generating plural laser beams from respective laser elements;

a collimating optical system in which said plural of laser beams from said semiconductor array laser are so commonly collimated as to have different emerging directions;

deflecting means for deflecting the beams emerging from said optical system;

irradiating means for irradiating a recording member with a portion of said deflected beams and irradiating a document with another portion of said deflected beams;

converting means for converting the reflected or transmitted light obtained from said other portion of said deflected beams directed to the document into electric signals; and

drive means for driving said laser elements for generating beams for irradiating said recording member according to said electric signals obtained by said converting means.

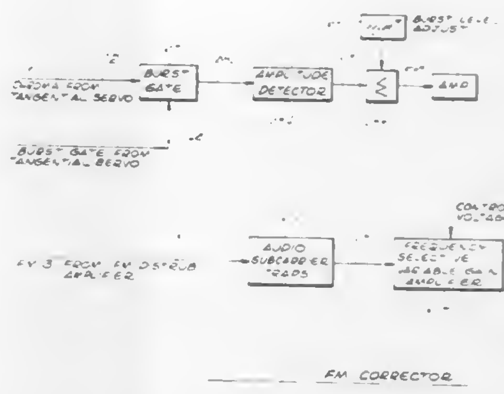
4,370,679
GAIN CORRECTION SYSTEM FOR VIDEODISC PLAYER APPARATUS

Ludwig Ceshkovsky, Fountain Valley, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 890,670, Mar. 27, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,902

Int. Cl.^{3} H04N *5/76, 9/535*

U.S. Cl. 358—318 **4 Claims**


BURST LEVEL ADJUST
BURST GATE
AMPLITUDE DETECTOR
AMP
CHROMA FROM TANGENTIAL SERVO
BURST GATE FROM TANGENTIAL SERVO
CONTROL VOLTAGE
AUDIO SUBCARRIER TRAPS
FREQUENCY SELECTIVE VARIABLE GAIN AMPLIFIER
CORRECTED FM TO FM DETECTOR
FM CORRECTOR

1. Apparatus for use in a signal recovery system for recovering a video signal from a video disc, wherein the signal includes luminance information, chrominance information and periodic chrominance bursts having a prescribed amplitude, wherein the signal is recorded in a succession of light reflective and light non-reflective regions forming a plurality of substantially circular and concentrically arranged information tracks, and wherein the system includes means for focusing a beam of radiation onto a selected track as the disc is rotated at a prescribed angular velocity and means for detecting a reflected beam of radiation having an intensity modulated by the recorded video signal, the gain of the higher frequency portion of the spectral response of the signal recovery system decreasing as the radius of the selected track decreases, thereby causing a corresponding variation in the respective amplitudes of the chrominance and luminance portions of the recovered video signal, said apparatus operating to correct for the variable gain of the system by controllably amplifying the corresponding portion of the frequency spectrum of the recovered video signal, said apparatus comprising:

means for detecting the amplitude of the successive chrominance bursts in the recovered video signal and for producing a corresponding control signal; and

means for amplifying the video signal recovered from the disc, said control signal being coupled to said amplifying means to controllably adjust its gain for a frequency band corresponding to the higher frequency portion of the recovered video signal, thereby correcting for the variable gain of the signal recovery system.

4,370,680
COLOR SIGNAL PROCESSING DEVICE FOR VIDEO RECORDER

Shinichiro Taguchi; Nobuya Nagao, and Yutaka Ogihara, all of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1981, Ser. No. 238,022

Int. Cl.^{3} H04N *9/491*

U.S. Cl. 358—330 **5 Claims**

1. A color signal processing device characterized by comprising:

a color signal amplifying circuit to which is selectively input through a first switching circuit an original color signal or a regenerative low frequency converted color signal according to the recording/reproducing mode of a video tape recorder, and which is gain-controlled by gain control means;

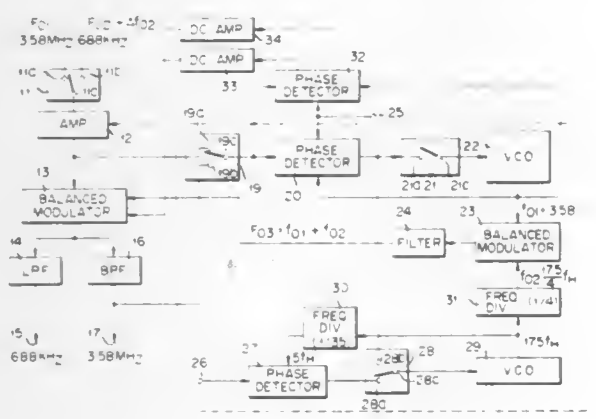
a first balanced modulator to which is input an output of said color signal amplifying circuit as well as a converting signal to provide a balanced modulated output of both input signals, and which has a control terminal for enabling control by color killer means;

a low-pass filter and a band-pass filter to which is input an output of said first balanced modulator;

a second switching circuit, to a first input terminal of which is input an output of said color signal amplifying circuit, and to a second input terminal of which is input an output of said band-pass filter, for selectively obtaining the signal at said first input terminal or said second input terminal according to the recording/reproducing mode of the video tape recorder;

a first phase detector, to one input terminal of which is input an output of said second switching circuit, and to the other input terminal of which is input an oscillation output of a first voltage controlled oscillator, for detecting a phase difference between the two input signals in a gate pulse period of a burst signal;

a third switching circuit, to which is input a phase detection output of said first phase detector, and which inputs or does not input this to an oscillation output control terminal of said first voltage controlled oscillator according to the recording/reproducing mode of the video tape recorder;



a second balanced modulator, to one input terminal of which is input an oscillation output of said first voltage controlled oscillator, and to the other input terminal of which is input a divided output of a first divider for dividing the oscillation output of a second voltage controlled oscillator, for applying a balanced modulated output of the two input signals to a converting signal input terminal of said first balanced modulator through a filter;

a second phase detector, to one input terminal of which is input a divided output of a second divider for dividing an oscillation output of said second voltage controlled oscillator, and to the other input terminal of which is input a horizontal sync signal, for obtaining a phase-detection output representing a frequency synchronization error of the two input signals; and

a fourth switching circuit, to a first input terminal of which is input a phase detection output of said second phase detector, and to a second input terminal of which is input a phase detection output of said first phase detector, for selectively inputting signals of said first and second input terminals to an oscillation output control terminal of said second voltage controlled oscillator according to the recording/reproducing mode of the video tape recorder.

4,370,681
GAIN CONTROL CIRCUIT FOR NOISE REDUCTION SYSTEM

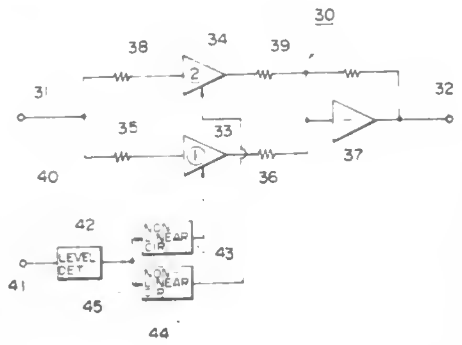
Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,363

Claims priority, application Japan, May 29, 1979, 54-65563

Int. Cl.³ G11B *5/02, 5/45, 15/02*

U.S. Cl. 360—68 **18 Claims**



1. In apparatus for recording an information signal on a recording medium by a recording device, gain control means comprising:

means defining a first transmission path for compressing said information signal supplied thereto with a first gain characteristic;

means defining a second transmission path separate from said first transmission path for compressing the same information signal supplied to said first transmission path with a second gain characteristic different from said first gain characteristic; and

means for providing a substantially constant overall compression characteristic for said apparatus by effectively supplying the information signal to said recording device by way of said first transmission path when the amplitude of the information signal is below a predetermined value and for effectively supplying said information signal to said recording device by way of said second transmission path when the amplitude of said information signal is above said predetermined value, said means for providing including amplifier means having an input supplied with the compressed information signal from said first transmission path and with the compressed information signal from said second transmission path whereby said compressed information signal from said first transmission path and said compressed information signal from said second transmission path are added at the input of said amplifier means.

4,370,682
TAPE LOADING APPARATUS IN A RECORDING AND/OP. REPRODUCING APPARATUS

Hiroshi Katoh, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 4, 1980, Ser. No. 109,672

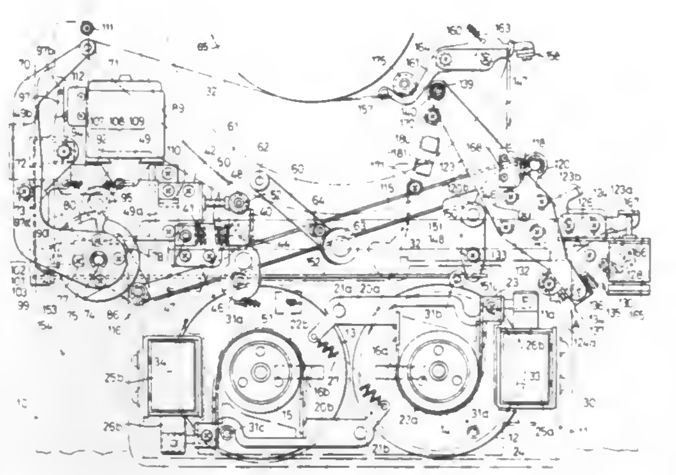
Claims priority, application Japan, Jan. 12, 1979, 54-2683; Jan. 12, 1979, 54-2684; Jan. 12, 1979, 54-2685

Int. Cl.³ G11B *15/66, 15/18, 5/52*

U.S. Cl. 360—71 **4 Claims**

1. A video cassette tape player comprising means for supporting a tape supply reel and a tape takeup reel with a length of tape extending between said reels; separate motor means individually associated with each of said reels for selectively transporting said tape back and forth between said reels; means for pulling said length of tape from said reels and into a predetermined tape path; means for normally holding said reels immobile against random rotation; means responsive to a playback command signal for releasing said holding means, starting said pulling means, and energizing said motor means; means for feeding back a control signal for applying a minimum driving

power to each of said motor means in order to maintain a predetermined and balanced tension in said length of said tape while it is being pulled into said predetermined tape path; and



means responsive to said tape reaching said predetermined tape path for reapplying said holding means, stopping said pulling means, and controlling the power applied to each of said motor means.

4,370,683
CROSS-COUPLED SERVO CONTROL MECHANISM FOR REEL-TO-REEL TAPE DRIVES

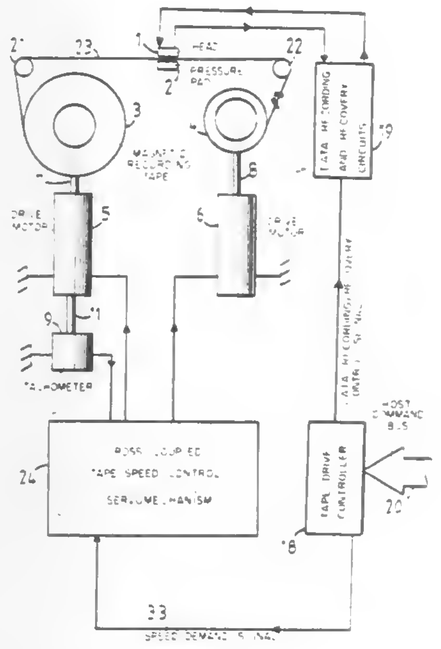
George H. Greig, and Archibald M. Pettigrew, both of Kirkcaldy, England, assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 5, 1979, Ser. No. 91,441

Claims priority, application United Kingdom, Nov. 28, 1978, 46353/78

Int. Cl.³ G11B *15/46, 19/20*

U.S. Cl. 360—73 **10 Claims**



1. A tape drive system for driving first and second tape storage reels containing a tape, comprising:

first and second tape moving means mechanically coupled, respectively to said first and second tape storage reels;

a tape drive controller for providing an analog signal indicative by magnitude of the required rotational speed of said first tape storage reel and by polarity of the direction of travel of said tape;

a tape speed control servo including:

- a speed transducer mechanically coupled to said first tape moving means for producing a signal indicating the speed and direction of said first tape moving means;
- first and second signal compensating networks each receiving the output of said speed transducer, the first signal compensating network delivers at its output a greater portion of its input signal than does the second signal compensating network;
- a first signal summing junction for receiving and summing the output of said first signal compensating network and the output of said tape drive controller;
- a second signal summing junction for receiving and summing the output of said second signal compensating network and the output of said tape drive controller;
- a signal inverter for receiving and inverting the output of said second summing junction;
- a first signal amplifier means receiving the output of said first summing junction for providing a unidirectional control signal to said first tape moving means; and
- a second signal amplifier means receiving the output of said signal inverter for providing a unidirectional control signal to second tape moving means.

4,370,684
TAPE RECORDER WITH AUTOMATIC TAPE END STOPPING AND ALARM GENERATION

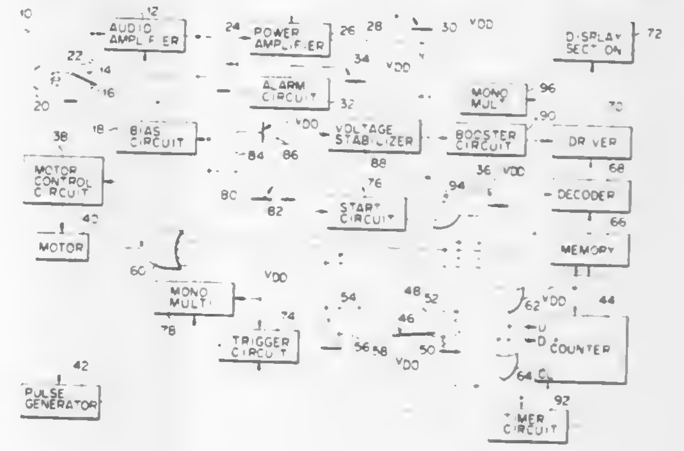
Katsumi Kanayama; Kazuyasu Motoyama, and Kenzi Furuta, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,503

Claims priority, application Japan, May 15, 1979, 54-64439[U]

Int. Cl.³ G11B *19/06, 15/48*

U.S. Cl. 360—74.2 **2 Claims**



1. A tape recorder in which an audio signal is supplied to a magnetic head through an audio amplifier with an output signal from a bias circuit at the time of a recording operation, and an output signal from the magnetic head is supplied to a loudspeaker through the audio amplifier and a power amplifier at the time of a reproducing operation, comprising:

means for running a magnetic tape;

pulse generating means for generating a pulse signal representing a distance for which the tape travels, said pulse signal comprising spaced apart pulses;

counting means coupled to said pulse generating means for counting pulses of the pulse signal from said pulse signal generating means;

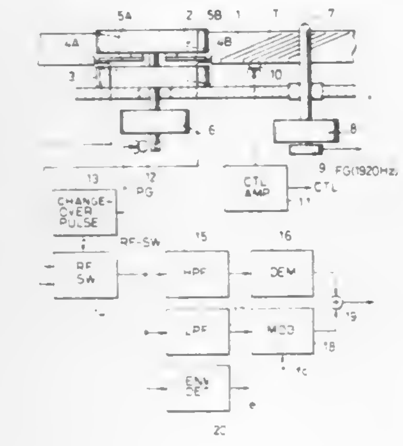
detecting means coupled to said pulse generating means for producing a detection signal, the level of which changes when the pulse interval between pulses of said pulse signal exceeds a predetermined interval;

alarm means for producing an alarm through the power amplifier to the loudspeaker;

first power supplying means coupled to said detecting means for supplying power to the audio amplifier, to the bias circuit, to the tape running means and to the power amplifier until the detecting means generates a detection signal at which time the first power supplying means is rendered off to stop supplying said power; and

second power supplying means coupled to said detecting means for supplying power to the power amplifier and to the alarm means only for a predetermined period of time after the detection signal is generated.

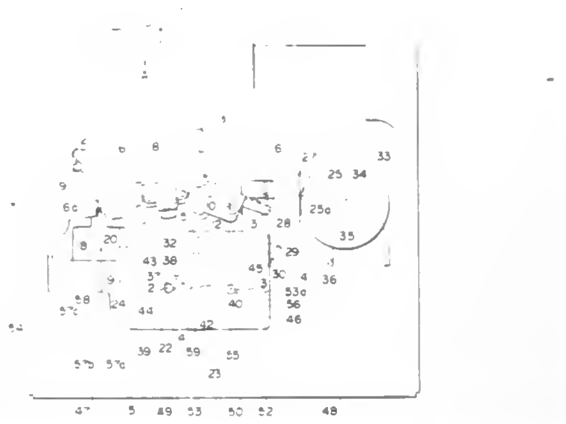
4,370,685
HEAD TRACKING CONTROL SYSTEM FOR A HELICAL SCAN VTR
Sadao Hosoi, Ebina, and Masayuki Takano, Hon, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 13, 1981, Ser. No. 243,352
Claims priority, application Japan, Mar. 13, 1980, 55-31900
Int. Cl.^{3} G11B *21/10, 5/52*
U.S. Cl. 360—77 **23 Claims**



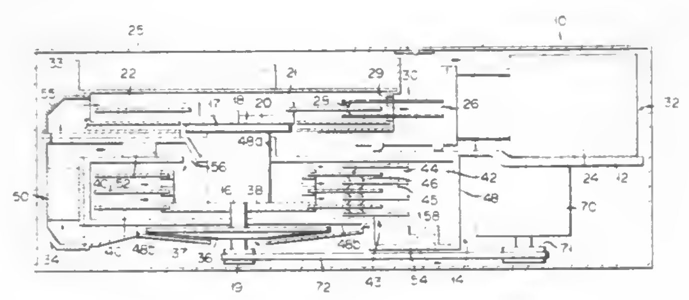
1. Apparatus for reproducing information signals recorded in successive parallel tracks on a record medium while the latter is advanced at a predetermined speed in a direction at an angle to the direction along said tracks, said apparatus comprising:
- transducer means movable along each of the tracks in a scanning path from a beginning end to a concluding end thereof for reproducing the signals recorded therein;
- transducer deflecting means for deflecting said transducer means in a direction transverse to the direction along the tracks;
- drive signal means for producing a drive signal controlling said transducer deflecting means to deflect said transducer means for accurately moving along said tracks during a scanning operation thereby; and
- phase compensation means for producing a phase compensation signal controlling said transducer deflecting means so as to preset said transducer means to the beginning of each track to be scanned during a non-scanning operation thereby, said phase compensation means including offset control means for producing an offset control signal as part of said phase compensation signal only when the speed of advancement of the record medium during reproducing is outside a predetermined range of speeds.

4,370,686
DRIVE MECHANISM FOR TAPE RECORDER
Noboru Katoh, Tokyo, and Akio Kimura, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 18, 1980, Ser. No. 160,588
Claims priority, application Japan, Jun. 20, 1979, 54/77680
Int. Cl.^{3} G11B *5/008, 15/00*
U.S. Cl. 360—96.3 **6 Claims**

1. A drive mechanism for a tape recorder comprising, a chassis, a magnetic head and a pinch roller movable from an inoperative position to an operative position to place a magnetic tape against said magnetic head, a transmission mechanism driven by a drive source and engageable with a supply and a take-up reel, respectively, for forming operational modes of quick feeding and rewinding, a slidable plate for supporting said transmission mechanism slidably mounted on said chassis and movable from a neutral position to a first operative position whereby said transmission mechanism is placed in engagement with said supply reel and movable from a neutral position to a second operative position whereby said transmission mechanism is in engagement with said take-up reel, spring means for biasing said slidable plate to said neutral position, a linkage mechanism linking a first plunger with said pinch roller when said slidable plate is in said neutral position, a second plunger connected to move said slidable plate from said neutral position to said first operative position, a third plunger connected to move said slidable plate from said neutral position to said second operative position, a locking means connected to said first plunger to be moved from a first position to a second position by said first plunger for locking said slidable plate in its said first and second operative positions against the biasing force provided by said spring means when said second or third plunger is de-energized.

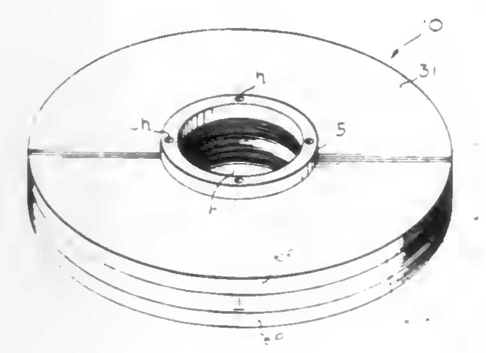


4,370,687
MAGNETIC DISK APPARATUS
Fumitake Shiraishi; Masahiko Fujioka, and Masao Fujiki, all of Hamura, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Continuation-in-part of Ser. No. 16,539, Mar. 1, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,799
Claims priority, application Japan, Mar. 9, 1978, 53-25995
Int. Cl.^{3} G11B *5/012, 23/02*
U.S. Cl. 360—98 **3 Claims**



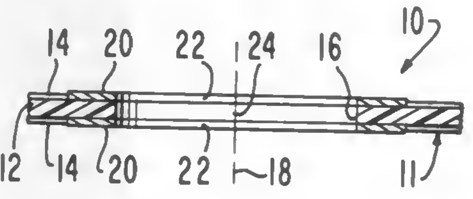
1. A magnetic disk apparatus comprising a base casting; a sealed enclosure removably secured on one side of the base casting; a drive spindle rotatably supported by the enclosure and having one end exposed on the opposite side of the base casting; means for rotating the drive spindle; fixed disk means received in the enclosure and connected to the drive spindle; first magnetic head means cooperable with said fixed disk means; a flange supported on said one end of the drive spindle; removable disk means interchangeably mounted on said flange; second magnetic head means cooperable with said removable disk means; a first head-positioning device received in the enclosure and operable to shift said first magnetic head means to a desired track formed in the fixed disk means; a second head-positioning device mounted on the base casting for shifting said second magnetic head means to a desired track formed in the removable disk means; and means for controlling the operation of the first and second magnetic head-positioning devices independently of one another.

4,370,688
FLOPPY PACK WITH ENHANCED ORIFICE MEANS
Harvey J. Richardson, Sepulveda, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Jun. 3, 1980, Ser. No. 156,199
Int. Cl.^{3} G11B *23/02, 25/04*
U.S. Cl. 360—99 **15 Claims**



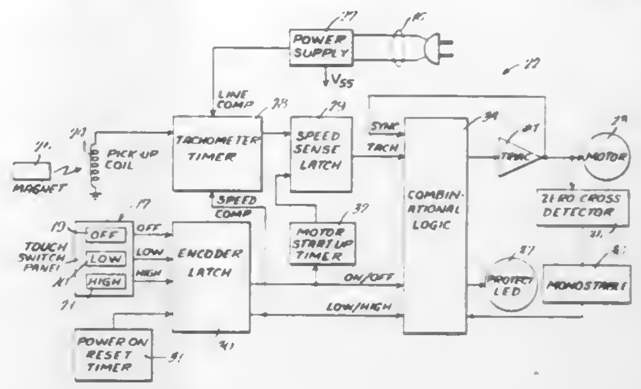
1. In an improved pack of flexible disks adapted to be pneumatically partitioned axially and wherein the disks are formed with gas-conducting apertures therethrough, the improvement therewith of rim means disposed in each gap defined between adjacent disks, and about adjacent apertures between respective disks, the rim means comprising "full-rim" annuli about certain apertures, being adapted to isolate the gap from the gas stream passing axially-up through certain "isolated" ones of said apertures, and certain other diverting "partial-rim" annuli only partly encircling other "entry" ones of said apertures communicating penumatically with the subject gap to divert gas into the respective inter-disk gap rather than across this gap; these annuli also providing a reference platform against which the disks may be pressed; and wherein enlargement means characterize at least some of said "entry" apertures, so as to facilitate increased gas flow therethrough.

4,370,689
FLEXIBLE MAGNETIC RECORDING MEDIUM WITH IMPROVED REINFORCEMENT MEANS
Charles A. Davies, Los Gatos, Calif., assignor to Dysan Corporation, Santa Clara, Calif.
Filed Aug. 4, 1980, Ser. No. 174,966
Int. Cl.^{3} G11B *5/02;* **B44C** *31/00*
U.S. Cl. 360—135 **11 Claims**



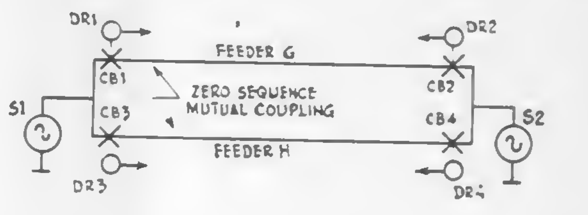
1. A magnetic recording medium comprising: a flexible body having a pair of opposed surfaces with a magnetic recording layer on at least one of said surfaces, and a central hole therethrough; and an annular reinforcing member of a material capable of being hot stamped, the member being hot stamped to one side of the body in surrounding relationship to the hole.

4,370,690
VACUUM CLEANER CONTROL
Daniel A. Baker, St. Louis Park, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Feb. 6, 1981, Ser. No. 231,992
Int. Cl.^{3} H02H *7/093*
U.S. Cl. 361—23 **14 Claims**



1. In a vacuum cleaner having a suction means including an alternating current motor, a rotatable beater brush and drive means for driving the brush as an incident of rotation of said motor, an improved control for controlling the operation of said motor comprising:
- gated electronic switch means connected to the motor for controlling energization thereof;
- touch switch means for selectively controlling the gated switch means to provide a high speed operation thereof and a low speed operation thereof;
- sensing means for sensing the speed of rotation of the beater brush; and
- means for turning off said switch means to terminate operation of the motor when the speed sensed by said sensing means is below a first preselected speed when the gated switch means is arranged to cause high speed operation of the motor, and to terminate operation of the motor when the speed sensed by said sensing means is below a second, lower preselected speed when the gated switch means is arranged to cause low speed operation of the motor, said second preselected speed being caused to be lower than said first preselected speed independently of changes in the voltage conditions of said suction means motor during normal operation thereof.

4,370,691
PROTECTION APPARATUS FOR ELECTRIC POWER TRANSMISSION SYSTEMS
Adrian O. Newbould, Hixon, England, assignor to The General Electric Company Limited, London, England
Filed Mar. 23, 1981, Ser. No. 246,374
Claims priority, application United Kingdom, Mar. 21, 1980, 8009709
Int. Cl.^{3} H02H *7/00*
U.S. Cl. 361—62 **6 Claims**



1. A protection apparatus for a feeder of an electric power transmission system incorporating compensation for mutual coupling between the feeder and another feeder including: means for deriving a first signal representative of the zero sequence current in a feeder to be protected by the apparatus; means for deriving a second signal representative of the zero

sequence current in another feeder with which the protected feeder is mutually coupled; and means responsive to said first and second signals to produce a signal for compensating for said mutual coupling, said mutual coupling compensation signal being proportional to the zero sequence current in the other feeder when the ratio of the zero sequence currents in the other feeder and the protected feeder is below a predetermined value, and when said ratio is above said predetermined value being limited to a value proportional to the protected feeder zero sequence current.

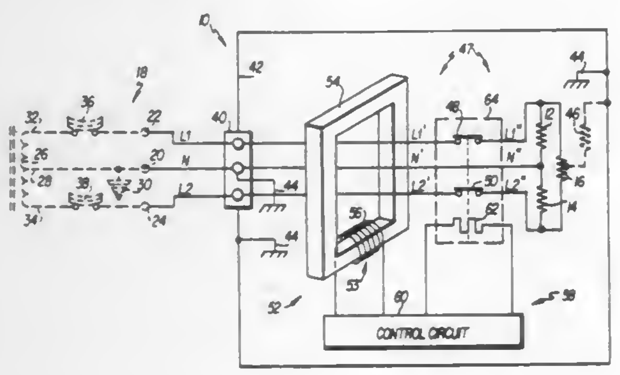
4,370,692
GROUND FAULT PROTECTIVE SYSTEM REQUIRING REDUCED CURRENT-INTERRUPTING CAPABILITY

Carl E. Wellman, Jr., and Richard E. Hornung, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 951,892, Oct. 16, 1978. This application Jul. 13, 1981, Ser. No. 282,574

Int. Cl.³ H05B *9/00*

U.S. Cl. 361—109 **16 Claims**



1. An electric range including at least one sheathed electrical resistance heating unit of the type having a spiralled electrical resistance wire encased within an elongated ceramic-filled metal outer sheath connected to a ground reference point, said electric range further including load-supplying conductors adapted to be supplied from a power source having a first overcurrent interruption means for interrupting the power source when a predetermined current threshold is exceeded, said electric range being subject to a first class of failure characterized by a breakdown or an initial failure stage in the form of an incipient breakdown in the electrical insulation qualities of the ceramic material within said outer sheath with consequent excessive current flow between at least one of said conductors and the ground reference point with circuit current remaining at or below the predetermined current threshold and circuit current remaining below that of a major arcing ground fault, said electric range being subject to a second class of failure characterized by current through at least one of said conductors being above the predetermined current threshold, and said electric range comprising:

second means for interrupting at least one of said conductors in response to excessive current flow characteristic of an incipient ground fault between one of said conductors and the ground reference point, said second means for interrupting operating sufficiently quickly to potentially avoid failure of the heating unit beyond the incipient ground fault stage, and said second means for interrupting including means for preventing conductor interruption thereby in the event a failure of the second class occurs.

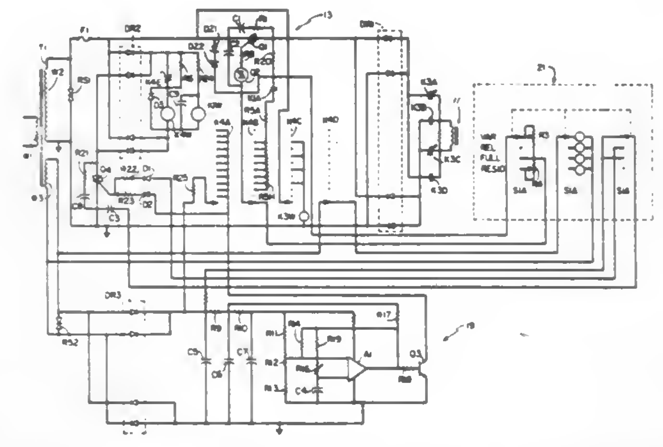
4,370,693
DEMAGNETIZING APPARATUS FOR A WORKPIECE HOLDING ELECTROMAGNET

Donald C. McDonald; Roger B. Ela, and Dominic F. Pignataro, all of c/o Walker Magnetics Group, Inc., Rockdale St., Worcester, Mass. 01606

Continuation-in-part of Ser. No. 67,366, Aug. 17, 1979. This application Jan. 2, 1981, Ser. No. 221,990

Int. Cl.³ H01F *13/00*

U.S. Cl. 361—145 **15 Claims**



1. Apparatus for generating a sequence of energizations of the winding of an electromagnet to effect release, by the electromagnet, of a magnetizable workpiece, said apparatus comprising:

phase sensitive power control means providing alternating current of variable average voltage from an a.c. supply voltage of fixed amplitude;

a full wave rectifier means interconnected with said power control means for proving variable direct current from said variable alternating current;

a current reversing switch circuit for connecting the d.c. output of said rectifier means to said electromagnet in either a forward or a reverse direction;

sequential switching means including a first portion for progressively changing the phase setting of said power control means upon successive actuations and a second portion for reversing the polarity of magnetization of said magnet winding by said switch circuit upon successive actuations of said switching means; and

means for periodically actuating said sequential switching means.

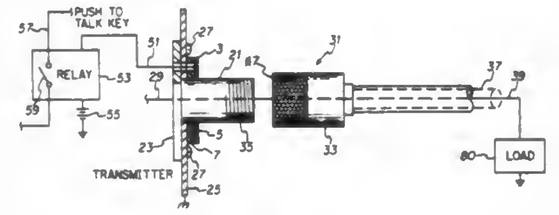
4,370,694
ELECTRICAL INTERLOCK

Thomas A. Hargrave, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 3, 1980, Ser. No. 193,874

Int. Cl.³ H01R *13/44*

U.S. Cl. 361—179 **4 Claims**



1. An electrical interlock comprising:

protection circuit means for protecting electrical equipment;

a male type connector with an external conductor shaped to provide a first fastener means;

a flat insulated spacer means for mounting on the male type connector the flat insulated spacer mean includes; an electrical insulator shaped as a washer with a first center opening—an electrical conductor shaped as a washer with a second center opening having a greater diameter than the first center opening—mounting means for mounting the electrical conductor on the insulator—and connector means for connecting the electrical conductor to the protection circuit means to provide an electrical contact thereby;

a female type connector with an external conductor shaped to provide a second fastener means acceptable to the first fastener means; and

the protection circuit means being connected to the electrical conductor whereby when said first fastener means is engaged with the second fastener means, the protection circuit is deactivated to enable the use of the electrical equipment.

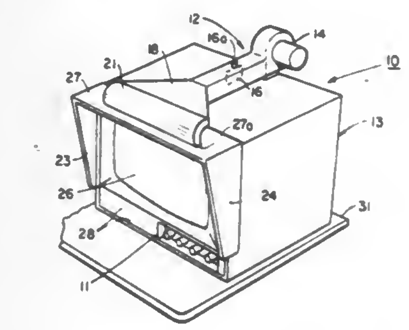
4,370,695
APPARATUS FOR PREVENTING ELECTROSTATIC CHARGE BUILD-UP ON CRT MONITORS

Loren C. Penick, Naperville, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 28, 1980, Ser. No. 201,645

Int. Cl.³ H05F *3/06*

U.S. Cl. 361—213 **43 Claims**



1. A CRT monitor assembly comprising:

a CRT monitor which includes a display screen that normally inherently tends to build-up a relative high electrostatic charge on the surface thereof when said monitor is energized, and

a de-ionizing air generating system for preventing electrostatic charge build-up on said monitor, said system including:

a. first means, comprising an electrically operated ionized air blower having at least one output port, and

b. second means coupled to said first means for initially receiving, then fanning out and forming said supply of ionized air into a thin stream of de-ionizing air, with the latter being directed immediately adjacent to, and across, said screen from one predetermined edge to and beyond the opposite edge thereof, said second means including a thin, wedge-shaped fan-out nozzle portion, and a wide, thin arcuate forming nozzle portion that communicates with both the outer end of said fan-out nozzle portion and the predetermined edge of said monitor screen, said forming nozzle portion being contoured so as to re-direct said stream of de-ionizing air at a relatively sharp angle from a first trajectory after passing through said fan-out nozzle portion to a second trajectory substantially parallel as well as adjacent to the surface of said monitor screen, the proximity of said stream of de-ionizing air to said screen preventing the build-up of detrimental electrostatic charge on the surface of the latter.

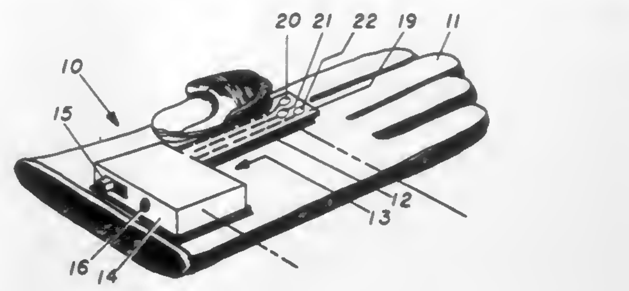
4,370,696
ELECTRIFIED GLOVE

Miklos Darrell, 7311 Denny Ave., Sun Valley, Calif. 91352

Filed May 26, 1981, Ser. No. 266,886

Int. Cl.³ F41B *15/04*

U.S. Cl. 361—232 **7 Claims**



1. An electrified device for temporarily incapacitating an individual or animal, comprising:

(a) a battery;

(b) transformer means for increasing voltage and reducing amperage from the battery;

(c) a transistor oscillator for converting D.C. voltage to A.C. voltage to power the transformer and produce a continuous A.C. voltage output;

(d) a rectifier and charging capacitor for converting a portion of the A.C. output to an intermittent D.C. output; and,

(e) open terminal output means connecting to the A.C. and D.C. outputs, the transistor oscillator being connected directly through the capacitor to the terminal means;

whereby, an individual or animal who contacts the open terminals will be temporarily incapacitated, and the transistor oscillator will be buffered by the charging capacitor against reflected impedance signals due to contact with the terminals and thereby maintain continuous operation of the oscillator.

4,370,697
CAPACITOR FOR MEASURING FORCES

Rainer Haberl, Traiskirchen, and Josef Kastner, Vienna, both of Austria, assignors to Semperit AG, Traiskirchen, Austria

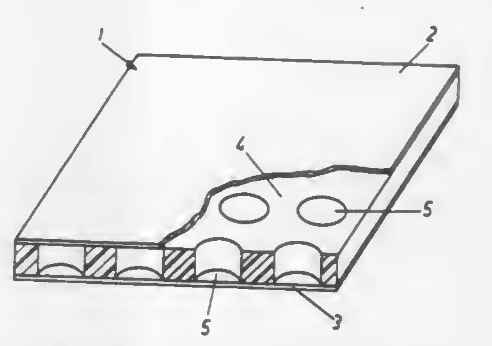
Continuation-in-part of Ser. No. 870,476, Jan. 18, 1978, Pat. No. 4,266,263. This application Nov. 3, 1980, Ser. No. 203,102

Claims priority, application Switzerland, Jan. 21, 1977, 730/77

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ H01G *7/00*

U.S. Cl. 361—283 **9 Claims**



1. A capacitor for measuring external pressure comprising:

a pair of electrically conductive electrodes;

an elastomeric dielectric comprising a web arranged between said electrodes;

seal means for sealing said elastomeric dielectric; and

said web having at least one face thereof protruding nap-shaped protuberances defining a hollow space which is at a reduced pressure in relation to the external pressure.

4,370,698

THROUGH TYPE HIGH-WITHSTAND-VOLTAGE CERAMIC

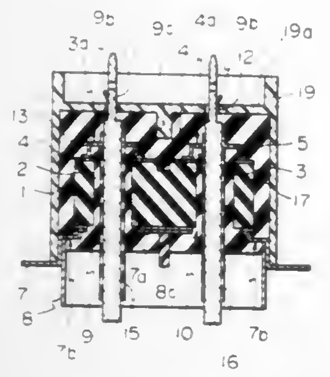
Setsuo Sasaki, Nikaho, Japan, assignor to TDK Electronics Co., Ltd., Japan

Filed Aug. 12, 1980, Ser. No. 177,374

Claims priority, application Japan, Oct. 8, 1979, 54/139387[U]; Dec. 17, 1979, 54/174705[U]; **Jan. 19, 1980, 55/5103[U]**

Int. Cl.^{3} H01G *4/42*

U.S. Cl. 361—330 **18 Claims**



1. A through type twin high-withstand-voltage ceramic capacitor comprising;

(a) a rectangular ground conductor plate unit (**7**) having a plate (*7c*) and an elevated substantially elliptic portion (*7a*) elevated from said plate (*7c*), said elevated portion (*7a*) having a plurality of relatively small holes (*7b*) on the closed peripheral line of the elevated portion (*7a*) and a pair of relatively larger holes (**9, 10**),

(b) a capacitor half assembly having a substantially elliptic column shaped ceramic body (**1**), a pair of separated electrodes (**4, 5**) disposed on the upper surface of said ceramic body, and a common electrode (**6**) disposed on the bottom surface of said ceramic body (**1**), said ceramic body (**1**) and the electrodes (**4, 5, 6**) disposed thereon having a pair of common holes (**2, 3**) therethrough in the thick vertical direction of the ceramic body (**1**), and said capacitor half assembly being disposed on said elevated portion (*7a*) within the range defined by said relatively small holes (*7b*),

(c) a pair of circular caps (**13, 14**) each having an elevated portion (**13***a*, **14***a*) being provided on the closed peripheral line of each of said caps (**13, 14**), said caps (**13, 14**) being disposed on each of said separated electrodes (**4, 5**), respectively,

(d) a pair of conductive rods (**11, 12**) each respectively passing through a hole of said ground conductor plate unit (**7**), the capacitor half assembly and the cap (**13, 14**), and said conductor rods being fixed to said caps,

(e) a pair of insulation tubes (**15, 16**) covering the conductive rods (**11, 12**) so that those conductive rods (**11; 12**) do not electrically contact the common electrode (**6**) and the ground conductor plate unit (**7**),

(f) a hollow substantially elliptic column shaped plastic cover (**8**) positioned below said ground conductor plate unit (**7**) covering said insulation tubes (**15, 16**), said cover (**8**) having a bridge (**8***c*) across a pair of substantially parallel side walls (**8***a*, **8***b*) of said cover (**8**) so that said bridge (**8***c*) separates the cross section of the cover (**8**) into two generally circular areas,

(g) an insulator (**17**) injected into said cover (**8**), and said holes (**2, 3**) of the capacitor half assembly, also enclosing said capacitor half assembly.

4,370,699

PRINTED WIRING BOARD FOR RECORDING OR DISPLAYING INFORMATION

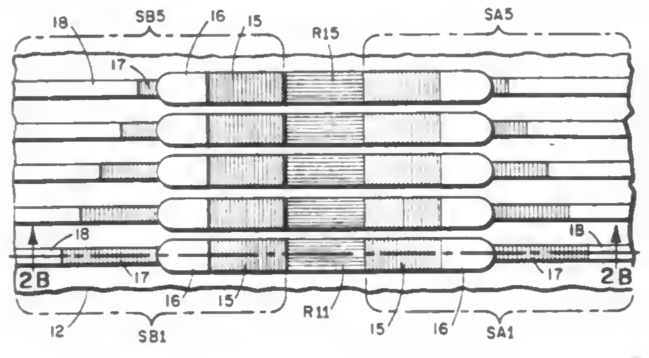
Tamio Saito, Oume, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 28, 1980, Ser. No. 211,450

Claims priority, application Japan, Nov. 28, 1979, 54/153857

Int. Cl.^{3} H05K *1/16*

U.S. Cl. 361—406 **16 Claims**



1. A printed wiring board for recording or displaying information comprising:

an insulated substrate;

a plurality of functional elements placed on said insulated substrate, each of said strip wires connected to a respective functional element, and at least two of the strip wires having different lengths such that one is longer than the other, each of said strip wires comprising a first portion having a first resistivity, wherein the resistance of the second portion of said shorter strip wire is higher than the resistance of the second portion of said longer strip wire, and the resistance of the first portion of said longer strip wire is higher than the resistance of the first portion of said shorter strip wire so that the total resistance of the shorter strip wire is substantially equal to the total resistance of the longer strip wire.

4,370,700

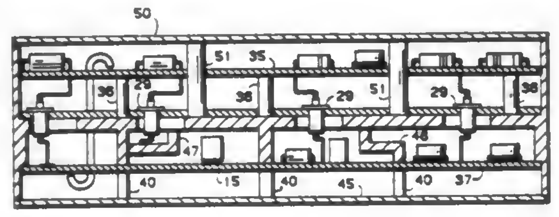
RF PACKAGE INCLUDING RF SHIELDING FOR A MULTIPLE PC BOARD

Allen L. Duddles, Tempe, and Daniel G. Toomey, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg

Continuation of Ser. No. 156,156, Jun. 3, 1980, abandoned. This application Nov. 13, 1981, Ser. No. 321,287

Int. Cl.^{3} H02B *1/08*

U.S. Cl. 361—424 **4 Claims**



1. Apparatus for assembling into an RF package for RF shielding a printed circuit board having a plurality of circuits thereon requiring shielding from each other and from the surroundings, said apparatus comprising:

(a) base means formed with at least electrically conductive surfaces and having a planar wall adapted to be positioned parallel with the printed circuit board and at least coextensive therewith and upright walls formed as an integral part of said planar wall and generally perpendicular thereto, outer portions of said upright walls defining one compartment for fixedly receiving the printed circuit board therein in overlying parallel, spaced apart relationship with respect to said planar wall and inner portions of said upright walls extending from said planar wall a shorter distance than said outer portions further defining a plurality of subcompartments within the one compartment wherein said inner portions of said upright walls extend from said planar wall for abutting engagement with one side of the printed circuit board and for encircling each of the plurality of circuits thereon;

(b) the planar wall being formed with at least one opening therethrough and the apparatus further including an electrically conductive planar member having at least one feedthrough component mounted thereon, said planar member being fixedly mounted on said planar wall in overlying relationship with the opening therethrough;

(c) cover means for being affixed to said upright walls of said base means in parallel spaced apart relationship with respect to said planar wall and cooperating with said outer portions of said upright walls for defining a single compartment between the printed circuit board, said upright walls and said cover means and for substantially enclosing the printed circuit board; and

(d) wall means formed with at least electrically conductive surfaces and for mounting between said cover means and the printed circuit board in electrical contact with said cover means, generally parallel with said upright walls and for mounting in abutting engagement with the other side of the printed circuit board so as to divide the single compartment into subcompartments for generally encircling each of the plurality of circuits on the printed circuit board.

4,370,701

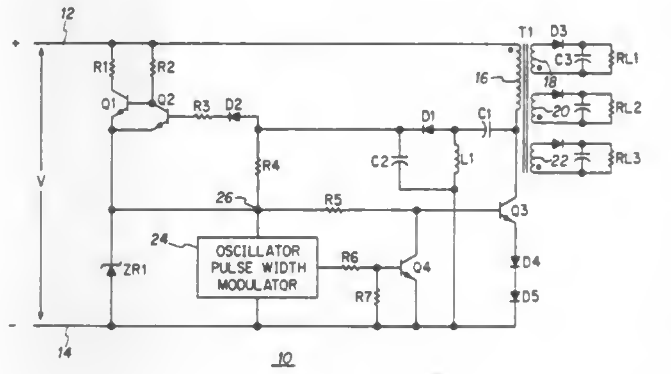
ENERGY CONSERVING DRIVE CIRCUIT FOR SWITCHED MODE CONVERTER UTILIZING CURRENT SNUBBER APPARATUS

Ralph E. Western, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 24, 1981, Ser. No. 257,287

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—20 **3 Claims**



1. A switched-mode power converter comprising, in combination:

transformer means;

main power switch means, connected to said transformer means, for controlling conduction of primary current therethrough in accordance with an input control signal supplied thereto; and

non-dissipative snubber means, connected to said transformer means and said main power switch means, for converting transformer leakage inductance energy to drive said main power switch, said non-dissipative snubber means comprising,

a first capacitor C1 charged by said transformer leakage inductance energy upon each turn-OFF of said main power switch;

a second layer capacitor C2 charged in increments through C1 until a given threshold charge level is reached in C2 after a plurality of ON-OFF cycles of said main power switch;

an inductor connected to said C1 and C2 capacitors for limiting discharge of C1 through said main power switch means when the latter is in an ON condition; and

a diode connected between C1 and C2 and poled in series-aiding direction from C1 to C2 to permit charging of C2 through C1 but to prevent discharge of C2 through C1 whereby the snubber means acts as a step-down voltage device to supply useful low voltages to said switch means in a non-dissipative fashion.

4,370,702

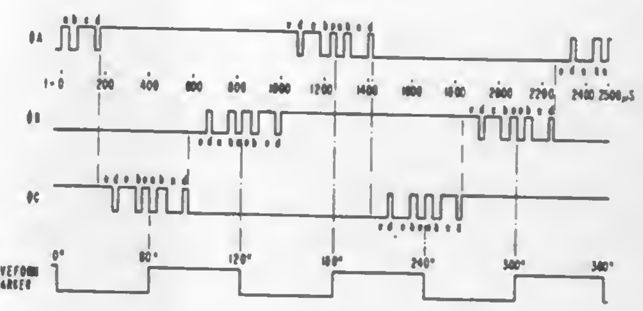
MICROPROCESSOR CONTROL OF INVERTER POWER TRANSISTORS WITH DC CONTENT CORRECTION

Kenneth C. Shuey, Cridersville, and Mark A. Rosswurm, Jackson Township, Hardin County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1981, Ser. No. 225,225

Int. Cl.^{3} H02P *13/20;* **H02M** *1/12*

U.S. Cl. 363—42 **10 Claims**



1. Apparatus for generating an AC waveform from a DC source comprising:

means for generating a series of clock pulses at fixed intervals;

a pair of electronic switches connected to said DC source to generate an output of one polarity when one of said switches is turned on and an output of the opposite polarity when the other switch is turned on;

means for filtering the output of said electronic switches to generate a filtered output waveform;

means for detecting a DC content in the filtered output waveform including the polarity thereof; and

means for switching said electronic switches such that alternately one is on and then the other with said switching occuring at selected intervals which are multiples of the clock pulses and which produce a sinusoidal filtered output waveform, and for modifying the selected switching intervals in response to the detection of a DC content in said filtered output waveform by delaying by a predetermined multiple of said clock pulses the switching on of the electronic switch which generates an output of the same polarity as the DC component and by advancing by said predetermined multiple of said clock pulses the switching on of the electronic switch which generates an output opposite in polarity to that of the DC content.

4,370,703

SOLID STATE FREQUENCY CONVERTER

Robert L. Risberg, Milwaukee, Wis., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jul. 20, 1981, Ser. No. 285,355

Int. Cl.^{3} H02M *7/515;* **H05B** *6/02*

U.S. Cl. 363—136 **12 Claims**

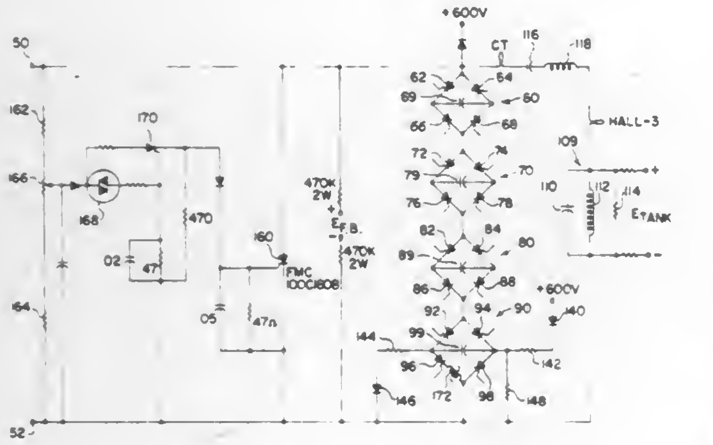
1. A solid state frequency converter comprising:

a diamond chain including a plurality of N diamond circuits coupled in series, each said diamond circuit comprising a capacitor having first and second terminals and first through fourth unidirectional switching elements each having input, output and control terminals and conducting from input to output in response to a control terminal signal, the input terminals of said first and third switching elements being coupled together to form a diamond circuit input terminal, the output terminals of said second and fourth switching elements being coupled together to form a diamond circuit output terminal, the output terminal of said first switching element and input terminal of said fourth switching element being coupled to said first capacitor terminal, and the output terminal of said third switching element and input terminal of said second switching element being coupled to said second capacitor terminal, said N diamond circuits being connected in series;

constant current source means for providing a substantially constant current to said diamond chain;

means for providing control signals to said switching elements, the control signals to said first and second switching elements in any one diamond circuit being substantially simultaneous, the control signals to said third and fourth switching elements in said one diamond circuit being substantially simultaneous and 180° out-of-phase with respect to said first and second switching element control signals, and the control signals in each said diamond circuit being shifted in phase with respect to the control signals provided to the switching elements in the remaining diamond circuits, thereby generating a voltage across the input and output terminals of said diamond chain which has a frequency of 2 N times the switching frequency of any one switching element; and

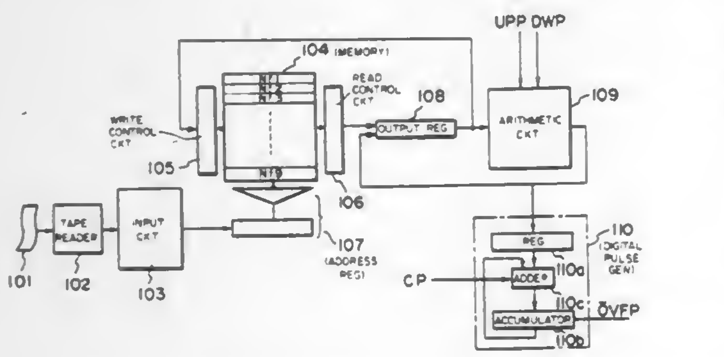
a resonant load coupled to said diamond chain.



4,370,704
FEED SPEED CONTROL SYSTEM

Hiroomi Fukuyama, Hachioji, and Shinichi Isobe, Tachikawa, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,036
Claims priority, application Japan, Sep. 4, 1979, 54-113261
Int. Cl.^{3} G05B *19/18*
U.S. Cl. 364—171 19 Claims



1. A feed speed control system for controlling the feed speed of a movable member, comprising:

memory means for storing a plurality of numerical values corresponding to feed speeds;

command means, operatively connected to said memory means, for issuing a command signal indicative of a selected numerical value from among the plurality of numerical values stored in said memory means;

manual operation means for providing an adjustment pulse;

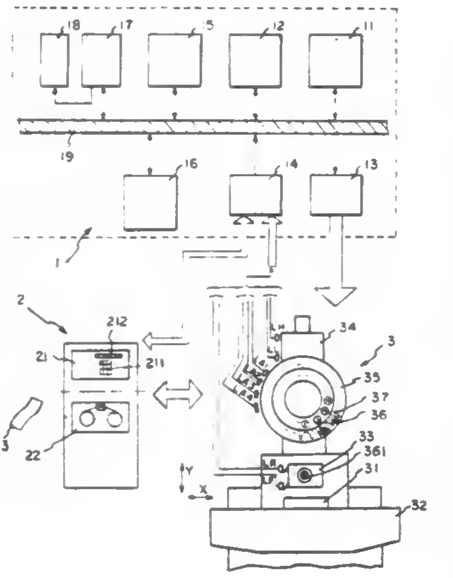
arithmetic means, operatively connected to said memory means, for reading the selected numerical value from said memory means and for incrementing or decrementing the selected numerical value read from said memory means in response to the adjustment pulse from said manual operation means; and

pulse generating means, operatively connected to said arithmetic means, for generating output pulses of a frequency which is proportional to the incremented or decremented selected numerical value from said arithmetic means, the frequency of said output pulses corresponding to the feed speed.

4,370,705
SEQUENCE CONTROL SYSTEM FOR NUMERICALLY CONTROLLED MACHINE TOOL

Ryoji Imazeki, Hachioji; Katsuaki Kusumi, Kawasaki, and Yoshihiro Nakajima, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,809
Claims priority, application Japan, Sep. 18, 1979, 54/119628
Int. Cl.^{3} G06F *13/00*
U.S. Cl. 364—184 4 Claims



1. A numerical control system for a numerically controlled machine tool whose sequence operation results from command data applied to the machine tool from an NC unit and is controlled through a programmable sequence controller interposed between the NC unit and the machine tool comprising:

a first non-volatile storage area means, provided in the programmable sequence controller, for storing command data applied to the machine tool;

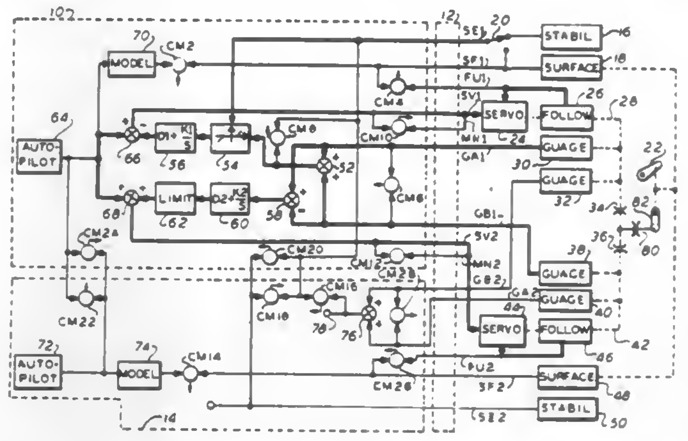
a second non-volatile storage area means, provided in the programmable sequence controller, for storing a duplicate of the command data stored in said first non-volatile storage area means when the machine tool issues a signal indicating that it has completed an operation in accordance with the command data; and

a comparator means, provided in the programmable sequence controller, for comparing the contents of said first and second non-volatile storage area means, when electric power is connected to the machine tool.

4,370,706
CONTROLLER FOR A DUAL SERVO SYSTEM

Jerry Doniger; Albert T. Kirchhein, both of Montvale, N.J., and Gibson Reynolds, Tuxedo, N.Y., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Sep. 26, 1980, Ser. No. 191,231
Int. Cl.^{3} G05B *9/02;* G06F *11/16*
U.S. Cl. 364—184 24 Claims



1. In a dual servo system for driving a controlled element with mechanically coupled first and second servos in response to a pair of control signals separately applied thereto, said servos cooperating with a sensing means for providing a signal signifying on operating parameter associated with at least one of said servos, a controller comprising:

first digital processing means connected to said first and second servos for simultaneously driving them by providing to each a corresponding one of said control signals, said first digital processing means being operable to measure the responsiveness of said servos to said first digital processing means to provide a self-checking indication; and

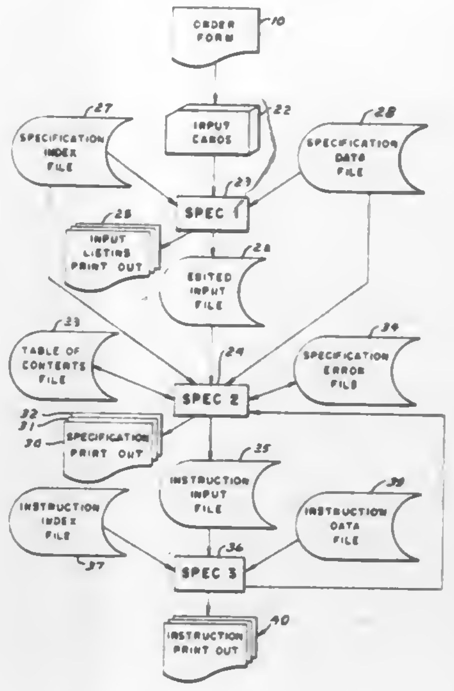
second digital processing means connected to said first digital processing means for measuring the responsiveness of said servos to said first digital processing means to provide an independent indication of failure of said responsiveness, said independent indication being provided by at least one signal comparison, examining the signal of said sensing means but neither of said control signals.

4,370,707
COMPUTER SYSTEM FOR GENERATING ARCHITECTURAL SPECIFICATIONS AND PROJECT CONTROL INSTRUCTIONS

Clarence W. Phillips, Canton; Michael R. Eiben, Chicago, and Harvey T. Morgan, Jr., Oak Park, all of Ill., assignors to Computer Service, Inc., Chicago, Ill.

Filed Aug. 3, 1971, Ser. No. 168,711
Int. Cl.^{3} G06F *15/21*
U.S. Cl. 364—200 17 Claims

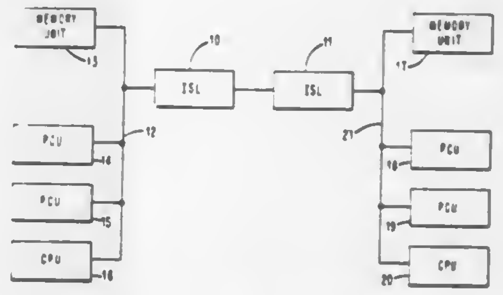
1. An automated system for preparing a printed architectural specification and related instructions comprising: a master catalog including a large number of printed phrases indicating materials and construction techniques from which a specifier may choose, each phrase having associated with it a short code; order form means on which a specifier may record code selected from said catalog and representative of a desired sequence of said phrases; data processing means adapted to receive input signals representative of the code prepared by the specifier and including a Specification Data File storing signals representative of said phrases; Specification Index File means addressable by said data processing means and storing signals representative of the locations of said phrases in said Specification Data File; instruction file means storing signals representative of prepared instructions for predetermined ones of said phrases and correlated with said phrases by code; and program means for operating said data processing means for receiving said input signals representative of said code, for referencing said Specification Index File to obtain the location of phrases called for by said input code in said Specification Data File, for printing an output specification incorporating said phrases from said Specification Data File as determined by the input code, and for printing out instructions from said instruction file means corresponding to said printed specification as determined by said input code.



4,370,708
LOGIC SYSTEM FOR SELECTIVELY RECONFIGURING AN INTERSYSTEM COMMUNICATION LINK

Kenneth E. Bruce, Nashua, N.H.; John W. Conway, Waltham, Mass.; Ralph M. Lombardo, Jr., Lowell, Mass., and Bruce H. Tarbox, Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 956,381, Oct. 31, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 110,000
Int. Cl.^{3} G06F *3/04*
U.S. Cl. 364—200 2 Claims



1. Intersystem link (ISL) unit architecture wherein an ISL unit may be selectively reconfigured to accommodate information transfers between a local communication bus and any data processing unit including memory units, peripheral control units, central processing units and ISL units in electrical communication with any of plural communication busses in a data processing system wherein each of said plural communication busses are in electrical communication with an ISL unit and ISL units are in electrical communication in pairs, which comprises:

(a) cycle control logic means responsive to communication bus requests and to an output control command from a CPU in electrical communication with one of said plural communication busses for transitioning an addressed ISL unit between an on-line logic state and a stop logic state wherein said addressed ISL unit may respond to pending communication bus requests while inhibiting further communication bus requests;

(b) programmable memory means in electrical communication with said one of said plural communication busses and having memory cell locations for storing binary coded information received from any one of said plural communication busses for accommodating information transfers between said plural communication busses; and

(c) configuration control logic means responsive to said cycle control logic means for altering binary coded information stored in selected ones of said memory cell locations of said programmable memory means in accordance with configuration data received from said CPU, thereby providing a dynamic reassignment of data processing system resources between said plural communication busses.

4,370,709

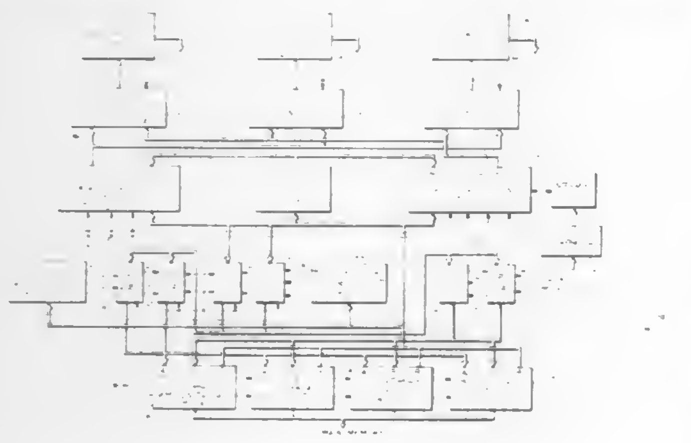
COMPUTER EMULATOR WITH THREE SEGMENT MICROCODE MEMORY AND TWO SEPARATE MICROCONTROLLERS FOR OPERAND DERIVATION AND EXECUTION PHASES

Robert E. Fosdick, Austin, Tex., assignor to Tracor, Inc., Austin, Tex.

Filed Aug. 1, 1980, Ser. No. 174,721

Int. Cl.^{3} G06F *9/44, 9/22, 9/46*

U.S. Cl. 364—200 **7 Claims**



2. A microcoded computer emulator for executing instructions of a target computer where the instructions are stored in a memory and each instruction is capable of referencing an operand address location, comprising:

(a) a micromemory including a right, a middle and a left micromemory unit for storing microcode which controls the resource circuits of the emulator,
  - (i) each said micromemory unit controlling separate emulator resources and each responsive to a separate micromemory address,
  - (ii) the emulator executing each instruction by dividing each instruction into an operand address derivation phase and an instruction execution phase, and
  - (iii) where said left micromemory unit is associated with the execution phase and said right micromemory unit is associated with the operand address derivation phase, with said middle micromemory unit providing shared microcode therebetween;

(b) a pair of microcontrollers, one associated with the operand address derivation phase and one associated with the instruction execution phase, and each responsive to said microcode for generating the next micromemory address for each micromemory unit;

(c) a plurality of address selection units each responsive to the microcode and to the micromemory address from said microcontrollers, and each addressing an associated one of said micromemory units, for temporarily storing and outputting to its associated micromemory unit, a micromemory address from either one of said microcontrollers whereby each said microcontroller may obtain control of the emulator resource circuits associated with said middle micromemory unit when those resources are needed to perform the operations for its respective phase;

(d) an op-code mapping means responsive to the instructions, for mapping each instruction into said micromemory at the starting addresses of microcoded routines which will control the operand address derivation and instruction execution phases for each instruction; and

(e) a processing means responsive to the microcode for performing the logical operations required in each phase to emulate the instructions of the target computer.

4,370,710

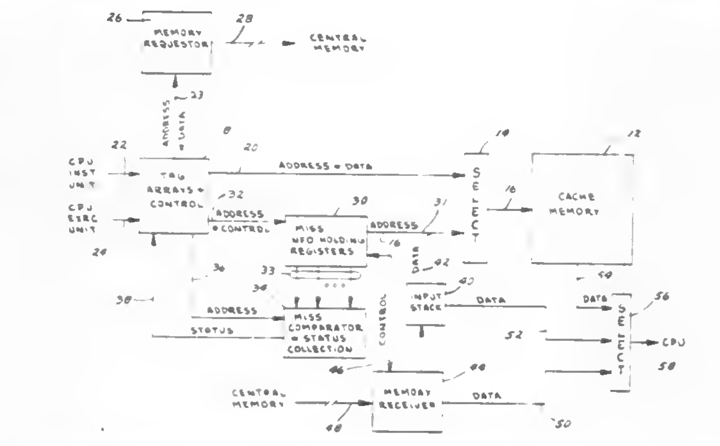
CACHE MEMORY ORGANIZATION UTILIZING MISS INFORMATION HOLDING REGISTERS TO PREVENT LOCKUP FROM CACHE MISSES

David Kroft, Thornhill, Canada, assignor to Control Data Corporation, Minneapolis, Minn.

Filed Aug. 26, 1980, Ser. No. 181,529

Int. Cl.^{3} G06F *13/00*

U.S. Cl. 364—200 **7 Claims**



1. A cache memory organization comprised of;
a cache memory unit,
selection unit means for selecting the input to said cache memory unit,
a tag arrays and control unit means connected to and for providing a first data input for forming a first address input to said selection unit means,
input stack means connected to and for providing a second data input to said selection unit means,
a miss information holding registers unit connected to and for providing a third data input for forming a second address input to said selection unit means, wherein said miss information holding registers unit receives an input from said tag arrays and control unit means, wherein said miss information holding registers unit holds a predetermined number of required addresses not found in said cache memory unit when said cache memory unit is addressed and misses,
a miss information comparator and status collection network connected to said miss information registers holding unit and receiving input request and cache memory addresses from said tag arrays and control unit means and for providing status information to said tag arrays and control unit means,
a memory receiver unit for receiving data from a central memory of a computer system, said memory receiver unit being connected to said input stack means and to said miss information holding registers unit for providing addresses to said input stack means under control of said miss information holding registers unit,
an output selection network for the cache memory organization having a first input from the cache memory unit, a second input from said input stack means and a third input from said memory receiver unit wherein said cache memory organization is not locked up when said cache memory unit is addressed and misses by means of said miss information holding registers unit holding miss addresses until said memory receiver unit receives the required miss address information while said tag arrays and control unit means continues to provide addresses to said cache memory unit through said selection unit means.

4,370,711

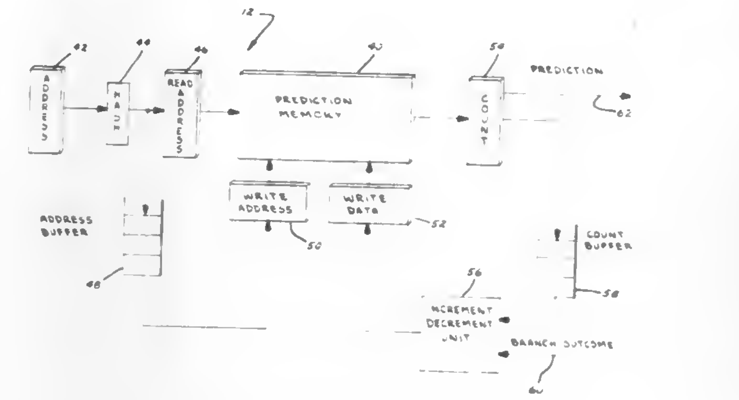
BRANCH PREDICTOR USING RANDOM ACCESS MEMORY

James E. Smith, Forest Lake, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 21, 1980, Ser. No. 198,990

Int. Cl.^{3} G06F *9/42*

U.S. Cl. 364—200 **5 Claims**



1. A branch prediction mechanism comprising
a prediction memory,
an instruction address receiving means,
a hash address device connected to receive instruction addresses from said instruction address receiving means,
an address register connected with said prediction memory and to said hash address device for receiving hash addresses from said hash address device,
an address buffer connected to said hash address device for receiving hash addresses from said hash address device,
a write hash address register connected to said address buffer for receiving hash addresses from said address buffer and connected to said prediction memory,
a count register connected to said prediction memory for receiving the output from said prediction memory,
a count buffer connected to said count register for receiving output counts from said count register,
an increment-decrement unit connected to said count buffer for receiving input counts from said count buffer and having an input for receiving branch outcome information for updating the count according to the branch outcome,
a write data register connected to said increment-decrement unit for receiving the updated count information from said increment-decrement unit said write data register being connected to said prediction memory to provide updated count information corresponding to the hash address in said write hash address register, and
wherein said branch prediction device operates to predict branch instructions on a continuously updated history of recently executed branch instructions.

4,370,712

MEMORY CONTROLLER WITH ADDRESS INDEPENDENT BURST MODE CAPABILITY

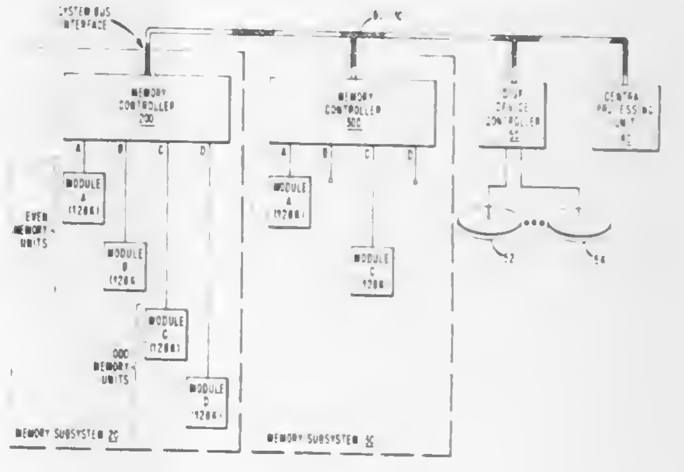
Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 31, 1980, Ser. No. 202,409

Int. Cl.^{3} G06F *13/00, 13/06, 11/30;* G11C *7/00*

U.S. Cl. 364—200 **38 Claims**

26. A memory controller for use in a system including a data processing unit and a high speed storage unit coupled to a bus in common with said controller, said controller being coupled to a plurality of memory modules, each including a plurality of word locations and said controller being operative to control the operation of said modules in response to memory requests generated by said units, said memory requests including burst memory requests, each coded to specify the read out of predetermined numbers of data words over successive memory cycles of operation by said controller independently of any memory address included within said request and each burst memory request including a memory address specifying where in said memory modules the read out of said words is to begin, said controller comprising:
a plurality of address counter circuits each being individually coupled to said bus for receiving a predetermined portion of a different one of said memory addresses and said each address counter circuit being operatively coupled to apply address signals to said plurality of modules for specifying numbers of locations to be addressed during each of said successive memory cycles of operation;
a plurality of mode control means, each coupled to a different one of said address counter circuits and to said bus, each of said plurality of mode control means when selected as available to process one of said burst requests being operative in response to said burst request to switch from a first state to a second state conditioning said controller for operating in a burst mode of operation, each of said mode control means only when in said second state generating signals for incrementing by one said predetermined address portion, the contents of said different one of said plurality of address counter circuits after each consecutive memory cycle of operation of said burst request enabling the read out of successive pairs of words from consecutive locations of said memory modules;



address boundary detection and signalling means coupled to said plurality of address counter circuits and to said bus for receiving another predetermined portion of said memory address; and,
said different one of said plurality of address counter circuits upon being incremented to a predetermined count generating an output signal indicating the termination of said burst mode operation, said address boundary detection and signalling means being operative in response to said output signal to generate a response signal on said bus in accordance with said another predetermined portion of said memory address, indicating to said unit whether or not said predetermined count exceeded the address boundary defined by said predetermined type of request and said each selected mode control means switching from said second state to said first state in response to said output signal indicative of the availability of said different one of said plurality of address counter circuits for processing another burst memory request.

4,370,713

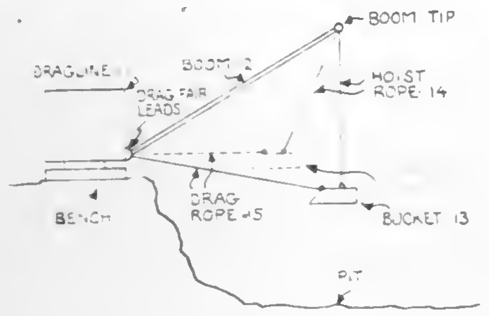
ANTI-TIGHTLINE CONTROL SYSTEM AND METHOD FOR DRAGLINE TYPE EQUIPMENT

Charles E. McCoy, Jr., Erie, Pa., and James L. Crowgey, Roanoke, Va., assignors to General Electric Co., Schenectady, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,256

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—424 **33 Claims**



11. In a drive regulating system for controlling operation of the bucket means for dragline type equipment having respective hoist and drag rope means attached to the bucket means which can be taken-up or paid-out by respective hoist rope and drag rope pay-out and take-up means to control the positioning and operation of the bucket means, and respective operator controlled hoist and drag rope regulating control means for controlling operation of said respective hoist rope and drag rope pay-out and take-up means; the improvement comprising anti-tightline control system means for monitoring the respective lengths of the hoist and drag rope means paid-out or taken-up at any given time and the speed at which the hoist and drag rope means is being taken-up and for deriving a rope speed adjusted allowed combined hoist and drag rope length anti-tightline boundary limited control signal, and means for supplying said anti-tightline boundary limited control signal to said respective operator controlled hoist and drag rope regulating control means for overriding the operator control settings and maintaining operation of said dragline type equipment within constraints required to avoid a tightline operating condition.

4,370,714

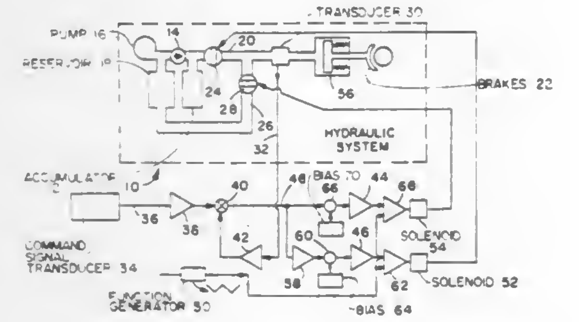
ELECTRONICALLY ACTUATED BRAKE SYSTEM

Thomas A. Rettich, Monrovia, and Raymond D. Woodworth, Irvine, both of Calif., assignors to Minnesota Automotive, Inc., North Mankato, Minn.

Filed Aug. 25, 1980, Ser. No. 180,679

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **13 Claims**



1. An electronically controlled brake system for a towed, wheeled vehicle having hydraulically actuated brakes comprising:

a self-contained hydraulic fluid brake actuating system located entirely on a towed, wheeled vehicle and including:

a high pressure hydraulic fluid supply means,

a high pressure hydraulic fluid supply line leading from said fluid supply means to said brakes,

a solenoid actuated inlet valve connected in said high pressure hydraulic fluid supply line,

a reduced pressure hydraulic fluid supply line leading from said brakes to said high pressure hydraulic fluid supply means,

a solenoid actuated outlet valve connected in said reduced pressure hydraulic fluid return line,

a hydraulic pressure transducer in communication with said brakes for providing an electrical feedback signal therefrom, a manual command signal transducer located external to said towed vehicle for producing an electrical command signal proportional to a desired pressure in said hydraulically actuated brakes,

differential amplification means coupled to receive said command signal and said feedback signal to provide an error signal, and

pulse width modulated control means coupled to selectively actuate the solenoids of said inlet and outlet valves in accordance with the polarity and magnitude of said error signal.

4,370,715

ANTI-LOCK CONTROL SYSTEM

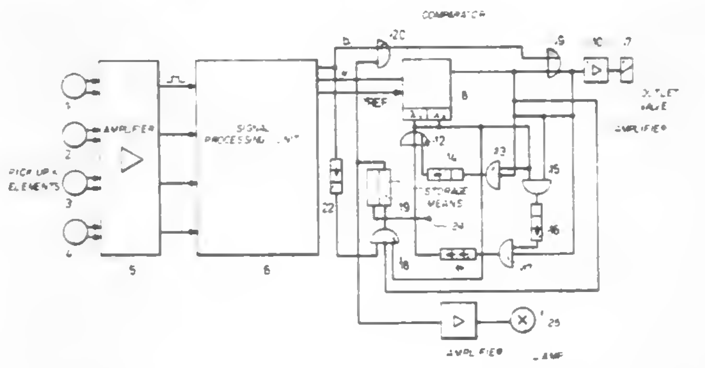
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 886,310, Mar. 13, 1978, abandoned. This application Jan. 29, 1981, Ser. No. 229,366

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713828

Int. Cl.³ B60T *8/10*

U.S. Cl. 364—426 **4 Claims**



1. An anti-lock control system for the hydraulic braking system of a wheeled vehicle, comprising;

at least one pickup element for generating a wheel speed signal proportional to the speed of a vehicle wheel on at least one vehicle axle;

an evaluation circuit connected to an output of said pickup element for controlling fluid pressure in the wheel brake cylinders producing a control signal causing a lowering of fluid pressure when a threshold λ_1 or λ_2, wherein $\lambda_2 > \lambda_1$, between a vehicle speed reference and the wheel speed proportional signal is passed in the decreasing direction and wherein normally the threshold λ_1 is effective;

switching means having timing elements connected thereto, connected to respond to the presence of a brake fluid pressure lowering signal beyond a predetermined time T_1 for switching over for a given short time to a control state in which the λ_2 threshold is effective and thus switching said brake fluid pressure lowering signal only in the event that the differential between the vehicle speed signal and reference signal is greater than said higher threshold λ_2; and

testing means operative only when said λ_2 threshold becomes effective for determining the presence or absence of said pressure lowering signal, said testing means being adapted to maintain the switchover to the λ_2 threshold for a time period T_2 greater than T_1 when said pressure lowering signal disappears after the switchover to the λ_2 threshold.

4,370,716

ACTIVE NUTATION CONTROL SYSTEM FOR SPACE VEHICLE

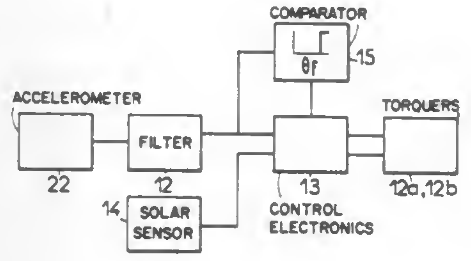
Jean-Claude Amieux, Voisins le Bretonneux, France, assignor to Matra, Paris, France

Filed Jan. 22, 1980, Ser. No. 114,197

Claims priority, application France, Jan. 23, 1979, 79 01663

Int. Cl.³ B64G *1/10;* G05D *1/08*

U.S. Cl. 364—434 **8 Claims**



4. An active nutation control system for a space vehicle spinning about one of its geometrical axes, having: means for creating pulses of external rocking torque about an axis transverse to said geometrical axis; means carried by said space vehicle for delivering a periodically varying signal having an amplitude representative of the magnitude of the nutation of said space vehicle and a frequency equal to the nutation frequency of said space vehicle; and control means for controlling the torque-creating means, comprising:

first enabling means to deliver a signal authorizing actuation of said torque creating means for delivering a pulse of predetermined time duration at times having a predetermined phase difference with respect to said periodically varying signal;

second enabling means to compare said periodically varying signal with a predetermined threshold and to deliver a signal when the amplitude of said signal exceeds said threshold;

third enabling means connected to receive signals representative of the pulses to be delivered by said torque-creating means for computing the cumulative change in the direction of the angular momentum of the space vehicle due to the actuation of said torque-creating means and to deliver a signal under conditions where the next pulse does not increase the angular discrepancy between the current direction of the angular momentum of the vehicle and the initial direction thereof;

and means responsive to the signals from said first, second and third means for causing delivery of one of said pulses upon simultaneous occurrences of all three signals.

4,370,717

ELEVATOR BANK SIMULATION SYSTEM

George T. Hummert, Oakmont; Thomas D. Moser, and David M. Edison, both of Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1974, Ser. No. 510,940

Int. Cl.³ B66B *3/00;* G06F *15/20*

U.S. Cl. 364—436 **23 Claims**

MICROFICHE APPENDIX INCLUDED

(6 Microfiche, 320 Pages)

1. An elevator bank simulation system, comprising:

display means,

sequence controlling means,

and dispatcher means,

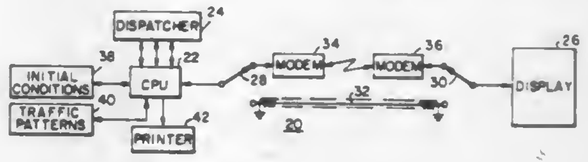
said display means including indicating means for visually displaying information relative to the operation of a simulated bank of elevator cars, and means for entering traffic requests,

said sequence controlling means including the following components: (a) display updating means, (b) dispatcher updating means, (c) simulation means, and (d) status means,

said display updating means being responsive to said traffic requests for providing signals for said display means which actuate said indicating means to visually display which traffic requests have been entered,

said dispatcher updating means providing signals for said dispatcher means relative to said traffic requests and to the status of the elevator cars of the simulated bank,

said dispatcher means including assignment means responsive to the signals provided by said sequence controlling means for developing assignment signals for the elevator cars of the simulated bank according to a predetermined strategy,



said simulation means being responsive to the assignment signals for simulating the response of the elevator cars to the assignment signals and for canceling traffic requests as they are served by the elevator cars,

said status means being responsive to the simulation means for providing signals for the dispatcher means indicative of the status of the elevator cars,

said display updating means providing signals for said display means which actuate said indicating means to visually display the simulated response of the elevator cars and the answering of traffic requests.

4,370,718

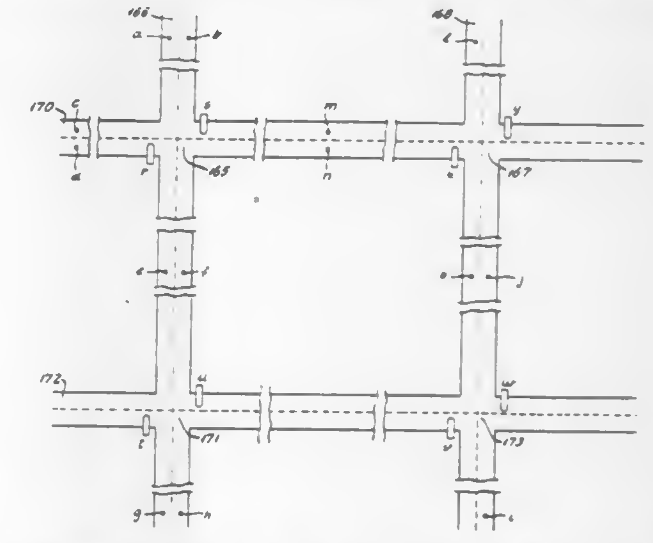
RESPONSIVE TRAFFIC LIGHT CONTROL SYSTEM AND METHOD BASED ON CONSERVATION OF AGGREGATE MOMENTUM

Norman E. Chasek, 24 Briar Brae Rd., Stamford, Conn. 06903

Continuation of Ser. No. 9,890, Feb. 6, 1979, abandoned, which is a continuation of Ser. No. 905,786, May 15, 1978, abandoned, which is a continuation of Ser. No. 702,091, Jul. 6, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,345

Int. Cl.³ G08G *1/08*

U.S. Cl. 364—436 **28 Claims**



1. A traffic control system for controlling vehicular traffic flow at an intersection of roadways with the objective of increasing the average vehicular velocity and reducing the average number of stops without compromising safety or introducing intolerably long delays for adversely affected vehicles comprising:

a multiplicity of sensors positioned for sensing aggregate vehicular momentum and congestion experienced for each of the vehicles passing through a predetermined zone on each such roadway upstream from the intersection,

processor means connected to the respective sensors for generating first and second sequences of pulses for each vehicle passing the sensed zone, in which each first sequence is representative of each vehicle's momentum, or preferably, its velocity times its incremental length, and each said second sequence is representative of the congestion experienced by each sensed vehicle,

first summing means connected to said processor means for generating a first running sum of the pulses in the successive first sequences, said first running sum being representative of aggregate momentum of the sensed vehicles on the respective roadway, and for generating a second running sum of the pulses in the successive second sequences, said second running sum being representative of the aggregate congestion experiences by the sensed vehicles on the respective roadway,

further summing means connected to said first summing means and to said second summing means for generating a third running sum of said first and second running sums for a roadway having a "go" signal and for providing only the first running sum for a roadway having a "stop" signal,

means for sensing whether the traffic control light facing a respective roadway is "go" or "stop",

forecasting means under control of said go/stop sensing means, and connected to said processor means for forecasting when the sensed vehicles on a respective roadway will likely pass through the intersection and for forecasting when the sensed vehicles on the respective roadway will likely become stopped at the intersection, said forecasting means being connected with said further summing means for subtracting from said third running sum respective portions of said first and second running sums representative of the contribution to aggregate momentum and aggregate congestion of the respective forecasted vehicles for producing a corrected third running sum for each roadway,

comparison means for comparing the respective corrected third running sum for each roadway, and

light timer means connected and under the control of to said comparison means for lengthening the "go" signal relative to the "stop" signal for the respective roadway having the greater corrected third running sum applicable thereto and for speeding up said timer means if the signal is on "stop" or slowing or stopping said timer means if the signal is on "go".

4,370,719
CONTROL OF CENTRIFUGAL PIPE CASTING OPERATION

Thurman H. Upchurch, Lynchburg, and Gerardo A. Bianco, Jr., Madison Heights, both of Va., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 17, 1980, Ser. No. 207,389
Int. Cl.³ G06F *15/46;* B22D *13/02*
U.S. Cl. 364—472 **5 Claims**

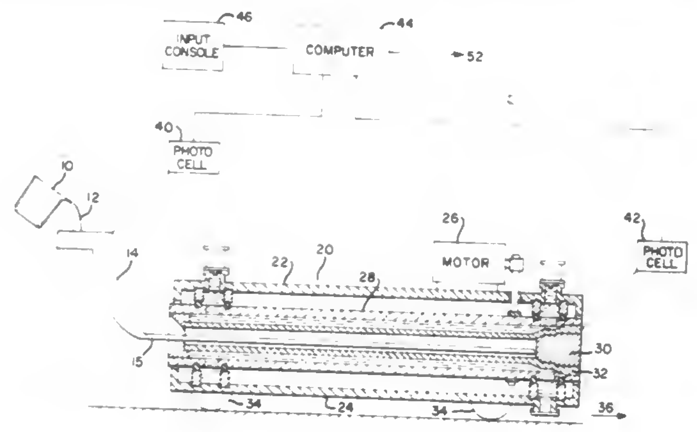
1. A method for controlling the centrifugal casting of a metal pipe including the steps of:

obtaining a first photoelectric cell signal when molten metal passes into a pouring trough,

obtaining a second photoelectric cell signal when molten metal passes to the end of the casting mold at the end of the pouring trough,

comparing said first and second photoelectric cell signals to determine the actual metal pouring flow time, comparing the actual pouring flow time with a stored standard pouring flow time,

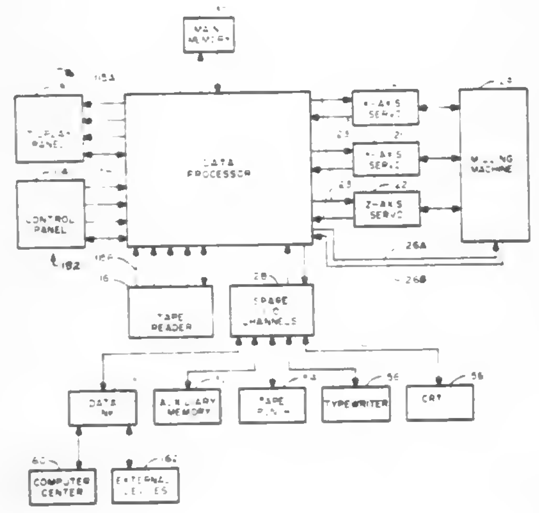
increasing the bell end forming time for the metal pipe when the actual measured pouring flow time is greater than the standard pouring flow time, and decreasing the bell end forming time for the metal pipe when the actual measured pouring flow time is less than the standard pouring flow time.



4,370,720
COORDINATE ROTATION FOR NUMERICAL CONTROL SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, and Ser. No. 230,872, Mar. 1, 1972. This application Mar. 7, 1972, Ser. No. 232,459
Int. Cl.³ G05B *19/18*
U.S. Cl. 364—474 **28 Claims**



1. A machine control system comprising:

input means for providing object path end point signals;

an integrated circuit object memory for storing object path end point signals received from said input means;

rotation command means for providing a multi-dimensional rotation command signal;

translation command means for providing a multi-dimensional translation command signal;

an integrated circuit data processor for processing the object path end point signals stored in said object memory in real time in response to the multi-dimensional rotation command signal from said rotation command means and the multi-dimensional translation command signal from said translation command means to generate real time object control signals, said data processor including

a. multi-dimensional rotation processing means for performing multi-dimensional rotation processing of the object path end point signals from said object memory to generate multi-dimensional rotated object path end point signals in response to the multi-dimensional rotation command signal from said rotation command means,

b. multi-dimensional translation processing means for performing multi-dimensional translation processing of the object path end point signals from said object memory to generate multi-dimensional translated object path end point signals in response to the multi-dimensional translation command signal from said translation command means,

c. multi-dimensional scaling processing means for performing multi-dimensional scaling processing of the object path end point signals processed with said multi-dimensional rotation processing means and with said multi-dimensional translation processing means to generate reduced multi-dimensional rotated and translated path signals,

d. path smoothing processing means for performing path smoothing processing of the multi-dimensional reduced rotated and translated path signals processed with said multi-dimensional scaling processing means to generate smoothed and reduced multi-dimensional rotated and translated path signals, and

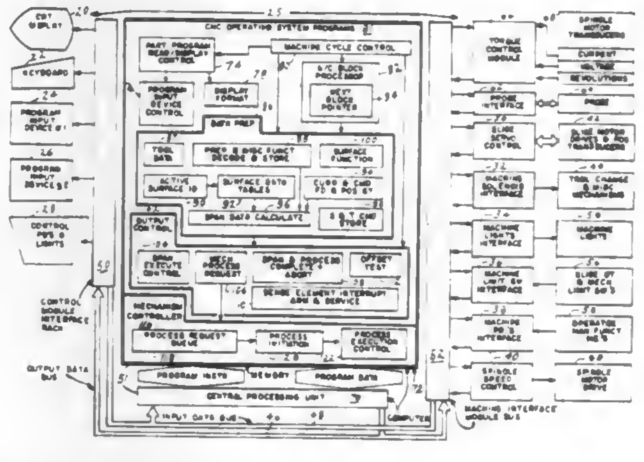
e. output means for generating the real time object control signals as smoothed and reduced multi-dimensional rotated and translated path control signals in response to the smoothed and reduced multi-dimensional rotated and translated path signals from said path smoothing processing means; and

control means for controlling motion of multi-dimensional machine elements in response to the smoothed and reduced multi-dimensional rotated and translated path control signals from said output means.

4,370,721
METHOD FOR MODIFYING PROGRAMMED POSITIONS BY USING A PROGRAMMABLY CONTROLLED SURFACE SENSING ELEMENT

John A. Berenberg; William A. Haggerty; Richard L. Kegg, all of Cincinnati; Myron J. Schmenk, Milford, and Ralph C. Taylor, Jr., West Chester, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 2, 1980, Ser. No. 183,193
Int. Cl.³ G05B *19/18;* G06F *15/46*
U.S. Cl. 364—474 **51 Claims**



1. A method for measuring the actual position of unmachined surfaces on a workpiece and modifying command signals derived from a machining program defining a cycle of operation of a machine relative to the unmachined surfaces, said machine having machine slides moving along axes of motion for effecting relative movement between the workpiece and a tool holder having a sensing element associated therewith, said machine being connected to a control for storing the machining program and generating the command signals to control the relative motion, the method comprising the steps of:

(a) storing scanning program instructions in association with the machining program to define a scanning cycle for using the sensing element to measure the actual position of the unmachined surfaces;

(b) executing the scanning cycle prior to executing the cycle of operation in response to the scanning program instructions to generate coordinate signals representing positions of detected points on the unmachined surfaces;

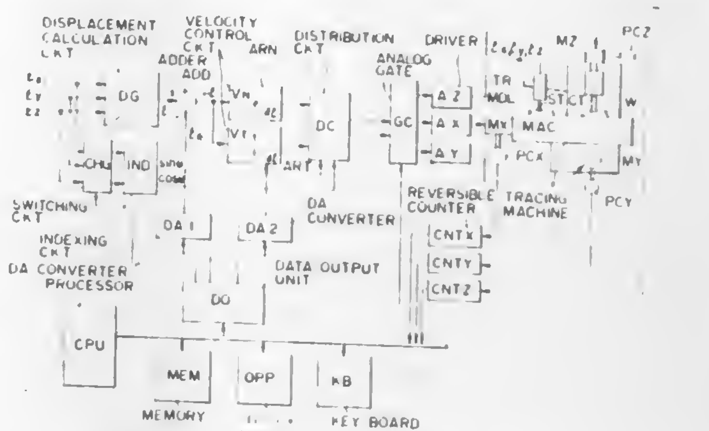
(c) storing selected ones of the coordinate signals; and

(d) executing the cycle of operation after completing the scanning cycle by generating modified command signals in response to the selected coordinate signals and the command signals derived from the machining program, said modified command signals effecting relative motion between the tool holder and the workpiece in accordance with the machining program and independent of variations in the position of the unmachined surfaces.

4,370,722
TRACER CONTROL SYSTEM

Ryoji Imazeki; Etsuo Yamazaki, and Takao Sasaki, all of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,662
Claims priority, application Japan, Jan. 17, 1980, 55-3839
Int. Cl.³ G05B *19/37;* G06F *15/46*
U.S. Cl. 364—474 **11 Claims**



1. A tracer control system in which the configuration of a model is detected by the motion of a tracer head with a stylus relative to the model surface being traced during a selected tracing, said system including a movable machine part moving along machine axes for providing said motion, and in which feed velocity components along said machine axes for providing the motion are obtained by arithmetic processing of data including displacement signals corresponding to the position of the end of said stylus with respect to the tracer head, said displacement signals having components corresponding to said machine axes, said motion of said tracer head selectively comprising sequential trace feed and pick feed steps, the tracer control system comprising:

a memory for storing data for determining the limits of the range of a selected tracing of the surface of the model;

a processor for reading out the stored data of the memory, for performing any necessary calculation of the limits of the range of the selected tracing from said stored data, and for performing control functions for performing said selected tracing over said range defined by said limits; and

detecting means for detecting the current position of said movable machine part along each said machine axis;

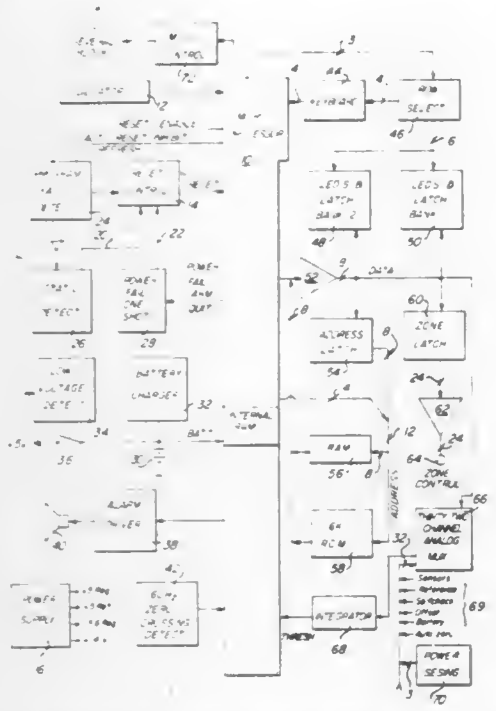
wherein each said limit of the selected tracing corresponding to a respective machine axis is compared with the current position along the respective machine axis, and when it is detected that the current position has reached a respective limit, during one of said trace feed steps, the trace feed step is switched to a pick feed step, and, after the pick feed step is performed for a respective predetermined distance, a predetermined subsequent trace feed step is performed, until said selected tracing is completed over said range.

4,370,723

COMPUTERIZED ENERGY MANAGEMENT SYSTEM

Stanley S. Huffman, Golden; Alan F. Neel, Lakewood; Christopher A. Swartout, and Neil E. Dvorak, both of Denver, all of Colo., assignors to Peak Demand Limiters, Inc., Lakewood, Colo.

Filed Jan. 31, 1980, Ser. No. 117,381
Int. Cl.^{3} G05B *15/00;* G06F *15/20*
U.S. Cl. 364—483 **30 Claims**



1. Power consumption controlling apparatus for use in a facility having a plurality of power consuming loads in various zones, including thermostatically controlled electrically operated space heating devices in some of the zones and electrically operated appliance devices in other of said zones, and comprising:

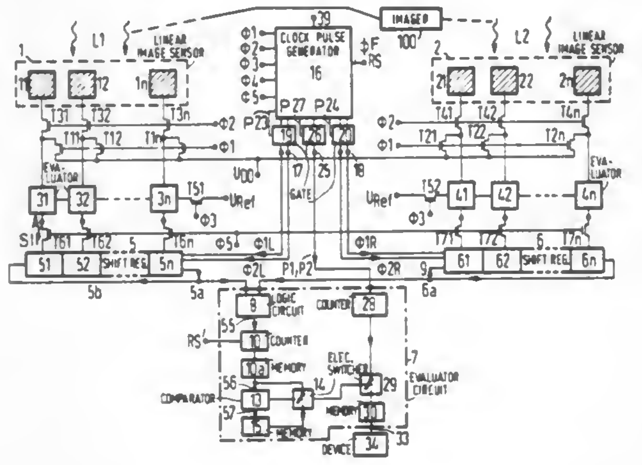
a power sensing circuit means associated with the main power line to the facility for continuously generating signals representative of total electrical power consumption by electrically operated devices in the facility;
a computer means connected to said power sensing circuit means for receiving said signals and comparing said signals with a predetermined maximum power demand limit set in said computer means;
keyboard means for entering data into the computer, said data including said predetermined maximum power demand limit and an initially selected maximum temperature level for each of a plurality of said electrically operated space heating devices;
an on-off heater control relay means connected to each of the electrically operated space heating devices for controlling the on-off state thereof;
temperature sensors, connected to the computer, for sensing temperature levels in each of the various zones so that said computer may compare each temperature level with a corresponding one of said initial selected maximum temperature levels to actuate said on-off heater control relay means when temperature levels are below said maximum temperature levels except when power consumption exceeds said power demand limit;
an on-off relay means connected to each of the plurality of the electrically operated appliance devices and turned on, to deliver power thereto or turned off by said computer;
a temperature level setting control means in the computer operably associated with each of the on-off heater control relays means for automatically incrementally increasing and decreasing the temperature level setting therefor;
said computer controlling said temperature control means to maintain said initial selected maximum temperature levels except when power consumption exceeds said power demand limit; and
said computer incrementally reducing said initial maximum temperature levels to a plurality of reduced temperature levels a preselected amount below said initial maximum temperature levels while power consumption exceeds said power demand limit.

4,370,724

CIRCUIT FOR THE SENSOR CONTROLLED DISTANCE MEASUREMENT

Heiner Herbst, Munich; Hans-Joerg Pfleiderer, Zorneding, and Hans-Peter Grassl, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 172,084
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936535
Int. Cl.^{3} G01C *3/08, 3/32;* G06F *15/336*
U.S. Cl. 364—561 **14 Claims**



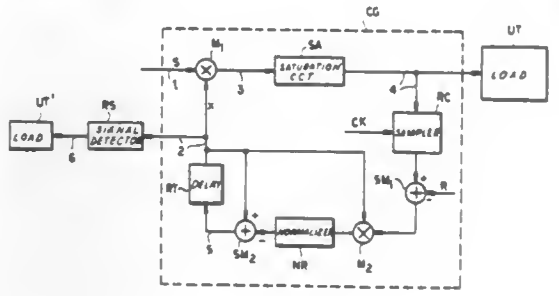
1. A circuit for sensor controlled distance measurement, comprising: two linear image sensors each having sensor elements; means for projecting onto the sensor elements segments of lines corresponding to two images obtained separately from an object; evaluator means connected to the sensor elements for switching between two different switching states in dependence upon the exceeding of a reference charge in the sensor element so as to digitalize sensor signals; an evaluating circuit means for evaluating the digitalized sensor signals in dependence upon difference relative position displacements with respect to a maximum correlation; device means connected to the evaluating circuit means for indicating a range of said object; outputs of the evaluator means connected via transfer transistors in parallel to inputs of individual stages of two shift registers individually associated with the two image sensors, the last stage of each shift register having a output which is back coupled to an input of its first stage and also is connected with an input of the evaluating circuit means for a serial release of evaluated sensor signal; and clock pulse generator means for supplying clock pulse signals to control said evaluator means to digitalize the sensor signals, clock pulse signals to gates of said transfer transistors, and clock pulse signals to clock pulse inputs of said two shift registers for shifting information contained therein, said transfer transistors being operated by said clock pulse generator means in cooperation with said evaluator means and said shift registers in such a way so as to disconnect outputs of the evaluator means from the individual shift register stage inputs during digitalization of the sensor signals in the evaluator means, and to transfer the digitalized sensor signals in the evaluator means to said inputs of the individual shift register stages after digitalization.

4,370,725

METHOD OF AND CIRCUIT ARRANGEMENT FOR AUTOMATIC SIGNAL-LEVEL CONTROL

Paolo Di Tria, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Sep. 17, 1980, Ser. No. 188,036
Claims priority, application Italy, Sep. 18, 1979, 68828 A/79
Int. Cl.^{3} H04L *15/24*
U.S. Cl. 364—582 **8 Claims**



1. A method of controlling the level of an incoming signal, comprising the steps of:

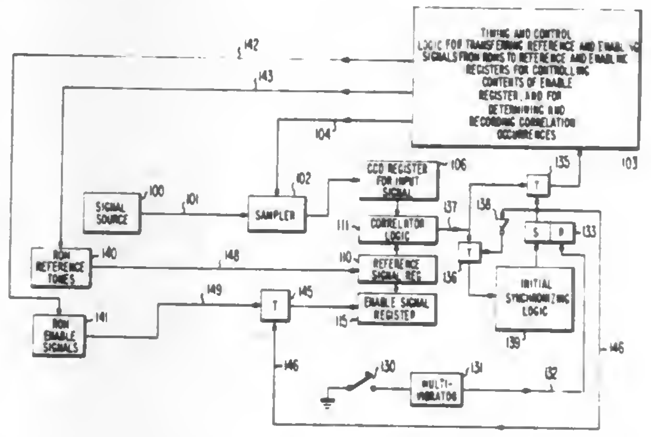
(a) multiplying the incoming signal by a level-controlling modifier;
(b) differentially combining the thus-modified magnitude of said signal with a fixed reference value to produce an error signal;
(c) multiplying said error signal with said modifier and with a fractional coefficient to produce a corrective value;
(d) algebraically combining said modifier with said corrective value to produce an updated modifier; and
(e) repeating steps (a) through (d) with the updated modifier up to substantial disappearance of said error signal.

4,370,726

SIGNAL CORRELATION MEANS EMPLOYING CHARGED-COUPLED DEVICE TYPE SHIFT REGISTERS

Michael G. Caracappa, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,212
Int. Cl.^{3} G06F *15/34*
U.S. Cl. 364—604 **8 Claims**


TIMING AND CONTROL LOGIC FOR TRANSFERRING REFERENCE AND ENABLING SIGNALS FROM ROMS TO REFERENCE AND ENABLING REGISTERS FOR CONTROLLING CONTENTS OF ENABLE REGISTER, AND FOR DETERMINING AND RECORDING CORRELATION OCCURRENCES
142
143
SIGNAL SOURCE
SAMPLER
CCD REGISTER FOR INPUT SIGNAL
CORRELATION LOGIC
REFERENCE SIGNAL REG
ENABLE SIGNAL REGISTER
ROM REFERENCE TIMES
ROM ENABLE SIGNALS
INITIAL SYNCHRONIZING LOGIC
MULTIVIBRATOR

1. A system for correlating the frequency of a quantized input signal with the frequency of a two level reference signal, comprising:

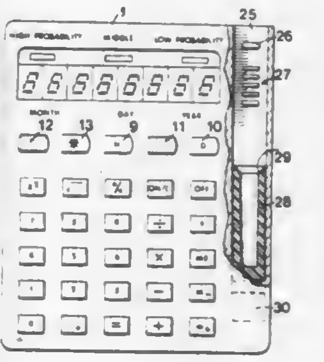
first and second signal summing means;
means for generating said two level reference signal and a two level enable signal;
first, second, and third registers for storing said quantized input signal, said two level reference signal, and said two level enable signal, respectively, and each having a plurality of corresponding stages;
logic means comprising a plurality of gating means each responsive to the contents of a given single corresponding stage of said second and third registers to gate the contents of said given stage of said first register to said first and second summing means, respectively, when the contents of said given stage of said second register is a first and second logic level, respectively, and the contents of said given stage of said third register is a first logic level, and to gate the contents of said given stage of said first register to neither summing means when the contents of said given stage of said third register is a second logic level; and
means for combining the contents of said first and second summing means to produce an output signal indicative of the degree of correlation between said quantized input signal and said two level reference signals.

4,370,727

POCKET CALCULATOR FOR FAMILY PLANNING INCLUDING A THERMOMETRIC PROBE

Jean-Marie Bellet, Geneva, Switzerland, assignor to Bioself International Inc., Nassau, The Bahamas

Filed Jun. 4, 1980, Ser. No. 156,446
Claims priority, application Switzerland, Jun. 7, 1979, 5336/79
Int. Cl.^{3} G06F *3/05, 15/42*
U.S. Cl. 364—705 **16 Claims**



1. In a pocket calculator for family planning including a casing, a control keyboard, a display, electronic calculating and control means and a memory arranged for application of a family planning method, the improvement comprising: a receptacle in said casing for receiving a removable thermometric probe, said thermometric probe comprising a probe body ended by a thermometric sensor, a measuring and storing circuit connected to the sensor for providing and storing temperature information in the form of digital data corresponding to the temperature of the sensor, and output contact means for outputting said temperature information, the receptacle of the calculator including mating contact means, the receptacle contact means being coupled with the calculating and control means, the calculating and control means being arranged to read and store in the memory said digital data temperature information, there being no connection between the calculator and the probe when the probe is removed from the receptacle.

4,370,728

STATIC STIMULUS TESTER FOR MICROPROCESSOR SYSTEMS

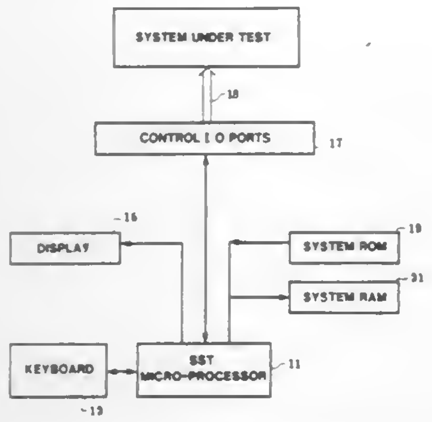
James W. Coffron, Palo Alto, Calif., assignor to Creative Microprocessor Systems, Los Gatos, Calif.

Filed Jan. 14, 1980, Ser. No. 111,830
Int. Cl.^{3} G06F *11/00, 11/20*
U.S. Cl. 364—900 **5 Claims**

1. A static stimulus testing device for testing an electronic system from which has been removed a system digital electronic microprocessor which is normally included in said system, said device comprising:

a plurality of input-output ports corresponding to the input-/output pins of the system microprocessor of the system under test; and
control means for enabling a user to independently control the logic levels of each input/output port, so that when the testing device is connected to the system under test, in

place of said removed system microprocessor system, the user will have control of the logic levels of each input-/output line independent of the logic levels of the other lines of the system under test, which are normally controlled by said removed system microprocessor;



data entry means interconnected with said control means for entering into said device information to control said electronic system;

and display means interconnected with said control means for displaying from said device information about the state of said electronic system under test.

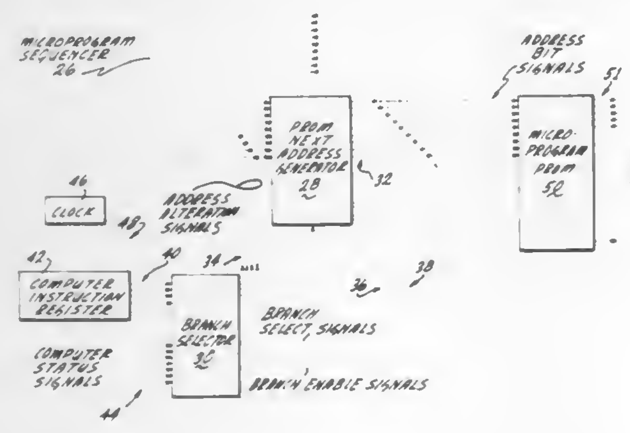
4,370,729
MICROPROGRAM SEQUENCER

Eugen I. Bosch, Tustin, Calif., assignor to Point 4 Data Corporation, Irvine, Calif.

Filed Mar. 21, 1980, Ser. No. 132,797

Int. Cl.² G06F *9/22*

U.S. Cl. 364—200 **7 Claims**



1. A microprogram sequencer for generating in a proper sequence, including required branching, the addresses of the successive microinstructions used in executing a given machine instruction by a computer of the type in which status signals are produced which represent the status of various components of the computer, and in which the operation of the various components is synchronized by a clock which generates a periodic clock signal demarking successively occurring machine cycle clock periods, said microprogram sequencer comprising in combination:

address generator memory means for producing during a current machine cycle period a first set of output signals including a first code set of signals designating a normal next input address for said address generator memory means;

selector means receiving as inputs applied status signals, instruction signals, and predetermined ones of the set of output signals produced by said address generator memory means, and responsive to the received signals during the current machine cycle period for selectively producing address alteration signals during the current machine cycle period;

means for logically combining said address alteration signals and said first code set of signals designating a normal next address during the current machine cycle period to selectively alter the first code set of signals to represent an altered next input address, any alteration of the first code set of signals being established before the end of the current machine cycle period; and

means for applying the first code set of signals to said address generator memory means during the current machine cycle period as the input address thereto, said address generator memory means being responsive to such application of the first code set of signals, whether altered or unaltered, for producing during the next successive machine cycle period a selectively corresponding second set of output signals including a second code set of signals designating the next successive normal input address for said address generator memory means.

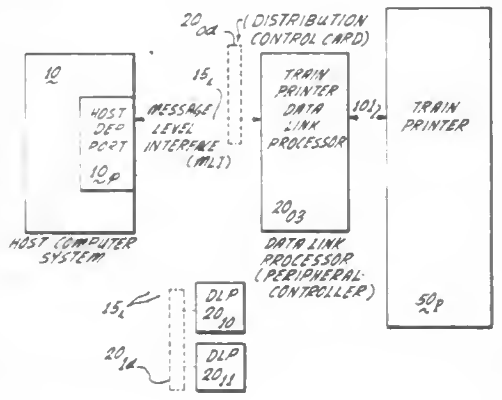
4,370,730
RAM BUFFER MEMORY CIRCUIT SYSTEM FOR TRAIN PRINTER-DATA LINK PROCESSOR

David P. Chadra, Anaheim, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 147,509

Int. Cl.³ G06F *3/12*

U.S. Cl. 364—900 **10 Claims**


20od
(DISTRIBUTION CONTROL CARD)
10
15
HOST DEP PORT
10p
MESSAGE LEVEL INTERFACE (MLI)
TRAIN PRINTER DATA LINK PROCESSOR
20₀₃
101
TRAIN PRINTER
HOST COMPUTER SYSTEM
DATA LINK PROCESSOR (PERIPHERAL CONTROLLER)
15
DLP 20₁₀
20
DLP 20₁₁
50p

1. In a high speed data printer system wherein a host computer provides I/O descriptor command words and data link task-identifier words to a peripheral-controller which operates a train-printer mechanism, and said peripheral-controller provides result/descriptor words to inform said host computer as to the completion/incompletion of each commanded task, a buffer memory circuit system in said peripheral-controller comprising:

(A) a RAM buffer memory which includes:
  (a1) a first dedicated memory area (print image buffer) having a plurality of addressable locations which are numerically equal to the number of columns printable by said train printer mechanism, each of said locations storing character data to be printed and which had been received from said main host computer;
  (a2) a second dedicated memory area (train image buffer) having a plurality of addressable locations for storing coded data representing each of a plurality of graphic characters that match the characters on the train of said train-printer mechanism;

(B) pointer address means for pointing to addresses in said second memory area (train image buffer) in synchronism with the movement of characters in said train wherein each address pointed-to represents a character positioned over a print hammer;

(C) means to scan the character data in said first memory area (print image buffer) wherein each of said character data corresponds to a specific hammer position in said print mechanism;

(D) comparison means for comparing the addressed code in said second memory area (train image buffer) with said addressed code in said first memory area (print image buffer) wherein a match in coding will initiate the firing of a print hammer during a print cycle.

4,370,731
SYSTEM FOR ENTERING TEMPERATURE CONTROL DATA AND DISPLAYING IT WITH THE TEMPERATURE SCALE

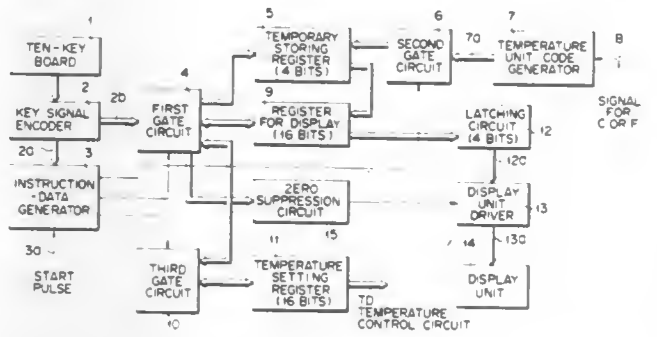
Masayuki Sasaki, Kawasaki; Yoshio Oida, Funabashi, and Hidetoshi Semi, Kamakura, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 928,977, Jul. 28, 1978, abandoned. This application May 8, 1980, Ser. No. 148,036

Claims priority, application Japan, Jul. 30, 1977, 52-91614

Int. Cl.³ G06F *15/20;* H05B *1/02*

U.S. Cl. 364—900 **9 Claims**


1
TEN-KEY BOARD
2
20
KEY SIGNAL ENCODER
20
3
INSTRUCTION-DATA GENERATOR
30
START PULSE
4
FIRST GATE CIRCUIT
THIRD GATE CIRCUIT
10
5
TEMPORARY STORING REGISTER (4 BITS)
9
REGISTER FOR DISPLAY (16 BITS)
ZERO SUPPRESSION CIRCUIT
11
15
TEMPERATURE SETTING REGISTER (16 BITS)
TO TEMPERATURE CONTROL CIRCUIT
6
SECOND GATE CIRCUIT
70
7
TEMPERATURE UNIT CODE GENERATOR
8
SIGNAL FOR C OR F
LATCHING CIRCUIT (4 BITS)
12
120
DISPLAY UNIT DRIVER
13
14
130
DISPLAY UNIT

1. A system for selectively setting a numerical temperature level and for displaying a temperature setting comprising the selected temperature level and an alphabetic temperature unit data indicating the temperature scale associated with said selected temperature level, wherein said temperature scale is in degrees Celsius or degrees Fahrenheit, said system comprising:

temperature data input means for entering the temperature level to be set and displayed;

temperature unit code generator means for entering the temperature scale associated with said temperature level;

memory means for combining a said temperature level entered by said temperature data input means with a said temperature scale entered by said temperature unit code generator means to form a said temperature setting and for storing said temperature-setting;

temperature-setting register means for storing a said temperature level;

first gate circuit means coupled to said temperature data input means and said memory means for transferring a said temperature level from said temperature data input means to said memory means;

second gate circuit means coupled to said temperature unit code generator means and said memory means for transferring a said temperature scale from said temperature unit code generator means to said memory means;

third gate circuit means coupled to said first gate circuit means and said temperature-setting register means for transferring temperature levels between said temperature setting register means and said memory means through said first gate circuit means and said third gate circuit means;

display means coupled to said memory means for displaying said temperature setting including said temperature level and said temperature scale stored in said memory means; and

instruction data generator means coupled to said temperature data input means, said first gate circuit means, said second gate circuit means and said third gate circuit means for controlling (a) the transfer of a temperature level from said temperature data input means to said memory means via said first gate circuit means, (b) the transfer of a said temperature scale from said temperature unit code generator means to said memory means via said second gate circuit means, and (c) the transfer of a said temperature level between said temperature setting register means and said memory means via said first gate circuit means and said third gate circuit means to combine in said memory means a temperature level entered through said temperature data input means and a temperature scale entered through said temperature unit code generating means into a temperature setting in said memory means for display by said display means.

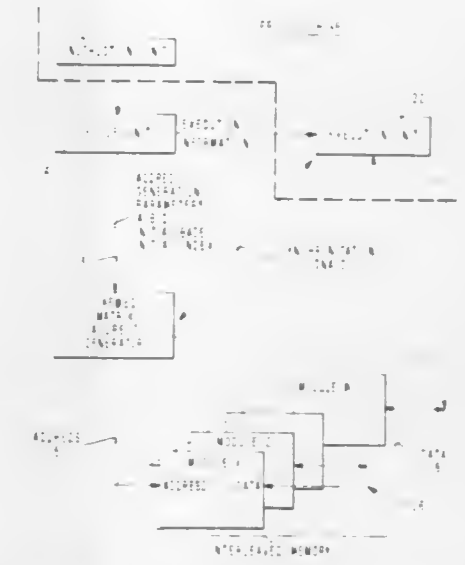
4,370,732
SKEWED MATRIX ADDRESS GENERATOR

Peter M. Kogge, Endicott, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,256

Int. Cl.³ G06F *9/34*

U.S. Cl. 364—900 **2 Claims**



1. In an address generator for an M-interleaved memory for accessing at the memory system's maximum access rate successive elements of either a row or a column of a matrix stored in a skewed matrix pattern, apparatus for generating the sequences of appropriate memory addresses for the desired row or column, comprising:

a base register having an input connected to a first adder which adds an input value A to the contents in the base register so that the output of the adder can be stored and subsequently used as a pointer to the beginning of the current row in the matrix in memory being accessed;

an index register having an input connected to a second added for adding an input value B to the contents of the index register and that sum being conditionally added in a third adder to an input value C which sum is then stored in the index register so that it can be subsequently used as a pointer to the column element in the matrix in memory being accessed;

a fourth adder having inputs connected to the base register and the index register for generating from the row and column pointers the actual memory address of the next matrix element to be accessed;

whereby in response to a series of clock pulses a sequence of memory addresses needed to access the desired row or column will be generated with the result appearing in natural order.

4,370,733
PATTERN GENERATION SYSTEM

John J. Gaudio, P.O. Box 27826, Denver, Colo. 80227

Division of Ser. No. 907,685, May 19, 1978, Pat. No. 4,262,338. This application Nov. 10, 1980, Ser. No. 205,790

Int. Cl.³ G06F *3/14*

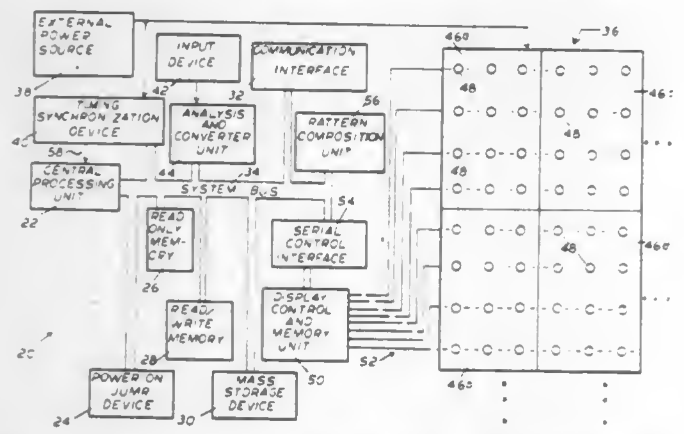
U.S. Cl. 364—900 **4 Claims**

1. A computer system comprising a central processing means for operatively controlling said computer system, and

memory means having a plurality of addressable memory locations for recording and holding signals therein, said processing means operatively addressing said addressable memory locations and controlling said memory means to record signals in the memory locations addressed and to supply signals in accordance with the signals previously recorded in the memory locations addressed, said computer system further comprising, in combination:

means (**56**) for combining a plurality of pre-existing signals and supplying a new signal formed by the combination of the pre-existing signals, said combining means being operatively connected with said processing means and with said memory means and being operatively controlled by said processing means, said combining means further comprising:

logical combination means (**154**) for performing a selected logical combination on two input signals applied thereto and for supplying therefrom a new signal representative of the logical combination of the two applied input signals,



said logical combination means being operatively connected to receive one input signal from said memory means;

temporary result storage means (**160**) operatively connected to receive the new signal supplied from said logical combination means, said temporary result storage means also supplying the new signal received as an output signal at an output thereof, the output of said temporary result storage means being operatively connected to supply the output signals therefrom as the other one of the two input signals to said logical combination means;

addressing means (**148**) operatively connected for addressing selected memory locations of said memory means; and

delivery means (**164**) operatively controlled by said addressing means for conducting the new signal from the output of said temporary result storage means to a selected memory address location addressed by said addressing means.

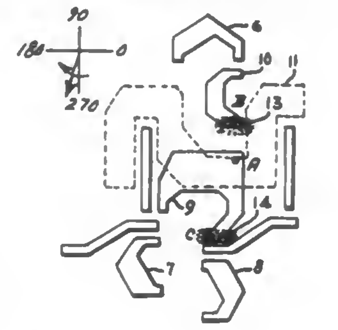
4,370,734
SWITCHING METHOD FOR EFFECTING REPLICATION IN MAGNETIC BUBBLE DEVICES

Isoris S. Gergis, Yorba Linda, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,454
Int. Cl.^{3} G11C ***19/08***
U.S. Cl. 365—12 **1 Claim**

1. The method of effecting replication in a magnetic bubble domain propagation structure having an organization of propagate elements providing a major loop, at least one organization of propagate elements providing a minor loop wherein magnetic bubbles propagate in response to the influence of a clockwise rotating magnetic field, a magnetic field, a magnetic bubble switch propagate element associated with each minor loop for transmitting magnetic bubbles into said major loop, a control conductor element associated with each minor loop traversing each said minor loop, its associated magnetic bubble switch propagate element and a proximate propagate element of said major loop, and a current pulse source for delivering current pulses to said control conductor element, said method comprising the steps of:

applying a first current pulse to said control conductor element at approximately 45° phase angle of said rotating magnetic field, said current pulse having a magnitude and polarity adapted to attract a magnetic bubble to said bubble switch propagate element and stretch said magnetic bubble between said bubble switch propagate element and its proximate minor loop propagate element,



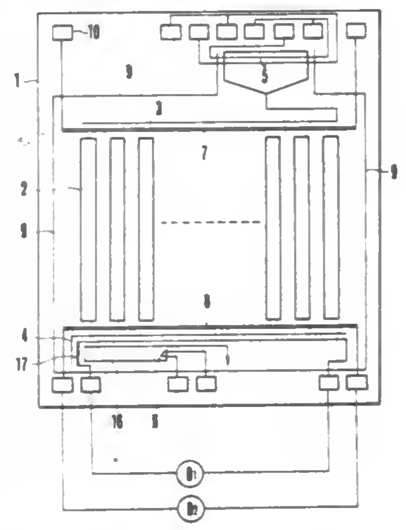
terminating said first current pulse at approximately 0° phase angle of said rotating magnetic field, and

applying a second, narrow, current pulse of the same polarity as said first current pulse to said control conductor element at approximately 270° phase angle of said rotating magnetic field, said second current pulse having an amplitude sufficient to sever said magnetic bubble.

4,370,735
MAGNETIC BUBBLE MEMORY DEVICE

Toshio Futami, and Kazutoshi Yoshida, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,503
Int. Cl.^{3} G11C ***19/08***
U.S. Cl. 365—16 **4 Claims**



1. A magnetic bubble memory device comprising;

a magnetic bubble generator which generates a magnetic bubble carrying information "1" by conducting a pulse current on its hairpin-shaped conductor loop and creating a data having information "0" by suppressing said pulse current;

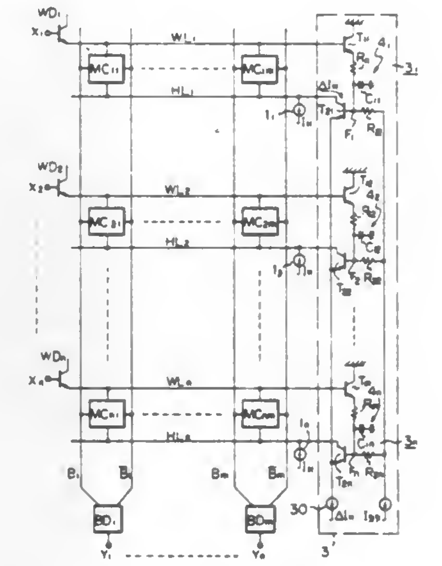
a major propagation circuit for propagating said magnetic bubble to a transfer-in gate circuit which transfers said magnetic bubble to a memory storage region; and

a gate means provided between said magnetic bubble generator and said major propagation circuit for transferring a magnetic bubble carrying information "1" at a predetermined timing and preventing spurious bubbles from being transferred to said major propagation circuit at a second predetermined timing.

4,370,736
TERMINATION CIRCUIT FOR WORD LINES OF A SEMICONDUCTOR MEMORY DEVICE

Yukio Takahashi, Shiga, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 29, 1980, Ser. No. 182,670
Claims priority, application Japan, Aug. 30, 1979, 54-110720
Int. Cl.^{3} G11C ***11/40, 7/00***
U.S. Cl. 365—155 **10 Claims**



1. A termination circuit, for word lines of a semiconductor memory device having a plurality of memory cells, operatively connected between the word lines and hold lines, the word lines selected by word address signals applied to the semiconductor memory device, the word lines driven to different first or second potential levels with respect to a reference voltage in dependence upon the selected or non-selected condition of the word lines, each hold line having a hold line current source operatively connected thereto, comprising:

first transistors, each operatively connected to one of the word lines, each detecting a potential change of one of the word lines with respect to the reference voltage, and each generating a detected output signal when a change in the word line potential with respect to the reference voltage occurs;

delay circuits, each operatively connected to one of said first transistors, respectively, for delaying the detected output signal of the one of said first transistors to which the selected word line is connected for a predetermined period and for generating a delayed detected output signal;

second transistors, each having an emitter, a base operatively connected to one of said delay circuits, respectively, and a collector operatively connected to one of the hold lines, respectively, and each turned on and off by the delayed detected output signal from one of said delay circuits, respectively; and

a common hold current source for the hold lines, operatively connected to the emitter of said second transistors, and each of said second transistors and said common hold current source forming a current switch.

4,370,737
SENSE AMPLIFIER AND SENSING METHODS

John Y. Chan, Belmont, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 11, 1980, Ser. No. 120,426
Int. Cl.^{3} G11C ***11/24***
U.S. Cl. 365—203 **23 Claims**

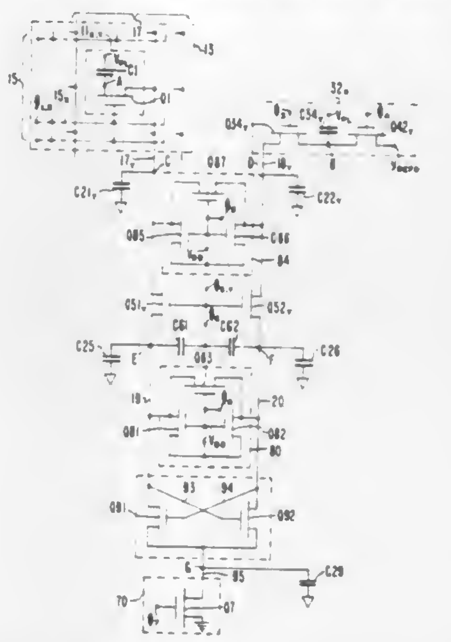
1. An electronic circuit for determining the logic state of a memory cell existing selectively either in a low logic state or in a high logic state, the electronic circuit comprising:

means for establishing a voltage difference between (1) a first input conductor coupled to the memory cell and (2) a first reference conductor, the sign of the voltage difference being indicative of the logic state;

means for transferring the voltage on said first input conductor to a second input conductor and the voltage on said first reference conductor to a second reference conductor;

means for selectively at least partially isolating said input conductors from each other and said reference conductors from each other.

means for increasing the voltage on said second input conductor and on said second reference conductor after said input and reference conductors are isolated from each other;



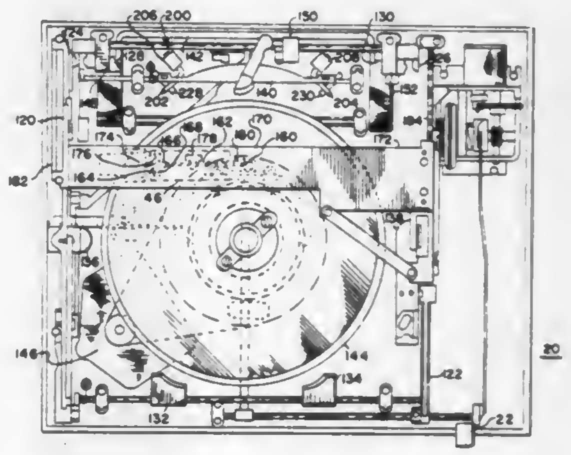
means for amplifying the voltage difference to generate an amplified voltage difference between the voltages on (1) said second input conductor coupled to said first input conductor and (2) said second reference conductor coupled to said first reference conductor; and

means for sensing the amplified voltage difference to determine the logic state.

4,370,738
VIDEO DISC PLAYER HAVING RECORD RETAINING MECHANISM

Clyde F. Coleman, Crawfordsville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 210,464
Int. Cl.^{3} G11B ***25/04, 17/04***
U.S. Cl. 369—77 **8 Claims**



1. In a player for recovering prerecorded information from a turntable-supported record during playback; said record being enclosed in a cover having an edge opening in communication with a record enclosing cavity; said player having an input slot through which an occupied cover is inserted along a

path to load an enclosed record therein; said player including a record extracting mechanism for removing said enclosed record from said cover during cover withdrawal subsequent to an occupied cover arrival at a fully inserted position in said player, thereby retaining said record in said player resting on a record supporting platform; an empty cover being inserted into said player along said path for retrieving said retained record into said cover; apparatus comprising:

(A) a first member mounted in said player; the location of said first member being such that a peripheral portion of said retained record is urged forward into engagement with said first member by an empty cover, as said empty cover is inserted into said player for record retrieval, to hold said record in place during said cover insertion; and

(B) means for retracting said first member out of said cover insertion path just prior to any engagement between said cover and said first member, as said empty cover is inserted into said player, to allow further insertion of said cover into said player.

4,370,739

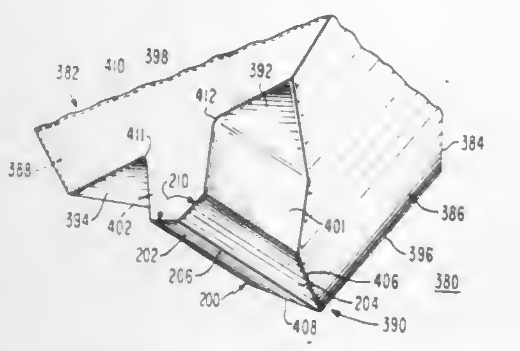
SPINEL VIDEO DISC PLAYBACK STYLUS

Chih C. Wang, Hightstown; Harry L. Pinch, Princeton, and Ronald F. Bates, Trenton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 158,062

Int. Cl.³ G11B *9/06, 3/44*

U.S. Cl. 369—126 **4 Claims**



1. In an information storage and playback system comprising a playback stylus and a disc record wherein information is recorded in the surface of the disc record; wherein the stylus is fabricated out of a dielectric support material; wherein there is relative motion between the disc and the playback stylus during recovery of the recorded information; and wherein the stylus contacts the record disc surface during the recovery of the information;

the improvement wherein said stylus dielectric support material is single crystal magnesium aluminate spinel comprised of a ratio of MgO to Al_2O_3 of about 1:1 to about 1:2.5 and having a surface with a (100) orientation, and further comprising a conductive layer of epitaxial α-tantulum having a surface with a (110) orientation formed on said spinel (100) surface.

4,370,740

ROTARY RECORDING MEDIUM

Atsumi Hirata, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 11, 1979, Ser. No. 102,528

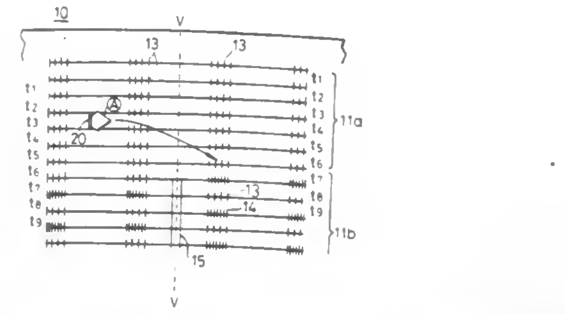
Claims priority, application Japan, Dec. 11, 1978, 53-152926

Int. Cl.³ G11B *11/00*

U.S. Cl. 369—276 **6 Claims**

1. A grooveless rotary recording medium, at least one surface of which has a spiral main track comprising a multiplicity of successively adjacent track turns, each of said turns being identified by a respective track turn number, and a reference signal track disposed centrally between the center lines of mutually adjacent track turns of the main track, said surface comprising:

at least one displacement part comprising a plurality of track turns of the main track having no information signal recorded thereon, only either one of first and second reference signals being recorded in reference signal tracks along both of the opposite sides of each main track; and



at least one information part comprising track turns of the main track having an information signal recorded thereon, the first and second reference signals being recorded alternately in the reference signal tracks on opposite sides of the main track, and a third reference signal being recorded at positions where the track turn numbers change at every revolution of the recording medium.

4,370,741

PROCESS AND AN APPARATUS FOR TRANSMITTING DATA ACROSS A TWO-WIRE LINE

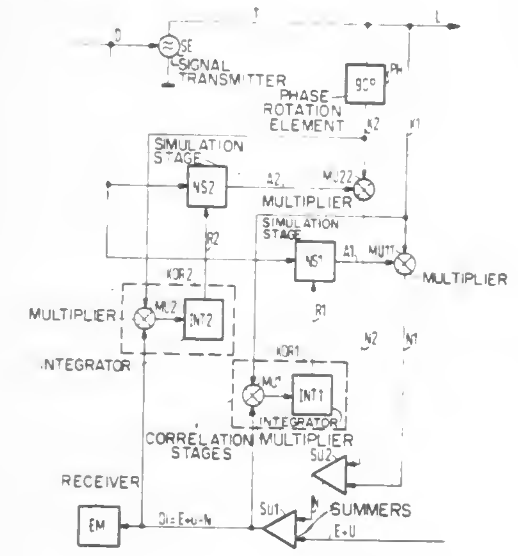
Adolf Haass, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 9, 1980, Ser. No. 138,707

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921780

Int. Cl.³ H04B *3/20*

U.S. Cl. 370—24 **21 Claims**



1. A process for transmitting data over a two-wire line from a first station to a remote, second station and vice-versa, wherein the data of the first station produce a cross-talk signal comprising first and second signal components, which cross talk signal is superimposed upon a received signal which comprises a cross-talk superposed data modulated carrier transmitted from the remote, second station and occurs in the received signal at the first station, comprising the steps of:

transmitting the data with a data modulated carrier over the two-wire line;

branching the modulated carrier into first and second orthogonal signal components whose phase angles differ by 90°;

correlating a difference signal with the first and second orthogonal signal components, respectively, to produce a

first regulating signal indicating the deviation of the first orthogonal signal component from the first signal component of the cross-talk signal and a second regulating signal indicating the deviation of the second orthogonal signal component from the second signal component of the cross-talk signal;

producing first and second dummy signals from the first and second regulating signals and the data, respectively;

multiplying the first orthogonal signal component and the first dummy signal, and the second orthogonal signal component and the second dummy signal to produce first and second multiplicative signals;

summing the first and second multiplicative signals to produce a compensation signal; and

summing the cross-talk superposed data modulated carrier and the compensation signal to produce the difference signal.

4,370,742

TIME DIVISION ELECTRONIC SWITCHING SYSTEM

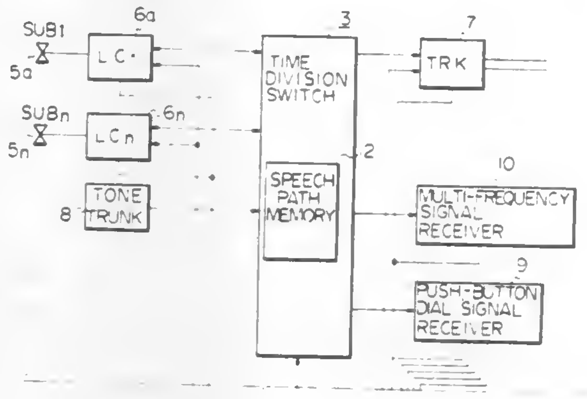
Eiji Minamitani, Yokohama; Kiyoo Ozawa, Kawasaki, and Takashi Yokoto, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 15, 1980, Ser. No. 187,420

Claims priority, application Japan, Sep. 20, 1979, 54/121423

Int. Cl.³ H04J *3/00;* H04Q *11/04*

U.S. Cl. 370—58 **7 Claims**



1. A time division electronic switching system operatively connected to subscriber connection equipment and other telephone office connection equipment, the subscriber and other telephone office connection equipment generating dial information, including, as structural elements, a signal processor operatively connected to a central processing unit, a multi-frequency signal receiver operatively connected to both the signal processor and a time division switch including a speech path memory having transmitting and receiving sides, wherein said signal processor generates a control signal, said system comprising:

a multi-frequency signal receiver circuit of the multi-frequency receiver, having an output, including dial information detection means for detecting the dial information and for generating detected dial information;

holding memory means, operatively connected to the speech path memory, for controlling the writing of the detected dial information from said multi-frequency signal receiver circuit into the speech path memory; and

access means, operatively connected between the speech path memory means and the signal processor, for controllably reading out the detected dial information written in the speech path memory and supplying the detected dial information to the signal processor in dependence upon the control signal, whereby the signal processor supplies the detected dial information to the central processing unit.

4,370,743

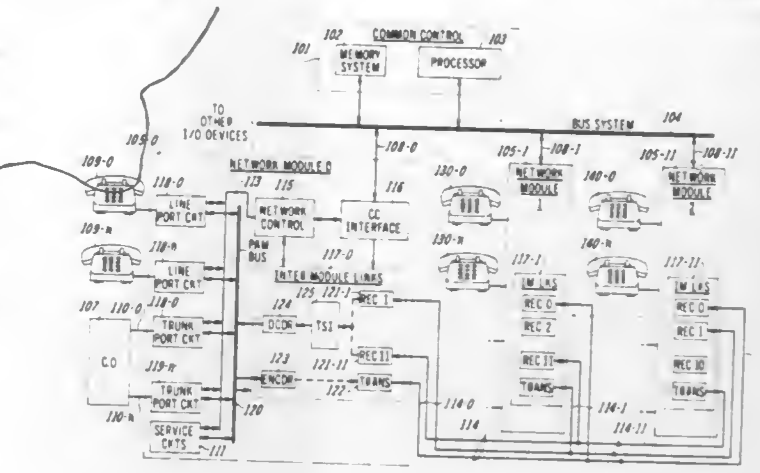
TIME DIVISION SWITCHING SYSTEM

John C. Moran, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 25, 1980, Ser. No. 172,191

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—67 **17 Claims**



13. The method of serving calls between port circuits in different modules of a time division switching system in which each module has a plurality of port circuits connected to a time division bus,

a bus system interconnecting all of said modules for the serving of intermodule calls,

said method comprising the steps of:

(1) exchanging call data words containing call message information over said bus system between a first and a second one of said modules serving an intermodule call,

(2) temporarily registering in a module each word received by said module over said bus system,

(3) entering said message information of a registered word into a buffer memory of a module only when said registered word pertains to an intermodule call currently being served by said module,

(4) repetitively scanning said buffer memory of each module to read out any call message information stored in said buffer memory, and

(5) applying said readout call message information to the time division bus of the module containing said readout memory.

4,370,744

TIME DIVISION MULTIPLEX COMMUNICATION SYSTEM

Junzo Hirano, Zushi, and Yukio Inoue, Yokohama, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Japan

Filed Feb. 28, 1980, Ser. No. 125,813

Claims priority, application Japan, Mar. 2, 1979, 54-24180

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—88 **21 Claims**

1. A time division multiplex communication system comprising:

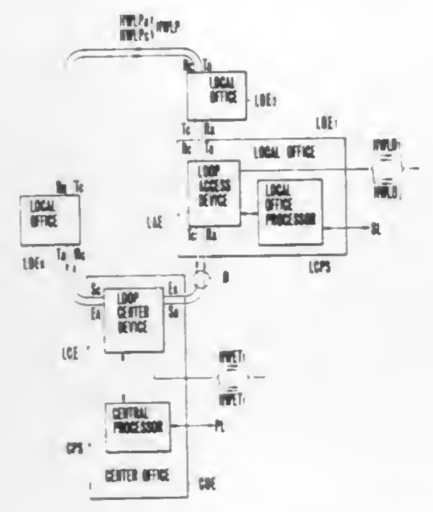
a set of loop shaped transmission line pairs for transmitting time division multiplexed signals via a first transmission line pair in a first loop direction and via a second transmission line pair in the opposite loop direction;

a central office connected to starting ends and terminal ends of each said transmission line pair;

and a plurality of local offices located at intermediate points of each said transmission line pair;

said central office including means connected to the starting and terminal ends of said transmission line pair for transmitting and receiving signals therewith, and a processing means for assigning time slots of time division multiplexed channels of said transmission line pairs to data signals to be sent via the transmission line pairs and for sending an interoffice signal regarding said assignment of the time slots to said local offices;

each of said local offices including access means for accessing the assigned time slots of said time division multiplexed channels of said transmission line pairs, and control means responsive to said interoffice signal sent from said central office for controlling said access means, whereby when a communication is made between two offices belonging to said loop, said processing means of the central office assigns a time slot to said offices between which said communication is made for causing the access means of said local offices to operate under control of said control means of the local office so as to form with said assigned time slots two route channels, one passing through a specific point on a transmission path provided by said transmission line pairs, while the other not passing through said specific point thereby performing interoffice communications through either one of said route channels under the control of either one of said processing means of the central office and said control means of the local office.



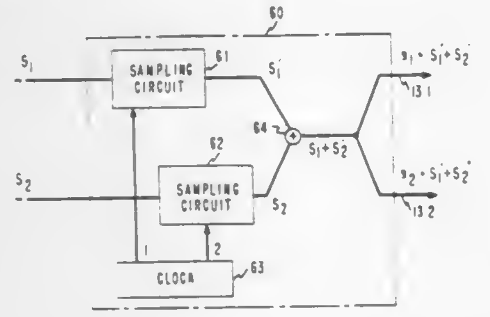
4,370,745
FAIL-SAFE TRANSMISSION SYSTEM

Stewart E. Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 14, 1980, Ser. No. 206,720

Int. Cl.^{3} G06F *11/08;* H03K *13/32*

U.S. Cl. 371—8 **7 Claims**



1. A fail-safe system for transmitting a multiplicity of n input signals over an equal multiplicity of n transmission links comprising:

means for encoding said input signals into n encoded signals such that at least two of said n encoded signals contain sufficient information to permit recovery of each of said input signals from each of said at least two encoded signals;

each of said encoded signals being transmitted along a different one of said multiplicity of transmission links;

and a decoder at the output end of said links for recovering said input signals.

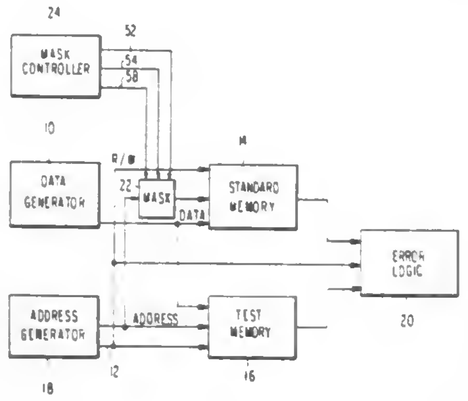
4,370,746
MEMORY ADDRESS SELECTOR

Robert E. Jones, Fishkill, and Donald H. Wood, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,656

Int. Cl.^{3} G01R *31/28;* G11C *29/00*

U.S. Cl. 371—27 **9 Claims**



1. In a testing apparatus of the type including a standard device for providing an output in response to N address signals received on N address input lines, a test device for providing an output in response to address signals received on a plurality of address lines, an address generator for providing address signals to said standard and test devices, and means for comparing the outputs from said two devices, the improvement comprising:

said address generating means providing M address signals on M address output lines, M≧N; and

programmable masking means for selecting N of said M address signals to be supplied as the N address signals to said standard device.

4,370,747
DATA TRANSMISSION

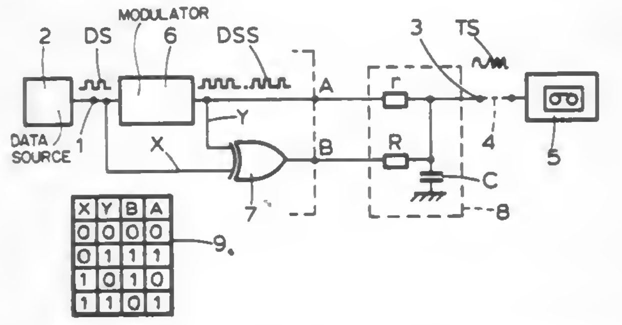
Richard E. F. Bugg, Shirley, and Derek J. Parkyn, Sevenoaks, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,234

Claims priority, application United Kingdom, Dec. 21, 1979, 7944027

Int. Cl.^{3} H03C *3/04*

U.S. Cl. 375—62 **8 Claims**



1. A circuit arrangement for use in a data transmission system in which binary data elements are trasmitted by frequency shift using two tone frequencies f0 and f1 corresponding to the transmission of data elements '0' and '1', respectively, said circuit arrangement being operable to generate two such tone frequencies f0 and f1 in response to a data signal consisting of the binary data elements, said circuit arrangement comprising; modulator means responsive to the data signal to produce a digital signal having a predetermined pattern of binary '1' and binary '0' values, the pattern occurring for the duration of each data element '0' in the applied data signal at a first bit rate and occurring for the duration of each data element '1' at a second bit rate, said first and second bit rates being appropriate for the generation of the respective tone frequencies f0 and f1; integrator means responsive to the digital signal to produce by decoding of the digital signal an output signal which conforms to the tone frequency f0 when the digital signal has said predetermined pattern occurring at said first bit rate and to the tone frequency f1 when the digital signal has said predetermined pattern occurring at said second bit rate; and control means responsive to the data signal to effect an adaptive control of the amplitude of the output signal by controlling the input to said integrator means such that this amplitude tends towards the same level for each of the two tone frequencies f0 and f1.

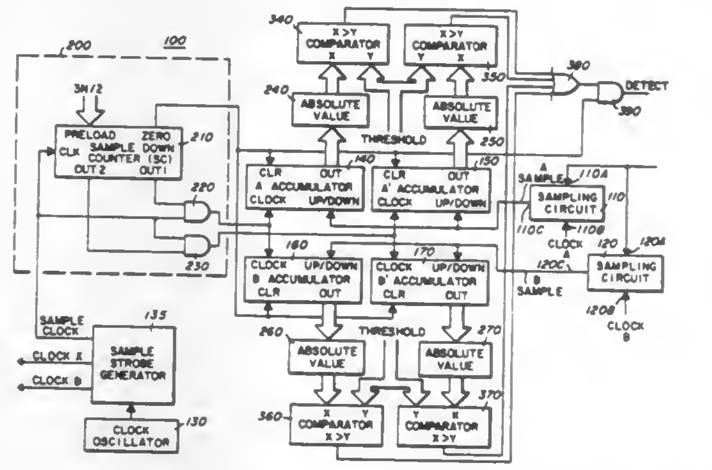
4,370,748
APPARATUS AND METHOD FOR DETECTING THE PRESENCE OF A PULSED RADIO FREQUENCY SIGNAL

Robert V. Janc, Palos Heights; David S. Robins, Buffalo Grove, and Michael H. Retzer, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1981, Ser. No. 222,423

Int. Cl.^{3} H04L *27/06*

U.S. Cl. 375—94 **6 Claims**



1. Apparatus for detecting the presence of a pulsed radio frequency signal including:

sampling means for sampling said radio frequency signal during selected periods of time having duration T, to periodically generate first and second samples in quadrature relationship;

first and second accumulating means, coupled to said sampling means, for respectively accumulating said first and second samples during a first period of time less than T to respectively generate first and second sums;

third and fourth accumulating means, coupled to said sampling means, for respectively accumulating said first and second samples during a second period of time less than T to respectively generate third and fourth sums, said second period of time overlapping said first period of time, and

comparator means, coupled to said first, second, third and fourth accumulating means, for generating an output signal when any one of said first, second, third and fourth sums exceeds a predetermined threshold level.

4,370,749
PHASE NOISE CORRECTION CIRCUIT FOR A DATA TRANSMISSION SYSTEM

Michel Levy, Massy, and Christian Poinas, Boulogne, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

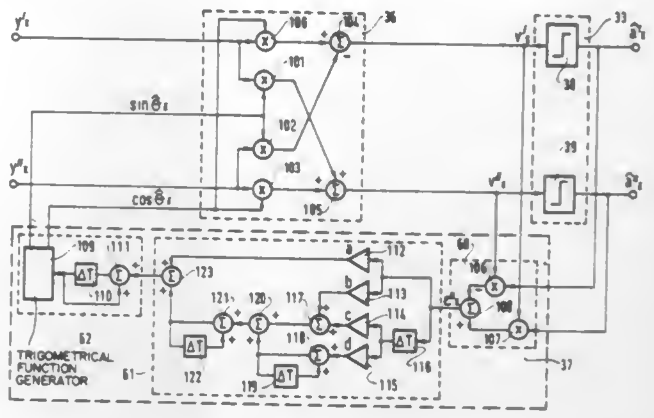
Filed Oct. 17, 1980, Ser. No. 198,086

Claims priority, application France, Oct. 19, 1979, 79 26065

Int. Cl.^{3} H04B *15/00*

U.S. Cl. 375—99 **5 Claims**

1. A phase noise correction circuit for a synchronous data transmission system using symbols and including a decision circuit at its receiving end for supplying an estimate of the transmitted symbols on the basis of the received symbols, wherein said correction circuit comprises a phase shifter circuit located at the receiving end, an output of the phase shifter circuit being coupled to an input of the decision circuit, and a third-order phase-controlling feedback circuit connected in a feedback path between the decision circuit and the phase shifter circuit.



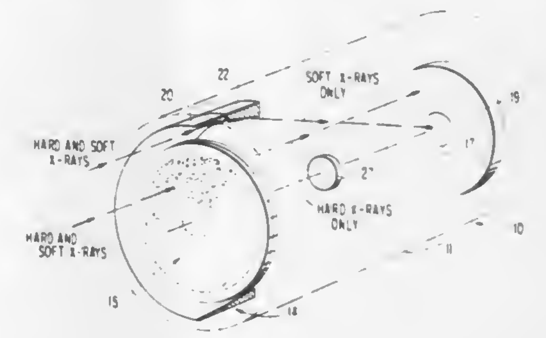
4,370,750
EXTENDED RANGE X-RAY TELESCOPE

Richard B. Hoover, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 15, 1981, Ser. No. 263,828

Int. Cl.^{3} G02B *23/06;* H05G *1/00*

U.S. Cl. 378—43 **21 Claims**



1. An extended range X-ray telescope system comprising:

(a) a tubular mount having a collecting region at one axial end for receiving X-rays from a remote source, and a detector region separated from the collecting region;

(b) a first subsystem associated with the collecting region for directing only relatively soft, near on-axis X-rays incident on a first portion of the collecting region into a first detector located at the detector region and sensitive to relatively soft X-rays; and

(c) a second subsystem associated with the collecting region for directing only relatively hard near on-axis incident on a second portion of the collecting region into a second detector located at the detector region and sensitive to relatively hard X-rays.

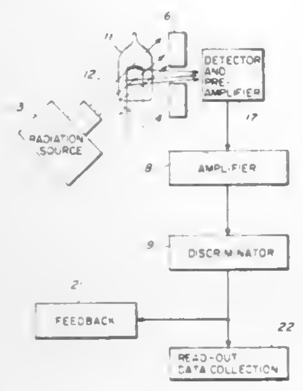
4,370,751
METHOD OF NON-DESTRUCTIVELY MEASURING THE PRESSURE OF A GAS IN A CLOSED VESSEL

Francis X. Pink, Norwood; Carmine Persiani, Milford, and Paul Lublin, Framingham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 9, 1981, Ser. No. 223,874

Int. Cl.^{3} G01N *23/22*

U.S. Cl. 378—47 **7 Claims**



1. A method of non-destructively measuring the pressure of a gas in a closed vessel comprising
irradiating said closed vessel with x-rays;
detecting secondary radiation emitted by irradiated gas within and emerging from said closed vessel;
discriminating the detected secondary radiation with respect to a particular element to provide an intensity count; and
converting said count to a pressure reading.

4,370,752
DEVICE FOR STABILIZING TUBE CURRENT IN X-RAY PHOTOGRAPHING APPARATUS

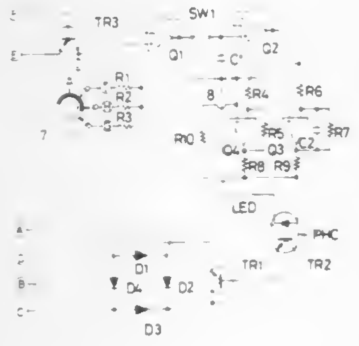
Shuhei Furuichi, Kyoto, and Masakazu Suzuki, Naka, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 54,691, Jul. 5, 1979, abandoned. This application Nov. 10, 1981, Ser. No. 319,925

Claims priority, application Japan, Jul. 7, 1978, 53/83215

Int. Cl.^{3} H05G *1/30*

U.S. Cl. 378—110 **1 Claim**



1. In an X-ray photographing apparatus of the type including an X-ray tube and a high voltage and filament transformer coupled respectively to the anode and filament of said X-ray tube, X-ray tube current stabilizing means comprising:
a means for detecting a tube current of said X-ray tube;
a means for setting a reference tube current level;
a comparing means for comparing said detected tube current with said reference tube current and for producing an output proportionate to said comparison, said comparing means comprising:
an integration circuit comprising a first amplifier with an integrating capacitor thereacross, said first amplifier having said detected tube current applied to one input and said reference tube current applied to another input thereof; and
a second amplifier coupled in parallel with said integration circuit, said second amplifier having said detected tube current applied to one input and said reference tube current applied to another input, said second amplifier further having an output thereof coupled to an output of said first amplifier and forming an output of said comparing means; and
a means for controlling said tube current on a primary side of said filament current transformer in response to said output of said comparing means such that said tube current is brought into agreement with said reference tube current.

4,370,753
BATTERY SAVER FOR A TONE CODED SIGNALLING SYSTEM

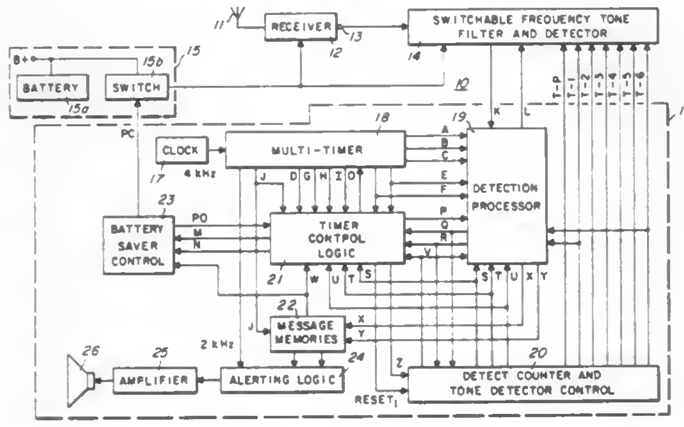
Edward L. Ehmke, Margate, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 755,696, Dec. 30, 1976, Pat. No. 4,181,893, which is a continuation of Ser. No. 590,537, Jun. 26, 1975, abandoned. This application May 29, 1979, Ser. No. 42,755

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.^{3} H04B *5/04*

U.S. Cl. 455—36 **26 Claims**



1. A multiple alert receiver operable in response to receiving a predetermined tone code, said receiver comprising:
receiver means for receiving transmitted signals;
detector means coupled to said receiver means for indicating a detection in response to said predetermined code being received by said receiver means; and
alert means coupled to said receiver means and said detector means for selecting and generating at least one of several alert signals in response to said detector means indicating a code detection and an additional signal being received by said receiver means, the additional received signal determining which of said several alert signals will be generated;
wherein the predetermined code includes at least one tone and said detector means includes circuitry for searching for said tone within a first time window duration and wherein said alert means includes circuitry for searching for said additional signal within a second time window duration, occurring after the code detection, which is greater than said first time window duration, whereby the receiver will be more likely to select a correct alert signal after said predetermined code has been identified.

DESIGNS

JANUARY 25, 1983

267,674
HOCKEY PANTS

John Livernois, St. Jean, Canada, assignor to Canada Cycle and Motor Company Limited, Weston, Canada

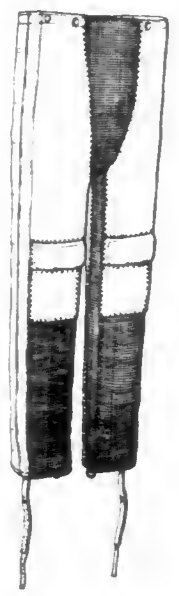
Filed Oct. 21, 1980, Ser. No. 198,906

Claims priority, application Canada, Apr. 25, 1980, 2504807

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—28



267,676
OVERSHOE

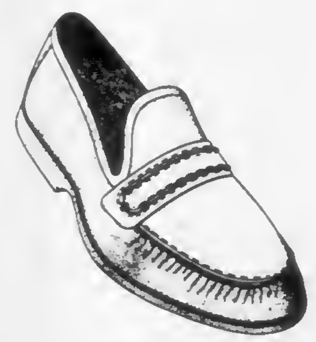
James H. Allen, Covington, Ky., assignor to 'Totes', Incorporated, Loveland, Ohio

Filed Sep. 8, 1980, Ser. No. 184,985

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—271



267,675
OVERSHOE

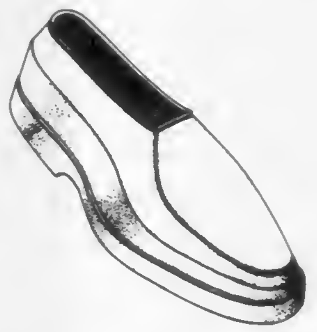
James H. Allen, Covington, Ky., assignor to 'Totes', Incorporated, Loveland, Ohio

Filed Sep. 8, 1980, Ser. No. 184,984

Term of patent 14 years

Int. Cl. D2—*04*

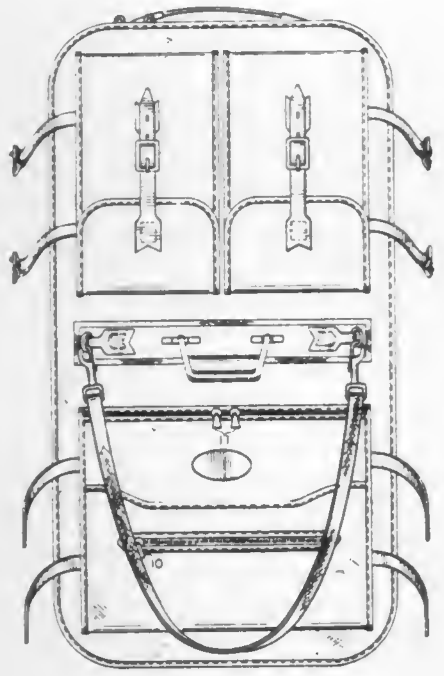
U.S. Cl. D2—271

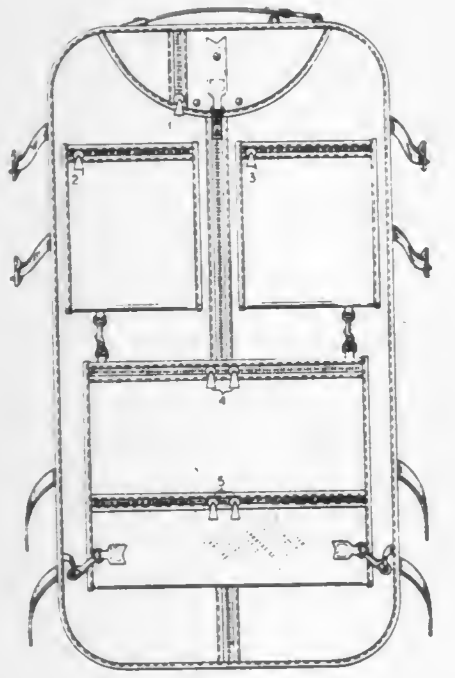


267,677
GARMENT BAG

Joseph Y. Pelavin, North Bergen, N.J., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Jun. 30, 1980, Ser. No. 164,107
Term of patent 14 years
Int. Cl. D3—*01*

U.S. Cl. D3—71

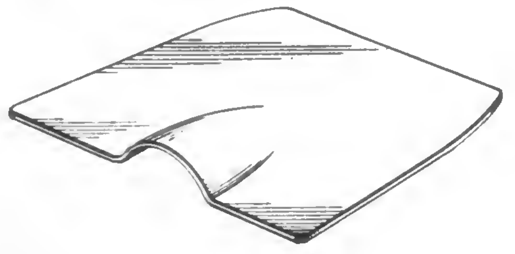




267,678
BABY SEAT

John J. Breen, 7100 Alcove Ave., North Hollywood, Calif. 91605
Filed Nov. 3, 1980, Ser. No. 203,521
Term of patent 3½ years
Int. Cl. D6—*01*

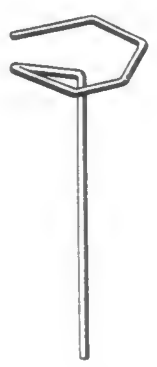
U.S. Cl. D6—7



267,679
GROUND INSERTED HOLDER FOR ROASTING FORK OR THE LIKE

Ray H. Barney, 217 Bond St., Allegan, Mich. 49010
Filed May 27, 1980, Ser. No. 153,371
Term of patent 14 years
Int. Cl. D6—*99*

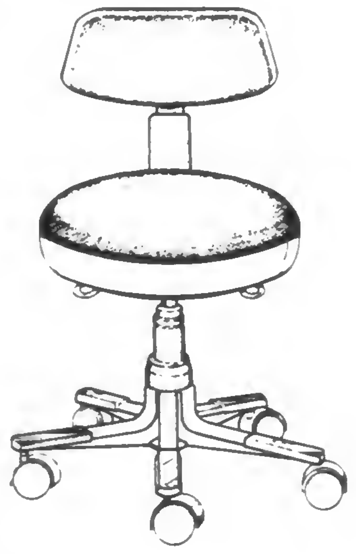
U.S. Cl. D6—20



267,680
CHAIR

Dennis F. Leffler, Charlotte, and Danny M. Truette, Pineville, both of N.C., assignors to The Pelton and Crane Company, Charlotte, N.C.
Filed Mar. 3, 1980, Ser. No. 126,794
Term of patent 14 years
Int. Cl. D6—*01*

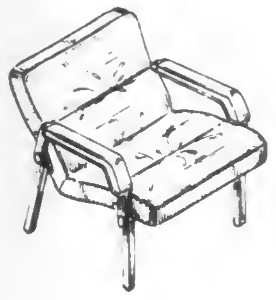
U.S. Cl. D6—30



267,681
CHAIR

Wolfgang Müller-Deisig, Borgenteich, Fed. Rep. of Germany, assignor to Fehlbaum & Co., Dornach, Switzerland
Filed Jan. 14, 1981, Ser. No. 224,863
Term of patent 14 years
Int. Cl. D6—*01*

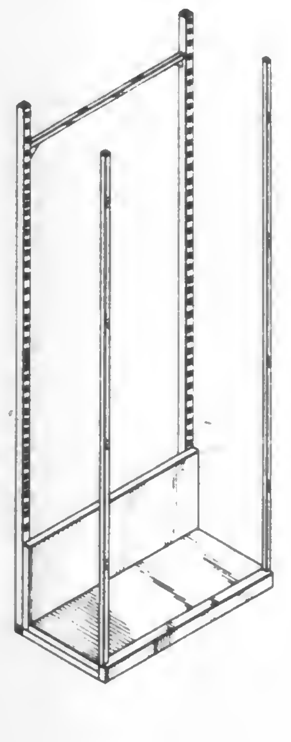
U.S. Cl. D6—73



267,682
DISPLAY UNIT

Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Jan. 7, 1981, Ser. No. 223,179
Term of patent 14 years
Int. Cl. D6—*06*

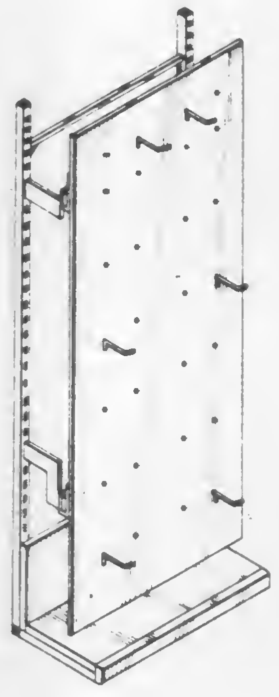
U.S. Cl. D6—85



267,683
DISPLAY UNIT

Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Jan. 7, 1981, Ser. No. 223,181
Term of patent 14 years
Int. Cl. D6—*06*

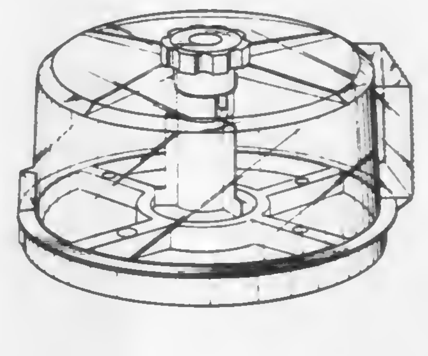
U.S. Cl. D6—85



267,684
COMBINED TOILET PAPER HOLDER AND DISPENSER

Lars B. Lander, Zug, Switzerland, assignor to Molnlycke Aktiebolag, Gothenburg, Sweden
Filed May 4, 1981, Ser. No. 263,477
Term of patent 14 years
Int. Cl. D23—*02;* D7—*01*

U.S. Cl. D6—97



267,685

WALL HOOK

Guy Vrignaud, Grenoble, France, assignor to Allibert S.A., Grenoble, France

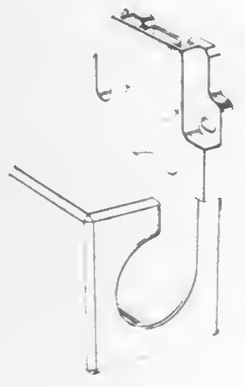
Filed Feb. 4, 1981, Ser. No. 231,347

Claims priority, application Hague, Aug. 18, 1980, DM/000 313

Term of patent 14 years

Int. Cl. D6—*06;* D8—*08*

U.S. Cl. D6—120



267,686

WALL MOUNTED FLAG CASE

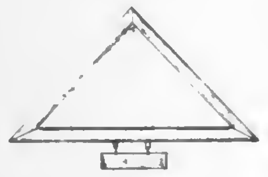
Donald R. Dawson, 116 E. Edgebrook, Apt. 614, Houston, Tex. 77504

Filed Oct. 3, 1980, Ser. No. 193,734

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—127



267,687

LENS DISPLAY STAND

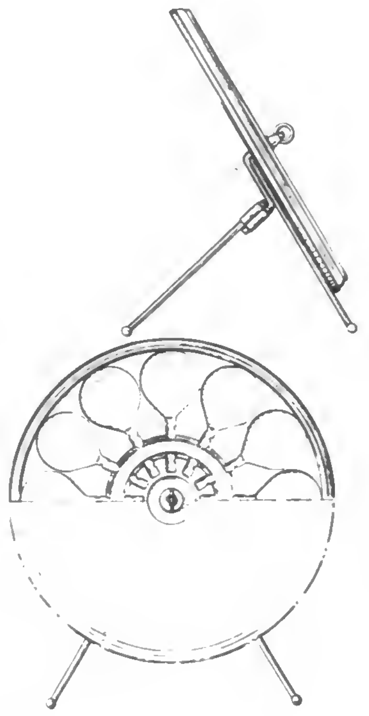
Milton B. Savage, deceased, late of Brooklyn, N.Y.; Sara Savage, executor, and Bernard D. Kane, executor

Filed Feb. 19, 1980, Ser. No. 122,360

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—157



267,688

DESK OR SIMILAR ARTICLE

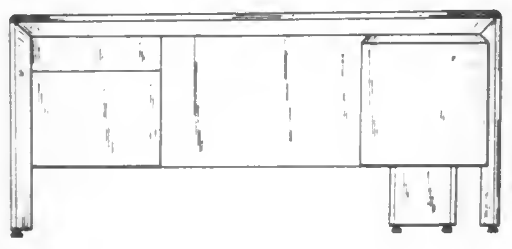
Warren Platner, Guilford, Conn., assignor to Litton Business Systems, Inc., Burlington, Iowa

Division of Ser. No. 914,285, Jun. 9, 1978. This application Jan. 9, 1981, Ser. No. 223,682

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—162



267,689

COMMUNICATION CABINET

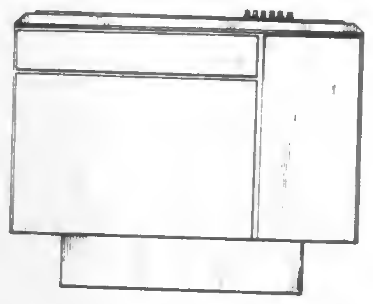
Warren Platner, Guilford, Conn., assignor to Litton Business Systems, Inc., Burlington, Iowa

Division of Ser. No. 914,285, Jun. 9, 1978. This application Jan. 9, 1981, Ser. No. 223,938

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—169



267,690

HOME COMPUTER TABLE

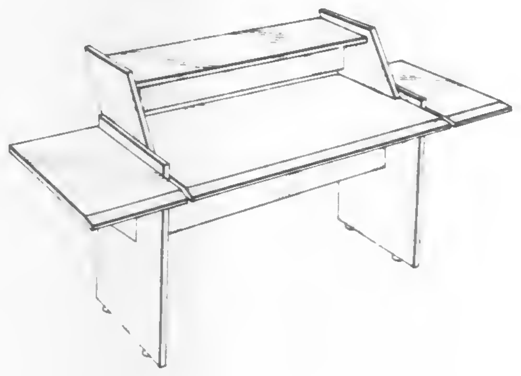
Joseph T. Verdesca, 5604 Lobello Dr., Dallas, Tex. 75229

Filed Oct. 21, 1980, Ser. No. 199,254

Term of patent 14 years

Int. Cl. D06—*03*

U.S. Cl. D6—179



267,691

COMBINED COFFEE TABLE AND BOOK SHELF UNIT

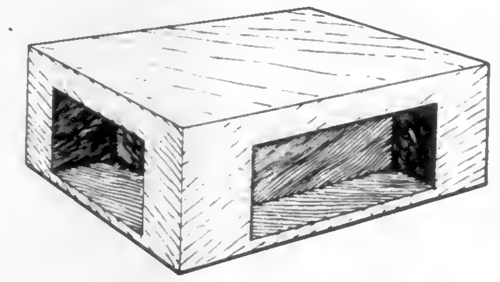
Courtney White, 3352 La Mesa Dr., San Carlos, Calif. 94070

Filed Nov. 17, 1980, Ser. No. 207,513

Term of patent 14 years

Int. Cl. D06—*03*

U.S. Cl. D6—179



267,692

DISPLAY UNIT

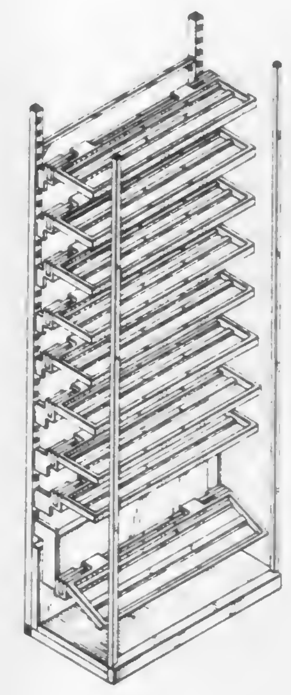
Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Jan. 7, 1981, Ser. No. 223,175

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—186



267,693

LIBRARY UNIT FOR ACCEPTING CANTILEVERED DOCUMENT-STORING COMPONENTS

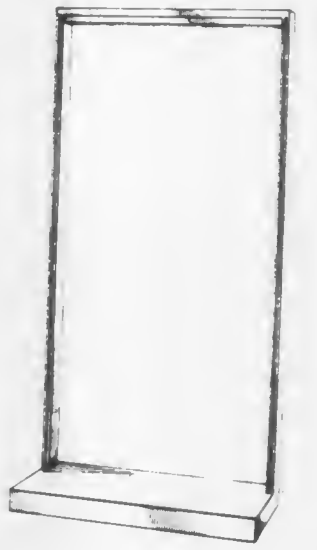
Edmund T. Paquette, Shrewsbury, and Frederick J. Moriarty, Worcester, both of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Mar. 31, 1980, Ser. No. 135,712

Term of patent 7 years

Int. Cl. D6—*06, 04*

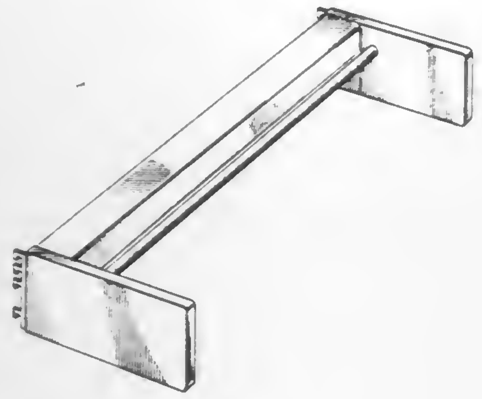
U.S. Cl. D6—191



267,694

DOCUMENTATION HANGER BAR FOR LIBRARY STORAGE UNIT

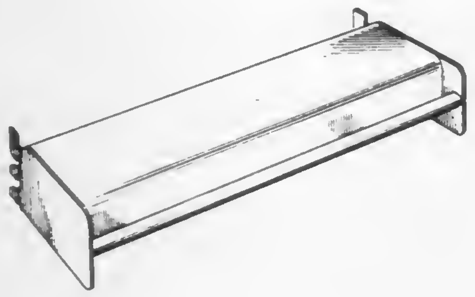
Frederick J. Moriarty, Worcester, and Edmund T. Paquette, Shrewsbury, both of Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Mar. 27, 1980, Ser. No. 134,706
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



267,695

DOCUMENTATION HANGER BAR

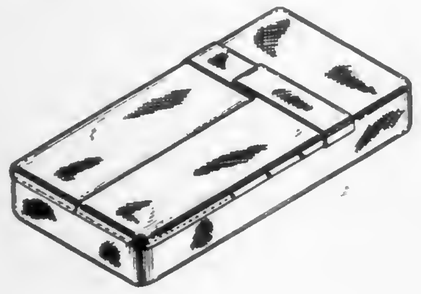
Edmund T. Paquette, Shrewsbury, and Richard M. Latino, Worcester, both of Mass., assignors to Wright Line Inc., Worcester, Mass.
Filed Apr. 17, 1980, Ser. No. 141,124
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



267,696

CONTOURED BED SHEET

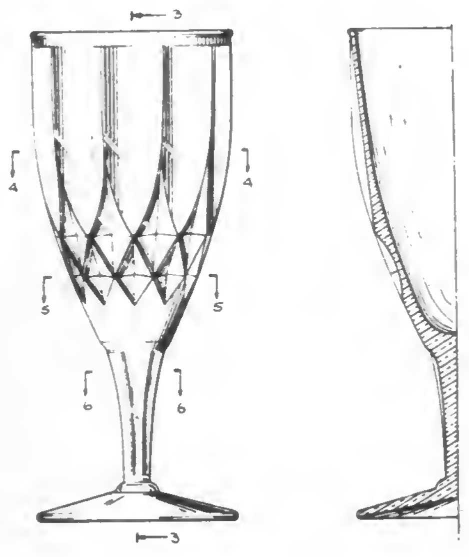
Eugene A. Adams, 110 E. 176th St., Bronx, N.Y. 10453
Continuation-in-part of Ser. No. 946,853, Sep. 28, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,222
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264

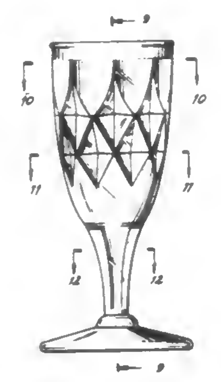


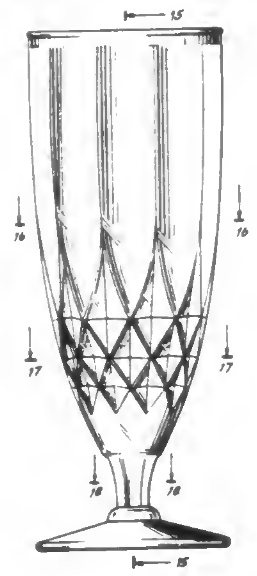
267,697

BEVERAGE GLASS OR SIMILAR ARTICLE

James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 14, 1980, Ser. No. 140,180
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—11



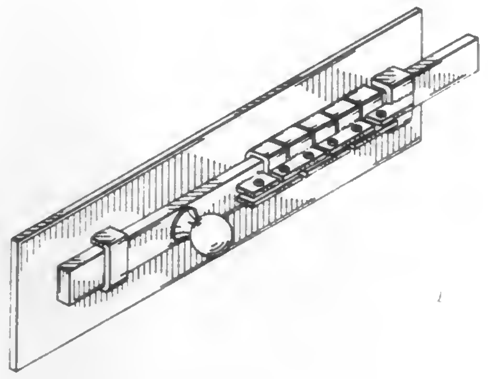




267,698

MULTIPLE ACCESS SLIDE-LOCK

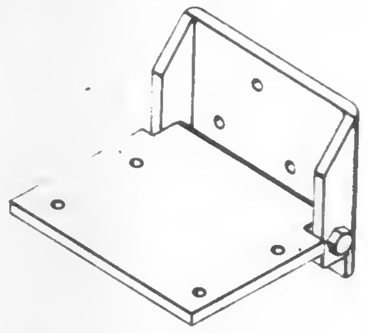
David C. Domes, Reno, Nev., assignor to Caravan Camper Mfg. Co., Reno, Nev.
Filed Nov. 3, 1980, Ser. No. 203,049
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—341



267,699

AIR COMPRESSOR BRACKET

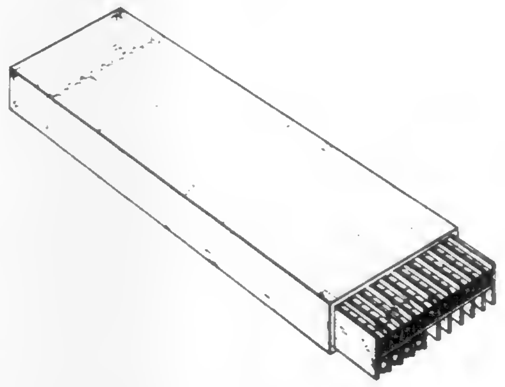
William F. Prawl, 5636 Tahama St., Sacramento, Calif. 95841
Filed Nov. 20, 1980, Ser. No. 208,564
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380



267,700

COMBINATION OF ARRAYS OF ELECTRICAL WIRE MARKERS IN AN INSERT AND BOX ARRANGEMENT

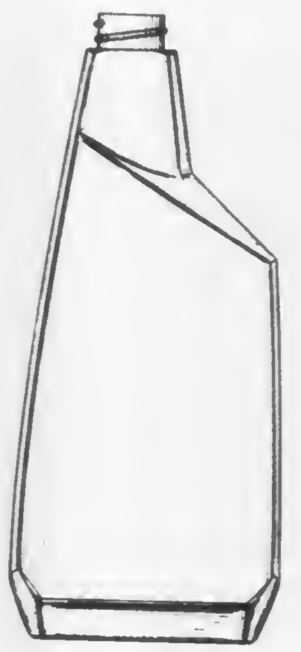
Lars Skarin, Otterbaäcken, Sweden, assignor to Partex Fabriksaktiebolag, Gullspang, Sweden
Filed Aug. 22, 1978, Ser. No. 936,268
Claims priority, application Sweden, Feb. 23, 1978, 78-0528
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—337



267,701

BOTTLE

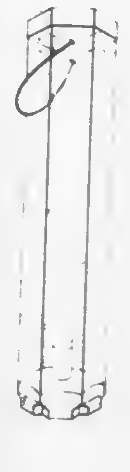
John Pardo, Yonkers, N.Y., and David A. Jones, Dayton, Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Feb. 3, 1981, Ser. No. 231,076
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—372



267,702

PACKAGING CONTAINER

James Swann, P.O. Box 584, South Brisbane, Queensland, 4101, Australia
Filed Jun. 16, 1980, Ser. No. 159,516
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424

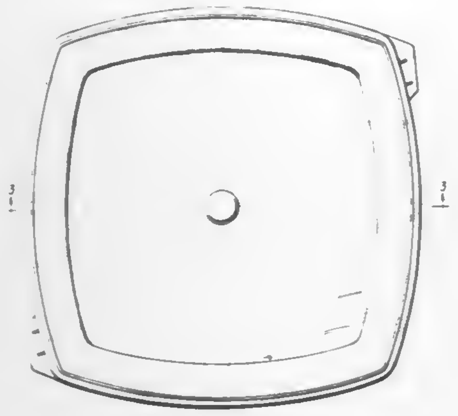


267,703
CONTAINER LID OR THE LIKE

David O. Chase, Skaneateles, N.Y., and Paul H. Pfuhl, Wrentham, Mass., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,600
Term of patent 14 years
Int. Cl. D9—*07*

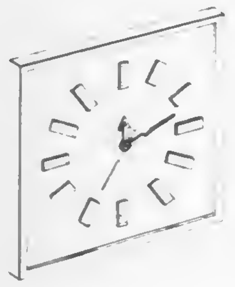
U.S. Cl. D9—435



267,704
CLOCK

Robert J. Burke, 8 Adams Ct., Quincy, Mass. 02169
Filed Nov. 7, 1980, Ser. No. 205,000
Term of patent 14 years
Int. Cl. D10—*01*

U.S. Cl. D10—6

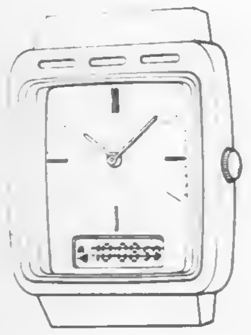


267,705
WRISTWATCH

Nobuhiro Kosugi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 216,016
Claims priority, application Japan, Jun. 11, 1980, 55-023215
Term of patent 14 years
Int. Cl. D10—*02*

U.S. Cl. D10—39

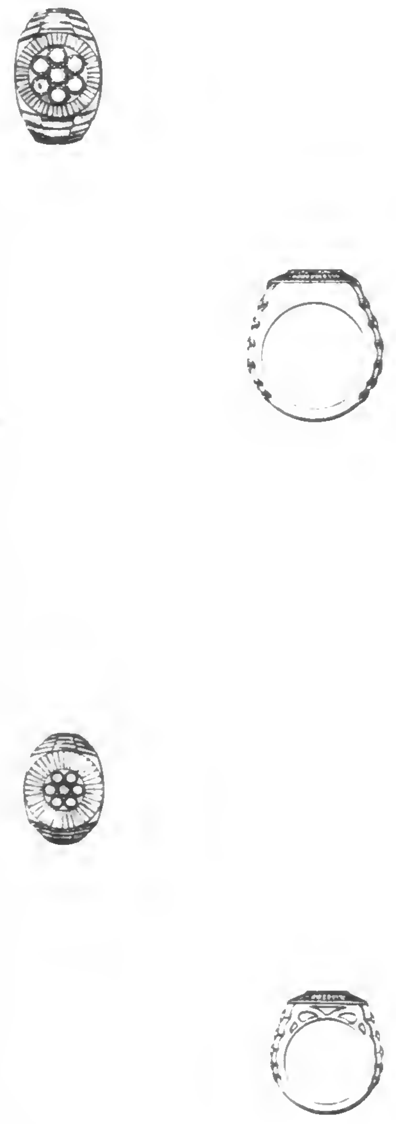


267,706
RING

Jeffrey H. Shapiro, Landing, N.J., assignor to A.B.L. Jewelers, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,507
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—34

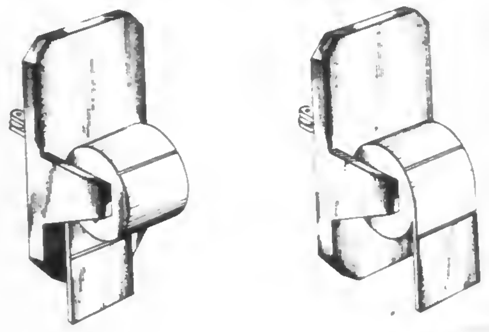


267,707
NOVELTY PIN

William E. Jarrett, 1465 Calvin, SE., Grand Rapids, Mich. 49507

Filed Nov. 13, 1980, Ser. No. 206,395
Term of patent 14 years
Int. Cl. D11—*01*

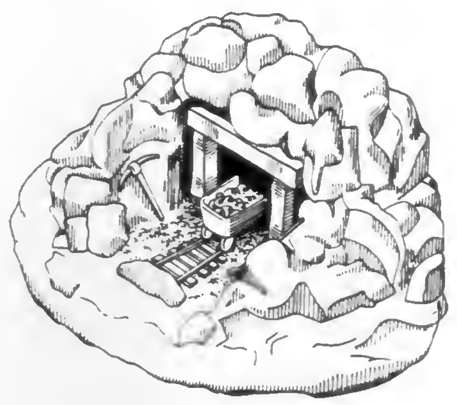
U.S. Cl. D11—48



267,708
SCULPTURE

Roderick R. Boyakin, P.O. Box 6254, Richardson, Tex. 75080
Filed Oct. 7, 1980, Ser. No. 194,811
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—157

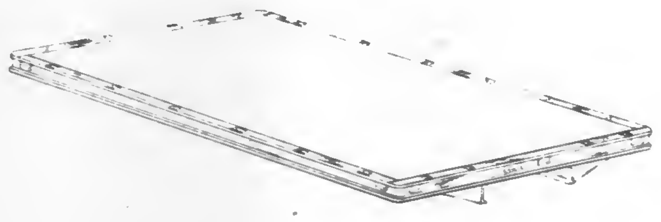


267,709
PLATFORM BODY FOR A TRUCK

John Y. Leaver, Elkhart, Ind., assignor to The Knapheide Mfg. Co., Quincy, Ill.

Filed Oct. 17, 1980, Ser. No. 197,858
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—96

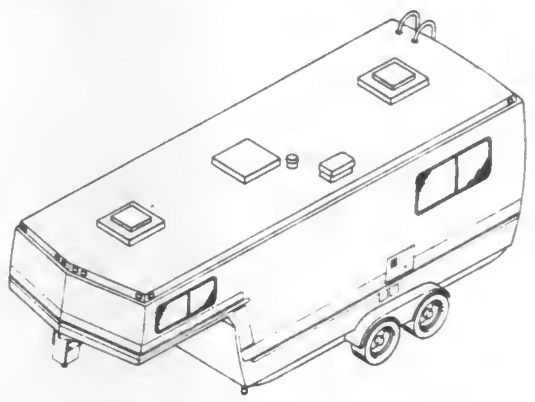


267,710
FIFTH WHEEL RECREATION VEHICLE

James F. King, 1995 Chestnut St., Apt.#107, San Francisco, Calif. 94123

Filed Dec. 26, 1979, Ser. No. 107,368
Term of patent 14 years
Int. Cl. D12—*10*

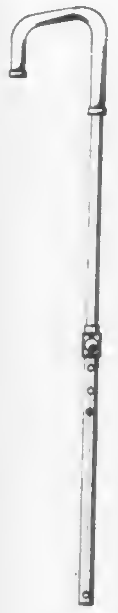
U.S. Cl. D12—103



267,711
EXTENDABLE HANDLE FOR COLLAPSIBLE PERAMBULATOR

Giuseppe Perego, Via De Gasperi, 20043 Arcore (Milano), Italy
Filed Sep. 30, 1980, Ser. No. 192,535
Claims priority, application Italy, Mar. 31, 1980, 21347/80[U]
Term of patent 14 years
Int. Cl. D12—*12*

U.S. Cl. D12—133

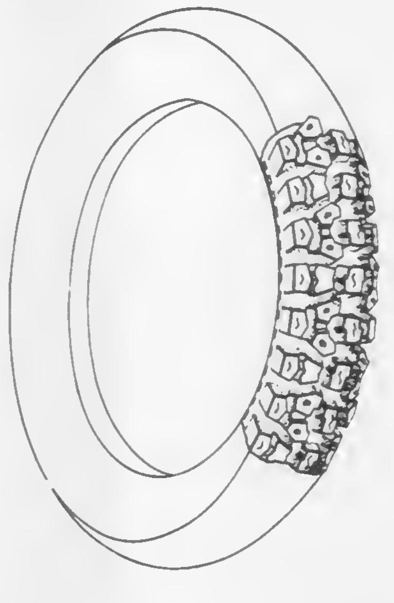


267,712
TIRE FOR A VEHICLE WHEEL

Hiroshi Tomoda, Ashiya, Japan, assignor to Dunlop Limited, London, England

Filed May 23, 1980, Ser. No. 152,685
Claims priority, application Japan, Dec. 11, 1979, 55-51920
Term of patent 14 years
Int. Cl. D12—*15*

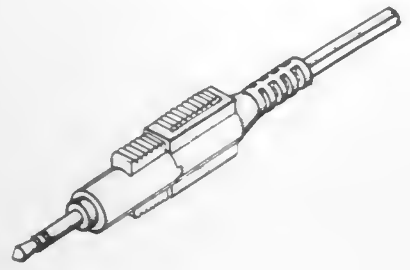
U.S. Cl. D12—136



267,713

COMBINED ELECTRICAL CONNECTOR AND ADAPTER PLUG THEREFOR

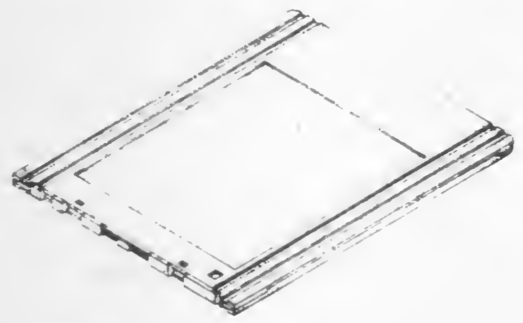
Junichi Noda, Tokyo, and Isao Yanagisawa, Tokorozawa, both of Japan, assignors to Tamura Seisakusho Co., Ltd., Japan
Filed Sep. 15, 1980, Ser. No. 187,199
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



267,714

PRE-RECORDED CARTRIDGE VIDEO/AUDIO DISK

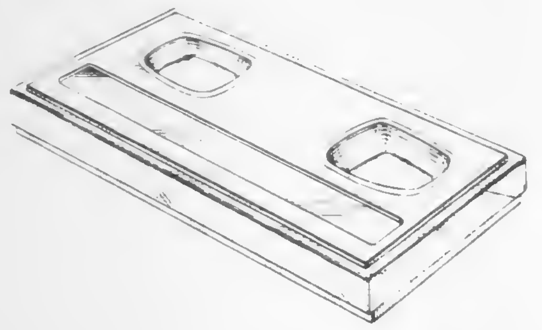
Osamu Tajima, Ayase; Takashi Yamamura, Yokohama; Yoichi Mita, Tokyo, and Masafumi Mochizuki, Yamato, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed Jul. 7, 1980, Ser. No. 166,781
Claims priority, application Japan, Feb. 1, 1980, 55-14482
Term of patent 14 years
Int. Cl. D14—*99;* D16—*05, 99*
U.S. Cl. D14—11



267,715

HOUSING FOR A TELEPHONE INSTRUMENT BASE

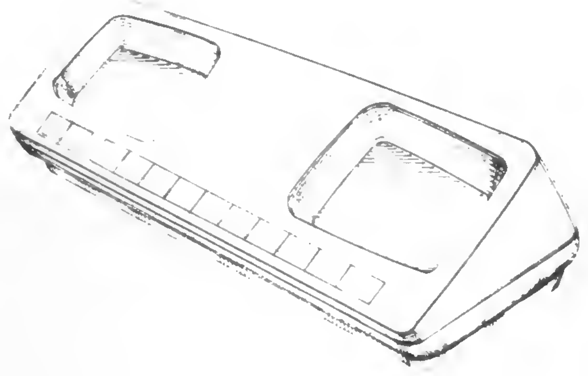
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,336
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



267,716

DESK TELEPHONE HOUSING

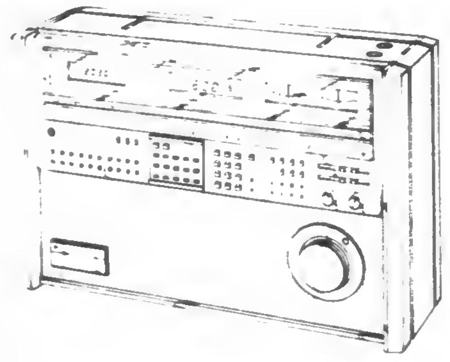
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,338
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



267,717

CLOCK RADIO

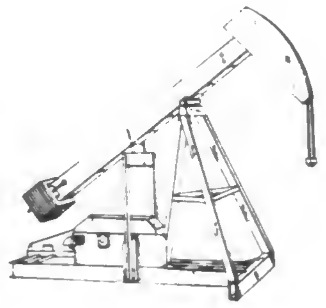
Shinzo Murakami, Higashiosaka; Kazumasa Takenaka, Katano; Kikuo Ohta, Ikoma; Masanori Hamada, Yao, and Kunio Hoshino, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 12, 1980, Ser. No. 158,999
Claims priority, application Japan, Dec. 20, 1979, 54-53707
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—70



267,718

BEAM BALANCED PUMPING UNIT

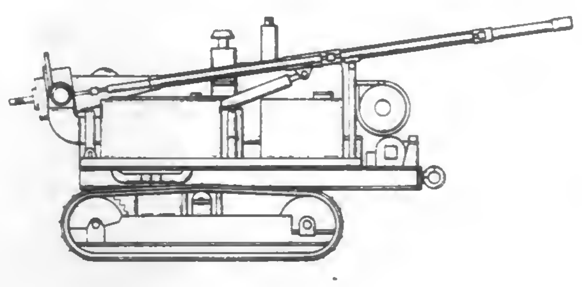
John J. Gostomski, Omaha, Nebr., assignor to Hellstar Corporation, Wahoo, Nebr.
Filed Jul. 7, 1980, Ser. No. 165,870
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



267,719

SELF-PROPELLED DRILLING MACHINE

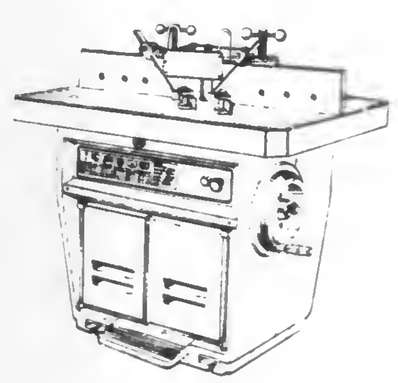
Stanford E. Case, 26627 Snell La., Los Altos Hills, Calif. 94022
Filed Jun. 13, 1980, Ser. No. 159,203
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—21



267,720

WOOD SHAPER

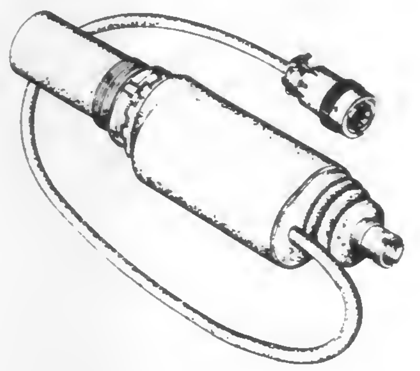
Peter Lawson, Sao Paulo, Brazil, assignor to Rockwell do Brasil Ind. E. Com. Ltda., Limeira, Brazil
Filed Nov. 19, 1979, Ser. No. 95,862
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130



267,721

LINEAR ACTUATOR

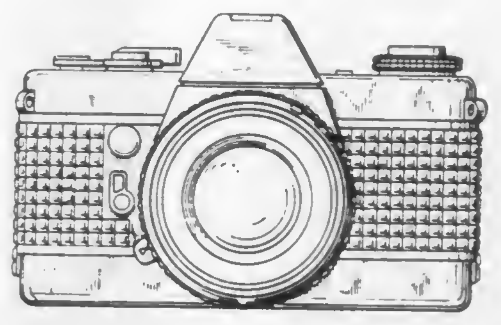
Jean-Claude Dupuis, and Georges Roudavitch, both of Chatellerault, France, assignors to Societe Francaise d'Equipments pour La Navigation Aerienne (S.F.E.N.A.), Velizy Villacoublay, France
Filed Apr. 17, 1979, Ser. No. 30,850
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—148



267,722

CAMERA

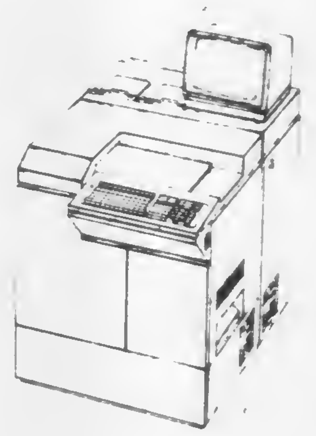
Rolf Schreiber, 23 Räcknitzer Weg, 8020 Dresden, Fed. Rep. of Germany
Filed Mar. 18, 1977, Ser. No. 816,850
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1977, 12618070
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—08



267,723

ELECTRONIC COPYING MACHINE WITH A COMPUTER SYSTEM OR THE LIKE

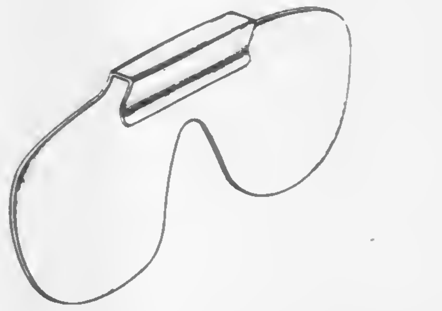
Kunio Hara, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Feb. 4, 1981, Ser. No. 231,508
Claims priority, application Japan, Aug. 5, 1980, 55-31740
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—28



267,724

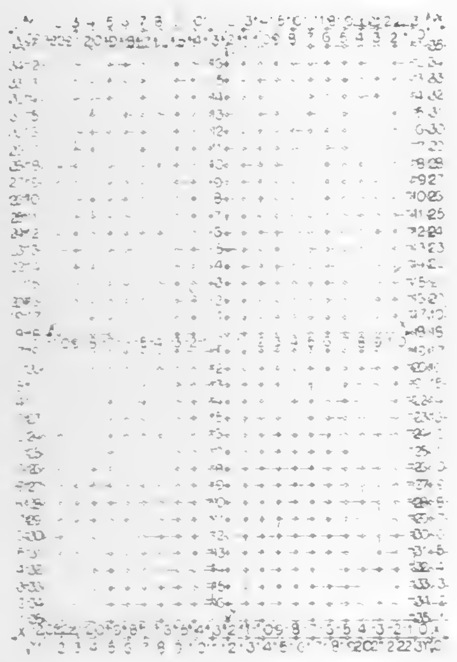
CLIP-ON SUNGLASSES OR SIMILAR ARTICLE

Norman D. Staller, Beverly, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 29, 1981, Ser. No. 258,644
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—112



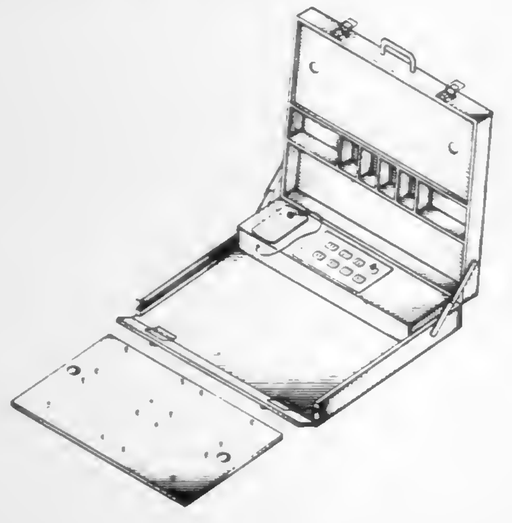
267,725
POINT PLOTTING GUIDE

Fahim R. Sidrak, 4649 Norwich Rd., Wilmington, N.C. 28405
Filed Jan. 4, 1980, Ser. No. 109,669
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—37



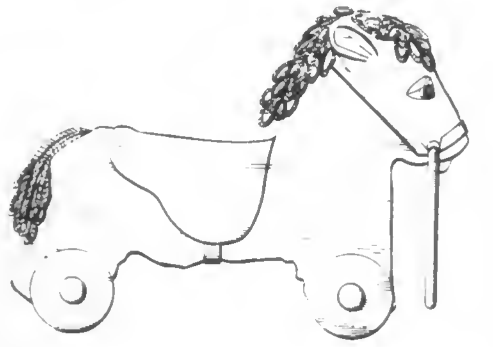
267,726
EMPLOYABILITY TESTING APPARATUS

Morris Ehrenreich, 7108 260 St., Floral Park, N.Y. 11004
Filed Oct. 14, 1980, Ser. No. 196,539
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



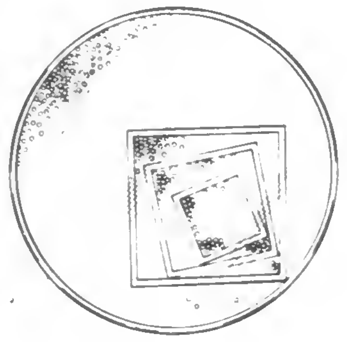
267,727
TOY RIDING HORSE

Walter P. Doe, East Aurora, N.Y., assignor to Playskool, Inc., Chicago, Ill.
Filed Dec. 11, 1980, Ser. No. 215,423
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—75



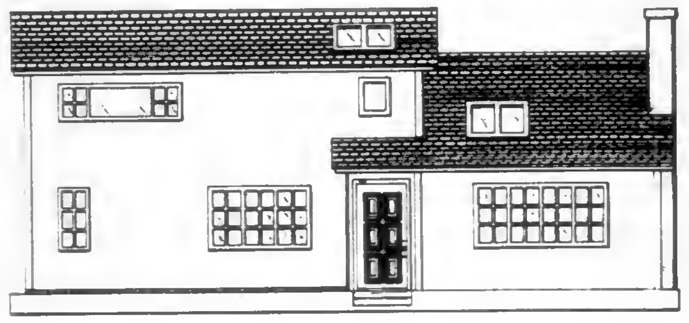
267,728
PUZZLE TOY

Richard L. Loncraine, London, England, assignor to Loncraine Broxton & Partners Limited, England
Filed Jul. 17, 1981, Ser. No. 284,329
Claims priority, application United Kingdom, Jan. 30, 1981, 998662
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104



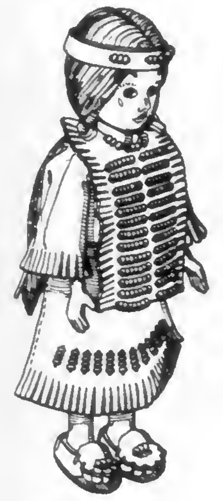
267,729
TOY HOUSE

Michael W. Nuttall, South Pasadena, and Karen Lang, Rosemead, both of Calif., assignors to Tomy Corporation, Inc., Carson, Calif.
Filed Nov. 17, 1980, Ser. No. 207,249
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



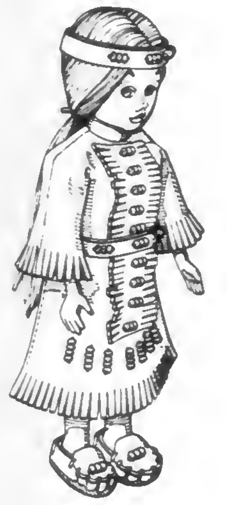
267,730
INDIAN DOLL

Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,870
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



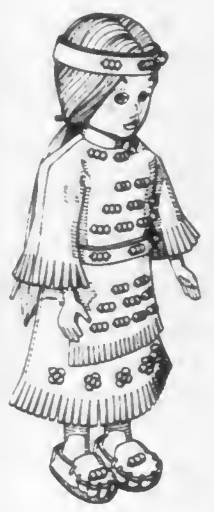
267,731
INDIAN DOLL

Ann Carlson, 21 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,871
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



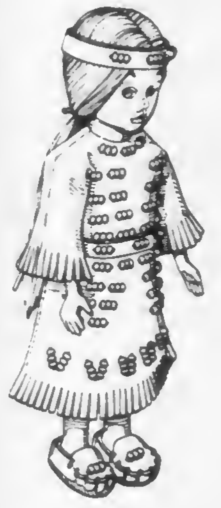
267,732
INDIAN DOLL

Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,872
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182



267,733
INDIAN DOLL

Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,873
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182

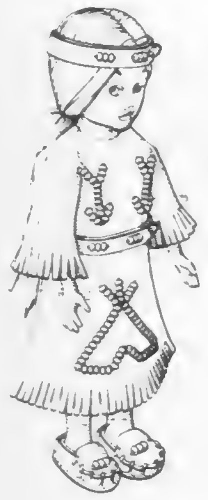


267,734

INDIAN DOLL

Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,874
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—182

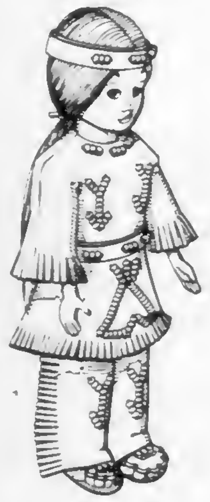


267,735

INDIAN DOLL

Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,879
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—182

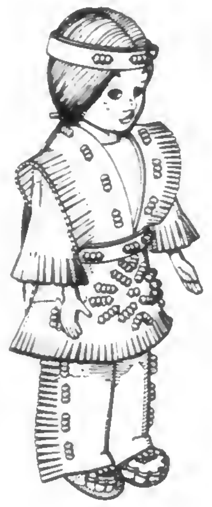


267,736

INDIAN DOLL

Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,895
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—182

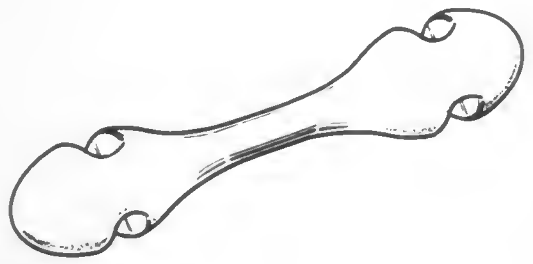


267,737

BARBELL

Forrest S. Wright, 533 Hill, Rochester, Mich. 48063
Filed Jan. 19, 1981, Ser. No. 225,920
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—197



267,738

PUTTER HEAD

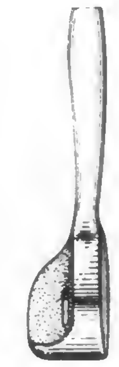
Charles Giebel, Phoenix, Ariz.; Charles D. Rambo, Escondido, Calif., and Gary Spencer, Phoenix, Ariz., assignors to Acushnet Company, New Bedford, Mass.

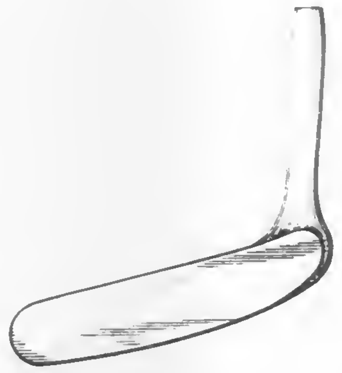
Continuation-in-part of Ser. No. 43,351, May 29, 1979. This application Sep. 19, 1980, Ser. No. 188,752

The portion of the term of this patent subsequent to Aug. 11, 1995, has been disclaimed.

Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—217



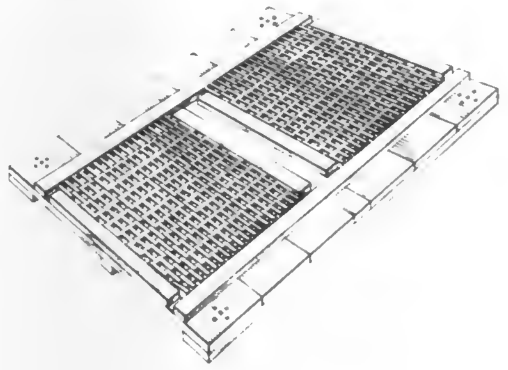


267,739

GOLF PRACTICE PLATFORM

Royal W. Hughes, 3675 Gordon Rd., Elkhart, Ind. 46516
Filed Jan. 8, 1981, Ser. No. 223,329
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—234

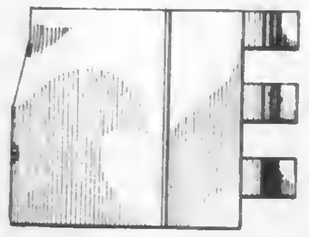


267,740

PROTECTIVE CORNER FOR LOBSTER TRAP

Emile A. P. Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Oct. 30, 1980, Ser. No. 202,330
Term of patent 14 years
Int. Cl. D22—*06*

U.S. Cl. D22—18

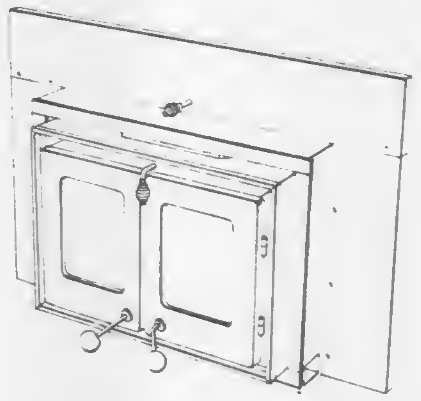


267,741

FIREPLACE INSERT

Robert A. Geiter, Coventry; Peter S. Albertsen, Warwick, both of R.I., and Robert A. Powell, Louisville, Ky., assignors to Jamestown Group, Providence, R.I.
Filed Jun. 29, 1981, Ser. No. 279,241
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—94

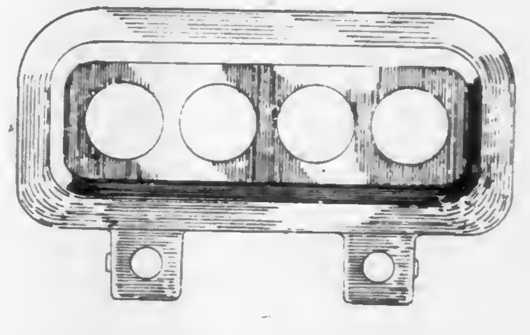


267,742

HALOGEN QUARTZ LAMP RADIANT HEATING MODULE

George E. McFarland, Carmichael, Calif., assignor to Thermomatics Associates, Ltd., Sacramento, Calif.
Filed Sep. 10, 1980, Ser. No. 185,786
Term of patent 14 years
Int. Cl. D23—*03;* D26—*05*

U.S. Cl. D23—127

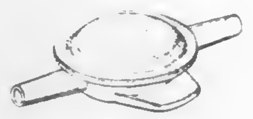


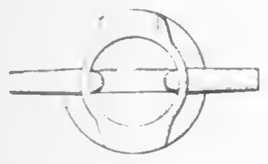
267,743
PRESSURE DIAPHRAGM

Joel N. Cunningham, San Diego; Richard M. Bucchianeri, Escondido, and Stephen H. O'Leary, Encinitas, all of Calif., assignors to IVAC Corporation, San Diego, Calif.

Filed Dec. 15, 1980, Ser. No. 216,635
Term of patent 14 years
Int. Cl. D24—*02;* D23—*01*

U.S. Cl. D24—53



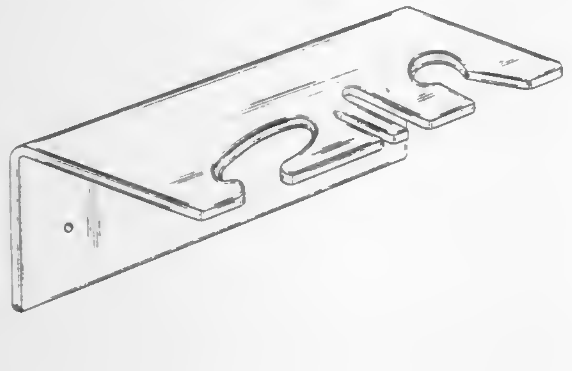


267,744
MEDICAL INSTRUMENT SUPPORT

Mary E. Flynn, St. Petersburg, Fla., assignor to Sandspur Enterprises, Inc., St. Petersburg, Fla.

Filed Apr. 17, 1981, Ser. No. 255,333
Term of patent 14 years
Int. Cl. D24—*99;* D6—*06*

U.S. Cl. D24—31

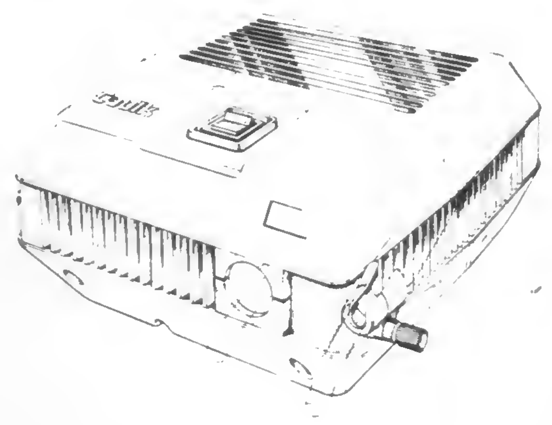


267,745
HOUSING FOR A DENTAL LIGHT INSTRUMENT OR THE LIKE

Wayne C. Seeley, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Aug. 29, 1980, Ser. No. 182,555
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—10

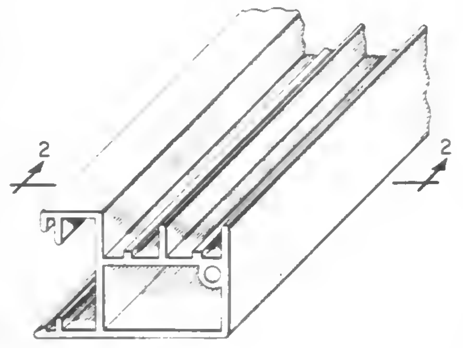


267,746
FRAME MEMBER FOR WINDOWS OR THE LIKE

Dietrich F. Schmidt, 375 N. 29th St., Camp Hill, Pa. 17011

Filed Sep. 11, 1980, Ser. No. 186,725
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D25—74



267,747
BICYCLE LIGHT

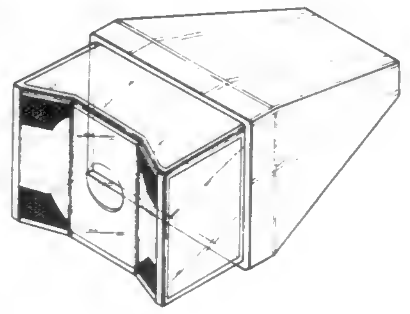
Knut O. Sassmannshausen, Rothenbach, 6580 Idar-Oberstein 3, Fed. Rep. of Germany

Filed Aug. 5, 1980, Ser. No. 175,445

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, MR 1496

Term of patent 14 years
Int. Cl. D26—*06*

U.S. Cl. D26—28



267,748
BICYCLE LIGHT

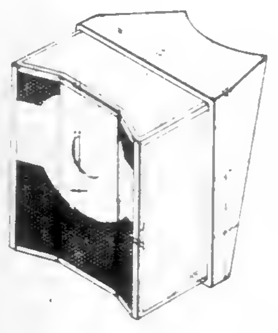
Knut O. Sassmannshausen, Rothenbach, 6580 Idar-Oberstein 3, Fed. Rep. of Germany

Filed Aug. 5, 1980, Ser. No. 175,446

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, MR 1496

Term of patent 14 years
Int. Cl. D26—*06*

U.S. Cl. D26—28



267,749
COSMETIC CONTAINER

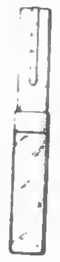
Pierre Ballereaud, 4 bis, route d'Ormoy, 28360 Dammarie, France

Filed Feb. 10, 1981, Ser. No. 233,158

Claims priority, application Switzerland, Aug. 12, 1980, 70.576

Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D28—76



267,750
PROTECTIVE SHOE FOR DOGS

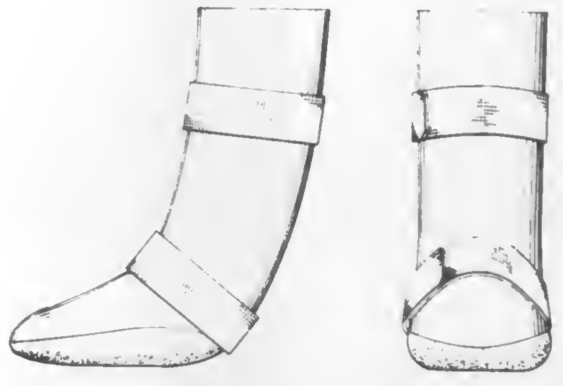
Sven E. Norstrom, Trangvagen 13 B, Solleftea S-881 00, Sweden

Filed May 19, 1981, Ser. No. 265,004

Claims priority, application Sweden, Nov. 25, 1980, 80-2364

Term of patent 14 years
Int. Cl. D30—*01*

U.S. Cl. D30—34

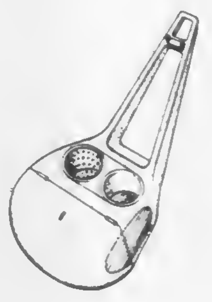


267,751
GOLF CLUB CLEANER

Richard W. Dobyns, 1351 Graymill Dr., Scotch Plains, N.J. 07076

Filed Sep. 10, 1980, Ser. No. 185,785
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D32—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JANUARY, 1983

Note.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. B. Dick Company: *See—*
  - Ghosh, Syamal K.; and Kelly, Frank D., 4,370,399, Cl. 430-58.000.
- A. E. Staley Manufacturing Company: *See—*
  - Lehnhardt, William F.; Gibson, Paul W.; and Orthoefer, Frank T., 4,370,267, Cl. 260-123.500.
- Abbey, Dean M. Energy saving override blower control for forced air systems. 4,369,916, Cl. 236-11.000.
- Abbott Laboratories: *See—*
  - Haviv, Fortuna; DeNet, Robert W.; and Boulanger, William A., 4,370,339, Cl. 424-273.00P.
  - Hung, Paul P.; Lee, Shaw-Guang; Roychoudhury, Ranajit; Ratzkin, Barry J.; Schrenk, W. Jurgen; and Chen, Michael C., 4,370,417, Cl. 435-212.000.
- Abe, Akira: *See—*
  - Takamizawa, Minoru; Abe, Akira; Kasahara, Katsusuke; Komeno, Yukito; and Aoyama, Akira, 4,370,365, Cl. 427-387.000.
- Abe, Katsuro: *See—*
  - Izumi, Eiki; Honma, Kazuo; Abe, Katsuro; Uno, Masaaki; and Nakajima, Kichio, 4,369,625, Cl. 60-327.000.
- Abe, Kuniomi: *See—*
  - Kani, Kazutaka; Abe, Kuniomi; Konagaya, Masahiko; and Ono, Noboru, 4,370,033, Cl. 351-206.000.
- Abe, Masaharu: *See—*
  - Uekita, Masakazu; and Abe, Masaharu, 4,370,191, Cl. 156-307.700.
  - Uekita, Masakazu; Fushiki, Yasuo; and Abe, Masaharu, 4,370,386, Cl. 428-458.000.
- Abe, Takeshi: *See—*
  - Yanase, Hiroshi; Kanno, Fukuo; and Abe, Takeshi, 4,370,292, Cl. 264-272.110.
- Abe, Tsutomu: *See—*
  - Horikoshi, Katsunori; and Abe, Tsutomu, 4,370,381, Cl. 428-392.000.
- Abelitis, Andris, to Klockner-Humboldt-Deutz AG. Apparatus for the production of cement clinker low in alkali from alkali-containing raw material. 4,370,127, Cl. 432-106.000.
- Abner, Harold D., to Procter & Gamble Company, The. Composite can with compressed end to provide easy opening. 4,369,912, Cl. 229-5.600.
- Abolafia, Oscar R.; Ameen, Joseph G.; and Elmore, Glenn V., to International Business Machines Corporation. Process for etching chrome. 4,370,197, Cl. 156-659.100.
- Abraham, Fayez F., to Tyler Refrigeration Corporation. Refrigerated merchandizer display case adapted for energy conservation. 4,369,631, Cl. 62-82.000.
- Abraham, Fayez F., to Tyler Refrigeration Corporation. Refrigerated merchandizer display case. 4,369,632, Cl. 62-82.000.
- Ackley, E. Michael. Material orientation and printing apparatus. 4,369,702, Cl. 101-40.000.
- Acme Burgess, Inc.: *See—*
  - Beiswenger, John L.; Moon, Howard R.; Smiesko, Frank A.; and Chaphalkar, Dhananjay, 4,369,921, Cl. 239-317.000.
- Acrometal Products, Inc.: *See—*
  - Gerber, Dennis J., 4,369,601, Cl. 51-135.0BT.
- Adachi, Hiroyuki: *See—*
  - Kuge, Tsukasa; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,370,049, Cl. 355-3.0DD.
- Adachi, Yukio: *See—*
  - Katagiri, Mikio; Sakota, Yukio; Hiroshige, Kunie; and Adachi, Yukio, 4,370,187, Cl. 156-244.230.
- Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, to Agence Nationale de Valorisation. Water soluble agents effective as immunological adjuvants for stimulating in the host the immune response to various antigens and compositions, notably vaccines containing said water soluble agents. 4,370,265, Cl. 260-112.50R.
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- Adolph Coors Company: *See—*
  - Carter, Robert C., 4,369,821, Cl. 141-147.000.
- Advanced Technology & Research, Inc.: *See—*
  - Higgins, William E.; and Lazzara, Richard C., 4,370,372, Cl. 428-116.000.
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  - Fournier, Paul J. E.; and Kunz, Guenter O., 4,369,992, Cl. 285-256.000.
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- Ag-Electron, Inc.: *See—*
  - Lane, Marvin M.; and Garnett, Eric W. D., 4,369,886, Cl. 209-564.000.
- Agarwal, Pawan K.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Hot melt adhesive compositions of neutralized sulfonated EPDM and tackifier mixture. 4,370,432, Cl. 524-216.000.
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  - Takamizawa, Minoru; Abe, Akira; Kasahara, Katsusuke; Komeno, Yukito; and Aoyama, Akira, 4,370,365, Cl. 427-387.000.
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  - Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.
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  - Sorbier, Pierre, 4,370,112, Cl. 425-3.000.
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  - Ogata, Ikuei; Kawabata, Yasuziro; Tanaka, Masato; and Hayashi, Teruyuki, 4,370,258, Cl. 252-429.00R.
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  - Van Bouwel, Leo; Geyken, Erwin; Ertl, Franz; and Fleck, Adolf, 4,370,046, Cl. 354-324.000.
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- Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground climber and slide. 4,369,965, Cl. 272-56.50R.
- Airco, Inc.: *See—*
  - Maynard, Robert A., 4,369,958, Cl. 269-61.000.
- Aircraft Dynamics Corporation: *See—*
  - Jones, Jack D.; and Glover, Russell K., 4,369,801, Cl. 134-58.00R.
- Aisan Kogyo Kabushiki Kaisha: *See—*
  - Sugi, Fumio, 4,369,749, Cl. 123-439.000.
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  - Kazaoka, Kenichi; and Hattori, Takemi, 4,370,000, Cl. 297-284.000.
  - Masai, Hiroto, 4,370,074, Cl. 403-388.000.
  - Nishida, Koji; and Miyake, Osamu, 4,369,722, Cl. 112-103.000.
- Aisin Warner Kabushiki Kaisha: *See—*
  - Matsumoto, Goichi; and Hayakawa, Yoichi, 4,369,671, Cl. 74-665.0GA.
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- Aizawa, Hiroshi: *See—*
  - Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,370,037, Cl. 354-23.00D.
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  - Kato, Mamoru; Matsumoto, Shoji; and Aizawa, Tatsuo, 4,370,379, Cl. 428-341.000.
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  - Weinhold, Harri; Vogel, Heinz-Rudiger; Kurze, Bernhard; and Koch, Gerhard, 4,370,244, Cl. 252-39.000.
- Akagi, Junko: *See—*
  - Azuma, Makoto; and Akagi, Junko, 4,370,180, Cl. 148-187.000.
- Akagiri, Kenzo, to Sony Corporation. Gain control circuit for noise reduction system. 4,370,681, Cl. 360-68.000.
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  - Gustafsson, Sten-Ake, 4,369,823, Cl. 144-340.000.
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  - Vest, H. Ryland; and Boone, Walter S., 4,369,528, Cl. 2-69.000.
- Albo, Ronald T., to Caterpillar Tractor Co. Apparatus and method for holding and tacking material. 4,370,183, Cl. 156-117.000.
- Aleixo, Francisco H.: *See—*
  - Lasner, Jeffrey I.; and Aleixo, Francisco H., 4,369,787, Cl. 128-318.000.
- Alexander, Samuel T. Gravimeter. 4,369,657, Cl. 73-382.00R.
- Allen, David H., to Cam Gears Limited. Rack and pinion assembly. 4,369,669, Cl. 74-422.000.
- Allen, John K.: *See—*
  - Allen, Kenneth R.; Allen, John K.; and McNally, Gordon G., 4,370,610, Cl. 324-52.000.
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- Allied Colloids Limited: *See—*
  - Clarke, John B.; and Pitts, Leslie, 4,370,429, Cl. 524-60.000.
- Allis-Chalmers Corporation: *See—*
  - Backlin, Robert R., 4,369,980, Cl. 277-235.00B.
  - Hanaway, Roger D.; and James, Larry R., 4,369,617, Cl. 56-14.600.
  - Rietman, David W., 4,369,861, Cl. 187-9.00E.

- Allison, George M., III; and Wilt, Mason S., to Phillips Petroleum Company. High strength diene/monovinyl aromatic copolymer-based adhesives. 4,370,433, Cl. 524-274.000.
- Alps Electric Co. Ltd.: *See—*
  - Ushida, Susumu, 4,370,626, Cl. 331-96.000.
- Alvero, Ernesto J.: *See—*
  - Kelly, William R.; and Alvero, Ernesto J., 4,370,036, Cl. 354-1.000.
- Ambert, Jack: *See—*
  - Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,370,394, Cl. 429-199.000.
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- Amchem Products, Inc.: *See—*
  - Dollman, David Y., 4,370,173, Cl. 134-3.000.
  - Frelin, Frank J.; Kelly, Timm L.; and Malloy, Anthony J., 4,370,177, Cl. 148-6.270.
- Ameen, Joseph G.: *See—*
  - Abolafia, Oscar R.; Ameen, Joseph G.; and Elmore, Glenn V., 4,370,197, Cl. 156-659.100.
- American Can Company: *See—*
  - Sorenson, Wayne P., 4,370,289, Cl. 264-113.000.
- American Cyanamid Company: *See—*
  - Hoffman, Joseph A., 4,370,430, Cl. 524-96.000.
  - Kurose, Nancy S., 4,370,500, Cl. 564-304.000.
  - Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, 4,370,482, Cl. 548-155.000.
- American Microsystems, Inc.: *See—*
  - Cooley, Richard F., 4,370,192, Cl. 156-345.000.
  - Hiltpold, William R., 4,369,564, Cl. 29-571.000.
- Amiad Mutzarei Yiul: *See—*
  - Tavor, Chanany, 4,369,805, Cl. 137-101.310.
- Amicel, Charles G., to Bertin & Cie. Surface finishing device. 4,369,602, Cl. 51-168.000.
- Amieux, Jean-Claude, to Matra. Active nutation control system for space vehicle. 4,370,716, Cl. 364-434.000.
- AMP Incorporated: *See—*
  - Dola, Frank P., 4,370,009, Cl. 339-31.00R.
  - Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,370,012, Cl. 339-75.0MP.
  - Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,370,017, Cl. 339-176.0MP.
  - Johnson, Tore R., 4,370,022, Cl. 350-96.210.
  - Loose, Winfield W., 4,370,529, Cl. 200-16.00D.
- Ampex Corporation: *See—*
  - Tin, Lucas K., 4,370,620, Cl. 329-192.000.
- AMSTED Industries Incorporated: *See—*
  - Upchurch, Thurman H.; and Bianco, Gerardo A., Jr., 4,370,719, Cl. 364-472.000.
- Ancillotti, Francesco; Terzoni, Giuseppe; Micucci, Lidio; Maggioni, Paolo; and Panseri, Pietro, to Anic S.p.A. Terbutylating hydroxyaromatic compounds. 4,370,506, Cl. 568-785.000.
- Anderson, Alan A. Window shade sealing system. 4,369,827, Cl. 160-41.000.
- Anderson, Harry. Dye reducing composition for dye transfers, photographic transparencies and color prints. 4,370,402, Cl. 430-237.000.
- Anderson, Kenneth L.: *See—*
  - Vidaurri, Fernando C.; and Anderson, Kenneth L., 4,370,470, Cl. 528-388.000.
- Andersson, Ake. Filling machine. 4,369,898, Cl. 222-4.000.
- Andow, Fumio; and Fujisawa, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Relay device. 4,370,571, Cl. 307-353.000.
- Andreas Kufferath KG: *See—*
  - Schmidt, Sylvia; Eckert, Hansdieter; Holzinger, Wolfgang; and Holle, Dietrich, 4,370,200, Cl. 162-210.000.
- Anelva Corporation: *See—*
  - Funaki, Hidefumi, 4,370,217, Cl. 204-298.000.
- Anglin, James R.: *See—*
  - Ryu, Yumi P.; Anglin, James R.; and Singerman, Gary M., 4,370,245, Cl. 252-46.400.
- Angus Chemical Co.: *See—*
  - Robinson, Glenn N.; and Seeney, Charles E., 4,370,171, Cl. 106-300.000.
- Ani-Live Film Service Inc.: *See—*
  - Cooper, Sidney; and Jacob, Ezekiel J., 4,370,400, Cl. 430-126.000.
- Anic S.p.A.: *See—*
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- Anschutz GmbH: *See—*
  - Gerstenberger, Friedrich; and Jaedicke, Ludwig, 4,369,759, Cl. 124-68.000.
- Anzai, Makoto, to Nissan Motor Company, Limited. Plasma jet ignition system. 4,369,757, Cl. 123-620.000.
- Aoki, Takashi: *See—*
  - Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,369,695, Cl. 91-375.00A.
- Aoyagi, Takaaki: *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Kawamura, Kenji; and Fukatsu, Shunzo, 4,370,318, Cl. 424-177.000.
- Aoyama, Akira: *See—*
  - Takamizawa, Minoru; Abe, Akira; Kasahara, Katsusuke; Komeno, Yukito; and Aoyama, Akira, 4,370,365, Cl. 427-387.000.
- Aoyama, Kazuho: *See—*
  - Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,370,453, Cl. 525-450.000.
- Aoyama, Youichi: *See—*
  - Kondo, Hideya; Yokoyama, Youichi; Aoyama, Youichi; and Mori, Tamotsu, 4,370,634, Cl. 335-16.000.
- Appel, Hans; and Brossmann, Gottfried, to Peroxide Chemie GmbH. Process for the continuous preparation of dialkylperoxydicarbonates. 4,370,276, Cl. 260-463.000.
- Arai, Mamoru; Haneishi, Tatsuo; Nakajima, Mutsuo; Torikata, Akio; and Enokita, Ryuzo, to Sankyo Company, Limited. Mycoplanecin derivatives and their preparation. 4,370,266, Cl. 260-112.50R.
- Arai, Tokuji: *See—*
  - Takaki, Kiyofumi, 4,370,403, Cl. 430-271.000.
- Arakawa, Masatoshi: *See—*
  - Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, 4,370,447, Cl. 525-39.000.
- Araki, Yoshihiko: *See—*
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- Arcangeli, Gerald T.: *See—*
  - Kelly, Patrick J.; and Arcangeli, Gerald T., 4,369,940, Cl. 244-3.210.
- Arditty, Herve: *See—*
  - Puech, Claude; Arditty, Herve; and Papuchon, Michel, 4,370,612, Cl. 324-117.00R.
- Argus Chemical Corporation: *See—*
  - Pastorino, Ronald L.; Bock, Lawrence A.; and Halle, Reidar, 4,370,459, Cl. 526-227.000.
- Arikawa, Yoshijiro: *See—*
  - Takahashi, Yukio; Arikawa, Yoshijiro; and Yakushiji, Yoshio, 4,370,262, Cl. 252-464.000.
- Arimatsu, Toshio; and Sakon, Tohatirou, to Sumitomo Rubber Industries, Ltd. Process for vulcanization of elastomer products. 4,370,283, Cl. 264-37.000.
- Armbruster, Joseph M. Air circulating device. 4,370,155, Cl. 55-316.000.
- Armstrong, Robert S.: *See—*
  - Armstrong, Robert S., Jr.; and Armstrong, Robert S., 4,369,569, Cl. 29-726.000.
- Armstrong, Robert S., Jr.; and Armstrong, Robert S., to Armstrong & Sons. Tube-pulling apparatus. 4,369,569, Cl. 29-726.000.
- Armstrong & Sons: *See—*
  - Armstrong, Robert S., Jr.; and Armstrong, Robert S., 4,369,569, Cl. 29-726.000.
- Aronson, Orvil R. Self-centering fixture. 4,369,956, Cl. 269-34.000.
- Arrowhead Research: *See—*
  - Tripp, Dwight E., 4,370,103, Cl. 417-298.000.
- Asada, Miyozo: *See—*
  - Okamoto, Miyoshi; and Asada, Miyozo, 4,370,114, Cl. 425-131.500.
- Asahi Glass Company, Ltd.: *See—*
  - Yanase, Hiroshi; Kanno, Fukuo; and Abe, Takeshi, 4,370,292, Cl. 264-272.110.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Horikoshi, Katsunori; and Abe, Tsutomu, 4,370,381, Cl. 428-392.000.
  - Kamide, Kenji; Okajima, Kunihiko; and Matsui, Toshihiko, 4,370,168, Cl. 106-177.000.
  - Mori, Koichi; and Nakao, Masafumi, 4,370,391, Cl. 428-697.000.
  - Nakajima, Osamu; Matsuoka, Yukinori; and Nakayama, Yoshiaki, 4,370,468, Cl. 528-335.000.
- Asano, Hidejiro: *See—*
  - Ueno, Nagaharu; Oka, Joji; Asano, Hidejiro; Ogasawara, Takahisa; Mizutani, Kiyokazu; and Tominaga, Yoshiitsu, 4,370,387, Cl. 428-458.000.
- Asano, Hiroyuki: *See—*
  - Morita, Masaaki; Yamaguchi, Michio; and Asano, Hiroyuki, 4,369,714, Cl. 104-250.000.
- Asanuma, Yoshihiko; and Shimajiri, Yoshihumi, to Showa, Aluminum Kabushiki Kaisha. Device for releasing heat. 4,369,838, Cl. 165-185.000.
- Aschenbach, Louis F., to Eaton Corporation. Miniature sealed toggle switch. 4,370,528, Cl. 200-6.0BB.
- Asea Aktiebolag: *See—*
  - Eriksson, Gunno; and Nilarp, Anders, 4,370,671, Cl. 357-79.000.
- Ashland Oil, Inc.: *See—*
  - Schafer, Robert J., 4,370,463, Cl. 528-78.000.
- Ashland Petroleum Company, division of Ashland Oil, Inc.: *See—*
  - Carlos, Donald D., 4,370,218, Cl. 208-3.000.
- Ashley, Charles R.: *See—*
  - Giggey, Robert W.; Serletic, Bernard T.; and Ashley, Charles R., 4,369,880, Cl. 206-63.300.
- Asselin, Andre A.; and Humber, Leslie G., to Ayerst, McKenna & Harrison, Ltd. 6,7,8,9-Tetrahydro-3H-benz[E]indol-8-amine derivatives. 4,370,341, Cl. 424-274.000.
- Association Foret-Cellulose: *See—*
  - Franclet, Andre; and Favereau, Pierre, 4,369,599, Cl. 47-74.000.
- Astley, Graham J.: *See—*
  - Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Astley, Graham J., 4,369,541, Cl. 15-97.00B.
- Ateliers des Charmilles, S.A.: *See—*
  - Kruth, Jean-Pierre, 4,370,536, Cl. 219-69.00M.
- Ateliers et Chantiers de Bretagne: *See—*
  - Gagliardi, Georges, 4,370,091, Cl. 414-735.000.
- Atkins, Sidney H., to Plessey Overseas Limited. Methods of making electrical connectors. 4,369,572, Cl. 29-879.000.

- ATS Advanced Technics & Systems, S.A.: *See—*
  - Brisebarre, Marcel, 4,369,960, Cl. 271-5.000.
- Audibert, Francoise: *See—*
  - Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.
- Auerbach, Frederick F.: *See—*
  - Robbins, Richard F., 4,369,774, Cl. 128-133.000.
- Automobiles Peugeot: *See—*
  - Perineau, Jean, 4,369,694, Cl. 91-368.000.
- Avco Corporation: *See—*
  - Bloomfield, Warren, 4,369,630, Cl. 60-718.000.
- Avery International Corporation: *See—*
  - Miller, Ezra D., 4,369,786, Cl. 604-390.000.
- Axmark, Roger E.; and Satren, Ernest A., to Honeywell Inc. Dual detector flame sensor. 4,370,557, Cl. 250-554.000.
- Ayerst, McKenna & Harrison, Ltd.: *See—*
  - Asselin, Andre A.; and Humber, Leslie G., 4,370,341, Cl. 424-274.000.
- Ayres Technologies, Inc.: *See—*
  - Batchelor, William H.; and Batchelor, Douglas R., 4,369,751, Cl. 123-527.000.
- Azuma, Kenkoku: *See—*
  - Doi, Kunihiro; Takeyama, Tetsu; and Azuma, Kenkoku, 4,370,301, Cl. 422-122.000.
- Azuma, Makoto; and Akagi, Junko, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing power switching devices. 4,370,180, Cl. 148-187.000.
- B. F. Goodrich Company, The: *See—*
  - Nehmey, Samuel D.; and Summers, James W., 4,370,286, Cl. 264-53.000.
- Babb, Alvin A. Hunter's tree stand and seat. 4,369,858, Cl. 182-134.000.
- Babcock-Hitachi, Ltd.: *See—*
  - Takahashi, Yukio; Arikawa, Yoshijiro; and Yakushiji, Yoshio, 4,370,262, Cl. 252-464.000.
- Babich, Edward: *See—*
  - Offutt, Elmer B.; Babich, Edward; and Gillett, William G., 4,369,897, Cl. 221-227.000.
- Bacal, Kazimierz; Wierusz, Lech B.; and Miszczyk, Janusz, to Wyzsza Szkola Inzynierska Im. J. Gagarina. Surgical strut for treatment of the back-bone. 4,369,770, Cl. 128-69.000.
- Backlin, Robert R., to Allis-Chalmers Corporation. Fire ring for cylinder head gasket. 4,369,980, Cl. 277-235.00B.
- Backstein, Guenter; Unger, Hans W.; Guenther, Michael; Kaltbeitzer, Dieter; and Veldhoen, Hendrik, to Rheinmetall GmbH. Underwater detonating device. 4,369,709, Cl. 102-229.000.
- Bader, Karl O. Process and apparatus for converting sound waves into digital electrical signals. 4,370,523, Cl. 179-1.0DM.
- Badische Corporation: *See—*
  - Sanders, John H., 4,369,549, Cl. 19-145.700.
- Baehr, Frederick J., Jr.; Kemeny, George A.; and Barber, John P., to Westinghouse Electric Corp. Projectile launching system with resistive insert in the breech. 4,369,691, Cl. 89-8.000.
- Bailey, Arvin K., Jr.; and Taylor, Richard S. Cooperative TV-FM cable splitter-ground module and housing therefor. 4,370,516, Cl. 174-59.000.
- Bain, Douglas I.: *See—*
  - Engstrom, Gary G.; and Bain, Douglas I., 4,369,719, Cl. 110-345.000.
- Bainbridge, Robert W.: *See—*
  - Dannels, W. Andrew; and Bainbridge, Robert W., 4,370,122, Cl. 425-543.000.
  - Dannels, W. Andrew; and Bainbridge, Robert W., 4,370,123, Cl. 425-543.000.
- Baird, William C., Jr.: *See—*
  - Eberly, Paul E., Jr.; Mauldin, Charles H.; and Baird, William C., Jr., 4,370,224, Cl. 208-139.000.
- Baker, Daniel A., to Whirlpool Corporation. Vacuum cleaner control. 4,370,690, Cl. 361-23.000.
- Baker, Eugene E.: *See—*
  - Szarka, David D.; and Baker, Eugene E., 4,369,840, Cl. 166-214.000.
- Baker, William T.: *See—*
  - Waycaster, Roy A.; Baker, William T.; and Bidle, Jerry D., 4,370,553, Cl. 250-343.000.
- Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG: *See—*
  - Lange, Karl-Heinz, 4,370,040, Cl. 354-288.000.
- Baldwin, Dorothy M.; Oharek, Frank J.; and Stahl, Curt, to United States of America, Navy. Rotating shutter system for improving the resolution of a visual display system. 4,370,677, Cl. 358-225.000.
- Balint, Nikolaous K., to Standard Oil Company (Indiana). Catalyst system. 4,370,457, Cl. 526-137.000.
- Banko, Anton, to Surgical Design. Ultrasonic transducer tips. 4,370,131, Cl. 433-86.000.
- Barber, John P.: *See—*
  - Baehr, Frederick J., Jr.; Kemeny, George A.; and Barber, John P., 4,369,691, Cl. 89-8.000.
- Barch, Herbert W.; Melle, Carl A.; McWilliams, Donald E.; and Hudson, Howard J., to PPG Industries, Inc. Stable sizing compositions used during forming of glass fibers and resulting fiber. 4,370,157, Cl. 65-3.430.
- Bardon, Charles: *See—*
  - Gadelle, Claude; Burger, Jacques; and Bardon, Charles, 4,370,078, Cl. 405-264.000.
- Barker, Clark R., to University of Missouri, The Curators of the. High pressure fluid jet cutting and drilling apparatus. 4,369,850, Cl. 175-393.000.
- Barker, William I.; and Denham, Ernest J., to Suspendex (Proprietary) Limited. Tape fixing device. 4,370,185, Cl. 156-565.000.
- Barnard, Timothy J.: *See—*
  - Izu, Masatsugu; Barnard, Timothy J.; and Gattuso, David A., 4,369,730, Cl. 118-723.000.
- Barr, Samuel R., Jr., administrator: *See—*
  - LeBell, Clarence E.; and Barr, Samuel R., Sr., deceased, 4,369,937, Cl. 244-53.00R.
- Barr, Samuel R., Sr., deceased: *See—*
  - LeBell, Clarence E.; and Barr, Samuel R., Sr., deceased, 4,369,937, Cl. 244-53.00R.
- Barry, Leonard D. Rotary parallel arm loader and system. 4,370,085, Cl. 414-337.000.
- Barry, Leonard D. Rotary loader and side coupling system. 4,370,086, Cl. 414-337.000.
- Barton, Derek H. R.; Ley, Steven V.; and Meerholz, Clive A. Oxidation process using tellurium oxide catalysts. 4,370,497, Cl. 564-55.000.
- BASF Aktiengesellschaft: *See—*
  - Bock, Gustav; and Fabian, Wolfgang, 4,370,270, Cl. 260-245.870.
  - Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Schaefer, Eberhard, 4,370,491, Cl. 560-234.000.
  - Messmer, Karlheinz; Fischer, Hermann; Hartmann, Heinrich; Denzinger, Walter; Schneider, Rolf; Wulz, Klaus; and Raubenheimer, Hans-Juergen, 4,370,454, Cl. 526-88.000.
  - Neubert, Gerhard; and Wistuba, Eckehardt, 4,370,460, Cl. 526-329.200.
- Bata Limited: *See—*
  - Rys-Sikora, John, 4,370,423, Cl. 521-84.000.
- Batchelor, Douglas R.: *See—*
  - Batchelor, William H.; and Batchelor, Douglas R., 4,369,751, Cl. 123-527.000.
- Batchelor, William H.; and Batchelor, Douglas R., to Ayres Technologies, Inc. Liquefied propane carburetor modification system. 4,369,751, Cl. 123-527.000.
- Bates, Ronald F.: *See—*
  - Wang, Chih C.; Pinch, Harry L.; and Bates, Ronald F., 4,370,739, Cl. 369-126.000.
- Bateson, Simon V. R.; and Gerrard, Andrew, to British Leyland UK Limited. Vehicle transmission system. 4,369,866, Cl. 192-3.570.
- Bauer, Jackson, to Collins and Aikman Corp. Process for treatment of polyester fabrics. 4,370,143, Cl. 8-493.000.
- Baumann, Heinz, to Schaum-Chemie W. Bauer GmbH & Co KG. Plastic and foam plastic and method for making them. 4,370,424, Cl. 521-121.000.
- Bayer Aktiengesellschaft: *See—*
  - Blank, Heinz U.; Wolters, Erich; Muller, Karl W.; and Rottloff, Gunter, 4,370,499, Cl. 564-200.000.
  - Bonse, Gerhard; and Blank, Heinz U., 4,370,498, Cl. 564-155.000.
  - Grigo, Ulrich; Merten, Josef; and Binsack, Rudolf, 4,370,450, Cl. 525-262.000.
  - Harnisch, Horst, 4,370,486, Cl. 549-46.000.
  - Klein, Alfons; Wedemeyer, Karlfried; and Thies, Jurgen, 4,370,505, Cl. 568-734.000.
  - Mitschke, Karl-Heinz; and Niederprum, Hans, 4,370,254, Cl. 252-355.000.
  - Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,370,280, Cl. 260-465.600.
  - Scholl, Walter, 4,370,268, Cl. 260-146.00T.
  - Stammann, Gunter; Becker, Robert; Grolig, Johann; and Waldmann, Helmut, 4,370,275, Cl. 260-463.000.
- Bayerische Motoren Werke A.G.: *See—*
  - Seidl, Jiri, 4,369,740, Cl. 123-90.450.
  - Wilka, Josef, 4,370,138, Cl. 440-112.000.
- Beane, Tim E. Ladder with bracket attachments. 4,369,860, Cl. 182-214.000.
- Bearden, Roby; and Stuntz, Gordon F., to Exxon Research and Engineering Co. Process for reducing coke formation in heavy feed catalytic cracking. 4,370,220, Cl. 208-108.000.
- Beasley, Max M., to Tuftco Corporation. Tufting looper apparatus with opposed clip support. 4,369,720, Cl. 112-79.00A.
- Beattie, William: *See—*
  - Weiner, Maurice; and Beattie, William, 4,370,597, Cl. 315-58.000.
- Becker, Carl: *See—*
  - Skelly, James K.; Evans, David G.; and Becker, Carl, 4,370,144, Cl. 8-501.000.
- Becker, Jon; Miller, Kirby G.; and Burney, Charles F., to GTE Products Corporation. Method of making tape transducer. 4,370,182, Cl. 156-52.000.
- Becker, Robert: *See—*
  - Stammann, Gunter; Becker, Robert; Grolig, Johann; and Waldmann, Helmut, 4,370,275, Cl. 260-463.000.
- Beckman Instruments, Inc.: *See—*
  - Luper, Charles R., 4,370,152, Cl. 55-281.000.
- Beckwith, Thomas F. Container element combination for seed sprouting or plant culture. 4,369,598, Cl. 47-66.000.
- Bedenbaugh, William E., to Sonoco Products Company. Yarn tube with pickup groove accommodating left hand and right hand pickup. 4,369,933, Cl. 242-125.100.
- Beiswenger, John L.; Moon, Howard R.; Smiesko, Frank A.; and Chaphalkar, Dhananjay, to Acme Burgess, Inc. Hose-end sprayer. 4,369,921, Cl. 239-317.000.

Belanger, Inc.: *See—*
Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Astley, Graham J., 4,369,541, Cl. 15-97.00B.

Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Astley, Graham J., to Belanger, Inc. Retractable wax, buff and polish apparatus for cars. 4,369,541, Cl. 15-97.00B.

Bell Telephone Laboratories, Incorporated: *See—*
Dynes, Robert C.; and Mochel, John M., 4,370,640, Cl. 338-25.000.
Fetter, Linus A.; Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,370,359, Cl. 427-63.000.
Francis, Gordon K., 4,370,525, Cl. 179-16.00A.
Johnston, James D.; Lamel, Lori F.; Rabiner, Lawrence R.; Rosenberg, Aaron E.; and Wilpon, Jay G., 4,370,521, Cl. 179-1.0SC.
Miller, Stewart E., 4,370,745, Cl. 371-8.000.
Moran, John C., 4,370,743, Cl. 370-67.000.

Bellet, Jean-Marie, to Bioself International Inc. Pocket calculator for family planning including a thermometric probe. 4,370,727, Cl. 364-705.000.

Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., to Npk za Kontrolno Zavarachni Raboti. Plasma torch for processing metals in the air and under water. 4,369,919, Cl. 239-79.000.

Beloev, Marin G.: *See—*
Garlanov, Dimo T.; Beloev, Marin G.; Hlebarov, Vladimir P.; Kolarova, Mariana V.; and Vangelov, Ivan V., 4,370,539, Cl. 219-121.0PW.

Beloit Corporation: *See—*
Wedel, Gregory L., 4,369,586, Cl. 34-125.000.

Bendix Corporation, The: *See—*
Bourdon, Normand C., 4,370,014, Cl. 339-97.00R.
Doniger, Jerry; Kirchhein, Albert T.; and Reynolds, Gibson, 4,370,706, Cl. 364-184.000.

Bennett, Gordon C. Paint can collar. 4,369,890, Cl. 220-85.00R.

Berenberg, John A.; Haggerty, William A.; Kegg, Richard L.; Schmenk, Myron J.; and Taylor, Ralph C., Jr., to Cincinnati Milacron Inc. Method for modifying programmed positions by using a programmably controlled surface sensing element. 4,370,721, Cl. 364-474.000.

Berger, Igor A. Wax occlusal rim warmer. 4,370,130, Cl. 433-32.000.

Bergfelt, Nils H.: *See—*
Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,369,876, Cl. 198-460.000.

Berguer, Ramon, to Lunax Corporation. Isothermic protective boot. 4,369,588, Cl. 36-9.00R.

Berkoff, William; and Martens, Walter O., to Berkoff, William. Wet and dry roasting apparatus and process for nut, bean and seed-like product. 4,369,585, Cl. 34-63.000.

Berkowitz, Ami E.; Lahut, Joseph A.; and Wang, Jish M., to General Electric Company. Easily assembled transverse magnetic printing head. 4,370,661, Cl. 346-74.500.

Bernhardt, Joerg, to Siemens Aktiengesellschaft. Method of producing liquid crystal display devices with alignment layer formed from organic tin compound of the type R_nSnX_{4-n}. 4,370,028, Cl. 350-341.000.

Bernstein, Joel E. Method and composition for treating and preventing irritation of the eyes. 4,370,324, Cl. 424-244.000.

Bertin & Cie: *See—*
Amicel, Charles G., 4,369,602, Cl. 51-168.000.

Beyer, Peter, to Boehringer Mannheim GmbH. Process for the preparation of α-[4-(4-chlorobenzoylaminoethyl)-phenoxy]-isobutyric acid. 4,370,495, Cl. 562-451.000.

Bhojwani, Arju H.: *See—*
Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,370,303, Cl. 422-144.000.

Bianco, Gerardo A., Jr.: *See—*
Upchurch, Thurman H.; and Bianco, Gerardo A., Jr., 4,370,719, Cl. 364-472.000.

Bicc Limited: *See—*
Sullivan, Thomas; and Braddock, James E., 4,370,076, Cl. 405-132.000.

Bicc Public Limited Company: *See—*
Allen, Kenneth R.; Allen, John K.; and McNally, Gordon G., 4,370,610, Cl. 324-52.000.

Bicher, James I.; and Frinak, Stanley. Implantable microthermocouple member. 4,369,795, Cl. 128-736.000.

Bicker, Uwe: *See—*
Kampe, Wolfgang; Thiel, Max; Fauland, Erich; Bicker, Uwe; and Hebold, Gottfried, 4,370,323, Cl. 424-244.000.

Bidle, Jerry D.: *See—*
Waycaster, Roy A.; Baker, William T.; and Bidle, Jerry D., 4,370,553, Cl. 250-343.000.

Bieg, Hartmut; Jonas, Hans; Rosswurm, Heinz; Demmer, Wilhelm; and Dobel, Ludwig, to Sigri Elektrographit GmbH. Discharging device for an extrusion press. 4,369,683, Cl. 83-157.000.

Bingel, John P.; and Salmi, Robert W., to United States Steel Corporation. Dry magnetic separators for increased recovery or ore at high belt speeds. 4,370,225, Cl. 209-40.000.

Binsack, Rudolf: *See—*
Grigo, Ulrich; Merten, Josef; and Binsack, Rudolf, 4,370,450, Cl. 525-262.000.

Bioself International Inc.: *See—*
Bellet, Jean-Marie, 4,370,727, Cl. 364-705.000.

Biotest-Serum-Institut GmbH: *See—*
Kotitschke, Ronald; and Stephan, Wolfgang, 4,370,264, Cl. 260-112.00B.

Birbara, Philip J.: *See—*
Bok, Hendrik F.; and Birbara, Philip J., 4,370,356, Cl. 427-38.000.

Bird, Carl H.: *See—*
Bird, Thomas O.; White, Jack; and Bird, Carl H., 4,370,249, Cl. 252-62.000.

Bird, Thomas O.; White, Jack; and Bird, Carl H., to White, Jack E.; and Smith, Franklin N., Jr. Fire-retardant cellulose insulation and method of production. 4,370,249, Cl. 252-62.000.

Birnkraut, Hans-Walter: *See—*
Falbe, Jurgen; Schneller, Peter; Payer, Wolfgang; Forster, Ingrid; Cornils, Boy; Birnkraut, Hans-Walter; Lutze, Siegfried; and Otterbein, Karl, 4,370,458, Cl. 526-138.000.

Bishop, Thomas R.; and Peil, Archie W., to Bowen Tools, Inc. Seal for an overshot and a method of doing same. 4,369,977, Cl. 277-1.000.

Black & Decker Inc.: *See—*
Gise, Glenn A.; and Edleblute, Calvin M., 4,369,577, Cl. 30-276.000.

Blandin, Jean-Claude; and Richard, Louis, to Nadia Nicoll, Societe a responsabilite limitee. Method for manufacturing a metal-plastics composite tube and apparatus for carrying out said method. 4,370,186, Cl. 156-203.000.

Blank, Heinz U.; Wolters, Erich; Muller, Karl W.; and Rottloff, Gunter, to Bayer Aktiengesellschaft. 3-Nitro-acetoacetanilides, processes for their preparation and their use. 4,370,499, Cl. 564-200.000.

Blank, Heinz U.: *See—*
Bonse, Gerhard; and Blank, Heinz U., 4,370,498, Cl. 564-155.000.

Blase, Robert. Twin torsional bicycle seat undercarriage. 4,369,998, Cl. 297-195.000.

Blaszuk, Paul R.: *See—*
Davis, Jack W.; and Blaszuk, Paul R., 4,370,540, Cl. 219-121.0LM.

Bleckmann, Ingo. Heat exchange assembly. 4,369,836, Cl. 165-171.000.

Bloodworth, Darrell R. Animal halter. 4,369,615, Cl. 54-24.000.

Bloomfield, Warren, to Avco Corporation. Combination drive system for ships. 4,369,630, Cl. 60-718.000.

Blumenberg, Guenther, to Kabel-und Metallwerke Gutehoffnungshuette AG. Method of making a gas-tight connection between a corrugated high quality tube and a high quality steel sleeve. 4,369,911, Cl. 228-173.00F.

Bock, Gustav; and Fabian, Wolfgang, to BASF Aktiengesellschaft. Novel pigmentary form of β-copper phthalocyanine. 4,370,270, Cl. 260-245.870.

Bock, Lawrence A.: *See—*
Pastorino, Ronald L.; Bock, Lawrence A.; and Halle, Reidar, 4,370,459, Cl. 526-227.000.

Boehringer Ingelheim GmbH: *See—*
Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Maier, Roland; Lechner, Uwe; and Goeth, Hanns, 4,370,327, Cl. 424-246.000.

Boehringer Mannheim GmbH: *See—*
Beyer, Peter, 4,370,495, Cl. 562-451.000.
Kampe, Wolfgang; Thiel, Max; Fauland, Erich; Bicker, Uwe; and Hebold, Gottfried, 4,370,323, Cl. 424-244.000.

Boer, Hubert, to diga - die gasheizung GmbH. Method for lining pipe mains having branching domestic connection pipes. 4,370,364, Cl. 427-238.000.

Boesenberg, Heinz; Horlein, Gerhard; Kocher, Helmut; and Langeluddeke, Peter, to Hoechst Aktiengesellschaft. Herbicidal compounds. 4,370,489, Cl. 560-62.000.

Boettcher, William C., to D.O.V.E. Equipment Corporation. Helical vending machine with pivot panel adjustment. 4,369,896, Cl. 221-75.000.

Bofors America, Inc.: *See—*
Wareham, William M., 4,369,659, Cl. 73-708.000.

Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Alkali metal complex compounds. 4,370,488, Cl. 549-429.000.

Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, to International Business Machines Corporation. Alignment system for particle beam lithography. 4,370,554, Cl. 250-491.100.

Bok, Hendrik F.; and Birbara, Philip J., to Integrated Technologies, Inc. Method of meniscus coating. 4,370,356, Cl. 427-38.000.

Bolldorf, Kurt; and Bruckner, Ernst, to Pfaff Industriemaschinen GmbH. Embroidering machine with thread changer. 4,369,721, Cl. 112-98.000.

Bollier, J. F., to Patmark Consultants. Disappearing underground safe. 4,369,717, Cl. 109-45.000.

Bond, William B., to Du Pont de Nemours, E. I., and Company. Abrasion-resistant monofilament with molybdenum disulfide useful in the formation of papermaking belts. 4,370,375, Cl. 428-229.000.

Bonin, Werner: *See—*
Welter, Wolfgang; Mildenberger, Hilmar; Knauf, Werner; Waltersdorfer, Anna; and Bonin, Werner, 4,370,345, Cl. 424-282.000.

Bonis, Laszlo J., to Composite Container Corporation. Heat-sealable sheet and container. 4,370,369, Cl. 428-35.000.

Bonomi, Angelo: *See—*
Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,370,394, Cl. 429-199.000.

Bonse, Gerhard; and Blank, Heinz U., to Bayer Aktiengesellschaft. Preparation of α-ketocarboxylic acid N-acylamides. 4,370,498, Cl. 564-155.000.

Boone, Walter S.: *See—*
Vest, H. Ryland; and Boone, Walter S., 4,369,528, Cl. 2-69.000.

Bosch, Eugen I., to Point 4 Data Corporation. Microprogram sequencer. 4,370,729, Cl. 364-200.000.

Bosch, Gerrit; Kok, Arnoldus W.; and Giethoorn, Harmen, to U.S. Philips Corporation. Method of manufacturing a permanent magnet

which is to be arranged in an air gap of a transformer core. 4,369,567, Cl. 29-607.000.

Bose, Phillip R., to Chevron Research Company. Coking hydrocarbonaceous oils with an aqueous liquid. 4,370,223, Cl. 208-125.000.

Bostroem, Theodore. Film identification method. 4,370,409, Cl. 430-496.000.

Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Schaefer, Eberhard, to BASF Aktiengesellschaft. Continuous preparation of acetic acid esters. 4,370,491, Cl. 560-234.000.

Bouchard, Andre C.; Hall, Harold H., Jr.; and Loughridge, Frederick A., to GTE Products Corporation. Method of making a photoflash lamp having new lead seal structure. 4,369,556, Cl. 29-25.150.

Boulanger, William A.: *See—*
Haviv, Fortuna; DeNet, Robert W.; and Boulanger, William A., 4,370,339, Cl. 424-273.00P.

Bourdon, Normand C., to Bendix Corporation, The. Insulated wire termination device. 4,370,014, Cl. 339-97.00R.

Bourgraf, Elroy E.; Dunn, Robert E.; and Vance, Ronald D., to Weil, Burt. One man cart for articles. 4,369,985, Cl. 280-641.000.

Boussekey, Bernard: *See—*
Chielens, Alain; Boussekey, Bernard; and Deschamps, Bernard, 4,370,128, Cl. 432-115.000.

Bouvet, Jean M.; and Quemerais, Philippe, to Regie Nationale Des Usines Renault. Electrohydraulic translation apparatus, in particular permitting control of a pressure in an automatic transmission. 4,369,804, Cl. 137-85.000.

Bovis, Claude: *See—*
Depetris, Norbert; and Bovis, Claude, 4,370,445, Cl. 524-742.000.

Bowen Tools, Inc.: *See—*
Bishop, Thomas R.; and Peil, Archie W., 4,369,977, Cl. 277-1.000.

Bozler, Gerhard: *See—*
Jung, Gunther; Bruckner, Hans; Swetly, Peter; and Bozler, Gerhard, 4,370,312, Cl. 424-1.500.

Brackmann, Warren A.; and Snaidr, Stanislav M., to Rothmans of Pall Mall Canada Limited. Feed mechanism for tobacco cutting machines. 4,369,797, Cl. 131-109.0AB.

Braddock, James E.: *See—*
Sullivan, Thomas; and Braddock, James E., 4,370,076, Cl. 405-132.000.

Braithwaite, Charles H., Jr. Method for removing adhesive residues with an emulsion cleaner. 4,370,174, Cl. 134-7.000.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Catalyst for methylamines production. 4,370,503, Cl. 564-474.000.

Brandon, Deryck. Apparatus and method for heating, thawing and/or demoisturizing materials and/or objects. 4,370,534, Cl. 219-10.55A.

Brandt, Dieter, to Wandel & Goltermann GmbH & Co. Synchronization extractor responsive to digital signals. 4,370,617, Cl. 328-63.000.

Brantingham, George L., to Texas Instruments Incorporated. System and method of driving a multiplexed liquid crystal display by varying the frequency of the drive voltage signal. 4,370,647, Cl. 340-784.000.

Bratanov, Anton A.: *See—*
Marev, Kiril S.; Krachanov, Hristo G.; Bratanov, Anton A.; and Kirchev, Nikolay A., 4,370,473, Cl. 536-2.000.

Brauer, Hans, to Kocks Technik GmbH & Company. Method and apparatus for cooling wire rod. 4,369,645, Cl. 72-201.000.

Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, to Proge Groupement d'Interet Economique. Salt composition usable as a fused electrolyte in accumulators. 4,370,394, Cl. 429-199.000.

Brethon, Jean-Pierre; Guiho, Jean-Paul; Taniel, Gerard; and Viel, Georges, to Commissariat a l'Energie Atomique; and Societe CGR-MeV. Device for storing a source of photons and for irradiating a body by the radiation from said source. 4,370,555, Cl. 378-120.000.

Bretl, Wayne E.: *See—*
Johnson, Fred D.; Flasza, Michael D.; and Bretl, Wayne E., 4,370,674, Cl. 358-74.000.

Brevignon, Michele: *See—*
Dubroeucq, Georges; Lacombat, Michel; and Brevignon, Michele, 4,370,026, Cl. 350-163.000.

Breznican, Stephen J., to Westinghouse Electric Corp. Two-speed motor control. 4,370,605, Cl. 318-773.000.

Briggs, George R., to RCA Corporation. Vehicle multiplex system. 4,370,561, Cl. 307-9.000.

Brighty, Sidney G. Plotting device. 4,369,583, Cl. 33-403.000.

Briles, Franklin S. Blind fastener with work gripping head. 4,370,081, Cl. 411-43.000.

Brill, Joseph H. Diaphragm pump. 4,370,108, Cl. 417-430.000.

Brisebarre, Marcel, to ATS Advanced Technics & Systems, S.A. Device for separating bank notes. 4,369,960, Cl. 271-5.000.

British Leyland UK Limited: *See—*
Bateson, Simon V. R.; and Gerrard, Andrew, 4,369,866, Cl. 192-3.570.

Brocklehurst, Charles E.: *See—*
Griffith, William C., Jr.; and Brocklehurst, Charles E., 4,369,723, Cl. 112-281.000.

Bron, Dan. Self-regulating nozzle for a liquid supply line. 4,369,923, Cl. 239-542.000.

Brooks, Joe: *See—*
Henson, George S.; and Brooks, Joe, 4,369,845, Cl. 166-298.000.

Brossmann, Gottfried: *See—*
Appel, Hans; and Brossmann, Gottfried, 4,370,276, Cl. 260-463.000.

Brown, Kenard D. Automatic pump for deep wells. 4,370,105, Cl. 417-360.000.

Brownell, George L.; Davie, William R.; and Fields, Marvin C., to United States Steel Corporation. Removal of iron compounds from organic process streams. 4,370,240, Cl. 210-673.000.

Browning Engineering Corporation: *See—*
Browning, James A., 4,370,538, Cl. 219-121.0PY.

Browning, James A., to Browning Engineering Corporation. Method and apparatus for ultra high velocity dual stream metal flame spraying. 4,370,538, Cl. 219-121.0PY.

Bruce, Kenneth E.; Conway, John W.; Lombardo, Ralph M., Jr.; and Tarbox, Bruce H., to Honeywell Information Systems Inc. Logic system for selectively reconfiguring an intersystem communication link. 4,370,708, Cl. 364-200.000.

Bruckner, Ernst: *See—*
Bolldorf, Kurt; and Bruckner, Ernst, 4,369,721, Cl. 112-98.000.

Bruckner, Hans: *See—*
Jung, Gunther; Bruckner, Hans; Swetly, Peter; and Bozler, Gerhard, 4,370,312, Cl. 424-1.500.

Bruel, Michel, to Commissariat a l'Energie Atomique. Process for fast droping of semiconductors. 4,370,176, Cl. 148-1.500.

Bruggeman, William L.; and Myers, Claude B., to Cat Pumps Corporation. Sand blasting apparatus. 4,369,607, Cl. 51-427.000.

Brugmans, Johannes T., to Koninklijke Emballage Industrie Van Leer B.V. Metallized labels for containers. 4,370,377, Cl. 428-327.000.

Brunn GmbH & Co. KG: *See—*
Brunn, Martin, 4,369,628, Cl. 60-618.000.

Brunn, Martin, to Brunn GmbH & Co. KG. Method and apparatus for improving the firedamp safety of an internal combustion engine for underground operation. 4,369,628, Cl. 60-618.000.

Brunswick Corporation: *See—*
Grover, Richard L.; and Humphrey, William D., 4,369,894, Cl. 220-414.000.

Bryan, Paul J.; and Morse, Daniel R., to Du Pont de Nemours, E. I., and Company. Delay blasting cap. 4,369,708, Cl. 102-202.130.

Bryant-Poff, Inc.: *See—*
Taylor, Edmund P., 4,369,870, Cl. 193-23.000.

Budde, Volker, to Daimler-Benz Aktiengesellschaft. Short circuit fuse for electrical igniters. 4,369,707, Cl. 102-202.200.

Bugaut, Andree; Thouvenin, Philippe; and Cotteret, Jean, to L'Oreal. Hair-dyeing compositions based on para-phenylenediamine and ortho-aminophenol. 4,370,142, Cl. 8-407.000.

Bugg, Richard E. F.; and Parkyn, Derek J., to U.S. Philips Corporation. Data transmission. 4,370,747, Cl. 375-62.000.

Buja, Frederick J. Modular rotary molding machine. 4,370,124, Cl. 425-556.000.

Bunce, Roger A.; Gibbons, John E. C.; and Kricka, Larry J., to National Research Development Corporation. Pipette means. 4,369,664, Cl. 73-864.120.

Bunker Ramo Corporation: *See—*
Hutter, Harold G.; and Francis, Leonard J., 4,370,015, Cl. 339-97.00P.

Bunnell, Thomas K., to Dolan Corrugated Containers Limited. Rotary die cutters having magnetically-attracted waste ejector. 4,369,682, Cl. 83-112.000.

Bunri Industry Co., Ltd.: *See—*
Tashiro, Minoru; and Uemura, Takaaki, 4,370,228, Cl. 210-223.000.

Burgbacher, Martin, to Papst Motoren GmbH und Co. KG. Reluctance motor. 4,370,580, Cl. 310-67.00R.

Burger, Jacques: *See—*
Gadelle, Claude; Burger, Jacques; and Bardon, Charles, 4,370,078, Cl. 405-264.000.

Burgoon, Jack L.; and Karpanty, David J., to Scott & Fetzer Company, The. Floor cleaning machine. 4,369,540, Cl. 15-49.00R.

Burk, Robert C., to McDonnell Douglas Corporation. 3-D Chopped-fiber composites. 4,370,390, Cl. 428-614.000.

Burkin, Alfred R.: *See—*
Dain, Richard J.; Manning, Gary D.; and Burkin, Alfred R., 4,370,237, Cl. 210-638.000.

Burlington Industries, Inc.: *See—*
Janicz, Thomas H., 4,370,373, Cl. 428-151.000.

Burmeister, Fredrik: *See—*
Heijola, Pentti; and Burmeister, Fredrik, 4,369,853, Cl. 180-117.000.

Burnett, William R.; and Thompson, Charles T., to Varian Associates, Inc. Multiple threaded fastener assembly. 4,370,083, Cl. 411-87.000.

Burnette, Clarence S. Wood burning stove. 4,369,761, Cl. 126-63.000.

Burney, Charles F.: *See—*
Becker, Jon; Miller, Kirby G.; and Burney, Charles F., 4,370,182, Cl. 156-52.000.

Burroughs Corporation: *See—*
Chadra, David P., 4,370,730, Cl. 364-900.000.
Greig, George H.; and Pettigrew, Archibald M., 4,370,683, Cl. 360-73.000.
Richardson, Harvey J., 4,370,688, Cl. 360-99.000.

Burton, Bruce L.; and Doorakian, George A., to Dow Chemical Company, The. Organo phosphorus-containing compounds as catalysts for deblocking blocked isocyanates. 4,370,461, Cl. 528-45.000.

Burysek, Frantisek; Mikulecky, Karel; Elias, Jiri; Esner, Stanislav; Skoda, Stanislav; and Janousek, Jan, to Vyzkumny ustav bavlnarsky. Apparatus for spinning-in yarns in open-end rotor spinning units. 4,369,620, Cl. 57-263.000.

Buschbom, Floyd E.; and Hutchison, Marion, to Veda, Inc. Fluid drive system. 4,369,855, Cl. 180-212.000.

Bussard, Robert W., to FDX Associates, L.P. Fusion-fission power generating device having fissile-fertile material within the region of the toroidal field coils generating means. 4,370,295, Cl. 376-133.000.

Bussard, Robert W., to FDX Associates, L.P. Toroidal fusion reactor having ohmic heating coil substantially adjacent toroidal fusion region. 4,370,296, Cl. 376-133.000.

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- Busse, Oswald; and Klesper, Hugo, to Passavant-Werke AG & Co. KG. Sludge de-watering plant with a plurality of filter presses connected in parallel. 4,370,232, Cl. 210-224.000.
- Bussey, Marlin G.: *See—*
  - Zabrocki, Vincent S.; and Bussey, Marlin G., 4,370,378, Cl. 428-339.000.
- Butterwick, Gilbert N., to RCA Corporation. Evaporator support assembly for a photomultiplier tube. 4,370,585, Cl. 313-102.000.
- Butterworth, Archibald J. Parking devices for vehicles. 4,369,854, Cl. 180-201.000.
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- Byer, Richard J., to Du Pont de Nemours, E. I., and Company. Method for producing a long scale direct-positive photographic emulsion. 4,370,411, Cl. 430-596.000.
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  - Williams, Frank R.; and Hurst, Ronald C., 4,370,308, Cl. 423-450.000.
- California Institute of Technology: *See—*
  - Stirn, Richard J., 4,370,510, Cl. 136-262.000.
- Callantine, Merritt R.: *See—*
  - Greaney, Martin O.; and Callantine, Merritt R., 4,370,321, Cl. 424-243.000.
- Calvin, Douglas J.: *See—*
  - Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Astley, Graham J., 4,369,541, Cl. 15-97.00B.
- Cam Gears Limited: *See—*
  - Allen, David H., 4,369,669, Cl. 74-422.000.
- Camp, John P. Protective fire hydrant guard. 4,369,807, Cl. 137-296.000.
- Campbell, Simon F.; Danilewicz, John C.; Ham, Allan L.; and Stubbs, John K., to Pfizer Inc. Cardiac stimulant 1-(3- or 4-substituted piperidino)phthalazines. 4,370,328, Cl. 424-250.000.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of Energy, Mines and Resources: *See—*
  - Patmore, David J.; Ranganathan, Ramaswami; Khulbe, Chandra P.; and Pruden, Barry B., 4,370,221, Cl. 208-112.000.
- Canfield, Allen B., to Rexham Corporation. Top heat sealing unit for pouches. 4,369,611, Cl. 53-127.000.
- Canon Kabushiki Kaisha: *See—*
  - Hara, Toshitami; and Matsumoto, Shigeyuki, 4,370,668, Cl. 346-140.00R.
  - Harigaya, Isao; and Tamamura, Hideo, 4,370,043, Cl. 354-173.000.
  - Hirayama, Kazuhiro; and Ito, Michio, 4,370,053, Cl. 355-14.00D.
  - Ikemori, Keiji, 4,370,031, Cl. 350-426.000.
  - Isohata, Junji; and Yamamoto, Hironori, 4,370,054, Cl. 355-53.000.
  - Kitamura, Takashi, 4,370,678, Cl. 358-285.000.
  - Kuge, Tsukasa; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,370,049, Cl. 355-3.0DD.
  - Murakami, Katsumi; Furuichi, Katsushi; and Honma, Toshio, 4,370,052, Cl. 355-14.00R.
  - Noda, Atsushi; and Hanagata, Takayoshi, 4,370,666, Cl. 346-76.0PH.
  - Shigenobu, Michio; and Ohkubo, Masaharu, 4,369,729, Cl. 118-60.000.
  - Shirasaki, Takayuki, 4,370,019, Cl. 350-6.600.
  - Tateoka, Masamichi, 4,370,032, Cl. 350-476.000.
  - Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,370,037, Cl. 354-23.00D.
- Canron Corporation: *See—*
  - Lund, Raymond R., 4,370,093, Cl. 414-779.000.
  - von Beckmann, Helmuth, 4,369,712, Cl. 104-12.000.
- Capaldi, Bernard: *See—*
  - Addicott, Roy W.; and Capaldi, Bernard, 4,370,582, Cl. 310-211.000.
- Capek, Raymond G.; and Garrett, Elgie E., to Zenith Radio Corporation. Isolating connector. 4,370,630, Cl. 333-24.00C.
- Caracappa, Michael G., to RCA Corporation. Signal correlation means employing charged-coupled device type shift registers. 4,370,726, Cl. 364-604.000.
- Carignani, Giancarlo; and Cipriani, Aldo, to Shia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Process for obtaining permanently self-extinguishing cellular materials which have a low density and high mechanical characteristics. 4,370,425, Cl. 521-138.000.
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  - Trotscher, Otto; Stacklies, Horst; and Machler, Meinrad, 4,370,058, Cl. 356-125.000.
- Carlos, Donald D., to Ashland Petroleum Company, division of Ashland Oil, Inc. Inorganic salt oxidation promoters for hydrocarbons. 4,370,218, Cl. 208-3.000.
- Carroll, John T.; and Yamat, Miguel B., to Siemens-Allis, Inc. Undervoltage release device for a circuit breaker. 4,370,635, Cl. 335-20.000.
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  - de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,370,541, Cl. 219-121.0EC.
- Carter, Robert C., to Adolph Coors Company. Cam actuated filler valve. 4,369,821, Cl. 141-147.000.
- Casiday, John J. Window unit for storm windows. 4,369,829, Cl. 160-120.000.
- Cason, William C.; Kuecker, Ward A.; and Stratton, Susan D., to International Business Machines Corporation. Ghost cursor in display all codes mode. 4,370,645, Cl. 340-709.000.
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  - Bruggeman, William L.; and Myers, Claude B., 4,369,607, Cl. 51-427.000.
- Caterpillar Tractor Co.: *See—*
  - Albo, Ronald T., 4,370,183, Cl. 156-117.000.
  - Hendrickson, Vergil P., 4,369,826, Cl. 152-410.000.
  - Szentes, John F., 4,369,651, Cl. 73-119.00A.
- Gavitron Corporation: *See—*
  - Stempel, John A., 4,370,133, Cl. 433-171.000.
- Cayer, Pierre W. Dispenser for rolled sheet goods. 4,369,929, Cl. 242-55.420.
- CBS Industries: *See—*
  - Zopf, David E., 4,369,949, Cl. 248-632.000.
- Ceintrey, Claude; and Detain, Monique, to Rhone-Poulenc Systemes. Presensitized plastic card, tamperproof identification card prepared therefrom, and process for manufacture of tamperproof identification card. 4,370,397, Cl. 430-10.000.
- Celanese Corporation: *See—*
  - DeGuia, Andrea A., 4,370,438, Cl. 524-412.000.
  - Lee, Shu M.; and Gezovich, Donald M., 4,370,141, Cl. 8-115.500.
- Centro Ricerche Fiat S.p.A.: *See—*
  - Palazzetti, Mario; and Salotti, Gianfranco, 4,370,562, Cl. 307-38.000.
  - Venturello, Giorgio; and Salvatore, Osvaldo, 4,369,663, Cl. 73-862.040.
- Ceshkovsky, Ludwig; and Dakin, Wayne R., to Discovision Associates. Gain correction system for videodisc player apparatus. 4,370,679, Cl. 358-318.000.
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- Chadra, David P., to Burroughs Corporation. Ram buffer memory circuit system for train printer-data link processor. 4,370,730, Cl. 364-900.000.
- Chan, John Y., to Fairchild Camera and Instrument Corporation. Sense amplifier and sensing methods. 4,370,737, Cl. 365-203.000.
- Chang, Mark S.: *See—*
  - O'Toole, Michael M.; Liu, En-Den D.; and Chang, Mark S., 4,370,405, Cl. 430-312.000.
- Chang, Richard S.; and Levine, Richard S., to Mattel, Inc. Electronic bowling game. 4,369,971, Cl. 273-85.00G.
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  - Beiswenger, John L.; Moon, Howard R.; Smiesko, Frank A.; and Chaphalkar, Dhananjay, 4,369,921, Cl. 239-317.000.
- Chapin, Carole N.; Kelm, Gary R.; and Shelton, David L., to Procter & Gamble Company, The. Skin conditioning compositions. 4,370,319, Cl. 424-184.000.
- Charek, Leonard T., to Firestone Tire & Rubber Company, The. Trailer with mass restraint. 4,369,983, Cl. 280-81.00A.
- Chasek, Norman E. Responsive traffic light control system and method based on conservation of aggregate momentum. 4,370,718, Cl. 364-436.000.
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  - Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.
- Chen, Catherine S. H.; and Luh, Yuhshi, to Mobil Oil Corporation. Oil recovery by surfactant-alcohol waterflooding. 4,370,243, Cl. 252-8.55D.
- Chen, Hong: *See—*
  - Chen, Jen; and Chen, Hong, 4,369,543, Cl. 15-319.000.
- Chen, Jen; and Chen, Hong. Remote-control radio vacuum cleaner. 4,369,543, Cl. 15-319.000.
- Chen, Michael C.: *See—*
  - Hung, Paul P.; Lee, Shaw-Guang; Roychoudhury, Ranajit; Ratzkin, Barry J.; Schrenk, W. Jurgen; and Chen, Michael C., 4,370,417, Cl. 435-212.000.
- Chen, Wilkie Y.: *See—*
  - Purcell, John R.; Chen, Wilkie Y.; and Toffolo, Walter E., 4,369,636, Cl. 62-514.00R.
- Cheng, Paul J., to Phillips Petroleum Company. Method for removing carbon black deposits. 4,370,309, Cl. 423-461.000.
- Chevron Research Company: *See—*
  - Bose, Phillip R., 4,370,223, Cl. 208-125.000.
  - deVries, Louis; and King, John M., 4,370,246, Cl. 252-46.400.
  - Jensen, Harbo P., 4,370,239, Cl. 210-668.000.
  - Miller, Stephen J., 4,370,219, Cl. 208-59.000.
- Chiba, Akio; and Funahashi, Jun, to Nissan Motor Company, Ltd. Fuel tank fitting structure. 4,369,981, Cl. 280-5.00A.
- Chielens, Alain; Boussekey, Bernard; and Deschamps, Bernard, to Fives-Cail Babcock. Protective device for a discharge end of a tubular rotary kiln. 4,370,128, Cl. 432-115.000.
- Chloe-Chimie: *See—*
  - Depetris, Norbert; and Bovis, Claude, 4,370,445, Cl. 524-742.000.
- Choay, Jean: *See—*
  - Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.

- Chou, Clifford K. F.; and McCarthy, Paul, to United States Steel Corporation. Wire galvanizer cooler. 4,369,802, Cl. 134-122.00R.
- Christensen, George L. Scabbard for firearms. 4,369,904, Cl. 224-250.000.
- Chu, James C.; Crane, Patrick E.; D'Agostino, Jack V.; and Schwartz, Paul M., to Sperry Corporation. Antenna. 4,370,659, Cl. 343-772.000.
- Chu, Kwo R.: *See—*
  - Sprangle, Phillip A.; Smith, Robert A.; and Chu, Kwo R., 4,370,621, Cl. 330-4.000.
- Chunn, Robert E. Card game with trump suits and trump words. 4,369,976, Cl. 273-303.000.
- Church, Leslie G., to Propeller Design Limited. Marine propeller. 4,370,096, Cl. 416-189.000.
- Chvapil, Milos. Contraceptive sponge - diaphragm bilayer. 4,369,773, Cl. 128-127.000.
- Cianciolo, Cosmo J.; Snyder, John R.; and King, Roderick V., to Ethyl Products Company. Closure with smooth edge. 4,369,643, Cl. 72-75.000.
- Ciba-Geigy AG: *See—*
  - Clubley, Brian G.; Hyde, Thomas G.; and Keenan, John F. E., 4,370,281, Cl. 260-966.000.
- Ciba-Geigy Corporation: *See—*
  - Deiner, Hans, 4,370,366, Cl. 427-389.900.
  - Lienhard, Paul; and Roueche, Armand, 4,370,431, Cl. 524-100.000.
  - Skelly, James K.; Evans, David G.; and Becker, Carl, 4,370,144, Cl. 8-501.000.
- Cincinnati Milacron Inc.: *See—*
  - Berenberg, John A.; Haggerty, William A.; Kegg, Richard L.; Schmenk, Myron J.; and Taylor, Ralph C., Jr., 4,370,721, Cl. 364-474.000.
- Ciorbaru, Rita: *See—*
  - Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.
- Ciosek, Bernard M., Jr., to Du Pont de Nemours, E. I., and Company. Shrinkage gauge and method. 4,369,653, Cl. 73-150.00R.
- Cipriani, Aldo: *See—*
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  - Iwakura, Ryoji; Nitta, Tatsuo; and Takahashi, Kazutoshi, 4,370,067, Cl. 368-202.000.
  - Yamaguchi, Sizuo, 4,370,066, Cl. 368-188.000.
- Citrin, Paul S., to Indicon Inc. Manually holdable automatic pipette. 4,369,665, Cl. 73-864.180.
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  - Uraneck, Carl A.; and Clark, Earl, 4,370,252, Cl. 252-311.000.
- Clarke, John B.; and Pitts, Leslie, to Allied Colloids Limited. Dispersing solid carbonaceous material in water. 4,370,429, Cl. 524-60.000.
- Clary, Robert M.: *See—*
  - Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,369,876, Cl. 198-460.000.
- Clear, Elmer E., to Phillips Petroleum Company. Method using lost circulation material for sealing permeable formations. 4,369,844, Cl. 166-294.000.
- Clemens, Jon K.: *See—*
  - Ross, Michael D.; and Clemens, Jon K., 4,370,672, Cl. 358-312.000.
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- Cleveland Gear Company: *See—*
  - Swartz, LeRoy O., 4,370,357, Cl. 427-46.000.
- Clubley, Brian G.; Hyde, Thomas G.; and Keenan, John F. E., to Ciba-Geigy AG. Triaryl phosphates. 4,370,281, Cl. 260-966.000.
- Clutts, Earnest H. Utility vest. 4,369,526, Cl. 2-51.000.
- Coach & Car Equipment Corporation: *See—*
  - Harder, Arthur J., Jr., 4,369,995, Cl. 296-65.00A.
- Cody, John M.; and Weaks, William L. Centrifugal clutch and brake for lawnmower. 4,369,616, Cl. 56-11.300.
- Coffron, James W., to Creative Microprocessor Systems. Static stimulus tester for microprocessor systems. 4,370,728, Cl. 364-900.000.
- Cohen, Irun R.: *See—*
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- Cohn, William E., to Zenith Radio Corporation. Doorbell actuated television security system. 4,370,675, Cl. 358-108.000.
- Coleman, Clyde F., to RCA Corporation. Video disc player having record retaining mechanism. 4,370,738, Cl. 369-77.000.
- Coley, John L. Solar heating and shading window having automatic temperature-responsive damper system. 4,369,766, Cl. 126-429.000.
- Colgate-Palmolive Company: *See—*
  - Gaffar, Abdul, 4,370,314, Cl. 424-54.000.
  - Joshi, David P., 4,370,250, Cl. 252-135.000.
- Colgate, Stirling A. Method of pressurizing and stabilizing rock by periodic and repeated injections of a settable fluid of finite gel strength. 4,370,077, Cl. 405-258.000.
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  - Bauer, Jackson, 4,370,143, Cl. 8-493.000.
- Columbus, Richard L., to Eastman Kodak Company. Photographic products including liquid spreading means. 4,370,407, Cl. 430-403.000.
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  - Brethon, Jean-Pierre; Guiho, Jean-Paul; Taniel, Gerard; and Viel, Georges, 4,370,555, Cl. 378-120.000.
  - Bruel, Michel, 4,370,176, Cl. 148-1.500.
- Compagnie de Construction Mecanique Sulzer, French Societe Anonyme: *See—*
  - Gueissaz, Charles, 4,370,172, Cl. 127-1.000.
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  - Levy, Michel; and Poinas, Christian, 4,370,749, Cl. 375-99.000.
- Complete Business Services Corp.: *See—*
  - Zopf, David E., 4,369,950, Cl. 248-632.000.
- Composite Container Corporation: *See—*
  - Bonis, Laszlo J., 4,370,369, Cl. 428-35.000.
- Computer Service, Inc.: *See—*
  - Phillips, Clarence W.; Eiben, Michael R.; and Morgan, Harvey T., Jr., 4,370,707, Cl. 364-200.000.
- Consolidated Papers, Inc.: *See—*
  - Damrau, Wayne A., 4,369,731, Cl. 118-410.000.
- Consonni, Pietro: *See—*
  - Omodei-Sale, Amedeo; Consonni, Pietro; Galliani, Giulio; and Lerner, Leonard, 4,370,336, Cl. 424-269.000.
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  - Rehkopf, Paul G.; and Zdrojkowski, Ronald, 4,369,785, Cl. 128-276.000.
- Continental Group, Inc., The: *See—*
  - Walter, John, 4,369,888, Cl. 215-237.000.
- Control Data Corporation: *See—*
  - Kroft, David, 4,370,710, Cl. 364-200.000.
  - Smith, James E., 4,370,711, Cl. 364-200.000.
- Conway, John W.: *See—*
  - Bruce, Kenneth E.; Conway, John W.; Lombardo, Ralph M., Jr.; and Tarbox, Bruce H., 4,370,708, Cl. 364-200.000.
- Cookson, Alan H.; Fischer, William H.; Yoon, Kue H.; and Meyer, Jeffry R., to Westinghouse Electric Corp. Flexible gas insulated transmission line having regions of reduced electric field. 4,370,511, Cl. 174-14.00R.
- Cooley, Richard F., to American Microsystems, Inc. Apparatus for chemical etching of silicon. 4,370,192, Cl. 156-345.000.
- Cooper, Donald L.; and Zeidman, Gordon G., to Eastern Company, The. Tool and operator head for a tool-operated lock. 4,369,678, Cl. 81-90.00C.
- Cooper, Sidney; and Jacob, Ezekiel J., to Ani-Live Film Service Inc. Dry transfer of electrophotographic images. 4,370,400, Cl. 430-126.000.
- Cordier, Jean: *See—*
  - Namy, Gerald; and Cordier, Jean, 4,370,154, Cl. 55-309.000.
- Cornell Research Foundation, Inc.: *See—*
  - Hayes, Thomas D.; Kabrick, Randolph M.; and Jewell, William J., 4,370,233, Cl. 210-609.000.
- Cornils, Boy: *See—*
  - Falbe, Jurgen; Schneller, Peter; Payer, Wolfgang; Forster, Ingrid; Cornils, Boy; Birnkraut, Hans-Walter; Lutze, Siegfried; and Otterbein, Karl, 4,370,458, Cl. 526-138.000.
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- Costello, Edward C.; and Simon, David J., to Singer Company, The. Single non-linear converter ladder network having analog switches with digital control. 4,370,642, Cl. 340-347.0SY.
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- Courtright, John F.: *See—*
  - Task, Harry L.; Courtright, John F.; and Salys, Casimer K., 4,370,024, Cl. 350-162.120.
- Cousse, Henri: *See—*
  - Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,370,347, Cl. 424-324.000.
- Crane, Patrick E.: *See—*
  - Chu, James C.; Crane, Patrick E.; D'Agostino, Jack V.; and Schwartz, Paul M., 4,370,659, Cl. 343-772.000.
- Creative Microprocessor Systems: *See—*
  - Coffron, James W., 4,370,728, Cl. 364-900.000.
- Creusot-Loire Entreprises: *See—*
  - Namy, Gerald; and Cordier, Jean, 4,370,154, Cl. 55-309.000.
- Crosfield Electronics Limited: *See—*
  - Isherwood, Jeffrey, 4,369,906, Cl. 226-42.000.
- Crossley, Roger, to John Wyeth and Brother Limited. Certain 2-(arylaliphatic thio)-pyridinium compounds. 4,370,477, Cl. 542-413.000.
- Crowgey, James L.: *See—*
  - McCoy, Charles E., Jr.; and Crowgey, James L., 4,370,713, Cl. 364-424.000.
- Crowley, Albert T., to RCA Corporation. Phase comparator system. 4,370,653, Cl. 343-6.5LC.
- Cruikshank, Susan J.; and Orem, Michael W., to Eastman Kodak Company. Aqueous hydrophilic colloid coating composition containing a combination of anionic surfactants. 4,370,412, Cl. 430-635.000.
- CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
  - Di Tria, Paolo, 4,370,725, Cl. 364-582.000.
- Cuisinarts Research & Development Inc.: *See—*.
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  Lauterbach, Jerre F., 4,370,106, Cl. 417-407.000.
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  Kasting, Edward W.; and Glasson, Richard E., 4,369,627, Cl. 60-605.000.
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  Perrin, Marc, 4,369,741, Cl. 123-182.000.
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  Boettcher, William C., 4,369,896, Cl. 221-75.000.
Daane, Robert A., to W. R. Grace & Co. Preventing air film between web and roller. 4,369,584, Cl. 34-12.000.
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  Chu, James C.; Crane, Patrick E.; D'Agostino, Jack V.; and Schwartz, Paul M., 4,370,659, Cl. 343-772.000.
Dahlberg, Reinhard, to Licentia Patent-Verwaltungs-GmbH. Solar cell array. 4,370,509, Cl. 136-244.000.
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  Nakamura, Yukiharu; and Kawachi, Shoji, 4,370,436, Cl. 524-322.000.
Dailey, Harold E. Can folding and flattening device. 4,369,699, Cl. 100-156.000.
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  Gaus, Hermann, 4,369,676, Cl. 74-868.000.
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  Kinoshita, Minoru; and Mizuta, Masaji, 4,370,558, Cl. 250-559.000.
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  Masuda, Tatsunosuke, 4,370,059, Cl. 356-400.000.
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  Sugimoto, Tadahiro, 4,369,686, Cl. 83-801.000.
Dakin, Wayne R.: *See—*
  Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,370,679, Cl. 358-318.000.
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  Panda, Jajnya D.; and Mahapatra, Santosh K., 4,370,422, Cl. 501-108.000.
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Damrau, Wayne A., to Consolidated Papers, Inc. Coating apparatus having an internal leveling blade. 4,369,731, Cl. 118-410.000.
Daniel, Jean-Claude; Grossoleil, Jacques; and Roullet, Robert, to Rhone-Poulenc Industries. Binder for manufacturing tufted floor coverings. 4,370,426, Cl. 523-310.000.
Danilewicz, John C.: *See—*
  Campbell, Simon F.; Danilewicz, John C.; Ham, Allan L.; and Stubbs, John K., 4,370,328, Cl. 424-250.000.
Dannels, W. Andrew; and Bainbridge, Robert W., to Occidental Chemical Corporation. Apparatus for runnerless injection compression molding of thermosetting materials. 4,370,122, Cl. 425-543.000.
Dannels, W. Andrew; and Bainbridge, Robert W., to Occidental Chemical Corporation. Apparatus for runnerless injection compression molding of thermosetting materials. 4,370,123, Cl. 425-543.000.
Danville, Carlos R. Pigmented peroxide and polyester compositions. 4,370,428, Cl. 523-508.000.
Darakjian, Raymond Z.: *See—*
  Widman, Lawrence E.; Habeeb, Nasser G.; and Darakjian, Raymond Z., 4,370,136, Cl. 433-217.000.
Darrell, Miklos. Electrified glove. 4,370,696, Cl. 361-232.000.
Das, Balbhadra: *See—*
  Melle, Carl A.; McWilliams, Donald E.; and Das, Balbhadra, 4,370,439, Cl. 524-513.000.
Dash, Glen R.; and Straus, Isidor. Circuit for minimizing radiation. 4,370,570, Cl. 307-270.000.
Dassonville, Jacques, to Thomson-CSF. Static high voltage switch usable in a switchable high voltage D.C. generator. 4,370,607, Cl. 323-271.000.
Datafile Limited: *See—*
  Pfeffer, George B., 4,369,582, Cl. 33-180.00R.
Daughters, James R. Ink ribbon cartridge pack. 4,369,884, Cl. 206-389.000.
D'Aurora, Joseph R.; and Specht, David F. Electronic crossword puzzle. 4,369,973, Cl. 273-153.00R.
Davenport, Anthony T.: *See—*
  Waid, George M.; and Davenport, Anthony T., 4,370,178, Cl. 148-12.00F.
Davey, James W. Transportable fibre optic apparatus for use in a security system. 4,370,020, Cl. 350-96.100.
David, Bernard. Drier for screen printed sheets. 4,369,587, Cl. 34-150.000.
David, Paul E.; and Hyde, Leland M. Heat retriever apparatus. 4,369,918, Cl. 237-55.000.
Davie, William R.: *See—*
  Brownell, George L.; Davie, William R.; and Fields, Marvin C., 4,370,240, Cl. 210-673.000.
Davies, Charles A., to Dysan Corporation. Flexible magnetic recording medium with improved reinforcement means. 4,370,689, Cl. 360-135.000.
Davies, William L., to Eaton Laboratories, Inc. Nitrofurantoin dosage form. 4,370,313, Cl. 424-32.000.
Davis, Jack W.; and Blaszuk, Paul R., to United Technologies Corporation. Reflective beam rotator. 4,370,540, Cl. 219-121.0LM.
Davis, Jefferson W., Jr., to United States of America, Energy. Synthesis of amino acids. 4,370,493, Cl. 562-444.000.
de la Fe, Alicia B. Folding stroller for transporting children. 4,369,986, Cl. 280-644.000.
De Rijkslandbouwhogeschool: *See—*
  Gundlach, Bertus L., 4,369,652, Cl. 73-149.000.
Dearborn Chemical Company: *See—*
  Engstrom, Gary G.; and Bain, Douglas I., 4,369,719, Cl. 110-345.000.
de Buman, Alain; Riva, Aldo; and Sucker, Heinz, to Sandoz Ltd. Method for making suppositories by compression and product of same. 4,369,784, Cl. 128-271.000.
de Carbon, Christian B. Shock absorber including thermostatically controlled fluid flow passage. 4,369,864, Cl. 188-277.000.
DeCaro, Aristide R.; and Nixon, Henry M., to Westinghouse Electric Corp. Filament connector means for electric incandescent lamp. 4,370,589, Cl. 313-315.000.
Dechema Deutsche Gesellschaft fur Chemisches Apparatewesen E V: *See—*
  Kirchner, Kurt; and Litzenburger, Wolfgang, 4,370,306, Cl. 423-220.000.
de Graaf, Kenneth B.: *See—*
  Cosand, Albert E.; and de Graaf, Kenneth B., 4,370,572, Cl. 307-353.000.
Deguchi, Yukichi; Noguchi, Yukio; and Kobayashi, Hiroaki, to Toray Industries, Inc. Polyphenylenesulfide sheet-like material. 4,370,469, Cl. 528-388.000.
DeGuia, Andrea A., to Celanese Corporation. Polyester blend compositions exhibiting suppression of transesterification. 4,370,438, Cl. 524-412.000.
Degussa AG: *See—*
  Junkermann, Helmut; and Kruger, Horst, 4,370,241, Cl. 210-759.000.
Deiner, Hans, to Ciba-Geigy Corporation. Process for the production of an ester mixture, emulsions containing this mixture, and the application thereof. 4,370,366, Cl. 427-389.900.
Dell, Joseph C. Safety-vac lawn mower blade. 4,369,618, Cl. 56-295.000.
Delta Systems, Inc.: *See—*
  Howard, William A., 4,369,745, Cl. 123-198.0DC.
De Luca, Robert, to Johnson & Johnson Dental Products Company. Low silver dental amalgam alloy composition. 4,370,165, Cl. 106-35.000.
Demmer, Wilhelm: *See—*
  Bieg, Hartmut; Jonas, Hans; Rosswurm, Heinz; Demmer, Wilhelm; and Dobel, Ludwig, 4,369,683, Cl. 83-157.000.
Dencs, Bela; Ormos, Zoltan; and Pataki, Karoly, to Mta Muszaki Kemiai Kutato Intezet. Method and apparatus for the recovery of the solid material content of solutions and/or suspensions as granules in a gas fluidized bed. 4,370,198, Cl. 159-48.100.
DeNet, Robert W.: *See—*
  Haviv, Fortuna; DeNet, Robert W.; and Boulanger, William A., 4,370,339, Cl. 424-273.00P.
Denham, Ernest J.: *See—*
  Barker, William I.; and Denham, Ernest J., 4,370,185, Cl. 156-565.000.
Denzinger, Walter: *See—*
  Messmer, Karlheinz; Fischer, Hermann; Hartmann, Heinrich; Denzinger, Walter; Schneider, Rolf; Wulz, Klaus; and Raubenheimer, Hans-Juergen, 4,370,454, Cl. 526-88.000.
Depetris, Norbert; and Bovis, Claude, to Chloe-Chimie. Polyurethane-base material suitable for use for making fire arresting walls. 4,370,445, Cl. 524-742.000.
Dermik Laboratories: *See—*
  Packman, Albert M., 4,370,325, Cl. 424-245.000.
Desanta, Simon, to Kusch & Co., Sitzmohelwerke KG. Chair. 4,369,997, Cl. 297-68.000.
Deschamps, Bernard: *See—*
  Chielens, Alain; Boussekey, Bernard; and Deschamps, Bernard, 4,370,128, Cl. 432-115.000.
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, to Compagnie Francaise des Petroles. Electron beam chamber for butt welding pipes. 4,370,541, Cl. 219-121.0EC.
DeSoto, Inc.: *See—*
  Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, 4,370,441, Cl. 524-539.000.
Detain, Monique: *See—*
  Ceintrey, Claude; and Detain, Monique, 4,370,397, Cl. 430-10.000.
deVries, Louis; and King, John M., to Chevron Research Company. Antioxidant combinations of molybdenum complexes and aromatic amine compounds. 4,370,246, Cl. 252-46.400.
Diamond Shamrock Corporation: *See—*
  Solomon, Frank, 4,370,284, Cl. 264-42.000.
Dickson, William D.: *See—*
  McClain, James E.; Dickson, William D.; and Scott, Howard L., 4,370,098, Cl. 417-18.000.
Didier-Werke AG: *See—*
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Diebold Incorporated: *See—*
  Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; and Leontas, Spiro, 4,370,006, Cl. 312-215.000.

diga - die gasheizung GmbH: *See—*
  Boer, Hubert, 4,370,364, Cl. 427-238.000.
Dill, Ken A.; Zimm, Bruno H.; and Shafer, Richard H., to University of California, The Regents of the. Device for and a method to separate orientable or deformable particles. 4,370,242, Cl. 210-787.000.
Dinkel, Rolf, to Lonza Ltd. Process for the production of 3-picoline. 4,370,481, Cl. 546-251.000.
Discovision Associates: *See—*
  Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,370,679, Cl. 358-318.000.
Disselnkotter, Hans: *See—*
  Oediger, Hermann; Lieb, Folker; and Disselnkotter, Hans, 4,370,280, Cl. 260-465.600.
Ditchfield, Neville J. Coil package with hub forming means contained therein. 4,369,881, Cl. 206-225.000.
Di Tria, Paolo, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and circuit arrangement for automatic signal-level control. 4,370,725, Cl. 364-582.000.
Diversified Products Corporation: *See—*
  Silberman, Ira J.; and James, Calvin E., Sr., 4,369,966, Cl. 272-62.000.
Dobel, Ludwig: *See—*
  Bieg, Hartmut; Jonas, Hans; Rosswurm, Heinz; Demmer, Wilhelm; and Dobel, Ludwig, 4,369,683, Cl. 83-157.000.
Dr. C. Otto & Comp. G.m.b.H: *See—*
  Schulz, Peter, 4,370,363, Cl. 427-230.000.
Dr. Johannes Heidenhain GmbH: *See—*
  Ernst, Alfons, 4,369,578, Cl. 33-1.0PT.
Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See—*
  Jung, Gunther; Bruckner, Hans; Swetly, Peter; and Bozler, Gerhard, 4,370,312, Cl. 424-1.500.
Doersom, Mary E.: *See—*
  Sweigart, Raymond H.; and Doersom, Mary E., 4,370,593, Cl. 313-414.000.
Doi, Kunihiro; Takeyama, Tetsu; and Azuma, Kenkoku, to Mitsubishi Denki Kabushiki Kaisha. Dry deodorizing apparatus. 4,370,301, Cl. 422-122.000.
Dola, Frank P., to AMP Incorporated. Slotted plate terminal renewable as spade terminal. 4,370,009, Cl. 339-31.00R.
Dolan Corrugated Containers Limited: *See—*
  Bunnell, Thomas K., 4,369,682, Cl. 83-112.000.
Dollman, David Y., to Amchem Products, Inc. Composition and method for acid cleaning of aluminum surfaces. 4,370,173, Cl. 134-3.000.
Dombrowski, Philip: *See—*
  Hein, James R.; Herr, Wayne T., Sr.; Niemiec, John J.; and Dombrowski, Philip, 4,369,982, Cl. 280-47.13R.
Dominguez-Ahedo, Carlos; and Guzman-Bofill, Carlos, to Hylsa, S.A. Method for the gaseous reduction of iron ore to sponge iron. 4,370,162, Cl. 75-90.00R.
Donaghue, Paul F.; Love, Thomas L.; Mitchell, Kenneth A. W.; and Pitt, Maxwell G., to ICI Australia Limited. Method for mixing and placing explosive compositions. 4,369,689, Cl. 86-20.00C.
Donaldson, Jay W., to Rockwell International Corporation. Electromagnetic interference. 4,370,515, Cl. 174-35.00R.
Doniger, Jerry; Kirchhein, Albert T.; and Reynolds, Gibson, to Bendix Corporation, The. Controller for a dual servo system. 4,370,706, Cl. 364-184.000.
Donley, William B., to General Motors Corporation. Reduced source capacitance ring-shaped IGFET load transistor in mesa-type integrated circuit. 4,370,669, Cl. 357-23.000.
Donnelly, Donald E.; and Maney, Francis J., to Emerson Electric Co. Control system for blue-flame oil burner. 4,370,125, Cl. 431-66.000.
Doorakian, George A.: *See—*
  Burton, Bruce L.; and Doorakian, George A., 4,370,461, Cl. 528-45.000.
  Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,370,465, Cl. 528-104.000.
Dopp, Robert B., to Ray-O-Vac Corporation. Method for manufacturing cells utilizing centrifuging techniques. 4,369,568, Cl. 29-623.200.
Dorius, Edwin J.: *See—*
  Norris, Amos; and Dorius, Edwin J., 4,369,778, Cl. 128-205.130.
Dow Chemical Company, The: *See—*
  Burton, Bruce L.; and Doorakian, George A., 4,370,461, Cl. 528-45.000.
  Frudd, Francis D., 4,370,215, Cl. 204-242.000.
  Oakes, Billy D., 4,370,256, Cl. 252-391.000.
  Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,370,216, Cl. 204-243.00R.
  Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,370,465, Cl. 528-104.000.
  Zabrocki, Vincent S.; and Bussey, Marlin G., 4,370,378, Cl. 428-339.000.
Dow Corning Corporation: *See—*
  Plueddemann, Edwin P., 4,370,255, Cl. 252-389.00A.
  Ziemelis, Maris J., 4,370,160, Cl. 71-117.000.
Dressler, Mirko; Formanek, Vojtech; Michl, Vaclav; and Stejskal, Miroslav, to Vyzkumny ustav lesniho hospodarstvi a myslivosti. Cutting tool for tree delimbing device. 4,369,824, Cl. 144-343.000.
Dronet, Jean-Marc, to Societe d'Application Plastique Mecanique et Electronique. Arrangement for introducing banderoles or strips into receptacles. 4,370,118, Cl. 425-305.100.
Droz, Serge-Andre. Alarm device for a door, automatically switched off during a licit access. 4,370,644, Cl. 340-528.000.
Dualmatic Manufacturing Company: *See—*
  Fleitas, Arthur M., 4,369,868, Cl. 192-36.000.
Dubeck, Michael: *See—*
  Hargis, Duane C.; and Dubeck, Michael, 4,370,507, Cl. 568-902.000.
Dubroeucq, Georges; Lacombat, Michel; and Brevignon, Michele, to Thomson-CSF. Illuminating device for providing an illumination beam with adjustable distribution of intensity and a pattern-transfer system comprising such a device. 4,370,026, Cl. 350-163.000.
Duddles, Allen L.; and Toomey, Daniel G., to Motorola Inc. RF Package including RF shielding for a multiple PC board. 4,370,700, Cl. 361-424.000.
Dungs, Horst: *See—*
  Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,370,202, Cl. 202-228.000.
Dunn, Robert E.: *See—*
  Bourgraf, Elroy E.; Dunn, Robert E.; and Vance, Ronald D., 4,369,985, Cl. 280-641.000.
Du Pont de Nemours, E. I., and Company: *See—*
  Bond, William B., 4,370,375, Cl. 428-229.000.
  Brake, Loren D., 4,370,503, Cl. 564-474.000.
  Bryan, Paul J.; and Morse, Daniel R., 4,369,708, Cl. 102-202.130.
  Byer, Richard J., 4,370,411, Cl. 430-596.000.
  Ciosek, Bernard M., Jr., 4,369,653, Cl. 73-150.00R.
  Gangal, Subhash V.; and Olson, Allan H., 4,370,376, Cl. 428-241.000.
  Levitt, George, 4,370,479, Cl. 544-278.000.
  Levitt, George; and Petersen, Wallace C., 4,370,480, Cl. 544-320.000.
  Livingston, Richard D., 4,370,061, Cl. 366-85.000.
  Mahr, Tibor G.; and Subramanian, Pallatheri M., 4,370,212, Cl. 204-159.140.
  Schweitzer, Francis E., 4,370,427, Cl. 523-400.000.
  Siemionko, Roger K., 4,370,466, Cl. 528-190.000.
  Spencer, Dudley W. C., 4,369,779, Cl. 128-213.00A.
  Yunan, Malak E., 4,369,688, Cl. 86-1.00R.
Duskin Franchise Kabushiki Kaisha: *See—*
  Mori, Yasuyuki; Nishimura, Haruo; and Sugahara, Yoshikazu, 4,370,300, Cl. 422-108.000.
Dvorak, Neil E.: *See—*
  Huffman, Stanley S.; Neel, Alan F.; Swartout, Christopher A.; and Dvorak, Neil E., 4,370,723, Cl. 364-483.000.
Dynamit Nobel AG: *See—*
  Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, 4,370,204, Cl. 203-39.000.
Dynes, Robert C.; and Mochel, John M., to Bell Telephone Laboratories, Incorporated. Metal-semiconductor thermal sensor. 4,370,640, Cl. 338-25.000.
Dysan Corporation: *See—*
  Davies, Charles A., 4,370,689, Cl. 360-135.000.
Eastern Company, The: *See—*
  Cooper, Donald L.; and Zeidman, Gordon G., 4,369,678, Cl. 81-90.00C.
Eastman, Alan D.; and Kolts, John H., to Phillips Petroleum Company. Oxidative dehydrogenation catalyst. 4,370,259, Cl. 252-437.000.
Eastman Kodak Company: *See—*
  Columbus, Richard L., 4,370,407, Cl. 430-403.000.
  Cruikshank, Susan J.; and Orem, Michael W., 4,370,412, Cl. 430-635.000.
  Jackson, David R.; and Rushing, Allen J., 4,369,732, Cl. 118-681.000.
Eaton Corporation: *See—*
  Aschenbach, Louis F., 4,370,528, Cl. 200-6.0BB.
Eaton Laboratories, Inc.: *See—*
  Davies, William L., 4,370,313, Cl. 424-32.000.
Eberly, Paul E., Jr.; Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research and Engineering Co. Reforming with multimetallic catalysts. 4,370,224, Cl. 208-139.000.
Ebi, Yutaka: *See—*
  Horike, Masanori; Yoshiba, Yutaka; and Ebi, Yutaka, 4,370,664, Cl. 346-75.000.
Eckberg, Richard P.: *See—*
  Hayes, Susan E.; and Eckberg, Richard P., 4,370,358, Cl. 427-54.100.
Eckenrode, Lewis A. Radiator vent valve. 4,369,810, Cl. 137-556.000.
Eckert, Hansdieter: *See—*
  Schmidt, Sylvia; Eckert, Hansdieter; Holzinger, Wolfgang; and Holle, Dietrich, 4,370,200, Cl. 162-210.000.
Eckhardt, Dietrich: *See—*
  Sabet, Huschang; and Eckhardt, Dietrich, 4,370,109, Cl. 418-34.000.
Econ Company: *See—*
  Russell, Benjamin; and Scott, Jerry W., 4,370,153, Cl. 55-304.000.
Edison, David M.: *See—*
  Hummert, George T.; Moser, Thomas D.; and Edison, David M., 4,370,717, Cl. 364-436.000.
Edleblute, Calvin M.: *See—*
  Gise, Glenn A.; and Edleblute, Calvin M., 4,369,577, Cl. 30-276.000.
Edwards, Charles C. Spinal fixation device and method. 4,369,769, Cl. 128-69.000.
Edwards, Richard H.: *See—*
  Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,369,876, Cl. 198-460.000.
Egly, Robert A.; and Sullivan, Patrick, to Egly, Robert A. Magnetic disk storage case. 4,369,879, Cl. 206-45.180.
Ehmke, Edward L., to Motorola, Inc. Battery saver for a tone coded signalling system. 4,370,753, Cl. 455-36.000.

Eiben, Michael R.: *See—*

Phillips, Clarence W.; Eiben, Michael R.; and Morgan, Harvey T., Jr., 4,370,707, Cl. 364-200.000.

Eiken Chemical Co., Ltd.: *See—*

Iida, Tamotsu; Enomoto, Seiji; and Kimura, Michiya, 4,370,419, Cl. 435-301.000.

Ekkerink, Pierre J., to Vredestein N.V. Mattress assembly. 4,369,535, Cl. 5-481.000.

Ela, Roger B.: *See—*

McDonald, Donald C.; Ela, Roger B.; and Pignataro, Dominic F., 4,370,693, Cl. 361-145.000.

Elder Pharmaceuticals, Inc.: *See—*

Kaufman, Kurt D., 4,370,344, Cl. 424-279.000.

Electrolux GmbH: *See—*

Michael, Harald R., 4,370,227, Cl. 210-170.000.

Elias, Jiri: *See—*

Burysek, Frantisek; Mikulecky, Karel; Elias, Jiri; Esner, Stanislav; Skoda, Stanislav; and Janousek, Jan, 4,369,620, Cl. 57-263.000.

Ellouz, Fabrielle: *See—*

Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.

Elmore, Glenn V.: *See—*

Abolafia, Oscar R.; Ameen, Joseph G.; and Elmore, Glenn V., 4,370,197, Cl. 156-659.100.

Elson, Lloyd C. Article dropping kite. 4,369,939, Cl. 244-155.00R.

Eltra Corporation: *See—*

Kern, Calvin V., 4,369,666, Cl. 74-7.00R.

Emerson Electric Co.: *See—*

Donnelly, Donald E.; and Maney, Francis J., 4,370,125, Cl. 431-66.000.

Emery Industries, Inc.: *See—*

Kinsman, Donald V.; and Luken, Clement H., Jr., 4,370,273, Cl. 260-404.500.

Emery, Merton D., to Harbor Industries, Inc. Merchandizing rack. 4,369,887, Cl. 211-49.00D.

Emhart Industries, Inc.: *See—*

Perry, Leroy A.; and Scott, Charles E., 4,370,566, Cl. 307-141.000.

Endo, Hiroshi, to Nissan Motor Company, Limited. Plasma ignition system. 4,369,758, Cl. 123-620.000.

Energy Conversion Devices, Inc.: *See—*

Izu, Masatsugu; Barnard, Timothy J.; and Gattuso, David A., 4,369,730, Cl. 118-723.000.

Engineered Products Company: *See—*

Nelson, Joseph N., 4,369,728, Cl. 116-276.000.

Engstrom, Gary G.; and Bain, Douglas I., to Dearborn Chemical Company. Vermiculite as a deposit modifier in coal fired boilers. 4,369,719, Cl. 110-345.000.

Enokita, Ryuzo: *See—*

Arai, Mamoru; Haneishi, Tatsuo; Nakajima, Mutsuo; Torikata, Akio; and Enokita, Ryuzo, 4,370,266, Cl. 260-112.50R.

Enomoto, Seiji: *See—*

Iida, Tamotsu; Enomoto, Seiji; and Kimura, Michiya, 4,370,419, Cl. 435-301.000.

Eppinger, Mariao: *See—*

Eppinger, Otto; and Eppinger, Mariao, 4,369,718, Cl. 110-163.000.

Eppinger, Otto; and Eppinger, Mariao. Shut-off system for flue gas conduits or air intake conduits in oil and gas fire systems. 4,369,718, Cl. 110-163.000.

Eriksson, Gunno; and Nilarp, Anders, to Asea Aktiebolag. Semiconductor device. 4,370,671, Cl. 357-79.000.

Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Encapsulated angle measuring apparatus. 4,369,578, Cl. 33-1.0PT.

Ernst Leitz Wetzlar GmbH: *See—*

Lenz, Karl J., 4,369,581, Cl. 33-169.00C.

Ertl, Franz: *See—*

Van Bouwel, Leo; Geyken, Erwin; Ertl, Franz; and Fleck, Adolf, 4,370,046, Cl. 354-324.000.

ESCO Manufacturing Company: *See—*

McClain, James E.; Dickson, William D.; and Scott, Howard L., 4,370,098, Cl. 417-18.000.

Esner, Stanislav: *See—*

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Estes, R. Ray: *See—*

Fisher, E. Eugene; Estes, R. Ray; Lokken, Orvin D.; and Paquette, Elmer G., 4,370,350, Cl. 426-5.000.

Estingoy, Henri L. Method and apparatus for knitting hollow articles. 4,369,638, Cl. 66-148.000.

Ethyl Corporation: *See—*

Hargis, Duane C.; and Dubeck, Michael, 4,370,507, Cl. 568-902.000.

Stahly, Barbara C.; and Stahly, G. P., 4,370,278, Cl. 260-465.00E.

Ethyl Products Company: *See—*

Cianciolo, Cosmo J.; Snyder, John R.; and King, Roderick V., 4,369,643, Cl. 72-75.000.

Ostrowsky, Efrem M., 4,369,889, Cl. 215-246.000.

Euerle, Karl. Back-pressure valve for heating installations. 4,369,809, Cl. 137-543.190.

Eufusia, Eugene A.: *See—*

Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,369,876, Cl. 198-460.000.

Evans, David G.: *See—*

Skelly, James K.; Evans, David G.; and Becker, Carl, 4,370,144, Cl. 8-501.000.

Evans, John R.; Fildes, Francis J. T.; and Oliver, Jean E., to Imperial Chemical Industries Limited. Process for preparing freeze-dried liposome compositions. 4,370,349, Cl. 424-365.000.

Everts, Robert G., to Piston Powered Products a division of RW Technologies, Inc. Connecting rod for internal combustion engine. 4,369,742, Cl. 123-193.00P.

Exxon Research and Engineering Co.: *See—*

Agarwal, Pawan K.; and Lundberg, Robert D., 4,370,432, Cl. 524-216.000.

Bearden, Roby; and Stuntz, Gordon F., 4,370,220, Cl. 208-108.000.

Eberly, Paul E., Jr.; Mauldin, Charles H.; and Baird, William C., Jr., 4,370,224, Cl. 208-139.000.

Ostyn, Marcel A., 4,370,247, Cl. 252-46.700.

Ezoe, Mitsuhiko, to Nissan Motor Co., Ltd. Plasma jet ignition system for internal combustion engine. 4,369,756, Cl. 123-620.000.

F. L. Smidth & Co.: *See—*

Rasmussen, Ole S.; and Lund, Peter, 4,369,926, Cl. 241-18.000.

F & P Production Co., Inc.: *See—*

Freeman, Ronnie D.; and Payne, Elton R., 4,369,839, Cl. 166-53.000.

Fabian, Wolfgang: *See—*

Bock, Gustav; and Fabian, Wolfgang, 4,370,270, Cl. 260-245.870.

Fahmy, Moustafa N. I. Broadband elliptic sheet antenna. 4,370,660, Cl. 343-795.000.

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Chan, John Y., 4,370,737, Cl. 365-203.000.

Falbe, Jurgen; Schneller, Peter; Payer, Wolfgang; Forster, Ingrid; Cornils, Boy; Birnkraut, Hans-Walter; Lutze, Siegfried; and Otterbein, Karl, to Ruhrchemie AG. Process for the manufacture of polyolefins. 4,370,458, Cl. 526-138.000.

Farge, Daniel; Roy, Pierre L.; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, to Rhone-Poulenc Industries. Oxacephalosporins. 4,370,478, Cl. 542-427.000.

Farmitalia Carlo Erba S.p.A.: *See—*

Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,370,474, Cl. 536-6.400.

Farr, Glyn P. R.; and Matthews, Colin S., to Lucas Industries Limited. Internal shoe drum brakes for vehicles. 4,369,863, Cl. 188-106.00A.

Fasco, Rudolph. Anchor. 4,369,727, Cl. 114-297.000.

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Kampe, Wolfgang; Thiel, Max; Fauland, Erich; Bicker, Uwe; and Hebold, Gottfried, 4,370,323, Cl. 424-244.000.

Faulkner, D. John, to University of California, The Regents of the. Sceptrin an antimicrobial agent from *Agelas sceptrum*. 4,370,484, Cl. 548-316.000.

Faulkner, Dennis T.; Glennon, Timothy F.; and Markunas, Albert L., to Sundstrand Corporation. Compressor load control for an auxiliary power unit. 4,370,560, Cl. 290-40.00C.

Favereau, Pierre: *See—*

Franclet, Andre; and Favereau, Pierre, 4,369,599, Cl. 47-74.000.

Fawn Engineering Corp.: *See—*

Offutt, Elmer B.; Babich, Edward; and Gillett, William G., 4,369,897, Cl. 221-227.000.

FDX Associates, L.P.: *See—*

Bussard, Robert W., 4,370,295, Cl. 376-133.000.

Bussard, Robert W., 4,370,296, Cl. 376-133.000.

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Langston, Joseph, Jr.; and Murray, Robert J., 4,369,914, Cl. 229-33.000.

Fegley, Richard F.; and Kiss, Steven R., to Paco Winders, Inc. Paper tube cut off saw. 4,370,140, Cl. 493-289.000.

Fenstermaker, Roger W., to Phillips Petroleum Company. Engine performance operating on field gas as engine fuel. 4,370,150, Cl. 55-16.000.

Ferguson, Robert C., to Phillips Petroleum Company. Purification of hydrocarbon streams. 4,370,236, Cl. 210-634.000.

Fetter, Linus A.; Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., to Bell Telephone Laboratories, Incorporated. Fabrication technique for junction devices. 4,370,359, Cl. 427-63.000.

Field Electronics Inc.: *See—*

McCarty, John J.; and Meyer, Kerry L., 4,369,895, Cl. 221-3.000.

Fields, Marvin C.: *See—*

Brownell, George L.; Davie, William R.; and Fields, Marvin C., 4,370,240, Cl. 210-673.000.

Fildes, Francis J. T.: *See—*

Evans, John R.; Fildes, Francis J. T.; and Oliver, Jean E., 4,370,349, Cl. 424-365.000.

Finch, Harvey E.; and Trapanese, Salvatore P., to FPS Development Partnership. Olive oil recovery. 4,370,274, Cl. 260-412.300.

Finley, Arlington L.: *See—*

Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,370,216, Cl. 204-243.00R.

Firestone Tire & Rubber Company, The: *See—*

Charek, Leonard T., 4,369,983, Cl. 280-81.00A.

Fischer, Hermann: *See—*

Messmer, Karlheinz; Fischer, Hermann; Hartmann, Heinrich; Denzinger, Walter; Schneider, Rolf; Wulz, Klaus; and Raubenheimer, Hans-Juergen, 4,370,454, Cl. 526-88.000.

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Fischer, William H.: *See—*

Cookson, Alan H.; Fischer, William H.; Yoon, Kue H.; and Meyer, Jeffry R., 4,370,511, Cl. 174-14.00R.

Fisher, E. Eugene; Estes, R. Ray; Lokken, Orvin D.; and Paquette, Elmer G., to Wm. Wrigley Jr. Company. Chewing gum method. 4,370,350, Cl. 426-5.000.

Fitts, Robert W., to RCA Corporation. Image intensifier tube having an internal alkali baffle. 4,370,586, Cl. 313-102.000.

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Chielens, Alain; Boussekey, Bernard; and Deschamps, Bernard, 4,370,128, Cl. 432-115.000.

Flagg, Rodger H. Apparatus for salvage compacting. 4,369,700, Cl. 100-215.000.

Flanders, Dale C.: *See—*

Shaver, David C.; Smith, Henry I.; and Flanders, Dale C., 4,370,194, Cl. 156-643.000.

Flasza, Michael D.: *See—*

Johnson, Fred D.; Flasza, Michael D.; and Bretl, Wayne E., 4,370,674, Cl. 358-74.000.

Fleck, Adolf: *See—*

Van Bouwel, Leo; Geyken, Erwin; Ertl, Franz; and Fleck, Adolf, 4,370,046, Cl. 354-324.000.

Fleitas, Arthur M., to Dualmatic Manufacturing Company. Automatic clutch for four-wheel drive vehicles. 4,369,868, Cl. 192-36.000.

Fler, Jack P., to Jacmorr Manufacturing Limited. Sliding drawer suspension. 4,370,007, Cl. 312-334.000.

Fluck, David W., to PACCAR Inc. Sun visor system for trucks. 4,369,996, Cl. 296-97.00K.

Fluid Energy Systems Corporation: *See—*

Nagely, John L., 4,370,110, Cl. 418-132.000.

FMC Corporation: *See—*

Liao, Hsjang P.; Mohr, Richard A.; and Start, John F., 4,370,251, Cl. 252-186.420.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Redirecting device for safety belts. 4,369,931, Cl. 242-107.000.

Fohlmeister, Hans D.: *See—*

Heuer, Helmut; Schapsmeier, Wilhelm; and Fohlmeister, Hans D., 4,369,877, Cl. 198-509.000.

Ford & Dain Research Limited: *See—*

Dain, Richard J.; Manning, Gary D.; and Burkin, Alfred R., 4,370,237, Cl. 210-638.000.

Ford Motor Company: *See—*

Lemieux, George E., 4,369,867, Cl. 192-4.00A.

Lewis, Charles W., 4,369,677, Cl. 74-869.000.

Foremost-McKesson, Inc.: *See—*

Weaver, Robert F., 4,370,084, Cl. 414-292.000.

Formanek, Vojtech: *See—*

Dressler, Mirko; Formanek, Vojtech; Michl, Vaclav; and Stejskal, Miroslav, 4,369,824, Cl. 144-343.000.

Forster, Franz; and Stein, Harald, to Linde Aktiengesellschaft. Regulating devices for hydrostatic drive units. 4,370,100, Cl. 417-218.000.

Forster, Ingrid: *See—*

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Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Control device for remote adjustments of ink zones in printing presses. 4,369,706, Cl. 101-365.000.

Fosdick, Robert E., to Tracor, Inc. Computer emulator with three segment microcode memory and two separate microcontrollers for operand derivation and execution phases. 4,370,709, Cl. 364-200.000.

Foseco International Limited: *See—*

Generali, Marcel, 4,369,830, Cl. 164-137.000.

Foster, Donald D.: *See—*

Magers, Wallace F.; and Foster, Donald D., 4,369,899, Cl. 222-153.000.

Foster, John S., Jr.; Wilson, James R.; and McDonald, Charles A., Jr., to United States of America, Energy. Electric generator. 4,370,576, Cl. 310-10.000.

Foster, Robert D.; and Weeden, Frank G. Compacting press with expandable body. 4,370,120, Cl. 425-405.00H.

Fournier, Paul J. E.; and Kunz, Guenter O., to Aeroquip Corporation. Convoluted hose fitting. 4,369,992, Cl. 285-256.000.

Fox, Gary R., to Wadsworth-Greenwood Corporation. Apparatus for obtaining uniform solid colors or variegated patterns in fabrics. 4,369,640, Cl. 68-205.00R.

Foxcroft Associates: *See—*

Robinson, Thomas C.; and Kitrilakis, Sotiris, 4,369,530, Cl. 3-1.700.

FPS Development Partnership: *See—*

Finch, Harvey E.; and Trapanese, Salvatore P., 4,370,274, Cl. 260-412.300.

Francis, Gordon K., to Bell Telephone Laboratories, Incorporated. Variable rate timing circuit. 4,370,525, Cl. 179-16.00A.

Francis, Leonard J.: *See—*

Hutter, Harold G.; and Francis, Leonard J., 4,370,015, Cl. 339-97.00P.

Franclet, Andre; and Favereau, Pierre, to Association Foret-Cellulose. Cultivation balls. 4,369,599, Cl. 47-74.000.

Franken, Jeffrey J.; Gladney, Walter W.; and Yeich, William R., to Western Electric Co., Inc. Compacting particulate material into a body. 4,370,294, Cl. 264-571.000.

Frankie, Thomas T. Hot-air distribution system. 4,369,626, Cl. 60-517.000.

Franz, James H., Jr.; and Jones, Stanley W., to Westinghouse Electric Corp. Shunt field control apparatus and method. 4,370,603, Cl. 318-523.000.

Frazer, Spencer; and Soibelman, Steven P., to Kind Horn Company, The. Loudspeaker and horn combination. 4,369,857, Cl. 181-159.000.

Frazier, Lawrence M.; and Lewis, Benjamin G., to General Dynamics, Pomona Division. Use of bistatic radar system for determining distance between airborne aircraft. 4,370,656, Cl. 343-112.00D.

Freeman, Ronnie D.; and Payne, Elton R., to F & P Production Co., Inc. Casing vacuum system. 4,369,839, Cl. 166-53.000.

Frei, Bernhard: *See—*

Seifert, Helmut; Honl, Wolf-Dieter; Schmid, Johannes; and Frei, Bernhard, 4,369,932, Cl. 242-107.40A.

Frelin, Frank J.; Kelly, Timm L.; and Malloy, Anthony J., to Amchem Products, Inc. Coating solution for metal surfaces. 4,370,177, Cl. 148-6.270.

Friedman, Harry G., to Medtronic, Inc. Body implantable electrode. 4,369,791, Cl. 128-419.00P.

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Frinak, Stanley: *See—*

Bicher, James I.; and Frinak, Stanley, 4,369,795, Cl. 128-736.000.

Fritzsche, Alfred K.: *See—*

Opersteny, Edward J.; and Fritzsche, Alfred K., 4,369,605, Cl. 51-319.000.

Frudd, Francis D., to Dow Chemical Company, The. Renewable electrode assembly. 4,370,215, Cl. 204-242.000.

Fuchikami, Takamasa: *See—*

Ojima, Iwao; and Fuchikami, Takamasa, 4,370,504, Cl. 568-454.000.

Fuerle, Gerard A. Payment responsive data display network. 4,370,649, Cl. 340-825.350.

Fuji Photo Film Co., Ltd.: *See—*

Ohara, Yuji; and Ohnishi, Masahiro, 4,370,667, Cl. 346-108.000.

Sato, Masamichi; Matsumoto, Kenji; and Seki, Kazuhisa, 4,370,025, Cl. 350-166.000.

Sato, Masamichi; Matsumoto, Kenji; and Naito, Shunichi, 4,370,396, Cl. 430-7.000.

Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,370,404, Cl. 430-302.000.

Fuji Photo Optical Co., Ltd.: *See—*

Sato, Masamichi; Matsumoto, Kenji; and Seki, Kazuhisa, 4,370,025, Cl. 350-166.000.

Sato, Masamichi; Matsumoto, Kenji; and Naito, Shunichi, 4,370,396, Cl. 430-7.000.

Fuji Xerox Co., Ltd.: *See—*

Fuse, Mario; and Takenouchi, Mutsuo, 4,370,360, Cl. 427-76.000.

Fujiki, Masao: *See—*

Shiraishi, Fumitake; Fujioka, Masahiko; and Fujiki, Masao, 4,370,687, Cl. 360-98.000.

Fujimatsu, Wataru: *See—*

Iijima, Toshifumi; Fujimatsu, Wataru; and Onodera, Kaoru, 4,370,410, Cl. 430-505.000.

Fujimoto, Katsuhiko: *See—*

Nishikawa, Masao; Toshimitsu, Yoshihiko; Iwasaki, Akira; and Fujimoto, Katsuhiko, 4,369,852, Cl. 180-148.000.

Fujioka, Masahiko: *See—*

Shiraishi, Fumitake; Fujioka, Masahiko; and Fujiki, Masao, 4,370,687, Cl. 360-98.000.

Fujisaki, Kazuuki: *See—*

Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Fujisaki, Kazuuki, 4,370,353, Cl. 426-570.000.

Fujisawa, Norio: *See—*

Andow, Fumio; and Fujisawa, Norio, 4,370,571, Cl. 307-353.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*

Kishimoto, Teiji; Kochi, Hiromu; and Kaneda, Yoshiyuki, 4,370,332, Cl. 424-258.000.

Sato, Yoshinari, 4,370,334, Cl. 424-266.000.

Takaya, Takao; and Tozuka, Zenzaburo, 4,370,326, Cl. 424-246.000.

Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,370,340, Cl. 424-274.000.

Fujishima, Nobuiti; Nakano, Hideharu; and Wada, Yukio, to Matsushita Electric Works, Ltd. Hair dryer. 4,370,544, Cl. 219-370.000.

Fujita, Saburo: *See—*

Kazama, Takahiko; Okamura, Yuji; and Fujita, Saburo, 4,370,291, Cl. 264-210.700.

Fujitsu Fanuc Limited: *See—*

Fukuyama, Hiroomi; and Isobe, Shinichi, 4,370,704, Cl. 364-171.000.

Imazeki, Ryoji; Kusumi, Katsuaki; and Nakajima, Yoshihiro, 4,370,705, Cl. 364-184.000.

Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,370,722, Cl. 364-474.000.

Kawada, Shigeki; and Ishida, Hiroshi, 4,370,614, Cl. 324-173.000.

Fujitsu Limited: *See—*

Kamei, Seisuke; Nabetani, Hideo; and Kinoshita, Ryohei, 4,370,533, Cl. 200-340.000.

Minamitani, Eiji; Ozawa, Kiyoo; and Yokoto, Takashi, 4,370,742, Cl. 370-58.000.

Nawata, Yoshiaki; Nakatani, Yasutaka; and Nakazawa, Haruki, 4,370,670, Cl. 357-36.000.

Ogawa, Tadao; and Yamaguchi, Nobuhide, 4,370,624, Cl. 330-294.000.

Shinoda, Tsutae; Yoshikawa, Kazuo; and Miyashita, Yoshinori, 4,370,599, Cl. 315-217.000.

Takahashi, Yukio, 4,370,736, Cl. 365-155.000.

Fujiwara, Yasuo: *See—*

Kojima, Ichiro; Maruhashi, Kenji; and Fujiwara, Yasuo, 4,370,415, Cl. 435-119.000.

- Fukatsu, Shunzo: *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Kawamura, Kenji; and Fukatsu, Shunzo, 4,370,318, Cl. 424-177.000.
- Fukuhara, Toru; and Utagawa, Ken, to Nippon Kogaku K.K. Focus detecting device. 4,370,551, Cl. 250-201.000.
- Fukuma, Daizo: *See—*
  - Okamoto, Hisao; and Fukuma, Daizo, 4,369,710, Cl. 102-289.000.
- Fukumoto, Terumichi: *See—*
  - Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, 4,370,577, Cl. 310-12.000.
- Fukuyama, Hiroomi; and Isobe, Shinichi, to Fujitsu Fanuc Limited. Feed speed control system. 4,370,704, Cl. 364-171.000.
- Fullalove, Richard, to Henry Simon Limited. Sifting machine. 4,370,226, Cl. 209-332.000.
- Funahashi, Jun: *See—*
  - Chiba, Akio; and Funahashi, Jun, 4,369,981, Cl. 280-5.00A.
- Funaki, Hidefumi, to Anelva Corporation. Target assembly comprising, for use in a magnetron-type sputtering device, a magnetic target plate and permanent magnet pieces. 4,370,217, Cl. 204-298.000.
- Furler, Alan G., to Mallinckrodt, Inc. Probe with electrocardiographic monitoring. 4,369,794, Cl. 128-671.000.
- Furnier-U. Sperrholzwerk, J. F. Werz Jr. KG: *See—*
  - Munk, Edmund; and Huber, Helmuth, 4,369,716, Cl. 108-51.100.
- Furr, Danny L., to Phillips Petroleum Company. Control of fuel gas blending. 4,369,803, Cl. 137-6.000.
- Furuichi, Katsushi: *See—*
  - Murakami, Katsumi; Furuichi, Katsushi; and Honma, Toshio, 4,370,052, Cl. 355-14.00R.
- Furuichi, Shuhei; and Suzuki, Masakazu, to Kabushiki Kaisha Morita Seisakusho. Device for stabilizing tube current in X-ray photographing apparatus. 4,370,752, Cl. 378-110.000.
- Furukawa, Kaoru: *See—*
  - Kakumoto, Hiromi; and Furukawa, Kaoru, 4,370,606, Cl. 320-35.000.
- Furuta, Kenzi: *See—*
  - Kanayama, Katsumi; Motoyama, Kazuyasu; and Furuta, Kenzi, 4,370,684, Cl. 360-74.200.
- Furuya, Katusuke: *See—*
  - Watanabe, Kenkichi; Furuya, Katusuke; and Kimoto, Toyoki, 4,369,800, Cl. 133-8.00R.
- Fuse, Mario; and Takenouchi, Mutsuo, to Fuji Xerox Co., Ltd. Film type light receiving element and sputter method of manufacturing the same. 4,370,360, Cl. 427-76.000.
- Fushiki, Yasuo: *See—*
  - Uekita, Masakazu; Fushiki, Yasuo; and Abe, Masaharu, 4,370,386, Cl. 428-458.000.
- Futami, Toshio; and Yoshida, Kazutoshi, to Hitachi, Ltd. Magnetic bubble memory device. 4,370,735, Cl. 365-16.000.
- Fuzeau, Michel: *See—*
  - de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,370,541, Cl. 219-121.0EC.
- Fuzii, Tadashi: *See—*
  - Toyoda, Tsutomu; Maekawa, Iwao; Izumi, Hirobumi; and Fuzii, Tadashi. 4,370,446, Cl. 525-36.000.
- Gadelle, Claude; Burger, Jacques; and Bardon, Charles, to Institut Francais du Petrole. Process for consolidating geological formations. 4,370,078, Cl. 405-264.000.
- Gaffar, Abdul, to Colgate-Palmolive Company. Oral composition containing antibacterial agent. 4,370,314, Cl. 424-54.000.
- Gaffin, Stephen L.: *See—*
  - Neeman, Ishak; and Gaffin, Stephen L., 4,370,413, Cl. 435-39.000.
- Gagliardi, Georges, to Ateliers et Chantiers de Bretagne. Remote manipulator arm. 4,370,091, Cl. 414-735.000.
- Gaku, Morio; and Ikeguchi, Nobuyuki, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition from polyfunctional aromatic ester and maleimide compound. 4,370,467, Cl. 528-322.000.
- Galliani, Giulio: *See—*
  - Omodei-Sale, Amedeo; Consonni, Pietro; Galliani, Giulio; and Lerner, Leonard, 4,370,336, Cl. 424-269.000.
  - Omodei-Sale', Amedeo; Consonni, Pietro; and Galliani, Giulio, 4,370,337, Cl. 424-269.000.
- Gamm, Paul B., to Jung Products, Inc. Multi-purpose anatomical support wrap. 4,369,775, Cl. 128-166.000.
- Gamou, Takaharu: *See—*
  - Moriwaki, Yoshio; Gamou, Takaharu; Yanagihara, Nobuyuki; Yamashita, Toshio; and Iwaki, Tsutomu, 4,370,163, Cl. 420-582.000.
- Gangal, Subhash V.; and Olson, Allan H., to Du Pont de Nemours, E. I., and Company. Tetrafluoroethylene polymer dispersions. 4,370,376, Cl. 428-241.000.
- Gannaway, Edwin L., to Tecumseh Products Company. Discharge gas temperature control. 4,370,099, Cl. 417-32.000.
- Gant, Gary L.: *See—*
  - Muntean, George; Wilson, Harry L.; and Gant, Gary L., 4,369,750, Cl. 123-505.000.
- Gardel, William: *See—*
  - Mizoule, Henri, 4,369,579, Cl. 33-1.00M.
- Garlanov, Dimo T.; Beloev, Marin G.; Hlebarov, Vladimir P.; Kolarova, Mariana V.; and Vangelov, Ivan V., to NPK za Kontrolno Zavarachni Raboti. Device for the manual start-up of a plasma torch. 4,370,539, Cl. 219-121.0PW.
- Garlanov, Dimo T.: *See—*
  - Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., 4,369,919, Cl. 239-79.000.
- Garnett, Eric W. D.: *See—*
  - Lane, Marvin M.; and Garnett, Eric W. D., 4,369,886, Cl. 209-564.000.
- Garrett, Elgie E.: *See—*
  - Capek, Raymond G.; and Garrett, Elgie E., 4,370,630, Cl. 333-24.00C.
- Gartside, Robert J.: *See—*
  - Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,370,303, Cl. 422-144.000.
- Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, to DeSoto, Inc. Siliconized polyester thermosetting coating compositions. 4,370,441, Cl. 524-539.000.
- Gattuso, David A.: *See—*
  - Izu, Masatsugu; Barnard, Timothy J.; and Gattuso, David A., 4,369,730, Cl. 118-723.000.
- Gatzke, Kenneth G.: *See—*
  - Winslow, John M.; and Gatzke, Kenneth G., 4,370,401, Cl. 430-178.000.
- Gaudio, John J. Pattern generation system. 4,370,733, Cl. 364-900.000.
- Gaus, Hermann, to Daimler-Benz Aktiengesellschaft. Kick-down circuit for automatic change-speed transmissions. 4,369,676, Cl. 74-868.000.
- Gebel, Iosif D.; Zykov, Arkady A.; Lvov, Vladimir M.; Nefedov, Askold I.; Parshikov, Viktor I.; Starkina, Marina Y.; Klibanov, Mendel S.; Ryss, Alexandr S., deceased; and by Ryss, Maria I., legal representative. Method of positioning and rotating workpiece and arrangement implementing same. 4,369,603, Cl. 51-236.000.
- Gehring, Fritz; Windischbauer, Florian; and Haussler, Horst, to Lindauer Dornier Gesellschaft mbH. Device for coupling a heddle frame to vertically reciprocating drive bars. 4,369,815, Cl. 139-57.000.
- Gelinas, Wilfred R., to Harris Corporation. Printing press. 4,369,705, Cl. 101-177.000.
- General Atomic Company: *See—*
  - Purcell, John R.; Chen, Wilkie Y.; and Toffolo, Walter E., 4,369,636, Cl. 62-514.00R.
- General Dynamics Corporation: *See—*
  - McArdle, Beryl L., 4,370,519, Cl. 178-22.140.
- General Dynamics, Pomona Division: *See—*
  - Frazier, Lawrence M.; and Lewis, Benjamin G., 4,370,656, Cl. 343-112.00D.
- General Electric Company: *See—*
  - Berkowitz, Ami E.; Lahut, Joseph A.; and Wang, Jish M., 4,370,661, Cl. 346-74.500.
  - Hayes, Susan E.; and Eckberg, Richard P., 4,370,358, Cl. 427-54.100.
  - Leroux, Marcel H., 4,370,070, Cl. 374-170.000.
  - Madden, James A.; and LeDuc, Kenneth C., 4,369,570, Cl. 29-730.000.
  - Mahony, John E., 4,370,646, Cl. 340-722.000.
  - McCoy, Charles E., Jr.; and Crowgey, James L., 4,370,713, Cl. 364-424.000.
  - Perman, Gifford T.; and Poff, David A., 4,369,684, Cl. 83-216.000.
  - Sugalski, Raymond K., 4,369,571, Cl. 29-731.000.
  - VanPatten, John R., 4,370,636, Cl. 335-132.000.
  - Webster, Harold F., 4,370,590, Cl. 313-391.000.
  - Wellman, Carl E., Jr.; and Hornung, Richard E., 4,370,692, Cl. 361-109.000.
- General Electric Company Limited, The: *See—*
  - Newbould, Adrian O., 4,370,691, Cl. 361-62.000.
- General Motors Corporation: *See—*
  - Donley, William B., 4,370,669, Cl. 357-23.000.
- General Scanning, Inc.: *See—*
  - Montagu, Jean I., 4,370,613, Cl. 324-154.00R.
- Generali, Marcel, to Foseco International Limited. Sealing joints in moulds. 4,369,830, Cl. 164-137.000.
- George, Kathleen F., to Union Carbide Corporation. Catalyst composition for copolymerizing ethylene. 4,370,456, Cl. 526-125.000.
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  - Gregory, William D.; and Morelli, Luigi, 4,370,611, Cl. 324-61.00R.
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  - Wight, Edward M., 4,369,612, Cl. 53-494.000.
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- Graham, Roy R., to PPG Industries, Inc. Aqueous dispersion of glass fibers and method and composition for producing same. 4,370,169, Cl. 106-267.000.
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- Groom, James S., to Package Machinery Company. Tonnage indicator for injection molding machine. 4,370,116, Cl. 425-171.000.
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  - Bouchard, Andre C.; Hall, Harold H., Jr.; and Loughridge, Frederick A., 4,369,556, Cl. 29-25.150.
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- Guzy, Raymond L., to Hughes Tool Company. Splice for lead-coated and insulated conductors. 4,370,518, Cl. 174-84.00R.
- Haass, Adolf, to Siemens Aktiengesellschaft. Process and an apparatus for transmitting data across a two-wire line. 4,370,741, Cl. 370-24.000.
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- Haberl, Rainer; and Kastner, Josef, to Semperit AG. Capacitor for measuring forces. 4,370,697, Cl. 361-283.000.
- Habich, Adolph B.; and Hunt, Ronald E., to International Business Machines Corp. Print package. 4,370,071, Cl. 400-144.200.
- Hagen, Hans, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Passenger vehicle such as a bus having a laterally extending stair assembly. 4,369,984, Cl. 280-166.000.
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- Hagman, Emanuel F. Disc-type check valve. 4,369,808, Cl. 137-515.500.
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- Hamano, Isao; and Yabunaka, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Method of connecting armature coil of rotary machine. 4,369,910, Cl. 228-110.000.
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- Hanson, Donald B.; and Metzger, Frederick B., to United Technologies Corporation. Noise reduction means for prop-fan. 4,370,097, Cl. 416-228.000.
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- Hargrave, Thomas A., to Rockwell International Corporation. Electrical interlock. 4,370,694, Cl. 361-179.000.
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- Hartmann, Heinrich: *See—*
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- Haworth Mfg., Inc.: *See—*
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- Hedman, Dale E.: *See—*
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- Hendrickson, Vergil P., to Caterpillar Tractor Co. Multi-piece wheel structure. 4,369,826, Cl. 152-410.000.
- Hendriks, Petrus F. A. M.; Jansen, Arie; van den Berg, Willem B.; and Hoek, Cornelis, to Unie van Kunstmestfabrieken, B.V. Two-phase spraying device and reaction chamber for the preparation of a product containing ammonium orthophosphate. 4,370,304, Cl. 422-224.000.
- Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
  - Preuss, Wolfgang, 4,370,271, Cl. 260-397.450.
- Henry Simon Limited: *See—*
  - Fullalove, Richard, 4,370,226, Cl. 209-332.000.
- Henson, George S.; and Brooks, Joe, to Mobell Blowout Services Limited. Oil well blow-out control. 4,369,845, Cl. 166-298.000.
- Heraeus Quarzschmelze GmbH: *See—*
  - Schulke, Karl A., 4,370,158, Cl. 65-32.000.
- Herbrechtsmeier, Peter; Schafer, Hans; and Steiner, Rudolf, to Hoechst Aktiengesellschaft. Process and apparatus for gassing liquids. 4,370,151, Cl. 55-38.000.
- Herbst, Heiner; Pfleiderer, Hans-Joerg; and Grassl, Hans-Peter, to Siemens Aktiengesellschaft. Circuit for the sensor controlled distance measurement. 4,370,724, Cl. 364-561.000.
- Hercules Incorporated: *See—*
  - Leipold, Dianne P., 4,370,354, Cl. 426-573.000.
- Heredia, Juan. Quick release device for fishing leader lines. 4,369,551, Cl. 24-201.00A.
- Herr, Wayne T., Sr.: *See—*
  - Hein, James R.; Herr, Wayne T., Sr.; Niemiec, John J.; and Dombrowski, Philip, 4,369,982, Cl. 280-47.13R.
- Herzig, Heinrich G.; and Rothfuss, Robert, to Wella Aktiengesellschaft. Coiffure demonstration head model. 4,370,137, Cl. 434-94.000.
- Heuer, Helmut; Schapsmeier, Wilhelm; and Fohlmeister, Hans D., to Weserhutte Aktiengesellschaft. Stockpile reclaiming apparatus. 4,369,877, Cl. 198-509.000.
- Heuft, Bernhard. Apparatus for laterally deflecting articles. 4,369,873, Cl. 198-/367.000.
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  - Hunsinger, Dan M., 4,370,569, Cl. 307-266.000.
  - O'Toole, Michael M.; Liu, En-Den D.; and Chang, Mark S., 4,370,405, Cl. 430-312.000.
- Hicks, Alan A.; Morrison, Howard J.; Wildman, John R.; and Webb, Terry E., to Marvin Glass & Associates. Counting device with ball actuated aligned rotatable indicating elements. 4,370,064, Cl. 368-93.000.
- Hidding, Walter E. Snap-up cover for spice dispenser. 4,369,901, Cl. 222-480.000.
- Higgins, William E.; and Lazzara, Richard C., to Advanced Technology & Research, Inc. Method of joining honeycomb panels using a fastener element. 4,370,372, Cl. 428-116.000.
- Hill, Fred G. Antenna apparatus and method for making same. 4,370,658, Cl. 343-713.000.
- Hill, Jeffrey A.: *See—*
  - Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; and Leontas, Spiro, 4,370,006, Cl. 312-215.000.
- Hiller, Dietrich; Klatt, Peter; and Reul, Bernhard, to Hoechst Aktiengesellschaft. Device for the prophylactic or therapeutic treatment of cattle. 4,369,783, Cl. 128-260.000.
- Hiltpold, William R., to American Microsystems, Inc. VMOS Memory cell and method for making same. 4,369,564, Cl. 29-571.000.
- Hiraguri, Seisuke, to Victor Company of Japan, Ltd. Circuit for time compression and expansion of audio signals. 4,370,524, Cl. 179-15.55T.
- Hirakura, Koji; Sawada, Yasuo; Watase, Kenta; and Kitamura, Takahiko, to Ricoh Company, Ltd. Toner concentration control apparatus. 4,369,733, Cl. 118-691.000.
- Hirano, Junzo; and Inoue, Yukio, to Nippon Telegraph & Telephone Public Corp. Time division multiplex communication system. 4,370,744, Cl. 370-88.000.
- Hirata, Atsumi, to Victor Company of Japan, Ltd. Rotary recording medium. 4,370,740, Cl. 369-276.000.
- Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, to Toyo Seikan Kaisha, Ltd. Plastic bottles and process for preparation thereof. 4,370,368, Cl. 428-35.000.
- Hiratsuka, Ko: *See—*
  - Sasaki, Michiaki; Yamamoto, Kiyokazu; and Hiratsuka, Ko, 4,370,102, Cl. 417-296.000.
- Hirayama, Kazuhiro; and Ito, Michio, to Canon Kabushiki Kaisha. Developer supply device. 4,370,053, Cl. 355-14.00D.
- Hirayama, Tsutomu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engine cooling system with optionally communicable head cooling circuit and block cooling circuit, and method of operating the same. 4,369,738, Cl. 123-41.100.
- Hirose, Katsutoshi: *See—*
  - Murase, Isao; Hirose, Katsutoshi; and Yoneya, Shoji, 4,370,060, Cl. 356-417.000.
- Hiroshige, Kunie: *See—*
  - Katagiri, Mikio; Sakota, Yukio; Hiroshige, Kunie; and Adachi, Yukio, 4,370,187, Cl. 156-244.230.
- Hirschberg, Rudolf; and Schonfeld, Bernd, to Riedel-De Haen Aktiengesellschaft. Chlorofluoroferrate(II,III), a process for its manufacture, its use and a grinding wheel containing chlorofluoroferrate(II,III). 4,370,148, Cl. 51-293.000.
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  - Soma, Kenichiro; Kuma, Shoji; Sakaguchi, Harunori; Shirai, Hisanari; Ito, Ryoichi; and Shiina, Toshio, 4,370,517, Cl. 174-74.00A.
- Hitachi Chemical Company, Ltd.: *See—*
  - Toyoda, Tsutomu; Maekawa, Iwao; Izumi, Hirobumi; and Fuzii, Tadashi, 4,370,446, Cl. 525-36.000.
- Hitachi Construction Machinery Co., Ltd.: *See—*
  - Izumi, Eiki; Honma, Kazuo; Abe, Katsuro; Uno, Masaaki; and Nakajima, Kichio, 4,369,625, Cl. 60-327.000.
- Hitachi Heating Appliances Co., Ltd.: *See—*
  - Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, 4,370,545, Cl. 219-491.000.
- Hitachi Koki Company, Limited: *See—*
  - Kobayashi, Jyuro; Ito, Masanori; and Ishikawa, Hiroyasu, 4,370,579, Cl. 310-50.000.
- Hitachi, Ltd.: *See—*
  - Futami, Toshio; and Yoshida, Kazutoshi, 4,370,735, Cl. 365-16.000.
  - Kajiwara, Toshiyuki, 4,369,646, Cl. 72-243.000.
  - Kaneko, Kenji; and Okabe, Takahiro, 4,370,627, Cl. 331-108.00D.
  - Matsushita, Yasuo; Takeda, Yukio; Nakamura, Kousuke; and Okoshi, Tokio, 4,370,421, Cl. 501-88.000.
  - Muramatsu, Akira, 4,369,565, Cl. 29-580.000.
  - Satoh, Yoshio, 4,370,591, Cl. 313-402.000.
  - Ueno, Sadayasu; Sato, Kanemasa; Oyama, Yoshishige; Nishimura, Yutaka; and Miya, Kazuhiko, 4,369,656, Cl. 73-204.000.
- Hitaci, Ltd.: *See—*
  - Miyanaka, Motoshi; Toudo, Kenzi; Kudo, Yoshinori; and Nakagawa, Sumio, 4,370,126, Cl. 431-73.000.
- Hlebarov, Vladimir P.: *See—*
  - Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., 4,369,919, Cl. 239-79.000.
  - Garlanov, Dimo T.; Beloev, Marin G.; Hlebarov, Vladimir P.; Kolarova, Mariana V.; and Vangelov, Ivan V., 4,370,539, Cl. 219-121.0PW.
- Ho, Winston: *See—*
  - Mohrbacher, Richard; Ho, Winston; and Tutwiler, Gene, 4,370,343, Cl. 424-275.000.
- Hobart, Floyd E., Jr., to Western Electric Company, Inc. Universal strand clamp and strand clamp assembly. 4,369,944, Cl. 248-56.000.
- Hoechst Aktiengesellschaft: *See—*
  - Boesenberg, Heinz; Horlein, Gerhard; Kocher, Helmut; and Langeluddeke, Peter, 4,370,489, Cl. 560-62.000.
  - Gildemeister, Horst; Mildenberger, Hilmar; Knauf, Werner; Waltersdorfer, Anna; and Sachse, Burkhard, 4,370,320, Cl. 424-200.000.
  - Herbrechtsmeier, Peter; Schafer, Hans; and Steiner, Rudolf, 4,370,151, Cl. 55-38.000.
  - Hiller, Dietrich; Klatt, Peter; and Reul, Bernhard, 4,369,783, Cl. 128-260.000.
  - Papenfuhs, Theodor, 4,370,483, Cl. 548-165.000.
  - Schwaiger, Gunther; and Hoyer, Ernst, 4,370,145, Cl. 8-549.000.
  - Uhle, Karlheinz; and Kramer, Horst, 4,369,648, Cl. 73-61.400.
  - Uhle, Karlheinz; and Kramer, Horst, 4,369,649, Cl. 73-61.400.
  - Weingarten, Friedrich W.; Hunger, Klaus; and Klappert, Ernst, 4,370,269, Cl. 260-157.000.
  - Welter, Wolfgang; and Mildenberger, Hilmar, 4,370,277, Cl. 260-465.00F.
  - Welter, Wolfgang; Mildenberger, Hilmar; Knauf, Werner; Waltersdorfer, Anna; and Bonin, Werner, 4,370,345, Cl. 424-282.000.
  - Wunder, Friedrich; Quadflieg, Therese; Roscher, Gunter; and Heck, Gunther, 4,370,261, Cl. 252-460.000.
  - Wunder, Friedrich; Quadflieg, Therese; Roscher, Gunter; and Heck, Gunther, 4,370,492, Cl. 560-245.000.
- Hoek, Cornelis: *See—*
  - Hendriks, Petrus F. A. M.; Jansen, Arie; van den Berg, Willem B.; and Hoek, Cornelis, 4,370,304, Cl. 422-224.000.
- Hoelzle & Chelius KG: *See—*
  - Affonso, Alvaro, 4,370,305, Cl. 422-292.000.
- Hoffman, Joseph A., to American Cyanamid Company. Hindered amine light stabilizers for polymers. 4,370,430, Cl. 524-96.000.
- Hoffmann, Arthur K.: *See—*
  - Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, 4,370,482, Cl. 548-155.000.

- Hoffmann, Herwig: *See—*
  - Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Schaefer, Eberhard, 4,370,491, Cl. 560-234.000.
- Hohyu Rubber Co., Ltd.: *See—*
  - Nakahira, Akitaro, 4,370,371, Cl. 428-65.000.
- Holle, Dietrich: *See—*
  - Schmidt, Sylvia; Eckert, Hansdieter; Holzinger, Wolfgang; and Holle, Dietrich, 4,370,200, Cl. 162-210.000.
- Holman, George B.: *See—*
  - Powers, Charles A.; Holman, George B.; and Smith, Robert C., 4,370,166, Cl. 106-97.000.
- Holmes, William A., to Polaroid Corporation. Film processor. 4,370,045, Cl. 354-304.000.
- Holt, James L.; Mahoney, John M.; and McLeod, Kenneth M., to Outboard Marine Corporation. Electronic lubricant metering system. 4,369,743, Cl. 123-196.00S.
- Holtz, R. Barry, to Spawn Mate, Inc. Nutrient for mushroom growth and process for producing same. 4,370,159, Cl. 71-5.000.
- Holzinger, Wolfgang: *See—*
  - Schmidt, Sylvia; Eckert, Hansdieter; Holzinger, Wolfgang; and Holle, Dietrich, 4,370,200, Cl. 162-210.000.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Hamane, Masumi; and Kondo, Makoto, 4,369,674, Cl. 74-752.00E.
  - Niitsu, Mitsugi; Yamazaki, Shuichi; and Kimura, Shigeru, 4,370,013, Cl. 339-82.000.
  - Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,369,695, Cl. 91-375.00A.
  - Nishikawa, Masao; Toshimitsu, Yoshihiko; Iwasaki, Akira; and Fujimoto, Katsuhiko, 4,369,852, Cl. 180-148.000.
- Honeywell Inc.: *See—*
  - Axmark, Roger E.; and Satren, Ernest A., 4,370,557, Cl. 250-554.000.
  - Griffin, Patrick J., 4,370,604, Cl. 318-687.000.
  - Lane, Charles E., III, 4,370,018, Cl. 339-263.00R.
  - Zansky, Zoltan, 4,370,600, Cl. 315-244.000.
- Honeywell Information Systems Inc.: *See—*
  - Bruce, Kenneth E.; Conway, John W.; Lombardo, Ralph M., Jr.; and Tarbox, Bruce H., 4,370,708, Cl. 364-200.000.
  - Johnson, Robert B.; and Nibby, Chester M., Jr., 4,370,712, Cl. 364-200.000.
  - Keene, Bruce C., 4,370,573, Cl. 307-514.000.
  - Nielsen, Raymond E., 4,370,574, Cl. 307-514.000.
- Hongu, Masayuki; Omuro, Shigeru; Kita, Hiroyuki; and Tokuhara, Masaharu, to Sony Corporation. Carrier regenerating circuit for a synchronous detector. 4,370,676, Cl. 358-188.000.
- Honigsberg, Charles A.: *See—*
  - Pennell, William E.; and Honigsberg, Charles A., 4,369,893, Cl. 220-378.000.
- Honl, Wolf-Dieter: *See—*
  - Seifert, Helmut; Honl, Wolf-Dieter; Schmid, Johannes; and Frei, Bernhard, 4,369,932, Cl. 242-107.40A.
- Honma, Kazuo: *See—*
  - Izumi, Eiki; Honma, Kazuo; Abe, Katsuro; Uno, Masaaki; and Nakajima, Kichio, 4,369,625, Cl. 60-327.000.
- Honma, Toshio: *See—*
  - Murakami, Katsumi; Furuichi, Katsushi; and Honma, Toshio, 4,370,052, Cl. 355-14.00R.
- Honma, Tsunetoshi: *See—*
  - Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, 4,370,475, Cl. 536-16.800.
- Hoover, Richard B., to United States of America, National Aeronautics and Space Administration. Extended range X-ray telescope. 4,370,750, Cl. 378-43.000.
- Horii, Shigeru; Yoshikawa, Nobuhisa; and Koyama, Kazutaka, to Matsushita Electric Industrial Co., Ltd. High pressure discharge lamp apparatus. 4,370,601, Cl. 315-307.000.
- Horike, Masanori; Yoshiba, Yutaka; and Ebi, Yutaka, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,370,664, Cl. 346-75.000.
- Horikoshi, Katsunori; and Abe, Tsutomu, to Asahi Kasei Kogyo Kabushiki Kaisha. Granulocyte-separating material and granulocyte separator. 4,370,381, Cl. 428-392.000.
- Horizon Chemical, Inc.: *See—*
  - Kenny, Thomas C.; and Plunkett, John P., 4,370,147, Cl. 44-68.000.
- Horlein, Gerhard: *See—*
  - Boesenberg, Heinz; Horlein, Gerhard; Kocher, Helmut; and Langeluddeke, Peter, 4,370,489, Cl. 560-62.000.
- Hornbeck, Sherman J.; and Thornton, Jack C., to Rockwell International Corporation. IMD Limiter. 4,370,622, Cl. 330-207.00P.
- Hornbuckle, William M. Sheet feed machine. 4,369,959, Cl. 271-3.100.
- Hornung, Richard E.: *See—*
  - Wellman, Carl E., Jr.; and Hornung, Richard E., 4,370,692, Cl. 361-109.000.
- Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Borated hydroxyl-containing acid esters and lubricants containing same. 4,370,248, Cl. 252-49.600.
- Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,370,384, Cl. 428-425.900.
- Hosoi, Sadao; and Takano, Masayuki, to Sony Corporation. Head tracking control system for a helical scan VTR. 4,370,685, Cl. 360-77.000.
- Hosokawa, Minoru: *See—*
  - Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,370,065, Cl. 368-157.000.
- Hoster, Clyde H. Hoists. 4,370,089, Cl. 414-589.000.
- Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, to Hitachi Heating Appliances Co., Ltd. Cooking apparatus. 4,370,545, Cl. 219-491.000.
- Hou, Shou L.; and Tashiro, Isao, to Ricoh Company, Ltd. Ink jet array ultrasonic simulation. 4,370,662, Cl. 346-75.000.
- Houchins, Stanley L.; and Jackson, Thomas B. Sink assembly. 4,369,532, Cl. 4-619.000.
- Howa Kogyo Kabushiki Kaisha: *See—*
  - Kogiso, Takashi, 4,369,621, Cl. 57-267.000.
- Howard, Richard E.: *See—*
  - Fetter, Linus A.; Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,370,359, Cl. 427-63.000.
- Howard, William A., to Delta Systems, Inc. Safety interlock for machine and engine with magneto ignition. 4,369,745, Cl. 123-198.0DC.
- Howmedica, Inc.: *See—*
  - Giggey, Robert W.; Serletic, Bernard T.; and Ashley, Charles R., 4,369,880, Cl. 206-63.300.
- Hoy, Douglas B.: *See—*
  - Henderson, Alva; and Hoy, Douglas B., 4,370,628, Cl. 331-111.000.
- Hoyer, Ernst: *See—*
  - Schwaiger, Gunther; and Hoyer, Ernst, 4,370,145, Cl. 8-549.000.
- Hsien-Sen, Liao. Peel concentrating clearance box. 4,369,574, Cl. 30-123.500.
- Hu, Evelyn L.: *See—*
  - Fetter, Linus A.; Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,370,359, Cl. 427-63.000.
- Huber, Helmuth: *See—*
  - Munk, Edmund; and Huber, Helmuth, 4,369,716, Cl. 108-51.100.
- Hudson, Howard J.: *See—*
  - Barch, Herbert W.; Melle, Carl A.; McWilliams, Donald E.; and Hudson, Howard J., 4,370,157, Cl. 65-3.430.
- Huffman, Stanley S.; Neel, Alan F.; Swartout, Christopher A.; and Dvorak, Neil E., to Peak Demand Limiters, Inc. Computerized energy management system. 4,370,723, Cl. 364-483.000.
- Huge, Gerald W., to Professional Positioners, Inc. Tooth positioner with harder areas. 4,370,129, Cl. 433-6.000.
- Hughes Aircraft Company: *See—*
  - Lau, Kreisler S. Y., 4,370,501, Cl. 564-330.000.
- Hughes, Richard H.; and Marks, Bruce G., to RCA Corporation. Color picture tube having an improved inline electron gun with an expanded focus lens. 4,370,592, Cl. 313-414.000.
- Hughes Tool Company: *See—*
  - Guzy, Raymond L., 4,370,518, Cl. 174-84.00R.
- Humber, Leslie G.: *See—*
  - Asselin, Andre A.; and Humber, Leslie G., 4,370,341, Cl 424-274.000.
- Hummert, George T.; Moser, Thomas D.; and Edison, David M., to Westinghouse Electric Corp. Elevator bank simulation system. 4,370,717, Cl. 364-436.000.
- Humphrey, Kenneth M., to Underwater and Marine Equipment Limited. Flexible tubular joint. 4,369,814, Cl. 138-120.000.
- Humphrey, William D.: *See—*
  - Grover, Richard L.; and Humphrey, William D., 4,369,894, Cl. 220-414.000.
- Hung, Paul P.; Lee, Shaw-Guang; Roychoudhury, Ranajit; Ratzkin, Barry J.; Schrenk, W. Jurgen; and Chen, Michael C., to Abbott Laboratories. Recombinant deoxyribonucleic acid which codes for plasminogen activator. 4,370,417, Cl. 435-212.000.
- Hunger, Klaus: *See—*
  - Weingarten, Friedrich W.; Hunger, Klaus; and Klappert, Ernst, 4,370,269, Cl. 260-157.000.
- Hunsinger, Dan M., to Hewlett-Packard Company. Integratable single pulse circuit. 4,370,569, Cl. 307-266.000.
- Hunt, Ronald E.: *See—*
  - Habich, Adolph B.; and Hunt, Ronald E., 4,370,071, Cl. 400-144.200.
- Hurst, Ronald C.: *See—*
  - Williams, Frank R.; and Hurst, Ronald C., 4,370,308, Cl. 423-450.000.
- Hussein, Said. Model train crossing gate. 4,369,943, Cl. 246-127.000.
- Hutchins, Ferris L., Jr.: *See—*
  - Ingersoll, Brian; and Hutchins, Ferris L., Jr., 4,369,715, Cl. 108-2.000.
- Hutchison, Marion: *See—*
  - Buschbom, Floyd E.; and Hutchison, Marion, 4,369,855, Cl. 180-212.000.
- Hutter, Harold G.; and Francis, Leonard J., to Bunker Ramo Corporation. Coaxial tap connector. 4,370,015, Cl. 339-97.00P.
- Hutter, Odo: *See—*
  - Kettner, Hans; and Hutter, Odo, 4,369,874, Cl. 198-396.000.
- Hyatt, Gilbert P. Coordinate rotation for numerical control system. 4,370,720, Cl. 364-474.000.
- Hybler, Ludmila, to Phillips Petroleum Company. Method and apparatus for cathodic protection. 4,370,211, Cl. 204-148.000.
- Hyde, Leland M.: *See—*
  - David, Paul E.; and Hyde, Leland M., 4,369,918, Cl. 237-55.000.
- Hyde, Thomas G.: *See—*
  - Clubley, Brian G.; Hyde, Thomas G.; and Keenan, John F. E., 4,370,281, Cl. 260-966.000.
- Hylsa, S.A.: *See—*
  - Dominguez-Ahedo, Carlos; and Guzman-Bofill, Carlos, 4,370,162, Cl. 75-90.00R.
- I. Bager & Co. A/S: *See—*
  - Nielsen, Erik S.; and Stacker, Poul, 4,369,619, Cl. 57-58.340.

- Ichikoh Industries Limited: *See—*
  - Tamura, Takeo; Kido, Takayoshi; and Nakamura, Tatsuo, 4,369,542, Cl. 15-250.00B.
- Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, to Toyo Seikan Kaisha, Ltd. Peelable bonded structures and process for preparing same. 4,370,190, Cl. 156-307.300.
- Ichiyanagi, Toshikazu: *See—*
  - Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,370,037, Cl. 354-23.00D.
- ICI Australia Limited: *See—*
  - Donaghue, Paul F.; Love, Thomas L.; Mitchell, Kenneth A. W.; and Pitt, Maxwell G., 4,369,689, Cl. 86-20.00C.
- Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, to Shionogi & Co., Ltd. Apramycin derivatives. 4,370,475, Cl. 536-16.800.
- Igarashi, Toshiji; Nomura, Keiichi; Naito, Kunji; and Yoshida, Mikihiko, to Hayashibara Biochemical Laboratories, Inc. Plasma expander. 4,370,472, Cl. 536-1.100.
- Iida, Hiroshi: *See—*
  - Ito, Kosuke; Iida, Hiroshi; Harada, Masanori; and Hatakenaka, Masato, 4,369,752, Cl. 123-568.000.
- Iida, Tamotsu; Enomoto, Seiji; and Kimura, Michiya, to Eiken Chemical Co., Ltd. Tray for identifying microorganisms. 4,370,419, Cl. 435-301.000.
- Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Kano, Toshiji; Yamada, Kiyoshi; and Hatta, Yoshio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Electrolytic process of an aqueous alkali metal halide solution and electrolytic cell. 4,370,208, Cl. 204-98.000.
- Iijima, Toshifumi; Fujimatsu, Wataru; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide color photosensitive material. 4,370,410, Cl. 430-505.000.
- Ikeda, Tomoaki: *See—*
  - Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,370,404, Cl. 430-302.000.
- Ikeguchi, Nobuyuki, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition. 4,370,462, Cl. 528-73.000.
- Ikeguchi, Nobuyuki: *See—*
  - Gaku, Morio; and Ikeguchi, Nobuyuki, 4,370,467, Cl. 528-322.000.
- Ikemori, Keiji, to Canon Kabushiki Kaisha. Zoom objective of small size. 4,370,031, Cl. 350-426.000.
- Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirofumi, to Seikosha Co., Ltd. Electrode configuration for thickness-shear mode piezoelectric vibrator. 4,370,584, Cl. 310-365.000.
- Ilekis, John V. Lipid assay based on aggregating properties. 4,370,311, Cl. 424-1.100.
- Illinois Tool Works Inc.: *See—*
  - Green, Todd C., 4,370,532, Cl. 200-314.000.
- Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for polymerization of alpha-olefins and method for using the same. 4,370,257, Cl. 252-429.00B.
- Imazeki, Ryoji; Kusumi, Katsuaki; and Nakajima, Yoshihiro, to Fujitsu Fanuc Limited. Sequence control system for numerically controlled machine tool. 4,370,705, Cl. 364-184.000.
- Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, to Fujitsu Fanuc Limited. Tracer control system. 4,370,722, Cl. 364-474.000.
- Imperial Chemical Industries Limited: *See—*
  - Bye, Ashley D., 4,370,449, Cl. 525-247.000.
  - Evans, John R.; Fildes, Francis J. T.; and Oliver, Jean E., 4,370,349, Cl. 424-365.000.
- Imperial Chemical Industries PLC: *See—*
  - Punja, Nazim, 4,370,346, Cl. 424-305.000.
- Inaba, Naomi: *See—*
  - Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,370,257, Cl. 252-429.00B.
- Indicon Inc.: *See—*
  - Citrin, Paul S., 4,369,665, Cl. 73-864.180.
- Ingersoll, Brian; and Hutchins, Ferris L., Jr., to Mead Corporation, The. Resilient hinge assembly for a display structure. 4,369,715, Cl. 108-2.000.
- Ingersoll Milling Machine Company, The: *See—*
  - Goode, Keith F., 4,370,080, Cl. 409-200.000.
- Inoue, Yoshio: *See—*
  - Yoshida, Akiteru; Yokoo, Akiro; Yokokura, Shuichi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,370,385, Cl. 428-429.000.
- Inoue, Yukio: *See—*
  - Hirano, Junzo; and Inoue, Yukio, 4,370,744, Cl. 370-88.000.
- Institut Francais du Petrole: *See—*
  - Gadelle, Claude; Burger, Jacques; and Bardon, Charles, 4,370,078, Cl. 405-264.000.
- Integrated Technologies, Inc.: *See—*
  - Bok, Hendrik F.; and Birbara, Philip J., 4,370,356, Cl. 427-38.000.
- International Business Machines Corporation: *See—*
  - Abolafia, Oscar R.; Ameen, Joseph G.; and Elmore, Glenn V., 4,370,197, Cl. 156-659.100.
  - Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, 4,370,554, Cl. 250-491.100.
  - Cason, William C.; Kuecker, Ward A.; and Stratton, Susan D., 4,370,645, Cl. 340-709.000.
  - Habich, Adolph B.; and Hunt, Ronald E., 4,370,071, Cl. 400-144.200.
  - Jones, Robert E.; and Wood, Donald H., 4,370,746, Cl. 371-27.000.
  - Kantor, Sherwood; Maddox, Randall A.; and Yosim, Paul S., 4,370,641, Cl. 340-146.30H.
  - Kogge, Peter M., 4,370,732, Cl. 364-900.000.
  - Reible, George A., Jr., 4,370,651, Cl. 340-825.860.
- Irnich, Rudolf: *See—*
  - Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Schaefer, Eberhard, 4,370,491, Cl. 560-234.000.
- Isherwood, Jeffrey, to Crosfield Electronics Limited. Web feeding machines. 4,369,906, Cl. 226-42.000.
- Ishida, Hiroshi: *See—*
  - Kawada, Shigeki; and Ishida, Hiroshi, 4,370,614, Cl. 324-173.000.
- Ishii, Hiroshi: *See—*
  - Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,370,065, Cl. 368-157.000.
- Ishii, Kazuo: *See—*
  - Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,370,404, Cl. 430-302.000.
- Ishikawa, Hiroyasu: *See—*
  - Kobayashi, Jyuro; Ito, Masanori; and Ishikawa, Hiroyasu, 4,370,579, Cl. 310-50.000.
- Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, to Japan Synthetic Rubber Co., Ltd. Unsaturated polyester resin compositions. 4,370,447, Cl. 525-39.000.
- Isobe, Shinichi: *See—*
  - Fukuyama, Hiroomi; and Isobe, Shinichi, 4,370,704, Cl. 364-171.000.
- Isobe, Yukihiro: *See—*
  - Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,370,384, Cl. 428-425.900.
- Isohata, Junji; and Yamamoto, Hironori, to Canon Kabushiki Kaisha. Projection exposure apparatus. 4,370,054, Cl. 355-53.000.
- Ito, Kosuke; Iida, Hiroshi; Harada, Masanori; and Hatakenaka, Masato, to Nissan Motor Co., Ltd. Exhaust gas purification control apparatus for internal combustion engine. 4,369,752, Cl. 123-568.000.
- Ito, Masanori: *See—*
  - Kobayashi, Jyuro; Ito, Masanori; and Ishikawa, Hiroyasu, 4,370,579, Cl. 310-50.000.
- Ito, Michio: *See—*
  - Hirayama, Kazuhiro; and Ito, Michio, 4,370,053, Cl. 355-14.00D.
- Ito, Ryoichi: *See—*
  - Soma, Kenichiro; Kuma, Shoji; Sakaguchi, Harunori; Shirai, Hisanari; Ito, Ryoichi; and Shiina, Toshio, 4,370,517, Cl. 174-74.00A.
- Ito, Sumio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake air heater. 4,369,736, Cl. 123-1.00A.
- Ito, Tetsuro: *See—*
  - Oizumi, Toshiro; Ito, Tetsuro; and Yamada, Shigeo, 4,370,537, Cl. 219-69.00V.
- ITW Limited: *See—*
  - Palmer, John P.; and McCann, Patrick J., 4,369,946, Cl. 248-74.00A.
- Iura, Yukio: *See—*
  - Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,370,037, Cl. 354-23.00D.
- Iwaki, Tsutomu: *See—*
  - Moriwaki, Yoshio; Gamou, Takaharu; Yanagihara, Nobuyuki; Yamashita, Toshio; and Iwaki, Tsutomu, 4,370,163, Cl. 420-582.000.
- Iwakura, Ryoji; Nitta, Tatsuo; and Takahashi, Kazutoshi, to Citizen Watch Company Limited. Electronic timepiece with gain/loss adjustment. 4,370,067, Cl. 368-202.000.
- Iwasa, Yoshio: *See—*
  - Umemura, Yukio; Yoshida, Isao; Taguchi, Yoshio; and Iwasa, Yoshio, 4,369,739, Cl. 123-41.740.
- Iwasaki, Akira: *See—*
  - Nishikawa, Masao; Toshimitsu, Yoshihiko; Iwasaki, Akira; and Fujimoto, Katsuhiko, 4,369,852, Cl. 180-148.000.
- Iwashita, Tomonori: *See—*
  - Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,370,037, Cl. 354-23.00D.
- Iwata, Susumu; and Maruta, Keiichi, to Ricoh Company, Ltd. Thermosensitive recording adhesive label. 4,370,370, Cl. 428-40.000.
- Iwata, Yasuo; and Shirai, Hisao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Outer race working method and apparatus therefor. 4,369,558, Cl. 29-148.40R.
- Izu, Masatsugu; Barnard, Timothy J.; and Gattuso, David A., to Energy Conversion Devices, Inc. Cathode for generating a plasma. 4,369,730, Cl. 118-723.000.
- Izumi, Eiki; Honma, Kazuo; Abe, Katsuro; Uno, Masaaki; and Nakajima, Kichio, to Hitachi Construction Machinery Co., Ltd. Drive system for construction machinery and method of controlling hydraulic circuit means thereof. 4,369,625, Cl. 60-327.000.
- Izumi, Hirobumi: *See—*
  - Toyoda, Tsutomu; Maekawa, Iwao; Izumi, Hirobumi; and Fuzii, Tadashi, 4,370,446, Cl. 525-36.000.
- J. I. Case Company: *See—*
  - Nudd, Barry C., 4,369,856, Cl. 180-321.000.
  - Shumaker, John F.; and Maurer, Herman J., 4,370,090, Cl. 414-694.000.
- Jache, Harold G.: *See—*
  - Harris, William R.; and Jache, Harold G., 4,370,164, Cl. 420-503.000.

Jackel, Lawrence D.: *See—*
  Fetter, Linus A.; Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,370,359, Cl. 427-63.000.
Jackson, Allen C. Combination cigarette holder and cigarette smoke catcher. 4,369,798, Cl. 131-330.000.
Jackson, David R.; and Rushing, Allen J., to Eastman Kodak Company. Imaging apparatus adapted for developing intermittently moving webs. 4,369,732, Cl. 118-681.000.
Jackson, Thomas B.: *See—*
  Houchins, Stanley L.; and Jackson, Thomas B., 4,369,532, Cl. 4-619.000.
Jacmorr Manufacturing Limited: *See—*
  Fler, Jack P., 4,370,007, Cl. 312-334.000.
Jacob, Ezekiel J.: *See—*
  Cooper, Sidney; and Jacob, Ezekiel J., 4,370,400, Cl. 430-126.000.
Jacobi, Haireddin; and Opitz, Wolfgang, to Troponwerke GmbH & Co. KG. S-Alkyl 3-alkylthiopropionothioate compounds, their production and their medicinal use. 4,370,342, Cl. 424-275.000.
Jaedicke, Ludwig: *See—*
  Gerstenberger, Friedrich; and Jaedicke, Ludwig, 4.369,759, Cl. 124-68.000.
Jagenberg Werke AG: *See—*
  Gopel, Helmut; and Klapp, Hartmut, 4,369,961, Cl. 271-10.000.
  Knauthe, Joachim, 4,370,193, Cl. 156-446.000.
Jahoda, Stanislav, to Ustav pro vyzkum motorovych vozidel. Method of and apparatus for preparation of a combustion mixture for engines with divided combustion space. 4,369,747, Cl. 123-278.000.
Jakobi, Wilhelm: *See—*
  Schmid, Karl; and Jakobi, Wilhelm, 4,370,203, Cl. 202-228.000.
James, Calvin E., Sr.: *See—*
  Silberman, Ira J.; and James, Calvin E., Sr., 4,369,966, Cl. 272-62.000.
James, Larry R.: *See—*
  Hanaway, Roger D.; and James, Larry R., 4,369,617, Cl. 56-14.600.
Jamieson, H. William, Jr., to Offset Engineering Co., Inc. Clip-on star wheel substitute. 4,369,963, Cl. 271-204.000.
Janc, Robert V.; Robins, David S.; and Retzer, Michael H., to Motorola, Inc. Apparatus and method for detecting the presence of a pulsed radio frequency signal. 4,370,748, Cl. 375-94.000.
Janicz, Thomas H., to Burlington Industries, Inc. Flexible edging of desks. 4,370,373, Cl. 428-151.000.
Janousek, Jan: *See—*
  Burysek, Frantisek; Mikulecky, Karel; Elias, Jiri; Esner, Stanislav; Skoda, Stanislav; and Janousek, Jan, 4,369,620, Cl. 57-263.000.
Jansen, Arie: *See—*
  Hendriks, Petrus F. A. M.; Jansen, Arie; van den Berg, Willem B.; and Hoek, Cornelis, 4,370,304, Cl. 422-224.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
  Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, 4,370,447, Cl. 525-39.000.
Jarach, Roberto. Devices for numeration, overprinting, perforation and cutting on Offset sheet printing machines. 4,369,703, Cl. 101-76.000.
Jenkins, David: *See—*
  Koopman, Benjamin L.; Lau, Antonio O.; Strom, Peter F.; and Jenkins, David, 4,370,418, Cl. 435-289.000.
Jensen, Gerald A.; and Merry, Ted G., to Pako Corporation. Photographic film splicer. 4,370,184, Cl. 156-157.000.
Jensen, Harbo P., to Chevron Research Company. Bisulfite sponge process. 4,370,239, Cl. 210-668.000.
Jewell, William J.: *See—*
  Hayes, Thomas D.; Kabrick, Randolph M.; and Jewell, William J., 4,370,233, Cl. 210-609.000.
Jidosha Denki Kogyo Kabushiki Kaisha: *See—*
  Sasaki, Michiaki; Yamamoto, Kiyokazu; and Hiratsuka, Ko, 4,370,102, Cl. 417-296.000.
Jinnai, Koichiro; and Umezawa, Michio, to Ricoh Company, Ltd. Sheet feed apparatus for printer or the like. 4,369,964, Cl. 271-260.000.
Jochem, Cornelis M. G.: *See—*
  Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,370,021, Cl. 350-96.180.
John, Erich: *See—*
  Pollak-Banda, Erich; and John, Erich, 4,369,668, Cl. 74-414.000.
John Wyeth and Brother Limited: *See—*
  Crossley, Roger, 4,370,477, Cl. 542-413.000.
Johne, Hans: *See—*
  Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, 4,369,706, Cl. 101-365.000.
Johnson, Axel R.: *See—*
  Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,370,303, Cl. 422-144.000.
Johnson, David E. Positive displacement engine with separate combustion chamber. 4,369,623, Cl. 60-39.600.
Johnson, Fred D.; Flasza, Michael D.; and Bretl, Wayne E., to Zenith Radio Corporation. Stabilization network for a cathode ray tube. 4,370,674, Cl. 358-74.000.
Johnson & Johnson Dental Products Company: *See—*
  De Luca, Robert, 4,370,165, Cl. 106-35.000.
Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Memory controller with address independent burst mode capability. 4,370,712, Cl. 364-200.000.
Johnson, Tore R., to AMP Incorporated. Biconical optical waveguide splice. 4,370,022, Cl. 350-96.210.
Johnston, James D.; Lamel, Lori F.; Rabiner, Lawrence R.; Rosenberg, Aaron E.; and Wilpon, Jay G., to Bell Telephone Laboratories, Incorporated. Endpoint detector. 4,370,521, Cl. 179-1.0SC.
Jonas, Hans: *See—*
  Bieg, Hartmut; Jonas, Hans; Rosswurm, Heinz; Demmer, Wilhelm; and Dobel, Ludwig, 4,369,683, Cl. 83-157.000.
Jones, Jack D.; and Glover, Russell K., to Aircraft Dynamics Corporation. Apparatus for washing an article. 4,369,801, Cl. 134-58.00R.
Jones, Johnny O., Jr.; and White, Charles C., Jr. Waterbed vibrator. 4,370,602, Cl. 318-114.000.
Jones, Norman E. Portable rotary machining device. 4,369,679, Cl. 82-4.00R.
Jones, Robert E.; and Wood, Donald H., to International Business Machines Corporation. Memory address selector. 4,370,746, Cl. 371-27.000.
Jones, Stanley W.: *See—*
  Franz, James H., Jr.; and Jones, Stanley W., 4,370,603, Cl. 318-523.000.
Jones, Thomas H., to Richardson Graphics Company. Developers for photopolymer lithographic plates. 4,370,406, Cl. 430-331.000.
Jonville, Pierre: *See—*
  Breda, Frederic; Jonville, Pierre; Bonomi, Angelo; and Ambert, Jack, 4,370,394, Cl. 429-199.000.
Jorgensen, Jorgen A.; and Nygren, Donald W., to Northland Aluminum Products, Inc. Portable oven air circulator. 4,369,760, Cl. 126-21.00A.
Jorgensen, Karin D.: *See—*
  Jorgensen, Klavs H.; Jorgensen, Karin D.; and Thim, Lars, 4,370,317, Cl. 424-177.000.
Jorgensen, Klavs H.; Jorgensen, Karin D.; and Thim, Lars, to Novo Industri A/S. Pancreatic spasmolytic polypeptide. 4,370,317, Cl. 424-177.000.
Joshi, David P., to Colgate-Palmolive Company. Detergent tablet. 4,370,250, Cl. 252-135.000.
Jostens Inc.: *See—*
  Harris, William R.; and Jache, Harold G., 4,370,164, Cl. 420-503.000.
Judd, George G., to Martin Marietta Corporation. Preparation of pure magnesian values. 4,370,307, Cl. 423-432.000.
Juhl, Nis H.: *See—*
  Marwick, Edward F.; and Juhl, Nis H., 4,370,298, Cl. 376-317.000.
Jung, Gunther; Bruckner, Hans; Swetly, Peter; and Bozler, Gerhard, to Dr. Karl Thomae Gesellshaft mit beschrankter Haftung. Decapeptide. 4,370,312, Cl. 424-1.500.
Jung Products, Inc.: *See—*
  Gamm, Paul B., 4,369,775, Cl. 128-166.000.
Junkermann, Helmut; and Kruger, Horst, to Degussa AG. Process for the detoxification of waste water containing phenol, phenol derivative or phenol and formaldehyde. 4,370,241, Cl. 210-759.000.
Juy, Dominique: *See—*
  Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See—*
  Blumenberg, Guenther, 4,369,911, Cl. 228-173.00F.
Kaber, Stanley A.: *See—*
  Leep, Ronald B.; and Kaber, Stanley A., 4,369,597, Cl. 47-9.000.
Kabrick, Randolph M.: *See—*
  Hayes, Thomas D.; Kabrick, Randolph M.; and Jewell, William J., 4,370,233, Cl. 210-609.000.
Kabushiki Kaisha Morita Seisakusho: *See—*
  Furuichi, Shuhei; and Suzuki, Masakazu, 4,370,752, Cl. 378-110.000.
Kabushiki Kaisha Nagasawa: *See—*
  Nagasawa, Hideki, 4,370,623, Cl. 330-267.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
  Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, 4,370,065, Cl. 368-157.000.
  Nomura, Hiroaki, 4,370,069, Cl. 368-273.000.
Kadija, Igor V., to Olin Corporation. Reticulate electrode for electrolytic cells. 4,370,214, Cl. 204-242.000.
Kaeding, Warren W., to Mobil Oil Corporation. Para-selective zeolite catalysts treated with nitrogen compounds. 4,370,508, Cl. 585-467.000.
Kaganowicz, Grzegorz, to RCA Corporation. Method for mechanically preparing stylus lapping discs. 4,369,604, Cl. 51-281.00R.
Kaibel, Gerd: *See—*
  Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Schaefer, Eberhard, 4,370,491, Cl. 560-234.000.
Kajiwara, Toshiyuki, to Hitachi, Ltd. Rolling mill and method for rolling a sheet material. 4,369,646, Cl. 72-243.000.
Kakumoto, Hiromi; and Furukawa, Kaoru, to Matsushita Electric Works, Ltd. Charging apparatus. 4,370,606, Cl. 320-35.000.
Kakuta, Yoshiyuki: *See—*
  Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, 4,369,900, Cl. 222-321.000.
Kaleskas, Edward W.: *See—*
  Paradis, Joseph R.; and Kaleskas, Edward W., 4,369,812, Cl. 137-843.000.
Kaloi, Cyril M., to United States of America, Navy. Electrically end coupled parasitic microstrip antennas. 4,370,657, Cl. 343-700.0MS.
Kaltbeitzer, Dieter: *See—*
  Backstein, Guenter; Unger, Hans W.; Guenther, Michael; Kaltbeitzer, Dieter; and Veldhoen, Hendrik, 4,369,709, Cl. 102-229.000.
Kamei, Seisuke; Nabetani, Hideo; and Kinoshita, Ryohei, to Fujitsu Limited. Keyboard switch and process for production thereof. 4,370,533, Cl. 200-340.000.

Kamide, Kenji; Okajima, Kunihiko; and Matsui, Toshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Mesophase dope containing cellulose derivative and inorganic acid. 4,370,168, Cl. 106-177.000.
Kaminski, Joan M.: *See—*
  Horodysky, Andrew G.; and Kaminski, Joan M., 4,370,248, Cl. 252-49.600.
Kampe, Wolfgang; Thiel, Max; Fauland, Erich; Bicker, Uwe; and Hebold, Gottfried, to Boehringer Mannheim GmbH. 2-Cyanoaziridinyl-(1)-2-substituted-aziridinyl-(1)-methanes. 4,370,323, Cl. 424-244.000.
Kanayama, Katsumi; Motoyama, Kazuyasu; and Furuta, Kenzi, to Olympus Optical Co., Ltd. Tape recorder with automatic tape end stopping and alarm generation. 4,370,684, Cl. 360-74.200.
Kanebo Foods, Ltd.: *See—*
  Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,370,352, Cl. 426-557.000.
Kaneda, Yoshiyuki: *See—*
  Kishimoto, Teiji; Kochi, Hiromu; and Kaneda, Yoshiyuki, 4,370,332, Cl. 424-258.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Kano, Toshiji; Yamada, Kiyoshi; and Hatta, Yoshio, 4,370,208, Cl. 204-98.000.
  Uekita, Masakazu; and Abe, Masaharu, 4,370,191, Cl. 156-307.700.
  Uekita, Masakazu; Fushiki, Yasuo; and Abe, Masaharu, 4,370,386, Cl. 428-458.000.
Kaneko, Kenji; and Okabe, Takahiro, to Hitachi, Ltd. Integrated injection logic amplifier and oscillator circuits. 4,370,627, Cl. 331-108.00D.
Kani, Kazutaka; Abe, Kuniomi; Konagaya, Masahiko; and Ono, Noboru, to Konan Camera Research Institute. Eyeball examining device. 4,370,033, Cl. 351-206.000.
Kanno, Fukuo: *See—*
  Yanase, Hiroshi; Kanno, Fukuo; and Abe, Takeshi, 4,370,292, Cl. 264-272.110.
Kano, Toshiji: *See—*
  Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Kano, Toshiji; Yamada, Kiyoshi; and Hatta, Yoshio, 4,370,208, Cl. 204-98.000.
Kantor, Sherwood; Maddox, Randall A.; and Yosim, Paul S., to International Business Machines Corporation. Electronic control system. 4,370,641, Cl. 340-146.30H.
Karl O. Helm Aktiengesellschaft: *See—*
  Maasbol, Alfred G., 4,370,331, Cl. 424-258.000.
Karpanty, David J.: *See—*
  Burgoon, Jack L.; and Karpanty, David J., 4,369,540, Cl. 15-49.00R.
Kasahara, Katsusuke: *See—*
  Takamizawa, Minoru; Abe, Akira; Kasahara, Katsusuke; Komeno, Yukito; and Aoyama, Akira, 4,370,365, Cl. 427-387.000.
Kashima Saddle Mfg. Co., Ltd.: *See—*
  Kashima, Tetsuo, 4,369,999, Cl. 297-195.000.
Kashima, Tetsuo, to Kashima Saddle Mfg. Co., Ltd. Saddle for bicycle. 4,369,999, Cl. 297-195.000.
Kashiwa, Norio: *See—*
  Ueda, Takashi; Minami, Syuji; Kioka, Mamoru; and Kashiwa, Norio, 4,370,455, Cl. 526-125.000.
Kasting, Edward W.; and Glasson, Richard E., to Cummins Engine Company, Inc. Internal combustion engine. 4,369,627, Cl. 60-605.000.
Kastner, Josef: *See—*
  Haberl, Rainer; and Kastner, Josef, 4,370,697, Cl. 361-283.000.
Kasuga, Muneo: *See—*
  Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, 4,370,055, Cl. 355-14.0SH.
Katagiri, Mikio; Sakota, Yukio; Hiroshige, Kunie; and Adachi, Yukio, to Mitsui Polychemicals Co. Ltd. Process and apparatus for producing a laminated structure composed of a substrate web and a thermoplastic resin web extrusion-coated thereon. 4,370,187, Cl. 156-244.230.
Kato Hatsujo Kaisha, Ltd.: *See—*
  Shinozaki, Nobuya, 4,369,891, Cl. 220-85.0VR.
Kato, Mamoru; Matsumoto, Shoji; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Method for preparing original for projection and transfer film for electrostatic photography for use in carrying out said method. 4,370,379, Cl. 428-341.000.
Katoh, Hiroshi, to Victor Company of Japan, Ltd. Tape loading apparatus in a recording and/or reproducing apparatus. 4,370,682, Cl. 360-71.000.
Katoh, Noboru; and Kimura, Akio, to Sony Corporation. Drive mechanism for tape recorder. 4,370,686, Cl. 360-96.300.
Katsuyama, Tsutomu, to Mochizuki Shoten, Limited. Combination photographing and developing apparatus. 4,370,041, Cl. 354-92.000.
Katz, Bernard B.: *See—*
  Levatter, Jeffrey I., 4,370,175, Cl. 148-1.500.
Kaufman, Kurt D., to Elder Pharmaceuticals, Inc. 5′-Aminoalkyl-4′-alkylpsoralens. 4,370,344, Cl. 424-279.000.
Kawabata, Yasuziro: *See—*
  Ogata, Ikuei; Kawabata, Yasuziro; Tanaka, Masato; and Hayashi, Teruyuki, 4,370,258, Cl. 252-429.00R.
Kawachi, Shoji: *See—*
  Nakamura, Yukiharu; and Kawachi, Shoji, 4,370,436, Cl. 524-322.000.
Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. Speed and direction detector. 4,370,614, Cl. 324-173.000.
Kawahara, Hiroshi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,370,383, Cl. 428-425.900.
Kawamura, Katsuaki: *See—*
  Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,370,522, Cl. 179-1.0GD.
Kawamura, Kenji: *See—*
  Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Kawamura, Kenji; and Fukatsu, Shunzo, 4,370,318, Cl. 424-177.000.
Kawamura, Yoshikazu; Hosokawa, Minoru; Okazaki, Sakiho; and Ishii, Hiroshi, to Kabushiki Kaisha Suwa Seikosha. Step motor control mechanism for electronic timepiece. 4,370,065, Cl. 368-157.000.
Kawano, Mutsumi: *See—*
  Tanaka, Katsutoshi; Takeda, Hisao; Kawano, Mutsumi; and Miyahara, Isao, 4,370,464, Cl. 528-99.000.
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  Matsuyama, Takashi; and Kawazu, Hideyuki, 4,370,051, Cl. 355-3.00R.
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  - Gopel, Helmut; and Klapp, Hartmut, 4,369,961, Cl. 271-10.000.
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- Kolarova, Mariana V.: *See—*
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- Komperda, Joseph. Golf club for putting. 4,369,974, Cl. 273-164.000.
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  - Brugmans, Johannes T., 4,370,377, Cl. 428-327.000.
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- Korach, Malcolm: *See—*
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- Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Method for the purification of hexamethyldisiloxane. 4,370,204, Cl. 203-39.000.
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- Koyama, Kazutaka: *See—*
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- Krauss, Halina: *See—*
  - Krauss, Leonard; and Krauss, Halina, 4,369,948, Cl. 248-441.00A.
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- Kress, Robert W. Fuel tank for model aircraft. 4,369,938, Cl. 244-135.00R.
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  - Junkermann, Helmut; and Kruger, Horst, 4,370,241, Cl. 210-759.000.
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  - Schmid, Karl; and Jakobi, Wilhelm, 4,370,203, Cl. 202-228.000.
- Kruth, Jean-Pierre, to Ateliers des Charmilles, S.A. Efficiency adaptive EDM apparatus and method. 4,370,536, Cl. 219-69.00M.
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- Kuecker, Ward A.: *See—*
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- Kumazawa, Toshiharu: *See—*
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- Kusch & Co., Sitzmohelwerke KG: *See—*
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- Ladek Corporation: *See—*
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- Lahut, Joseph A.: *See—*
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  - Marsoner, Hermann; and Kleinhappl, Erich, 4,369,951, Cl. 251-7.000.
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  - Van Doorn, Donald W.; and Hawkins, James B., 4,369,681, Cl. 83-100.000.
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  - Gebel, Iosif D.; Zykov, Arkady A.; Lvov, Vladimir M.; Nefedov, Askold I.; Parshikov, Viktor I.; Starkina, Marina Y.; Klibanov, Mendel S.; Ryss, Alexandr S., deceased; and Ryss, Maria I., legal representative, 4,369,603, Cl. 51-236.000.
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- Malinak, Frank J. Depither. 4,369,548, Cl. 19-26.000.
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- Malloy, Anthony J.: *See—*
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  - Amieux, Jean-Claude, 4,370,716, Cl. 364-434.000.
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  - Hara, Toshitami; and Matsumoto, Shigeyuki, 4,370,668, Cl. 346-140.00R.
- Matsumoto, Shoji: *See—*
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  - Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,370,340, Cl. 424-274.000.
- Matsuoka, Yukinori: *See—*
  - Nakajima, Osamu; Matsuoka, Yukinori; and Nakayama, Yoshiaki, 4,370,468, Cl. 528-335.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Horii, Shigeru; Yoshikawa, Nobuhisa; and Koyama, Kazutaka, 4,370,601, Cl. 315-307.000.
  - Kinoshita, Hiromi; Maeda, Yoshinobu; and Tanno, Tadashi, 4,369,819, Cl. 140-105.000.
  - Moriwaki, Yoshio; Gamou, Takaharu; Yanagihara, Nobuyuki; Yamashita, Toshio; and Iwaki, Tsutomu, 4,370,163, Cl. 420-582.000.
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  - Fujishima, Nobuiti; Nakano, Hideharu; and Wada, Yukio, 4,370,544, Cl. 219-370.000.
  - Kakumoto, Hiromi; and Furukawa, Kaoru, 4,370,606, Cl. 320-35.000.
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  - Nakamura, Yoshimitsu, 4,370,581, Cl. 310-198.000.
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  - Shigeyasu, Motoo; and Kuki, Michio, 4,370,496, Cl. 562-487.000.
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  - Sapkus, Jurgis, 4,369,690, Cl. 87-33.000.
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  - Steinke, Leo; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,369,748, Cl. 123-425.000.
- Maurer, Herman J.: *See—*
  - Shumaker, John F.; and Maurer, Herman J., 4,370,090, Cl. 414-694.000.
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- McArdle, Beryl L., to General Dynamics Corporation. Autokey generator for secret communication system. 4,370,519, Cl. 178-22.140.
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- McDonald, Donald C.; Ela, Roger B.; and Pignataro, Dominic F. Demagnetizing apparatus for a workpiece holding electromagnet. 4,370,693, Cl. 361-145.000.
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  - Burk, Robert C., 4,370,390, Cl. 428-614.000.
  - Kelly, Patrick J.; and Arcangeli, Gerald T., 4,369,940, Cl. 244-3.210.
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- McGovern, Stephen J.; and Yeigh, John H., Jr., to Mobil Oil Corporation. FCC Regeneration. 4,370,222, Cl. 208-113.000.
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- McNally, Gordon G.: *See—*
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  - Scott, Malcolm K., 4,370,335, Cl. 424-267.000.
- McShane, Peter F. Portable fencing loading means. 4,370,088, Cl. 414-439.000.
- McVaugh, Arthur K. Hand-held cable cutter. 4,369,576, Cl. 30-228.000.
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  - Barch, Herbert W.; Melle, Carl A.; McWilliams, Donald E.; and Hudson, Howard J., 4,370,157, Cl. 65-3.430.
  - Melle, Carl A.; McWilliams, Donald E.; and Das, Balbhadra, 4,370,439, Cl. 524-513.000.
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  - Ingersoll, Brian; and Hutchins, Ferris L., Jr., 4,369,715, Cl. 108-2.000.
  - Scranton, Robert J.; and Meckstroth, James R., 4,370,665, Cl. 346-75.000.
- Mead Johnson and Company: *See—*
  - Greaney, Martin O.; and Callantine, Merritt R., 4,370,321, Cl. 424-243.000.
- Meckstroth, James R.: *See—*
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- Medtronic, Inc.: *See—*
  - Friedman, Harry G., 4,369,791, Cl. 128-419.00P.
- Meerholz, Clive A.: *See—*
  - Barton, Derek H. R.; Ley, Steven V.; and Meerholz, Clive A., 4,370,497, Cl. 564-55.000.
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- Mercer, Scott A.: *See—*
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- Merry, Ted G.: *See—*
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- Messmer, Karlheinz; Fischer, Hermann; Hartmann, Heinrich; Denzinger, Walter; Schneider, Rolf; Wulz, Klaus; and Raubenheimer, Hans-Juergen, to BASF Aktiengesellschaft. Preparation of maleic anhydride copolymers. 4,370,454, Cl. 526-88.000.
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- Metco Inc.: *See—*
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- Metzger, Frederick B.: *See—*
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- Meyer, Jeffry R.: *See—*
  - Cookson, Alan H.; Fischer, William H.; Yoon, Kue H.; and Meyer, Jeffry R., 4,370,511, Cl. 174-14.00R.
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- Meyering, Clinton: *See—*
  - Staver, Peter J.; and Meyering, Clinton, 4,369,793, Cl. 128-643.000.
- Meyers, Stanley T. Pitch sensor. 4,369,687, Cl. 84-454.000.
- Michael, Harald R., to Electrolux GmbH. Vacuum drain facility. 4,370,227, Cl. 210-170.000.
- Micheletti, Arrigo. Circular knitting machines. 4,369,637, Cl. 66-8.000.
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  - Nelson, Richard T.; and Middleton, Marc G., 4,370,104, Cl. 417-312.000.
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  - Welter, Wolfgang; and Mildenberger, Hilmar, 4,370,277, Cl. 260-465.00F.
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- Miller, Ezra D., to Avery International Corporation. Refastenable adhesive closure for disposable diapers or briefs. 4,369,786, Cl. 604-390.000.
- Miller, Gary J., to University of Florida. Method for strengthening a fractured bone. 4,369,772, Cl. 128-92.00C.
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- Miller, Margaret Y. Brassiere for supporting prosthesis. 4,369,792, Cl. 128-479.000.
- Miller, Michael E. Rear mounted scraper for vehicles. 4,369,590, Cl. 37-231.000.
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- Miller, Stewart E., to Bell Telephone Laboratories, Incorporated. Fail-safe transmission system. 4,370,745, Cl. 371-8.000.
- Millevoi, Eugenio, to Weldotron Corporation. Conveyor belt tracking. 4,369,878, Cl. 198-807.000.
- Millington, Daniel R. Skewer attachment. 4,369,697, Cl. 99-351.000.
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- Mitsubishi Chemical Industries, Ltd.: *See—*
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- Mitsubishi Denki Kabushiki Kaisha: *See—*
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- Mitsubishi Gas Chemical Company, Inc.: *See—*
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- Mitsubishi Precision Co., Ltd.: *See—*
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- Miyashita, Yoshinori: *See—*
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- Mizoule, Jacques, to Pharmindustrie. Medicament based on 2-amino-6-trifluoromethoxy-benzothiazole. 4,370,338, Cl. 424-270.000.
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- Mizuno, Yukio, to Nissan Motor Company Limited. Weft picking device of air jet type weaving loom. 4,369,817, Cl. 139-435.000.
- Mizunuma, Wataru, to Mitsubishi Jukogyo Kabushiki Kaisha. Blade assembly. 4,369,847, Cl. 172-815.000.
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  - Horodysky, Andrew G.; and Kaminski, Joan M., 4,370,248, Cl. 252-49.600.
  - Kaeding, Warren W., 4,370,508, Cl. 585-467.000.
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- Mochizuki Shoten, Limited: *See—*
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- Moffitt, Merritt L., Jr. Utility brush. 4,370,072, Cl. 401-276.000.
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  - Liao, Hsiang P.; Mohr, Richard A.; and Start, John F., 4,370,251, Cl. 252-186.420.
- Mohrbacher, Richard; Ho, Winston; and Tutwiler, Gene, to McNeilab, Inc. Method for controlling hypertension. 4,370,343, Cl. 424-275.000.
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- Montagu, Jean I., to General Scanning, Inc. Galvanometer with molded outer layer under hoop stress. 4,370,613, Cl. 324-154.00R.
- Moody, Warren E. Dispensing gun for two-part adhesives. 4,370,062, Cl. 366-130.000.
- Moon, Howard R.: *See—*
  - Beiswenger, John L.; Moon, Howard R.; Smiesko, Frank A.; and Chaphalkar, Dhananjay, 4,369,921, Cl. 239-317.000.
- Moran, John C., to Bell Telephone Laboratories, Incorporated. Time division switching system. 4,370,743, Cl. 370-67.000.
- Moranne, Jean-Pierre, to Societe Anonyme des Usines Chausson. Tube for tube-plate heat exchangers. 4,369,837, Cl. 165-175.000.
- Morassi, Mario: *See—*
  - Mantoan, Dominico; and Morassi, Mario, 4,369,945, Cl. 248-73.000.
- Morelli, Luigi: *See—*
  - Gregory, William D.; and Morelli, Luigi, 4,370,611, Cl. 324-61.00R.
- Morgan, Harvey T., Jr.: *See—*
  - Phillips, Clarence W.; Eiben, Michael R.; and Morgan, Harvey T., Jr., 4,370,707, Cl. 364-200.000.
- Mori, Fumio: *See—*
  - Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, 4,370,190, Cl. 156-307.300.
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- Mori, Tamotsu: *See—*
  - Kondo, Hideya; Yokoyama, Youichi; Aoyama, Youichi; and Mori, Tamotsu, 4,370,634, Cl. 335-16.000.
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- Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary type electrostatic spray painting device. 4,369,924, Cl. 239-703.000.
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- Moriya, Kiyoshi: *See—*
  - Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, 4,370,279, Cl. 260-465.300.
- Morozumi, Shotaro, to Tokyo Shibaura Denki Kabushiki Kaisha; and Morozumi, Shotaro. Molybdenum-based alloy. 4,370,299, Cl. 420-429.000.
- Morrison, Howard J.: *See—*
  - Hicks, Alan A.; Morrison, Howard J.; Wildman, John R.; and Webb, Terry E., 4,370,064, Cl. 368-93.000.
- Morse, Daniel R.: *See—*
  - Bryan, Paul J.; and Morse, Daniel R., 4,369,708, Cl. 102-202.130.
- Moser, Thomas D.: *See—*
  - Hummert, George T.; Moser, Thomas D.; and Edison, David M., 4,370,717, Cl. 364-436.000.
- Moshe, Gideon B.: *See—*
  - L'woff, Andre; Yerushalmi, Aaron; Cohen, Irun R.; Moshe, Gideon B.; and Pennell, Jack, 4,369,777, Cl. 128-200.140.
- Motorola, Inc.: *See—*
  - Allgood, Robert N.; Kelley, Stephen H.; Ulmer, Richard W.; and Wurzburg, Henry, 4,370,632, Cl. 333-173.000.
  - Duddles, Allen L.; and Toomey, Daniel G., 4,370,700, Cl. 361-424.000.
  - Ehmke, Edward L., 4,370,753, Cl. 455-36.000.
  - Janc, Robert V.; Robins, David S.; and Retzer, Michael H., 4,370,748, Cl. 375-94.000.
  - Rice, M. John, Jr.; and Legge, Ronald N., 4,370,288, Cl. 264-81.000.
  - Someshwar, Ashok H., 4,370,625, Cl. 331-49.000.
- Motoyama, Kazuyasu: *See—*
  - Kanayama, Katsumi; Motoyama, Kazuyasu; and Furuta, Kenzi, 4,370,684, Cl. 360-74.200.
- Mott, George R.: *See—*
  - Damouth, David E.; Mott, George R.; and Stange, Klaus K., 4,370,047, Cl. 355-3.0BE.
- Moutonnier, Claude: *See—*
  - Farge, Daniel; Roy, Pierre L.; Moutonnier, Claude; Plau, Bernard; and Peyronel, Jean-Francois, 4,370,478, Cl. 542-427.000.
- Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, to Pierre Fabre S.A. Method of treating anxiety with 2′-(orthochlorobenzoyl)-4′-chloroglycylanilides, and compositions thereof. 4,370,347, Cl. 424-324.000.
- Mta Muszaki Kemiai Kutato Intezet: *See—*
  - Dencs, Bela; Ormos, Zoltan; and Pataki, Karoly, 4,370,198, Cl. 159-48.100.
- Mudd, Patrick J., to National Gypsum Company. Asbestos-free drywall joint compound utilizing sepiolite clay as asbestos substitute. 4,370,167, Cl. 106-119.000.
- Muhr, Richard; and Schink, Karl, to Muhr und Bender. Punching and riveting machine. 4,369,907, Cl. 227-54.000.
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  - Muhr, Richard; and Schink, Karl, 4,369,907, Cl. 227-54.000.
- Muise, Herbert D., to Weyerhaeuser Company. Tray. 4,369,913, Cl. 229-30.000.
- Muller, Karl-Heinz: *See—*
  - Krude, Werner; Muller, Karl-Heinz; and Riemscheid, Helmut, 4,369,979, Cl. 277-212.0FB.
- Muller, Karl W.: *See—*
  - Blank, Heinz U.; Wolters, Erich; Muller, Karl W.; and Rottloff, Gunter, 4,370,499, Cl. 564-200.000.
- Muller, Klaus: *See—*
  - Steinke, Leo; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,369,748, Cl. 123-425.000.
- Mullin, Richard W.: *See—*
  - Sheldon, Robert W.; and Mullin, Richard W., 4,369,609, Cl. 52-478.000.
- Muneyuki, Ryonosuke: *See—*
  - Mitsugi, Takashi; Muneyuki, Ryonosuke; Wakisaka, Yoshiharu; Koizumi, Kenzo; and Kondo, Eiji, 4,370,414, Cl. 435-44.000.
- Munk, Edmund; and Huber, Helmuth, to Furnier-U. Sperrholzwerk, J. F. Werz Jr. KG. Display pallet. 4,369,716, Cl. 108-51.100.
- Muntean, George; Wilson, Harry L.; and Gant, Gary L., to Cummins Engine Company, Inc. Fuel injector for internal combustion engine. 4,369,750, Cl. 123-505.000.
- Murakami, Katsumi; Furuichi, Katsushi; and Honma, Toshio, to Canon Kabushiki Kaisha. Copying apparatus with detachable sorter. 4,370,052, Cl. 355-14.00R.
- Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, to Kanebo Foods, Ltd. Non-fried instant cooking dry noodles. 4,370,352, Cl. 426-557.000.
- Murakami, Shohachi: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.
- Muramatsu, Akira, to Hitachi, Ltd. Method of manufacturing a semiconductor device utilizing etch and refill to form isolation regions. 4,369,565, Cl. 29-580.000.
- Murase, Isao; Hirose, Katsutoshi; and Yoneya, Shoji, to Nissan Motor Co., Ltd. Flame photometric detector analyzer. 4,370,060, Cl. 356-417.000.
- Murray, Robert J.: *See—*
  - Langston, Joseph, Jr.; and Murray, Robert J., 4,369,914, Cl. 229-33.000.

- Muscat-Tyler, Denis P.: *See—*
  - Greiner, Waldemar H.; and Muscat-Tyler, Denis P., 4,369,953, Cl. 256-24.000.
- Myers, Claude B.: *See—*
  - Bruggeman, William L.; and Myers, Claude B., 4,369,607, Cl. 51-427.000.
- Nabetani, Hideo: *See—*
  - Kamei, Seisuke; Nabetani, Hideo; and Kinoshita, Ryohei, 4,370,533, Cl. 200-340.000.
- Nadia Nicoll, Societe a responsabilite limitee: *See—*
  - Blandin, Jean-Claude; and Richard, Louis, 4,370,186, Cl. 156-203.000.
- Nagano, Katsumi; and Kubo, Daijiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrable conversion circuit for converting input voltage to output current or voltage. 4,370,608, Cl. 323-316.000.
- Nagao, Nobuya: *See—*
  - Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,370,680, Cl. 358-330.000.
- Nagaoka, Takenori: *See—*
  - Harada, Taira; Shimizu, Toyozi; and Nagaoka, Takenori, 4,370,502, Cl. 564-411.000.
- Nagaoka, Yoshitomi: *See—*
  - Tomimoto, Tetsuo; Nagaoka, Yoshitomi; Sasaki, Reiichi; and Oyama, Hiroshi, 4,370,673, Cl. 358-21.00R.
- Nagasawa, Hideki, to Kabushiki Kaisha Nagasawa. Push-pull amplifier circuit. 4,370,623, Cl. 330-267.000.
- Nagasawa, Toshio; and Nishihara, Yoshio, to Ube Industries, Ltd. Electrical heating element. 4,370,548, Cl. 219-549.000.
- Nagaura, Toru; and Aita, Takayuki, to Union Carbide Corporation. Alkaline cell. 4,370,395, Cl. 429-219.000.
- Nagely, John L., to Fluid Energy Systems Corporation. High pressure gear pump or motor with axial retaining means in a housing cavity. 4,370,110, Cl. 418-132.000.
- Naito, Kunji: *See—*
  - Igarashi, Toshiji; Nomura, Keiichi; Naito, Kunji; and Yoshida, Mikihiko, 4,370,472, Cl. 536-1.100.
- Naito, Shunichi: *See—*
  - Sato, Masamichi; Matsumoto, Kenji; and Naito, Shunichi, 4,370,396, Cl. 430-7.000.
- Nakagawa, Sumio: *See—*
  - Miyanaka, Motoshi; Toudo, Kenzi; Kudo, Yoshinori; and Nakagawa, Sumio, 4,370,126, Cl. 431-73.000.
- Nakahira, Akitaro, to Hohyu Rubber Co., Ltd. Rubber disc for a record player turntable. 4,370,371, Cl. 428-65.000.
- Nakaji, Tarushige: *See—*
  - Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Fujisaki, Kazuuki, 4,370,353, Cl. 426-570.000.
- Nakajima, Kichio: *See—*
  - Izumi, Eiki; Honma, Kazuo; Abe, Katsuro; Uno, Masaaki; and Nakajima, Kichio, 4,369,625, Cl. 60-327.000.
- Nakajima, Mutsuo: *See—*
  - Arai, Mamoru; Haneishi, Tatsuo; Nakajima, Mutsuo; Torikata, Akio; and Enokita, Ryuzo, 4,370,266, Cl. 260-112.50R.
- Nakajima, Osamu; Matsuoka, Yukinori; and Nakayama, Yoshiaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Biaxially drawn polyhexamethylene adipamide film. 4,370,468, Cl. 528-335.000.
- Nakajima, Yoshihiro: *See—*
  - Imazeki, Ryoji; Kusumi, Katsuaki; and Nakajima, Yoshihiro, 4,370,705, Cl. 364-184.000.
- Nakamura, Kousuke: *See—*
  - Matsushita, Yasuo; Takeda, Yukio; Nakamura, Kousuke; and Okoshi, Tokio, 4,370,421, Cl. 501-88.000.
- Nakamura, Tatsuo: *See—*
  - Tamura, Takeo; Kido, Takayoshi; and Nakamura, Tatsuo, 4,369,542, Cl. 15-250.00B.
- Nakamura, Tomio: *See—*
  - Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, 4,370,279, Cl. 260-465.300.
- Nakamura, Yoshimi: *See—*
  - Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, 4,370,279, Cl. 260-465.300.
- Nakamura, Yoshimitsu, to Matsushita Electric Works, Ltd. Multilayered coil structure. 4,370,581, Cl. 310-198.000.
- Nakamura, Yukiharu; and Kawachi, Shoji, to Daikin Kogyo Co., Ltd. Process for preparing filled polytetrafluoroethylene molding powder. 4,370,436, Cl. 524-322.000.
- Nakano, Hideharu: *See—*
  - Fujishima, Nobuiti; Nakano, Hideharu; and Wada, Yukio, 4,370,544, Cl. 219-370.000.
- Nakao, Masafumi: *See—*
  - Mori, Koichi; and Nakao, Masafumi, 4,370,391, Cl. 428-697.000.
- Nakashin, Yasushi. Apparatus for repairing leaks in underground pipe. 4,370,113, Cl. 425-13.000.
- Nakatani, Yasutaka: *See—*
  - Nawata, Yoshiaki; Nakatani, Yasutaka; and Nakazawa, Haruki, 4,370,670, Cl. 357-36.000.
- Nakayama, Yoshiaki: *See—*
  - Nakajima, Osamu; Matsuoka, Yukinori; and Nakayama, Yoshiaki, 4,370,468, Cl. 528-335.000.
- Nakazawa, Haruki: *See—*
  - Nawata, Yoshiaki; Nakatani, Yasutaka; and Nakazawa, Haruki, 4,370,670, Cl. 357-36.000.
- Namy, Gerald; and Cordier, Jean, to Creusot-Loire Entreprises; and Usinor. Gas diversion unit. 4,370,154, Cl. 55-309.000.
- Napoleon, Jo. Cosmetic powder dispensing device. 4,369,799, Cl. 132-83.00R.
- National Gypsum Company: *See—*
  - Mudd, Patrick J., 4,370,167, Cl. 106-119.000.
- National Research Development Corporation: *See—*
  - Bunce, Roger A.; Gibbons, John E. C.; and Kricka, Larry J., 4,369,664, Cl. 73-864.120.
- Nawata, Yoshiaki; Nakatani, Yasutaka; and Nakazawa, Haruki, to Fujitsu Limited. Transistor with plural parallel units. 4,370,670, Cl. 357-36.000.
- Neel, Alan F.: *See—*
  - Huffman, Stanley S.; Neel, Alan F.; Swartout, Christopher A.; and Dvorak, Neil E., 4,370,723, Cl. 364-483.000.
- Neeman, Ishak; and Gaffin, Stephen L., to Technion Research and Development Foundation, Ltd. Micromethod for the determination of endotoxins. 4,370,413, Cl. 435-39.000.
- Nefedov, Askold I.: *See—*
  - Gebel, Iosif D.; Zykov, Arkady A.; Lvov, Vladimir M.; Nefedov, Askold I.; Parshikov, Viktor I.; Starkina, Marina Y.; Klibanov, Mendel S.; Ryss, Alexandr S., deceased; and Ryss, Maria I., legal representative, 4,369,603, Cl. 51-236.000.
- Nehmey, Samuel D.; and Summers, James W., to B. F. Goodrich Company, The. Chlorinated polyvinyl chloride composition. 4,370,286, Cl. 264-53.000.
- Nehmiz, Peter: *See—*
  - Bohlen, Harald; Greschner, Johann; Kulcke, Werner; and Nehmiz, Peter, 4,370,554, Cl. 250-491.100.
- Nelson, Joseph N., to Engineered Products Company. Air filter restriction indicating device. 4,369,728, Cl. 116-276.000.
- Nelson, Richard T.; and Middleton, Marc G., to White Consolidated Industries, Inc. Suction muffler for refrigeration compressor. 4,370,104, Cl. 417-312.000.
- Nemeth, Laszlo. Shower-sauna instantaneous electric steam or hot water supply unit. 4,370,543, Cl. 219-275.000.
- Neubert, Gerhard; and Wistuba, Eckehardt, to BASF Aktiengesellschaft. Copolymers based on styrene and acrylic acid esters and/or methacrylic acid esters, and their use in gasoline-containing masonry paints or renders. 4,370,460, Cl. 526-329.200.
- Neue Bruderhaus Maschinenfabrik GmbH: *See—*
  - Schmidt, Sylvia; Eckert, Hansdieter; Holzinger, Wolfgang; and Holle, Dietrich, 4,370,200, Cl. 162-210.000.
- Neukotter, Wilhelm: *See—*
  - Hemfort, Heinrich; Peitzmann, August; Neukotter, Wilhelm; Pautsch, Gunthard; and Guunnewig, Hubert, 4,369,698, Cl. 99-486.000.
- New Cosmos Electric Company Limited: *See—*
  - Shigemori, Tesshi; Nozawa, Yoshinao; Kojima, Teruhisa; and Kitajima, Satoshi, 4,369,647, Cl. 73-27.00R.
- Newbould, Adrian O., to General Electric Company Limited, The. Protection apparatus for electric power transmission systems. 4,370,691, Cl. 361-62.000.
- NGK Insulators, Ltd.: *See—*
  - Oki, Shuichiro; and Watanabe, Tetsuo, 4,370,213, Cl. 204-195.00S.
  - Watanabe, Tetsuo; Mase, Syunzo; and Soejima, Shigeo, 4,370,393, Cl. 429-193.000.
- Nibby, Chester M., Jr.: *See—*
  - Johnson, Robert B.; and Nibby, Chester M., Jr., 4,370,712, Cl. 364-200.000.
- Nibi, Lordana: *See—*
  - Sannipoli, Anna M.; Nibi, Lordana; and Saldi, Giorgio, 4,369,869, Cl. 192-131.00R.
- Nicolon Corporation: *See—*
  - Scales, John M., 4,370,075, Cl. 405-20.000.
- Niederprum, Hans: *See—*
  - Mitschke, Karl-Heinz; and Niederprum, Hans, 4,370,254, Cl. 252-355.000.
- Nielsen, Erik S.; and Stacker, Poul, to I. Bager & Co. A/S. Cable stranding machine. 4,369,619, Cl. 57-58.340.
- Nielsen, Raymond E., to Honeywell Information Systems Inc. Detector for time difference between transitions in two wave forms. 4,370,574, Cl. 307-514.000.
- Niemiec, John J.: *See—*
  - Hein, James R.; Herr, Wayne T., Sr.; Niemiec, John J.; and Dombrowski, Philip, 4,369,982, Cl. 280-47.13R.
- Niesse, Paul J., to Western Electric Company, Inc. Methods of and apparatus for coating lightguide fiber. 4,370,355, Cl. 427-9.000.
- Nifco, Inc.: *See—*
  - Niitsu, Mitsugi; Yamazaki, Shuichi; and Kimura, Shigeru, 4,370,013, Cl. 339-82.000.
  - Yuda, Takuo, 4,369,553, Cl. 24-230.00R.
- Niitsu, Mitsugi; Yamazaki, Shuichi; and Kimura, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha; and Nifco, Inc. Connector device for electric circuit. 4,370,013, Cl. 339-82.000.
- Nijman, Aloysius J.: *See—*
  - Schoofs, Franciscus A. C. M.; Nijman, Aloysius J.; and van Dongen, Frederik, 4,370,526, Cl. 179-51.0AA.
- Nijs, Marc, to N.V. Bekaert S.A. Reinforcing strip. 4,369,941, Cl. 245-2.000.
- Nikkel, Ronnie D., to Phillips Petroleum Company. Yarn processing apparatus. 4,369,555, Cl. 28-221.000.
- Nikov, Nikolay Y.: *See—*
  - Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., 4,369,919, Cl. 239-79.000.
- Nilarp, Anders: *See—*
  - Eriksson, Gunno; and Nilarp, Anders, 4,370,671, Cl. 357-79.000.

- Nilsson, Nils-Ake. Multiple wheel tire with reduced noise. 4,369,825, Cl. 152-157.000.
- Nippon Kinzoku Co., Ltd.: *See—*
  - Yoshihara, Tsuyoshi; and Ohashi, Nobuaki, 4,370,210, Cl. 204-140.000.
- Nippon Kogaku K.K.: *See—*
  - Fukuhara, Toru; and Utagawa, Ken, 4,370,551, Cl. 250-201.000.
  - Maida, Osamu, 4,370,044, Cl. 354-173.000.
  - Nohda, Masao, 4,370,034, Cl. 351-206.000.
  - Ohkubo, Yuji, 4,370,042, Cl. 354-127.000.
  - Sato, Masatoshi; and Takahashi, Yosuke, 4,370,027, Cl. 350-164.000.
- Nippon Oil Company, Ltd.: *See—*
  - Kojima, Ichiro; Maruhashi, Kenji; and Fujiwara, Yasuo, 4,370,415, Cl. 435-119.000.
  - Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,370,453, Cl. 525-450.000.
- Nippon Steel Corporation: *See—*
  - Ueno, Nagaharu; Oka, Joji; Asano, Hidejiro; Ogasawara, Takahisa; Mizutani, Kiyokazu; and Tominaga, Yoshiitsu, 4,370,387, Cl. 428-458.000.
- Nippon Telegraph & Telephone Public Corp.: *See—*
  - Hirano, Junzo; and Inoue, Yukio, 4,370,744, Cl. 370-88.000.
- Nishida, Koji; and Miyake, Osamu, to Aisin Seiki Kabushiki Kaisha. Control system for a plurality of embroidery sewing machines. 4,369,722, Cl. 112-103.000.
- Nishihara, Yoshio: *See—*
  - Nagasawa, Toshio; and Nishihara, Yoshio, 4,370,548, Cl. 219-549.000.
- Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, to Olympus Optical Company Limited. Duplicating system comprising electrophotographic copying apparatus and option device. 4,370,055, Cl. 355-14.0SH.
- Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Power steering apparatus for vehicle. 4,369,695, Cl. 91-375.00A.
- Nishikawa, Masao; Toshimitsu, Yoshihiko; Iwasaki, Akira; and Fujimoto, Katsuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Power steering apparatus for vehicles. 4,369,852, Cl. 180-148.000.
- Nishimura, Haruo: *See—*
  - Mori, Yasuyuki; Nishimura, Haruo; and Sugahara, Yoshikazu, 4,370,300, Cl. 422-108.000.
- Nishimura, Yutaka: *See—*
  - Ueno, Sadayasu; Sato, Kanemasa; Oyama, Yoshishige; Nishimura, Yutaka; and Miya, Kazuhiko, 4,369,656, Cl. 73-204.000.
- Nissan Motor Company, Limited: *See—*
  - Anzai, Makoto, 4,369,757, Cl. 123-620.000.
  - Chiba, Akio; and Funahashi, Jun, 4,369,981, Cl. 280-5.00A.
  - Endo, Hiroshi, 4,369,758, Cl. 123-620.000.
  - Ezoe, Mitsuhiko, 4,369,756, Cl. 123-620.000.
  - Ito, Kosuke; Iida, Hiroshi; Harada, Masanori; and Hatakenaka, Masato, 4,369,752, Cl. 123-568.000.
  - Kubozuka, Takao; and Takei, Hirofumi, 4,369,744, Cl. 123-198.00E.
  - Kuwano, Fumiyoshi, 4,369,947, Cl. 248-74.00A.
  - Miura, Toshikatsu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, 4,369,608, Cl. 52-309.900.
  - Mizuno, Yukio, 4,369,817, Cl. 139-435.000.
  - Morita, Masaaki; Yamaguchi, Michio; and Asano, Hiroyuki, 4,369,714, Cl. 104-250.000.
  - Murase, Isao; Hirose, Katsutoshi; and Yoneya, Shoji, 4,370,060, Cl. 356-417.000.
  - Ohtsuka, Kunio, 4,369,672, Cl. 74-688.000.
  - Okamoto, Hisao; and Fukuma, Daizo, 4,369,710, Cl. 102-289.000.
  - Saito, Masaaki, 4,369,755, Cl. 123-588.000.
  - Sasaki, Michiaki; Yamamoto, Kiyokazu; and Hiratsuka, Ko, 4,370,102, Cl. 417-296.000.
  - Sunohara, Yoshio; and Ohtsuka, Kunio, 4,369,865, Cl. 192-3.310.
  - Tamura, Takeo; Kido, Takayoshi; and Nakamura, Tatsuo, 4,369,542, Cl. 15-250.00B.
  - Umemura, Yukio; Yoshida, Isao; Taguchi, Yoshio; and Iwasa, Yoshio, 4,369,739, Cl. 123-41.740.
  - Watanabe, Takeaki, 4,369,978, Cl. 277-12.000.
  - Yamamoto, Tadahiro; and Masaki, Kenji, 4,369,650, Cl. 73-118.000.
  - Yokoyama, Junichi, 4,370,282, Cl. 261-34.00B.
- Nissin Kogyo Kabushiki Kaisha: *See—*
  - Seki, Masayuki, 4,369,862, Cl. 188-73.450.
- Nitta, Tatsuo: *See—*
  - Iwakura, Ryoji; Nitta, Tatsuo; and Takahashi, Kazutoshi, 4,370,067, Cl. 368-202.000.
- Nitto Chemical Industry Co., Ltd.: *See—*
  - Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, 4,370,279, Cl. 260-465.300.
- Nixon, Henry M.: *See—*
  - DeCaro, Aristide R.; and Nixon, Henry M., 4,370,589, Cl. 313-315.000.
- NL Industries, Inc.: *See—*
  - Scearce, Forest A., 4,369,655, Cl. 73-153.000.
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- Noda, Hideo, to Shimano Industrial Company Limited. Fishing reel. 4,369,930, Cl. 242-84.10J.
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- Nomura, Hiroaki, to Kabushiki Kaisha Suwa Seikosha. Electronic alarm timepiece. 4,370,069, Cl. 368-273.000.
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  - Igarashi, Toshiji; Nomura, Keiichi; Naito. Kunji; and Yoshida, Mikihiko, 4,370,472, Cl. 536-1.100.
- Nordeen, Erwin E., to Whirlpool Corporation. Powered floor sweeper. 4,369,539, Cl. 15-49.00C.
- Noren, Tore H. Vacuum breaker and mixing chamber. 4,369,806, Cl. 137-216.000.
- Norrell, Donald L., to Minnesota Mining and Manufacturing Company. Tone detection circuitry. 4,370,650, Cl. 340-825.710.
- Norris, Amos; and Dorius, Edwin J. Method and apparatus for a portable respirator. 4,369,778, Cl. 128-205.130.
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  - Grell, Gary J., 4,369,642, Cl. 70-389.000.
- Northern Telecom Limited: *See—*
  - Vallee, Guy, 4,370,639, Cl. 337-230.000.
- Northland Aluminum Products, Inc.: *See—*
  - Jorgensen, Jorgen A.; and Nygren, Donald W., 4,369,760, Cl. 126-21.00A.
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  - Wright, George C.; and White, Ronald E., 4,370,494, Cl. 562-450.000.
- Notelteirs, Victor R., to U.S. Philips Corporation. Lamp/reflector unit. 4,370,587, Cl. 313-113.000.
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  - Jorgensen, Klavs H.; Jorgensen, Karin D.; and Thim, Lars, 4,370,317, Cl. 424-177.000.
- Novum in Elettrodomestica Srl: *See—*
  - Parisi, Sebastiano, 4,369,544, Cl. 15-320.000.
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  - Shigemori, Tesshi; Nozawa, Yoshinao; Kojima, Teruhisa; and Kitajima, Satoshi, 4,369,647, Cl. 73-27.00R.
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  - Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., 4,369,919, Cl. 239-79.000.
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  - Paradis, Joseph R.; and Kaleskas, Edward W., 4,369,812, Cl. 137-843.000.
- Oakes, Billy D., to Dow Chemical Company, The. Corrosion inhibitor for aluminum in aqueous acids. 4,370,256, Cl. 252-391.000.
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  - Dannels, W. Andrew; and Bainbridge, Robert W., 4,370,123, Cl. 425-543.000.
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  - Cha, Chang Y., 4,369,841, Cl. 166-251.000.
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  - Kvapil, Rudolph; and Ricketts, Thomas E., 4,370,003, Cl. 299-2.000.
- Odell, Eugene I. Mechanical torque converter. 4,369,673, Cl. 74-751.000.
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  - Jamieson, H. William, Jr., 4,369,963, Cl. 271-204.000.
- Offutt, Elmer B.; Babich, Edward; and Gillett, William G., to Fawn Engineering Corp. Product storing and dispensing apparatus. 4,369,897, Cl. 221-227.000.
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  - Ueno, Nagaharu; Oka, Joji; Asano, Hidejiro; Ogasawara, Takahisa; Mizutani, Kiyokazu; and Tominaga, Yoshiitsu, 4,370,387, Cl. 428-458.000.
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- Ogawa, Tadao; and Yamaguchi, Nobuhide, to Fujitsu Limited. Low noise amplifier circuit with reduced low-frequency gain. 4,370,624, Cl. 330-294.000.

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  - Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,370,680, Cl. 358-330.000.
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- Ohara, Yuji; and Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Laser recorder. 4,370,667, Cl. 346-108.000.
- Oharek, Frank J.: *See—*
  - Baldwin, Dorothy M.; Oharek, Frank J.; and Stahl, Curt, 4,370,677, Cl. 358-225.000.
- Ohashi, Nobuaki: *See—*
  - Yoshihara, Tsuyoshi; and Ohashi, Nobuaki, 4,370,210, Cl. 204-140.000.
- Ohashi, Toshinori: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.
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  - Shigenobu, Michio; and Ohkubo, Masaharu, 4,369,729, Cl. 118-60.000.
- Ohkubo, Yuji, to Nippon Kogaku K.K. Ready-to-flash condition indicating device for a camera. 4,370,042, Cl. 354-127.000.
- Ohme, Dale A. Connector hub for geodesic dome structures. 4,370,073, Cl. 403-172.000.
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  - Ohara, Yuji; and Ohnishi, Masahiro, 4,370,667, Cl. 346-108.000.
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  - Sunohara, Yoshio; and Ohtsuka, Kunio, 4,369,865, Cl. 192-3.310.
- Oida, Yoshio: *See—*
  - Sasaki, Masayuki; Oida, Yoshio; and Semi, Hidetoshi, 4,370,731, Cl. 364-900.000.
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- Okada, Ken: *See—*
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- Okada, Yukio: *See—*
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- Okajima, Kunihiko: *See—*
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- Okamoto, Miyoshi; and Asada, Miyozo, to Toray Industries, Inc. Spinneret assembly for use in production of multi-ingredient multi-core composite filaments. 4,370,114, Cl. 425-131.500.
- Okamura, Shigemichi; and Watanabe, Masazumi, to Kikkoman Corporation. Hydroxy-cinnamic acid ester hydrolase and process for producing same. 4,370,416, Cl. 435-197.000.
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- Oki, Shuichiro; and Watanabe, Tetsuo, to NGK Insulators, Ltd. Oxygen sensor. 4,370,213, Cl. 204-195.00S.
- Okoshi, Tokio: *See—*
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- Okuhira, Toshifumi: *See—*
  - Suzuoka, Akihiro; Okuhira, Toshifumi; Matsumura, Eiji; and Sasaki, Katsushi, 4,370,302, Cl. 422-137.000.
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  - Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,370,384, Cl. 428-425.900.
- Olin Corporation: *See—*
  - Gray, Thomas J., 4,370,361, Cl. 427-123.000.
  - Kadija, Igor V., 4,370,214, Cl. 204-242.000.
  - Pryor, Michael J.; and Tyler, Derek E., 4,369,832, Cl. 164-472.000.
- Oliver, Jean E.: *See—*
  - Evans, John R.; Fildes, Francis J. T.; and Oliver, Jean E., 4,370,349, Cl. 424-365.000.
- Olson, Allan H.: *See—*
  - Gangal, Subhash V.; and Olson, Allan H., 4,370,376, Cl. 428-241.000.
- Olympus Optical Co., Ltd.: *See—*
  - Kanayama, Katsumi; Motoyama, Kazuyasu; and Furuta, Kenzi, 4,370,684, Cl. 360-74.200.
  - Kimura, Kenji, 4,370,038, Cl. 354-25.000.
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  - Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, 4,370,055, Cl. 355-14.0SH.
  - Shishido, Yoshio, 4,369,767, Cl. 128-6.000.
  - Tomizawa, Yoshio, 4,370,549, Cl. 235-92.0MP.
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  - Yamanaka, Takeshi, 4,369,935, Cl. 242-192.000.
- Omuro, Shigeru: *See—*
  - Hongu, Masayuki; Omuro, Shigeru; Kita, Hiroyuki; and Tokuhara, Masaharu, 4,370,676, Cl. 358-188.000.
- Ono, Noboru: *See—*
  - Kani, Kazutaka; Abe, Kuniomi; Konagaya, Masahiko; and Ono, Noboru, 4,370,033, Cl. 351-206.000.
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  - Iijima, Toshifumi; Fujimatsu, Wataru; and Onodera, Kaoru, 4,370,410, Cl. 430-505.000.
- Opelika Manufacturing Corporation: *See—*
  - Griffith, William C., Jr.; and Brocklehurst, Charles E., 4,369,723, Cl. 112-281.000.
- Opersteny, Edward J.; and Fritzsche, Alfred K., to Monsanto Company. Methods for preparing tube sheets for permeators having hollow fiber membranes. 4,369,605, Cl. 51-319.000.
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  - Jacobi, Haireddin; and Opitz, Wolfgang, 4,370,342, Cl. 424-275.000.
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  - Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., 4,369,876, Cl. 198-460.000.
- Ordmandy, Robert L. Quick change multiple function outlet. 4,370,010, Cl. 339-31.00R.
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  - Cruikshank, Susan J.; and Orem, Michael W., 4,370,412, Cl. 430-635.000.
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  - Panda, Jajnya D.; and Mahapatra, Santosh K., 4,370,422, Cl. 501-108.000.
- Ormos, Zoltan: *See—*
  - Dencs, Bela; Ormos, Zoltan; and Pataki, Karoly, 4,370,198, Cl. 159-48.100.
- Ornberg, Stellan. Basic frame for an adjustable damper-actuated chair. 4,370,001, Cl. 297-355.000.
- Orndorff, Steve A., to Westvaco Corporation. Enzymatic catalyzed biocide system. 4,370,199, Cl. 162-161.000.
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  - Shriver, David A., 4,370,348, Cl. 424-331.000.
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  - Lehnhardt, William F.; Gibson, Paul W.; and Orthoefer, Frank T., 4,370,267, Cl. 260-123.500.
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- Ostrowsky, Efrem M., to Ethyl Products Company. Tamperproof closure. 4,369,889, Cl. 215-246.000.
- Ostyn, Marcel A., to Exxon Research and Engineering Co. Gear and axle oil composition. 4,370,247, Cl. 252-46.700.
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  - Falbe, Jurgen; Schneller, Peter; Payer, Wolfgang; Forster, Ingrid; Cornils, Boy; Birnkraut, Hans-Walter; Lutze, Siegfried; and Otterbein, Karl, 4,370,458, Cl. 526-138.000.
- Otty, Malcolm. Method and apparatus for insulating coils for rotary electric machines. 4,370,188, Cl. 156-245.000.
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  - Holt, James L.; Mahoney, John M.; and McLeod, Kenneth M., 4,369,743, Cl. 123-196.00S.
- Owens-Corning Fiberglas Corporation: *See—*
  - Roberts, Michael G.; and Tanner, Joseph F., 4,370,435, Cl. 524-312.000.
- Owens-Illinois, Inc.: *See—*
  - Uhlig, Albert R., 4,369,892, Cl. 220-320.000.
- Oy Nokia AB: *See—*
  - Riekkinen, Asko S.; and Ronneberg, Allan F., 4,369,928, Cl. 242-25.00A.

- Oy Tampella Ab: *See*—
  - Salmi, Pekka; and Helin, Aimo, 4,369,848, Cl. 173-8.000.
- Oy Wartsila Ab: *See*—
  - Heijola, Pentti; and Burmeister, Fredrik, 4,369,853, Cl. 180-117.000.
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  - Minamitani, Eiji; Ozawa, Kiyoo; and Yokoto, Takashi, 4,370,742, Cl. 370-58.000.
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  - Fluck, David W., 4,369,996, Cl. 296-97.00K.
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  - Fegley, Richard F.; and Kiss, Steven R., 4,370,140, Cl. 493-289.000.
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  - Jensen, Gerald A.; and Merry, Ted G., 4,370,184, Cl. 156-157.000.
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- Papst Motoren GmbH und Co. KG: *See*—
  - Burgbacher, Martin, 4,370,580, Cl. 310-67.00R.
- Papuchon, Michel: *See*—
  - Puech, Claude; Arditty, Herve; and Papuchon, Michel, 4,370,612, Cl. 324-117.00R.
- Paquette, Elmer G.: *See*—
  - Fisher, E. Eugene; Estes, R. Ray; Lokken, Orvin D.; and Paquette, Elmer G., 4,370,350, Cl. 426-5.000.
- Paradis, Joseph R.; and Kaleskas, Edward W., to Nypro Inc. Control of fluid flow using precisely positioned disc. 4,369,812, Cl. 137-843.000.
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- Parisi, Sebastiano, to Novum in Elettrodomestica Srl. Machine to wash surfaces. 4,369,544, Cl. 15-320.000.
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  - Risberg, Robert L., 4,370,703, Cl. 363-136.000.
- Parker, Richard A. Card dealer wheel assembly with adjustable arm. 4,369,972, Cl. 273-148.00A.
- Parkyn, Derek J.: *See*—
  - Bugg, Richard E. F.; and Parkyn, Derek J., 4,370,747, Cl. 375-62.000.
- Parrish, John D., to Reed Rock Bit Company. Large diameter oil well drilling bit. 4,369,849, Cl. 175-340.000.
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  - Busse, Oswald; and Klesper, Hugo, 4,370,232, Cl. 210-224.000.
- Passovoy, Alexander E. Door frame assembly with improved characteristics. 4,369,600, Cl. 49-504.000.
- Pasternak, Stephen F., to Peerless of America, Inc. Tube supports. 4,369,833, Cl. 165-67.000.
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- Pataki, Karoly: *See*—
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- Patmark Consultants: *See*—
  - Bollier, J. F., 4,369,717, Cl. 109-45.000.
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- Payne, Elton R.: *See*—
  - Freeman, Ronnie D.; and Payne, Elton R., 4,369,839, Cl. 166-53.000.
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  - Huffman, Stanley S.; Neel, Alan F.; Swartout, Christopher A.; and Dvorak, Neil E., 4,370,723, Cl. 364-483.000.
- Pearson, Glenn A. Fire retardant compositions. 4,370,442, Cl. 524-598.000.
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  - Pasternak, Stephen F., 4,369,833, Cl. 165-67.000.
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  - Bishop, Thomas R.; and Peil, Archie W., 4,369,977, Cl. 277-1.000.
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- Penick, Loren C., to Western Electric Company, Inc. Apparatus for preventing electrostatic charge build-up on CRT monitors. 4,370,695, Cl. 361-213.000.
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  - Caracappa, Michael G., 4,370,726, Cl. 364-604.000.
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  - Crowley, Albert T., 4,370,653, Cl. 343-6.5LC.
  - Fitts, Robert W., 4,370,586, Cl. 313-102.000.
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  - Thompson, Robert P., 4,370,287, Cl. 264-67.000.
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- Rexnord, Incorporated: *See—*
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- Rice, Robert C. Combination tool chest dolly and leaved workbench. 4,369,822, Cl. 144-286.00R.
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- Richardson Graphics Company: *See—*
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- Richardson, Harvey J., to Burroughs Corporation. Floppy pack with enhanced orifice means. 4,370,688, Cl. 360-99.000.
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  - Iwata, Susumu; and Maruta, Keiichi, 4,370,370, Cl. 428-40.000.
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  - Matsushita, Yoh, 4,370,564, Cl. 307-140.000.
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- Rijckaert, Albert M. A., to U.S. Philips Corporation. Phase comparison circuit arrangement. 4,370,619, Cl. 328-133.000.
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  - Hargrave, Thomas A., 4,370,694. Cl. 361-179.000.
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- Roullet, Robert: *See—*
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  - Falbe, Jurgen; Schneller, Peter; Payer, Wolfgang; Forster, Ingrid; Cornils, Boy; Birnkraut, Hans-Walter; Lutze, Siegfried; and Otterbein, Karl, 4,370,458, Cl. 526-138.000.
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- Safetran Systems Corporation: *See—*
  - Wilson, H. James, 4,369,942, Cl. 246-34.0CT.
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  - Ojima, Iwao; and Fuchikami, Takamasa, 4,370,504, Cl. 568-454.000.
- Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, to Toyama Chemical Company, Ltd. Pharmaceutical composition comprising extract from poison pouch contents of bee useful for treating decreased immunity. 4,370,316, Cl. 424-98.000.
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  - Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, 4,370,279, Cl. 260-465.300.
- Saito, Tadao; Kishi, Takao; and Kakuta, Yoshiyuki, to Yoshino Kogyosho Co., Ltd. Manual accumulator type atomizer. 4,369,900, Cl. 222-321.000.
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- Sakai, Eiichi, to Sharp Kabushiki Kaisha. Blocking condition detection device in a medical fluid injection system. 4,369,780, Cl. 128-214.00E.
- Sakai, Hiroshi: *See—*
  - Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.
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  - Sannipoli, Anna M.; Nibi, Lordana; and Saldi, Giorgio, 4,369,869, Cl. 192-131.00R.
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  - Bingel, John P.; and Salmi, Robert W., 4,370,225, Cl. 209-40.000.
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  - Palazzetti, Mario; and Salotti, Gianfranco, 4,370,562, Cl. 307-38.000.
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  - Venturello, Giorgio; and Salvatore, Osvaldo, 4,369,663, Cl. 73-862.040.
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- Sanders, Cledith A., II: *See—*
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- Sanders, John H., to Badische Corporation. Blending method using a roving disintegrator-dispenser. 4,369,549, Cl. 19-145.700.
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  - de Buman, Alain; Riva, Aldo; and Sucker, Heinz, 4,369,784, Cl. 128-271.000.
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  - Suzuoka, Akihiro; Okuhira, Toshifumi; Matsumura, Eiji; and Sasaki, Katsushi, 4,370,302, Cl. 422-137.000.
- Sasaki, Masayuki; Oida, Yoshio; and Semi, Hidetoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. System for entering temperature control data and displaying it with the temperature scale. 4,370,731, Cl. 364-900.000.
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- Sasaki, Setsuo, to TDK Electronics Co., Ltd. Through type high-withstand-voltage ceramic. 4,370,698, Cl. 361-330.000.
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- Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, to Nitto Chemical Industry Co., Ltd. Process for production of acrylonitrile. 4,370,279, Cl. 260-465.300.
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  - Suzuki, Kenpei; Koya, Shinichi; and Sato, Hiroshi, 4,370,011, Cl. 339-74.00R.
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- Sato, Masatoshi; and Takahashi, Yosuke, to Nippon Kogaku K.K. Anti-reflection film with an ion-penetration prevention layer. 4,370,027, Cl. 350-164.000.
- Sato, Tsutomu, to Ricoh Company, Ltd. Electrostatic copying process. 4,370,398, Cl. 430-42.000.
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  - Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, 4,370,340, Cl. 424-274.000.
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- Satren, Ernest A.: *See—*
  - Axmark, Roger E.; and Satren, Ernest A., 4,370,557, Cl. 250-554.000.
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  - Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., 4,369,919, Cl. 239-79.000.
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  - Haworth, Richard G.; Saylor, Charles J.; and Wilson, Harold R., 4,370,008, Cl. 339-4.000.
- Scales, John M., to Nicolon Corporation. Revetment grids and mats. 4,370,075, Cl. 405-20.000.
- Scearce, Forest A., to NL Industries, Inc. Method of determining the concentration of solid lubricants in drilling fluids. 4,369,655, Cl. 73-153.000.
- Schaefer, Eberhard: *See—*
  - Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Schaefer, Eberhard, 4,370,491, Cl. 560-234.000.
- Schafer, Hans: *See—*
  - Herbrechtsmeier, Peter; Schafer, Hans; and Steiner, Rudolf, 4,370,151, Cl. 55-38.000.
- Schafer, Robert J., to Ashland Oil, Inc. Process for no-bake foundry application utilizing polyurethanes based on amine polyols. 4,370,463, Cl. 528-78.000.
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  - Heuer, Helmut; Schapsmeier, Wilhelm; and Fohlmeister, Hans D., 4,369,877, Cl. 198-509.000.
- Schaum-Chemie W. Bauer GmbH & Co KG: *See—*
  - Baumann, Heinz, 4,370,424, Cl. 521-121.000.
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  - Ruff, Gunter W.; and Scheffler, Hartmut, 4,370,527, Cl. 179-70.000.
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- Schluger, Allen, to Modular Magazine Sampling Systems, Inc. Container for product samples. 4,369,882, Cl. 206-232.000.
- Schmenk, Myron J.: *See—*
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- Schmitt, Kirk D., to Mobil Oil Corporation. Infrared absorption determination of sulfonate surfactants utilizing deuterated sulfonates. 4,370,146, Cl. 436-120.000.
- Schmitz, Heinz, to Rose Verpackungsmaschinen-Fabrik Theegarten GmbH & Co. KG, Firma. Apparatus for isolation and supply of objects, in particular sweets, to a packing machine. 4,369,875, Cl. 198-456.000.
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  - Pluck, Christian; and Schuster, Peter, 4,370,285, Cl. 264-43.000.
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  - Messmer, Karlheinz; Fischer, Hermann; Hartmann, Heinrich; Denzinger, Walter; Schneider, Rolf; Wulz, Klaus; and Raubenheimer, Hans-Juergen, 4,370,454, Cl. 526-88.000.
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  - Falbe, Jurgen; Schneller, Peter; Payer, Wolfgang; Forster, Ingrid; Cornils, Boy; Birnkraut, Hans-Walter; Lutze, Siegfried; and Otterbein, Karl, 4,370,458, Cl. 526-138.000.
- Schofield, John, to U.S. Philips Corporation. Acoustic wave bandpass electrical filters. 4,370,633, Cl. 333-195.000.
- Scholl, Walter, to Bayer Aktiengesellschaft. Reactive dyestuffs. 4,370,268, Cl. 260-146.00T.
- Schonfeld, Bernd: *See—*
  - Hirschberg, Rudolf; and Schonfeld, Bernd, 4,370,148, Cl. 51-293.000.
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  - Hung, Paul P.; Lee, Shaw-Guang; Roychoudhury, Ranajit; Ratzkin, Barry J.; Schrenk, W. Jurgen; and Chen, Michael C., 4,370,417, Cl. 435-212.000.
- Schroder, Gunter: *See—*
  - Gruber, Wilhelm; and Schroder, Gunter, 4,370,490, Cl. 560-214.000.
- Schruhl, Robert: *See—*
  - Raabe, Fritz; and Schruhl, Robert, 4,370,374, Cl. 428-216.000.
- Schuck, Helmut: *See—*
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- Schuh, Eduard: *See—*
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- Schulke, Karl A., to Heraeus Quarzschmelze GmbH. Heat-treating method for semiconductor components. 4,370,158, Cl. 65-32.000.
- Schulz, Johann G.: *See—*
  - Selwitz, Charles M.; and Schulz, Johann G., 4,370,253, Cl. 252-312.000.
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- Schurman, Peter T., to Plastic Forming Company, Inc., The. Tote device. 4,369,575, Cl. 30-151.000.
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- Schwartz, Paul M.: *See—*
  - Chu, James C.; Crane, Patrick E.; D'Agostino, Jack V.; and Schwartz, Paul M., 4,370,659, Cl. 343-772.000.
- Schwarz, Herbert F., to Polysar Limited. Compositions comprising chlorosulphonated polyethylene, carboxylated butadiene-acrylonitrile and magnesium oxide useful for liners or membranes. 4,370,440, Cl. 524-522.000.
- Schweitzer, Francis E., to Du Pont de Nemours, E. I., and Company. Alkylated isoadipoguanamine-formaldehyde crosslinking resin and improved coating compositions produced therefrom. 4,370,427, Cl. 523-400.000.
- Scott, Charles E.: *See—*
  - Perry, Leroy A.; and Scott, Charles E., 4,370,566, Cl. 307-141.000.
- Scott & Fetzer Company, The: *See—*
  - Burgoon, Jack L.; and Karpanty, David J., 4,369,540, Cl. 15-49.00R.
- Scott, Howard L.: *See—*
  - McClain, James E.; Dickson, William D.; and Scott, Howard L., 4,370,098, Cl. 417-18.000.
- Scott, Jerry W.: *See—*
  - Russell, Benjamin; and Scott, Jerry W., 4,370,153, Cl. 55-304.000.
- Scott, Leonard F.: *See—*
  - McCloskey, Chester M.; Fischer, James R.; and Scott, Leonard F., 4,370,485, Cl. 548-404.000.
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- Scranton, Robert J.; and Meckstroth, James R., to Mead Corporation, The. Paper transport for a printer test unit. 4,370,665, Cl. 346-75.000.
- Sealed Motor Construction Company, Limited: *See—*
  - Addicott, Roy W.; and Capaldi, Bernard, 4,370,582, Cl. 310-211.000.
- Searson, D. James: *See—*
  - Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,370,216, Cl. 204-243.00R.
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  - Greff, Daniel; Petit-Martenon, Francoise; and Toan, Tran, 4,370,315, Cl. 424-94.000.
- Seeney, Charles E.: *See—*
  - Robinson, Glenn N.; and Seeney, Charles E., 4,370,171, Cl. 106-300.000.
- Seidl, Jiri, to Bayerische Motoren Werke A.G. Valve-actuating lever. 4,369,740, Cl. 123-90.450.
- Seifert, Helmut; Honl, Wolf-Dieter; Schmid, Johannes; and Frei, Bernhard, to Repa Feinstanzwerk GmbH. Automatic wind-up roller for a safety belt. 4,369,932, Cl. 242-107.40A.
- Seikosha Co., Ltd.: *See—*
  - Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirofumi, 4,370,584, Cl. 310-365.000.
- Seitz-Werke GmbH: *See—*
  - Ahlers, Egon; and Rentel, Alfred, 4,369,820, Cl. 141-39.000.
- Seki, Kazuhisa: *See—*
  - Sato, Masamichi; Matsumoto, Kenji; and Seki, Kazuhisa, 4,370,025, Cl. 350-166.000.
- Seki, Masayuki, to Nissin Kogyo Kabushiki Kaisha. Disc brake assembly for vehicle use. 4,369,862, Cl. 188-73.450.
- Sekmakas, Kazys: *See—*
  - Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, 4,370,441, Cl. 524-539.000.
- Selwitz, Charles M.; and Schulz, Johann G., to Gulf Research & Development Company. Alkenylsuccinic acid emulsions and their preparation. 4,370,253, Cl. 252-312.000.
- Semi, Hidetoshi: *See—*
  - Sasaki, Masayuki; Oida, Yoshio; and Semi, Hidetoshi, 4,370,731, Cl. 364-900.000.
- Semperit AG: *See—*
  - Haberl, Rainer; and Kastner, Josef, 4,370,697, Cl. 361-283.000.
- Sensors, Inc.: *See—*
  - Waycaster, Roy A.; Baker, William T.; and Bidle, Jerry D., 4,370,553, Cl. 250-343.000.
- Serletic, Bernard T.: *See—*
  - Giggey, Robert W.; Serletic, Bernard T.; and Ashley, Charles R., 4,369,880, Cl. 206-63.300.
- Servais, Stephen B.: *See—*
  - Lentz, Richard P.; Lasky, Thomas J.; and Servais, Stephen B., 4,369,660, Cl. 73-753.000.
- Service Distributors, Inc.: *See—*
  - Sidline, George B., 4,370,550, Cl. 235-449.000.
- SGB Group Limited: *See—*
  - Smits, Marinus A. L., 4,369,859, Cl. 182-179.000.
- Shafer, Richard H.: *See—*
  - Dill, Ken A.; Zimm, Bruno H.; and Shafer, Richard H., 4,370,242, Cl. 210-787.000.
- Shah, Kishore R., to Kendall Company, The. Pressure-sensitive adhesive. 4,370,380, Cl. 428-355.000.
- Sharp Kabushiki Kaisha: *See—*
  - Sakai, Eiichi, 4,369,780, Cl. 128-214.00E.
- Shaver, David C.; Smith, Henry I.; and Flanders, Dale C., to Massachusetts Institute of Technology. Orientation of ordered liquids and their use in devices. 4,370,194, Cl. 156-643.000.
- Shaw, Graham C.: *See—*
  - Lundstrom, Norman H.; and Shaw, Graham C., 4,370,181, Cl. 149-2.000.
- Shea, Robert H. Rotary pump or motor with drive rollers and free-floating rollers. 4,370,111, Cl. 418-212.000.
- Sheldon, Robert W.; and Mullin, Richard W. Prefabricated building system. 4,369,609, Cl. 52-478.000.
- Shelton, David L.: *See—*
  - Chapin, Carole N.; Kelm, Gary R.; and Shelton, David L., 4,370,319, Cl. 424-184.000.
- Shepard, James N., to United States Steel Corporation. Dumping apparatus for particulate-bearing container. 4,370,087, Cl. 414-421.000.
- Sherwood Medical Industries Inc.: *See—*
  - Gilson, Richard W.; and Windischman, Edward F., 4,369,781, Cl. 128-214.00R.
- Shia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
  - Carignani, Giancarlo; and Cipriani, Aldo, 4,370,425, Cl. 521-138.000.
- Shibata, Junichi: *See—*
  - Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,370,522, Cl. 179-1.0GD.
- Shibuya, Kunihiro; Uchida, Koachi; and Hashimoto, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrostatic copying apparatus. 4,370,048, Cl. 355-3.0TR.
- Shigemori, Tesshi; Nozawa, Yoshinao; Kojima, Teruhisa; and Kitajima, Satoshi, to New Cosmos Electric Company Limited. Gas leakage detector. 4,369,647, Cl. 73-27.00R.
- Shigenobu, Michio; and Ohkubo, Masaharu, to Canon Kabushiki Kaisha. Image recording apparatus. 4,369,729, Cl. 118-60.000.
- Shigeyasu, Motoo; and Kuki, Michio, to Matsuyama Petrochemicals Inc. Process for continuous production of high purity terephthalic acid. 4,370,496, Cl. 562-487.000.
- Shiina, Toshio: *See—*
  - Soma, Kenichiro; Kuma, Shoji; Sakaguchi, Harunori; Shirai, Hisanari; Ito, Ryoichi; and Shiina, Toshio, 4,370,517, Cl. 174-74.00A.
- Shimajiri, Yoshihumi: *See—*
  - Asanuma, Yoshihiko; and Shimajiri, Yoshihumi, 4,369,838, Cl. 165-185.000.
- Shimakata, Masashi: *See—*
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- Shimano Industrial Company Limited: *See—*
  - Noda, Hideo, 4,369,930, Cl. 242-84.10J.
  - Noda, Hideo, 4,369,936, Cl. 242-220.000.
- Shimazaki, Hiroshi: *See—*
  - Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; and Shimazaki, Hiroshi, 4,370,290, Cl. 264-184.000.
- Shimizu, Toyozi: *See—*
  - Harada, Taira; Shimizu, Toyozi; and Nagaoka, Takenori, 4,370,502, Cl. 564-411.000.
- Shin-Etsu Chemical Co., Ltd.: *See—*
  - Takamizawa, Minoru; Abe, Akira; Kasahara, Katsusuke; Komeno, Yukito; and Aoyama, Akira, 4,370,365, Cl. 427-387.000.
- Shinoda, Tsutae; Yoshikawa, Kazuo; and Miyashita, Yoshinori, to Fujitsu Limited. Self shift type gas discharge panel. 4,370,599, Cl. 315-217.000.
- Shinozaki, Fumiaki: *See—*
  - Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,370,404, Cl. 430-302.000.
- Shinozaki, Nobuya, to Kato Hatsujo Kaisha, Ltd. Structure of a breather pipe for gasoline tanks. 4,369,891, Cl. 220-85.0VR.
- Shinryo Air Conditioning Co., Ltd.: *See—*
  - Suzuki, Akira; and Shioya, Yasumi, 4,370,235, Cl. 210-620.000.
- Shionogi & Co., Ltd.: *See—*
  - Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, 4,370,475, Cl. 536-16.800.
  - Mitsugi, Takashi; Muneyuki, Ryonosuke; Wakisaka, Yoshiharu; Koizumi, Kenzo; and Kondo, Eiji, 4,370,414, Cl. 435-44.000.
- Shioya, Yasumi: *See—*
  - Suzuki, Akira; and Shioya, Yasumi, 4,370,235, Cl. 210-620.000.
- Shirai, Hisanari: *See—*
  - Soma, Kenichiro; Kuma, Shoji; Sakaguchi, Harunori; Shirai, Hisanari; Ito, Ryoichi; and Shiina, Toshio, 4,370,517, Cl. 174-74.00A.
- Shirai, Hisao: *See—*
  - Iwata, Yasuo; and Shirai, Hisao, 4,369,558, Cl. 29-148.40R.
- Shiraishi, Fumitake; Fujioka, Masahiko; and Fujiki, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic disk apparatus. 4,370,687, Cl. 360-98.000.
- Shirasaki, Takayuki, to Canon Kabushiki Kaisha. Optical scanning device with temperature control means. 4,370,019, Cl. 350-6.600.
- Shishido, Yoshio, to Olympus Optical Co., Ltd. Endoscope system. 4,369,767, Cl. 128-6.000.

- Showa, Aluminum Kabushiki Kaisha: *See—*
  - Asanuma, Yoshihiko; and Shimajiri, Yoshihumi, 4,369,838, Cl. 165-185.000.
- Shriver, David A., to Ortho Pharmaceutical Corporation. Method of inducing cytoprotection. 4,370,348, Cl. 424-331.000.
- Shuey, Kenneth C.; and Rosswurm, Mark A., to Westinghouse Electric Corp. Microprocessor control of inverter power transistors with DC content correction. 4,370,702, Cl. 363-42.000.
- Shumaker, John F.; and Maurer, Herman J., to J. I. Case Company. Boom lock. 4,370,090, Cl. 414-694.000.
- Sibit, S.p.A.: *See—*
  - Visca, Mario, 4,370,263, Cl. 252-472.000.
- Sicurpress Antinfortunistica & C.: *See—*
  - Sannipoli, Anna M.; Nibi, Lordana; and Saldi, Giorgio, 4,369,869, Cl. 192-131.00R.
- Sidline, George B., to Service Distributors, Inc. Dual read-record head for magnetic card machine actuator. 4,370,550, Cl. 235-449.000.
- Siedenstrang, Roy W.; and Thorsrud, Agmund K., to Phillips Petroleum Company. Modifying thermoplastic materials and products thereof. 4,370,189, Cl. 156-272.200.
- Siemens Aktiengesellschaft: *See—*
  - Bernhardt, Joerg, 4,370,028, Cl. 350-341.000.
  - Haass, Adolf, 4,370,741, Cl. 370-24.000.
  - Herbst, Heiner; Pfleiderer, Hans-Joerg; and Grassl, Hans-Peter, 4,370,724, Cl. 364-561.000.
  - Lange, Gerhard; and Saller, Helmut, 4,370,023, Cl. 350-96.230.
  - Matthaus, Gunther; and Ruffer, Joachim, 4,370,514, Cl. 174-31.00R.
  - Wohlgemuth, Juergen, 4,370,132, Cl. 433-128.000.
- Siemens-Allis, Inc.: *See—*
  - Carroll, John T.; and Yamat, Miguel B., 4,370,635, Cl. 335-20.000.
- Siemens Corporation: *See—*
  - Wagner, Theodore; Vyas, Ramesh M.; and Liang, Samuel, 4,370,648, Cl. 340-825.200.
- Siemionko, Roger K., to Du Pont de Nemours, E. I., and Company. Optically anisotropic melt forming polyesters. 4,370,466, Cl. 528-190.000.
- Siffroi, Lucien, to La Telemecanique Electrique. Magnetic actuator. 4,370,637, Cl. 335-174.000.
- Sigri Elektrographit GmbH: *See—*
  - Bieg, Hartmut; Jonas, Hans; Rosswurm, Heinz; Demmer, Wilhelm; and Dobel, Ludwig, 4,369,683, Cl. 83-157.000.
- Silberman, Ira J.; and James, Calvin E., Sr., to Diversified Products Corporation. Folding exercising apparatus. 4,369,966, Cl. 272-62.000.
- Silhouette, Jean-Max M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Device for detecting differences in the speeds of rotation of two shafts. 4,369,658, Cl. 73-507.000.
- Simon, David J.: *See—*
  - Costello, Edward C.; and Simon, David J., 4,370,642, Cl. 340-347.0SY.
- Sinay, Pierre: *See—*
  - Adam, Arlette; Audibert, Francoise; Chedid, Louis; Choay, Jean; Ciorbaru, Rita; Ellouz, Fabrielle; Juy, Dominique; Lefrancier, Pierre; Merser, Claude; Petit, Jean-Francois; Sinay, Pierre; and Lederer, Edgar, 4,370,265, Cl. 260-112.50R.
- Singbartl, Gunther: *See—*
  - Klatt, Alfred; and Singbartl, Gunther, 4,369,696, Cl. 91-465.000.
- Singer Company, The: *See—*
  - Costello, Edward C.; and Simon, David J., 4,370,642, Cl. 340-347.0SY.
  - Ljung, Bo H. G., 4,370,583, Cl. 310-331.000.
- Singerman, Gary M.: *See—*
  - Ryu, Yumi P.; Anglin, James R.; and Singerman, Gary M., 4,370,245, Cl. 252-46.400.
- Singh, Balwant: *See—*
  - Raghu, Sivaraman; Hoffmann, Arthur K.; and Singh, Balwant, 4,370,482, Cl. 548-155.000.
- SISA, Incorporated: *See—*
  - Ghosh, Anil C.; and Razdan, Raj K., 4,370,333, Cl. 424-260.000.
- Skelly, James K.; Evans, David G.; and Becker, Carl, to Ciba-Geigy Corporation. Two-phase organic solvent-water dyeing process for polyester fibers. 4,370,144, Cl. 8-501.000.
- Skoda, Stanislav: *See—*
  - Burysek, Frantisek; Mikulecky, Karel; Elias, Jiri; Esner, Stanislav; Skoda, Stanislav; and Janousek, Jan, 4,369,620, Cl. 57-263.000.
- Skrdlant, Karel; and Milota, Lubor, to PIKAZ, inzenyrsky podnik. Process of producing front commutators for the rotors of direct current machines. 4,369,566, Cl. 29-597.000.
- Sleeper, H. Prescott, Jr. Compound coaxial windmill. 4,370,095, Cl. 416-175.000.
- Small, Edward A.; Edwards, Richard H.; Eufusia, Eugene A.; Clary, Robert M.; and Bergfelt, Nils H., to Optical Coating Laboratory, Inc. Multi-layer coating apparatus, system and method. 4,369,876, Cl. 198-460.000.
- Smedal, Arne. Apparatus for transfer of persons and goods between structures offshore. 4,369,538, Cl. 14-69.500.
- Smiesko, Frank A.: *See—*
  - Beiswenger, John L.; Moon, Howard R.; Smiesko, Frank A.; and Chaphalkar, Dhananjay, 4,369,921, Cl. 239-317.000.
- Smith, Franklin N., Jr.: *See—*
  - Bird, Thomas O.; White, Jack; and Bird, Carl H., 4,370,249, Cl. 252-62.000.
- Smith, Henry I.: *See—*
  - Shaver, David C.; Smith, Henry I.; and Flanders, Dale C., 4,370,194, Cl. 156-643.000.
- Smith, James E., to Control Data Corporation. Branch predictor using random access memory. 4,370,711, Cl. 364-200.000.
- Smith, John Conventry, Jr.: *See—*
  - Williamson, David T. N., 4,369,563, Cl. 29-568.000.
- Smith, Robert A.: *See—*
  - Sprangle, Phillip A.; Smith, Robert A.; and Chu, Kwo R., 4,370,621, Cl. 330-4.000.
- Smith, Robert C.: *See—*
  - Powers, Charles A.; Holman, George B.; and Smith, Robert C., 4,370,166, Cl. 106-97.000.
- Smith, Stuart B., to Thermoset AG. Foaming apparatus. 4,370,117, Cl. 425-224.000.
- Smits, Marinus A. L., to SGB Group Limited. Scaffolding system. 4,369,859, Cl. 182-179.000.
- Snaidr, Stanislav M.: *See—*
  - Brackmann, Warren A.; and Snaidr, Stanislav M., 4,369,797, Cl. 131-109.0AB.
- Snap-On Tools Corporation: *See—*
  - Lentz, Richard P.; Lasky, Thomas J.; and Servais, Stephen B., 4,369,660, Cl. 73-753.000.
- Snyder, David A. Multiple stage compressor with flash gas injection assembly. 4,369,633, Cl. 62-117.000.
- Snyder, John R.: *See—*
  - Cianciolo, Cosmo J.; Snyder, John R.; and King, Roderick V., 4,369,643, Cl. 72-75.000.
- Societa Italiana Resine S.I.R. S.p.A.: *See—*
  - Pezzoli, Silvestro; and Rossi, Giancarlo, 4,370,444, Cl. 524-732.000.
- Societe Anonyme Automobiles Citroen: *See—*
  - Perineau, Jean, 4,369,694, Cl. 91-368.000.
- Societe Anonyme des Usines Chausson: *See—*
  - Moranne, Jean-Pierre, 4,369,837, Cl. 165-175.000.
- Societe CGR-MeV: *See—*
  - Brethon, Jean-Pierre; Guiho, Jean-Paul; Taniel, Gerard; and Viel, Georges, 4,370,555, Cl. 378-120.000.
- Societe d'Application Plastique Mecanique et Electronique: *See—*
  - Dronet, Jean-Marc, 4,370,118, Cl. 425-305.100.
- Societe de vente de L'Aluminium Pechniney: *See—*
  - Lyonnet, Christian, 4,369,562, Cl. 29-527.100.
- Societe Industrielle LeSaffre: *See—*
  - Clement, Philippe; and Rossi, Jean-Paul, 4,370,420, Cl. 435-256.000.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See—*
  - Silhouette, Jean-Max M., 4,369,658, Cl. 73-507.000.
- Soejima, Shigeo: *See—*
  - Watanabe, Tetsuo; Mase, Syunzo; and Soejima, Shigeo, 4,370,393, Cl. 429-193.000.
- Soibelman, Steven P.: *See—*
  - Frazer, Spencer; and Soibelman, Steven P., 4,369,857, Cl. 181-159.000.
- Solomon, Frank, to Diamond Shamrock Corporation. Non-bleeding electrode. 4,370,284, Cl. 264-42.000.
- Soma, Kenichiro; Kuma, Shoji; Sakaguchi, Harunori; Shirai, Hisanari; Ito, Ryoichi; and Shiina, Toshio, to Hitachi Cable Limited. Polyolefin compositions for electrical insulation. 4,370,517, Cl. 174-74.00A.
- Someshwar, Ashok H., to Motorola, Inc. Integrated circuit having elements for selectively forming an RC or a crystal oscillator. 4,370,625, Cl. 331-49.000.
- Sonoco Products Company: *See—*
  - Bedenbaugh, William E., 4,369,933, Cl. 242-125.100.
- Sony Corporation: *See—*
  - Akagiri, Kenzo, 4,370,681, Cl. 360-68.000.
  - Hongu, Masayuki; Omuro, Shigeru; Kita, Hiroyuki; and Tokuhara, Masaharu, 4,370,676, Cl. 358-188.000.
  - Hosoi, Sadao; and Takano, Masayuki, 4,370,685, Cl. 360-77.000.
  - Katoh, Noboru; and Kimura, Akio, 4,370,686, Cl. 360-96.300.
- Sorbier, Pierre, to Agence Nationale de Valorisation de la Recherche (ANVAR). Method and apparatus for molding articles from agglomerated particles. 4,370,112, Cl. 425-3.000.
- Sorenson, Wayne P., to American Can Company. Fibrous web structure and its manufacture. 4,370,289, Cl. 264-113.000.
- Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, to Dow Chemical Company, The. Electrolytic cell and anode for molten salt electrolysis. 4,370,216, Cl. 204-243.00R.
- Spawn Mate, Inc.: *See—*
  - Holtz, R. Barry, 4,370,159, Cl. 71-5.000.
- Specht, David F.: *See—*
  - D'Aurora, Joseph R.; and Specht, David F., 4,369,973, Cl. 273-153.00R.
- Spencer, Dudley W. C., to Du Pont de Nemours, E. I., and Company. Sterile docking process, apparatus and system. 4,369,779, Cl. 128-213.00A.
- Sperry Corporation: *See—*
  - Chu, James C.; Crane, Patrick E.; D'Agostino, Jack V.; and Schwartz, Paul M., 4,370,659, Cl. 343-772.000.
  - Lucchi, George A., 4,370,652, Cl. 343-5.0SM.
- Spies, Henry J. Helical filament winding apparatus. 4,369,934, Cl. 242-157.100.
- Spiro, Murray. Apparatus for feeding sheets. 4,369,962, Cl. 271-11.000.
- Sprague, Robert A.; Turner, William D.; and Hartke, David H., to Xerox Corporation. Dielectric interface for proximity coupled electro-optic devices. 4,370,029, Cl. 350-355.000.
- Sprague, Robert A., to Xerox Corporation. Extended resolution light deflector using surface acoustic waves. 4,370,030, Cl. 350-358.000.
- Sprangle, Phillip A.; Smith, Robert A.; and Chu, Kwo R., to United States of America, Navy. High efficiency gyrotron oscillator and amplifier. 4,370,621, Cl. 330-4.000.

- Stacker, Poul: *See—*
  - Nielsen, Erik S.; and Stacker, Poul, 4,369,619, Cl. 57-58.340.
- Stacklies, Horst: *See—*
  - Trotscher, Otto; Stacklies, Horst; and Machler, Meinrad, 4,370,058, Cl. 356-125.000.
- Stahl, Curt: *See—*
  - Baldwin, Dorothy M.; Oharek, Frank J.; and Stahl, Curt, 4,370,677, Cl. 358-225.000.
- Stahly, Barbara C.; and Stahly, G. P., to Ethyl Corporation. Nucleophilic substitution process. 4,370,278, Cl. 260-465.00E.
- Stahly, G. P.: *See—*
  - Stahly, Barbara C.; and Stahly, G. P., 4,370,278, Cl. 260-465.00E.
- Stammann, Gunter; Becker, Robert; Grolig, Johann; and Waldmann, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of carbonic acid esters. 4,370,275, Cl. 260-463.000.
- Standard Manufacturing Company, Incorporated: *See—*
  - Mankey, Harry S., 4,369,989, Cl. 280-763.000.
- Standard Oil Company (Indiana): *See—*
  - Balint, Nikolaous K., 4,370,457, Cl. 526-137.000.
  - Goddin, Clifton S., Jr.; and McGalliard, Russell L., 4,370,156, Cl. 62-17.000.
  - Powers, Charles A.; Holman, George B.; and Smith, Robert C., 4,370,166, Cl. 106-97.000.
- Stange, Klaus K.: *See—*
  - Damouth, David E.; Mott, George R.; and Stange, Klaus K., 4,370,047, Cl. 355-3.0BE.
- Starkina, Marina Y.: *See—*
  - Gebel, Iosif D.; Zykov, Arkady A.; Lvov, Vladimir M.; Nefedov, Askold I.; Parshikov, Viktor I.; Starkina, Marina Y.; Klibanov, Mendel S.; Ryss, Alexandr S., deceased; and Ryss, Maria I., legal representative, 4,369,603, Cl. 51-236.000.
- Start, John F.: *See—*
  - Liao, Hsiang P.; Mohr, Richard A.; and Start, John F., 4,370,251, Cl. 252-186.420.
- Staver, Peter J.; and Meyering, Clinton. Medical instrumentation electrode apparatus. 4,369,793, Cl. 128-643.000.
- Stein, Harald: *See—*
  - Forster, Franz; and Stein, Harald, 4,370,100, Cl. 417-218.000.
- Steiner, Rudolf: *See—*
  - Herbrechtsmeier, Peter; Schafer, Hans; and Steiner, Rudolf, 4,370,151, Cl. 55-38.000.
- Steinke, Leo; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, to Robert Bosch GmbH. Optical engine knock sensing system. 4,369,748, Cl. 123-425.000.
- Stejskal, Miroslav: *See—*
  - Dressler, Mirko; Formanek, Vojtech; Michl, Vaclav; and Stejskal, Miroslav, 4,369,824, Cl. 144-343.000.
- Stella, Joseph A., to Polaroid Corporation. Dual web sound movie cassette with emulsion stripping web. 4,370,035, Cl. 352-78.00R.
- Stempel, John A., to Cavitron Corporation. Denture means and method. 4,370,133, Cl. 433-171.000.
- Stenger, Antoine: *See—*
  - Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,370,347, Cl. 424-324.000.
- Stengl, Gerhard; and Loschner, Hans, to Rudolf Sacher Gesellschaft m.b.H. Self-supporting mask, method for production as well as use of same. 4,370,556, Cl. 250-503.100.
- Stepan Chemical Company: *See—*
  - Wechsler, Joseph R.; and Lane, Mark, 4,370,272, Cl. 260-404.000.
- Stephan, Wolfgang: *See—*
  - Kotitschke, Ronald; and Stephan, Wolfgang, 4,370,264, Cl. 260-112.00B.
- Sterling Drug Inc.: *See—*
  - Wesseler, Eugene P., 4,370,443, Cl. 524-612.000.
- Steyr-Daimler-Puch Aktiengesellschaft: *See—*
  - Zedrosser, Ulrich; and Malhotra, Satish K., 4,369,593, Cl. 42-70.00F.
- Sticht, Walter. Apparatus for the manufacture and/or handling of workpieces. 4,369,872, Cl. 198-339.000.
- Stirn, Richard J., to California Institute of Technology. Gallium arsenide single crystal solar cell structure and method of making. 4,370,510, Cl. 136-262.000.
- Stone & Webster Engineering Corp.: *See—*
  - Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,370,303, Cl. 422-144.000.
- Stoy, Vladimir A., to S.K.Y. Polymers. Novel block copolymers including acrylonitrile sequences and sequences including units derived from glutarimide units and processes for preparing same. 4,370,451, Cl. 525-294.000.
- Stratton, Susan D.: *See—*
  - Cason, William C.; Kuecker, Ward A.; and Stratton, Susan D., 4,370,645, Cl. 340-709.000.
- Straub, Willy, to Kirchner, Georg. Body exercising device. 4,369,969, Cl. 272-144.000.
- Straus, Isidor: *See—*
  - Dash, Glen R.; and Straus, Isidor, 4,370,570, Cl. 307-270.000.
- Stravitz, David M. Tape cassette storage and carrying case. 4,369,883, Cl. 206-387.000.
- Strom, Peter F.: *See—*
  - Koopman, Benjamin L.; Lau, Antonio O.; Strom, Peter F.; and Jenkins, David, 4,370,418, Cl. 435-289.000.
- Stubbs, John K.: *See—*
  - Campbell, Simon F.; Danilewicz, John C.; Ham, Allan L.; and Stubbs, John K., 4,370,328, Cl. 424-250.000.
- Studiengesellschaft Kohle mbH: *See—*
  - Bogdanovic, Borislav, 4,370,488, Cl. 549-429.000.
- Stuntz, Gordon F.: *See—*
  - Bearden, Roby; and Stuntz, Gordon F., 4,370,220, Cl. 208-108.000.
- Subramanian, Pallatheri M.: *See—*
  - Mahr, Tibor G.; and Subramanian, Pallatheri M., 4,370,212, Cl. 204-159.140.
- Sucker, Heinz: *See—*
  - de Buman, Alain; Riva, Aldo; and Sucker, Heinz, 4,369,784, Cl. 128-271.000.
- Sudreau, Bernard: *See—*
  - de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,370,541, Cl. 219-121.0EC.
- Sugahara, Yoshikazu: *See—*
  - Mori, Yasuyuki; Nishimura, Haruo; and Sugahara, Yoshikazu, 4,370,300, Cl. 422-108.000.
- Sugalski, Raymond K., to General Electric Company. Shuttle plate guide for automatic winding machines. 4,369,571, Cl. 29-731.000.
- Sugawara, Tamio: *See—*
  - Igarashi, Kikuo; Honma, Tsunetoshi; and Sugawara, Tamio, 4,370,475, Cl. 536-16.800.
- Sugi, Fumio, to Aisan Kogyo Kabushiki Kaisha. Variable venturi carburetor. 4,369,749, Cl. 123-439.000.
- Sugimoto, Tadahiro, to Daito Seiki Company Limited. Metal-sawing machine. 4,369,686, Cl. 83-801.000.
- Sugita, Mitsuyuki: *See—*
  - Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirofumi, 4,370,584, Cl. 310-365.000.
- Sugiyama, Matsuyoshi: *See—*
  - Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,369,924, Cl. 239-703.000.
- Sugiyama, Matuyoshi: *See—*
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- Sugiyama, Toshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Pressure mediated diesel engine exhaust gas recirculation control system. 4,369,753, Cl. 123-569.000.
- Sullivan, James E. Cooking table. 4,369,763, Cl. 126-276.000.
- Sullivan, Patrick: *See—*
  - Egly, Robert A.; and Sullivan, Patrick, 4,369,879, Cl. 206-45.180.
- Sullivan, Thomas; and Braddock, James E., to Bicc Limited. Transportation systems and electric cables for use therein. 4,370,076, Cl. 405-132.000.
- Sulzer Brothers Limited: *See—*
  - Tylmann, Josef, 4,370,230, Cl. 210-289.000.
- Sumitomo Electric Industries, Ltd.: *See—*
  - Hara, Akio; and Yazu, Shuji, 4,370,149, Cl. 51-309.000.
  - Hayashi, Kyozo, 4,369,831, Cl. 164-415.000.
- Sumitomo Rubber Industries, Ltd.: *See—*
  - Arimatsu, Toshio; and Sakon, Tohatirou, 4,370,283, Cl. 264-37.000.
- Summers, James W.: *See—*
  - Nehmey, Samuel D.; and Summers, James W., 4,370,286, Cl. 264-53.000.
- Summey, Walter R. Shoes. 4,369,589, Cl. 36-77.00R.
- Sundberg, Borje E. I. Fastening element. 4,370,082, Cl. 411-61.000.
- Sundstrand Corporation: *See—*
  - Faulkner, Dennis T.; Glennon, Timothy F.; and Markunas, Albert L., 4,370,560, Cl. 290-40.00C.
- Sunohara, Yoshio; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Lock-up control system for a torque converter. 4,369,865, Cl. 192-3.310.
- Surgical Design: *See—*
  - Banko, Anton, 4,370,131, Cl. 433-86.000.
- Suspendex (Proprietary) Limited: *See—*
  - Barker, William I.; and Denham, Ernest J., 4,370,185, Cl. 156-565.000.
- Suzuki, Akira; and Shioya, Yasumi, to Shinryo Air Conditioning Co., Ltd. Method of treating excess sludge. 4,370,235, Cl. 210-620.000.
- Suzuki, Kenpei; Koya, Shinichi; and Sato, Hiroshi, to Takeda Riken Kogyo Kabushikikaisha. Contact drive assembly for use with electronic part test equipment. 4,370,011, Cl. 339-74.00R.
- Suzuki, Masakazu: *See—*
  - Furuichi, Shuhei; and Suzuki, Masakazu, 4,370,752, Cl. 378-110.000.
- Suzuki, Noboru: *See—*
  - Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, 4,370,190, Cl. 156-307.300.
- Suzuki, Toshikazu: *See—*
  - Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,369,924, Cl. 239-703.000.
  - Morishita, Teru; Sugiyama, Matuyoshi; and Suzuki, Toshikazu, 4,369,925, Cl. 239-703.000.
- Suzuoka, Akihiro; Okuhira, Toshifumi; Matsumura, Eiji; and Sasaki, Katsushi, to Teijin Limited. Machine for solid phase polymerization. 4,370,302, Cl. 422-137.000.
- Swanson, Richard G., to Macristy Industries, Inc. Liquid flow control strainer. 4,369,531, Cl. 4-295.000.
- Swartout, Christopher A.: *See—*
  - Huffman, Stanley S.; Neel, Alan F.; Swartout, Christopher A.; and Dvorak, Neil E., 4,370,723, Cl. 364-483.000.
- Swartz, LeRoy O., to Cleveland Gear Company. Process of continuous metal coating. 4,370,357, Cl. 427-46.000.
- Sweigart, Raymond H.; and Doersom, Mary E., to RCA Corporation. In-line electron gun and method for modifying the same. 4,370,593, Cl. 313-414.000.
- Swetly, Peter: *See—*
  - Jung, Gunther; Bruckner, Hans; Swetly, Peter; and Bozler, Gerhard, 4,370,312, Cl. 424-1.500.

Szarka, David D.; and Baker, Eugene E., to Halliburton Company. Anchor and anchor positioner assembly. 4,369,840, Cl. 166-214.000.

Szentes, John F., to Caterpillar Tractor Co. Non-contacting multi-function sensor arrangement. 4,369,651, Cl. 73-119.00A.

Tabuchi, Hiroshi: *See—*
Lord, Steven M.; and Tabuchi, Hiroshi, 4,369,725, Cl. 114-40.000.

Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Desensitizing solution for lithographic printing plate. 4,370,404, Cl. 430-302.000.

Tackett, James E., Jr., to Marathon Oil Company. Process for drying surfactant-containing crude oil. 4,370,238, Cl. 210-639.000.

Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Color signal processing device for video recorder. 4,370,680, Cl. 358-330.000.

Taguchi, Tetsuya: *See—*
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,370,037, Cl. 354-23.00D.

Taguchi, Yoshio: *See—*
Umemura, Yukio; Yoshida, Isao; Taguchi, Yoshio; and Iwasa, Yoshio, 4,369,739, Cl. 123-41.740.

Takada, Juichiro. Coupling assembly for connecting a slider to a drive wire in a passive vehicle occupant restraint belt system. 4,369,990, Cl. 280-804.000.

Takagi, Hiroshi: *See—*
Morikawa, Hiroshi; Kumazawa, Toshiharu; and Takagi, Hiroshi, 4,370,004, Cl. 308-10.000.

Takagi, Tatsuya. Stabilizer fitting apparatus. 4,369,988, Cl. 280-689.000.

Takahashi, Hiroshi: *See—*
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,370,352, Cl. 426-557.000.

Takahashi, Kazutoshi: *See—*
Iwakura, Ryoji; Nitta, Tatsuo; and Takahashi, Kazutoshi, 4,370,067, Cl. 368-202.000.

Takahashi, Kenji; and Takanashi, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Cathode assembly. 4,370,588, Cl. 313-270.000.

Takahashi, Yohonosuke: *See—*
Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,370,404, Cl. 430-302.000.

Takahashi, Yosuke: *See—*
Sato, Masatoshi; and Takahashi, Yosuke, 4,370,027, Cl. 350-164.000.

Takahashi, Yukio; Arikawa, Yoshijiro; and Yakushiji, Yoshio, to Babcock-Hitachi, Ltd. Catalytic structure for treating exhaust gases and a process for making the catalytic structure. 4,370,262, Cl. 252-464.000.

Takahashi, Yukio, to Fujitsu Limited. Termination circuit for word lines of a semiconductor memory device. 4,370,736, Cl. 365-155.000.

Takahata, Masahiro: *See—*
Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.

Takaishi, Yukio: *See—*
Takeda, Nobuhiro; Mizuno, Shigeo; Hattori, Masaichi; and Takaishi, Yukio, 4,370,638, Cl. 335-186.000.

Takaki, Kiyofumi, to Arai, Tokuji; and Takle, Birger. Photopolymerizable radiation-sensitive resin composition and radiation-sensitive sheet material 4,370,403, Cl. 430-271.000.

Takamizawa, Minoru; Abe, Akira; Kasahara, Katsusuke; Komeno, Yukito; and Aoyama, Akira, to Shin-Etsu Chemical Co., Ltd.; and Agehara Orimono Kogyo K.K. Method for imparting water-repellency to woven fabrics. 4,370,365, Cl. 427-387.000.

Takamizawa, Minoru: *See—*
Yoshida, Akiteru; Yokoo, Akiro; Yokokura, Shuichi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,370,385, Cl. 428-429.000.

Takanashi, Yukio: *See—*
Takahashi, Kenji; and Takanashi, Yukio, 4,370,588, Cl. 313-270.000.

Takano, Masayuki: *See—*
Hosoi, Sadao; and Takano, Masayuki, 4,370,685, Cl. 360-77.000.

Takaya, Takao; and Tozuka, Zenzaburo, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds and composition. 4,370,326, Cl. 424-246.000.

Takeda, Hisao: *See—*
Tanaka, Katsutoshi; Takeda, Hisao; Kawano, Mutsumi; and Miyahara, Isao, 4,370,464, Cl. 528-99.000.

Takeda, Nobuhiro; Mizuno, Shigeo; Hattori, Masaichi; and Takaishi, Yukio, to Tokai Rika Co., Ltd. Double-function solenoid operated switch. 4,370,638, Cl. 335-186.000.

Takeda Riken Kogyo Kabushikikaisha: *See—*
Suzuki, Kenpei; Koya, Shinichi; and Sato, Hiroshi, 4,370,011, Cl. 339-74.00R.

Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, to Pioneer Electronic Corporation. FM Receiver for use with motorcars. 4,370,522, Cl. 179-1.0GD.

Takeda, Yukio: *See—*
Matsushita, Yasuo; Takeda, Yukio; Nakamura, Kousuke; and Okoshi, Tokio, 4,370,421, Cl. 501-88.000.

Takei, Hirofumi: *See—*
Kubozuka, Takao; and Takei, Hirofumi, 4,369,744, Cl. 123-198.00E.

Takenouchi, Mutsuo: *See—*
Fuse, Mario; and Takenouchi, Mutsuo, 4,370,360, Cl. 427-76.000.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Kawamura, Kenji; and Fukatsu, Shunzo, 4,370,318, Cl. 424-177.000.

Takeyama, Tetsu: *See—*
Doi, Kunihiro; Takeyama, Tetsu; and Azuma, Kenkoku, 4,370,301, Cl. 422-122.000.

Takle, Birger: *See—*
Takaki, Kiyofumi, 4,370,403, Cl. 430-271.000.

Tamagawa Kikai Kabushiki Kaisha: *See—*
Watanabe, Takashi, 4,370,119, Cl. 425-352.000.

Tamamura, Hideo: *See—*
Harigaya, Isao; and Tamamura, Hideo, 4,370,043, Cl. 354-173.000.

Tamura, Takeo; Kido, Takayoshi; and Nakamura, Tatsuo, to Nissan Motor Co., Ltd.; and Ichikoh Industries Limited. Mirror apparatus having wiper means. 4,369,542, Cl. 15-250.00B.

Tanaka, Katsutoshi; Takeda, Hisao; Kawano, Mutsumi; and Miyahara, Isao, to Kyoritsu Yuki Co., Ltd.; and Mitsubishi Chemical Industries, Ltd. Cationic polymer flocculant. 4,370,464, Cl. 528-99.000.

Tanaka, Masato: *See—*
Ogata, Ikuei; Kawabata, Yasuziro; Tanaka, Masato; and Hayashi, Teruyuki, 4,370,258, Cl. 252-429.00R.

Taniel, Gerard: *See—*
Brethon, Jean-Pierre; Guiho, Jean-Paul; Taniel, Gerard; and Viel, Georges, 4,370,555, Cl. 378-120.000.

Tanigawa, Koichi: *See—*
Kuge, Tsukasa; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,370,049, Cl. 355-3.0DD.

Tanikawa, Isao: *See—*
Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, 4,370,368, Cl. 428-35.000.

Tanner, Joseph F.: *See—*
Roberts, Michael G.; and Tanner, Joseph F., 4,370,435, Cl. 524-312.000.

Tanno, Tadashi: *See—*
Kinoshita, Hiromi; Maeda, Yoshinobu; and Tanno, Tadashi, 4,369,819, Cl. 140-105.000.

Tarbox, Bruce H.: *See—*
Bruce, Kenneth E.; Conway, John W.; Lombardo, Ralph M., Jr.; and Tarbox, Bruce H., 4,370,708, Cl. 364-200.000.

Tarc, Andrew. Display tile for electronic chess game. 4,369,975, Cl. 273-237.000.

Tashiro, Isao: *See—*
Hou, Shou L.; and Tashiro, Isao, 4,370,662, Cl. 346-75.000.

Tashiro, Minoru; and Uemura, Takaaki, to Bunri Industry Co., Ltd. Magnetic belt conveyor type magnetic particle separator. 4,370,228, Cl. 210-223.000.

Task, Harry L.; Courtright, John F.; and Salys, Casimer K., to United States of America, Air Force. Dynamic binary fourier filtereo imaging system. 4,370,024, Cl. 350-162.120.

Tateoka, Masamichi, to Canon Kabushiki Kaisha. Projection lens. 4,370,032, Cl. 350-476.000.

Tatro, Michael J., to Wausau Metals Corporation. Supplemental window and blind unit. 4,369,828, Cl. 160-107.000.

Tatsukawa, Osami: *See—*
Hotta, Kouichi; Yazawa, Yukichi; and Tatsukawa, Osami, 4,370,545, Cl. 219-491.000.

Tavor, Chanany, to Amiad Mutzarei Yiul. Liquid metering injector assembly. 4,369,805, Cl. 137-101.310.

Taylor, Edmund P., to Bryant-Poff, Inc. Automatic grain distributor. 4,369,870, Cl. 193-23.000.

Taylor, Ralph C., Jr.: *See—*
Berenberg, John A.; Haggerty, William A.; Kegg, Richard L.; Schmenk, Myron J.; and Taylor, Ralph C., Jr., 4,370,721, Cl. 364-474.000.

Taylor, Richard S.: *See—*
Bailey, Arvin K., Jr.; and Taylor, Richard S., 4,370,516, Cl. 174-59.000.

TDK Electronics Co., Ltd.: *See—*
Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,370,384, Cl. 428-425.900.
Kawahara, Hiroshi, 4,370,383, Cl. 428-425.900.
Sasaki, Setsuo, 4,370,698, Cl. 361-330.000.

Technion Research and Development Foundation, Ltd.: *See—*
Neeman, Ishak; and Gaffin, Stephen L., 4,370,413, Cl. 435-39.000.

Tecumseh Products Company: *See—*
Gannaway, Edwin L., 4,370,099, Cl. 417-32.000.

Teed, Richard K.; and Pressley, Arther M., to Riegel Textile Corporation. Method and apparatus for drawing and blending textile materials. 4,369,622, Cl. 57-315.000.

Teichmann, Theodor, to Texas Gas Transmission Corporation. Method and apparatus for nuclear thermochemical water cracking. 4,370,297, Cl. 376-148.000.

Teijin Limited: *See—*
Suzuoka, Akihiro; Okuhira, Toshifumi; Matsumura, Eiji; and Sasaki, Katsushi, 4,370,302, Cl. 422-137.000.

Terzoni, Giuseppe: *See—*
Ancillotti, Francesco; Terzoni, Giuseppe; Micucci, Lidio; Maggioni, Paolo; and Panseri, Pietro, 4,370,506, Cl. 568-785.000.

Tetra Pak Developpement SA: *See—*
Petersen-Hoj, Peter, 4,370,293, Cl. 264-514.000.

Tetzner, Siegfried K. Wrapping apparatus. 4,369,614, Cl. 53-556.000.

Texas Brine Corporation: *See—*
Mondshine, Thomas C., 4,369,843, Cl. 166-292.000.

Texas Gas Transmission Corporation: *See—*
Teichmann, Theodor, 4,370,297, Cl. 376-148.000.

Texas Instruments Incorporated: *See—*
Brantingham, George L., 4,370,647, Cl. 340-784.000.
Henderson, Alva; and Hoy, Douglas B., 4,370,628, Cl. 331-111.000.
Lear, Anthony, 4,370,567, Cl. 307-252.00T.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,370,575, Cl. 307-530.000.

Thermoset AG: *See—*
Smith, Stuart B., 4,370,117, Cl. 425-224.000.

Thiel, Max: *See—*
Kampe, Wolfgang; Thiel, Max; Fauland, Erich; Bicker, Uwe; and Hebold, Gottfried, 4,370,323, Cl. 424-244.000.

Thies, Jurgen: *See—*
Klein, Alfons; Wedemeyer, Karlfried; and Thies, Jurgen, 4,370,505, Cl. 568-734.000.

Thim, Lars: *See—*
Jorgensen, Klavs H.; Jorgensen, Karin D.; and Thim, Lars, 4,370,317, Cl. 424-177.000.

Thiokol Corporation: *See—*
Lundstrom, Norman H.; and Shaw, Graham C., 4,370,181, Cl. 149-2.000.

Thomas, John H., to Kerotest Manufacturing Corp. Pipe stopper method and apparatus. 4,369,813, Cl. 138-94.000.

Thomas, Michael W., to Westinghouse Electric Corp. Shielding device for electrical inductive structure. 4,370,512, Cl. 174-18.000.

Thomason, Harry E.; and Thomason, Harry J. L., Jr. Solar heat storage system. 4,369,764, Cl. 126-400.000.

Thomason, Harry J. L., Jr.: *See—*
Thomason, Harry E.; and Thomason, Harry J. L., Jr., 4,369,764, Cl. 126-400.000.

Thompson, Charles T.: *See—*
Burnett, William R.; and Thompson, Charles T., 4,370,083, Cl. 411-87.000.

Thompson, Robert P., to RCA Corporation. Preform method of synthesizing a phosphor. 4,370,287, Cl. 264-67.000.

Thomson-CSF: *See—*
Dassonville, Jacques, 4,370,607, Cl. 323-271.000.
Dubroeucq, Georges; Lacombat, Michel; and Brevignon, Michele, 4,370,026, Cl. 350-163.000.
Puech, Claude; Arditty, Herve; and Papuchon, Michel, 4,370,612, Cl. 324-117.00R.
Tonnel, Eugene, 4,369,561, Cl. 29-576.00W.

Thornton, Jack C.: *See—*
Hornbeck, Sherman J.; and Thornton, Jack C., 4,370,622, Cl. 330-207.00P.

Thorsrud, Agmund K.: *See—*
Siedenstrang, Roy W.; and Thorsrud, Agmund K., 4,370,189, Cl. 156-272.200.

Thouvenin, Philippe: *See—*
Bugaut, Andree; Thouvenin, Philippe; and Cotteret, Jean, 4,370,142, Cl. 8-407.000.

Thring, Robert H., to Ricardo Consulting Engineers Limited. Catalytic combustion engines. 4,369,746, Cl. 123-261.000.

Tilse, Wilhelm K. P. H., to Timex Corporation. Coil/core assembly with interference fit. 4,370,578, Cl. 310-42.000.

Timex Corporation: *See—*
Tilse, Wilhelm K. P. H., 4,370,578, Cl. 310-42.000.

Tin, Lucas K., to Ampex Corporation. Efficient high performance envelope detector with controlled decay envelope detection. 4,370,620, Cl. 329-192.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,370,257, Cl. 252-429.00B.

Toagosei Chemical Industry Co., Ltd.: *See—*
Ueno, Nagaharu; Oka, Joji; Asano, Hidejiro; Ogasawara, Takahisa; Mizutani, Kiyokazu; and Tominaga, Yoshiitsu, 4,370,387, Cl. 428-458.000.

Toan, Tran: *See—*
Greff, Daniel; Petit-Martenon, Francoise; and Toan, Tran, 4,370,315, Cl. 424-94.000.

Tobin, Thomas J., to S&C Electric Company. Electric switch and improved device using same. 4,370,531, Cl. 200-151.000.

Toffolo, Walter E.: *See—*
Purcell, John R.; Chen, Wilkie Y.; and Toffolo, Walter E., 4,369,636, Cl. 62-514.00R.

Tokai Rika Co., Ltd.: *See—*
Takeda, Nobuhiro; Mizuno, Shigeo; Hattori, Masaichi; and Takaishi, Yukio, 4,370,638, Cl. 335-186.000.

Tokuhara, Masaharu: *See—*
Hongu, Masayuki; Omuro, Shigeru; Kita, Hiroyuki; and Tokuhara, Masaharu, 4,370,676, Cl. 358-188.000.

Tokuno, Masateru, to Rengo Co., Ltd. Method and apparatus for guiding a corrugated fibreboard web. 4,369,905, Cl. 226-17.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Andow, Fumio; and Fujisawa, Norio, 4,370,571, Cl. 307-353.000.
Azuma, Makoto; and Akagi, Junko, 4,370,180, Cl. 148-187.000.
Morozumi, Shotaro, 4,370,299, Cl. 420-429.000.
Nagano, Katsumi; and Kubo, Daijiro, 4,370,608, Cl. 323-316.000.
Noda, Tomimitsu, 4,370,535, Cl. 219-10.55B.
Saito, Tamio, 4,370,699, Cl. 361-406.000.
Sasaki, Masayuki; Oida, Yoshio; and Semi, Hidetoshi, 4,370,731, Cl. 364-900.000.
Shibuya, Kunihiro; Uchida, Koachi; and Hashimoto, Shinichi, 4,370,048, Cl. 355-3.0TR.
Shiraishi, Fumitake; Fujioka, Masahiko; and Fujiki, Masao, 4,370,687, Cl. 360-98.000.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,370,680, Cl. 358-330.000.
Takahashi, Kenji; and Takanashi, Yukio, 4,370,588, Cl. 313-270.000.

Tolonen, William J.; and Pitchford, Armin C., to Phillips Petroleum Co. Producing minimum asphalt-containing cationic emulsions employing specific conductance. 4,370,170, Cl. 106-277.000.

Tomimoto, Tetsuo; Nagaoka, Yoshitomi; Sasaki, Reiichi; and Oyama, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Signal generator for a color television transmitting system. 4,370,673, Cl. 358-21.00R.

Tominaga, Yoshiitsu: *See—*
Ueno, Nagaharu; Oka, Joji; Asano, Hidejiro; Ogasawara, Takahisa; Mizutani, Kiyokazu; and Tominaga, Yoshiitsu, 4,370,387, Cl. 428-458.000.

Tomizawa, Yoshio, to Olympus Optical Co., Ltd. Electronic counter circuit for tape recorder. 4,370,549, Cl. 235-92.0MP.

Tonnel, Eugene, to Thomson-CSF. Process for aligning diffusion masks with respect to isolating walls of coffers in integrated circuits. 4,369,561, Cl. 29-576.00W.

Toomey, Daniel G.: *See—*
Duddles, Allen L.; and Toomey, Daniel G., 4,370,700, Cl. 361-424.000.

Toray Industries, Inc.: *See—*
Deguchi, Yukichi; Noguchi, Yukio; and Kobayashi, Hiroaki, 4,370,469, Cl. 528-388.000.
Kazama, Takahiko; Okamura, Yuji; and Fujita, Saburo, 4,370,291, Cl. 264-210.700.
Okamoto, Miyoshi; and Asada, Miyozo, 4,370,114, Cl. 425-131.500.

Torikata, Akio: *See—*
Arai, Mamoru; Haneishi, Tatsuo; Nakajima, Mutsuo; Torikata, Akio; and Enokita, Ryuzo, 4,370,266, Cl. 260-112.50R.

Toshimitsu, Yoshihiko: *See—*
Nishikawa, Masao; Toshimitsu, Yoshihiko; and Aoki, Takashi, 4,369,695, Cl. 91-375.00A.
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Toyama Chemical Company, Ltd.: *See—*
Saikawa, Isainu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.

Toyo Seikan Kaisha, Ltd.: *See—*
Hirata, Sadao; Tanikawa, Isao; and Maruhashi, Yoshitsugu, 4,370,368, Cl. 428-35.000.
Ichinose, Isao; Mori, Fumio; and Suzuki, Noboru, 4,370,190, Cl. 156-307.300.

Toyoda, Tsutomu; Maekawa, Iwao; Izumi, Hirobumi; and Fuzii, Tadashi, to Hitachi Chemical Company, Ltd. Method for manufacture of polyhutadiene-modified unsaturated polyester. 4,370,446, Cl. 525-36.000.

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Hirayama, Tsutomu, 4,369,738, Cl. 123-41.100.
Ito, Sumio, 4,369,736, Cl. 123-1.00A.
Iwata, Yasuo; and Shirai, Hisao, 4,369,558, Cl. 29-148.40R.
Morishita, Teru; Sugiyama, Matsuyoshi; and Suzuki, Toshikazu, 4,369,924, Cl. 239-703.000.
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Sarai, Hiroshi; Hamada, Eiichi; and Ueda, Norihiro, 4,370,005, Cl. 384-154.000.
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Takaya, Takao; and Tozuka, Zenzaburo, 4,370,326, Cl. 424-246.000.

Tracor, Inc.: *See—*
Fosdick, Robert E., 4,370,709, Cl. 364-200.000.

Transcanada Pipelines Ltd.: *See—*
Richardson, Anthony C., 4,369,713, Cl. 104-138.00G.

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Finch, Harvey E.; and Trapanese, Salvatore P., 4,370,274, Cl. 260-412.300.

Trick, Robert E., to Medical Engineering Corporation. Penile erectile system. 4,369,771, Cl. 128-79.000.

Trigg, Donald L. Band saw blade. 4,369,685, Cl. 83-661.000.

Tripp, Dwight E., to Arrowhead Research. Piston pump with discharge valve, inlet valve and misalignment compensating means in a pump head. 4,370,103, Cl. 417-298.000.

Troponwerke GmbH & Co. KG: *See—*
Jacobi, Haireddin; and Opitz, Wolfgang, 4,370,342, Cl. 424-275.000.

Trotscher, Otto; Stacklies, Horst; and Machler, Meinrad, to Carl Zeiss-Stiftung. Digital focimeter and method. 4,370,058, Cl. 356-125.000.

TRW Inc.: *See—*
Cosand, Albert E.; and de Graaf, Kenneth B., 4,370,572, Cl. 307-353.000.
Hayden, Rodney, 4,370,565, Cl. 307-141.000.

Tsuda, Hisatsugu: *See—*
Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.

Tuftco Corporation: *See—*
Beasley, Max M., 4,369,720, Cl. 112-79.00A.

Tung-Chen, Chen: *See—*
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  Meunier, Georges; and Martin, Jean-Francois, 4,369,834, Cl. 165-104.160.
Turkdogan, Ethem T., to United States Steel Corporation. Ore reduction using calcium oxide desulfurization. 4,370,161, Cl. 75-34.000.
Turner, William D.: *See—*
  Sprague, Robert A.; Turner, William D.; and Hartke, David H., 4,370,029, Cl. 350-355.000.
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  Mohrbacher, Richard; Ho, Winston; and Tutwiler, Gene, 4,370,343, Cl. 424-275.000.
Tyler, Derek E.: *See—*
  Pryor, Michael J.; and Tyler, Derek E., 4,369,832, Cl. 164-472.000.
Tyler Refrigeration Corporation: *See—*
  Abraham, Fayez F., 4,369,631, Cl. 62-82.000.
  Abraham, Fayez F., 4,369,632, Cl. 62-82.000.
Tylmann, Josef, to Sulzer Brothers Limited. Drainpipe for a reversible drainpipe filter system. 4,370,230, Cl. 210-289.000.
Ube Industries, Ltd.: *See—*
  Makino, Hiroshi; Kusuki, Yoshihiro; Harada, Takashi; and Shimazaki, Hiroshi, 4,370,290, Cl. 264-184.000.
  Nagasawa, Toshio; and Nishihara, Yoshio, 4,370,548, Cl. 219-549.000.
Uchida, Koachi: *See—*
  Shibuya, Kunihiro; Uchida, Koachi; and Hashimoto, Shinichi, 4,370,048, Cl. 355-3.0TR.
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Digital control camera. 4,370,037, Cl. 354-23.00D.
Ueda, Ikuo; Matsuo, Masaaki; Satoh, Susumu; and Watanabe, Takao, to Fujisawa Pharmaceutical Co., Ltd. Benzothiazol-2-one-3-alkanoic acids and esters and aldose reductase inhibiting compositions thereof. 4,370,340, Cl. 424-274.000.
Ueda, Minoru, to Yoshida Kogyo K.K. Method of manufacturing slide fasteners. 4,369,560, Cl. 29-408.000.
Ueda, Nobuhiro: *See—*
  Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, 4,370,577, Cl. 310-12.000.
Ueda, Norihiro: *See—*
  Sarai, Hiroshi; Hamada, Eiichi; and Ueda, Norihiro, 4,370,005, Cl. 384-154.000.
Ueda, Takashi; Minami, Syuji; Kioka, Mamoru; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Process for polymerizing or copolymerizing olefins. 4,370,455, Cl. 526-125.000.
Uekita, Masakazu; and Abe, Masaharu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Electrical laminate. 4,370,191, Cl. 156-307.700.
Uekita, Masakazu; Fushiki, Yasuo; and Abe, Masaharu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Reinforced unsaturated polyester resin laminate. 4,370,386, Cl. 428-458.000.
Uemura, Takaaki: *See—*
  Tashiro, Minoru; and Uemura, Takaaki, 4,370,228, Cl. 210-223.000.
Ueno, Hiroshi: *See—*
  Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,370,257, Cl. 252-429.00B.
Ueno, Nagaharu; Oka, Joji; Asano, Hidejiro; Ogasawara, Takahisa; Mizutani, Kiyokazu; and Tominaga, Yoshiitsu, to Toagosei Chemical Industry Co., Ltd.; and Nippon Steel Corporation. Pre-coated steel sheets and process for production thereof. 4,370,387, Cl. 428-458.000.
Ueno, Sadayasu; Sato, Kanemasa; Oyama, Yoshishige; Nishimura, Yutaka; and Miya, Kazuhiko, to Hitachi, Ltd. Air intake measuring device for internal combustion engine. 4,369,656, Cl. 73-204.000.
Uhle, Karlheinz; and Kramer, Horst, to Hoechst Aktiengesellschaft. Testing method for determining the magnetic properties of ferromagnetic powders. 4,369,648, Cl. 73-61.400.
Uhle, Karlheinz; and Kramer, Horst, to Hoechst Aktiengesellschaft. Testing method for determining the magnetic properties of ferromagnetic powders. 4,369,649, Cl. 73-61.400.
Uhlig, Albert R., to Owens-Illinois, Inc. Container with expansion type locking closure. 4,369,892, Cl. 220-320.000.
Ulmer, Richard W.: *See—*
  Allgood, Robert N.; Kelley, Stephen H.; Ulmer, Richard W.; and Wurzburg, Henry, 4,370,632, Cl. 333-173.000.
Umemura, Yukio; Yoshida, Isao; Taguchi, Yoshio; and Iwasa, Yoshio, to Nissan Motor Company, Limited. Structure of a cylinder assembly for an internal combustion engine. 4,369,739, Cl. 123-41.740.
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Kawamura, Kenji; and Fukatsu, Shunzo, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Bestatin-related compounds as immunopotentiator. 4,370,318, Cl. 424-177.000.
Umezawa, Michio: *See—*
  Jinnai, Koichiro; and Umezawa, Michio, 4,369,964, Cl. 271-260.000.
Underwater and Marine Equipment Limited: *See—*
  Humphrey, Kenneth M., 4,369,814, Cl. 138-120.000.
Unger, Hans W.: *See—*
  Backstein, Guenter; Unger, Hans W.; Guenther, Michael; Kaltbeitzer, Dieter; and Veldhoen, Hendrik, 4,369,709, Cl. 102-229.000.
Uni-Cardan Aktiengesellschaft: *See—*
  Krude, Werner; Muller, Karl-Heinz; and Riemscheid, Helmut, 4,369,979, Cl. 277-212.0FB.
Unie van Kunstmestfabrieken, B.V.: *See—*
  Hendriks, Petrus F. A. M.; Jansen, Arie; van den Berg, Willem B.; and Hoek, Cornelis, 4,370,304, Cl. 422-224.000.
Union Carbide Corporation: *See—*
  George, Kathleen F., 4,370,456, Cl. 526-125.000.
  Nagaura, Toru; and Aita, Takayuki, 4,370,395, Cl. 429-219.000.
  Salensky, George A., 4,370,382, Cl. 428-418.000.
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  Air Force: *See—*
    Gergis, Isoris S., 4,370,734, Cl. 365-12.000.
    Task, Harry L.; Courtright, John F.; and Salys, Casimer K., 4,370,024, Cl. 350-162.120.
  Army: *See—*
    LeBell, Clarence E.; and Barr, Samuel R., Sr., deceased, 4,369,937, Cl. 244-53.00R.
    Manion, Francis M.; and Paras, Charles E., 4,369,811, Cl. 137-819.000.
    Masak, Raymond J., 4,370,655, Cl. 343-100.0LE.
    Weiner, Maurice; and Beattie, William, 4,370,597, Cl. 315-58.000.
  Energy: *See—*
    Davis, Jefferson W., Jr., 4,370,493, Cl. 562-444.000.
    Foster, John S., Jr.; Wilson, James R.; and McDonald, Charles A., Jr., 4,370,576, Cl. 310-10.000.
    Pennell, William E.; and Honigsberg, Charles A., 4,369,893, Cl. 220-378.000.
  National Aeronautics and Space Administration: *See—*
    Hoover, Richard B., 4,370,750, Cl. 378-43.000.
  Navy: *See—*
    Baldwin, Dorothy M.; Oharek, Frank J.; and Stahl, Curt, 4,370,677, Cl. 358-225.000.
    Gerber, Robert L.; and Raper, Larry C., 4,370,631, Cl. 333-106.000.
    Kaloi, Cyril M., 4,370,657, Cl. 343-700.0MS.
    Sprangle, Phillip A.; Smith, Robert A.; and Chu, Kwo R., 4,370,621, Cl. 330-4.000.
U.S. Philips Corporation: *See—*
  Bosch, Gerrit; Kok, Arnoldus W.; and Giethoorn, Harmen, 4,369,567, Cl. 29-607.000.
  Bugg, Richard E. F.; and Parkyn, Derek J., 4,370,747, Cl. 375-62.000.
  Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,370,021, Cl. 350-96.180.
  Notelteirs, Victor R., 4,370,587, Cl. 313-113.000.
  Rijckaert, Albert M. A., 4,370,619, Cl. 328-133.000.
  Roger, Bernard, 4,370,179, Cl. 148-175.000.
  Schofield, John, 4,370,633, Cl. 333-195.000.
  Schoofs, Franciscus A. C. M.; Nijman, Aloysius J.; and van Dongen, Frederik, 4,370,526, Cl. 179-51.0AA.
  Willemsen, Petrus J. M.; Konijnendijk, Willem L.; and Peters, Robert C., 4,370,595, Cl. 313-486.000.
United States Steel Corporation: *See—*
  Bingel, John P.; and Salmi, Robert W., 4,370,225, Cl. 209-40.000.
  Brownell, George L.; Davie, William R.; and Fields, Marvin C., 4,370,240, Cl. 210-673.000.
  Chou, Clifford K. F.; and McCarthy, Paul, 4,369,802, Cl. 134-122.00R.
  Lowenhaupt, Douglas E., 4,370,201, Cl. 201-1.000.
  Shepard, James N., 4,370,087, Cl. 414-421.000.
  Turkdogan, Ethem T., 4,370,161, Cl. 75-34.000.
United Technologies Corporation: *See—*
  Davis, Jack W.; and Blaszuk, Paul R., 4,370,540, Cl. 219-121.0LM.
  Hanson, Donald B.; and Metzger, Frederick B., 4,370,097, Cl. 416-228.000.
University of Akron, The: *See—*
  Savinell, Robert F.; and Liu, Chung-Chiun, 4,370,392, Cl. 429-15.000.
University of California, The Regents of the: *See—*
  Dill, Ken A.; Zimm, Bruno H.; and Shafer, Richard H., 4,370,242, Cl. 210-787.000.
  Faulkner, D. John, 4,370,484, Cl. 548-316.000.
  Koopman, Benjamin L.; Lau, Antonio O.; Strom, Peter F.; and Jenkins, David, 4,370,418, Cl. 435-289.000.
University of Florida: *See—*
  Miller, Gary J., 4,369,772, Cl. 128-92.00C.
University of Missouri, The Curators of the: *See—*
  Barker, Clark R., 4,369,850, Cl. 175-393.000.
Uno, Masaaki: *See—*
  Izumi, Eiki; Honma, Kazuo; Abe, Katsuro; Uno, Masaaki; and Nakajima, Kichio, 4,369,625, Cl. 60-327.000.
UOP Inc.: *See—*
  Pujado, Peter R., 4,370,205, Cl. 203-75.000.
Upchurch, Thurman H.; and Bianco, Gerardo A., Jr., to AMSTED Industries Incorporated. Control of centrifugal pipe casting operation. 4,370,719, Cl. 364-472.000.
Uraneck, Carl A.; and Clark, Earl, to Phillips Petroleum Company. Emulsion polymerization process utilizing a highly dispersed organosulfur molecular weight modifier. 4,370,252, Cl. 252-311.000.
Usher, Thomas C.; and Hattori, Izu. Dextran polycarboxylic acids, ferric hydroxide complexes. 4,370,476, Cl. 536-113.000.
Ushida, Susumu, to Alps Electric Co. Ltd. Output coupling circuit for LC local oscillator. 4,370,626, Cl. 331-96.000.
Usinor: *See—*
  Namy, Gerald; and Cordier, Jean, 4,370,154, Cl. 55-309.000.
USM Corporation: *See—*
  Hanson, Raymond; and White, Anthony M., 4,369,536, Cl. 12-1.00A.
Ustav pro vyzkum motorovych vozidel: *See—*
  Jahoda, Stanislav, 4,369,747, Cl. 123-278.000.
Utagawa, Ken: *See—*
  Fukuhara, Toru; and Utagawa, Ken, 4,370,551, Cl. 250-201.000.

Utsumi, Hiroshi: *See—*
  Sasaki, Yutaka; Nakamura, Tomio; Nakamura, Yoshimi; Moriya, Kiyoshi; Utsumi, Hiroshi; and Saito, Shigeru, 4,370,279, Cl. 260-465.300.
Vadetec Corporation: *See—*
  Kemper, Yves J., 4,369,667, Cl. 74-191.000.
Vahlensieck, Hans-Joachim: *See—*
  Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, 4,370,204, Cl. 203-39.000.
Vallee, Guy, to Northern Telecom Limited. High capacity change-over power supply fuse. 4,370,639, Cl. 337-230.000.
Valyi, Emery I. Apparatus for forming hollow plastic objects. 4,370,121, Cl. 425-526.000.
Van Doorne's Transmissie B.V.: *See—*
  van Deursen, Petrus H., 4,369,675, Cl. 74-864.000.
Van Bouwel, Leo; Geyken, Erwin; Ertl, Franz; and Fleck, Adolf, to AGFA-Gevaert Aktiengesellschaft. Method and apparatus for processing exposed photographic material with bath constituent supply outlet openings at different levels. 4,370,046, Cl. 354-324.000.
Vance, Ronald D.: *See—*
  Bourgraf, Elroy E.; Dunn, Robert E.; and Vance, Ronald D., 4,369,985, Cl. 280-641.000.
Vandebult, Jan. Process for fabricating resonant tag circuit constructions. 4,369,557, Cl. 29-25.420.
van den Berg, Willem B.: *See—*
  Hendriks, Petrus F. A. M.; Jansen, Arie; van den Berg, Willem B.; and Hoek, Cornelis, 4,370,304, Cl. 422-224.000.
Vander Horst, John. Constant delivery inertia pump. 4,370,101, Cl. 417-241.000.
Vandermarliere, Charles: *See—*
  Curinier, Jean; and Vandermarliere, Charles, 4,369,554, Cl. 28-101.000.
van Deursen, Petrus H., to Van Doorne's Transmissie B.V. Method and apparatus for controlling an infinitely variable transmission of a motor vehicle. 4,369,675, Cl. 74-864.000.
Vandling, John M., deceased; and Vandling, Patricia, executrix. Method of and apparatus for load and/or load control signaling to customers in a power system. 4,370,563, Cl. 307-40.000.
Vandling, Patricia, executrix: *See—*
  Vandling, John M., deceased; and Vandling, Patricia, executrix, 4,370,563, Cl. 307-40.000.
van Dongen, Frederik: *See—*
  Schoofs, Franciscus A. C. M.; Nijman, Aloysius J.; and van Dongen, Frederik, 4,370,526, Cl. 179-51.0AA.
Van Doorn, Donald W.; and Hawkins, James B., to Lummus Industries, Inc. Inside-out cutter for elongated material such as tow. 4,369,681, Cl. 83-100.000.
Van Gaalen, Neil. Moving dam waterway cleaner. 4,369,735, Cl. 119-3.000.
Vangelov, Ivan V.: *See—*
  Beloev, Marin G.; Vangelov, Ivan V.; Garlanov, Dimo T.; Nikov, Nikolay Y.; Savov, Ivan S.; and Hlebarov, Vladimir P., 4,369,919, Cl. 239-79.000.
  Garlanov, Dimo T.; Beloev, Marin G.; Hlebarov, Vladimir P.; Kolarova, Mariana V.; and Vangelov, Ivan V., 4,370,539, Cl. 219-121.0PW.
VanPatten, John R., to General Electric Company. Electromagnetic dual break contactor. 4,370,636, Cl. 335-132.000.
Varian Associates, Inc.: *See—*
  Burnett, William R.; and Thompson, Charles T., 4,370,083, Cl. 411-87.000.
  Ward, Curtis E., 4,370,547, Cl. 219-497.000.
VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
  Forster, Karl-Heinz; Johne, Hans; Schuck, Helmut; and Friedrich, Ludwig, 4,369,706, Cl. 101-365.000.
Veda, Inc.: *See—*
  Buschbom, Floyd E.; and Hutchison, Marion, 4,369,855, Cl. 180-212.000.
Veldhoen, Hendrik: *See—*
  Backstein, Guenter; Unger, Hans W.; Guenther, Michael; Kaltbeitzer, Dieter; and Veldhoen, Hendrik, 4,369,709, Cl. 102-229.000.
Venturello, Giorgio; and Salvatore, Osvaldo, to Centro Ricerche Fiat S.p.A. Transducer with six degrees of freedom. 4,369,663, Cl. 73-862.040.
Vest, H. Ryland; and Boone, Walter S., to Alba-Waldensian, Inc. Garment for maintaining body temperature and method of making same. 4,369,528, Cl. 2-69.000.
VI po Hranitelna I Vkussova Promishlenost: *See—*
  Marev, Kiril S.; Krachanov, Hristo G.; Bratanov, Anton A.; and Kirchev, Nikolay A., 4,370,473, Cl. 536-2.000.
Vicino, Robert K. Inflatable display structure. 4,369,591, Cl. 40-610.000.
Victor Company of Japan, Ltd.: *See—*
  Hiraguri, Seisuke, 4,370,524, Cl. 179-15.55T.
  Hirata, Atsumi, 4,370,740, Cl. 369-276.000.
  Katoh, Hiroshi, 4,370,682, Cl. 360-71.000.
  Kitamura, Masatsugu, 4,370,643, Cl. 340-347.0SH.
Vidaurri, Fernando C.; and Anderson, Kenneth L., to Phillips Petroleum Company. Multistage, agitated contactor and its use in continuous production of arylene sulfide polymer. 4,370,470, Cl. 528-388.000.
Viel, Georges: *See—*
  Brethon, Jean-Pierre; Guiho, Jean-Paul; Taniel, Gerard; and Viel, Georges, 4,370,555, Cl. 378-120.000.
Vikre, Merle A. Sprinkler head for a center pivot irrigation system. 4,369,922, Cl. 239-454.000.
Visca, Mario, to Sibit, S.p.A. Catalyst for the photo-decomposition of water and process for the preparation of the catalyst. 4,370,263, Cl. 252-472.000.
Vitale, Steven. Pipe cutter. 4,369,573, Cl. 30-105.000.
Vogel, Heinz-Rudiger: *See—*
  Weinhold, Harri; Vogel, Heinz-Rudiger; Kurze, Bernhard; and Koch, Gerhard, 4,370,244, Cl. 252-39.000.
Volan, Daniel, to Luchaire S.A. External revetment panel for buildings. 4,369,610, Cl. 52-509.000.
von Beckmann, Helmuth, to Canron Corporation. Railroad tamping machine. 4,369,712, Cl. 104-12.000.
Vorves, Steve P. Strike plate support. 4,369,994, Cl. 292-340.000.
Vossen, John L., Jr.; and Halon, Bernard, to RCA Corporation. Anisotropic etching of aluminum. 4,370,196, Cl. 156-643.000.
Vossen, John L., Jr.: *See—*
  Halon, Bernard; and Vossen, John L., Jr., 4,370,195, Cl. 156-643.000.
Vredestein N.V.: *See—*
  Ekkerink, Pierre J., 4,369,535, Cl. 5-481.000.
Vukovic, Marko. Arthroscope. 4,369,768, Cl. 128-6.000.
Vyas, Ramesh M.: *See—*
  Wagner, Theodore; Vyas, Ramesh M.; and Liang, Samuel, 4,370,648, Cl. 340-825.200.
Vyzkumny ustav bavlnarsky: *See—*
  Burysek, Frantisek; Mikulecky, Karel; Elias, Jiri; Esner, Stanislav; Skoda, Stanislav; and Janousek, Jan, 4,369,620, Cl. 57-263.000.
Vyzkumny ustav lesniho hospodarstvi a myslivosti: *See—*
  Dressler, Mirko; Formanek, Vojtech; Michl, Vaclav; and Stejskal, Miroslav, 4,369,824, Cl. 144-343.000.
W. R. Grace & Co.: *See—*
  Daane, Robert A., 4,369,584, Cl. 34-12.000.
  Kim, Gwan, 4,370,260, Cl. 252-438.000.
WABCO Fahrzeugbremsen GmbH: *See—*
  Klatt, Alfred; and Singbartl, Gunther, 4,369,696, Cl. 91-465.000.
Wada, Shozo: *See—*
  Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,370,257, Cl. 252-429.00B.
Wada, Yukio: *See—*
  Fujishima, Nobuiti; Nakano, Hideharu; and Wada, Yukio, 4,370,544, Cl. 219-370.000.
Wadsworth-Greenwood Corporation: *See—*
  Fox, Gary R., 4,369,640, Cl. 68-205.00R.
Wagner, Theodore; Vyas, Ramesh M.; and Liang, Samuel, to Siemens Corporation. Synchronizing circuit for use with a telecommunication system. 4,370,648, Cl. 340-825.200.
Waid, George M.; and Davenport, Anthony T., to Republic Steel Corporation. Method of making as-pierced tubular products. 4,370,178, Cl. 148-12.00F.
Wakabayashi, Noriaki; Fukumoto, Terumichi; and Ueda, Nobuhiro, to Matsushita Electric Industrial Co., Ltd. Linear motor. 4,370,577, Cl. 310-12.000.
Wakisaka, Yoshiharu: *See—*
  Mitsugi, Takashi; Muneyuki, Ryonosuke; Wakisaka, Yoshiharu; Koizumi, Kenzo; and Kondo, Eiji, 4,370,414, Cl. 435-44.000.
Waldmann, Helmut: *See—*
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Walker, Darrell W., to Phillips Petroleum Company. Zinc aluminate prepared using an alumina hydrate. 4,370,310, Cl. 423-600.000.
Walker, Michael J., to Lucas Industries Limited. Circuit for recognizing cyclically occurring pulse sequences. 4,370,618, Cl. 328-120.000.
Wallach, Erich. Timelock device. 4,369,641, Cl. 70-272.000.
Walter, John, to Continental Group, Inc., The. Closure for container. 4,369,888, Cl. 215-237.000.
Waltersdorfer, Anna: *See—*
  Gildemeister, Horst; Mildenberger, Hilmar; Knauf, Werner; Waltersdorfer, Anna; and Sachse, Burkhard, 4,370,320, Cl. 424-200.000.
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Wang, Jish M.: *See—*
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Wareham, William M., to Bofors America, Inc. Pressure transducer. 4,369,659, Cl. 73-708.000.
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Watanabe, Kenkichi; Furuya, Katusuke; and Kimoto, Toyoki, to Laurel Bank Machine Co., Ltd. Coin handling apparatus having a signal operated blocker. 4,369,800, Cl. 133-8.00R.
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Watanabe, Takashi, to Tamagawa Kikai Kabushiki Kaisha. Powder press. 4,370,119, Cl. 425-352.000.
Watanabe, Takeaki, to Nissan Motor Co., Ltd. Gasket for air conditioners. 4,369,978, Cl. 277-12.000.

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Webster, Harold F., to General Electric Company. Method for writing on archival target and target produced thereby. 4,370,590, Cl. 313-391.000.
Wechsler, Joseph R.; and Lane, Mark, to Stepan Chemical Company. Alkoxylated quaternary ammonium surfactants. 4,370,272, Cl. 260-404.000.
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Weiner, Maurice; and Beattie, William, to United States of America, Army. Thyratron switch for narrow pulses. 4,370,597, Cl. 315-58.000.
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Weinhold, Harri; Vogel, Heinz-Rudiger; Kurze, Bernhard; and Koch, Gerhard, to Akademie der Wissenschaften der DDR. Process for cold mechanical working of metallic materials. 4,370,244, Cl. 252-39.000.
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Niesse, Paul J., 4,370,355, Cl. 427-9.000.
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Hamm, James R.; and Young, William E., 4,369,624, Cl. 60-39.120.
Hummert, George T.; Moser, Thomas D.; and Edison, David M., 4,370,717, Cl. 364-436.000.
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Nordeen, Erwin E., 4,369,539, Cl. 15-49.00C.
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Widman, Lawrence E.; Habeeb, Nasser G.; and Darakjian, Raymond Z. Treatment for periodontal diseases. 4,370,136, Cl. 433-217.000.
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Williams, Bruce T. Low impedance electrostatic detector. 4,370,616, Cl. 324-458.000.
Williams, Frank R.; and Hurst, Ronald C., to Cabot Corporation. Production of carbon black. 4,370,308, Cl. 423-450.000.
Williams, James E., to Cuisinarts Research & Development Inc. Method and apparatus for changing slicer cutting parameters in a rotary food processor. 4,369,680, Cl. 83-13.000.
Williams, Stanley B. Device for clamping and aligning plates to be joined in selected angular relationship. 4,369,957, Cl. 269-41.000.
Williamson, David T. N., to Molins Limited; and Smith, John Conventry, Jr. Automated machine tool installation with storage means. 4,369,563, Cl. 29-568.000.
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Wunder, Friedrich; Quadflieg, Therese; Roscher, Gunter; and Heck, Gunther, to Hoechst Aktiengesellschaft. Carrier catalyst for the preparation of vinyl acetate from ethylene, acetic acid and oxygen in the gaseous phase. 4,370,261, Cl. 252-460.000.
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Yoshioka, Tsutomu: *See—*

Miura, Toshikatsu; Kikuchi, Hiroto; Okada, Yukio; and Yoshioka, Tsutomu, 4,369,608, Cl. 52-309.900.

Yosim, Paul S.: *See—*

Kantor, Sherwood; Maddox, Randall A.; and Yosim, Paul S., 4,370,641, Cl. 340-146.30H.

Yotsuji, Akira: *See—*

Saikawa, Isamu; Yasuda, Takashi; Murakami, Shohachi; Maeda, Toyoo; Yotsuji, Akira; Takahata, Masahiro; Tsuda, Hisatsugu; Mikami, Hidetada; Sakai, Hiroshi; and Ohashi, Toshinori, 4,370,316, Cl. 424-98.000.

Young, William E.: *See—*

Hamm, James R.; and Young, William E., 4,369,624, Cl. 60-39.120.

Yuda, Takuo, to Nifco Inc. Buckle. 4,369,553, Cl. 24-230.00R.

Yunan, Malak E., to Du Pont de Nemours, E. I., and Company. Method and apparatus for producing a detonating cord. 4,369,688, Cl. 86-1.00R.

Zabrocki, Vincent S.; and Bussey, Marlin G., to Dow Chemical Company, The. Low density, extruded ethylenic polymer foams. 4,370,378, Cl. 428-339.000.

Zahnraderfabrik Renk A.G.: *See—*

Pollak-Banda, Erich; and John, Erich, 4,369,668, Cl. 74-414.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*

Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Kawamura, Kenji; and Fukatsu, Shunzo, 4,370,318, Cl. 424-177.000.

Zansky, Zoltan, to Honeywell Inc. Two-wire electronic dimming ballast for fluorescent lamps. 4,370,600, Cl. 315-244.000.

Zdrojkowski, Ronald: *See—*

Rehkopf, Paul G.; and Zdrojkowski, Ronald, 4,369,785, Cl. 128-276.000.

Zedrosser, Ulrich; and Malhotra, Satish K., to Steyr-Daimler-Puch Aktiengesellschaft. Firing mechanism for pistols. 4,369,593, Cl. 42-70.00F.

Zeidman, Gordon G.: *See—*

Cooper, Donald L.; and Zeidman, Gordon G., 4,369,678, Cl. 81-90.00C.

Zenith Radio Corporation: *See—*

Capek, Raymond G.; and Garrett, Elgie E., 4,370,630, Cl. 333-24.00C.

Cohn, William E., 4,370,675, Cl. 358-108.000.

Johnson, Fred D.; Flasza, Michael D.; and Bretl, Wayne E., 4,370,674, Cl. 358-74.000.

Ziebert, Tony. Solid fuel supporting grate for fireplace. 4,369,762, Cl. 126-164.000.

Ziemelis, Maris J., to Dow Corning Corporation. Process for preparing silicone microparticles. 4,370,160, Cl. 71-117.000.

Zientara, Stanley V. Hand held tools and utensils stabilizer bar, adjustable and non-adjustable. 4,369,546, Cl. 16-110.00R.

Zigler, James D., to Reliance Electric Company. Variable speed V-belt sheaves. 4,370,139, Cl. 474-45.000.

Zimm, Bruno H.: *See—*

Dill, Ken A.; Zimm, Bruno H.; and Shafer, Richard H., 4,370,242, Cl. 210-787.000.

Zopf, David E., to CBS Industries. Loudspeaker pedestal. 4,369,949, Cl. 248-632.000.

Zopf, David E., to Complete Business Services Corp. Turntable support. 4,369,950, Cl. 248-632.000.

Zurga, Joe F. Magazine for muzzle loader. 4,369,594, Cl. 42-90.000.

Zykov, Arkady A.: *See—*

Gebel, Iosif D.; Zykov, Arkady A.; Lvov, Vladimir M.; Nefedov, Askold I.; Parshikov, Viktor I.; Starkina, Marina Y.; Klibanov, Mendel S.; Ryss, Alexandr S., deceased; and Ryss, Maria I., legal representative, 4,369,603, Cl. 51-236.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JANUARY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bebout, Robert W., to Totten, John. Wood turning process and apparatus for making cylindroconical wood products. Re. 31,130, Cl. 142-1.000.

Bunker Ramo Corporation: *See—*

Hoppe, Paul P., Jr., Re. 31,132, Cl. 339-97.00R.

Burke Company, The: *See—*

Torbet, Philip A.; and Eager, Thomas, Re. 31,131, Cl. 294-89.000.

Eager, Thomas: *See—*

Torbet, Philip A.; and Eager, Thomas, Re. 31,131, Cl. 294-89.000.

Hoppe, Paul P., Jr., to Bunker Ramo Corporation. Electrical connector and insulation-piercing contact member. Re. 31,132, Cl. 339-97.00R.

Lux, Robert J., Jr., to Thermodynamics Corporation. Ground level transformer unit. Re. 31,134, Cl. 336-65.000.

Niessner, Rudolf; and Sonnleitner, Max, to Thyssen Plastik Anger KG. Extrusion methods. Re. 31,133, Cl. 264-541.000.

Sonnleitner, Max: *See—*

Niessner, Rudolf; and Sonnleitner, Max, Re. 31,133, Cl. 264-541.000.

Thermodynamics Corporation: *See—*

Lux, Robert J., Jr., Re. 31,134, Cl. 336-65.000.

Thyssen Plastik Anger KG: *See—*

Niessner, Rudolf; and Sonnleitner, Max, Re. 31,133, Cl. 264-541.000.

Torbet, Philip A.; and Eager, Thomas, to Burke Company, The. Concrete slab hoisting apparatus. Re. 31,131, Cl. 294-89.000.

Totten, John: *See—*

Bebout, Robert W., Re. 31,130, Cl. 142-1.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Kempe, Carl, to Logging Development Corp. Felling head reciprocating blade type. B1 3,625,268, Cl. 144—34 E.

Logging Development Corp.: *See—*

Kempe, Carl, B1 3,625,268, Cl. 144—34 E.

Vernon, Richard I., to Lockheed Corporation. Unitized aircraft food and beverage service. B1 3,517,899, Cl. 244—118.5.

Lockheed Corporation: *See—*

Vernon, Richard I. B1 3,517,899. Cl. 244—118.5.

Rumbaugh, Paul S., to Altec Corporation. Modular printed circuit board assembly having cooling means incorporated therein. B1 4,122,508, Cl. 361—384.

Altec Corporation: *See—*

Rumbaugh, Paul S. B1 4,122,508, Cl. 361—384.

Sergovic, John A., to The Burns & Russell Company of Baltimore City. Method of producing cast surfaces and product obtained thereby. B1 3,328,231, Cl. 428—451.

Burns & Russell Company of Baltimore City, The: *See—*

Sergovic, John A. B1 3,328,231, Cl. 428—451.

LIST OF DESIGN PATENTEES

A.B.L. Jewelers, Inc.: *See—*

Shapiro, Jeffrey H., 267,706, Cl. D11-34.000.

Acushnet Company: *See—*

Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 267,738, Cl. D21-217.000.

Adams, Eugene A. Contoured bed sheet. 267,696, 1-25-83, Cl. D6-264.000.

Albertsen, Peter S.: *See—*

Geiter, Robert A.; Albertsen, Peter S.; and Powell, Robert A., 267,741, Cl. D23-94.000.

Allen, James H., to 'Totes', Incorporated. Overshoe. 267,675, 1-25-83, Cl. D2-271.000.

Allen, James H., to 'Totes', Incorporated. Overshoe. 267,676, 1-25-83, Cl. D2-271.000.

Allibert S.A.: *See—*

Vrignaud, Guy, 267,685, Cl. D6-120.000.

Anchor Hocking Corporation: *See—*

Thrush, James L., 267,697, Cl. D7-11.000.

Ballereaud, Pierre. Cosmetic container. 267,749, 1-25-83, Cl. D28-76.000.

Barney, Ray H. Ground inserted holder for roasting fork or the like. 267,679, 1-25-83, Cl. D6-20.000.

Boyakin, Roderick R. Sculpture. 267,708, 1-25-83, Cl. D11-157.000.

Breen, John J. Baby seat. 267,678, 1-25-83, Cl. D6-7.000.

Bucchianeri, Richard M.: *See—*

Cunningham, Joel N.; Bucchianeri, Richard M.; and O'Leary, Stephen H., 267,743, Cl. D24-53.000.

Burke, Robert J. Clock. 267,704, 1-25-83, Cl. D10-6.000.

Canada Cycle and Motor Company Limited: *See—*

Livernois, John, 267,674, Cl. D2-28.000.

Caravan Camper Mfg. Co.: *See—*

Domes, David C., 267,698, Cl. D8-341.000.

Carlson, Ann. Indian doll. 267,730, 1-25-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,731, 1-25-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,732, 1-25-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,733, 1-25-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,734, 1-25-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,735, 1-25-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,736, 1-25-83, Cl. D21-182.000.

Case, Stanford E. Self-propelled drilling machine. 267,719, 1-25-83, Cl. D15-21.000.

Chase, David O.; and Pfuhl, Paul H., to Mobil Oil Corporation. Container lid or the like. 267,703, 1-25-83, Cl. D9-435.000.

CPG Products Corp.: *See—*

Pelavin, Joseph Y., 267,677, Cl. D3-71.000.

Cunningham, Joel N.; Bucchianeri, Richard M.; and O'Leary, Stephen H., to IVAC Corporation. Pressure diaphragm. 267,743, 1-25-83, Cl. D24-53.000.

Dawson, Donald R. Wall mounted flag case. 267,686, 1-25-83, Cl. D6-127.000.
Dentsply Research & Development Corp.: *See—*
  Seeley, Wayne C., 267,745, Cl. D24-10.000.
Dobyns, Richard W. Golf club cleaner. 267,751, 1-25-83, Cl. D32-1.000.
Doe, Walter P., to Playskool, Inc. Toy riding horse. 267,727, 1-25-83, Cl. D21-75.000.
Domes, David C., to Caravan Camper Mfg. Co. Multiple access slide-lock. 267,698, 1-25-83, Cl. D8-341.000.
Drackett Company, The: *See—*
  Pardo, John; and Jones, David A., 267,701, Cl. D9-372.000.
Dunlop Limited: *See—*
  Tomoda, Hiroshi, 267,712, Cl. D12-136.000.
Dupuis, Jean-Claude; and Roudavitch, Georges, to Societe Francaise d'Equipments pour La Navigation Aerienne (S.F.E.N.A.). Linear actuator. 267,721, 1-25-83, Cl. D15-148.000.
Ehrenreich, Morris. Employability testing apparatus. 267,726, 1-25-83, Cl. D19-59.000.
Fehlbaum & Co.: *See—*
  Muller-Deisig, Wolfgang, 267,681, Cl. D6-73.000.
Flynn, Mary E., to Sandspur Enterprises, Inc. Medical instrument support. 267,744, 1-25-83, Cl. D24-31.000.
Geiter, Robert A.; Albertsen, Peter S.; and Powell, Robert A., to Jamestown Group. Fireplace insert. 267,741, 1-25-83, Cl. D23-94.000.
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, to Acushnet Company. Putter head. 267,738, 1-25-83, Cl. D21-217.000.
Gostomski, John J., to Hellstar Corporation. Beam balanced pumping unit. 267,718, 1-25-83, Cl. D15-7.000.
GTE Automatic Electric Labs Inc.: *See—*
  Janda, George M., 267,715, Cl. D14-60.000.
  Janda, George M., 267,716, Cl. D14-60.000.
Hamada, Masanori: *See—*
  Murakami, Shinzo; Takenaka, Kazumasa; Ohta, Kikuo; Hamada, Masanori; and Hoshino, Kunio, 267,717, Cl. D14-70.000.
Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine with a computer system or the like. 267,723, 1-25-83, Cl. D16-28.000.
Hellstar Corporation: *See—*
  Gostomski, John J., 267,718, Cl. D15-7.000.
Hoshino, Kunio: *See—*
  Murakami, Shinzo; Takenaka, Kazumasa; Ohta, Kikuo; Hamada, Masanori; and Hoshino, Kunio, 267,717, Cl. D14-70.000.
Hughes, Royal W. Golf practice platform. 267,739, 1-25-83, Cl. D21-234.000.
IVAC Corporation: *See—*
  Cunningham, Joel N.; Bucchianeri, Richard M.; and O'Leary, Stephen H., 267,743, Cl. D24-53.000.
Jamestown Group: *See—*
  Geiter, Robert A.; Albertsen, Peter S.; and Powell, Robert A., 267,741, Cl. D23-94.000.
Janda, George M., to GTE Automatic Electric Labs Inc. Housing for a telephone instrument base. 267,715, 1-25-83, Cl. D14-60.000.
Janda, George M., to GTE Automatic Electric Labs Inc. Desk telephone housing. 267,716, 1-25-83, Cl. D14-60.000.
Jarrett, William E. Novelty pin. 267,707, 1-25-83, Cl. D11-48.000.
Jones, David A.: *See—*
  Pardo, John; and Jones, David A., 267,701, Cl. D9-372.000.
Kabushiki Kaisha Daini Seikosha: *See—*
  Kosugi, Nobuhiro, 267,705, Cl. D10-39.000.
Kane, Bernard D., executor: *See—*
  Savage, Milton B., deceased; Savage, Sara, executor; and Kane, Bernard D., executor, 267,687, Cl. D6-157.000.
Kates, Fred W., to Revlon, Inc. Display unit. 267,682, 1-25-83, Cl. D6-85.000.
Kates, Fred W., to Revlon, Inc. Display unit. 267,683, 1-25-83, Cl. D6-85.000.
Kates, Fred W., to Revlon, Inc. Display unit. 267,692, 1-25-83, Cl. D6-186.000.
King, James F. Fifth wheel recreation vehicle. 267,710, 1-25-83, Cl. D12-103.000.
Knapheide Mfg. Co., The: *See—*
  Leaver, John Y., 267,709, Cl. D12-96.000.
Kosugi, Nobuhiro, to Kabushiki Kaisha Daini Seikosha. Wristwatch. 267,705, 1-25-83, Cl. D10-39.000.
Lander, Lars B., to Molnlycke Aktiebolag. Combined toilet paper holder and dispenser. 267,684, 1-25-83, Cl. D6-97.000.
Lang, Karen: *See—*
  Nuttall, Michael W.; and Lang, Karen, 267,729, Cl. D21-114.000.
Latino, Richard M.: *See—*
  Paquette, Edmund T.; and Latino, Richard M., 267,695, Cl. D6-191.000.
Lawson, Peter, to Rockwell do Brasil Ind. E. Com. Ltda. Wood shaper. 267,720, 1-25-83, Cl. D15-130.000.
Leaver, John Y., to Knapheide Mfg. Co., The. Platform body for a truck. 267,709, 1-25-83, Cl. D12-96.000.
Leffler, Dennis F.; and Truette, Danny M., to Pelton and Crane Company, The. Chair. 267,680, 1-25-83, Cl. D6-30.000.
Litton Business Systems, Inc.: *See—*
  Platner, Warren, 267,688, Cl. D6-162.000.
  Platner, Warren, 267,689, Cl. D6-169.000.
Livernois, John, to Canada Cycle and Motor Company Limited. Hockey pants. 267,674, 1-25-83, Cl. D2-28.000.
Loncraine Broxton & Partners Limited: *See—*
  Loncraine, Richard L., 267,728, Cl. D21-104.000.
Loncraine, Richard L., to Loncraine Broxton & Partners Limited. Puzzle toy. 267,728, 1-25-83, Cl. D21-104.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
  Murakami, Shinzo; Takenaka, Kazumasa; Ohta, Kikuo; Hamada, Masanori; and Hoshino, Kunio, 267,717, Cl. D14-70.000.
McFarland, George E., to Thermomatics Associates, Ltd. Halogen quartz lamp radiant heating module. 267,742, 1-25-83, Cl. D23-127.000.
Mita, Yoichi: *See—*
  Tajima, Osamu; Yamamura, Takashi; Mita, Yoichi; and Mochizuki, Masafumi, 267,714, Cl. D14-11.000.
Mobil Oil Corporation: *See—*
  Chase, David O.; and Pfuhl, Paul H., 267,703, Cl. D9-435.000.
Mochizuki, Masafumi: *See—*
  Tajima, Osamu; Yamamura, Takashi; Mita, Yoichi; and Mochizuki, Masafumi, 267,714, Cl. D14-11.000.
Molnlycke Aktiebolag: *See—*
  Lander, Lars B., 267,684, Cl. D6-97.000.
Moriarty, Frederick J.; and Paquette, Edmund T., to Wright Line Inc. Documentation hanger bar for library storage unit. 267,694, 1-25-83, Cl. D6-191.000.
Moriarty, Frederick J.: *See—*
  Paquette, Edmund T.; and Moriarty, Frederick J., 267,693, Cl. D6-191.000.
Muller-Deisig, Wolfgang, to Fehlbaum & Co. Chair. 267,681, 1-25-83, Cl. D6-73.000.
Murakami, Shinzo; Takenaka, Kazumasa; Ohta, Kikuo; Hamada, Masanori; and Hoshino, Kunio, to Matsushita Electric Industrial Co., Ltd. Clock radio. 267,717, 1-25-83, Cl. D14-70.000.
Noda, Junichi; and Yanagisawa, Isao, to Tamura Seisakusho Co., Ltd. Combined electrical connector and adapter plug therefor. 267,713, 1-25-83, Cl. D13-24.000.
Norstrom, Sven E. Protective shoe for dogs. 267,750, 1-25-83, Cl. D30-34.000.
Nuttall, Michael W.; and Lang, Karen, to Tomy Corporation, Inc. Toy house. 267,729, 1-25-83, Cl. D21-114.000.
Ohta, Kikuo: *See—*
  Murakami, Shinzo; Takenaka, Kazumasa; Ohta, Kikuo; Hamada, Masanori; and Hoshino, Kunio, 267,717, Cl. D14-70.000.
O'Leary, Stephen H.: *See—*
  Cunningham, Joel N.; Bucchianeri, Richard M.; and O'Leary, Stephen H., 267,743, Cl. D24-53.000.
Paquette, Edmund T.; and Moriarty, Frederick J., to Wright Line Inc. Library unit for accepting cantilevered document-storing components. 267,693, 1-25-83, Cl. D6-191.000.
Paquette, Edmund T.; and Latino, Richard M., to Wright Line Inc. Documentation hanger bar. 267,695, 1-25-83, Cl. D6-191.000.
Paquette, Edmund T.: *See—*
  Moriarty, Frederick J.; and Paquette, Edmund T., 267,694, Cl. D6-191.000.
Pardo, John; and Jones, David A., to Drackett Company, The. Bottle. 267,701, 1-25-83, Cl. D9-372.000.
Partex Fabriksaktiebolag: *See—*
  Skarin, Lars, 267,700, Cl. D9-337.000.
Pelavin, Joseph Y., to CPG Products Corp. Garment bag. 267,677, 1-25-83, Cl. D3-71.000.
Pelton and Crane Company, The: *See—*
  Leffler, Dennis F.; and Truette, Danny M., 267,680, Cl. D6-30.000.
Perego, Giuseppe. Extendable handle for collapsible perambulator. 267,711, 1-25-83, Cl. D12-133.000.
Pfuhl, Paul H.: *See—*
  Chase, David O.; and Pfuhl, Paul H., 267,703, Cl. D9-435.000.
Plante, Emile A. P. Protective corner for lobster trap. 267,740, 1-25-83, Cl. D22-18.000.
Platner, Warren, to Litton Business Systems, Inc. Desk or similar article. 267,688, 1-25-83, Cl. D6-162.000.
Platner, Warren, to Litton Business Systems, Inc. Communication cabinet. 267,689, 1-25-83, Cl. D6-169.000.
Playskool, Inc.: *See—*
  Doe, Walter P., 267,727, Cl. D21-75.000.
Polaroid Corporation: *See—*
  Staller, Norman D., 267,724, Cl. D16-112.000.
Powell, Robert A.: *See—*
  Geiter, Robert A.; Albertsen, Peter S.; and Powell, Robert A., 267,741, Cl. D23-94.000.
Prawl, William F. Air compressor bracket. 267,699, 1-25-83, Cl. D8-380.000.
Rambo, Charles D.: *See—*
  Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 267,738, Cl. D21-217.000.
Revlon, Inc.: *See—*
  Kates, Fred W., 267,682, Cl. D6-85.000.
  Kates, Fred W., 267,683, Cl. D6-85.000.
  Kates, Fred W., 267,692, Cl. D6-186.000.
Rockwell do Brasil Ind. E. Com. Ltda.: *See—*
  Lawson, Peter, 267,720, Cl. D15-130.000.
Roudavitch, Georges: *See—*
  Dupuis, Jean-Claude; and Roudavitch, Georges, 267,721, Cl. D15-148.000.
Sandspur Enterprises, Inc.: *See—*
  Flynn, Mary E., 267,744, Cl. D24-31.000.
Sassmannshausen, Knut O. Bicycle light. 267,747, 1-25-83, Cl. D26-28.000.

Sassmannshausen, Knut O. Bicycle light. 267,748, 1-25-83, Cl. D26-28.000.
Savage, Milton B., deceased; Savage, Sara, executor; and Kane, Bernard D., executor. Lens display stand. 267,687, 1-25-83, Cl. D6-157.000.
Savage, Sara, executor: *See—*
  Savage, Milton B., deceased; Savage, Sara, executor; and Kane, Bernard D., executor, 267,687, Cl. D6-157.000.
Schmidt, Dietrich F. Frame member for windows or the like. 267,746, 1-25-83, Cl. D25-74.000.
Schreiber, Rolf. Camera. 267,722, 1-25-83, Cl. D16-08.000.
Seeley, Wayne C., to Dentsply Research & Development Corp. Housing for a dental light instrument or the like. 267,745, 1-25-83, Cl. D24-10.000.
Shapiro, Jeffrey H., to A.B.L. Jewelers, Inc. Ring. 267,706, 1-25-83, Cl. D11-34.000.
Sidrak, Fahim R. Point plotting guide. 267,725, 1-25-83, Cl. D19-37.000.
Skarin, Lars, to Partex Fabriksaktiebolag. Combination of arrays of electrical wire markers in an insert and box arrangement. 267,700, 1-25-83, Cl. D9-337.000.
Societe Francaise d'Equipments pour La Navigation Aerienne (S.F.E.N.A.): *See—*
  Dupuis, Jean-Claude; and Roudavitch, Georges, 267,721, Cl. D15-148.000.
Spencer, Gary: *See—*
  Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 267,738, Cl. D21-217.000.
Staller, Norman D., to Polaroid Corporation. Clip-on sunglasses or similar article. 267,724, 1-25-83, Cl. D16-112.000.
Swann, James. Packaging container. 267,702, 1-25-83, Cl. D9-424.000.
Tajima, Osamu; Yamamura, Takashi; Mita, Yoichi; and Mochizuki, Masafumi, to Victor Company of Japan, Limited. Pre-recorded cartridge video/audio disk. 267,714, 1-25-83, Cl. D14-11.000.
Takenaka, Kazumasa: *See—*
  Murakami, Shinzo; Takenaka, Kazumasa; Ohta, Kikuo; Hamada, Masanori; and Hoshino, Kunio, 267,717, Cl. D14-70.000.
Tamura Seisakusho Co., Ltd.: *See—*
  Noda, Junichi; and Yanagisawa, Isao, 267,713, Cl. D13-24.000.
Thermomatics Associates, Ltd.: *See—*
  McFarland, George E., 267,742, Cl. D23-127.000.
Thrush, James L., to Anchor Hocking Corporation. Beverage glass or similar article. 267,697, 1-25-83, Cl. D7-11.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  Hara, Kunio, 267,723, Cl. D16-28.000.
Tomoda, Hiroshi, to Dunlop Limited. Tire for a vehicle wheel. 267,712, 1-25-83, Cl. D12-136.000.
Tomy Corporation, Inc.: *See—*
  Nuttall, Michael W.; and Lang, Karen, 267,729, Cl. D21-114.000.
'Totes', Incorporated: *See—*
  Allen, James H., 267,675, Cl. D2-271.000.
  Allen, James H., 267,676, Cl. D2-271.000.
Truette, Danny M.: *See—*
  Leffler, Dennis F.; and Truette, Danny M., 267,680, Cl. D6-30.000.
Verdesca, Joseph T. Home computer table. 267,690, 1-25-83, Cl. D6-179.000.
Victor Company of Japan, Limited: *See—*
  Tajima, Osamu; Yamamura, Takashi; Mita, Yoichi; and Mochizuki, Masafumi, 267,714, Cl. D14-11.000.
Vrignaud, Guy, to Allibert S.A. Wall hook. 267,685, 1-25-83, Cl. D6-120.000.
White, Courtney. Combined coffee table and book shelf unit. 267,691, 1-25-83, Cl. D6-179.000.
Wright, Forrest S. Barbell. 267,737, 1-25-83, Cl. D21-197.000.
Wright Line Inc.: *See—*
  Moriarty, Frederick J.; and Paquette, Edmund T., 267,694, Cl. D6-191.000.
  Paquette, Edmund T.; and Moriarty, Frederick J., 267,693, Cl. D6-191.000.
  Paquette, Edmund T.; and Latino, Richard M., 267,695, Cl. D6-191.000.
Yamamura, Takashi: *See—*
  Tajima, Osamu; Yamamura, Takashi; Mita, Yoichi; and Mochizuki, Masafumi, 267,714, Cl. D14-11.000.
Yanagisawa, Isao: *See—*
  Noda, Junichi; and Yanagisawa, Isao, 267,713, Cl. D13-24.000.

LIST OF PLANT PATENTEES

Duffett, William E.: *See—*
  Jessel, Walter H., Jr.; and Duffett, William E., 4,978, Cl. 78.000.
Ewen, Alan D.: *See—*
  Hengst, William E., 4,977, Cl. 38.000.
Hengst, William E., to Ewen, Alan D. Plum tree. 4,977, 1-25-83, Cl. 38.000.
Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,978, 1-25-83, Cl. 78.000.
Yoder Brothers, Inc.: *See—*
  Jessel, Walter H., Jr.; and Duffett, William E., 4,978, Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 25, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
51	4,369,526
	4,369,527
69	4,369,528
322	4,369,529
CLASS 3	
1.7	4,369,530
CLASS 4	
295	4,369,531
619	4,369,532
CLASS 5	
61	4,369,533
475	4,369,534
481	4,369,535
CLASS 8	
115.5	4,370,141
407	4,370,142
493	4,370,143
501	4,370,144
549	4,370,145
CLASS 12	
1 A	4,369,536
142 RS	4,369,537
CLASS 14	
69.5	4,369,538
CLASS 15	
49 C	4,369,539
49 R	4,369,540
97 B	4,369,541
250 B	4,369,542
319	4,369,543
320	4,369,544
CLASS 16	
64	4,369,545
110 R	4,369,546
CLASS 17	
21	4,369,547
CLASS 19	
26	4,369,548
145.7	4,369,549
240	4,369,550
CLASS 24	
201 A	4,369,551
230 R	4,369,552
	4,369,553
CLASS 28	
101	4,369,554
221	4,369,555
CLASS 29	
25.15	4,369,556
25.42	4,369,557
148.4 R	4,369,558
401.1	4,369,559
408	4,369,560
527.1	4,369,562
568	4,369,563
571	4,369,564
576 W	4,369,561
580	4,369,565
597	4,369,566
607	4,369,567
623.2	4,369,568
726	4,369,569
730	4,369,570
731	4,369,571
879	4,369,572
CLASS 30	
105	4,369,573
123.5	4,369,574
151	4,369,575
228	4,369,576
276	4,369,577
CLASS 33	
1 M	4,369,579
1 PT	4,369,578
42	4,369,580
169 C	4,369,581
180 R	4,369,582
403	4,369,583
CLASS 34	
12	4,369,584
63	4,369,585
125	4,369,586
150	4,369,587
CLASS 36	
9 R	4,369,588
77 R	4,369,589
CLASS 37	
231	4,369,590
CLASS 40	
610	4,369,591
CLASS 42	
54	4,369,592
70 F	4,369,593
90	4,369,594
CLASS 43	
83.5	4,369,595
CLASS 44	
68	4,370,147
CLASS 47	
1.5	4,369,596
9	4,369,597
66	4,369,598
74	4,369,599
CLASS 49	
504	4,369,600
CLASS 51	
135 BT	4,369,601
168	4,369,602
236	4,369,603
281 R	4,369,604
293	4,370,148
309	4,370,149
319	4,369,605
334	4,369,606
427	4,369,607
CLASS 52	
309.9	4,369,608
478	4,369,609
509	4,369,610
CLASS 53	
127	4,369,611
494	4,369,612
553	4,369,613
556	4,369,614
CLASS 54	
24	4,369,615
CLASS 55	
16	4,370,150
38	4,370,151
281	4,370,152
304	4,370,153
309	4,370,154
316	4,370,155
CLASS 56	
11.3	4,369,616
14.6	4,369,617
295	4,369,618
CLASS 57	
58.34	4,369,619
263	4,369,620
267	4,369,621
315	4,369,622
CLASS 60	
39.12	4,369,624
39.6	4,369,623
327	4,369,625
517	4,369,626
605	4,369,627
618	4,369,628
698	4,369,629
718	4,369,630
CLASS 62	
17	4,370,156
82	4,369,631
	4,369,632
117	4,369,633
126	4,369,634
260	4,369,635
514 R	4,369,636
CLASS 65	
3.43	4,370,157
32	4,370,158
CLASS 66	
8	4,369,637
148	4,369,638
203	4,369,639
CLASS 68	
205 R	4,369,640
CLASS 70	
272	4,369,641
389	4,369,642
CLASS 71	
5	4,370,159
117	4,370,160
CLASS 72	
75	4,369,643
92	4,369,644
201	4,369,645
243	4,369,646
CLASS 73	
27 R	4,369,647
61.4	4,369,648
	4,369,649
118	4,369,650
119 A	4,369,651
149	4,369,652
150 R	4,369,653
151	4,369,654
153	4,369,655
204	4,369,656
382 R	4,369,657
507	4,369,658
708	4,369,659
753	4,369,660
755	4,369,661
862.01	4,369,662
862.04	4,369,663
864.12	4,369,664
864.18	4,369,665
CLASS 74	
7 R	4,369,666
191	4,369,667
414	4,369,668
422	4,369,669
513	4,369,670
665 GA	4,369,671
688	4,369,672
751	4,369,673
752 E	4,369,674
864	4,369,675
868	4,369,676
869	4,369,677
CLASS 75	
34	4,370,161
90 R	4,370,162
CLASS 81	
90 C	4,369,678
CLASS 82	
4 R	4,369,679
CLASS 83	
13	4,369,680
100	4,369,681
112	4,369,682
157	4,369,683
216	4,369,684
661	4,369,685
801	4,369,686
CLASS 84	
454	4,369,687
CLASS 86	
1 R	4,369,688
20 C	4,369,689
CLASS 87	
33	4,369,690
CLASS 89	
8	4,369,691
	4,369,692
CLASS 91	
35	4,369,693
368	4,369,694
375 A	4,369,695
465	4,369,696
CLASS 99	
351	4,369,697
486	4,369,698
CLASS 100	
156	4,369,699
215	4,369,700
CLASS 101	
32	4,369,701
40	4,369,702
76	4,369,703
110	4,369,704
177	4,369,705
365	4,369,706
CLASS 102	
202.13	4,369,708
202.2	4,369,707
229	4,369,709
289	4,369,710
324	4,369,711
CLASS 104	
12	4,369,712
138 G	4,369,713
250	4,369,714
CLASS 106	
35	4,370,165
97	4,370,166
119	4,370,167
177	4,370,168
267	4,370,169
277	4,370,170
300	4,370,171
CLASS 108	
2	4,369,715
51.1	4,369,716
CLASS 109	
45	4,369,717
CLASS 110	
163	4,369,718
345	4,369,719
CLASS 112	
79 A	4,369,720
98	4,369,721
103	4,369,722
281	4,369,723
CLASS 114	
39	4,369,724
40	4,369,725
90	4,369,726
297	4,369,727
CLASS 116	
276	4,369,728
CLASS 118	
60	4,369,729
410	4,369,731
681	4,369,732
691	4,369,733
702	4,369,734
723	4,369,730
CLASS 119	
3	4,369,735
CLASS 123	
1 A	4,369,736
3	4,369,737
41.1	4,369,738
41.74	4,369,739
90.45	4,369,740
182	4,369,741
193 P	4,369,742
196 S	4,369,743
198 DC	4,369,745
198 E	4,369,744
261	4,369,746
278	4,369,747
425	4,369,748
439	4,369,749
505	4,369,750
527	4,369,751
568	4,369,752
569	4,369,753
573	4,369,754
588	4,369,755
620	4,369,756
	4,369,757
	4,369,758
CLASS 124	
68	4,369,759
CLASS 126	
21 A	4,369,760
63	4,369,761
164	4,369,762
276	4,369,763
400	4,369,764
427	4,369,765
429	4,369,766
CLASS 127	
1	4,370,172
CLASS 128	
6	4,369,767
	4,369,768
69	4,369,769
	4,369,770
79	4,369,771
92 C	4,369,772
127	4,369,773
133	4,369,774
166	4,369,775
200.14	4,369,776
	4,369,777
205.13	4,369,778
213 A	4,369,779
214 E	4,369,780
214 R	4,369,781
249	4,369,782
260	4,369,783
271	4,369,784
276	4,369,785
318	4,369,787
321	4,369,788
419 P	4,369,791
479	4,369,792
643	4,369,793
671	4,369,794
736	4,369,795
CLASS 131	
95	4,369,796
109 AB	4,369,797
330	4,369,798
CLASS 132	
83 R	4,369,799
CLASS 133	
8 R	4,369,800
CLASS 134	
3	4,370,173
7	4,370,174
58 R	4,369,801
122 R	4,369,802
CLASS 136	
244	4,370,509
262	4,370,510
CLASS 137	
6	4,369,803
85	4,369,804
101.31	4,369,805
216	4,369,806
296	4,369,807
515.5	4,369,808
543.19	4,369,809
556	4,369,810
819	4,369,811
843	4,369,812
CLASS 138	
94	4,369,813
120	4,369,814
CLASS 139	
57	4,369,815
426 R	4,369,816
435	4,369,817
452	4,369,818
CLASS 140	
105	4,369,819
CLASS 141	
39	4,369,820
147	4,369,821
CLASS 142	
1	Re.31,130
CLASS 144	
286 R	4,369,822
340	4,369,823
343	4,369,824
34	B1 3,625,268
CLASS 148	
1.5	4,370,175
	4,370,176
6.27	4,370,177
12 F	4,370,178
175	4,370,179
187	4,370,180
CLASS 149	
2	4,370,181
CLASS 152	
157	4,369,825
410	4,369,826
CLASS 156	
52	4,370,182
117	4,370,183
157	4,370,184
203	4,370,186
244.23	4,370,187
245	4,370,188
272.2	4,370,189
307.3	4,370,190
307.7	4,370,191
345	4,370,192
446	4,370,193
565	4,370,185
643	4,370,194
	4,370,195
	4,370,196
659.1	4,370,197
CLASS 159	
48.1	4,370,198
CLASS 160	
41	4,369,827
107	4,369,828
120	4,369,829
CLASS 162	
161	4,370,199
210	4,370,200
CLASS 164	
137	4,369,830
415	4,369,831
472	4,369,832
CLASS 165	
67	4,369,833
104.16	4,369,834
154	4,369,835
171	4,369,836
175	4,369,837
185	4,369,838
CLASS 166	
53	4,369,839
214	4,369,840
251	4,369,841
	4,369,842
292	4,369,843
294	4,369,844
298	4,369,845
CLASS 172	
60	4,369,846
815	4,369,847
CLASS 173	
8	4,369,848
CLASS 174	
14 R	4,370,511

CLASSIFICATION OF PATENTS

18	4,370,512
21 JS	4,370,513
31 R	4,370,514
35 R	4,370,515
59	4,370,516
74 A	4,370,517
84 R	4,370,518

CLASS 175

340	4,369,849
393	4,369,850

CLASS 178

22.14	4,370,519

CLASS 179

1 DM	4,370,523
1 GD	4,370,522
1 GS	4,370,520
1 SC	4,370,521
15.55 T	4,370,524
16 A	4,370,525
51 AA	4,370,526
70	4,370,527

CLASS 180

6.66	4,369,851
117	4,369,853
148	4,369,852
201	4,369,854
212	4,369,855
321	4,369,856

CLASS 181

159	4,369,857

CLASS 182

134	4,369,858
179	4,369,859
214	4,369,860

CLASS 187

9 E	4,369,861

CLASS 188

73.45	4,369,862
106 A	4,369,863
277	4,369,864

CLASS 192

3.31	4,369,865
3.57	4,369,866
4 A	4,369,867
36	4,369,868
131 R	4,369,869

CLASS 193

23	4,369,870

CLASS 198

320	4,369,871
339	4,369,872
367	4,369,873
396	4,369,874
456	4,369,875
460	4,369,876
509	4,369,877
807	4,369,878

CLASS 200

6 BB	4,370,528
16 D	4,370,529
144 B	4,370,530
151	4,370,531
314	4,370,532
340	4,370,533

CLASS 201

1	4,370,201

CLASS 202

228	4,370,202
	4,370,203

CLASS 203

39	4,370,204
75	4,370,205

CLASS 204

1 T	4,370,206
95	4,370,207
98	4,370,208
	4,370,209
140	4,370,210
148	4,370,211
159.14	4,370,212
195 S	4,370,213
242	4,370,214
	4,370,215
243 R	4,370,216
298	4,370,217

CLASS 206

45.18	4,369,879
63.3	4,369,880
225	4,369,881
232	4,369,882
387	4,369,883
389	4,369,884

484	4,369,885

CLASS 208

3	4,370,218
59	4,370,219
108	4,370,220
112	4,370,221
113	4,370,222
125	4,370,223
139	4,370,224

CLASS 209

40	4,370,225
332	4,370,226
564	4,369,886

CLASS 210

170	4,370,227
223	4,370,228
224	4,370,232
242.3	4,370,229
289	4,370,230
404	4,370,231
609	4,370,233
617	4,370,234
620	4,370,235
634	4,370,236
638	4,370,237
639	4,370,238
668	4,370,239
673	4,370,240
759	4,370,241
787	4,370,242

CLASS 211

49 D	4,369,887

CLASS 215

237	4,369,888
246	4,369,889

CLASS 219

10.55 A	4,370,534
10.55 B	4,370,535
69 M	4,370,536
69 V	4,370,537
121 EC	4,370,541
121 LH	4,370,542
121 LM	4,370,540
121 PW	4,370,539
121 PY	4,370,538
275	4,370,543
370	4,370,544
491	4,370,545
497	4,370,546
	4,370,547
549	4,370,548

CLASS 220

85 R	4,369,890
85 VR	4,369,891
320	4,369,892
378	4,369,893
414	4,369,894

CLASS 221

3	4,369,895
75	4,369,896
227	4,369,897

CLASS 222

4	4,369,898
153	4,369,899
321	4,369,900
480	4,369,901

CLASS 224

42.42	4,369,902
213	4,369,903
250	4,369,904

CLASS 226

17	4,369,905
42	4,369,906

CLASS 227

54	4,369,907
90	4,369,908
109	4,369,909

CLASS 228

110	4,369,910
173 F	4,369,911

CLASS 229

5.6	4,369,912
30	4,369,913
33	4,369,914

CLASS 235

92 MP	4,370,549
449	4,370,550

CLASS 236

11	4,369,916

CLASS 237

12.1	4,369,917

55	4,369,918

CLASS 239

79	4,369,919
127.3	4,369,920
317	4,369,921
454	4,369,922
542	4,369,923
703	4,369,924
	4,369,925

CLASS 241

18	4,369,926
73	4,369,927

CLASS 242

25 A	4,369,928
55.42	4,369,929
84.1 J	4,369,930
107	4,369,931
107.4 A	4,369,932
125.1	4,369,933
157.1	4,369,934
192	4,369,935
220	4,369,936

CLASS 244

3.21	4,369,940
53 R	4,369,937
135 R	4,369,938
155 R	4,369,939
118.5	B1 3.517.899

CLASS 245

2	4,369,941

CLASS 246

34 CT	4,369,942
127	4,369,943

CLASS 248

56	4,369,944
73	4,369,945
74 A	4,369,946
	4,369,947
441 A	4,369,948
632	4,369,949
	4,369,950

CLASS 250

201	4,370,551
253	4,370,552
343	4,370,553
491.1	4,370,554
503.1	4,370,556
554	4,370,557
559	4,370,558

CLASS 251

7	4,369,951

CLASS 252

8.55 D	4,370,243
39	4,370,244
46.4	4,370,245
	4,370,246
46.7	4,370,247
49.6	4,370,248
62	4,370,249
135	4,370,250
186.42	4,370,251
311	4,370,252
312	4,370,253
355	4,370,254
389 A	4,370,255
391	4,370,256
429 B	4,370,257
429 R	4,370,258
437	4,370,259
438	4,370,260
460	4,370,261
464	4,370,262
472	4,370,263

CLASS 254

353	4,369,952

CLASS 256

24	4,369,953

CLASS 260

112 B	4,370,264
112.5 R	4,370,265
	4,370,266
123.5	4,370,267
146 T	4,370,268
157	4,370,269
245.87	4,370,270
397.45	4,370,271
404	4,370,272
404.5	4,370,273
412.3	4,370,274
463	4,370,275
	4,370,276
465 E	4,370,278
465 F	4,370,277
465.3	4,370,279
465.6	4,370,280
966	4,370,281

CLASS 261

34 B	4,370,282

CLASS 264

37	4,370,283
42	4,370,284
43	4,370,285
53	4,370,286
67	4,370,287
81	4,370,288
113	4,370,289
184	4,370,290
210.7	4,370,291
272.11	4,370,292
514	4,370,293
541	Re.31,133
571	4,370,294

CLASS 266

139	4,369,954
	4,369,955

CLASS 269

34	4,369,956
41	4,369,957
61	4,369,958

CLASS 271

3.1	4,369,959
5	4,369,960
10	4,369,961
11	4,369,962
204	4,369,963
260	4,369,964

CLASS 272

56.5 R	4,369,965
62	4,369,966
119	4,369,967
123	4,369,968
144	4,369,969

CLASS 273

67 A	4,369,970
85 G	4,369,971
148 A	4,369,972
153 R	4,369,973
164	4,369,974
237	4,369,975
303	4,369,976

CLASS 277

1	4,369,977
12	4,369,978
212 FB	4,369,979
235 B	4,369,980

CLASS 280

5 A	4,369,981
47.13 R	4,369,982
81 A	4,369,983
166	4,369,984
641	4,369,985
644	4,369,986
	4,369,987
689	4,369,988
763	4,369,989
804	4,369,990

CLASS 285

38	4,369,991
256	4,369,992

CLASS 290

1 R	4,370,559
40 C	4,370,560

CLASS 292

148	4,369,993
340	4,369,994

CLASS 294

89	Re.31,131

CLASS 296

65 A	4,369,995
97 K	4,369,996

CLASS 297

68	4,369,997
195	4,369,998
	4,369,999
284	4,370,000
355	4,370,001
452	4,370,002

CLASS 299

2	4,370,003

CLASS 307

9	4,370,561
38	4,370,562
40	4,370,563
140	4,370,564
141	4,370,565
	4,370,566
252 T	4,370,567
260	4,370,568

266	4,370,569
270	4,370,570
353	4,370,571
	4,370,572
514	4,370,573
	4,370,574
530	4,370,575

CLASS 308

10	4,370,004

CLASS 310

	4,370,576
12	4,370,577
42	4,370,578
50	4,370,579
67 R	4,370,580
198	4,370,581
211	4,370,582
331	4,370,583
365	4,370,584

CLASS 312

215	4,370,006
334	4,370,007

CLASS 313

102	4,370,585
	4,370,586
113	4,370,587
270	4,370,588
315	4,370,589
391	4,370,590
402	4,370,591
414	4,370,592
	4,370,593
458	4,370,594
486	4,370,595

CLASS 315

3.6	4,370,596
58	4,370,597
59	4,370,598
217	4,370,599
244	4,370,600
307	4,370,601

CLASS 318

114	4,370,602
523	4,370,603
687	4,370,604
773	4,370,605

CLASS 320

35	4,370,606

CLASS 323

271	4,370,607
316	4,370,608

CLASS 324

51	4,370,609
52	4,370,610
61 R	4,370,611
117 R	4,370,612
154 R	4,370,613
173	4,370,614
457	4,370,615
458	4,370,616

CLASS 328

63	4,370,617
120	4,370,618
133	4,370,619

CLASS 329

192	4,370,620

CLASS 330

4	4,370,621
207 P	4,370,622
267	4,370,623
294	4,370,624

CLASS 331

49	4,370,625
96	4,370,626
108 D	4,370,627
111	4,370,628
179	4,370,629

CLASS 333

24 C	4,370,630
106	4,370,631
173	4,370,632
195	4,370,633

CLASS 335

16	4,370,634
20	4,370,635
132	4,370,636
174	4,370,637
186	4,370,638

CLASS 336

65	Re.31,134

CLASS 337

230	4,370,639

CLASS 338

25	4,370,640

CLASS 339

4	4,370,008
31 R	4,370,009
	4,370,010
74 R	4,370,011
75 MP	4,370,012
82	4,370,013
97 P	4,370,015
97 R	Re.31,132
	4,370,014
103 M	4,370,016
176 MP	4,370,017
263 R	4,370,018

CLASS 340

146.3 H	4,370,641
347 SH	4,370,643
347 SY	4,370,642
528	4,370,644
709	4,370,645
722	4,370,646
784	4,370,647
825.2	4,370,648
825.35	4,370,649
825.71	4,370,650
825.86	4,370,651

CLASS 343

5 SM	4,370,652
6.5 LC	4,370,653
18 D	4,370,654
100 LE	4,370,655
112 D	4,370,656
700 MS	4,370,657
713	4,370,658
772	4,370,659
795	4,370,660

CLASS 346

74.5	4,370,661
75	4,370,662
	4,370,663
	4,370,664
	4,370,665
76 PH	4,370,666
108	4,370,667
140 R	4,370,668

CLASS 350

6.6	4,370,019
96.10	4,370,020
96.18	4,370,021
96.21	4,370,022
96.23	4,370,023
162.12	4,370,024
163	4,370,026
164	4,370,027
166	4,370,025
341	4,370,028
355	4,370,029
358	4,370,030
426	4,370,031
476	4,370,032

CLASS 351

206	4,370,033
	4,370,034

CLASS 352

78 R	4,370,035

CLASS 354

1	4,370,036
23 D	4,370,037
25	4,370,038
77	4,370,039
92	4,370,041
127	4,370,042
173	4,370,043
	4,370,044
288	4,370,040
304	4,370,045
324	4,370,046

CLASS 355

3 BE	4,370,047
3 DD	4,370,049
	4,370,056
3 R	4,370,051
3 SH	4,370,050
3 TR	4,370,048
14 D	4,370,053
14 R	4,370,052
14 SH	4,370,055
53	4,370,054

CLASS 356

71	4,370,057
125	4,370,058
400	4,370,059
417	4,370,060

CLASSIFICATION OF PATENTS

CLASS 357

23	4,370,669
36	4,370,670
79	4,370,671

CLASS 358

21 R	4,370,673
74	4,370,674
108	4,370,675
188	4,370,676
225	4,370,677
285	4,370,678
312	4,370,672
318	4,370,679
330	4,370,680

CLASS 360

68	4,370,681
71	4,370,682
73	4,370,683
74.2	4,370,684
77	4,370,685
96.3	4,370,686
98	4,370,687
99	4,370,688
135	4,370,689

CLASS 361

23	4,370,690
62	4,370,691
109	4,370,692
145	4,370,693
179	4,370,694
213	4,370,695
232	4,370,696
283	4,370,697
330	4,370,698
406	4,370,699
424	4,370,700
384	B1 4.122.508

CLASS 363

20	4,370,701
42	4,370,702
136	4,370,703

CLASS 364

171	4,370,704
184	4,370,705
	4,370,706
200	4,370,707
	4,370,708
	4,370,709
	4,370,710
	4,370,711
	4,370,712
	4,370,729
424	4,370,713
426	4,370,714
	4,370,715
434	4,370,716
436	4,370,717
	4,370,718
472	4,370,719
474	4,370,720
	4,370,721
	4,370,722
483	4,370,723
561	4,370,724
582	4,370,725
604	4,370,726
705	4,370,727
900	4,370,728
	4,370,730
	4,370,731
	4,370,732
	4,370,733

CLASS 365

12	4,370,734
16	4,370,735
155	4,370,736
203	4,370,737

CLASS 366

85	4,370,061

130	4,370,062

CLASS 368

71	4,370,063
93	4,370,064
157	4,370,065
188	4,370,066
202	4,370,067
240	4,370,068
273	4,370,069

CLASS 369

77	4,370,738
126	4,370,739
276	4,370,740

CLASS 370

24	4,370,741
58	4,370,742
67	4,370,743
88	4,370,744

CLASS 371

8	4,370,745
27	4,370,746

CLASS 374

170	4,370,070

CLASS 375

62	4,370,747
94	4,370,748
99	4,370,749

CLASS 376

133	4,370,295
	4,370,296
148	4,370,297
317	4,370,298

CLASS 378

43	4,370,750
47	4,370,751
110	4,370,752
120	4,370,555

CLASS 384

154	4,370,005

CLASS 400

144.2	4,370,071

CLASS 401

276	4,370,072

CLASS 403

172	4,370,073
388	4,370,074

CLASS 405

20	4,370,075
132	4,370,076
258	4,370,077
264	4,370,078
272	4,370,079

CLASS 409

200	4,370,080

CLASS 411

43	4,370,081
61	4,370,082
87	4,370,083

CLASS 414

292	4,370,084
337	4,370,085
	4,370,086
421	4,370,087
439	4,370,088
589	4,370,089
694	4,370,090
735	4,370,091
752	4,370,092
779	4,370,093

CLASS 415

172 A	4,370,094

CLASS 416

175	4,370,095
189	4,370,096
228	4,370,097

CLASS 417

18	4,370,098
32	4,370,099
218	4,370,100
241	4,370,101
296	4,370,102
298	4,370,103
312	4,370,104
360	4,370,105
407	4,370,106
413	4,370,107
430	4,370,108

CLASS 418

34	4,370,109
132	4,370,110
212	4,370,111

CLASS 420

429	4,370,299
503	4,370,164
582	4,370,163

CLASS 422

108	4,370,300
122	4,370,301
137	4,370,302
144	4,370,303
224	4,370,304
292	4,370,305

CLASS 423

220	4,370,306
432	4,370,307
450	4,370,308
461	4,370,309
600	4,370,310

CLASS 424

1.1	4,370,311
1.5	4,370,312
32	4,370,313
54	4,370,314
94	4,370,315
98	4,370,316
177	4,370,317
	4,370,318
184	4,370,319
200	4,370,320
243	4,370,321
	4,370,322
244	4,370,323
	4,370,324
245	4,370,325
246	4,370,326
	4,370,327
250	4,370,328
	4,370,329
	4,370,330
258	4,370,331
	4,370,332
260	4,370,333
266	4,370,334
267	4,370,335
269	4,370,336
	4,370,337
270	4,370,338
273 P	4,370,339
274	4,370,340
	4,370,341
275	4,370,342
	4,370,343
279	4,370,344
282	4,370,345
305	4,370,346
324	4,370,347
331	4,370,348
365	4,370,349

CLASS 425

3	4,370,112

13	4,370,113
131.5	4,370,114
144	4,370,115
171	4,370,116
224	4,370,117
305.1	4,370,118
352	4,370,119
405 H	4,370,120
526	4,370,121
543	4,370,122
	4,370,123
556	4,370,124

CLASS 426

5	4,370,350
7	4,370,351
557	4,370,352
570	4,370,353
573	4,370,354

CLASS 427

9	4,370,355
38	4,370,356
46	4,370,357
54.1	4,370,358
63	4,370,359
76	4,370,360
123	4,370,361
153	4,370,362
230	4,370,363
238	4,370,364
387	4,370,365
389.9	4,370,366
423	4,370,367

CLASS 428

35	4,370,368
	4,370,369
40	4,370,370
65	4,370,371
116	4,370,372
151	4,370,373
216	4,370,374
229	4,370,375
241	4,370,376
327	4,370,377
339	4,370,378
341	4,370,379
355	4,370,380
392	4,370,381
418	4,370,382
425.9	4,370,383
	4,370,384
429	4,370,385
458	4,370,386
	4,370,387
461	4,370,388
511	4,370,389
614	4,370,390
697	4,370,391
451	B1 3.328.231

CLASS 429

15	4,370,392
193	4,370,393
199	4,370,394
219	4,370,395

CLASS 430

7	4,370,396
10	4,370,397
42	4,370,398
58	4,370,399
126	4,370,400
178	4,370,401
237	4,370,402
271	4,370,403
302	4,370,404
312	4,370,405
331	4,370,406
403	4,370,407
432	4,370,408
496	4,370,409
505	4,370,410
596	4,370,411
635	4,370,412

CLASS 431

66	4,370,125
73	4,370,126

CLASS 432

106	4,370,127
115	4,370,128

CLASS 433

6	4,370,129
32	4,370,130
86	4,370,131
128	4,370,132
171	4,370,133
173	4,370,134
213	4,370,135
217	4,370,136

CLASS 434

94	4,370,137

CLASS 435

39	4,370,413
44	4,370,414
119	4,370,415
197	4,370,416
212	4,370,417
256	4,370,420
289	4,370,418
301	4,370,419

CLASS 436

120	4,370,146

CLASS 440

112	4,370,138

CLASS 455

36	4,370,753

CLASS 474

45	4,370,139

CLASS 493

289	4,370,140

CLASS 494

8	4,369,915

CLASS 501

88	4,370,421
108	4,370,422

CLASS 521

84	4,370,423
121	4,370,424
138	4,370,425

CLASS 523

310	4,370,426
400	4,370,427
508	4,370,428

CLASS 524

60	4,370,429
96	4,370,430
100	4,370,431
216	4,370,432
274	4,370,433
289	4,370,434
312	4,370,435
322	4,370,436
397	4,370,437
412	4,370,438
513	4,370,439
522	4,370,440
539	4,370,441
598	4,370,442
612	4,370,443
732	4,370,444
742	4,370,445

CLASS 525

36	4,370,446
39	4,370,447
99	4,370,448
247	4,370,449
262	4,370,450

294	4,370,451
438	4,370,452
450	4,370,453

CLASS 526

88	4,370,454
125	4,370,455
	4,370,456
137	4,370,457
138	4,370,458
227	4,370,459
329.2	4,370,460

CLASS 528

45	4,370,461
73	4,370,462
78	4,370,463
99	4,370,464
104	4,370,465
190	4,370,466
322	4,370,467
335	4,370,468
388	4,370,469
	4,370,470
	4,370,471

CLASS 536

1.1	4,370,472
2	4,370,473
6.4	4,370,474
16.8	4,370,475
113	4,370,476

CLASS 542

413	4,370,477
427	4,370,478

CLASS 544

278	4,370,479
320	4,370,480

CLASS 546

251	4,370,481

CLASS 548

155	4,370,482
165	4,370,483
316	4,370,484
404	4,370,485

CLASS 549

46	4,370,486
242	4,370,487
429	4,370,488

CLASS 560

62	4,370,489
214	4,370,490
234	4,370,491
245	4,370,492

CLASS 562

444	4,370,493
450	4,370,494
451	4,370,495
487	4,370,496

CLASS 564

55	4,370,497
155	4,370,498
200	4,370,499
304	4,370,500
330	4,370,501
411	4,370,502
474	4,370,503

CLASS 568

454	4,370,504
734	4,370,505
785	4,370,506
902	4,370,507

CLASS 585

467	4,370,508

CLASS 604

96	4,369,789
280	4,369,790
390	4,369,786

CLASSIFICATION OF DESIGNS

D2—	28	267,674
	271	267,675
		267,676
D3—	71	267,677
D6—	7	267,678
	20	267,679
	30	267,680
	73	267,681
	85	267,682
		267,683
	97	267,684
	120	267,685
	127	267,686
	157	267,687
	162	267,688
	169	267,689
	179	267,690
		267,691
	186	267,692
	191	267,693
		267,694
		267,695
	264	267,696
D7—	11	267,697
D8—	341	267,698
	380	267,699
D9—	337	267,700
	372	267,701
	424	267,702
	435	267,703
D10—	6	267,704
	39	267,705
D11—	34	267,706
	48	267,707
	157	267,708
D12—	96	267,709
	103	267,710
	133	267,711
	136	267,712
D13—	24	267,713
D14—	11	267,714
	60	267,715
		267,716
	70	267,717
D15—	7	267,718
	21	267,719
	130	267,720
	148	267,721
D16—	08	267,722
	28	267,723
	112	267,724
D19—	37	267,725
	59	267,726
D21—	75	267,727
	104	267,728
	114	267,729
	182	267,730
		267,731
		267,732
		267,733
		267,734
		267,735
		267,736
	197	267,737
	217	267,738
	234	267,739
D22—	18	267,740
D23—	94	267,741
	127	267,742
D24—	10	267,745
	31	267,744
	53	267,743
D25—	74	267,746
D26—	28	267,747
		267,748
D28—	76	267,749
D30—	34	267,750
D32—	1	267,751

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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4,369,673
4,369,711
4,369,766
4,369,966
4,370,095
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04 : 4,369,699
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